318 NEVINS STREET
BROOKLYN, KINGS COUNTY, NEW YORK

Remedial Action Work Plan

NYSDEC BCP Number: C224350

Prepared for:

Gowanus 300 Nevins Street LLC

19 West 24th Street, 12th Floor

New York, NY 10010

Prepared by:

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Submitted to:

New York State Department of Environmental Conservation
Division of Environmental Remediation
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SEPTEMBER 2023

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CERTIFICATIONS

I, Xin Yuan, certify that I am currently a NYS registered professional engineer and that this Remedial Action Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

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

Xin Yuan, P.E.	9/20/2023	
NYS Professional Engineer #096444	Date	Signature



It is a violation of Article 145 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 145, New York State Education La

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LIST OF ACRONYMS

Acronym	Definition
AGV	Air Guidance Value
amsl	above mean sea level
AOC	Area of Concern
ASTM	American Society for Testing and Materials
AST	Aboveground Storage Tank
AWQS	Ambient Water Quality Standards
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
fbg	feet below grade
bgs	below grade surface
CAMP	Community Air Monitoring Program
COC	Contaminant of Concern
CVOC	Chlorinated Volatile Organic Compound
DNAPL	Dense Non-Aqueous Phase Liquid
DO	Dissolved Oxygen
DUSR	Data Usability Summary Report
EDD	Electronic data deliverable
EDR	Environmental Data Resources
ELAP	Environmental Laboratory Approval Program
EM	Electromagnetic
EPA	United Stated Environmental Protection Agency
ESA	Environmental Site Assessment
ESI	Environmental Site Investigation
FWRIA	Fish and Wildlife Resources Impact Analysis
GPR	Ground Penetrating Radar
GSF	Gross Square Foot
HASP	Health and Safety Plan
IDW	Investigation Derived Waste
LNAPL	Light Non-Aqueous Phase Liquid
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NYCRR	New York Codes, Rules, and Regulations

Acronym	Definition
NYCDCP	New York City Department of City Planning
NYSDOH	New York State Department of Health
NYSDEC	New York State Department of Environmental Conservation
NYSDOT	New York State Department of Transportation
NYCOER	New York City Office of Environmental Remediation
NTU	Nephelometric Turbidity Units
ORP	Oxidation-Reduction Potential
PAH	Polycyclic Aromatic Hydrocarbon
PBS	Petroleum Bulk Storage
PCB	Polychlorinated Biphenyls
PCE	Tetrachloroethene
PID	Photoionization Detector
PPE	Personal Protective Equipment
ppm	Parts per million
ppmv	Parts per million by volume
PVC	Polyvinyl Chloride
PGSCOs	Protection of Groundwater Soil Cleanup Objectives
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Conditions
RI	Remedial Investigation
RIR	Remedial Investigation Report
RIWP	Remedial Investigation Work Plan
RL	Reporting Limit
RR	Restricted Residential
SCOs	Soil Cleanup Objectives
sf	square feet
SSDS	Sub Slab Depressurization System
SMP	Site Management Plan
SQG	Small Quantity Generator
SVOC	Semi Volatile Organic Compound

Acronym	Definition
TAL	Target Analyte List
TCA	Trichloroethane
TCE	Trichloroethene
TCL	Target Compound List
TOGS	Technical and Operational Guidance Series
USGS	United States Geological Survey
UST	Underground Storage Tank
VE	Vapor Extraction
VMP	Vapor Monitoring Point
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

Impact Environmental Engineering and Geology, PLLC (IEEG) has prepared this Remedial Action Work Plan (RAWP) including the Alternatives Analysis Report on behalf of Gowanus 300 Nevins Street LLC (the Volunteer) for the property located at 318 Nevins Street, Brooklyn, New York (the "Site"). The Volunteer was accepted into the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) pursuant to a NYSDEC Brownfield Cleanup Agreement (BCA), dated April 29, 2022 (BCP Site No. C224350).

Site Description/Physical Setting/Site History

The Site is a 2.34-acre property located in the County of Kings, Brooklyn, New York and is identified as Block 439, Lot 1 on the New York City Tax Map. The Site is currently unimproved (all former buildings have been demolished), vacant and unoccupied. The Site is bounded by Union Street to the north, Nevins Street to the east, Carroll Street to the south, and the Gowanus Canal to the to the west.

Two new mixed-use structures containing retail space and residential apartments with amenities is proposed for the property. When completed, the Site will contain a north mixed-use structure with a maximum of 22-floors and a south mixed-use structure with a maximum of 17-floors.

The Site is in a mixed-use area characterized by industrial, residential and commercial properties. The Site is zoned Manufacturing District (M1-4) with Medium Density Residential (R7-2) with a Special Purpose District (G) designation. The area surrounding the Site consist of a mix of zoning ranging from manufacturing districts generally with medium density residential zoning and commercial overlays and is special purpose district extends east to 4th Avenue.

Historic Sanborn Fire Insurance maps indicate that the Site was used for lumber yards from 1886 up until 1915. Kopper's Seaboard Coke Co. is depicted as the occupant of the north Site parcel and the south parcel was Brooklyn Nevins Coal Co., Morton Coal Co. and Hy-Grade Magnet over the period from circa 1922 until the 1950. During this time, the Site was used as a yard designed to receive coal or coke from barges, screen and deliver to trucks for distribution to consumers. The most recent on-site structure was reportedly constructed in 1958 and was occupied by a motor freight station from the 1960s through the late 1970s. Subsequently, the building was utilized by NY Telephone Co, Bell Atlantic and Verizon. Based on other historical information available for the Site, the Manhattan Commissary Inc. leased the property in 2012 which is primarily operated for food sales under numerous vendors identified as: Venditti, Tacos

Limos, Tacos Lupita, Tacos El Poblanito, Tacos El Chicken and Tacos Pollo Loco. These vendors operated at the Site until its recent sale on December 30, 2021.

Summary of the Remedial Investigation

The Site was investigated in accordance with the scope of work presented in the NYSDEC-approved Remedial Investigation (RI) Work Plan dated May 11, 2022, Revised September 22, 2022, and a Supplemental RI Work Plan dated December 8, 2022 for delineation of MGP coal tar which was revised December 22 2022. The RI was conducted on September 23, 2022, September 26 through 30, 2022, October 3 through 7, 2022 and October 10 through 12, 2022. The Supplemental RI for delineation of MGP coal tar was conducted from December 23, 2022 through January 30, 2023. The Remedial Investigation Report (RIR) was submitted to NYSDEC on November 10, 2022 and revised to include the supplemental RI data. The Revised RIR was submitted on March 13, 2023.

The RI completed at the Site consisted of the advancement of eight (8) soil borings to further investigate urban fill material; four (4) shallow soil borings to address potential USTs and two (2) soil borings to address a potential oil/water separator; six (6) soil borings to investigate the shallow soil conditions and to investigate the potential for migration of coal tar DNAPL contamination in deeper soil from an off-site and upgradient source(s); advancement of sixty-three (63) deep soil borings to further investigate and delineate the confirmed migration of coal tar DNAPL contamination onto the Site from an off-site and upgradient source(s); laboratory analysis of 138 soil samples; installation of five (5) shallow permanent groundwater interface monitoring wells and installation of two (2) sets of cluster wells where coal tar was initially detected; the laboratory analysis of five sets of groundwater samples; installation of five (5) soil vapor sampling points; and laboratory analysis of five soil vapor samples. The RI findings are summarized below:

- Evidence of fill material was observed in soil borings advanced on the Site which is further supported by the RI analytical data from soil borings advanced on the Site. Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene and Indeno(1,2,3-cd)pyrene, selenium and arsenic above RR SCOs and PGSCO's were detected in the shallow urban fill material present beneath the Site.

- PFOS was detected in shallow soil at 0-2 fbg in SB-8, SB-9 and SB-17 above the UU SCO and at OWS-1 at 5-6 fbg above the PGSCO's;

- VOCs above the UU and PGSCO's and SVOCs as PAHs above the UU, RR and PGSCO's were detected in deep saturated soil samples associated with SB-16 and SB-17 near the bulkhead where coal tar was first detected on the Site and in the supplemental delineation soil borings completed at the Site near the bulkhead and northwest corner of the Site.

- GCM in the form of coal tar DNAPL (dense non aqueous phase liquid) was identified in saturated soil beneath the Site along the bulkhead (SB-16 and SB-17) and was detected in forty-two (42) of the sixty-three (63) supplemental RI delineation borings at depths of approximately 18 to 35 fbg along the bulkhead in the vicinity of SB-16 and SB-17 and is present in the delineation borings completed on the northwest portion of the Site.

- The DNAPL contamination is associated with the migration from the former Fulton Municipal Works Former MGP facilities located 0.06 miles to 0.11 miles hydraulically upgradient of the site and historic Sanborn Maps showed hydrogen tanks, gas holders, gasometers, purifiers, condenser, gasoline house, naphtha tanks, purge tank, etc. IEEG also reviewed the Final Remedial Investigation Report prepared by GEI consultants (GEI) for the Fulton Municipal Works Former MGP site, dated July 2012. The report indicates the MGP operations started in 1879, MGP operations merged in 1895 and became the Brooklyn Union Gas Co, and operation ceased in 1929 (operated for 36 years). The GEI report documents petroleum, naphtha and coal tar contamination present in soil and groundwater beneath former MGP parcels and the contamination has migrated down gradient in the direction of the Site based on GEI's off-site subsurface investigation.

- Benzene was detected in one groundwater sample on the north end of the Site and MTBE was detected on two groundwater samples on the north end of the Site which is an area associated with the former USTs. Cis-1,2-Dichloroethylene was only detected in one well at the southwest corner of the Site.

- Dissolved arsenic, antimony, magnesium, manganese, sodium and selenium were detected in groundwater beneath the Site. Magnesium, manganese and sodium are commonly detected in groundwater along coastal areas. No antimony was identified in fill/soil at the Site and arsenic and selenium was detected in groundwater which is likely the result of the fill on the Site.

- PAHs and metals (i.e., selenium and arsenic) were detected in shallow groundwater and appear to be related to the urban fill material where these metals were detected in shallow soil.

- PFOS was detected in groundwater which appears to be related to the PFOS detected in shallow soil. PFOA was only detected in groundwater beneath the Site which indicates an off-Site source(s).

- Tetrachloroethylene (PCE) was detected in five (5) soil vapor samples at concentrations ranging from 2,587.626 µg/m^3 (SV-4) to 813.557 µg/m^3 (SV-8). Trichloroethylene (TCE) was detected in five (5) soil vapor samples at concentrations ranging from 2.632 µg/m^3 (SV-7) to 1,396.623 µg/m^3 (SV-8). These CVOCs were not detected in soil on the Site above the UU SCOs. It should be noted that cis-1,2-dichloroethylene was detected in groundwater sample GCMW28 above the AWQS. There is the potential for an off-Site source of the CVOCs detected at the Site.

- The advancement of shallow soil borings beneath the Site during previous subsurface investigations and the recent RI indicate the presence of urban fill material at depths up to approximately 9 feet below grade (fbg). The urban fill material is described as brown silty sand with gravel and anthropogenic material described as concrete, brick and asphalt fragments, wood, and some slag. Below the fill material, the soil is described as silty sand with gray clay, trace gravel and some organics in some borings at depths ranging from approximately 9 to 13 fbg followed by non-continuous gray clay encounter at depths ranging from approximately 10 to 13 fbg. For the borings that were advanced beyond 20 fbg, the soil is described as silt to fine sand, some clay which transitions to medium to coarse sand until the terminal depth of the boring.

- The Site adjoins the Gowanus Canal to the west which historically was a tidal creek with wetlands/lowland marsh areas prior to urban development in the mid-1800s. The creek was dredged to construct the canal and hardened shoreline. Dredge spoils were deposited behind the hardened shoreline followed by the historic fill material to allow for the general industrialized development of the area.

- The depth to groundwater beneath the Site ranged from approximately 5.0 to 7.0 feet below grade (fbg). Groundwater flow at the Site is to the west-southwest; however, the tidal fluctuations (oscillations) of the Gowanus Canal are likely to have some influence on groundwater flow.

Qualitative Human Health Exposure Assessment

As identified in the CSM, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene and Indeno(1,2,3-cd)pyrene, selenium and arsenic related to urban fill and PFOS are identified in soil and groundwater beneath the Site; PFOA from an off-Site source is present in groundwater; coal tar in the form of DNAPL was identified in saturated soil beneath the northwest and west portions of the Site which migrated from former Fulton Municipal Works MGP facilities located north-northeast (up gradient); and petroleum and CVOCs were detected in soil vapor samples collected from the Site.

The fate and transport of contaminants depends on the media. Soil contamination can be transported as dust and/or can migrate downward toward the groundwater interface, unless contaminated media was placed as fill material in low-lying saturated areas where groundwater contaminants are a saturated source that can be transported as a dissolved phase contaminant and in some cases as a non-aqueous phase liquid. Soil and groundwater contamination can volatilize into a vapor phase giving rise to soil vapor contamination.

The Site is currently capped by former building concrete slab, concrete walkways and asphalt pavement and is not occupied which limits potential exposure to Site contaminants. The cap limits contact of precipitation and runoff to contaminated media that can lead to contaminant migration, and potable water is provided by the NYC Department of Environmental Protection (DEP).

During the remedial actions, the potential routes of exposure include inhalation and ingestion of contaminated dust and other contaminants that can vaporize during soil disturbance activities such as excavation, dewatering, stockpiling and soil load out onto trucks. There can also be dermal contact with contaminated soil and groundwater. The receptors at the highest risk are construction and remediation workers, and the public and pedestrians in proximity of the Site to a lesser extent.

Based on the factors discussed above, the five elements exist for a complete pathway but is mitigated where the risk is minimized using health and safety protocols and best management practices such as implementation of Site security, personal protective equipment (PPE), air monitoring for VOCs and particulates, vapor and dust suppression measures, preventing off-Site tracking of contaminated soil by cleaning underside of trucks, wheels and areas that can accumulate soil.

The preparation of supporting documents such as a Construction Health and Safety Plan (CHASP), Community Air Monitoring Plan (CAMP) and Soils/Materials Management Plan (SMMP) provide guidance

and protocols for use of PPE, safety data sheets and emergency procedures, air monitoring, and measures to implement during soil/material disturbance and handling, respectively.

Under the proposed redevelopment of the Site, residual COCs may remain on the Site depending on the remedial action(s) selected and use of institutional and engineering controls that will mitigate the potential for exposure of COCs by the occupants of the new building (future receptor population). This receptor population would include but not be limited to commercial tenant employees and customers, maintenance workers, residents, and visitors.

The current Site conditions and Site redevelopment with remedial activities provide a potential risk of exposure to Site construction and/or environmental workers through ingestion, inhalation and dermal contact with COCs in soil. This risk will be minimized by using best management practices and protocols detailed in the CHASP, CAMP and the SMMP. Temporary engineering controls can also be implemented during the remedial activities such as vapor and dust suppression to reduce potential exposure.

A complete exposure pathway for COCs to the future receptor population is not likely since: 1) remedial activities at the Site will be completed where excavated soil was transported to an off-site disposal facility; 2) residual soil contaminants and groundwater are not accessible due to Site cover system and will address the ingestion and direct contact exposure pathways, 3) groundwater beneath the Site and surrounding area are not used as a source of potable water are not accessible due to Site cover system and will address the ingestion and direct contact exposure pathways; and 4) SSDSs will be installed beneath the foundation slab with waterproof membrane of both buildings and will address the inhalation exposure pathway.

Summary of the Remedy

The remedy proposed for the Site will meet Track 4 requirements and will include the following:

1. Asphalt pavement removal and demolition of the remnant foundation slab and foundation elements associated with the former building. Existing wells would be abandoned in accordance with the NYSDEC CP-43.

2. Implemental of the RAWP under the requirements of the Construction Health and Safety Plan (CHASP), Community Air Monitoring Plan (CAMP), Soil/Materials Management Plan (SMMP) and Soil/Sediment Erosion plan (SSEP) for the protection of on-site workers and the nearby community during remedial and construction activities at the Site.

3. Waste characterization investigation data for the fill/soil subject to excavation has been completed for disposal at a facility permitted to handle and dispose of the material. The facility approvals will be submitted to the NYSDEC for review and approval. Off-Site disposal of all material removed from the Site in accordance with all Federal, State and local rules and regulations for handling, transport, and disposal.

4. The Track 4 (Alternative 2) excavation is a 2-foot cut to remove fill material exceeding the Part 375 Restricted Residential (RR) SCOs for the Site footprint area which encompasses approximately 7,550 cubic yards (yd^3) of material.

5. Excavation of "hot spot" areas where a contaminant exceeds the Part 375 PGSCO's in shallow fill material/soil and the contaminant is detected in groundwater beneath the Site, is estimated at 1,768 yd^3 of material with excavation depths ranging from 8-21 fbg. A design for the support of excavation (SOE), including sheeting or shoring, where necessary, will be prepared and certified by a professional engineer to achieve the desired excavation depths of the hotpots as required and will be approved by the NYC Department of Buildings. It is expected that hot spot excavations over 10 fbg will require shoring.

6. Treatability study and pilot testing work plans will be prepared to evaluate the feasibility of two remedial technologies, In-Situ Geochemical Stabilization (ISGS) and In-Situ Stabilization/Solidification (ISS) for final remedy selection to address on-site NAPL, where NAPL is defined as NAPL saturated soils, NAPL lenses, NAPL coated soil, NAPL blebs or globs or sheen. The work plans will include treatability (i.e., bench-scale) testing to determine dosage for ISGS and mix design for ISS; and pilot testing (field verification testing) to confirm the effectiveness of the remedies. If ISGS is determined to be a feasible remedial technology, a Remedial Design Work Plan (RDWP) will be prepared to include engineering design specifications for ISGS implementation to reduce contaminant mass and stabilize NAPL in the northwestern portion of the Site in proximity to the bulkhead of the Gowanus Canal which poses constructability issues due to underground structures supporting the bulkhead (e.g., tiebacks, etc.). ISGS will be implemented by injecting a permanganate-based solution through direct push technology using pressurized delivery systems. The installation will include the defined saturated NAPL area above an elevation of NAVD88 -19' (approximately 29' bgs). The RDWP will be submitted for NYSDEC approval with the specifications of ISGS based on the results of the treatability and pilot testing results. ISS will be performed in the

defined saturated NAPL area above an elevation of NAVD88 -19' (approximately 29' bgs) which are accessible for soil auger mixing where underground obstructions related to the bulkhead are not present. ISS will be performed beneath areas where the building foundation will be installed. After the ISS curing has been completed and passed the QA/QC process, full displacement piles (FDP) will be installed in areas within the ISS treatment/monolith area for foundation purposes to the required depth of approximately 72'-80'. FDP piles will be installed throughout the remaining portion of the Site for building foundation purposes to the required depth of approximately 72'-80'. If required due to constructability issues with the FDP piles coring through the ISS monolith, continuous flight auger (CFA) piles would be installed through the ISS treatment/monolith area within the footprint of the building foundation after the ISS curing has been completed and passed the QA/QC process and then below the monolith, the methodology will be changed back to the FDP pile to complete the remaining pile installation. If ISGS and/or ISS does not extend to the terminal depth of the materials containing NAPL, and free phase mobile and recoverable NAPL remains post treatment, DNAPL recovery wells will be installed along the bulkhead. The NAPL mobility results will determine areas exhibiting mobile NAPL and will facilitate design parameters to establish a baseline for comparison with future performance monitoring. The engineering design of the final remedy selected will be provided in a RDWP for ISGS and ISS, as well as recovery well specifications (size, locations, pump specs, etc). Quality Control/Quality Assurance (QA/QC) Plans for both ISS and ISGS are included in **Appendix K and L.**

7. A dewatering system will be required to achieve some of the excavation depths (e.g., hot spot removal) as the water table interface beneath the Site ranges from 5 to 7 fbg. Dewatering design for extraction, effluent treatment and discharge permitting will be performed, and a Permit Equivalence (NYSDEC Long Island Well Permit and NYCDEP discharge permit) will be obtained.

8. Continuous field screening of excavated soil/fill will be completed to identify contamination by visual means, odor, and monitoring with a PID and to ensure transport for disposal at the pre-approved facilities.
9. Should an unknown UST(s) be encountered during Site redevelopment activities the UST(s) will be removed which includes removal of contents, cleaning and disposal of tank, and

disposal of associated contaminated soil, as applicable. This will be completed in accordance with NYSDEC DER-10 and the NYSDEC PBS regulations.

10. Collection and laboratory analysis of documentation soil samples from the excavation base and sidewalls, as accessible, to evaluate the performance of the remedy with respect to attainment of RRSCO's and PGSCO's. Where installation of sheeting/shoring is required for deep excavations (>10 fbg) and dewatering to achieve remedial excavation depths for the hotpots, sidewall samples will not be accessible for collection.

11. After the completion of soil removal and any other invasive remedial activities and prior to backfilling, a land survey will be performed by a New York State licensed surveyor. The survey will define the top elevation of residual contaminated soils.

12. Import of materials to be used for backfilling and cover will follow: (1) chemical limits and other specifications included in DER-10; and (2) all Federal, State and local rules and regulations for handling and transport of material.

13. A waterproofing membrane will be installed as a construction element on the exterior foundation walls and below the foundation slab. Bithene® 3000, or equivalent, is the waterproofing membrane proposed for exterior foundation walls and Preprufe® 300 Plus Membrane or equivalent, a water proofing membrane that bonds to poured concrete, is proposed for use below the slab.

14. An active sub-slab depressurization system (SSDS) will be installed beneath the slab of each building to provide mitigation of soil vapor contaminants. Post construction performance monitoring will include the collection of soil vapor samples and differential pressure readings using a digital manometer from vapor points installed through the sub-slab of the proposed buildings, as practicable, in conjunction with the collection of indoor/ambient outdoor air samples in accordance with the NYSDOH "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" (October 2006) and the May 2017: Updates to Soil Vapor / Indoor Air Decision Matrices.

15. Following removal of the 2' remedial excavation, where exposed fill/soil shall exist outside of the footprint of the two new buildings, installation of a demarcation layer followed by a two (2) foot clean soil cover that meets the requirements for import to the Site will be installed. In addition, areas that are subject to ISS outside of building footprints will require

an additional 2’ excavation (total of 4’ cover system) followed by the installation of a four (4) foot clean soil cover that meets the requirements for import to the Site. The import of materials to the Site for construction and cover purposes must be in accordance with Chapter 5, Subdivision 5.4(e) and Appendix 5 of NYSDEC DER-10.

16. As part of the Track 4 Restricted-Residential Use remedy, an environmental easement referencing the Site-specific Institutional Controls (ICs) will be recorded against title and be binding upon the Volunteer and all its successors and assigns. The environmental easement will: (1) restrict the Site to restricted-residential, commercial, and industrial uses, as subject to local zoning laws; (2) prohibit the use of groundwater as a source of potable or process water without necessary water quality treatment as determined by the NYSDOH; (3) prohibit vegetable gardens and farming in residual soil on the Site; (4) require the implementation of and compliance with an NYSDEC-approved SMP; and (5) require periodic certification of all ECs/ICs in accordance with 6 NYCRR 375-1.8(h)(3).

17. The Track 4 (Alternative 2) remedial action requires the preparation of a Site Management Plan (SMP) for the long-term management of residual contamination at the Site as required by the Environmental Easement, including plans for: (1) Institutional and Engineering Controls, (2) monitoring, (3) operation and maintenance and (4) reporting.

18. All responsibilities associated with the Remedial Action, including permitting requirements and pretreatment requirements, will be addressed in accordance with all applicable Federal, State and local rules and regulations.

1.0 INTRODUCTION

Gowanus 300 Nevins Street LLC entered into a Brownfield Cleanup Agreement (BCA), Index No. C224350-03-22, with the New York State Department of Environmental Conservation (NYSDEC) on April 29, 2022 to investigate and remediate a 2.34 acre property located at 318 Nevins Street in Brooklyn, Kings County, New York (the Site). Gowanus 300 Nevins Street LLC is a Volunteer in the Brownfield Cleanup Program. Two new mixed-use structures containing retail space and residential apartments with amenities.is proposed for the property. When completed, the Site will contain a north mixed-use structure with a maximum of 22-floors and a south mixed-use structure with a maximum of 17-floors. Refer to the Brownfield Cleanup Program (BCP) application for additional details.

This Remedial Action Work Plan (RAWP) summarizes the nature and extent of contamination as determined from data gathered during the Remedial Investigation (RI) of the Site and the Supplemental RI which focused for the delineation of MGP coal tar.

The Remedial Investigation Work Plan (RIWP) was submitted to the NYSDEC on May 11, 2022. The NYSDEC issued a July 19, 2022 comment letter, and the RIWP was revised and resubmitted on August 2, 2022. The NYSDEC issued a comment letter on August 9, 2022. The RIWP was revised and resubmitted on August 18, 2022. The NYSDEC issued a comment letter on September 16, 2022. The RIWP was revised and resubmitted on September 22, 2022 and was approved by the NYSDEC on September 23, 2022. The RI was then performed on September 23, September 26 through 30, October 3 through 7 and October 10 through 12, 2022. The Remedial Investigation Report based on the initial data collected was submitted to the NYSDEC on November 10 and 22, 2022.

Since grossly contaminated material (GCM), in the form of dense non-aqueous phase liquid (DNAPL) from off-Site former manufactured gas plant (MGP), was detected in soil borings proximate to the Gowanus Canal bulkhead, the NYSDEC requested a Supplemental RIWP. The Supplemental RIWP was submitted to the NYSDEC on December 8, 2022 and the NYSDEC issued a comment letter on December 14, 2022. The Supplemental RIWP was revised and resubmitted on December 21, 2022 and again on December 22, 2022 per additional NYSDEC comments. The Supplemental RIWP was approved on December 22, 2022 and implementation commenced on December 23, 2022. The DNAPL migration delineation soil boring portion of the Supplemental RIWP and installation of two cluster wells was completed on January 30, 2023. An updated Supplemental RIR was submitted to NYSDEC on March 13, 2023 and is pending review by the NYSDEC.

The installation of additional cluster monitoring wells was deferred pending further discussion with the NYSDEC. A NAPL/GCM Mobility Assessment Work Plan, submitted to the NYSDEC on March 6, 2023, includes the installation of five (5) cluster wells and drawdown/recharge testing for DNAPL and was approved by the NYSDEC on March 7, 2023. The results of the NAPL/GCM Mobility Assessment will be submitted to the NYSDEC for review upon completion.

The RI/Supplemental RI that has been submitted to the NYSDEC provides a summary of the Contaminants of Concern (COC) detected in shallow and intermediate soil which will be disturbed as part of Site redevelopment, as well as shallow groundwater and soil vapor data.

This RAWP provides an evaluation of a Track 1 cleanup and other applicable Remedial Action alternatives, their associated costs, and the recommended and preferred remedy. The remedy described in this document is consistent with the procedures defined in DER-10 and complies with all applicable standards, criteria and guidance. The remedy described in this document also complies with all applicable Federal, State and local laws, regulations and requirements. The NYSDEC and New York State Department of Health (NYSDOH) have not made a determination on whether this Site poses a significant threat to human health and the environment. The industrial use of the west adjoining Gowanus canal has led to a designation as a Superfund Site and is considered an impaired habitat; therefore, the RI for this Site did not identify fish and wildlife resources.

1.1 SITE LOCATION AND DESCRIPTION

The Site is located in the County of Kings, Brooklyn, New York and is identified as Block 439 and Lot 1 on the New York City Tax Map. A United States Geological Survey (USGS) topographical quadrangle map (**Figure 1**) shows the Site location. The Site footprint consists of approximately 102,070-square feet (sf), or approximately 2.342-acres. The Site is bounded by Union Street to the north, Nevins Street to the east, Carroll Street to the south, and the Gowanus Canal to the to the west (see **Figure 2**). A boundary map is attached to the BCA as required by Environmental Conservation Law (ECL) Title 14 Section 27-1419 and is the Site fully described in **Appendix B**.

1.2 PROPOSED REDEVELOPMENT PLAN

The Remedial Action to be performed under the RAWP is intended to make the Site protective of human health and the environment consistent with the contemplated end use. The proposed redevelopment plan is described here to provide the basis for assessment of the Remedial Action(s) for

the Site. However, the Remedial Action contemplated under this RAWP may be implemented independent of the proposed redevelopment plan.

The proposed redevelopment project will consist of two (2) mixed use buildings, situated at the north portion of the Site (498 Union Street) and south portion 417 Carroll Street. The south building footprint will cover approximately 35, 343 square feet (SF) and the north building footprint will cover approximately 33,474 SF. The buildings will be separated by an approximately 50-foot-wide upland connection. The upland connection is located above a combined sewer overflow (CSO) pipe easement maintained by the City of New York.

The 498 Union Street building will be a maximum of 22 stories, and will be used for retail space, residential lobby, mechanical, and bicycle storage on the 1st floor, residential amenity space, mixed use space, and residential apartment units on the 2nd floor, and residential apartments from the 3rd through 22nd floors.

The 417 Carroll Street building will be a maximum of 17-stories, and will be used for retail space, residential lobby, mechanical, and bicycle storage on the 1st floor, residential amenity space, Gowanus Mixed Use (GMU) space, and residential apartment units on the 2nd floor, and residential apartments from the 3rd through 17th floors. A small partial cellar will also be constructed as part of this building.

As part of the Site redevelopment, there will also be a 30-foot shore public walkway and waterfront yard adjacent to the Gowanus Canal.

There will be portions of the Site that will require construction dewatering for foundation element installation. Dewatering will be performed in compliance with city, state, and federal laws and regulations. Extracted groundwater will either be containerized for off-Site licensed or permitted disposal or will be treated for discharge under a permit from New York City Department of Environmental Protection (NYCDEP) to meet pretreatment requirements prior to discharge to the sewer system. A Long Island Well Permit under a Permit Equivalence may also be required for the extraction of groundwater.

The superstructure of the former on-Site building was demolished under a NYSDEC approved Change of Use. The former building slab and foundation, which are situated on an elevated earthen platform, were left in place and will require demolition and removal to complete redevelopment of the Site. Once the former building slab, foundation and elevated earthen platform are removed, an excavation depth of approximately 4-feet below grade (fbg) is anticipated across the Site except for the 30-foot-wide waterfront set back along the canal.

The proposed Site redevelopment is slated to take approximately 24 months to complete, of which approximately 6 months will be for foundation installation. Plans for the Site redevelopment are provided in **Appendix C.**

1.3 DESCRIPTION OF SURROUNDING PROPERTY

The Site is in a mixed-use area characterized by industrial, residential and commercial properties. The Site is zoned Manufacturing District (M1-4) with Medium Density Residential (R7-2) with a Special Purpose District (G) designation. The area surrounding the Site consist of a mix of zoning ranging from manufacturing districts generally with medium density residential zoning and commercial overlays and is special purpose district extends east to 4th Avenue. The intent of the special purpose district is to preserve and enhance areas with unique characteristics.

To the north across Union Street are industrial/manufacturing buildings as well as the union Street Bridge operator building. To the east across Nevins Street are commercial industrial buildings, a NYSDEC BCP Site, Presidents Street, an industrial manufacturing building, a multi-family residential property and a vacant lot. To the south across Carroll Street is a NYSDEC BCP Site. The Gowanus Canal adjoins the site to the west and is a federal Superfund site which has been listed on the National Priorities List [NPL] Site since March 4, 2010. The following provides a summary of the property use adjoining the Site:

Adjoining Property Summary			
Direction	**Block/Lot**	**Address**	**Description**
North	Not identified	Union Street/Gowanus Canal	Union Street Bridge Tender
	423/15	524 Sackett St.	J&M Special Effects Warehouse
	432/7501	300 Nevins Street	Frame Shop, Pottery Shop, a publisher and office/studio space
Northeast	433/1	301 Nevins Street	Auto Repair Facility

Adjoining Property Summary			
Direction	**Block/Lot**	**Address**	**Description**
East	440/9	305 Nevins Street	Creamery
	440/1	469 President Street	NYSDEC BCP Site C224309
	447/7	325 Nevins Street	Candle Company
	447/4	335 Nevins Street	Candle Company
	447/3	337 Nevins Street	3-Story Residential Building
	447/1	431 Carroll Street	Vacant Lot
South-Southeast	453/1 453/21	420 Carroll Street	NYSDEC BCP Site C224118

In accordance with NYSDEC DER-10, a review for sensitive receptors within 0.5 miles of the Site (refer to **Figure 3** for 0.5 mile radius map) was performed and the following sensitive receptors have been defined:

Sensitive Receptor Survey			
Number	**Name**	**Address**	**Approximate Distance from Site**
1	PS 038 The Pacific	450 Pacific Street, Brooklyn, NY	0.46 Miles North-Northeast
2	PS 038 Athletic Facilities	480 Pacific Street, Brooklyn, NY	0.47 Miles North-Northeast
3	North Pacific Playground	473 Pacific Street, Brooklyn, NY	0.5 Miles North-Northeast
4	The Math & Science Exploratory School	500 Pacific Street, Brooklyn, NY	0.48 Miles Northeast
5	Brooklyn High School of the Arts	508 Pacific St./345 Dean ST., Brooklyn, Y	0.49 Miles Northeast

Sensitive Receptor Survey			
Number	**Name**	**Address**	**Approximate Distance from Site**
6	PS K369 Coy L. Cox School	610 Baltic Street, Brooklyn, NY	0.36 Miles Northeast
7	PS 133 William A. Butler School/Athletic Facilities	610 Baltic Street, Brooklyn, NY	0.37 Miles Northeast
8	Park Slope Christian Academy	985th Avenue, Brooklyn, NY	0.48 Miles Northeast
9	Fresnius Kidney Care Park Slope Dialysis Center	595 Degraw Street, Brooklyn, NY	0.17 Miles Northeast
10	Thomas Green Playground and Pool	225 Nevins Street, Brooklyn, NY	0.11 Miles Northeast
11	Park Slope Playground	41 Lincoln Place, Brooklyn, NY	0.48 Miles East
12	PS 282 Park Slope	180 6th Avenue, Brooklyn, NY	0.5 Miles East
13	Gardens of Union	634-640 Union Street, Brooklyn, NY	0.3 Miles East
14	Garden Space President Street	222 5th Avenue, Brooklyn, NY	0.39 Miles East
15	Rivendell School - Daycare	277 3rd Avenue, Brooklyn, NY	0.13 Miles East
16	PS 372 The Childrens's School and Playground	215 1st Street, Brooklyn, NY	0.19 Miles East-Southeast
17	Our Lady of Peace D.C.C Recreation Center	512 Carroll Street, Brooklyn, NY	0.17 Miles East-Southeast
18	Gil Hodges Community Garden	534 Carroll Street, Brooklyn, NY	0.22 Miles East-Southeast
19	MS 51 William Alexander	350 5th Avenue, Brooklyn, NY	0.41 Miles Southeast

Sensitive Receptor Survey			
Number	**Name**	**Address**	**Approximate Distance from Site**
20	Washington Park/J.J. Byrne Playground	336 3rd Street, Brooklyn, NY	0.35 Miles Southeast
21	NY Presbyterian Brooklyn Methodist Hospital Infusion Services	353 4th Avenue, Brooklyn, NY	0.32 Miles Southeast
22	FMS Nephro Care West	362 4th Avenue, Brooklyn, NY	0.26 Miles Southeast
23	Al-Madinah School	383 3rd Avenue, Brooklyn	0.24 Miles Southeast
24	PS 118 The Maurice Sendak Community School & Playground	211 8th Street, Brooklyn, NY	0.47 Miles Southeast
25	St. Mary's Park	440 Smith Street, Brooklyn, NY	0.44 Miles Southwest
26	St. Mary's Playground	422 Smith Street, Brooklyn	0.47 Miles Southwest
27	International School of Brooklyn	477 Court Street, Brooklyn, NY	0.47 Miles Southwest
28	Hannah Senesh Community Day School	342 Smith Street, Brooklyn	0.35 Miles West
29	PS 058 The Carroll and Athletic Facilities	242 Carroll Street, Brooklyn NY	0.35 Miles West
30	Carroll Park	President St. & Smith St.	0.34 Miles West
31	New Dawn Charter High School	242 Hoyt Street, Brooklyn, NY	0.27 Miles Northwest
31	PS 373 Brooklyn Transition Center	347 Baltic Street, Brooklyn, NY	0.38 Miles Northwest

Sensitive Receptor Survey			
Number	**Name**	**Address**	**Approximate Distance from Site**
33	Boerum Park	364 Warren Street, Brooklyn, NY	0.36 Northwest
34	Boerum Hill School for International Studies & Athletic Facilities (PS 368)	284 Baltic Street, Brooklyn, NY	0.41 Northwest
35	Nicholas Naquan Heyward Jr. Park	160 Wyckoff Street, Brooklyn, NY	0.35 Northwest
36	PS.261 Zipporiah Mills	314 Pacific Street, Brooklyn, NY	0.5 Northwest
37	Bishop Mugavero Senior Center	155 Dean Street Brooklyn, NY	0.49 Northwest

The NYSDEC Info Locator map was reviewed to complete a 0.5 mile radius search from the Site to identify remediation and environmental cleanup Sites, critical environmental areas, water bodies, regulatory wetlands, and water supply wells. The following table summarizes the remediation and environmental cleanup Sites located within the radius search from the Site:

Remediation and Environmental Cleanup Sites			
Number	**NYSDEC ID No.**	**Name**	**Address**
1	C224012	Carroll Gardens/Public Place Former MGP Site	5th Street & Smith Street to Gowanus Canal
2	C224012B	459 Smith Street (Citizens MGP Parcel III)	459 Smith Street
3	C224051	K - Fulton Municipal MGP	Nevins, DeGraw & Sackett Sts.
4	C224080	Gowanus Canal Northside	Union, Bond, Sackett and DeGraw Streets
5	C224099	Gowanus Village I	153 2nd St a/k/a 322 3rd Ave.

Remediation and Environmental Cleanup Sites			
Number	**NYSDEC ID No.**	**Name**	**Address**
6	C224100	Whole Foods Site	214 3rd St.
7	C224116	Toll Brooklyn, LP	64-98 1st St; 82-107 1st St; 119-145 2nd St.
8	C224118	Gowanus Village I, LLC - 420 Carroll Street	420 Carroll Street
9	C224173	388 Carroll Street and 363 Bond Street	388 Carroll Street and 363 Bond Street
10	C224174	365 Bond Street	365 Bond Street
11	C224209	175-225 3rd Street	175-225 3rd Street
12	C224219	450 Union Street	450 Union Street
13	C224220A	473 President Street	473 President Street
14	C224221	President Street Properties	Bond, Carroll and President Streets
15	C224222	563 Sackett Street	563 Sackett Street
16	C224224	425 Hoyt Street	419-429 Hoyt Street
17	C224225	335 Bond Street	335 Bond Street
18	C224227	22-36 Second Avenue	22-36 Second Avenue
19	C224245	Third Avenue Yard	222 First Street
20	C224261	234 Butler Street	234 Butler Street
21	C224273	242 Nevins Street	242 Nevins Street
22	C224295	204 4th Avenue	204 4th Avenue
23	C224298	272 4th Avenue	272 4th Avenue
24	C224309	President Street Portfolio	469 President Street and 532 Union Street

Remediation and Environmental Cleanup Sites			
Number	**NYSDEC ID No.**	**Name**	**Address**
25	C224314	240 Huntington Street	240 Huntington Street
26	C224316	210 Douglass Street	210 Douglass Street
27	C224318	514 Union Street	514 Union Street
28	C224329	585 Union Street	577-599 Union Street (aka 586 Sackett Street)
29	C224336	141 3rd Street	141 3rd Street
30	C224346	Third Street Gowanus	125 3rd Street
32	C224367	251 Douglas Street	251 Douglas Street
33	C224368	164 4th Ave	164 4th Avenue
34	C224372	Former A&A Brake Service Site	558 Sackett Street, Brooklyn, NY 11217
35	C224373	224 3rd Avenue	224 3rd Avenue
36	C224375	556 Baltic Street Site	151-169 Third Avenue
37	V00187	455 Smith Street (Vichar, Inc.)	5th Street & Smith Street to Gowanus Canal
38	V00360	K - Citizens MGP - Carroll Garden	5th Street & Smith Street to Gowanus Canal
39	V00633	Fulton Works	Degraw Street and Nevins Street
40	V00700	Fulton Municipal Works	Nevins, DeGraw & Sackett Sts.
41	224051	K - Fulton Works	Nevins, DeGraw & Sackett Sts.
42	224133	Gowanus Canal Site	Gowanus Canal
43	224152	Former O.Z. Electrical	198 Douglass Street

Remediation and Environmental Cleanup Sites			
Number	**NYSDEC ID No.**	**Name**	**Address**
44	224012	K - Citizens MGP - Carroll Garden	Corner of 5th Street & Smith Street
45	224149 (RCRA)	Patterson Chemical Co Inc	102 3rd Street

The NYSDEC Info Locator identified forty-five (45) remediation and environmental cleanup Sites within a 0.5-mile radius of the Site. These included thirty-six (36) NYSDEC Brownfield Cleanup Program (BCP) sites, four (4) Voluntary Cleanup Programs (VCP) sites, four (4) State Superfund sites and one (1) Resource Conservation and Recovery Act (RCRA) hazardous waste Site.

The NYSDEC Info Locator did not identify water supply wells or critical environmental areas withing the search radius. Groundwater beneath the Site and surrounding area are not used as a source of potable water.

The Gowanus Canal was identified as regulatory tidal wetlands. Prior to the urban development of the Site and surrounding area, the Gowanus Canal and proximate area consisted of tidal creeks with wetlands/lowland marsh areas. The Gowanus Canal has hardened shorelines that encompass bulkhead structures and no wet land areas were identified adjacent to the Site. Stormwater for areas surrounding the Site discharge to the New York City combined sewer system. No stormwater drainage features, other than a trench drain adjacent to the northwest portion of the building are evident on the Site. It should be noted that the 50-foot-wide Upland Connection proposed between the two new buildings is located above a combined sewer overflow (CSO) pipe easement maintained by the City of New York.

2.0 DESCRIPTION OF REMEDIAL INVESTIGATION FINDINGS

The Site was investigated in accordance with the scope of work presented in the NYSDEC-approved Remedial Investigation (RI) Work Plan dated May 11, 2022, Revised September 22, 2022, and a Supplemental RI Work Plan dated December 8, 2022 for delineation of MGP coal tar which was revised December 22 2022. The RI was conducted on September 23, 2022, September 26 through 30, 2022, October 3 through 7, 2022 and October 10 through 12, 2022. The Supplemental RI for delineation of MGP

coal tar was conducted from December 23, 2022 through January 30, 2023. The Remedial Investigation Report (RIR) was submitted to NYSDEC on November 10, 2022 and revised to include the supplemental RI data. The Revised RIR was submitted on March 13, 2023 and approval by NYSDEC is pending.

2.1 SUMMARY REMEDIAL INVESTIGATIONS PERFORMED

The RI and Supplemental RI included the following scope of work:

2.1.1 Geophysical Survey

A geophysical survey was performed by Nova Geophysical Engineering (Nova) on September 23 and 26, 2022 where ground penetrating radar (GPR) and other subsurface locating equipment were utilized to identify subsurface utility service lines and/or anomalies within the Site boundaries that may hinder the advancement of soil vapor points, soil borings, and monitoring wells. Locations for the water, sewer, drainage and natural gas lines were marked on the Site and three (3) anomalies were detected. The anomalies indicated potential USTs or soil disturbance related to USTs on northwestern portion of the Site; a suspected oil/water separator on the northeastern portion of the Site; and a large, flat uncharacterizable anomaly at the southeastern portion of the Site.

2.1.2 Soil Investigation

As part of the RI and Supplemental RI, a total of 83 soil borings were advanced at the Site and the locations are shown on **Figure 4** and **Figure 5**. The following soil borings were advanced utilizing a hydraulically driven direct push Geoprobe® DT22 Soil Sampling System to collect continuous soil cores at the Site as part of the RI and supplemental RI:

- Eight (8) soil borings outside of previous environmental investigation sample locations to further investigate urban fill material. The soil borings included SB-7, SB-8, SB-10 and SB-11 to approximately 15 fbg outside the elevated remnant concrete slab from the former building and soil borings SB-12, SB-13, SB-14 and SB-15 were advanced to approximately 20 fbg through the former building elevated slab.
- Four (4) shallow soil borings to address potential USTs and two (2) soil borings to address a potential oil/water separator. The soil borings for the UST investigation included TF-1, TF-2, TF-3 and TF-4 to approximately 10 fbg and the borings to investigate the suspected oil/water separator included OWS-1 and OWS-2 to approximately 15 fbg.

- Six (6) soil borings to investigate the shallow soil conditions and to investigate the potential for migration of MGP coal tar contamination in deeper soil from an off-site and upgradient source(s). Deep Soil borings SB-9, SB-16, SB-17, SB-18, SB-19 and SB-20 were advanced to depths ranging from 65 to 80 feet bgs.
- Advancement of sixty-three (63) deep soil borings to further investigate and delineate the confirmed migration of MGP coal tar contamination onto the Site from an off-site and upgradient source(s).

Soil was continuously field screened to termination depth at each soil boring using a photoionization detector (PID), and for visual and olfactory indications of contamination (e.g., staining and odor). A total of 138 soil samples were collected from the soil borings advanced during the RI and supplemental RI and submitted to Alpha Analytical (Alpha) of Westborough, MA, a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) Certified Environmental Laboratory (ELAP # 11148). These soil samples were submitted for laboratory analysis of target compound list (TCL) volatile organic compounds (VOCs) per USEPA Method 8260; TCL semi volatile organic compounds (SVOCs) per USEPA Method 8270; TCL organochlorine pesticides and herbicides per USEPA Methods 8081B and 8151A, respectively; polychlorinated biphenyls (PCBs) by USEPA Method 8082A; target analyte list (TAL) metals plus hexavalent chromium and cyanide by USEPA Methods 6010C/7471B/9010C/7196A, respectively; and emerging contaminants 1,4 -dioxane by USEPA Method 8270 SIM isotope dilution and NYSDEC list of per- and polyfluoroalkyl substances (PFAS) by USEPA Method 537 for initial RI and Method 1633 for supplemental RI.

2.1.3 Groundwater Investigation

The following monitoring wells were installed via hollow stem augur utilizing a Geoprobe® DT22 as part of the RI and supplemental RI:

- Installation of five (5) new shallow permanent groundwater interface monitoring wells throughout the property designated as GW-3 through GW-7 (new GW-3 replacement for damaged existing well GW-3). The monitoring wells were installed via auger to 20 fbg. The investigation also included the use of two (2) existing monitoring wells identified as GW-3 and GCMW28.

- Installation of two (2) sets of cluster wells, one at the SB-16 location and one at the SB-17 location. These wells were installed to address the coal tar DNAPL detected in SB-16 and SB-17 and no groundwater samples have been collected as of the date of this report, but will be addressed as part of a design phase work plan.
- The top of casing for the new and existing monitoring wells were surveyed to calculate the groundwater elevation and to prepare the groundwater contour map**.**

A total of eight (8) shallow groundwater samples were collected from GW-2 through GW-7 and GCMW28. These groundwater samples were submitted to Alpha for laboratory analysis of TCL VOCs per USEPA Method 8260; TCL SVOCs per USEPA Method 8270; TCL organochlorine pesticides and herbicides per USEPA Methods 8081B and 8151A, respectively; PCBs by USEPA Method 8082A; TAL metals plus hexavalent chromium and cyanide by USEPA Methods 6010C/7471B/9010C/7196A, respectively; and emerging contaminants 1,4 -dioxane by USEPA Method 8270 SIM isotope dilution and NYSDEC list of PFAS compounds by USEPA Method 537 in accordance with the initial RI.

2.1.4 Soil Vapor Investigation

The following soil vapor points were installed via hand auger and soft dig techniques:

- Installation of five (5) soil vapor sampling points throughout the property to depths of between 3 and 4 fbg (approximately 2-feet above the water table interface/capillary fringe zone).
- The soil vapor points, designated as SV-4 through SV-8, were each purged to evacuate potential atmospheric air prior to sample collection to ensure the sample would be representative of subsurface soil vapor conditions.

A total of five (5) soil vapor samples were collected to further define the soil vapor beneath the Site. A laboratory supplied clean 6-liter Summa canister with pre-calibrated flow controller (0.02 liters per minute) was used to collect the soil vapor samples over an 8-hour period. Soil vapor samples were submitted to Alpha for laboratory analysis of VOCs via EPA Method TO-15.

2.1 SIGNIFICANT THREAT

The NYSDEC and NYSDOH have determined that the Site poses a significant threat to human health and the environment.

2.2 SITE HISTORY

Based on review of historical records, environmental investigations, New York City records, NYC databases and environmental databases for the Site, the following sections provide a summary of the information identified for the Site.

2.2.1 Past Uses and Ownership

NYC ACRIS Ownership Summary*			
Document	**Date**	**Seller**	**Purchaser**
Deed	2/26/1976	Interboro Transport Terminal Corp.	NY Telephone Co.
Deed	6/15/1978	NY Telephone Co.	Joyce A.Klellgren
Deed	12/4/2012	Joyce A.Klellgren	Nevins Street Holdings LLC
Deed	12/30/2021	Nevins Street Holdings LLC	Gowanus 300 Nevins Street LLC

*NYC ACRIS records only go back as far as 1966, and older deeds and land records may exist for the Site.

2.2.2 Phase I and Phase II Reports

Two (2) NYSDEC Spill numbers have been identified for the Site:

- Spill No. 92-07367 (Verizon) opened 9/24/1992 for an unknown amount of gasoline affecting groundwater. The spill was closed by the NYSDEC on 6/4/2015.
- Spill No. 12-15913 (Verizon) opened 2/27/2013 for an unknown amount of hydraulic oil affecting soil due to equipment failure. The spill has a closure date of 6/17/2013.

The following environmental assessment reports for the Site have been reviewed.

Hydro Tech Environmental Corp. Phase I Environmental Site Assessment, Dated August 13, 2012

Hydro Tech completed a Phase I Environmental Site Assessment (ESA) for the Site in conformance with the scope and limitations of the ASTM Practice E 1527-13 for the Site in 2012 which identified the following twelve (12) Recognized Environmental Conditions (RECs) associated with the Site:

1. Two (2) storm water drywells that contain petroleum sheens.
2. The presence of an underground oil/water separator.
3. Two (2) vent pipes typically associated with USTs.
4. Significant petroleum staining on asphalt in poor condition.
5. Presence of ten (10) monitoring wells in asphalt paved parking areas and 8 monitoring wells in concrete sidewalks surrounding the Subject Property.
6. The Site had active NYSDEC Spill #9207367.
7. SVOCs in soil in the vicinity of an abandoned 550-gallon waste oil UST.
8. The presence of a gasoline tank on historical Sanborn Maps from 1938 and 1950.
9. Historical use of the Subject Property as a coking/coal facility.
10. Inaccurate registration of two (2) 4,000-gallon USTs with the NYSDEC Petroleum Bulk Storage (PBS) unit.
11. The presence of the monitoring wells associated with the USEPA National Priority List (NPL).
12. The presence of a Potential Vapor Encroachment Condition (PVEC) at the Subject Property.

The Phase I ESA regulatory documents identified NYSDEC Spill No. 9207367 for Verizon was assigned to the Site in response to a 1992 subsurface investigation sampling of 12 soil borings and 3 monitoring wells installed proximate to one (1) 2,000-gallon gasoline UST and one (1) 2,000-gallon diesel UST. Petroleum impacts were detected in both soil and groundwater above applicable regulatory standards. The following is a summary of the remedial activities performed:

- Two 2,000-gallon USTs abandoned in-place in August - September 1993 and additional investigations were completed between October 1994 – October 1998. The NYSDEC required additional on-Site and off-site investigations following bulkhead work along the Gowanus Canal in 1999. The on-site and off-site investigations were performed during 1999 and 2000.
- Approximately 360 and 300 pounds (lbs) of oxygen-release compound (ORC) were injected into the saturated zone on the north portion of Site along the sidewalk fronting Union Street in March 2001 and 2002, respectively.
- One (1) 4,000-gallon gasoline UST and one (1) 4,000-gallon diesel UST were removed from the north portion of the Site (fronting Union Street) in October 2003. During removal, approximately 337 tons of petroleum-contaminated soil was removed and disposed, and a total of 880 lbs of ORC was applied at the bottom of the excavation.

- The two (2) 2,000-gallon previously abandoned USTs were removed in May 2006. During UST removal, approximately 464 tons of petroleum-contaminated soil and 838 gallons of liquid were removed and disposed.
- A series of three (3) chemical oxidation injection events were performed between September 2008 and May 2009 where approximately 1,500 lbs was injected via six (6) injection wells. Subsequently, quarterly Enhanced Fluid Recovery (EFR) and quarterly groundwater sampling events were performed at a monitoring well located in the sidewalk area along Union Street. The January - March 2012 groundwater quality data indicated total VOC concentrations ranged from non-detect to over 17,000 parts per billion (ppb) beneath the sidewalk along the south side of Union Street.

A 550-gallon waste oil UST was also identified within the footprint of the Site building as abandoned on September 23, 1993. During abandonment, oil was observed in the UST fill vault. Three (3) soil borings were installed, and three (3) soil samples were collected for analysis. No VOCs were detected in the soil samples at concentrations exceeding laboratory analytical method detection limits (MDLs). Total SVOC concentrations ranged between 21,009 ppb to 49,620 ppb when considering Part 375 SCOs.

EnviroTrac Ltd. Request for Spill Closure, Dated April 11, 2013

EnviroTrac indicated that Cardno ATC completed a Phase I ESA dated December 19, 2012, and to address thosw RECs, EnviroTrac completed a Phase II ESA in February 2013 where seven (7) soil borings were advanced, and seven (7) soil samples were collected for laboratory analysis. No VOCs above the UUSCOs were detected in the soil samples collected, and SVOCs were detected at concentrations exceeding UUSCOs. The highest concentration of SVOCs was detected under the slab at the north end of the building (sample GP-3). Based on the SVOC detections, Verizon notified the NYSDEC Spills Hotline and Spill No. 12-15913 was assigned to the Site. Although the SVOCs detected in soil were thought to be due to urban fill, the area of GP-3 was further investigated through excavation. Approximately 17.75 tons of soil were removed and disposed of at Clean Earth of Carteret, New Jersey.

Urban fill was encountered in the excavation and no specific SVOC source was indicated. The laboratory analysis of four (4) endpoint soil sidewall samples did not detect VOCs above the UUSCOs; however, SVOCs

were detected above the UUSCOs. No VOCs or SVOCs above the analytical method detection limit were identified in the bottom soil sample, collected at approximately 11 fbg in native soil.

Due to the presence of area wide urban fill material, closure of NYSDEC Spill Number 12-15913 was requested by EnviroTrac on behalf of Verizon.

EnviroTrac Ltd. Update Report, Dated April 29, 2013

EnviroTrac's *Update Report* for the Site from January through March 2013, provided the following information:

- Lexicon Environmental Associates (Lexicon) completed an environmental assessment in 1992, which included the advancement of twelve (12) soil borings and installation of three (3) groundwater monitoring wells proximal to the 2,000-gallon gasoline and 2,000-gallon diesel USTs and associated dispensers. Analytical results revealed several benzene, toluene, ethylbenzene (BTEX), methyl tert butyl ether (MTBE) and polyaromatic hydrocarbons (PAHs) exceeding the NYSDEC TCLP Extraction Guidance Values. Groundwater analytical results revealed MTBE detected at MW-1 and MW-3 exceeding TCLP Guidance values.
- On August 19, 1993, the 2,000-gallon USTs were abandoned in-place using a concrete slurry (summarized in Lexicon's *Underground Storage Tank Closure Report* dated August 22, 1994).
- At the request of the NYSDEC, Lexicon completed a *Tidal Evaluation Report* on April 18, 1994, which concluded that off-site sources may have the potential to adversely affect the ground water at the site as a result of tidal fluctuation.
- Three (3) additional monitoring wells (MW-4 through MW-6) were installed in October 1994 and sampled in November. MTBE and BTEX levels increased and the NYSDEC requested that a remedial program be implemented.
- Four (4) injection points (IP-1 through IP-4) were installed near MW-1 (area with highest hydrocarbon concentrations) in 1995. After which, a routine groundwater sampling program was implemented.
- Following a meeting with the NYSDEC on May 20, 1999, it was determined that Lexicon would conduct an additional investigation to determine the extent of off-site impacts. Three (3) additional monitoring wells were installed; MW-8 and MW-9 in the sidewalk along Union Street adjacent to the site and MW-10 on-site.

- On June 6, 2000, the NYSDEC requested further off-site delineation. On November 8, 2020, two (2) additional off-site monitoring wells (MW-11 and MW-12) were installed.
- On November 11, 2001, after a meeting with the NYSDEC, Verizon decided to implement a passive bioremediation program. ORC injection occurred on May 2 and 3, 2001 by advancing 22 boreholes approximately 5 feet into the water table. A total of 360 lbs of ORC was injected.
- In March 2002, EnviroTrac continue Site remediation and quarterly sampling. On May 15, 2002, 300 lbs of calcium peroxide (Perme-ox Plus™) was injected on-Site.
- UST removal activities occurred in October 2003 where one (1) 4,000-gallon gasoline UST and one (1) 4,000-gallon diesel UST were removed (summarized in the *Underground Storage Tank Removals* report dated December 31, 2003). Soil proximal to MW-8 was then excavated, and a total of 337 tons of petroleum-impacted soil was disposed. Approximately 880 lbs of ORC was placed in the bottom of the excavation prior to backfilling.
- Per a *Remedial Work Plan*, dated July 25, 2008, 1,500 lbs of RegenOx ™ was injected using a network of six (6) off-site injection wells (IW-1 through IW-6). Quarterly EFR events at off-site monitoring well MW-8 was initiated in December 2009 and discontinued following the December 2012 event based on NYSDEC approval of the *Additional Remedial Work Plan* dated January 31, 2013.
- On February 1, 2013, the NYSDEC approved the *Additional Remedial Work Plan* which outlined the excavation of residual-impacted soils in the vicinity of off-site monitoring well MW-8. Soils were excavated down to 16 fbg and a slight petroleum odor was noted at the 12-16 fbg interval. Soils encountered down to approximately 12 fbg included urban fill materials, and groundwater was encountered at approximately 9 fbg. A total of 82.64 tons of petroleum-contaminated soil was removed from the excavations and transported to Clean Earth of Carteret in New Jersey for proper off-site disposal. Following excavation, two (2) endpoint sidewall samples and two (2) endpoint bottom sample were collected for laboratory analysis of CP-51 VOCs which were not detected above UU SCOs nor applicable supplemental soil cleanup objectives (S SCOs). Prior to backfilling the excavation, 505 lbs of ORC Advanced® was added to the saturated portion of the excavation as a long-term oxygen source in this area. MW-8 was reinstalled to an approximate depth of 14 feet bgs.
- Following the completion of the off-site excavation, on-site monitoring wells: MW-3, MW-4, MW-6, MW-7, MW-10, MW-13, MW-15, MW-16 and MW-17 were abandoned according to NYSDEC specifications on March 6, 2013.

- Subsequent quarterly sampling on March 29, 2013 indicated elevated dissolved-phase VOCs were detected at off-site MW-8. Concentrations of total BTEX increased from 662 ug/L to 4,248 ug/L and concentrations of total VOCs increased from 2,690 ug/L to 8,644 ug/L since the previous sampling event. Results of post off-site remediation quarterly 2013 off-site groundwater monitoring would be evaluated for spill closure request.

EnviroTrac Ltd. Phase II Environmental Site Assessment, Dated April 12, 2013

In response to seven (7) RECs identified in the December 19, 2012 Phase I ESA conducted by Cardno ATC (ATC), a Phase II ESA was completed by EnviroTrac. The RECs and EnviroTracs findings are summarized below:

1. Soil and groundwater contamination was discovered proximate to former USTs along the south side of Union Street during a subsurface investigation in 1992 and NYSDEC Spill Number 92-07367 was assigned to the Site on September 24, 1992. Investigations and remediation activities conducted at the Site beginning in 1992 included a groundwater monitoring program, applications of ORC and EFR events. The open spill number and on-going remediation was considered a REC.

   EnviroTrac submitted *an Additional Remedial Work Plan* to the NYSDEC for Spill Number 92-07367 on January 31, 2013. The NYSDEC subsequently approved the workplan in a letter dated February 1, 2013. The *Additional Remedial Work Plan* was implemented in February 2013 and included excavation of soil from the MW-8 area and the application of RegenOx ™ and ORC Advanced® to the excavation. Groundwater monitoring is to be performed and reported on a quarterly basis. Results of the off-site groundwater monitoring would be evaluated for the request of spill closure.

2. A former 550-gallon waste oil UST was closed in-place in the "parts" storage area of the motor service area in the northern portion of the building in 1993. According to the *Underground Storage Tank Closures Report*, prepared by Lexicon Environmental Associates, Inc. (Lexicon), dated August 22, 1994, SVOCs exceeded the NYSDEC Toxic Characteristic Leaching Procedure (TCLP) Extraction Alternative Guidance Values for fuel oil contaminated soils. Due to exceedances, the closed 55-gallon waste oil UST was considered a REC.

EnviroTrac's geophysical investigation identified the former waste oil UST location, and two (2) borings were installed proximal to the UST. Based on the analytical results from both samples, select SVOCs were detected at concentrations exceeding NYSDEC UU SCOs. However, SVOC detections were consistent with the urban fill identified at the Site and previous soil sampling conducted at the time of the UST closure by Lexicon in 1993. VOCs were not detected at concentrations exceeding UU SCOs. Given that the tank appeared to have been property abandoned by Lexicon and the detection of SVOCs appears associated with urban fill throughout the Site, EnviroTrac recommended no further action in reference to the waste oil UST.

3. The report entitled *Summary of EPA Gowanus Canal Remedial Investigation of Verizon New York Inc. Facility, 318 Nevins Street, Brooklyn, NY, NYSDEC Spill Number 92-07367,* prepared by EnviroTrac, dated June 8, 2011, documents a former sewer outfall and oil/water separator outfall that historically discharged into the Gowanus Canal. It was presumed that the outfalls were abandoned when the bulkhead along the Gowanus Canal was replaced in 1999, however, no record of the closure/abandonment was reported and considered a REC.

   Per EnviroTrac's investigation, pipes were not visible at the canal, and it was presumed that if there were outfalls, they were abandoned when the bulkhead along the Gowanus Canal was replaced in 1999 by the property owner. Two (2) borings were installed at suspected terminus points of the oil/water separator piping. Based on analytical results from the samples, select SVOCs were detected at concentrations exceeding UU SCOs and VOCs were not detected at concentrations exceeding UU SCOs. Again, SVOCs were consistent with the urban fill identified at the Property. If the oil/water separator is to be used in the future, EnviroTrac recommended that the capping of the discharge piping at the oil/water separator be confirmed and/or connected to the municipal water.

4. The Gowanus Canal, located directly west of the site, is listed on the National Priority List (NPL), CERCLIS and Primary Responsible Party (PRP) databases. The CERCLIS listing indicates that "The Gowanus Canal is impacted by contaminated sediments, principally due to the activities of former Manufactured Gas Plants (MPGs). Surface sediments contain PCBs at levels up to 350 ppm, and coal tar residue up to 23% by weight of sample." The Gowanus Canal listed on regulatory databases as being contaminated was considered a REC.

EnviroTrac concluded that this would remain a REC for the property.

5. Historical usage of the Property included a lumber yard, Koppers Seaboard Coke Co., Brooklyn Nevins Coal Company, Morton Coal Company, motor freight station, NY Telephone Co., Bell Atlantic and Verizon. The surrounding properties have been developed as lumber yard, coal yards, manufacturing, commercial, and dwellings from 1886 through 2007. Some of the specific property usage includes the oil and gasoline storage, auto repair, auto wrecking, truck repair, warehouses, foundry, garage, plastics manufacturing, factories, dry color manufacturing, and commercial and manufacturing facilities. Historical usage of the property and surrounding properties was considered a REC.

   EnviroTrac concluded that this would remain a REC for the property. Urban fill was identified at each Phase II ESA boring location and select SVOCs were detected at all seven (7) soil samples at concentrations exceeding UU SCOs. The suspected source of detected SVOCs at the boring locations was urban fill.

6. ATC observed two (2) aboveground hydraulic lifts, with an aboveground hydraulic tank, in the motor service area at the north end of the building. The aboveground lifts reportedly replaced two (2) former underground lifts which likely had underground components containing hydraulic oil. The former underground lifts are considered a REC as no assessment had been completed in related to them.

   EnviroTrac concluded that no underground hydraulic lifts were at the Site as none were identified during the geophysical investigation, installation of soil borings or excavation on-Site. The suspected source of detected SVOCs at the boring locations with the garage area and proximal to where the lifts were suspected is urban fill. EnviroTrac recommends no further action in reference to the reported former underground lifts.

7. ATC observed two (2) “stormwater drains/drywells” located in the eastern portion of the asphalt paved parking lot. During the Property reconnaissance, the “stormwater drains/drywells” were observed to be full of water with no lateral pipes observed that would be indicative of catch basins diverting water to a lateral line. A NYCDEP Brooklyn Sewer Map for the area does not show these drains connected to the sewer system on the map. In

addition, a slight sheen was observed in the southern stormwater drain/drywell. The stormwater drains/drywells were considered a REC.

EnviroTrac concluded that the stormwater drains/drywells were confirmed to be catch basins constructed of a solid concrete bottom and sidewalls with an interconnecting pipe to the municipal storm sewer. No overflow drywells were identified during the geophysical investigation. The bottom sediments were removed from the catch basins by AARC, Verizon's waste contractor on February 28, 2013 and were properly disposed. EnviroTrac recommended no further action in reference to the catch basins.

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. Phase II Environmental Site Assessment, Dated July 19, 2019

The investigation included the advancement of eight (8) soil borings to depths of 13 or 17 fbg in which one (1) discrete sample was collected for laboratory analysis from each boring at the one-foot interval exhibiting the greatest degree of impacts. Two (2) of the soil boring locations were completed as temporary groundwater monitoring wells. One (1) groundwater sample was collected from each of the newly installed wells and from two (2) of the three (3) existing wells. Additionally, three (3) borings were converted into temporary soil vapor probes for collection of three (3) soil vapor samples.

<u>Soil</u>

- "Historic Fill" material, characterized as fine-grained sand with varying amounts of gravel, clay, brick, concrete, wood, asphalt and slag, was observed directly below the impervious site cover to depths ranging from about 6 to 9 fbg in the borings. The historic fill material was underlain by varying amounts of sand, clay and gravel. A clay layer was observed in all borings from about 10 fbg to boring termination depths and ranged from 0.5 - 5 feet in thickness.
- Petroleum-like impacts were observed in four (4) borings at the groundwater interface as evidenced by odor, staining and PID readings above background.
- Petroleum-related VOCs were detected in soil samples collected from two (2) borings at concentrations above UU SCOs and Restricted Use Restricted Residential (RR) SCOs.
- SVOCs and metals characteristic of historic fill material in New York City were detected in soil samples collected from five (5) borings at concentrations above UU and RR SCOs.

Groundwater

- Depth to groundwater was observed at about 7.5 fbg.
- A petroleum-like odor and sheen were observed during sampling of one (1) well.
- Petroleum-related VOCs were detected in a groundwater sample collected from one (1) well at concentrations above the NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values for Class GA Water (NYSDEC SGVs).
- SVOCs were detected in two (2) groundwater samples at concentrations above NYSDEC SGVs. The detected SVOCs may be representative of regional groundwater quality associated with either the Gowanus Canal and upland sources of bank-stored coal tar or entrained historic fill material and groundwater.
- Dissolved metals characteristic of regional groundwater quality in Brooklyn were detected in the groundwater samples collected from two (2) wells at concentrations above NYSDEC SGVs.

Soil Vapor

- Although not a directly applicable comparison criterion, one (1) VOC was detected in soil vapor sample at a concentration above the minimum soil vapor concentrations at which mitigation is recommended.
- Four gasoline-related VOCs were detected at notable concentrations in one (1) soil vapor sample.

Impact Environmental Engineering and Geology, PLLC. Additional Subsurface Investigation, Dated October 2, 2021

IEEG conducted additional subsurface investigation activities at the Site between November 17 and 18, 2021, November 22, 2021 and November 24, 2021. The findings summarized herein are based on qualitative and quantitative data consisting of field observations, instrumental readings, and laboratory analytical results of soil, groundwater, and soil vapor samples collected at the Site, as follows:

- Stratigraphy: The surface of the Site down to approximately 5-9 fbg consisted of urban fill material comprised of asphalt, brick, gravel and concrete intermixed with sand. Underlying this layer,

brown fine to medium sand with some silt was observed from approximately 5 to 9 fbg, followed by a clay lens noted at the terminal depth of the borings at approximately 10 fbg. Other miscellaneous debris including small pieces of coal and odiferous wood fragments were noted in several borings located on the western portion of the property, parallel to Gowanus Canal.

- Hydrogeology: Groundwater was measured at depths ranging from 5.65 (GCMW28) to 6.55 (IEC-GW-1) fbg in permanent groundwater monitoring wells installed during the additional subsurface investigation. Based on gauging data and topography, localized groundwater is expected to flow west, towards the Gowanus Canal.
- Soil: Concentrations of VOCs, including acetone, tetracholorethene and benzene were detected above Protection of Groundwater SCOs at soil borings: SB-1 (5-7 fbg), SB-2 (5-7 fbg), SB-4 (0-2 fbg) and SB-6 (0-2 fbg). The sample locations with VOC detected above the UU SCOs were located on western portion of the Site, parallel to the Gowanus Canal. SVOCs, specifically PAHs, were also detected in the boring locations at the shallow and/or deep soil interval, with the exception of SB-2, SB-3 and SB-5, which had exceedances for RR SCOs and Protection of Groundwater Soil Cleanup Objectives (PGSCO) in both depth intervals. Metals, including barium, lead and mercury were detected above RR SCOs in SB-1 (0-2 fbg), SB-3 (5-7 fbg), SB-5 (5-7 fbg) and SB-6 at both depth intervals.
- Groundwater: Groundwater samples collected across the southwestern portion of the site contained VOCs, including acetone, benzene, cis-1,2-dichloroethene, isopropylbenzene, n-propylbenzene, sec-butylbenzene and trichloroethene (TCE), above NYSDEC AWQS. Additionally, SVOCs, specifically PAHs at concentrations above the Class GA TOGS AWQS/GV, were detected throughout the Site. Given the depth to the water table below the Site, the concentration of metals and PAHs in groundwater indicates an on-site source. The presence of PAHs and metals in groundwater may also be attributable to urban fill, former onsite uses and/or regional background concentrations, including the contiguous surrounding lots along the Gowanus Canal.
- Soil Vapor: Soil vapor samples were collected within the asphalt parking and accessways located on-Site. Trichloroethene (TCE) was detected at concentration of 141 micrograms per cubic meter ($\mu g/m^3$) in SV-3, located east of building along Nevins Street, which is at a concentration indicating mitigation when compared to the thresholds used in the NYSDOH Guidance. Tetrachloroethene (PCE) was detected at 306 $\mu g/m^3$ in SV-2 located parallel to Union Street. Indoor air samples were

not collected as part of this investigation given that the main industrial building is open with a high air exchange rate and not representative of indoor air quality.

2.2.3 Sanborn Maps

IEEG reviewed a July 6, 2012 Certified Sanborn Map report prepared by Environmental Data Resources, Inc. (EDR) where the Site is included for the following dates: 1886, 1904, 1915, 1922, 1928, 1938, 1950, 1969, 1977, 1978, 1980, 1981, 1982, 1986, 1987, 1988, 1991, 1992, 1993, 1995, 1996, 2001, 2002, 2003, 2004,2005, 2006, and 2007. The EDR Certified Sanborn Map report for this Site was reviewed prior to preparation of the RAWP. The EDR Certified Sanborn Map report is provided in **Appendix D.** The Site use observed on these maps is documented in the following table.

Sanborn Map Review Summary	
Date	**Site Description**
1886	South quarter of the Site (address range 403 – 423 Carroll/328-334 Nevins Steet) is identified as Loomis' Lumber Yard where there is a small 1-story building dwelling at the southeast corner and a Lumber Shed on the western portion. The remainder of the Site to the north (address range 484-504 Union Street/300-326 Nevins Street) is identified as Kenyon & Newtons Lumber Yard. A 2-story building labelled dwelling is on the east perimeter with a Lumber Shed to the north followed by a small building at the northeast corner and Lumber Shed on the north end of the Site.
1904	South quarter of the Site identified as Jno S. Loomis & Co. Lumber Yard. The remainder of the Site to the north is identified as the Albro J. Newton Comp'y Lumber Yard. Both of the Site parcels appear similar to that described above except lumber storage areas are indicated by dashed lines/boxes and the dwelling at the northeast corner is identified as a 2-story office building.
1915	South quarter of the Site identified as John S. Loomis & Co. Lumber Yard. The remainder of the Site to the north is identified as the Albro J. Newton Co. Lumber Yard. The Site parcels appear similar to that described above.
1922	South quarter of the Site identified as the Brooklyn Nevins Coal Company and generally appears similar to that described above. The north Site parcel is identified as Koppers Seaboard Coke Co., and what appear to be railroad spurs are on the west portion.
1928	The south quarter of the Site is identified as Morton Coal Co., and the north site parcel is identified as Koppers Seaboard Coke Co. The railroad spurs are no longer evident, and the structures on this parcel are not labelled.

Sanborn Map Review Summary	
Date	**Site Description**
1938	The south quarter of the Site is identified as Morton Coal Co., and coal storage structures, scales, and a shed are identified on the west portion and a 1-story office building at the southeast corner. The north site parcel is identified as Kopper's Seaboard Coke Co. This portion of the Site has conveyor equipment on the west portion with coal storage structures. A 2-story dwelling, two garage buildings and office buildings are located on the east portion, and a shed is located at the northwest corner of the Site. A gas tank is identified on the northeast portion of the Site.
1950	The south quarter of the Site is identified as Hy-Grade Magnet Corp., and coal storage structures, screening, scales, and a shed are identified on the west portion and a 1-story office building at the southeast corner. The north site parcel is identified as Koppers Co. Inc This portion of the Site has conveyor equipment on the west portion with coal storage structures. This parcel appears similar to that described above; however, more of the structures are labelled as traveling crane, movable crane, scales. An oil tank on ground is identified on the northwest portion of the Site near the conveyor, and a gas tank is indicated at the northeast portion of the Site. Coke piles are indicated near the center of this Site parcel.
1969	The previous Site use and features are no longer indicated. There is a long narrow building located on the east portion of the Site identified a Motor Freight Station built in 1958. The previously identified tanks are not indicated.
1977	The Site is developed similar to that described above.
1979	The Site is developed similar to that described above; however, the building is labelled as N.Y. Telephone Co.
1980-82 1986-88 1991-93 1995	The Site is developed similar to that described above.
1996	The building is labelled as NYNEX
2001	The building is labelled as Bell Atlantic and a 1-story building is shown at the northwest corner of the Site.
2002-07	The building is labelled as Verizon (Bell Atlantic) and appears similar to that described above.

These historic Sanborn Fire Insurance maps indicate that the Site was used for lumber yards from 1886 up until 1915.

Kopper's Seaboard Coke Co. is depicted as the occupant of the north Site parcel and the south parcel was Brooklyn Nevins Coal Co., Morton Coal Co. and Hy-Grade Magnet over the period from circa 1922 until the 1950. During this time, the Site was used as a yard designed to receive coal or coke from barges, screen and deliver to trucks for distribution to consumers. The most recent on-site structure was reportedly constructed in 1958 and was occupied by a motor freight station from the 1960s through the late 1970s. Subsequently, the building was utilized by NY Telephone Co, Bell Atlantic and Verizon.

Based on other historical information available for the Site, the Manhattan Commissary Inc. leased the property in 2012 which is primarily operated for food sales under numerous vendors identified as: Venditti, Tacos Limos, Tacos Lupita, Tacos El Poblanito, Tacos El Chicken and Tacos Pollo Loco. These vendors operated at the Site until its recent sale on December 30, 2021.

The Sanborn maps reviewed for the historical site usage also identified off-site parcels to the north and northeast of the site labelled as the Fulton Municipal Gas co in 1879. These parcels ranged from 0.06 miles to 0.11 miles hydraulically upgradient of the site and showed hydrogen tanks, gas holders, gasometers, purifiers, condenser, gasoline house, naphtha tanks, purge tank, etc. On the parcels. The 1904, 1915 and 1922 Sanborn maps show these parcels labelled as the Brooklyn Union Gas co. (Fulton Municipal Branch) but were not listed on the 1938 Sanborn map. IEEG also reviewed the Final Remedial Investigation Report prepared by GEI consultants (GEI for the Fulton Municipal Works Former Manufactured Gas Plant (MGP) site dated July 2012. The report indicates the MGP operations started in 1879, MGP operations merged in 1895 and became the Brooklyn Union Gas Co, and operation ceased in 1929 (operated for 36 years). The GEI report documents petroleum, naphtha and coal tar contamination present in soil and groundwater beneath former MGP parcels and the contamination has migrated down gradient in the direction of the Site based on GEI's off-site subsurface investigation. Based on this information, the MGP operations are the source of the area wide coal tar dense non aqueous phase liquid (DNAPL) detected in saturated soil beneath the site and other BCP sites along the canal. There is no historical use of the site that would have contributed to the MGP coal tar.

2.3 GEOLOGICAL CONDITIONS

The advancement of shallow soil borings beneath the Site during previous subsurface investigations and the recent RI indicate the presence of urban fill material at depths up to approximately 9 feet below

grade (fbg). The urban fill material is described as brown silty sand with gravel and anthropogenic material described as concrete, brick and asphalt fragments, wood, and some slag. Below the fill material, the soil is described as silty sand with gray clay, trace gravel and some organics in some borings at depths ranging from approximately 9 to 13 fbg followed by non-continuous gray clay encounter at depths ranging from approximately 10 to 13 fbg. For the borings that were advanced beyond 20 fbg, the soil is described as silt to fine sand, some clay which transitions to medium to coarse sand until the terminal depth of the boring.

The Site adjoins the Gowanus Canal to the west which historically was a tidal creek with wetlands/lowland marsh areas prior to urban development in the mid-1800s. The creek was dredged to construct the canal and hardened shoreline. Dredge spoils were deposited behind the hardened shoreline followed by the historic fill material to allow for the general industrialized development of the area. Alluvial/marsh deposits lie below the fill and are composed of alluvial sand deposits, peat, organic silts and clays (marsh deposits). The alluvial/marsh deposits are associated with the original wetlands complex that was present when the native area was altered.

This depositional sequence is supported by the presence of sand, organic material, and clay in on-Site soil borings. The soil boring logs from the RI and Supplemental RI are provided in **Appendix E**. **Figures 6A, 6B and 6C** provide a cross-sectional diagram showing the inferred shallow soil profile of the Site, as discussed above.

No bedrock was documented during the advancement of the previous or current borings at the Site. Damp to wet soil at the capillary fringe to the water table interface was detected at approximately 6-7 fbg in the Site soil borings.

The Gowanus canal discharges to Gowanus Bay and Upper New York Bay to the southwest and is a tidally influenced channel with a tidal cycle of two high tides and two low tides of unequal height each day that has a vertical tidal range of approximately 4.7 to 5.7 feet. The primary aquifer beneath the Gowanus Canal and surrounding upland areas is identified as the Upper Glacial Aquifer, which is generally a thick sequence of glacial deposits that includes beds of silt, sand and clay associated with alluvial/marsh sediments along coastal areas. The Upper Glacial Aquifer at the Site appears to be unconfined. In the Upper Glacial Aquifer, regional groundwater flows to the west/southwest toward Gowanus Canal. Groundwater from the Site area is not used as a potable water supply in Brooklyn.

The depth to groundwater beneath the Site on October 7, 2022 ranged from 5.13 to 6.41 fbg for the at-grade wells and from 10.56 to 11.00 fbg for the wells installed through the raised former building foundation on the Site. Groundwater flow at the Site is to the west-southwest; however, the tidal fluctuations (oscillations) of the Gowanus Canal are likely to have some influence on groundwater flow. The groundwater flow is shown in **Figure 7.**

2.4 CONTAMINATION CONDITIONS

2.4.1 Conceptual Model of Site Contamination

The Conceptual Site Model (CSM) prepared for this Site as part of the RIWP was based on data from previous environmental investigations, historical Site use information and existing Site conditions to understand the identified contaminants of concern and the risk they pose to receptors. The RI and Supplemental RI data input allows for further CSM refinement as new information is obtained. The CSM provides an understanding of the distribution of contaminated media and evaluation of potential migration pathways and mitigation.

The Site is currently not occupied, and the former building superstructure was demolished per a NYSDEC approved Change of Use (COU). Redevelopment activities for the Site are pending NYSDEC approval of a COU for the installation of foundation piles and approval of the Remedial Action Work Plan.

Currently, the potential receptors will be limited to construction and remedial workers; authorized visitors such as the NYSDEC, and the public from the surrounding community. Once Site redevelopment is complete, potential receptors will include building tenants, residents, workers and visitors and the use of the outdoor recreational areas by the same.

2.4.2 Description of Areas of Concern

The environmental data generated from the RI and supplemental RI was reviewed to evaluate contamination beneath the Site. Based on this data, the urban fill material is identified as a non-point source for Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene and Indeno(1,2,3-cd)pyrene, selenium and arsenic on portions of the Site and is considered an area of concern (AOC). Visual evidence of urban fill was documented by the presence of anthropogenic material in the soil samples and concentrations of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene and Indeno(1,2,3-cd)pyrene, selenium and arsenic in soil beneath the

Site. Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene and Indeno(1,2,3-cd)pyrene, selenium and arsenic were also detected in the groundwater samples collected from beneath the Site which are related to urban fill.

PFOS was identified in shallow on-Site soil and is present in the groundwater beneath the Site above the AWQS. The activity for the deposition of the PFOS in shallow soil is not known and could be related to the fill material. PFOA was detected in groundwater samples collected from beneath the Site above the AWQS; however, PFOA was not detected in soil. The presence of PFOA appears to be related to an offsite source and is not considered an AOC for the Site.

GCM in the form of coal tar DNAPL was identified in saturated soil beneath the Site and was delineated on the Site per the NYSDECs request. The coal tar DNAPL is located along the bulkhead in the vicinity of SB-16 and SB-17 and is present in the delineation borings completed on the northwest portion of the Site. **Figure 8A** and **Figure 8B** provide cross sections of the detected DNAPL. This DNAPL contamination is associated with the migration from the former Fulton Municipal Works Former MGP facilities located hydraulically upgradient and north-northeast of the Site. These associated closest parcels ranged from 0.06 miles to 0.11 miles hydraulically upgradient of the site and historic Sanborn Maps showed hydrogen tanks, gas holders, gasometers, purifiers, condenser, gasoline house, naphtha tanks, purge tank, etc. IEEG also reviewed the Final Remedial Investigation Report prepared by GEI consultants (GEI) for the Fulton Municipal Works Former MGP site, dated July 2012. The report indicates the MGP operations started in 1879, MGP operations merged in 1895 and became the Brooklyn Union Gas Co, and operation ceased in 1929 (operated for 36 years). The GEI report documents petroleum, naphtha and coal tar contamination present in soil and groundwater beneath former MGP parcels and the contamination has migrated down gradient in the direction of the Site based on GEI's off-site subsurface investigation. Based on this information, the MGP operations are the source of the area wide coal tar DNAPL detected in saturated soil beneath the site and other BCP sites along the canal. There is no historical use of the site that would have contributed to the MGP coal tar.

The two NYSDEC Spills associated with the Site, that resulted during Verizon's operation, have been closed. Two (2) 2,000-gallon and two (2) 4,000-gallon USTs containing diesel and gasoline were removed from the Site and remedial activities completed. Although these Spills were closed and the USTs removed, the 1938 and 1950 Sanborn Maps identified other USTs on the Site and there is no documentation of the removal. These former USTs and other potential unknown USTs are an AOC for the Site.

A potential oil/water separator structure was identified within the northwest portion of the building. Elevated PAHs and PFOS above the PGSCO's were identified in soil sample OWS-1 and represent an area of concern.

It should also be noted that the Gowanus Canal to the immediate west is a Superfund Site which has the potential to be an AOCs for the Site.

2.4.3 Identification of Standards, Criteria and Guidance

The SCGs serve as the target cleanup objectives for contaminants at the Site. The main SCGs that are applicable and relevant for determining a remedy for the Site are include the following:

- NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation (May 2010)
- 6 NYCRR Part 375 - Environmental Remediation Programs Subparts 375-1, 375-3 and 375-6 (December 2006)
- 6 NYCRR Part 375-6 Soil Cleanup Objectives (December 3, 2010)
- NYSDEC Commissioner Policy CP-51 / Soil Cleanup Guidance (October 21, 2010)
- 6 NYCRR Parts 700-706 - Water Quality Standards (June 1998)
- New York State Groundwater Quality Standards – 6 NYCRR Part 703
- NYSDEC Ambient Water Quality Standards and Guidance Values – TOGS 1.1.1
- NYS Solid Waste Management Requirements – 6 NYCRR Part 360 and Part 364.
- 6 NYCRR Part 371 - Identification and Listing of Hazardous Wastes (November 1998)
- 6 NYCRR Part 372 - Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities (November 1998)
- 6 NYCRR Part 364 - Waste Transporter Permits
- 6 NYCRR Subpart 374-1 - Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities (November 1998)
- 6 NYCRR Part 376 - Land Disposal Restrictions
- 6 NYCRR Part 608 - Use and Protection of Waters
- TAGM 4059 - Making Changes to Selected Remedies (May 1998)
- TAGM 3028 - "Contained In" Criteria for Environmental Media: Soil Action Levels (August 1997)
- DER-2: Making Changes to Selected Remedies (April 1, 2008)
- DER-13: Strategy for Prioritizing Vapor Intrusion Evaluations at Remedial Site in New York (October 18, 2006)

- DER-23 / Citizen Participation Handbook for Remedial Programs (January 2010)
- CP-43: Groundwater Monitoring Well Decommissioning Policy (November 3, 2009)
- DER-33: Institutional Controls – A Guide to Drafting and Recording Institutional Controls (December 3, 2010)
- New York State Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the Date of New York (October 2006, Subsequent Updates May 2010, September 2013 and August 2015)
- OSWER Directive 9200.4-17 - Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites (November 1997)
- 29 CFR Part 1910.120 - Hazardous Waste Operations and Emergency Response
- OSHA Workplace Safety: 30-Hour Construction Training
- NYSDEC Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) (Under NYSDEC's Part 375 Remedial Programs) (October 2020)

This list is intended provide the main SCGs and additional SCGs not included in the list above may be applicable or pertinent to the Site remedial action and will be considered and followed as applicable.

2.4.4 Soil/Fill Contamination

Evidence of fill material was observed in soil borings advanced on the Site which is further supported by the RI analytical data from soil borings advanced on the Site. Additionally, coal tar DNAPL was initially detected in two soil borings along the bulkhead (SB-16 and SB-17) and was detected in forty-two (42) of the sixty-three (63) supplemental RI delineation borings at depths of approximately 18 to 35 fbg. The following sections provide more detailed information regarding the fill material identified beneath the Site.

2.4.4.1 Summary of Soil/Fill Data

- Fill material is present across the Site down to approximately 9 fbg and is described as brown silty sand with gravel and anthropogenic material described as concrete, brick and asphalt fragments, wood, and some slag.
- The contaminant classes identified in shallow soil include two pesticides, SVOCs as PAHs, metals and PFOS.

- The contaminant classes identified in deeper saturated soil are related to the coal tar DNAPL from an off-Site source and include VOCs, SVOCs as PAHs and some metals.

2.4.4.1 Comparison of Soil/Fill with SCGs

- Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene and Indeno(1,2,3-cd)pyrene, selenium and arsenic above RR SCOs and PGSCO's were detected in the shallow urban fill material present beneath the Site.
- VOCs above the UU and PGSCO's and SVOCs as PAHs above the UU, RR and PGSCO's were detected in deep saturated soil samples associated with SB-16 and SB-17 near the bulkhead where coal tar was first detected on the Site and in the supplemental delineation soil borings completed at the Site near the bulkhead and northwest corner of the Site.
- PFOS was detected in shallow soil at 0-2 fbg in SB-8, SB-9 and SB-17 above the UU SCO and at OWS-1 at 5-6 fbg above the PGSCO's;

Figure 9 is a spider map that shows the location and summarizes exceedances of the UU, RR and PGSCO's for soil/fill from the initial RI. **Tables 1** provide a compilation of the soil data as comparted to the UU, RR and PGSCO's. The soil contaminant ranges are detailed on the ranked data **Table 2**.

2.4.5 On-Site and Off-Site Groundwater Contamination

2.4.5.1 Summary of Groundwater Data

- Benzene was detected in one groundwater sample on the north end of the Site and MTBE was detected on two groundwater samples on the north end of the Site which is an area associated with the former USTs.
- Dissolved arsenic, antimony, magnesium, manganese, sodium and selenium were detected in groundwater beneath the Site. Magnesium, manganese and sodium are commonly detected in groundwater along coastal areas. No antimony was identified in fill/soil at the Site and arsenic and selenium was detected in groundwater which is likely the result of the fill on the Site fill.
- Cis-1,2-Dichloroethylene was only detected in one well at the southwest corner of the Site.

- Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene and Indeno(1,2,3-cd)pyrene, selenium and arsenic were detected in groundwater appear to be related to the urban fill material where these metals were detected in shallow soil.
- PFOS was detected in groundwater which appears to be related to the PFOS detected in shallow soil.
- PFOA was only detected in groundwater beneath the Site which indicates an off-Site source(s).
- Coal tar DNAPL identified in saturated soil beneath the Site migrated from the former Fulton Municipal Works MGP facilities located hydraulically upgradient (north-northeast) as documented GEI's off-site subsurface investigation for the Fulton MGP. The coal tar DNAPL migration is consistent with the groundwater flow identified in both the GEI report and the RI prepared for the Site.

2.4.5.2 Comparison of Groundwater with SCGs

- Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene and Indeno(1,2,3-cd)pyrene, selenium and arsenic were detected in groundwater above the NYSDEC AWQS.
- PFOS detected in groundwater above the NYSDEC AWQS which appears to be related to the PFOS detected shallow soil.
- PFOA was only detected in groundwater beneath the Site which indicates an off-Site source(s).
- Cis-1,2-Dichloroethylene was only detected in one well above the AWQS.
- Benzene and MTBE were detected in groundwater above the AWQS.

A table that indicates exceedances from GA groundwater standards in monitor wells prior to the remedy is shown in **Table 3.** The contaminant ranges are detailed on the ranked data **Table 4**.

A spider map that indicates the location(s) of and summarizes exceedances from GA groundwater standards prior to the remedy is shown in **Figure 10.**

2.4.6 On-Site and Off-Site Soil Vapor Contamination

- The presence of VOCs, both petroleum related and CVOCs, were detected in soil vapor at the Site.

2.4.6.1 Comparison of Soil Vapor with SCGs

- Tetrachloroethylene (PCE) was detected in five (5) soil vapor samples at concentrations ranging from 2,587.626 µg/m^3 to 813.557 µg/m^3.
- Trichloroethylene (TCE) was detected in five (5) soil vapor samples at concentrations ranging from 2.632 µg/m^3 (SV-7) to 1,396.623 µg/m^3.
- These CVOCs were not detected in soil on the Site above the UU SCOs. It should be noted that cis-1,2-dichloroethylene was detected in groundwater sample GCMW28 above the AWQS. There is the potential for an off-Site source of the CVOCs detected at the Site.

A table of soil vapor data collected prior to the remedy is shown in **Table 5.** The contaminant ranges are detailed on the ranked data **Table 6**. A spider map that indicates the location(s) of and summarizes soil vapor data prior to the remedy is shown in **Figure 11**.

2.5 ENVIRONMENTAL AND PUBLIC HEALTH ASSESSMENTS

2.5.1 Qualitative Human Health Exposure Assessment

The data collected during the remedial investigation and discussed as part of the Conceptual Site Model (CSM) indicate complete exposure pathways for the Site and from an off-Site source (PFAS in groundwater) under current conditions without the implementation of Institutional Controls and Engineering Controls (IC/EC). Complete exposure pathways pose a risk to human exposure via soil, groundwater and soil vapor. A complete exposure pathway for the contaminants of concern (COCs) identified for the Site includes an evaluation of the following:

- The contaminant source(s) and location of the release(s) to the environment, and the contaminated medium at the potential points of exposure;
- Description of the contaminant release and transport mechanisms to the exposed population;
- Identification of all points of potential human contact with the contaminated medium;
- Possible exposure route (e.g., ingestion, inhalation, dermal absorption); and
- Description of the receptor populations the who may be exposed to contaminants.

An exposure pathway is considered complete when these five elements are documented. A potential exposure pathway exists if one or more of the five elements is unknown. An exposure pathway can be eliminated from further evaluation when one of the five elements has not existed in the past, does not exist in the present and can reasonably be expected to never exist in the future. The following section

identifies potential points of human contact with contaminated media and exposure pathways identified for the Site.

As identified in the CSM, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene and Indeno(1,2,3-cd)pyrene, selenium and arsenic related to urban fill and PFOS are identified in soil and groundwater beneath the Site; PFOA from an off-Site source is present in groundwater; coal tar in the form of DNAPL was identified in saturated soil beneath the northwest and west portions of the Site which migrated from former Fulton Municipal Works MGP facilities located north-northeast (up gradient); and petroleum and CVOCs were detected in soil vapor samples collected from the Site.

The fate and transport of contaminants depends on the media. Soil contamination can be transported as dust and/or can migrate downward toward the groundwater interface, unless contaminated media was placed as fill material in low-lying saturated areas where groundwater contaminants are a saturated source that can be transported as a dissolved phase contaminant and in some cases as a non-aqueous phase liquid. Soil and groundwater contamination can volatilize into a vapor phase giving rise to soil vapor contamination.

The Site is currently capped by former building concrete slab, concrete walkways and asphalt pavement and is not occupied which limits potential exposure to Site contaminants. The cap limits contact of precipitation and runoff to contaminated media that can lead to contaminant migration, and potable water is provided by the NYC Department of Environmental Protection (DEP).

During the proposed Site redevelopment that includes a remedial construction plan, the potential routes of exposure include inhalation and ingestion of contaminated dust and other contaminants that can vaporize during soil disturbance activities such as excavation, dewatering, stockpiling and soil load out onto trucks. There can also be dermal contact with contaminated soil and groundwater. The receptors at the highest risk are construction and remediation workers, and the public and pedestrians in proximity of the Site to a lesser extent.

Based on the factors discussed above, the five elements exist for a complete pathway but is mitigated where the risk is minimized using health and safety protocols and best management practices such as implementation of Site security, personal protective equipment (PPE), air monitoring for VOCs and particulates, vapor and dust suppression measures, preventing off-Site tracking of contaminated soil by cleaning underside of trucks, wheels and areas that can accumulate soil.

The preparation of supporting documents such as a Construction Health and Safety Plan (CHASP), Community Air Monitoring Plan (CAMP) and Soils/Materials Management Plan (SMMP) provide guidance and protocols for use of PPE, safety data sheets and emergency procedures, air monitoring, and measures to implement during soil/material disturbance and handling, respectively.

Under the proposed redevelopment of the Site, residual COCs may remain on the Site depending on the remedial action(s) selected and use of institutional and engineering controls that will mitigate the potential for exposure of COCs by the occupants of the new building (future receptor population). This receptor population would include but not be limited to commercial tenant employees and customers, maintenance workers, residents, and visitors.

The current Site conditions and Site redevelopment with remedial activities provide a potential risk of exposure to Site construction and/or environmental workers through ingestion, inhalation and dermal contact with COCs in soil. This risk will be minimized by using best management practices and protocols detailed in the CHASP, CAMP and the SMMP. Temporary engineering controls can also be implemented during the remedial activities such as vapor and dust suppression to reduce potential exposure.

A complete exposure pathway for COCs to the future receptor population is not likely since: 1) remedial activities at the Site will be completed where excavated soil was transported to an off-site disposal facility; 2) residual soil contaminants and groundwater are not accessible due to Site cover system, 3) groundwater beneath the Site and surrounding area are not used as a source of potable water; and 4) SSDSs will be installed beneath the foundation slab with waterproof membrane of both buildings .

2.5.2 Fish & Wildlife Remedial Impact Analysis

Section 3.10 of the NYSDEC DER-10 requires an evaluation to determine if the Site meets the criteria for a Fish and Wildlife Resources Impact Analysis (FWRIA). IEEG completed the evaluation for the Site and surrounding area for fish and wildlife resources using aerial photos, USGS topographic maps, the NYSDEC DECinfo Locator interactive map, and site observations. The Gowanus Canal, which adjoins the Site to the immediate west, is not identified as a significant coastal fish and wildlife habitat; a significant habitat or ecological community; or as a wild, scenic or recreational river. The Gowanus Canal is identified on the DECinfo Locator as regulatory tidal wetlands; however, the Gowanus Canal is identified as a NPL site where the aquatic and terrestrial habitat has been impaired and degraded due to industrial development and urban pollution since construction circa 1860. The formal Gowanus Creek was a tidal estuary/marsh system that has been straightened, dredged and hardened with bulkheads. No wetland habitat of

ecological significance has been observed proximate to the Site. Based on the lack of surrounding natural resources and the impaired Gowanus Canal, a fish and wildlife assessment is not warranted.

2.6 INTERIM REMEDIAL ACTION

No IRMs have been performed or are planned for the Site.

2.7 REMEDIAL ACTION OBJECTIVES

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

2.7.1 Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater containing contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of, volatiles emanating from contaminated groundwater.

RAOs for Environmental Protection

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

2.7.2 Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.

RAOs for Environmental Protection

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

2.7.3 Soil Vapor

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

3.0 DESCRIPTION OF REMEDIAL ACTION PLAN

3.1 EVALUATION OF REMEDIAL ALTERNATIVES

Remedial alternatives are evaluated and developed for the Site in terms of meeting the threshold and the balancing criteria for the proposed remedy. The NYSDEC DER-10 'Threshold Criteria' requires evaluation of items 1 and 2; while the 'Balancing Criteria' requires evaluation of items 3 through 9 as follows:

1. Protection of human health and the environment;
2. Compliance with standards, criteria, and guidelines (SCGs);
3. Short-term effectiveness and impacts;
4. Long-term effectiveness and permanence;
5. Reduction of toxicity, mobility, or volume of contaminated material;
6. Implementability;
7. Cost effectiveness;
8. Community Acceptance; and
9. Land use.

Two main sources of soil contamination were identified through the RI and Supplemental RI work completed which are urban/historic fill material extending to approximately 9 fbg and coal tar NAPL at approximately 20 to 40 fbg in the sixty-three (63) delineation soil borings completed on the northwest and west portions of the Site. The Coal tar NAPL evidenced in these soil borings migrated onto the northwest part of the site and along sections of the bulkhead from an off-Site source(s) as there are no known historical on-site uses or production of coal tar. Coal tar NAPL shall be defined as NAPL saturated soils, NAPL lenses, NAPL coated soil, NAPL blebs or globs or sheen.

The following sections provide an analysis for implementation of a Track 1 Alternative I remedy at the Site versus the proposed Track 4 Alternative II remedy that can be completed at the Site in accordance with the BCP.

Alternative I, Track 1 Cleanup

Achieving the proposed Alternative 1, Track 1 Cleanup for the Site is not practicable due to the high degree of difficulty required for deep excavation to achieve the permanent removal of the coal tar DNAPL beneath the Site. The removal remedy alone would not prevent future migration of coal tar DNAPL to

Site from the upgradient off-site source(s) unless a cut off wall is installed on the north property boundary. The following work would need to be completed for the permanent removal of urban fill material and coal tar impacted soil:

- Asphalt pavement removal and demolition of the remnant foundation slab and foundation elements associated with the former building. Existing wells would be abandoned in accordance with the NYSDEC CP-43.

- A Construction Health and Safety Plan (CHASP), Community Air Monitoring Plan (CAMP), Soil/Materials Management Plan (SMMP) and Soil/Sediment Erosion plan (SSEP) will be required for the protection of on-site workers and the nearby community during remedial and construction activities at the Site.

- A waste characterization investigation of the fill/soil subject to excavation will be required for each zone to ensure disposal at a facility permitted to handle and dispose of the material. Sampling of the material will be completed in situ by drilling and/or stockpiling on the Site.

- The excavation of fill material exceeding the Part 375 Unrestricted Use Soil Cleanup Objectives (UU SCOs) would include the excavation and removal of fill material from the footprint of the Site down to about 9 fbg which would encompass approximately 53,600 cubic yards (yd^3) of material.

- To access the coal tar contaminated zone at approximately 20-40 fbg, soil from 9 – 20 fbg would first require excavation resulting in the excavation of approximately 71,316 yd^3 of native soil. The coal tar contaminated soil excavation would then yield approximately 129,666 yd^3 of contaminated soil.

- The design of the support of excavation (SOE) would be prepared and certified by a professional engineer to achieve the desired excavation depths. The SOE for the excavation of the Site footprint up to 9 fbg would be installed around the Site perimeter, and a deeper more localized SOE would be required to remove the native soil and the coal tar impacted soil from approximately 9 to 40 fbg. A combination of SOEs will likely be utilized to minimize groundwater seepage into the excavations to reduce the volume of groundwater extraction. Additionally, the installation of a vertical impermeable cutoff wall could be incorporated into the SOE design.

- Dewatering is required to achieve the excavation depths as detailed above since the depth to groundwater beneath the Site is approximately 5-7 fbg. A well point dewatering system is likely to be utilized to draw down the water table to below the desired excavation depths. A Permit Equivalence (NYSDEC Long Island Well Permit and NYCDEP discharge permit) is anticipated since extraction is expected to exceed 45 gallons per minute. Extracted groundwater will require treatment for discharge in accordance with a NYCDEP Dewatering Permit to allow for discharge to the combined sewer system.

- Continuous field screening of excavated soil/fill will be completed to identify contamination by visual means, odor, and monitoring with a PID and to ensure transport for disposal at the pre-approved facilities.
- Collection and laboratory analysis of documentation soil sample from the excavation base and sidewalls, as accessible, to confirm the contaminated soil/fill has been removed and the remaining soil meets Part 375 UU SCOs.

- Backfilling excavated areas to the original grade required for foundation construction will be required. The imported fill material for below the water table interface is expected to be virgin crushed stone for compaction purpose. A geotextile material would then be installed for the installation of certified fill meeting Part 375 UU SCOs. The native material removed from above the coal tar impacted soil can be reused on the Site if it meets Part 375 UU SCOs and PGSCO's. It is expected that soil compaction will be required to meet the construction requirements for the Site.

Alternative II, Track 4 Cleanup

To achieve the Alternative 2, Track 4 Cleanup for the Site, the following work would need to be completed:

- Asphalt pavement removal and demolition of the remnant foundation slab and foundation elements associated with the former building. Existing wells would be abandoned in accordance with the NYSDEC CP-43.

- A Construction Health and Safety Plan (CHASP), Community Air Monitoring Plan (CAMP), Soil/Materials Management Plan (SMMP) and Soil/Sediment Erosion plan (SSEP) will be

required for the protection of on-site workers and the nearby community during remedial and construction activities at the Site.

- A waste characterization investigation of the fill/soil subject to excavation will be required for disposal at a facility permitted to handle and dispose of the material. Sampling of the material will be completed in situ by drilling and/or stockpiling on the Site.

- The Track 4 (Alternative 2) excavation is a 2-foot cut to remove fill material exceeding the Part 375 Restricted Residential (RR) SCOs for the Site footprint area which encompasses approximately 7,550 cubic yards (yd^3) of material.

- Excavation of "hot spot" areas where a contaminant exceeds the Part 375 PGSCO's in shallow fill material/soil and the contaminant is detected in groundwater beneath the Site, is estimated at 1,768 yd^3 of material with excavation depths ranging from 8-21 fbg. A design for the support of excavation (SOE), including sheeting or shoring, where necessary, will be prepared and certified by a professional engineer to achieve the desired excavation depths of the hotpots as required and will be approved by the NYC Department of Buildings. It is expected that hot spot excavations over 10 fbg will require shoring.

- Treatability study and pilot testing work plans will be prepared to evaluate the feasibility of two remedial technologies, In-Situ Geochemical Stabilization (ISGS) and In-Situ Stabilization/Solidification (ISS) for final remedy selection to address on-site NAPL, where NAPL is defined as NAPL saturated soils, NAPL lenses, NAPL coated soil, NAPL blebs or globs or sheen. The work plans will include treatability (i.e., bench-scale) testing to determine dosage for ISGS and mix design for ISS; and pilot testing (field verification testing) to confirm the effectiveness of the remedies. If ISGS is determined to be a feasible remedial technology, a Remedial Design Work Plan (RDWP) will be prepared to include engineering design specifications for ISGS implementation to reduce contaminant mass and stabilize NAPL in the northwestern portion of the Site in proximity to the bulkhead of the Gowanus Canal which poses constructability issues due to underground structures supporting the bulkhead (e.g., tiebacks, etc.). ISGS will be implemented by injecting a permanganate-based solution through direct push technology using pressurized delivery systems. The installation will include the defined saturated NAPL area above an elevation of NAVD88 -19' (approximately 29' bgs). The RDWP will be submitted for NYSDEC approval with the specifications of ISGS

based on the results of the treatability and pilot testing results. ISS will be performed in the defined saturated NAPL area above an elevation of NAVD88 -19' (approximately 29' bgs) which are accessible for soil auger mixing where underground obstructions related to the bulkhead are not present. ISS will be performed beneath areas where the building foundation will be installed. After the ISS curing has been completed and passed the QA/QC process, full displacement piles (FDP) will be installed in areas within the ISS treatment/monolith area for foundation purposes to the required depth of approximately 72'-80'. FDP piles will be installed throughout the remaining portion of the Site for building foundation purposes to the required depth of approximately 72'-80'. If required due to constructability issues with the FDP piles coring through the ISS monolith, continuous flight auger (CFA) piles would be installed through the ISS treatment/monolith area within the footprint of the building foundation after the ISS curing has been completed and passed the QA/QC process and then below the monolith, the methodology will be changed back to the FDP pile to complete the remaining pile installation. If ISGS and/or ISS does not extend to the terminal depth of the materials containing NAPL, and free phase mobile and recoverable NAPL remains post treatment, DNAPL recovery wells will be installed along the bulkhead. The NAPL mobility results will determine areas exhibiting mobile NAPL and will facilitate design parameters to establish a baseline for comparison with future performance monitoring. The engineering design of the final remedy selected will be provided in a RDWP for ISGS and ISS, as well as recovery well specifications (size, locations, pump specs, etc). Quality Control/Quality Assurance (QA/QC) Plans for both ISS and ISGS are included in **Appendix K and L.**

- Dewatering is required to achieve some of the excavation depths as the water table interface beneath the Site ranges from 5 to 7 fbg. Dewatering design for extraction of groundwater, effluent treatment and discharge permitting will be performed, and a Permit Equivalence (NYSDEC Long Island Well Permit and NYCDEP discharge permit) will be obtained.

- Continuous field screening of excavated soil/fill will be completed to identify contamination by visual means, odor, and monitoring with a PID and to ensure transport for disposal at the pre-approved facilities.
- Should an unknown UST(s) be encountered during Site redevelopment activities the UST(s) will be removed which includes removal of contents, cleaning and disposal of tank, and

disposal of associated contaminated soil, as applicable. This will be completed in accordance with NYSDEC DER-10 and the NYSDEC PBS regulations.

- Collection and laboratory analysis of documentation soil samples from the excavation base and sidewalls, as accessible, to evaluate the performance of the remedy with respect to attainment of RRSCO's and PGSCO's. Where installation of sheeting/shoring is required for deep excavations (>10 fbg) and dewatering to achieve remedial excavation depths for the hotpots, sidewall samples will not be accessible for collection.
- A waterproofing membrane will be installed on the exterior foundation walls and below the foundation slab. Bithene® 3000, or equivalent, is the waterproofing membrane proposed for exterior foundation walls and Preprufe® 300 Plus Membrane or equivalent, a water proofing membrane that bonds to poured concrete, is proposed for use below the slab.
- An active sub-slab depressurization system (SSDS) will be installed beneath the slab of each building to provide mitigation of soil vapor contaminants. Post construction performance monitoring will include the collection of soil vapor samples and differential pressure readings using a digital manometer from vapor points installed through the sub-slab of the proposed buildings, as practicable, in conjunction with the collection of indoor/ambient outdoor air samples in accordance with the NYSDOH "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" (October 2006) and the May 2017: Updates to Soil Vapor / Indoor Air Decision Matrices.
- Following removal of the 2' remedial excavation, where exposed fill/soil shall exist outside of the footprint of the two new buildings, installation of a demarcation layer followed by a two (2) foot clean soil cover that meets the requirements for import to the Site will be installed. In addition, areas that are subject to ISS outside of building footprints will require an additional 2' excavation (total of 4' cover system) followed by the installation of a four (4) foot clean soil cover that meets the requirements for import to the Site. The import of materials to the Site for construction and cover purposes must be in accordance with Chapter 5, Subdivision 5.4(e) and Appendix 5 of NYSDEC DER-10.
- As part of the Track 4 Restricted-Residential Use remedy, an environmental easement referencing the Site-specific Institutional Controls (ICs) will be recorded against title and be binding upon the Volunteer and all its successors and assigns. The environmental easement will: (1) restrict the Site to restricted-residential, commercial, and industrial uses, as subject

to local zoning laws; (2) prohibit the use of groundwater as a source of potable or process water without necessary water quality treatment as determined by the NYSDOH; (3) prohibit vegetable gardens and farming in residual soil on the Site; (4) require the implementation of and compliance with an NYSDEC-approved SMP; and (5) require periodic certification of all ECs/ICs in accordance with 6 NYCRR 375-1.8(h)(3).

- The Track 4 (Alternative 2) remedial action requires the preparation of a Site Management Plan (SMP) for the Site.

Review of the Threshold Criteria and Balancing Criterial for Alternative I and Alternative II Options:

- Overall Protection of Public Health and the Environment: Both Alternative I and Alternative II would achieve the RAOs for soil, groundwater, and soil vapor.
    - The Alternative I remedy provides for the removal of soil exceeding the UU SCO to 9 fbg for the removal of contaminated fill material for the Site footprint and will require deeper excavation of the northwest portion of the Site to 40 fbg to remove the coal tar DNAPL. The excavation of the Site to these depths will require the import of backfill for excavated areas to return the original Site grade required for foundation construction. Construction of new building foundations with waterproofing/vapor barrier will also reduce the potential of exposure to potential residual soil vapor on and off-site. This remedy will eliminate the ingestion, inhalation and dermal contact pathways for the contaminated media identified at the Site.
    - The Alternative II remedy will include excavation and removal of a 2-foot soil cut and hot spot excavation to approximately 8-21 fbg for Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene and Indeno(1,2,3-cd)pyrene, selenium and arsenic detected above the Part 375 PGSCO's to meet Track 4 Restricted Residential (RR) SCOs; performance of a NAPL mobility and groundwater assessment, performance of treatability study and pilot testing work plans to evaluate the feasibility of two remedial technologies, ISGS and ISS for final remedy selection. The work plans will include treatability (i.e., bench-scale) testing to determine dosage for ISGS and mix design for ISS; and pilot testing (field verification testing) to confirm the effectiveness of the remedies. If ISGS is determined to be a feasible remedial technology, a RDWP will be prepared to include engineering design

specifications for ISGS implementation to reduce contaminant mass and stabilize NAPL in the northern portion of the Site. The treatment areas will include saturated NAPL above an elevation of NAVD88 -18' (approximately 28' bgs). The mobility results will determine areas exhibiting mobile NAPL and used to facilitate design parameters and establish a baseline for comparison with future performance monitoring. ISGS will be implemented by injecting a permanganate-based solution through direct push technology using pressurized delivery systems. The RDWP will be submitted for NYSDEC approval with the specifications of ISGS based on the results of the treatability and pilot testing results. If ISGS is determined not to be a feasible remedial technology, ISS will be selected as a contingency remedy. ISS would be performed in areas accessible for soil mixing. The proximity of the NAPL treatment area to the bulkhead of the Gowanus Canal poses constructability issues due to underground structures supporting the bulkhead (e.g., tie-backs, etc.). If ISS is determined to be the required remedy, a recovery well network would be installed along the bulkhead as a secondary contingency with the ISS, if the NAPL mobility assessment identifies free phase mobile and recoverable NAPL. The engineering design of the final remedy selected will be provided in a RDWP and will include a Quality Assurance Plan for either ISGS or ISS, as well as recovery well specifications (size, locations, pump specs, etc) if the contingency of ISS is selected. Outside of the building footprints, a soil cover system will be installed to prevent exposure to contaminated soil left in place and groundwater beneath the Site. Shallow groundwater impacts beneath the Site are at low concentrations above the AWQS which are related to urban fill material at the Site. Regional groundwater in the Gowanus area is impaired due to urban fill and coal tar DNAPL migration. Groundwater in Kings County is not a source of drinking water and its use on the Site will be restricted. In addition to waterproof barriers installation beneath the foundation slab and exterior foundation walls, a SSDS will be installed to address residual soil vapor. Engineering Controls (ECs)/Institutional Controls (ICs) at the Site will address residual contamination and will be implemented and maintained in accordance with a Site-specific Site Management Plan (SMP).

- Compliance with standards, criteria, and guidelines (SCGs): Both Alternative I and Alternative II would satisfy applicable SCGs.

- Per the details in previous section, the Track 1 remedy and the Track 4 remedy will comply with SCGs.

- Short-term effectiveness and Impacts: Both Alternative I and Alternative II have short term impacts and potential for exposure to the public and community.
  - The Alternative I remedy would have the most significant short-term impacts due to the larger volume of soil being excavated from the Site. The SOE for deeper excavation and dewatering required has a greater potential to affect properties adjoining the Site (e.g., settlement), and truck traffic will increase for a longer duration increasing the potential for exposure to dust and vapor by pedestrians and community. Some of the short-term impacts can be minimized through implementation of control plans including a CHASP, CAMP and SMMP during on-Site soil disturbance activities and implementation of truck traffic controls.
  - The Alternative II remedy will have a shorter duration with respect to excavation, soil handling and trucking off-Site. These short-term impacts would be minimized through implementation of the CHASP, CAMP and SMMP during on-Site soil disturbance activities and implementation of truck traffic controls.

- Long-term effectiveness and permanence: Both Alternative I and Alternative II meet this criteria.
  - The Track 1 remedy will remove contaminated soil to meet UU SCOs and the large-scale dewatering system will treat impacted groundwater removed from the Site. As previously indicated, groundwater in Kings County is not a source of drinking water and there is impaired groundwater present in the Gowanus area due to urban fill and coal tar DNAPL migration. Potential receptor exposure from impacted groundwater and soil vapor migration from off-site sources will be mitigated through the construction of the building foundation concrete slab with installation of waterproofing membrane under the slab and on foundation sidewalls. The Site will have unrestricted use which achieves the long-term effectiveness of this remedy.
  - The Track 4 remedy will remove source material, stabilize/solidify NAPL associated with MGP/Coal Tar present above elevation NAVD88 -18 (approximately 28’ bgs) and include a soil cover system will prevent exposure to contaminated soil left in place and groundwater beneath the Site. The contaminant concentrations in groundwater beneath

the Site are above the AWQS and the use of groundwater beneath the Site will be restricted through an IC. Additionally, groundwater in Kings County is not a drinking water source. EC/ICs will address residual contamination and will be maintained in accordance with the Site-specific SMP. Soil vapor will be mitigated through the waterproofing membrane under the slab and on foundation sidewalls as well as the installation of SSDSs beneath the building foundations. The long-term effectiveness of this remedy will eliminate the potential risk of contaminant exposure to receptors.

- Reduction of toxicity, mobility, or volume of contaminated material:
    - The Track 1 remedy will reduce the toxicity, mobility, and volume of contamination by the shallow and deep excavation and off-Site disposal of soil with dewatering to meet the UU SCOs.
    - The Track 4 remedy will reduce the toxicity, mobility and volume of contamination through the 2-foot cut excavation and excavation with dewatering of shallow hot spots where contaminants of concern are above the PGSCO's; stabilize/solidify and/or permanently remove NAPL associated with MGP/Coal Tar present above elevation NAVD88 -18 (approximately 28' bgs); EC/ICs to address residual contamination that will be maintained in accordance with the Site-specific SMP.
- Implementability
    - Both the Track 1 and Track 4 remedies can be implemented using standard construction methodology and equipment including but not limited to SOE, dewatering and excavators. Experienced contractors that complete this type of work on a regular basis are available in the NYC area but may be limited for the deep Track 1 soil excavation. The Track 1 remedy will be a more complicated excavation with the need to reduce impacts to adjoining buildings and adjacent infrastructure. The Track 4 remedy for source material removal also requires an SOE system but on a far smaller scale. Therefore, the implementability of the Track 4 remedy would be much less challenging than the Track 1 remedy.
- Cost Effectiveness
    - Alternative I for deep Site excavation to meet UU SCOs has the highest capital cost to related to the SOE, dewatering required for deep excavation, disposal of an estimated

254,583 yd^3 of soil and import of clean fill to bring the Site up to the development elevation required.

- Alternative II for Site excavation to meet Track 4 RR SCOs, SOE, excavation, minimal dewatering, disposal of estimated 16,617 yd^3 of soil of which approximately 7,500 yd^3 is from the top 2 feet cut, stabilizing/solidifying and/or permanently remove NAPL associated with MGP/Coal Tar present above elevation NAVD88 -18 (approximately 28' bgs) and implementation of the IC/ECs and the SMP requirements has a significantly lower capital cost.

- Community Acceptance
  - Even though exposure pathways will be eliminated by the Track 1 remedy, the community may be less tolerant to Alternative I due to an increased remedial construction timeline, increased truck traffic and increased timeframe for construction noise.
  - Although The Track 4 remedy would meet the RAOs and require IC/ECs to mitigate exposure pathways, the community will likely be more receptive to a shorter construction timeline, less truck traffic and a reduced construction timeframe for noise.
  - Ultimately, the community will have the potential to provide comments during the 45-day public comment period.

- Land Use
  - Both Alternatives and Site redevelopment are compatible with the zoning, neighborhood character, availability of utility infrastructure, the Gowanus Neighborhood Plan and NYC Coast Zone Boundary. Additionally, the Site redevelopment will provide housing inclusive of affordable housing. The proposed use complies with as-of-right redevelopment and is consistent with other development in the community.

3.2 SELECTION OF THE PREFERRED REMEDY

Both remedial Alternative I and Alternative II meet the RAOs and remedy selection evaluation criteria. Alternative I is the most comprehensive and most difficult cleanup track to achieve and would include all actions required to facilitate excavation of soils from the Site in excess of their respective

UUSCOs. The Alternative I/Track 1 remedy requires the design and construction of a significantly deeper SOE for excavation to 40 fbg that would require a complex excavation and dewatering system. Even though a Track 1 remedy is technically possible, the effort for implementation is cost prohibitive where there is not a significant benefit in terms of protection of human health and the environment and a deep excavation has a greater potential to have impacts on neighbors.

Alternative II provides for excavation and removal of a 2-foot soil cut and hot spot excavation to approximately 8-21 fbg for Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene and Indeno(1,2,3-cd)pyrene, selenium and arsenic detected above the Part 375 PGSCO's to meet Track 4 Restricted Residential (RR) SCOs; stabilization/solidification of NAPL associated with MGP/Coal Tar present above elevation NAVD88 -18 (approximately 28' bgs) and a soil cover system will prevent exposure to contaminated soil left in place and groundwater beneath the Site. Shallow groundwater impacts beneath the Site are at low concentrations above the AWQS which are related to urban fill material at the Site. Regional groundwater in the Gowanus area is impaired due to urban fill and coal tar DNAPL migration. Groundwater in Kings County is not a source of drinking water and its use on the Site will be restricted. EC/ICs will address residual contamination and will be maintained in accordance with the Site-specific SMP. Potential exposure pathways are mitigated.

In contrast to the Alternative I remedy, the Alternative II remedy can be reasonably implemented in a cost-effective manner while providing the same overall protection to human health and the environment. Therefore, Alternative II, Track 4 is the recommended remedial alternative for this site.

As required by Article 27, Title 14 of the Environmental Conservation Law 27-1415, the Alternative II, Track 4 remedy is evaluated in relation to the following land use factors as applied to the preferred alternative:

3.2.1 Zoning;

Based on review of historical New York City Zoning Maps covering the Site area from December 1961 through October 21, 2021, the Site had a M2-1 Medium Manufacturing zoning district until November 2023 when the Gowanus Neighborhood rezoning was completed by the City Planning Department (CEQR # 19DCP157K). In November 2021, the Site was rezoned M1-4/R7-2 with G; the M1-4 is a Light Manufacturing District where manufacturing, commercial and community facilities are permitted, and the R7-2 is Medium Density Residential with a Special Purpose District (G) designation. The intent of the special purpose district is to preserve and enhance areas with unique characteristics.

The proposed redevelopment will include the construction of a 17-story residential building and a 22-story residential building, both with first floor commercial residential lobby, mechanical and bicycle storage, which is in keeping with the current M1-4/R7-2 zoning regulations of for the Site.

3.2.2 Applicable comprehensive community master plans or land use plans;

The Site is located within the NYC Coastal Zone Boundary and the Gowanus Neighborhood Plan. The Coastal Zone Boundary defines the geographic area included in the Waterfront Revitalization Program (WRP) which establishes NYC policies for planning, preservation, and development in these areas.

The Gowanus Neighborhood Plan was adopted by the City Council in November 2021 with the objectives to expand housing (with emphasis on affordable housing) in the mixed-use area, provide economic development opportunities, provide open space access including waterfront spaces and support the clean-up of both the Gowanus Canal and surrounding area.

3.2.3 Surrounding property uses;

The site is situated within the Gowanus neighborhood which is an urban area generally characterized by residential, commercial, industrial and institutional buildings. The Site is bound to the north across Union Street by industrial/manufacturing buildings as well as the Union Street Bridge operator building; to the east across Nevins Street by commercial/industrial buildings, and NYSDEC BCP Sites (473 President Street Site C224220, 514 Union Street Site C224318 and President Street Portfolio Site C224309), Presidents Street, an industrial manufacturing building, a multi-family residential property and a vacant lot; to the south across Carroll Street by a NYCOER Site at 420Carroll Street; and the Gowanus Canal adjoins the site to the west.

3.2.4 Citizen participation;

The approved Citizen Participation Plan (CPP) has been prepared and is provided as **Appendix** F to this RAWP. Thus far in the BCP process, there have been no written or oral comments submitted by the public relating to the proposed redevelopment.

3.2.5 Environmental justice concerns;

The Site is not within a Potential Environmental Justice Area (PEJA) Community area as designated by New York State based on an analysis of the 2020 US Census Bureau data. The NYSDEC Commissioner Policy CP-29 entitled Environmental Justice and Permitting, dated March 19, 2003, defines Environmental justice as "the fair treatment and meaningful involvement of all people regardless of race, color, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies."

The Site is located in NYC Planning Brooklyn 6 Community District where there is a white (non-Hispanic) population of 64.1%, black (non-Hispanic) population of 7.2%, Asian (non-Hispanic) population of 7%, other (non-Hispanic) population of 5.4% and a Hispanic population of any race of 16.3%. Based on these demographics, a disproportionate share of the negative environmental consequences was not identified.

The Site redevelopment plan/remedial Alternative 2 is not anticipated to cause or increase a disproportionate burden on the community in which the Site is located, as the construction of two new residential buildings with first floor commercial space and the Shoreline Public Walkway is in accordance with the guidelines of the M1-4 and the R7-2 zoning district in which it resides.

3.2.6 Land use designations;

The Site has an E-designation (E-601) with Environmental Restrictions for Hazardous Materials, Noise and Air Quality under City Environmental Quality Review (CEQR) #19DCP157K. The proposed redevelopment/Remedial Alternative 2, and Environmental activities thus far have and will adhere to the Environmental Restrictions set forth in CEQR 19DCP157K. The proposed remedy conforms to the proposed development and is consistent with the land use for this area.

3.2.7 Population growth patterns;

Based on the New York City Census data, the population of Brooklyn increased from 2,504,700 in 2010 to 2,736,074 in 2020; an increase of 231,374 people or 9.2%. The NYC Brooklyn Community District

6 Census data, which encompasses the Site area, indicates that the population of this district increased from 104,709 in 2010 to 113,933 in 2020; an increase of 9,224 people or 8.8%. The 2020 Census data also indicates that 92% of the housing units are occupied. There is an increasing population trend for the Site area with an 8% housing unit inventory.

The increase in population patterns and limited available housing in the Site area supports the proposed future use of the property as with two new residential buildings (17-story and 22-Story apartment buildings) with public open space to address the needs of the local population and future growth.

3.2.8 Accessibility to existing infrastructure;

The proposed Site redevelopment has access to existing infrastructure. Sanitary and stormwater sewer and water supply are readily available through the NYC DEP. Electrical and natural gas services are available through Consolidated Edison.

3.2.9 Proximity to cultural resources;

The Site is located within the boundary of the Gowanus Canal Historic District. The Site has not been designated as a historic building by the NYC Landmarks Preservation Commission (LPC) and no properties proximate to the Site have been designated as historic buildings.

No important cultural resources, including federal or state historic or heritage sites or Native American religious sites have been identified proximal to the proposed Site redevelopment. Therefore, the proposed remedy will not impact cultural resources.

3.2.10 Proximity to natural resources;

No unique geologic features, state or federal regulated wetlands, significant natural communities, critical habitats of endangered or threatened species, rare plants or animals, wildlife refuges have been identified on or adjacent to the Site; however, a waterway has been identified on or adjoining the Site. The Gowanus Canal is located approximately to the immediate west of the Site and was identified as an estuarine and marine deep water on the National Wetlands Inventory map. The Gowanus Canal is a manmade waterway that was transformed from a creek and marshland (ecologically impaired). The Gowanus Canal is identified as a federal Superfund site which has been listed on the National Priorities

List [NPL] Site since March 4, 2010. The proposed Site redevelopment with remedial Alternative 2 would not result in a significant adverse impact to natural resources.

3.2.11 Off-Site groundwater impacts;

Based on the results of the RI and supplemental RI, significant migration of coal tar DNAPL onto the Site has occurred as identified in saturated deep soils beneath the Site and PFOA was only detected in groundwater samples which indicates an off-Site source(s).

There are no known groundwater well heads, groundwater recharge areas, or other areas identified by the state comprehensive groundwater remediation and protection program on or proximal to the Site that might be vulnerable to contamination present in the groundwater.

3.2.12 Proximity to floodplains;

The NYC Searchable Property Environmental E-Database (SPEED) 2.0 Database identified the Site within both the Federal Emergency Management Agency (FEMA) 100-year floodplain (areas at 1% annual risk of flood for 2020-2050) and the 500-year floodplain (areas at 0.5% annual risk of flood for 2020-2050). Remedial Alternative 2 is not likely to be significantly affected by the Site inclusion within the identified flood plains.

3.2.13 Geography and geology of the Site; and

The Site geology is described in Section 2.3 of this report.

3.2.14 Current Institutional Controls.

The Site is E-designated (E-601) with Environmental Restrictions for Hazardous Materials, Noise and Air Quality under City Environmental Quality Review (CEQR) #19DCP157K. The E-Designation is considered an institutional control implemented by the City of New York.

3.3 SUMMARY OF SELECTED REMEDIAL ACTIONS

The remedy proposed for the Site will meet Track 4 requirements and will include the following:

1. Asphalt pavement removal and demolition of the remnant foundation slab and foundation elements associated with the former building. Existing wells would be abandoned in accordance with the NYSDEC CP-43.

2. Implemental of the RAWP under the requirements of the Construction Health and Safety Plan (CHASP), Community Air Monitoring Plan (CAMP), Soil/Materials Management Plan (SMMP) and Soil/Sediment Erosion plan (SSEP) for the protection of on-site workers and the nearby community during remedial and construction activities at the Site.

3. Waste characterization investigation data for the fill/soil subject to excavation has been completed for disposal at a facility permitted to handle and dispose of the material. The facility approvals will be submitted to the NYSDEC for review and approval. Off-Site disposal of all material removed from the Site in accordance with all Federal, State and local rules and regulations for handling, transport, and disposal.

4. The Track 4 (Alternative 2) excavation is a 2-foot cut to remove fill material exceeding the Part 375 Restricted Residential (RR) SCOs for the Site footprint area which encompasses approximately 7,550 cubic yards (yd^3) of material.

5. Excavation of "hot spot" areas where a contaminant exceeds the Part 375 PGSCO's in shallow fill material/soil and the contaminant is detected in groundwater beneath the Site, is estimated at 1,768 yd^3 of material with excavation depths ranging from 8-21 fbg. A design for the support of excavation (SOE), including sheeting or shoring, where necessary, will be prepared and certified by a professional engineer to achieve the desired excavation depths of the hotpots as required and will be approved by the NYC Department of Buildings. It is expected that hot spot excavations over 10 fbg will require shoring.

6. Treatability study and pilot testing work plans will be prepared to evaluate the feasibility of two remedial technologies, In-Situ Geochemical Stabilization (ISGS) and In-Situ Stabilization/Solidification (ISS) for final remedy selection to address on-site NAPL, where NAPL is defined as NAPL saturated soils, NAPL lenses, NAPL coated soil, NAPL blebs or globs or sheen. The work plans will include treatability (i.e., bench-scale) testing to determine dosage for ISGS and mix design for ISS; and pilot testing (field verification testing) to confirm the effectiveness of the remedies. If ISGS is determined to be a feasible remedial technology, a Remedial Design Work Plan (RDWP) will be prepared to include engineering design

specifications for ISGS implementation to reduce contaminant mass and stabilize NAPL in the northwestern portion of the Site in proximity to the bulkhead of the Gowanus Canal which poses constructability issues due to underground structures supporting the bulkhead (e.g., tiebacks, etc.). ISGS will be implemented by injecting a permanganate-based solution through direct push technology using pressurized delivery systems. The installation will include the defined saturated NAPL area above an elevation of NAVD88 -19' (approximately 29' bgs). The RDWP will be submitted for NYSDEC approval with the specifications of ISGS based on the results of the treatability and pilot testing results. ISS will be performed in the defined saturated NAPL area above an elevation of NAVD88 -19' (approximately 29' bgs) which are accessible for soil auger mixing where underground obstructions related to the bulkhead are not present. ISS will be performed beneath areas where the building foundation will be installed. After the ISS curing has been completed and passed the QA/QC process, full displacement piles (FDP) will be installed in areas within the ISS treatment/monolith area for foundation purposes to the required depth of approximately 72'-80'. FDP piles will be installed throughout the remaining portion of the Site for building foundation purposes to the required depth of approximately 72'-80'. If required due to constructability issues with the FDP piles coring through the ISS monolith, continuous flight auger (CFA) piles would be installed through the ISS treatment/monolith area within the footprint of the building foundation after the ISS curing has been completed and passed the QA/QC process and then below the monolith, the methodology will be changed back to the FDP pile to complete the remaining pile installation. If ISGS and/or ISS does not extend to the terminal depth of the materials containing NAPL, and free phase mobile and recoverable NAPL remains post treatment, DNAPL recovery wells will be installed along the bulkhead. The NAPL mobility results will determine areas exhibiting mobile NAPL and will facilitate design parameters to establish a baseline for comparison with future performance monitoring. The engineering design of the final remedy selected will be provided in a RDWP for ISGS and ISS, as well as recovery well specifications (size, locations, pump specs, etc). Quality Control/Quality Assurance (QA/QC) Plans for both ISS and ISGS are included in **Appendix K and L.**

7. A dewatering system will be required to achieve some of the excavation depths (e.g., hot spot removal) as the water table interface beneath the Site ranges from 5 to 7 fbg. Dewatering design for extraction, effluent treatment and discharge permitting will be

performed, and a Permit Equivalence (NYSDEC Long Island Well Permit and NYCDEP discharge permit) will be obtained.

8. Continuous field screening of excavated soil/fill will be completed to identify contamination by visual means, odor, and monitoring with a PID and to ensure transport for disposal at the pre-approved facilities.
9. Should an unknown UST(s) be encountered during Site redevelopment activities the UST(s) will be removed which includes removal of contents, cleaning and disposal of tank, and disposal of associated contaminated soil, as applicable. This will be completed in accordance with NYSDEC DER-10 and the NYSDEC PBS regulations.
10. Collection and laboratory analysis of documentation soil samples from the excavation base and sidewalls, as accessible, to evaluate the performance of the remedy with respect to attainment of RRSCO's and PGSCO's. Where installation of sheeting/shoring is required for deep excavations (>10 fbg) and dewatering to achieve remedial excavation depths for the hotpots, sidewall samples will not be accessible for collection.
11. After the completion of soil removal and any other invasive remedial activities and prior to backfilling, a land survey will be performed by a New York State licensed surveyor. The survey will define the top elevation of residual contaminated soils.
12. Import of materials to be used for backfilling and cover will follow: (1) chemical limits and other specifications included in DER-10; and (2) all Federal, State and local rules and regulations for handling and transport of material.
13. A waterproofing membrane will be installed as a construction element on the exterior foundation walls and below the foundation slab. Bithene® 3000, or equivalent, is the waterproofing membrane proposed for exterior foundation walls and Preprufe® 300 Plus Membrane or equivalent, a water proofing membrane that bonds to poured concrete, is proposed for use below the slab.
14. An active sub-slab depressurization system (SSDS) will be installed beneath the slab of each building to provide mitigation of soil vapor contaminants. Post construction performance monitoring will include the collection of soil vapor samples and differential pressure readings using a digital manometer from vapor points installed through the sub-slab of the proposed buildings, as practicable, in conjunction with the collection of indoor/ambient outdoor air

samples in accordance with the NYSDOH "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" (October 2006) and the May 2017: Updates to Soil Vapor / Indoor Air Decision Matrices.

15. Following removal of the 2' remedial excavation, where exposed fill/soil shall exist outside of the footprint of the two new buildings, installation of a demarcation layer followed by a two (2) foot clean soil cover that meets the requirements for import to the Site will be installed. In addition, areas that are subject to ISS outside of building footprints will require an additional 2' excavation (total of 4' cover system) followed by the installation of a four (4) foot clean soil cover that meets the requirements for import to the Site. The import of materials to the Site for construction and cover purposes must be in accordance with Chapter 5, Subdivision 5.4(e) and Appendix 5 of NYSDEC DER-10.
16. As part of the Track 4 Restricted-Residential Use remedy, an environmental easement referencing the Site-specific Institutional Controls (ICs) will be recorded against title and be binding upon the Volunteer and all its successors and assigns. The environmental easement will: (1) restrict the Site to restricted-residential, commercial, and industrial uses, as subject to local zoning laws; (2) prohibit the use of groundwater as a source of potable or process water without necessary water quality treatment as determined by the NYSDOH; (3) prohibit vegetable gardens and farming in residual soil on the Site; (4) require the implementation of and compliance with an NYSDEC-approved SMP; and (5) require periodic certification of all ECs/ICs in accordance with 6 NYCRR 375-1.8(h)(3).
17. The Track 4 (Alternative 2) remedial action requires the preparation of a Site Management Plan (SMP) for the long-term management of residual contamination at the Site as required by the Environmental Easement, including plans for: (1) Institutional and Engineering Controls, (2) monitoring, (3) operation and maintenance and (4) reporting.
18. All responsibilities associated with the Remedial Action, including permitting requirements and pretreatment requirements, will be addressed in accordance with all applicable Federal, State and local rules and regulations.

Remedial activities will be performed at the Site in accordance with this NYSDEC-approved RAWP and the Department-issued Decision Document. All deviations from the RAWP and/or Decision Document will be promptly reported to NYSDEC for approval and fully explained in the FER.

4.0 REMEDIAL ACTION PROGRAM

4.1 GOVERNING DOCUMENTS

The documents governing the implementation of this remedial action are provided below.

4.1.1 Standards, Criteria and Guidance

The following standards, criteria, and guidance are typically applicable to Remedial Action projects in New York State, and will be consulted and adhered to as applicable:

4.1.1.1 Standards and criteria typically applicable to UST closures:

- 6 NYCRR Part 613 - Petroleum Bulk Storage
- 6 NYCRR Part 371 - Identification and Listing of Hazardous Wastes
- 6 NYCRR Subpart 374-2 - Standards for the Management of Used Oil
- 6 NYCRR Parts 700-706 - Water Quality Standards
- 40 CFR Part 280 - Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks

4.1.1.2 Guidance typically applicable to UST closures:

- STARS #1 - Petroleum-Contaminated Soil Guidance Policy (1992) (Sections III and IV have been replaced CP-51)
- STARS #2 - Biocell and Biopile Designs for Small-Scale Petroleum-Contaminated Soil Projects (1996)
- CP-51- Soil Cleanup Guidance (2010)
- Spill Response Guidance Manual (1995)
- Permanent Closure of Petroleum Storage Tanks (2003)
- TAGM 3028 - "Contained In" Criteria for Environmental Media: Soil Action Levels (August 1997)
- TOGS 1.1.1 - Ambient Water Quality Standards & Guidance Values and Groundwater Effluent Limitations (1998, Addenda 2000 and 2004)

- DAR-1 (formerly Air Guide 1) (1997) - Guidelines for the Control of Toxic Ambient Air Contaminants
- NYSDOH Environmental Health Manual CSFP-530 - "Individual Water Supplies - Activated Carbon Treatment Systems"

4.1.1.3 Standards and criteria typically applicable to Remedial Actions:

- 29 CFR Part 1910.120 - Hazardous Waste Operations and Emergency Response
- 40 CFR Part 144 - Underground Injection Control Program
- 10 NYCRR Part 67 – Lead Poisoning Prevention and Control
- 12 NYCRR Part 56 - Industrial Code Rule 56 (Asbestos)
- 6 NYCRR Part 175 - Special Licenses and Permits--Definitions and Uniform Procedures
- 6 NYCRR Part 361 - Siting of Industrial Hazardous Waste Facilities
- 6 NYCRR Part 371 - Identification and Listing of Hazardous Wastes
- 6 NYCRR Part 372 - Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities
- 6 NYCRR Subpart 373-4 - Facility Standards for the Collection of Household Hazardous Waste and Hazardous Waste from Conditionally Exempt Small Quantity Generators
- 6 NYCRR Subpart 374-1 - Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
- 6 NYCRR Subpart 374-3 - Standards for Universal Waste
- 6 NYCRR Part 375 - Environmental Remediation Programs
- 6 NYCRR Part 376 - Land Disposal Restrictions
- 19 NYCRR Part 600-603 - Waterfront Revitalization of Coastal Areas and Inland Waterways
- 6 NYCRR Part 608 - Use and Protection of Waters
- 6 NYCRR Part 661 - Tidal Wetlands - Land Use Regulations
- 6 NYCRR Part 663 - Freshwater Wetlands - Permit Requirements
- 6 NYCRR Parts 700-706 – Classifications and Standards of Quality and Purity
- 6 NYCRR Part 750 - State Pollutant Discharge Elimination System (SPDES) Permits

- Screening and Assessment of Contaminated Sediment (Division of Fish, Wildlife and Marine Resources, June 2014)

4.1.1.4 Guidance typically applicable to Remedial Actions:

- CP – 51 – Soil Cleanup Guidance (2010)
- DER-2 - Making Changes to Selected Remedies (Revised April, 2008)
- STARS #1 - Petroleum-Contaminated Soil Guidance Policy (1992) (Sections III and IV have been replaced CP-51)
- STARS #2 - Biocell and Biopile Designs for Small-Scale Petroleum-Contaminated Soil Projects
- TAGM 3028 - "Contained In" Criteria for Environmental Media: Soil Action Levels (August 1997)
- DER-23 – Citizen Participation Handbook for Remedial Programs (March, 2010)
- TOGS 1.1.1 - Ambient Water Quality Standards & Guidance Values and Groundwater Effluent Limitations
- TOGS 1.3.8 - New Discharges to Publicly Owned Treatment Works
- TOGS 2.1.2 - Underground Injection/Recirculation (UIR) at Groundwater Remediation Sites
- DAR-1 (formerly Air Guide 1) - Guidelines for the Control of Toxic Ambient Air Contaminants (1997)
- NYSDOS State Coastal Management Program
- U.S. EPA OSWER Directive 9200.4-17 - Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites (December 1997)
- NYSDOH Environmental Health Manual CSFP-530 - “Individual Water Supplies - Activated Carbon Treatment Systems”
- CP-43 – Commissioner Policy on Groundwater Monitoring Well Decommissioning (December 2009)

4.1.2 Site Specific Construction Health & Safety Plan (HASP)

A CHASP has been prepared for the Site and is included in Appendix G. The CHASP addresses the COCs identified at the Site that need to be considered during the remedial and construction work

performed. The CHASP describes potential physical and health hazards for when working at the Site along with procedures work practices and PPE to minimize those hazards and the process that needs to be followed should an exposure or accident occur. Contractors working at the Site will adhere to this plan or will adhere to their plan that meets the requirements of the CHASP.

All remedial work performed under this plan will be in full compliance with governmental requirements, including Site and worker safety requirements mandated by Federal OSHA.

The Volunteer and associated parties preparing the remedial documents submitted to the State and those performing the construction work, are completely responsible for the preparation of an appropriate Health and Safety Plan and for the appropriate performance of work according to that plan and applicable laws.

The CHASP and requirements defined in this Remedial Action Work Plan pertain to all remedial and invasive work performed at the Site until the issuance of a Certificate of Completion.

The Site Safety Coordinator will be Hal Benjamin. A resume will be provided to NYSDEC prior to the start of remedial construction.

Confined space entry will comply with all OSHA requirements to address the potential risk posed by combustible and toxic gasses.

4.1.3 Quality Assurance Project Plan (QAPP)

A Quality Assurance Project Plan (QAPP) has been prepared for the Site that describes the QA/QC required to ensure the Site remedy meets remedial goals and objectives. The QAPP is included in **Appendix H**. The QAPP dictates implementation of the remedial tasks delineated in this Work Plan. Refer to QAPP Table 1 and Table 2 for a summary of the endpoint sample analytical program summary and the sample parameters, holding times and sample container requirements, respectively.

Analytical Methods

The endpoint samples collected during the BCP Remedial Action will be analyzed using EPA-approved analytical methods that follow the most recent edition of the EPA's "Test Methods for Evaluating Solid Waste" (SW-846), Methods for Chemical Analysis of Water and Wastes" (EPA 600/4-79-020), and

Standard Methods for Examination of Water and Wastewater" (prepared and published jointly by the American Public Health Association, American Water works Association and Water Pollution Control Federation). Additionally, modified methods approved by the NYSDEC will be used for analysis of emerging contaminants.

Laboratory

The subcontracted laboratory will be a NYSDOH ELAP-certified analytical laboratory that can perform Contract Laboratory Program (CLP) analysis on the media to be sampled during this investigation. The laboratory will perform the sample analysis in accordance with the most recent NYSDEC Analytical Services Protocol (ASP).

Data Submittal

Analytical data will be submitted in complete ASP category B data packs. Procedures for chain of custody, laboratory instrumentation calibration, laboratory analyses, reporting of data, internal quality control, and corrective actions shall be followed as per SW-846 and as per the laboratory's Quality Assurance Plan. Where appropriate, trip blanks, field blanks, field duplicates, and matrix spike, matrix spike duplicate shall be performed at a rate of approximately one per twenty samples and will be used to assess the quality of the data. The laboratory's in-house QA/QC limits will be utilized whenever they are more stringent than those suggested by the EPA methods.

4.1.4 Construction Quality Assurance Plan (CQAP)

The Construction Quality Assurance Plan (CQAP) describes how the successful performance of the Remedial Action tasks through building construction will be completed through designed and documented QA/QC methodologies applied in the field and in the lab. The CQAP provides detailed descriptions of the observation and testing activities that will be used to monitor construction quality and confirm that remedy construction is in conformance with the remediation objectives and specifications. The CQAP should include but is not limited to the following:

- The environmental field staff assigned to the Site to oversee and monitor remedial activities will be supervised directly by the Remedial Engineer.
- The environmental field staff assigned to the Site to oversee remedial activities will regularly coordinate with the construction team and the Remedial Engineer to evaluate the daily and upcoming work schedule, completion of associated air monitoring per the CAMP, field screening

of soils during excavation and collection of documentation samples for laboratory analysis. Since the Site remedy will be completed as part of building construction, the Site contractor(s) and construction management team are responsible for the oversight of construction quality/adherence to specification.

- The environmental field staff will collect field data and field notes/sketches logged in a field book and take photographs documenting remedial work completed at the Site daily. The Remedial Engineer will review the information and daily reports including CAMP data, exceedances of action levels and corrective actions, other applicable field data and a photolog will be prepared and submitted to the NYSDEC and NYSDOH.

- The following personnel are anticipated to be involved with the implementation of the remedial construction action:

  Remedial Engineer: Xin Yuan, P.E.

  Project Manager: Diana Posten

  Qualified Environmental Professional: Kevin Kleaka, P.G.

  Field Team Leader: Alex Keenan

  Health and Safety Officer/Coordinator: Hal Benjamin

  Quality Assurance Officer: Juliana de la Fuente, P.G.

- Resumes of the key personnel are provided in **Appendix I**.

4.1.5 Soil/Materials Management Plan (SMMP)

A Soil/Materials Management Plan (SMMP) has been prepared for the Site, which includes detailed plans for the disturbance, handling and management of soil/materials in conjunction with excavation, stockpiling, soil load out, transportation and disposal. The SMMP includes procedures and controls that will be applied to these activities to ensure effective, nuisance-free performance in compliance with applicable federal, state and local laws and regulations. The SMMP is further described in Section 5.4.

4.1.6 Storm-Water Pollution Prevention Plan (SWPPP)

A Storm-Water Pollution Prevention Plan (SWPPP) is required at the Site since the disturbance area for the redevelopment and remedial action at the Site is greater than one acre. Erosion/sediment control management practices will be implemented as necessary in accordance with Section 5.4.10.

The erosion and sediment controls will be in conformance with requirements presented in the New York State Guidelines for Urban Erosion and Sediment Control.

4.1.7 Community Air Monitoring Plan (CAMP)

A Community Air Monitoring Plan (CAMP) was prepared for the Site and is provided in **Appendix J**. A CAMP is further detailed in Section 5.4.12

4.1.8 Contractors Site Operations Plan (SOP);

The Remedial Engineer has reviewed all plans and submittals for this remedial project (including those listed above and contractor and sub-contractor document submittals) and confirms that they are in compliance with this RAWP. The Remedial Engineer is responsible to ensure that all later document submittals for this remedial project, including contractor and sub-contractor document submittals, are in compliance with this RAWP. All remedial documents will be submitted to NYSDEC and NYSDOH in a timely manner and prior to the start of work.

Since a formal Remedial Design will be performed, it will incorporate all of the elements identified for this RAWP into a set of biddable quality plans and specifications, as applicable. The final design submittal of these plans and specifications will be signed and stamped by a NYS licensed professional engineer. A detailed remedial construction design document will be submitted to the NYSDEC upon completion of the coal tar DNAPL mobility assessment for review and approval.

4.1.9 Citizen Participation Plan

The NYSDEC and Gowanus 300 Nevins Street LLC have established a Citizen Participation Plan because the opportunity for citizen participation is an important component of the BCP. This Citizen Participation Plan describes how information about the project will be disseminated to the Community during the remedial process. As part of its obligations under the NYSDEC BCP, Gowanus 300 Nevins Street LLC will maintain a repository for project documents and provide public notice at specified times throughout the remedial program.

This Plan also considers potential environmental justice concerns in the community that surrounds the project Site. Under this Citizen Participation Plan, project documents and work plans are made available to the public in a timely manner. Public comment on work plans is strongly encouraged during

public comment periods. Work plans are not approved by the NYSDEC until public comment periods have expired and all comments are formally reviewed.

An explanation of cleanup plans in the form of a public meeting or informational session is available upon request to the NYSDECs project manager assigned to this Site, Mr. Aaron Fisher, who can be contacted about these issues or any others questions, comments or concerns that arise during the remedial process at (518) 598-7799.

A certification of mailing will be sent by the Volunteer to the NYSDEC project manager following the distribution of all Fact Sheets and notices that includes: (1) certification that the Fact Sheets were mailed, (2) the date they were mailed; (3) a copy of the Fact Sheet, (4) a list of recipients (contact list); and (5) a statement that the repository was inspected on (specific date) and that it contained all of applicable project documents.

No changes will be made to approved Fact Sheets authorized for release by NYSDEC without written consent of the NYSDEC. No other information, such as brochures and flyers, will be included with the Fact Sheet mailing.

The approved Citizen Participation Plan for this project is attached in Appendix F.

Document repositories have been established at the following locations and contain all applicable project documents:

Brooklyn Public Library-Pacific Branch
25 Fourth Ave at Pacific Street Brooklyn, NY 11217
Attn: Candace Vasquez
Phone: (718) 638-1531

Repository Hours:

Monday	10AM–6PM
Tuesday	1PM–8PM
Wednesday	10AM–6PM
Thursday	10AM–8PM
Friday	10AM–6PM
Saturday	10AM–5PM
Sunday	Closed

NYSDEC Region 2

625 Broadway, Albany, NY 12233-7016

Attn: Aaron Fisher

Phone: (518) 598-7799

Hours: (call for appointment)

4.1.10 Treatability Study and Pilot Test Work Plans

Treatability study and pilot testing work plans will be prepared to evaluate the feasibility of two remedial technologies, ISGS and ISS for final remedy selection. The work plans will include treatability (i.e., bench-scale) testing to determine dosage performance for ISGS and mix design for ISS; and based on the outcome of the treatability results, pilot testing (field verification testing) to confirm the effectiveness of the remedies. Treatability studies will include collection of saturated soil/NAPL, groundwater and NAPL product samples for bench scale/certified laboratory analysis. Based on the treatability results, pilot testing will be performed at the Site to assess design parameters by implementing actual pilot injections and/or soil mixing of ISGS/ISS reagents and amendments for evaluation of effectiveness. Remedial action objectives will be included in the work plans to indicate measurable performance metrics to verify effectiveness, including contaminant mass and flux reduction (i.e. NAPL stabilization) through field pilot testing. The work plans will be submitted to NYSDEC for review and approval prior to implementation.

4.1.11 Remedial Design Work Plan

A Remedial Design Work Plan (RDWP) will be prepared to include the results of the treatability and pilot testing and propose engineering design specifications for ISGS or ISS implementation to reduce contaminant mass and stabilize NAPL in the northern portion of the Site. The engineering design of the final remedy selected will be provided in a RDWP and will include a Quality Assurance Plan for either ISGS or ISS, as well as recovery well specifications (size, locations, pump specs, etc) if the contingency of ISS is selected. The RDWP will be submitted to NYSDEC for review and approval prior to implementation.

4.1.12 ISS QA/QC Plan

An ISS Quality Assurance/Quality Control (QA/QC) Plan which describes the QA/QC required to ensure the Site remedy meets the remedial goals and objectives included in **Appendix K**. The purpose of this document is to provide a method of QA/QC to ensure the effectiveness of ISS after field implementation is complete. This includes coring and testing for reagent presence and visual observations.

4.1.13 ISGS QA/QC Plan

An ISGS Quality Assurance/Quality Control (QA/QC) Plan which describes the QA/QC required to ensure the Site remedy meets the remedial goals and objectives included in **Appendix L**. The purpose of this document is to provide a method of QA/QC to ensure the effectiveness of ISGS after field implementation is complete. This includes coring and testing for reagent presence and visual observations.

4.2 GENERAL REMEDIAL CONSTRUCTION INFORMATION

4.2.1 Project Organization

Principal personnel who will participate in the remedial action include:

1. Xin Yuan, Professional Engineer (P.E.), who will act as the Remedial Engineer for this remedial project.
2. Kevin Kleaka, Professional Geologist (P.G.) is the Qualified Environmental Professional (QEP) for this project and will act as the overall manager for implementation of remedial actions. In this capacity, Mr. Kleaka will be responsible for the overall coordination associated with the implementation of RAWP.
3. Diana Posten, Project Manager, will coordinate and supervise project and field engineers/scientists, as well as subcontractors, as applicable; ensure adherence to and successful completion of RAWP tasks; interface with the data validator during development of Data Usability Summary Reports and subsequent reporting and documentation of the work performed.
4. Alex Keenan, Field Team Leader, will be responsible for direction of the field program for implementation of the remedial action tasks. Responsibilities will include maintaining quality

assurance policies related to various media sample collection, interface with the laboratory, directing subcontractor activities, and ensuring the successful completion of all RAWP field activities.

5. Hal Benjamin, Health and Safety Officer/Coordinator, will oversee the health and safety aspects for the project.
6. Juliana de la Fuente, P.G., Quality Assurance and Quality Control (QA/QC) officer, and will be responsible for the overall quality assurance and review of the project deliverables. She will interface with the Project Manager to address technical issues and provide quality control for the entire project.

Resumes of key personnel involved in the Remedial Action are included in Appendix I.

4.2.2 Remedial Engineer

The Remedial Engineer for this project will be Xin Yuan, P.E . The Remedial Engineer is a registered professional engineer licensed by the State of New York. The Remedial Engineer will have primary direct responsibility for implementation of the remedial program for the 318 Nevins Site (NYSDEC BCP Site No. C224350). The Remedial Engineer will certify in the Final Engineering Report that the remedial activities were observed by qualified environmental professionals under his supervision and that the remediation requirements set forth in the Remedial Action Work Plan and any other relevant provisions of ECL 27-1419 have been achieved in full conformance with that Plan. Other Remedial Engineer certification requirements are listed later in this RAWP.

The Remedial Engineer will coordinate the work of other contractors and subcontractors involved in all aspects of remedial construction, including soil excavation, stockpiling, characterization, removal and disposal, air monitoring, emergency spill response services, import of back fill material, and management of waste transport and disposal. The Remedial Engineer will be responsible for all appropriate communication with NYSDEC and NYSDOH.

The Remedial Engineer will review all pre-remedial plans submitted by contractors for compliance with this Remedial Action Work Plan and will certify compliance in the Final Engineering Report.

The Remedial Engineer will provide the certifications listed in Section 10.1 in the Final Engineering Report.

4.2.3 Remedial Action Construction Schedule

The Remedial Action Construction Schedule per the contractor/developers' schedule will require approximately 24 months to complete. The estimated remedial action construction schedule for the Site is provided in Section 12.

4.2.4 Work Hours

The hours for operation of remedial construction will conform to the New York City Department of Buildings construction code requirements or according to specific variances issued by that agency. DEC will be notified by the Volunteer of any variances issued by the Department of Buildings. NYSDEC reserves the right to deny alternate remedial construction hours.

4.2.5 Site Security

Site access is controlled by an 8-foot plywood construction fence with secured entry/exit gates in accordance with the NYC DOB and NYC Department of Transportation (DOT) requirements/permits, as applicable. The fence limits unauthorized Site access by pedestrians/community, and the access gates used by construction and remedial workers as well as guest are monitored. Visitors to the Site will be required to sign a logbook and meet applicable health and safety requirements. Excavation perimeters will be secured with snow fencing during non-working hours.

4.2.6 Traffic Control

Trucks/equipment entering/exiting the Site will be guided by construction workers designated as flaggers to protect Site workers and pedestrians. Trucks, excavators, and other mobile equipment moving on the Site will have visual and audible reverse indicators. Trucks for soil/materials management will be instructed to proceed without stopping in the vicinity of the Site to prevent neighborhood impacts. A planned designated route for trucks leaving the Site has been established and is shown on **Figure 12**. Trucks leaving the Site will be cleared on loose soil and debris from the undercarriage and loaded soil will be securely covered.

4.2.7 Contingency Plan

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

4.2.8 Worker Training and Monitoring

Workers participating in construction/remedial work at the Site involving contaminated material are required to have completed the 40-hour hazardous waste operators (HAZWOPER) training course and to take annual refresher training. This pertains to workers performing specific tasks including removing contaminated material and installing cleanup systems in contaminated areas.

4.2.9 Agency Approvals

The Site has E-designation E601 for hazardous materials, air quality, and noise attenuation under CEQR Number 19DCP119M. The scope of work proposed in this RAWP will satisfy the NYC OER requirements. Permits/approvals required will be obtained prior to the start of remedial construction.

The Volunteer has addressed all SEQRA requirements for this Site. All permits or government approvals required for remedial construction have been, or will be, obtained prior to the start of remedial construction.

The planned end use for the Site is in conformance with the current zoning for the property as determined by New York City Department of Planning.

All planned remedial or construction work in regulated wetlands and adjacent areas will be specifically approved by the NYSDEC Division of Natural Resources to ensure that it meets the requirements for substantive compliance with those regulations prior to the start of construction. Nothing in the approved Remedial Action Work Plan or its approval by NYSDEC should be construed as an approval for this purpose.

The Site will require permits from NYC, NYSDEC and USEPA for completion of the project as follows:

- The NYC Department of Building (DOB) requires permits for construction (e.g., SOE, excavation, foundation, superstructure, mechanical, plumbing, fire suppression, etc.)
- For dewatering, a NYSDEC LI Well Permit is likely to be required and a NYC Department of Environmental Protection (DEP) sewer discharge permit is required.
- NYSDEC Tidal Wetlands Permit for Shore Public Walkway

The Site will also require certifications from:

- NYC OER Notice of No Objection
- NYCDSBS - Notice of No Objection for Shore Public Walkway Construction and to maintain the bulkhead;
- NYC DCP Waterfront Certification: DCP concurrence that shore public walkway plan meets the zoning requirements;
- EPA Order Approving Stormwater Discharge into the Canal (through an outfall in the existing bulkhead)

4.2.10 NYSDEC BCP Signage

A project sign will be erected at the main entrance to the Site prior to the start of any remedial activities. The sign will indicate that the project is being performed under the New York State Brownfield Cleanup Program. The sign will meet the detailed specifications provided by the NYSDEC Project Manager.

4.2.11 Pre-Construction Meeting with NYSDEC

NYSDEC representatives will be given a seven-day notification for the scheduling of the pre-construction meeting. The NYSDEC will meet at the Site with the parties involved in the remedial process (e.g. QEP or Remedial Engineer, Volunteer, Construction Manager and Contractors) prior to the start of remedial construction activities to discuss the roles and responsibilities of the attendees and expectations associated with the NYSDEC RAWP.

4.2.12 Emergency Contact Information

An emergency contact sheet with names and phone numbers is the table provided below. This table defines the specific project contacts for use by NYSDEC and NYSDOH in the case of a day or night emergency.

Title/Name	Office Number / Cell Phone Number
Justin Pelsigner – COO Charney Companies	718.937.1000
Philip Caporaso – Tavros Holdings LLC	212-518-4942 / 570-801-0489
Xin Yuan, P.E. – Remedial Engineer	631-269-8800 / 412-719-2487
Diana Posten - Project Manager	631-269-8800 / 908-420-3516
Kevin Kleaka, P.G. - QEP	631-269-8800 / 516-805-8892
Alex Keenan – Field Team Leader	631-269-8800 / 516-301-0675
Hal Benjamin – Health and Safety	201-268-5686 / 631-897-7189
Juliana de la Fuente, P.G. – QA Officer	631-269-8800 / 631-704-5920
Local Emergency Responders	911
New York Presbyterian Brooklyn Methodist Hospital	718-780-3000

4.2.13 Remedial Action Costs

The total estimated cost of the Remedial Action for the Site is estimated at $20,800,000 which includes but is not limited to permitting, Track 4 and Hot Spot excavation, ISGS, dewatering, concrete slab, piles, soil transport and disposal, environmental consulting/engineering and site assessment, potential recovery well installation, engineering controls and institutional controls. An itemized and detailed summary of costs for all remedial activity will be prepared based on actual costs and submitted as an Appendix to the Final Engineering Report.

4.3 SITE PREPARATION

4.3.1 Mobilization

Temporary construction fencing to limit unauthorized access has been constructed at the Site. Prior to the start of the remedial excavation, the location of aboveground and underground utilities (e.g., power, gas, water, sewer, communications will be identified). The necessary remediation personnel,

equipment and materials will then be mobilized to the Site. Stabilized truck entrances/ramps will be prepared as well as a decontamination pad to mitigate off-Site movement of contaminated soil.

4.3.2 Monitoring Well / Vapor Probe Decommissioning

Existing groundwater monitoring wells will either be protected during remediation and development for use in post-remedial monitoring, or will be properly decommissioned in accordance with NYSDEC policy CP-43. The only exception to this is if the full length of the well is to be excavated during remediation and development.

Similarly, existing soil vapor probes will be properly decommissioned unless they are to be fully removed during remediation/development or used for post-remedial monitoring.

4.3.3 Erosion and Sedimentation Controls

The Site perimeter is secured with plywood fencing which serves as a barrier. The excavation proposed at the Site will extend below the grade of the adjoining sidewalks/roadways, and sedimentation impacting off-Site areas is not anticipated. Erosion and sediment control measures (e.g., silt fences and barriers, and hay bale checks) will be installed at the Site during the remedial construction, if required.

Weekly inspections and inspections after storm events will be completed. Necessary repairs shall be made immediately. Undercutting or erosion of the silt fence toe anchor will be repaired immediately with appropriate backfill materials.

4.3.4 Stabilized Construction Entrance(s)

Steps will be taken to ensure that trucks departing the site will not track soil, fill or debris off-Site. Such actions may include use of temporary asphalt, concrete or stone pads or other aggregate-based egress paths between the truck inspection station and the property exit. The stabilized construction entrance(s) will be lined and sloped to collect material washed or brushed from vehicles exiting the Site. All vehicles and equipment that contacts soils must be washed using clean water. All debris and wash water will be captured, containerized and disposed of off-site as IDW. Containerization and disposal of IDW must be documented in daily field reports. Measures will be taken to ensure that adjacent roadways will be kept clean of project related soils, fill and debris. An outbound-truck inspection station will be set up close to the Site exit. Before exiting the Site, trucks will be required to stop at the truck inspection station and will be examined for evidence of contaminated soil on the undercarriage, body,

and wheels. Soil and debris will be removed. Booms, shovels and clean water will be utilized for the removal of soil from vehicles and equipment, as necessary. All waste haul trucks must be properly covered with an opaque cover, secured to the sides and back of the truck. All IDW manifests will be documented and included in the Final Engineering Report.

4.3.5 Utility Marker and Easements Layout

The presence of utilities and easements on the Site will be fully investigated prior to the performance of invasive work such as excavation or drilling under this plan by using, at a minimum, the One-Call System (811). Underground utilities may pose an electrocution, explosion, or other hazard during excavation or drilling activities. All invasive activities will be performed in compliance with applicable laws and regulations including NYC Building Code to assure safety. Utility companies and other responsible authorities will be contacted to locate and mark the locations of all underground utilities, and a copy of the Mark-Out Ticket will be retained by the contractor prior to the start of drilling, excavation or other invasive subsurface operations. Overhead utilities may also be present within the anticipated work zones. Electrical hazards associated with drilling in the vicinity of overhead utilities will be prevented by maintaining a safe distance between overhead power lines and drill rig masts.

The Volunteer and its contractors are solely responsible for the identification of utilities that might be affected by work under the RAWP and implementation of all required, appropriate, or necessary health and safety measures during performance of work under this RAWP. The [Applicant / Volunteer / Participant] and its contractors are solely responsible for safe execution of all invasive and other work performed under this RAWP. The Volunteer and its contractors must obtain any local, State or Federal permits or approvals pertinent to such work that may be required to perform work under this RAWP. Approval of this RAWP by NYSDEC does not constitute satisfaction of these requirements.

The presence of utilities and easements on the Site has been investigated by the Remedial Engineer. It has been determined that no risk or impediment to the planned work under this Remedial Action Work Plan is posed by utilities or easements on the Site.

4.3.6 Sheeting and Shoring

Appropriate management of structural stability of on-Site or off-Site structures during on-Site activities include excavation is the sole responsibility of the Volunteer and its contractors. The Volunteer and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan. The Volunteer and its contractors must obtain any local, State or Federal permits or approvals that may be required to perform work under this Plan. Further, the Volunteer and its

contractors are solely responsible for the implementation of all required, appropriate, or necessary health and safety measures during performance of work under the approved Plan.

4.3.7 Equipment and Material Staging

A generalized plan will delineate areas of the work zone intended for staging soil, concrete, clean backfill, equipment and other materials during the remedial construction. Temporary facilities may be constructed for staging and these areas are subject to change based on site conditions.

Electrical hook-up and a tie in for the new building will be completed by the contractor and potable water connection may be installed. Portable toilets will be provided within the work zone for the duration of the project.

4.3.8 Decontamination Area

Remedial construction operations conducted at the Site have the potential to contaminate equipment and trucks. Outbound trucks either dropping materials or transporting materials off-Site or heavy equipment will have a prescribed inspection and decontamination procedure to prevent contaminant materials from potentially leaving the Site.

Trucks, vehicles, and equipment are required to stop at a designated inspection location to identify evidence of contaminated soil on the undercarriage, body, wheels and/or tracks. Such soil and debris will be removed by shovel, broom and possibly water. On-site contractors, such as drillers or backhoe operators, will be responsible for decontaminating all construction equipment prior to demobilization. Other smaller equipment and instrumentation can also be decontaminated by brushing off, rinsing, and wiping down surfaces to reduce the contamination. All debris and wash water will be captured and disposed of off-site as IDW.

4.3.9 Site Fencing

The Contractor shall protect the remedial construction work area by installation of temporary Site perimeter fencing to control public access and protect the site from theft and vandalism. The Contractor shall erect, maintain, and dismantle temporary fencing around construction site and materials storage areas. Fencing must be in compliance with NYC Department of Buildings requirements.

The Contractor shall provide secured gates for access of personnel and vehicles/truck as necessary to complete the Remedial Work. The installation of temporary fencing shall not deter or hinder access to existing and new hose connections and fire hydrants. The contractor shall maintain fencing in good condition and, if damaged, will immediately repair it.

4.3.10 Demobilization

Demobilization will include:

- Restoration of areas that may have been disturbed to accommodate support areas (e.g., staging areas, decontamination areas, storage areas, temporary water management area[s], and access area);
- Removal of temporary access areas (whether on-Site or off-Site) and restoration of disturbed access areas to pre-remediation conditions;
- Removal of sediment and erosion control measures and disposal of materials in accordance with acceptable rules and regulations;
- Equipment decontamination;
- General refuse disposal.

4.4 REPORTING

Site activities and progress will be reported on a daily and monthly basis as described below. All daily and monthly Reports will be included in the Final Engineering Report.

4.4.1 Daily Reports

Daily reports will be submitted to NYSDEC and NYSDOH Project Managers by the end of each day following the reporting period and will include:

- An update of progress made during the reporting day;
- Locations of work and quantities of material imported and exported from the Site;
- References to alpha-numeric map for Site activities;

- CAMP data will be reported as exported from the field instruments.
- A summary of any and all complaints with relevant details (names, phone numbers);
- A summary of CAMP finding, including excursions;
- An explanation of notable Site conditions.

Daily reports are not intended to be the mode of communication for notification to the NYSDEC of emergencies (accident, spill), requests for changes to the RAWP or other sensitive or time critical information. However, such conditions must also be included in the daily reports. Emergency conditions and changes to the RAWP will be addressed directly to NYSDEC Project Manager via personal communication.

Daily Reports will include a description of daily activities keyed to an alpha-numeric map for the Site that identifies work areas. These reports will include a summary of air sampling results, odor and dust problems and corrective actions, and all complaints received from the public. The NYSDEC assigned project number will appear on all reports.

A Site map that shows a predefined alpha-numeric grid for use in identifying locations described in reports submitted to NYSDEC is attached in **Figure 13.**

4.4.2 Monthly Reports

Monthly reports will be submitted to NYSDEC and NYSDOH Project Managers within one week following the end of the month of the reporting period and will include:

- Activities relative to the Site during the previous reporting period and those anticipated for the next reporting period, including a quantitative presentation of work performed (i.e. tons of material exported and imported, etc.);
- Description of approved activity modifications, including changes of work scope and/or schedule;
- Sampling results received following internal data review and validation, as applicable; and,

- An update of the remedial schedule including the percentage of project completion, unresolved delays encountered or anticipated that may affect the future schedule, and efforts made to mitigate such delays.

4.4.3 Other Reporting

Photographs will be taken of all remedial activities and submitted to NYSDEC in digital (JPEG) format. Photos will illustrate all remedial program elements and will be of acceptable quality. Representative photos of the Site prior to any Remedial Actions will be provided. Representative photos will be provided of each contaminant source, source area and Site structures before, during and after remediation. Photos will be included in the daily reports as needed, and a comprehensive collection of photos will be included in the Final Engineering Report.

Job-site record keeping for all remedial work will be appropriately documented. These records will be maintained on-Site at all times during the project and be available for inspection by NYSDEC and NYSDOH staff.

4.4.4 Complaint Management Plan

All complaints from citizens will be promptly reported to the NYSDEC Project Manager. Complaints will be addressed, and outcomes will also be reported to NYSDEC in daily reports. Notices to NYSDEC will include the nature of the complaint, the party providing the complaint, and the actions taken to resolve any problems.

4.4.5 Deviations from the Remedial Action Work Plan

Deviations from the RAWP work scope will be reported to the NYSDEC and detailed in the Final Engineering Report. The deviation notification will include the following:

- Reasons for deviating from the approved RAWP;
- Approval process to be followed for changes/editions to the RAWP;
- Effect of the deviations on overall remedy.

5.0 REMEDIAL ACTION: MATERIAL REMOVAL FROM SITE

The demolition of the super structure of the former building was completed in September 2022 per an approved change of use prior to the approval of the RAWP; however, the elevated concrete slab associated with the former buildings was left in place until the start of remedial activities. Removal of the former building concrete slab and soil/fill material will be implemented in accordance with the SMMP. **Figure 14** shows the Site Track 4 cleanup excavation areas, **Figure 15** shows the Hot Spot excavation locations and **Figure 16** shows the Construction Excavation.

5.1 SOIL CLEANUP OBJECTIVES

The SCOs applicable to this Track 4 remedy are the RR SCOs [Part 375-6.4(b)(2)], unless the PGSCO's is exceeded and those contaminants are detected in groundwater beneath the Site. In the latter case, soils exceeding the PGSCO's will be excavated as 'Hot Spot' areas. Soil remaining in place above the RR SCOs upon completion of the excavation will be capped with a Site-wide composite cover system [Part 375-6.7(d)]. The Soil Cleanup Objectives for this Site are in accordance with the RR Use SCOs for VOCs, SVOCs/PAHs, pesticides and metals identified in Table 375-6.8(b) and for PFOS RR Guidance Values identified in the NYSDEC Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) dated October 2020 which is under the NYSDEC Part 375 Remedial Programs.

Soil and materials management on-Site and off-Site will be conducted in accordance with the Soil Management Plan as described in Section 5.4.

Table 1 summarizes all soil samples that exceed the SCOs proposed for this Remedial Action and those that exceed the PGSCO's for contaminants detected in groundwater above the NYSDEC AWQS.

If applicable, UST closures will conform to criteria defined in DER-10 and the NYSDEC PBS regulations.

5.2 REMEDIAL PERFORMANCE EVALUATION (POST EXCAVATION DOCUMENTATION SAMPLING)

The collection of post excavation end-point samples is described in the following sections.

5.2.1 Documentation and Confirmation Sampling Frequency

Documentation sample collection will be conducted in accordance with the DER-10 sample frequency of one sample per 900 square feet for bottom samples in areas which do not exceed PGSCO's. These samples are used to document remaining conditions below the Site cover.

Confirmation sample collection will be conducted in accordance with the DER-10 sample frequency of one sample per 900 square feet within hot-spot excavation areas to confirm removal of source material (contaminants of concern with concentrations exceeding PGSCO's). No backfilling will occur in hot-spot excavation areas until data confirms Site SCO's are achieved and data has been reviewed by DEC and backfilling has been approved.

Sidewall samples will be collected, where accessible, along the side walls of the hot-spot excavations where sheeting/shoring is not installed (depths <10 fbg) to ensure material exceeding PGSCO's is properly removed. Where installation of sheeting/shoring is required for deep excavations (>10 fbg) and dewatering to achieve remedial excavation depths for the hotpots, sidewall samples will not be accessible for collection. If over-excavation is required, additional documentation samples may be required. An Alpha-Numeric Grid Map with the documentation soil samples is provided as **Figure 17**.

5.2.2 Methodology

Documentation samples will be collected as the remedial excavation is completed at areas of the Site to determine whether cleanup requirements have been achieved. Grab samples will be collected by field personal proficient in field screening and sample collection procedures. Sample collection locations will be biased to areas of greatest contamination based on professional judgment, discolored soil, field instrument measurements, odor or other field indicators. Documentation soil samples for VOC analysis will be collected using laboratory supplied TerraCore or Encore sampling kits and glass sample jars for other designated analysis. Samples will be logged on to a chain of custody with sample collection information and analysis documented. Documentation soil samples will be analyzed for TCL VOCs, TCLSVOCs, PCBs, TCL organochlochlorine pesticides, TAL metals plus hexavalent chromium and cyanide and emerging contaminants 1,4-dioxane and NYSDEC List PFAS compounds. QA/QC samples per the QAPP will also be collected. The samples will be submitted for Category B laboratory reporting.

5.2.3 Reporting of Results

The laboratory will be required to furnish an equivalent ASP Category B deliverables package to facilitate data evaluation and preparation of a Data Usability Summary Report (DUSR) by a third-party validation expert. Laboratory data will also be delivered in the form of an Electronic Data Deliverable (EDD) Format for upload to NYSDEC EQUIS database. The analytical results of the endpoint samples will be tabulated and compared to the Part 375 UU, RR and PGSCO's for the TCL/TAL analytes.

5.2.4 QA/QC

A Quality Assurance Project Plan (QAPP) detailing the frequency of sample collection, analytical methods and the quality standards that must be achieved by the analytical laboratory is included as Appendix H. Specific guidance regarding the collection of field and laboratory QA/QC samples is presented below:

- Trip Blanks (TB) will be used to determine if any cross-contamination occurred between samples for VOC analysis during shipment. The trip blanks are supplied by the analytical laboratory and are included with samples submitted for VOC analysis.
- Field Blanks (FB) will be collected to evaluate the cleanliness of the sampling equipment, sample bottles and the potential for cross-contamination of samples due to handling of equipment, sample bottles and contaminants present in the air.
- Duplicate samples will be collected from the same sample collection point at the same time using the same procedures and will be analyzed independently for the same parameters to assess variance in the sampling and analysis methods.
- MS/MSD samples will be collected to document the accuracy and precision of the laboratory analytical method.

The collection of QA/QC samples required for this project will be collected at a frequency as indicated in the QAPP.

5.2.5 DUSR

A qualified data validator will prepare a Data Usability Report (DUSR) according to the guidelines contained in Appendix 2B of DER-10. The DUSR will present the review of documentation sample laboratory data and provide evaluation of the data quality and the usability in relation to the project specific data quality objectives.

5.2.6 Reporting of Documentation Data in FER

The FER will include a detailed description of the documentation and confirmation sample collection activities, tabulated data summary tables, spider maps with sample collection locations and concentrations, DUSR, and laboratory reports. Chemical labs used for all sample results and contingency sampling will be NYSDOH ELAP certified.

Documentation sample collection will be conducted in accordance with the DER-10 sample frequency of one sample per 900 square feet for bottom samples in areas which do not exceed PGSCO's. These samples are used to document remaining conditions below the Site cover. Confirmation sample collection will be conducted in accordance with the DER-10 sample frequency of one sample per 900 square feet within hot-spot excavation areas to confirm removal of source material (contaminants of concern with concentrations exceeding PGSCO's). No backfilling will occur in hot-spot excavation areas until data confirms Site SCO's are achieved and data has been reviewed by DEC and backfilling has been approved. Sidewall samples will be collected, where accessible, along the side walls of the hot-spot excavations where sheeting/shoring is not installed (depths <10 fbg) to ensure material exceeding PGSCO's is properly removed. Where installation of sheeting/shoring is required for deep excavations (>10 fbg) and dewatering to achieve remedial excavation depths for the hotpots, sidewall samples will not be accessible for collection. If over-excavation is required, additional documentation samples may be required. An Alpha-Numeric Grid Map with the documentation soil samples is provided as **Figure 17**.

The FER will provide a tabular and map summary of all end-point sample results and exceedances of SCOs.

5.3 ESTIMATED MATERIAL REMOVAL QUANTITIES

The removal of materials from the Site will include:

1 Removal of the former building elevated concrete slab and associated foundation elements estimated at 1,107 yd^3;
2 Removal of above grade mounded soils beneath the former building slab estimated at 4167 yd^3;
3 Removal of asphalt and concrete pavement estimated at 1,354 yd^3;
4 Track 4 excavation to remove 2-foot cut of fill material exceeding the Part 375 RR SCOs for the Site footprint area which encompasses approximately 7,550 yd^3 of material;

5 Hot Spot excavation to 8-21 fbg, where a contaminant exceeds the Part 375 PGSCO's in shallow fill material/soil and the contaminant is detected in groundwater beneath the Site, is estimated at 1,768 yd^3 of material;

6 Excavation of soil/fill material under new building footprints from 2 to 4 fbg (below the Track 4 cut) for foundation construction purposes estimated at 4,973 yd^3 of material and deeper excavation for the partial cellar installation in the south building and the elevator pit in the north building to depths ranging from approximately 10 up to 17 fbg estimated at approximately 1,889 yd^3 of material; and

7 Excavation below the 2-foot cut for development of the exterior Shore Public Walkway and the Upland Connection on the Site, which will extend to up to approximately 4 fbg at locations for the replacement of bulkhead tie rods as necessary, installation of shallow footings for structural support of walkways as well as installation of exterior site drainage piping, hydrodynamic separators, raised and terraced planters, and land scape vegetation, is estimated at 1,264 yd^3 of material.

The estimated total of material from the removal of the above grade soil mound beneath the former building slab 4,167 yd^3 or 6,250.5 ton using 1.5 multiplier; Track 4 cut and hot spot excavations is 7906 yd^3 or 11,250 tons using 1.5 multiplier, and the estimated fill material removed for construction purposes is 8,126 yd^3 or 12,189 tons using 1.5 multiplier. The estimated quantity of soil to be imported into the Site for backfill and cover soil is between 6,000 and 6,900 cubic yards. No reuse of soil/fill excavated from the Site expected to be reused/relocated on Site.

5.4 Soil/Materials Management Plan

The soil materials management plan (SMMP) provides protocols and procedures used to guide soil handling and management during excavation work at the Site. The SMMP ensures the effective handling of soil and other materials that may be encountered during remedial excavation, construction related excavation, load out and disposal, post excavation documentation sampling and backfilling activities. These activities are conducted in accordance with the procedures defined in the HASP and CAMP for intrusive work. Soil left in place at the Site will be managed under the Site Management Plan that will be prepared after the remedial action.

5.4.1 Soil Screening Methods

Visual, olfactory and PID soil screening and assessment will be performed by a qualified environmental professional or experienced field geologist under the direction of the Remedial Engineer during all remedial and development excavations into known or potentially contaminated material. Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during the remedy and during development phase, such as excavations for foundations and utility work, prior to issuance of the COC.

All primary contaminant sources (including but not limited to tanks and hotspots) identified during Site Characterization, Remedial Investigation, and Remedial Action will be surveyed by a surveyor licensed to practice in the State of New York. This information will be provided on maps in the Final Engineering Report.

Screening will be performed by qualified environmental professionals. Resumes will be provided for all personnel responsible for field screening (i.e. those representing the Remedial Engineer) of invasive work for unknown contaminant sources during remediation and development work.

5.4.2 Stockpile Methods

Excavated material will be staged in an area designated for stockpile placement, or may be excavated directly into appropriate transportation vehicles as which may be the case of the source area.

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC.

Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Soil stockpiles will be continuously encircled with silt fences or other appropriate sediment control measures. Hay bales will be used as needed near catch basins, surface waters and other discharge points.

Water will be available on-site at suitable supply and pressure for use in dust control.

5.4.3 Materials Excavation and Load Out

The Remedial Engineer or a qualified environmental professional under his/her supervision will oversee all invasive work and the excavation and load-out of all excavated material.

The Volunteer and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the Site has been investigated by the Remedial Engineer. It has been determined that no risk or impediment to the planned work under this Remedial Action Work Plan is posed by utilities or easements on the Site.

Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

Vehicles leaving the Site will not be overloaded. The Remedial Engineer's representative will make reasonable efforts to ensure that vehicles are not loaded beyond their NYSDOT weight rating and that all material is secured beneath the truck bed cover.

A truck wash will be operated on-Site. The Remedial Engineer will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the Site until the remedial construction is complete.

Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-Site sediment tracking.

The Remedial Engineer will be responsible for ensuring that all egress points for truck and equipment transport from the Site will be clean of dirt and other materials derived from the Site during Site remediation and development. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site -derived materials.

The Volunteer and associated parties preparing the remedial documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all invasive work, the structural integrity of excavations, and for structures that may be affected by excavations (such as building foundations and bridge footings).

The Remedial Engineer will ensure that Site development activities will not interfere with, or otherwise impair or compromise, remedial activities proposed in this Remedial Action Work Plan.

Each hotspot and structure to be remediated (USTs, vaults and associated piping, transformers, etc.) will be removed and end-point remedial performance sampling completed before excavations related to Site development commence proximal to the hotspot or structure.

Development-related grading cuts and fills will not be performed without NYSDEC approval and will not interfere with, or otherwise impair or compromise, the performance of remediation required by this plan.

Mechanical processing of historical fill and contaminated soil on-Site is prohibited.

All primary contaminant sources (including but not limited to tanks and hotspots) identified during Site Characterization, Remedial Investigation, and Remedial Action will be surveyed by a surveyor licensed to practice in the State of New York. The survey information will be shown on maps to be reported in the Final Engineering Report.

5.4.4 Materials Transport Off-Site

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded. All trucks loaded with Site materials will exit the vicinity of the Site using the following:

- Outbound Trucks leaving the Site will travel south on Nevins and make a left onto Carroll Street followed by a right on 4th Avenue and use the Prospect Avenue entrance ramp to enter the Brooklyn Queens Expressway to the Verrazzano Bridge to New Jersey disposal facilities via Staten Island.
- Outbound Trucks leaving the Site will travel south on Nevins and make a left onto Carroll Street followed by a right on 4th Avenue and use the Prospect Expressway entrance to travel north within Brooklyn to New York disposal facilities (e.g., NYSDEC Part 360 permitted C&D disposal facilities).

Refer to **Figure 12** for the Truck Route leaving the Site.

All trucks loaded with Site materials will exit the vicinity of the Site using only these approved truck routes. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off- Site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; (f) overall safety in transport; and (g) community input [where necessary].

Trucks will be prohibited from stopping and idling in the neighborhood outside the project Site.

Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during Site remediation and development.

Queuing of trucks will be performed on-Site in order to minimize off-Site disturbance. Off-Site queuing will be prohibited.

Material transported by trucks exiting the Site will be secured with tight-fitting opaque covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

All trucks will be washed prior to leaving the Site.

5.4.5 Materials Disposal Off-Site

The disposal locations will be established at a later date and will be reported to the NYSDEC Project Manager for review and approval.

- The total quantity of material expected to be disposed off-Site is as follows:
- Estimated 6,250 tons for the above grade soil mound under the former building slab;
- Estimated 11,859 tons for 2-foot Track 4 cut including hot spot excavations;
- Estimated 12,189 tons for foundation and partial cellar construction;
- Estimated 1,896 tons associated with the development for the Shore Public Walkway and the Upland Connection; and
- Estimated 1,107 yd^3 of concrete from former building slab and associated foundation elements;
- Estimated 1,354 yd^3 of asphalt from paved areas outside of the former building.

All soil/fill/solid waste excavated and removed from the Site will be treated as contaminated and regulated material and will be disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this Site is proposed for unregulated disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to NYSDEC's Project Manager. Unregulated off-Site management of materials from this Site is prohibited without formal NYSDEC approval.

Material that does not meet Track 1 unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

The following documentation will be obtained and reported by the Remedial Engineer for each disposal location used in this project to fully demonstrate and document that the disposal of material derived from the Site conforms with all applicable laws: (1) a letter from the Remedial Engineer or BCP Volunteer to the receiving facility describing the material to be disposed and requesting formal written acceptance of the material. This letter will state that material to be disposed of is contaminated material generated at an environmental remediation Site in New York State. The letter will provide the project identity and the name and phone number of the Remedial Engineer. The letter will include as an attachment a summary of all chemical data for the material being transported (including Site Characterization data); and (2) a letter from all receiving facilities stating it is in receipt of the correspondence (above) and is approved to accept the material. These documents will be included in the FER.

Non-hazardous historic fill and contaminated soils taken off-Site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2

Historical fill and contaminated soils from the Site are prohibited from being disposed at Part 360-16 Registration Facilities (also known as Soil Recycling Facilities).

Soils that are contaminated but non-hazardous and are being removed from the Site are considered by the Division of Materials Management (DMM) in NYSDEC to be Construction and Demolition (C/D) materials with contamination not typical of virgin soils. These soils may be sent to a permitted Part 360 landfill. They may be sent to a permitted C/D processing facility without permit modifications only upon prior notification of NYSDEC Region 2 DMM. This material is prohibited from being sent or redirected to a Part 360-16 Registration Facility. In this case, as dictated by DMM, special procedures will include, at a minimum, a letter to the C/D facility that provides a detailed explanation that the material is derived from a DER remediation Site, that the soil material is contaminated and that it must not be redirected to on-Site or off-Site Soil Recycling Facilities. The letter will provide the project identity and the name and phone number of the Remedial Engineer. The letter will include as an attachment a summary of all chemical data for the material being transported.

The Final Engineering Report will include an accounting of the destination of all material removed from the Site during this Remedial Action, including excavated soil, contaminated soil, historic fill, solid

waste, and hazardous waste, non-regulated material, and fluids. Documentation associated with disposal of all material must also include records and approvals for receipt of the material. This information will also be presented in a tabular form in the FER.

Bill of Lading system or equivalent will be used for off-Site movement of non-hazardous wastes and contaminated soils. This information will be reported in the Final Engineering Report.

Hazardous wastes derived from on-Site will be stored, transported, and disposed of in full compliance with applicable local, State, and Federal regulations.

Appropriately licensed haulers will be used for material removed from this Site and will be in full compliance with all applicable local, State and Federal regulations.

Waste characterization will be performed for off-Site disposal in a manner suitable to the receiving facility and in conformance with applicable permits. Sampling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the FER. All data available for soil/material to be disposed at a given facility must be submitted to the disposal facility with suitable explanation prior to shipment and receipt.

5.4.6 Materials Reuse On-Site

Reuse of soil and demolition material is not anticipated as part of this remedial action. Should soil and/or demolition material reuse be contemplated later, the material will meet the chemical and/or physical criteria for on-Site reuse of material as approved by NYSDEC.

The Remedial Engineer will ensure that procedures defined for materials reuse in this RAWP are followed and that unacceptable material will not remain on-Site.

Acceptable demolition material proposed for reuse on-Site, if any, will be sampled for asbestos.

Concrete crushing or processing on-Site is prohibited.

Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site is prohibited for reuse on-Site.

Contaminated on-Site material, including historic fill and contaminated soil, removed for grading or other purposes will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines. This will be expressed in the final Site Management Plan.

5.4.7 Fluids Management

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Liquids discharged into the New York City sewer system will be addressed through approval by NYCDEP.

Dewatered fluids will not be recharged back to the land surface or subsurface of the Site. Dewatering fluids will be managed off-Site.

Discharge of water generated during remedial construction to surface waters (i.e. a local pond, stream or river) is prohibited without a SPDES permit.

5.4.8 Demarcation

After the completion of soil removal and any other invasive remedial activities and prior to backfilling, a land survey will be performed by a New York State licensed surveyor. The survey will define the top elevation of residual contaminated soils. A physical demarcation layer, consisting of orange snow fencing material or equivalent material will be placed on this surface to provide a visual reference. This demarcation layer will constitute the top of the 'Residuals Management Zone', the zone that requires adherence to special conditions for disturbance of contaminated residual soils defined in the Site Management Plan. The survey will measure the grade covered by the demarcation layer before the placement of cover soils, pavement and sub-soils, structures, or other materials. This survey and the demarcation layer placed on this grade surface will constitute the physical and written record of the upper surface of the 'Residuals Management Zone' in the Site Management Plan. A map showing the survey results will be included in the Final Engineering Report and the Site Management Plan.

5.4.9 Backfill from Off-Site Sources

Upon completion of the remedial 2-foot excavation cut followed by the required construction excavations, a gravel subbase layer will be imported for installation of the foundation slab and cellar/put slab. The gravel subbase will consist of virgin stone that meets the NYSDEC DER-10 criteria for imported material. Prior to the import of the virgin stone, the proposed material source and associated

documentation will be submitted to the NYSDEC for approval. Additionally, the following must be considered for the import of fill:

All materials proposed for import onto the Site will be approved by the Remedial Engineer and will be in compliance with provisions in this RAWP prior to receipt at the Site.

Material from industrial sites, spill sites, other environmental remediation sites or other potentially contaminated sites will not be imported to the Site.

The Final Engineering Report will include the following certification by the Remedial Engineer: "I certify that all import of soils from off-Site, including source evaluation, approval and sampling, has been performed in a manner that is consistent with the methodology defined in the Remedial Action Work Plan".

All imported soils will meet NYSDEC approved backfill or cover soil quality objectives for this Site. These NYSDEC approved backfill or cover soil quality objectives are the lower of the protection of groundwater or the protection of public health soil cleanup objectives for site specific use as set forth in Table 375-6.8(b) of 6 NYCRR Part 375. Non-compliant soils will not be imported onto the Site without prior approval by NYSDEC. Nothing in the approved Remedial Action Work Plan or its approval by NYSDEC should be construed as an approval for this purpose.

Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC. Nothing in this Remedial Action Work Plan should be construed as an approval for this purpose.

Solid waste will not be imported onto the Site.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers.

5.4.10 Stormwater Pollution Prevention

A Storm-Water Pollution Prevention Plan (SWPPP) is required at the Site since the disturbance area for the redevelopment and remedial action at the Site is greater than one acre. Erosion/sediment control best management practices will be implemented as necessary in accordance with the NYSDEC Division of Water guidelines and NYS regulations.

Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the RAWP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

5.4.11 Contingency Plan

Should an unknown source of contamination or AOC be identified such as USTs, stained soil, drums, etc., the NYSDEC will be notified and appropriate measures implemented to contain the contaminated media to prevent further contaminant release and migration, if applicable.

If underground tanks or other previously unidentified contaminant sources are found during on-Site remedial excavation or development related construction, sampling will be performed on product, sediment and surrounding soils, etc. Chemical analytical work will be for full scan parameters (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs). These analyses will not be limited to STARS parameters where tanks are identified without prior approval by NYSDEC. Analyses will not be otherwise limited without NYSDEC approval.

Identification of unknown or unexpected contaminated media identified by screening during invasive Site work will be promptly communicated by phone to NYSDEC's Project Manager. These findings will be also included in daily and periodic electronic media reports.

5.4.12 Community Air Monitoring Plan

Real-time air monitoring for volatile organic compounds (VOCs) and particulate levels at the perimeter of the exclusion zone or work area will be performed. Continuous monitoring will be performed for all ground intrusive activities and during the handling of contaminated or potentially contaminated media. Ground intrusive activities include, but are not limited to soil excavation and handling, test pit excavation or trenching. Three monitoring stations will be set up at the Site; one upwind and two downwind locations will be selected based on wind direction and adjusted in consideration of wind direction changes.

VOCs will be measured using a calibrated photoionization detector (PID). If the ambient air concentration of VOCs at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring. If the total VOC measurement is greater than 25 ppm work activities will be halted to determine the source for the elevated measurement and mitigation action taken.

Particulate concentrations will be monitored using a DustTrak or similar particulate monitor capable of measuring particulate matter less than 10 micrometers in size (PM-10). If the downwind PM-10 particulate level is 100 micrograms per cubic meter (µg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.

If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 µg/m3 above the upwind level, work will be stopped, and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 µg/m3 of the upwind level and in preventing visible dust migration.

Exceedances observed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers at the time of the exceedance in an email. Notification will include the time of the exceedance, work that

was being performed at the time of the CAMP exceedance, and actions implemented to correct the CAMP exceedance.

5.4.13 Odor, Dust and Nuisance Control Plan

The contractor is required to implement methods for dust, odor and nuisance control as discussed in this section.

The Final Engineering Report will include the following certification by the Remedial Engineer: "I certify that all invasive work during the remediation and all invasive development work were conducted in accordance with dust and odor suppression methodology defined in the Remedial Action Work Plan."

5.4.13.1 Odor Control Plan

This odor control plan is capable of controlling emissions of nuisance odors off-Site. Specific odor control methods to be used on a routine basis will include the application of foam, tarps and/or other control methods as applicable. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of all other complaints about the project. Implementation of all odor controls, including the halt of work, will be the responsibility of the Volunteer's Remedial Engineer, who is responsible for certifying the Final Engineering Report.

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

Where odor nuisances have developed during remedial work and cannot be corrected, or where the release of nuisance odors cannot otherwise be avoided due to on-Site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering excavation and handling areas under tented containment structures equipped with appropriate air venting/filtering systems.

5.4.13.2 Dust Control Plan

A dust suppression plan that addresses dust management during invasive on-Site work, will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of water available on-site at suitable supply and pressure for use in dust control.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-Site roads will be limited in total area to minimize the area required for water spraying.

5.4.13.3 Other Nuisances

A plan for rodent control will be developed and utilized by the contractor prior to and during Site clearing and Site grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work and will conform, at a minimum, to NYCDEP noise control standards.

6.0 RESIDUAL CONTAMINATION TO REMAIN ON-SITE

Since residual contaminated soil, groundwater and soil vapor will exist beneath the Site after the remedy is complete, Engineering and Institutional Controls (ECs and ICs) are required to protect human health and the environment. These ECs and ICs are described hereafter. Long-term management of EC/ICs and of residual contamination will be executed under a Site specific Site Management Plan (SMP) that will be developed and included in the FER.

ECs will be implemented to protect public health and the environment by appropriately managing residual contamination. The Controlled Property (the Site) will have a waterproofing membrane outside the foundation walls and beneath the slabs of the new buildings, will have active SSDSs installed sub-slab for the two new buildings to control potential vapor migration, and will have a soil cover system with walkway systems and concrete planters outside of the footprints of the new buildings.

The FER will report residual contamination on the Site in tabular and map form. This will include presentation of exceedances of Track 4 sites.

7.0 ENGINEERING CONTROLS: COMPOSITE COVER SYSTEM

Exposure to residual contaminated soils on the Site will be prevented by an engineered, composite cover system that will consist of a Preprufe® 300 Plus Membrane or equivalent, waterproof membrane that bonds to poured concrete, is proposed for use beneath the 10-inch concrete slab above a compacted aggregated base for the two new buildings and a combination of cover systems for the exterior areas between and to the west of the two new buildings. The areas outside the new building footprints will require the installation of a demarcation layer above the excavation bottom subgrade soil/fill which will consist of a combination of:

- Landscaped areas with 2-feet of approved imported fill (e.g., planting soil/mulch) between the bulkhead and the hardscape areas, and
- Hard scaped areas consisting of raised concrete planters, stone pavers, prefabricated unit pavers and wood boardwalks/platforms. Beneath hardscaped areas will be an imported compacted aggregated base, concrete footings, cast in place concrete slab followed by mortar set for pavers or nail board for wood decking.

The footprint for the Site areas are shown on **Figure 18A** and diagrams showing the composite cover design details for beneath the building footprints and the building exterior is shown in **Figure 18B**. In addition, plans for redevelopment of the open areas between the two new buildings and to the west of the buildings are included as **Appendix L**.

The Soil Management Plan will include procedures required in the event that the composite cover system and underlying residual contaminated fill/soil are disturbed after the Remedial Action is complete. Maintenance of this composite cover system will be described in the Site Management Plan in the FER.

8.0 ENGINEERING CONTROLS: TREATMENT SYSTEMS

8.1 Sub-Slab Depressurization System

Migration of soil vapor into the building will be mitigated with the construction of an active Sub-Slab Depressurization System (SSDS). The SSDS will consist of three (3) separate branches beneath each of the building slab footprints which consist of approximately 35,343 square feet for the south building footprint and 33,473 for the north building footprint. SSDS branches will be overlain by Stego Wrap 20-Mil vapor barrier. Each SSDS branch will consist of two or three individual 4-inch diameter Schedule 40 PVC slotted screen sections connected to individual 4-inch diameter Schedule 40 PVC solid sub-slab pipes that will be connected to steel piping prior to being routed vertically through the concrete floor slab into the building. The vertical steel piping legs will then be connected to a 6-inch diameter manifold. The manifold will include valves, gauges and sampling ports for flow balancing and monitoring of the individual screened zones. Each manifold will discharge to an individual 6-inch cast iron riser for each leg. Each riser will be extended vertically through the building to the roof, where it will connect to individual SSDS Blower. Each of the SSDS branches will provide the correct coverage in accordance with USEPA sub-slab depressurization design specifications. The exact location of the manifolds and risers will be determined as part of construction.

The system will consist of in-line vapor mitigation fans fitted to each of the risers penetrating the roof line, and will be hardwired into the building's electrical system to prevent accidental shut off and maintain continuous operation. The exhaust will be placed at a minimum distance of 10-ft from any operable window, door, and/or air intake. Risers would be extended to the roof through chase-way locations, and will extend at least 3-feet above the roof line. Each exhaust pipe will be completed with an inline fan and rain cap.

To ensure proper operation of the SSDS branches, vacuum measurements will be collected using nine (9) permanent pressure testing/vapor sampling ports that will be installed within the foundation slab of the new building. Each branch will be tested to ensure a sufficient radius of influence (ROI). A vacuum will be applied using a mobile blower with variable vacuum control. Sub-slab pressure differentials will be tested using a digital manometer at permanent monitoring points. Based on the results of the transmission tests during the installation of each point, the SSDS blower power will be determined. The

active SSDS required will achieve a pressure differential of at least 0.004 inches of water to provide an adequate safety factor for long-term and seasonal vairation. The ports will be comprised of 5/8-diameter stainless steel Vapor Pins manufactured by Cox-Colvin & Associates, Inc., shrouded by rubber gaskets for an air-tight seal, and 1.5-inch stainless steel flush mount locking covers will be installed over the ports.

Prior to the initiation of the active SSDS, a start-up test will be performed to determine sub-slab pressure readings under static non-operational conditions, and to establish the efficacy of each individual leg of the SSDS. The SSDS is a permanent engineering control. The system will be inspected, and its performance certified at specified intervals as required by this RAWP and the Site Management Plan. Maintenance of this SSDS will be described in the Site Management Plan in the Remedial Action Report. The location and layout of the SSDS is shown in **Figures 19**.

9.0 CRITERIA FOR COMPLETION OF REMEDIATION/TERMINATION OF REMEDIAL SYSTEMS

9.1 Composite Cover System

The composite cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity.

9.2 Sub-Slab Depressurization System (SSDS)

The active SSD system will not be discontinued without written approval by NYSDEC and NYSDOH. A proposal to discontinue the active SSD system may be submitted by the property owner based on confirmatory data that justifies such request. Systems will remain in place and operational until permission to discontinue use is granted in writing by NYSDEC and NYSDOH.

10.0 INSTITUTIONAL CONTROLS

After the remedy is complete, the Site will have residual contamination remaining in place. Institutional Controls (ECs) for the residual contamination have been incorporated into the remedy to render the overall Site remedy protective of public health and the environment. Two elements have been designed to ensure continual and proper management of residual contamination in perpetuity: an Environmental Easement and a Site Management Plan.

All as-built drawings, diagrams, calculation and manufacturer documentation for treatment systems will be presented in the FER. A Site -specific Environmental Easement will be recorded with New York City Registrar to provide an enforceable means of ensuring the continual and proper management of residual contamination and protection of public health and the environment in perpetuity or until released in writing by NYSDEC. It requires that the grantor of the Environmental Easement and the grantor's successors and assigns adhere to all Engineering and Institutional Controls (ECs/ICs) placed on this Site by this NYSDEC-approved remedy. ICs provide restrictions on Site usage and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. The Site Management Plan (SMP) describes appropriate methods and procedures to ensure compliance with all ECs and ICs that are required by the Environmental Easement. Once the SMP has been approved by the NYSDEC, compliance with the SMP is required by the grantor of the Environmental Easement and grantor's successors and assigns.

10.1 ENVIRONMENTAL EASEMENT

An Environmental Easement, as defined in Article 71 Title 36 of the Environmental Conservation Law, is required when residual contamination is left on-Site after the Remedial Action is complete. As part of this remedy, an Environmental Easement approved by NYSDEC will be filed and recorded with the Kings County Office of the City Register. The recorded Environmental Easement will be submitted as part of the Final Engineering Report.

The Environmental Easement renders the Site a Controlled Property. The Environmental Easement must be recorded with the Kings County Office of the City Register before the Certificate of Completion can be issued by NYSDEC. A series of Institutional Controls are required under this remedy to implement, maintain and monitor these Engineering Control systems, prevent future exposure to residual contamination by controlling disturbances of the subsurface soil and restricting the use of the Site to

restricted residential, commercial and industrial use(s) only. These Institutional Controls are requirements or restrictions placed on the Site that are listed in, and required by, the Environmental Easement. Institutional Controls can, generally, be subdivided between controls that support Engineering Controls, and those that place general restrictions on Site usage or other requirements. Institutional Controls in both of these groups are closely integrated with the Site Management Plan, which provides all of the methods and procedures to be followed to comply with this remedy.

The Institutional Controls that support Engineering Controls are select controls that apply to the Site or that are needed to support the remedy. Institutional Controls may be modified, added or deleted from this list as warranted by Site conditions. NYSDEC may also revise this list during review of the FER and SMP. Compliance with all elements of the Site Management Plan is required by the Grantor of the Environmental Easement, and the Grantor's successors and assigns.

- Compliance with the Environmental Easement by the Grantee and the Grantee's successors and adherence of all elements of the SMP is required;
- All Engineering Controls must be operated and maintained as specified in this SMP;
- A composite cover system consisting of asphalt covered roads, concrete covered sidewalks, and concrete building slabs must be inspected, certified and maintained as required in the SMP;
- A soil vapor mitigation system consisting of a sub-slab depressurization system under all building structures must be inspected, certified, operated and maintained as required by the SMP;
- All Engineering Controls on the Controlled Property must be inspected and certified at a frequency and in a manner defined in the SMP;
- Soil vapor and other environmental or public health monitoring must be performed as defined in the SMP;
- Data and information pertinent to Site Management for the Controlled Property must be reported at the frequency and in a manner defined in the SMP;
- On-Site environmental monitoring devices, including but not limited to soil vapor probes must be protected and replaced as necessary to ensure proper functioning in the manner specified in the SMP;

  Engineering Controls may not be discontinued without an amendment or extinguishment of the Environmental Easement.

Adherence to these Institutional Controls for the Site is mandated by the Environmental Easement and will be implemented under the Site Management Plan (discussed in the next section). The Controlled Property (Site) will also have a series of Institutional Controls in the form of Site restrictions and requirements. The Site restrictions that apply to the Controlled Property are:

- Vegetable gardens and farming on the Controlled Property are prohibited;
- Use of groundwater underlying the Controlled Property is prohibited without treatment rendering it safe for intended purpose;
- All future activities on the Controlled Property that will disturb residual contaminated material are prohibited unless they are conducted in accordance with the soil management provisions in the Site Management Plan;
- The Controlled Property may be used for restricted residential, commercial and industrial use only, provided the long-term Engineering and Institutional Controls included in the Site Management Plan are employed;
- The Controlled Property may not be used for a higher level of use, such as unrestricted or residential use without an amendment or extinguishment of this Environmental Easement;
- Grantor agrees to submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow. This time period statement will be certified by professional engineer.

10.2 SITE MANAGEMENT PLAN

Site Management is the last phase of remediation and begins with the approval of the Final Engineering Report and issuance of the Certificate of Completion (COC) for the Remedial Action. The Site

Management Plan is submitted as part of the FER but will be written in a manner that allows its removal and use as a complete and independent document. Site Management continues in perpetuity or until released in writing by NYSDEC. The property owner is responsible to ensure that all Site Management responsibilities defined in the Environmental Easement and the Site Management Plan are performed.

The SMP is intended to provide a detailed description of the procedures required to manage residual contamination left in place at the Site following completion of the Remedial Action in accordance with the BCA with the NYSDEC. This includes: (1) development, implementation, and management of all Engineering and Institutional Controls; (2) development and implementation of monitoring systems and a Monitoring Plan; (3) development of a plan to operate and maintain any treatment, collection, containment, or recovery systems (including, where appropriate, preparation of an Operation and Maintenance Manual); (4) submittal of Site Management Reports, performance of inspections and certification of results, and demonstration of proper communication of Site information to NYSDEC; and (5) defining criteria for termination of treatment system operation.

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

Site management activities, reporting, and EC/IC certification will be scheduled on a certification period basis. The certification period will be annually. The Site Management Plan will be based on a calendar year and will be due for submission to NYSDEC by March 1 of the year following the reporting period.

The Site Management Plan in the Final Engineering Report will include a monitoring plan to evaluate Site wide performance of the remedy.

No exclusions for handling of residual contaminated soils will be provided in the Site Management Plan (SMP). All handling of residual contaminated material will be subject to provisions contained in the SMP.

11.0 FINAL ENGINEERING REPORT

A Final Engineering Report (FER) will be submitted to NYSDEC following implementation of the Remedial Action defined in this RAWP. The FER provides the documentation that the remedial work required under this RAWP has been completed and has been performed in compliance with this plan. The FER will provide a comprehensive account of the locations and characteristics of all material removed from the Site including the surveyed maps of all sources. The Final Engineering Report will include as-built drawings for all constructed elements, calculation and manufacturer documentation for treatment systems, certifications, manifests, bills of lading as well as the complete Site Management Plan (formerly the Operation and Maintenance Plan). The FER will provide a description of the changes in the Remedial Action from the elements provided in the RAWP and associated design documents. The FER will provide a tabular summary of all performance evaluation sampling results and all material characterization results and other sampling and chemical analysis performed as part of the Remedial Action. The FER will provide test results demonstrating that all mitigation and remedial systems are functioning properly. The FER will be prepared in conformance with DER-10.

Where determined to be necessary by NYSDEC, a Financial Assurance Plan will be required to ensure the sufficiency of revenue to perform long-term operations, maintenance and monitoring tasks defined in the Site Management Plan and Environmental Easement. This determination will be made by NYSDEC in the context of the Final Engineering Report review.

The Final Engineering Report will include written and photographic documentation of all remedial work performed under this remedy.

The FER will include an itemized tabular description of actual costs incurred during all aspects of the Remedial Action.

The FER will provide a thorough summary of all residual contamination left on the Site after the remedy is complete. Residual contamination includes all contamination that exceeds the Track 1 Unrestricted Use SCO in 6NYCRR Part 375-6. A table that shows exceedances from Track 1 Unrestricted SCOs for all soil/fill remaining at the Site after the Remedial Action and a map that shows the location and summarizes exceedances from Track 1 Unrestricted SCOs for all soil/fill remaining at the Site after the Remedial Action will be included in the FER.

The FER will provide a thorough summary of all residual contamination that exceeds the SCOs defined for the Site in the RAWP and must provide an explanation for why the material was not removed as part of the Remedial Action. A table that shows residual contamination in excess of Site SCOs and a map that shows residual contamination in excess of Site SCOs will be included in the FER.

The Final Engineering Report will include an accounting of the destination of all material removed from the Site, including excavated contaminated soil, historic fill, solid waste, hazardous waste, non-regulated material, and fluids. Documentation associated with disposal of all material must also include records and approvals for receipt of the material. It will provide an accounting of the origin and chemical quality of all material imported onto the Site.

Before approval of a FER and issuance of a Certificate of Completion, all project reports must be submitted in digital form on electronic media (PDF).

11.1 CERTIFICATIONS

The following certification will appear in front of the Executive Summary of the Final Engineering Report. The certification will be signed by the Remedial Engineer Xin Yuan who is a Professional Engineer registered in New York State This certification will be appropriately signed and stamped. The certification will include the following statements:

I, Xin Yuan, am currently a registered professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the 318 Nevins Street Site (NYSDEC BCP Site No. C224350).

I certify that the Site description presented in this FER is identical to the Site descriptions presented in the Environmental Easement, the Site Management Plan, and the Brownfield Cleanup Agreement for [Site name] and related amendments.

I certify that the Remedial Action Work Plan dated [month day year] and Stipulations [if any] in a letter dated [month day year] and approved by the NYSDEC were implemented and that all requirements in those documents have been substantively complied with.

I certify that the remedial activities were observed by qualified environmental professionals under my supervision and that the remediation requirements set forth in the Remedial Action Work Plan and any other relevant provisions of ECL 27-1419 have been achieved.

I certify that all use restrictions, Institutional Controls, Engineering Controls, and all operation and maintenance requirements applicable to the Site are contained in an Environmental Easement created and recorded pursuant ECL 71-3605 and that all affected local governments, as defined in ECL 71-3603, have been notified that such easement has been recorded. A Site Management Plan has been submitted by the Volunteer for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the Site, including the proper maintenance of all remaining monitoring wells, and that such plan has been approved by the NYSDEC.

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

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

I certify that all invasive work during the remediation and all invasive development work were conducted in accordance with dust and odor suppression methodology and soil screening methodology defined in the Remedial Action Work Plan.

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

It is a violation of Article 130 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 130, New York State Education Law.

12.0 SCHEDULE

A schedule of Remedial Actions which subdivides work elements and provide estimated dates for performance of work and deliverables is provided as **Figure 20**. The general project sequencing of the remedy is provided as follows:

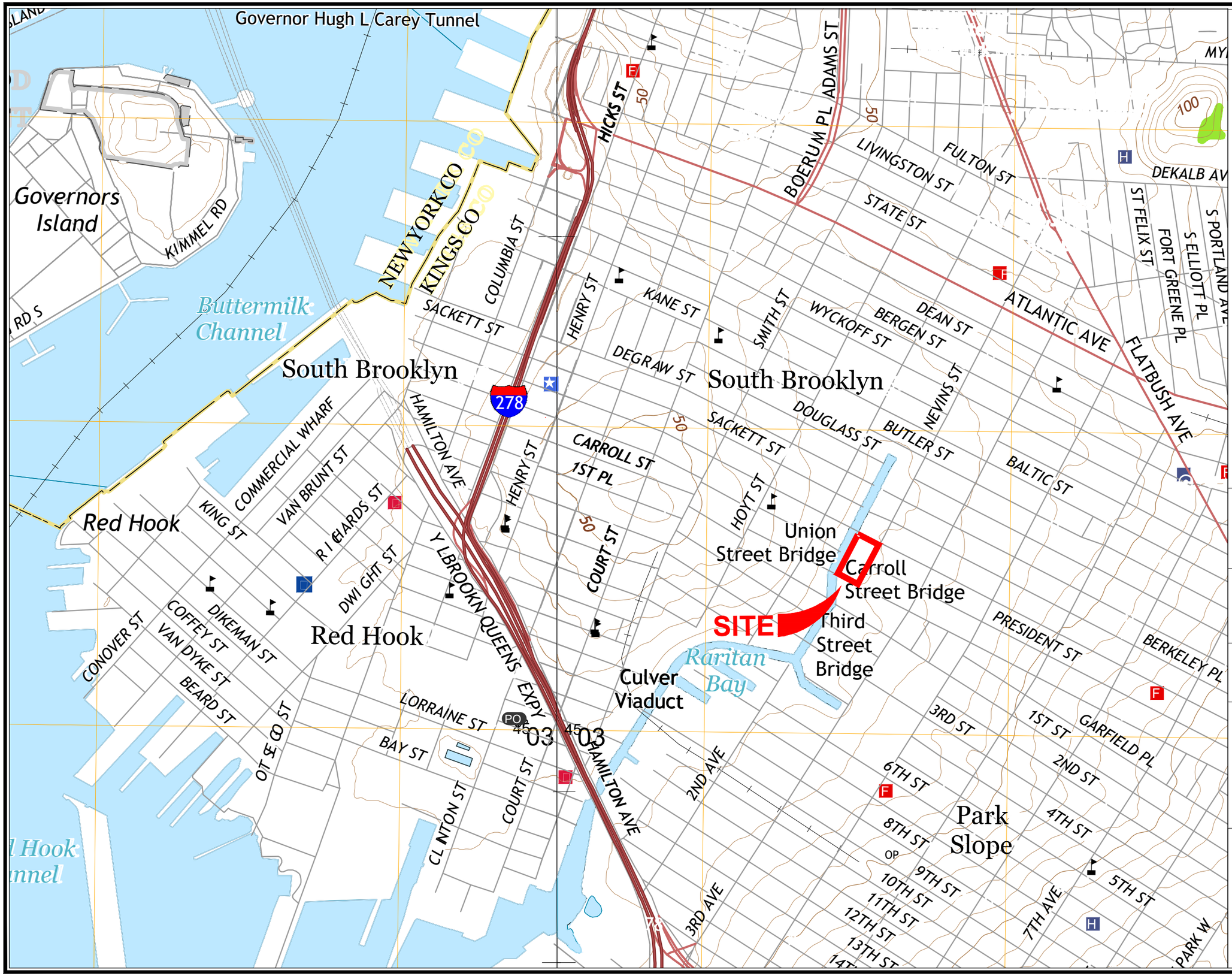
1. Submittal and Implementation of ISGS and ISS Feasibility Study/Pilot Testing Work Plans
2. NAPL Mobility and Feasibility/Pilot Testing Results
3. Remedial Design Work Plan with Quality Assurance Plan
4. Performance of Remedial Excavations (2' Cut and Hot Spot Excavations)
5. Documentation/Confirmation Sampling
6. Implementation of ISGS or ISS/Recovery Well Installations
7. Installation of Sub-Slab Depressurization System
8. Installation of Site Cover System

FIGURES

318 Nevins Street, Brooklyn, NY

Remedial Action Work Plan
NYSDEC BCP #C224350

Impact Environmental Engineering and Geology PLLC
170 KEYLAND COURT, BOHEMIA, NEW YORK 11716
TEL (631) 269-8800 ▪ FAX (631) 269-1599



PROJECT
NORTH

NOTES:

SITE LOCATION MAP

318 Nevins Street
Brooklyn, New York

Figure 1

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	DP
DATE:	11/30/2021
SCALE:	N.T.S.

REVISIONS

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ADJACENT PROPERTY

ADJACENT PROPERTY

ADJACENT PROPERTY

ADJACENT PROPERTY

GOWANUS CANAL

UNION STREET

SIDEWALK

SIDEWALK

SIDEWALK

SIDEWALK

ADJA
PROP

SIDEWALK

ADJACENT PROPERTY

ADJACENT PROPERTY

ADJACENT PROPERTY

FORMER BUILDING FOUNDATION SLAB

NEVINS STREET

SIDEWALK

SIDEWALK

SIDEWALK

SIDEWALK

PRESIDENT STREET

SIDEWALK

ADJACENT PROPERTY

ADJACENT PROPERTY

ADJACENT PROPERTY

ADJACENT PROPERTY

ADJACENT PROPERTY

SIDEWALK

SIDEWALK

SIDEWALK

CARROLL STREET

SIDEWALK

PROJECT NORTH

0' 50' 100'

NOTES:

LEGEND

- PROPERTY LINE
- TANK FIELD IDENTIFIED DURING THE SEPTEMBER 2022 GPR SURVEY
- POTENTIAL OIL/WATER SEPARATOR IDENTIFIED URING THE SEPTEMBER GPR SURVEY

REMEDIAL INVESTIGATION SAMPLE LOCATION MAP

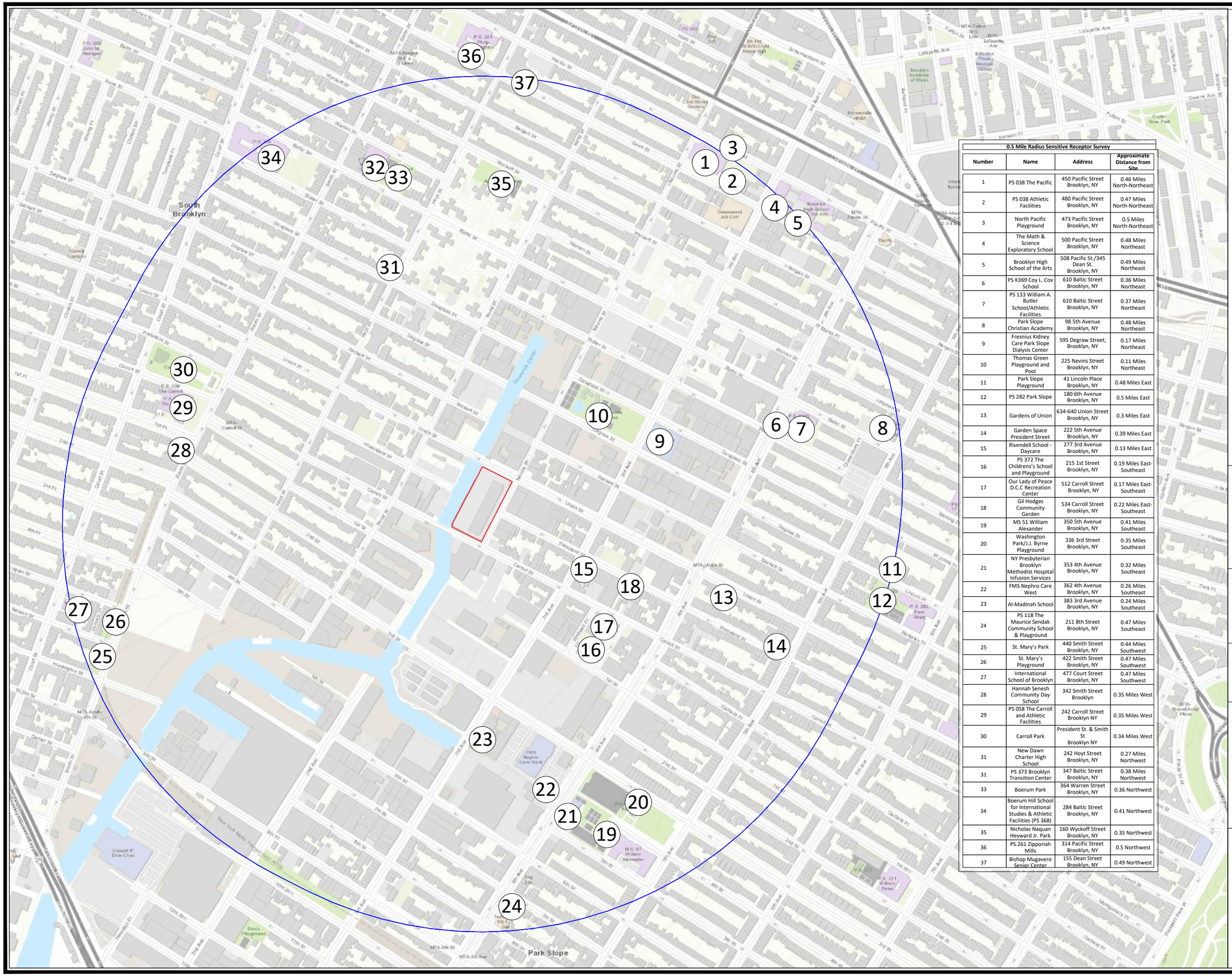
318 Nevins Street
Brooklyn, New York

Figure 2

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	DP
DATE:	11/8/2022
SCALE:	1" = 50'

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0.5 Mile Radius Sensitive Receptor Survey

Number	Name	Address	Approximate Distance from Site
1	PS 038 The Pacific	450 Pacific Street Brooklyn, NY	0.46 Miles North-Northeast
2	PS 038 Athletic Facilities	480 Pacific Street Brooklyn, NY	0.47 Miles North-Northeast
3	North Pacific Playground	473 Pacific Street Brooklyn, NY	0.5 Miles North-Northeast
4	The Math & Science Exploratory School	500 Pacific Street Brooklyn, NY	0.48 Miles Northeast
5	Brooklyn High School of the Arts	508 Pacific St./345 Dean St. Brooklyn, NY	0.49 Miles Northeast
6	PS K369 Coy L. Cox School	610 Baltic Street Brooklyn, NY	0.36 Miles Northeast
7	PS 133 William A. Butler School/Athletic Facilities	610 Baltic Street Brooklyn, NY	0.37 Miles Northeast
8	Park Slope Christian Academy	98 5th Avenue Brooklyn, NY	0.48 Miles Northeast
9	Fresnius Kidney Care Park Slope Dialysis Center	595 Degraw Street, Brooklyn, NY	0.17 Miles Northeast
10	Thomas Green Playground and Pool	225 Nevins Street Brooklyn, NY	0.11 Miles Northeast
11	Park Slope Playground	41 Lincoln Place Brooklyn, NY	0.48 Miles East
12	PS 282 Park Slope	180 6th Avenue Brooklyn, NY	0.5 Miles East
13	Gardens of Union	634-640 Union Street Brooklyn, NY	0.3 Miles East
14	Garden Space President Street	222 5th Avenue Brooklyn, NY	0.39 Miles East
15	Rivendell School - Daycare	277 3rd Avenue Brooklyn, NY	0.13 Miles East
16	PS 372 The Childrens's School and Playground	215 1st Street Brooklyn, NY	0.19 Miles East-Southeast
17	Our Lady of Peace D.C.C Recreation Center	512 Carroll Street Brooklyn, NY	0.17 Miles East-Southeast
18	Gil Hodges Community Garden	534 Carroll Street Brooklyn, NY	0.22 Miles East-Southeast
19	MS 51 William Alexander	350 5th Avenue Brooklyn, NY	0.41 Miles Southeast
20	Washington Park/J.J. Byrne Playground	336 3rd Street Brooklyn, NY	0.35 Miles Southeast
21	NY Presbyterian Brooklyn Methodist Hospital Infusion Services	353 4th Avenue Brooklyn, NY	0.32 Miles Southeast
22	FMS Nephro Care West	362 4th Avenue Brooklyn, NY	0.26 Miles Southeast
23	Al-Madinah School	383 3rd Avenue Brooklyn, NY	0.24 Miles Southeast
24	PS 118 The Maurice Sendak Community School & Playground	211 8th Street Brooklyn, NY	0.47 Miles Southeast
25	St. Mary's Park	440 Smith Street Brooklyn, NY	0.44 Miles Southwest
26	St. Mary's Playground	422 Smith Street Brooklyn, NY	0.47 Miles Southwest
27	International School of Brooklyn	477 Court Street Brooklyn, NY	0.47 Miles Southwest
28	Hannah Senesh Community Day School	342 Smith Street Brooklyn	0.35 Miles West
29	PS 058 The Carroll and Athletic Facilities	242 Carroll Street Brooklyn NY	0.35 Miles West
30	Carroll Park	President St. & Smith St Brooklyn NY	0.34 Miles West
31	New Dawn Charter High School	242 Hoyt Street Brooklyn, NY	0.27 Miles Northwest
31	PS 373 Brooklyn Transition Center	347 Baltic Street Brooklyn, NY	0.38 Miles Northwest
33	Boerum Park	364 Warren Street Brooklyn, NY	0.36 Northwest
34	Boerum Hill School for International Studies & Athletic Facilities (PS 368)	284 Baltic Street Brooklyn, NY	0.41 Northwest
35	Nicholas Naquan Heyward Jr. Park	160 Wyckoff Street Brooklyn, NY	0.35 Northwest
36	PS.261 Zipporiah Mills	314 Pacific Street Brooklyn, NY	0.5 Northwest
37	Bishop Mugavero Senior Center	155 Dean Street Brooklyn, NY	0.49 Northwest

LEGEND

PROPERTY LINE

1/2 MILE RADIUS LINE

PROJECT

NORTH

NOTES:

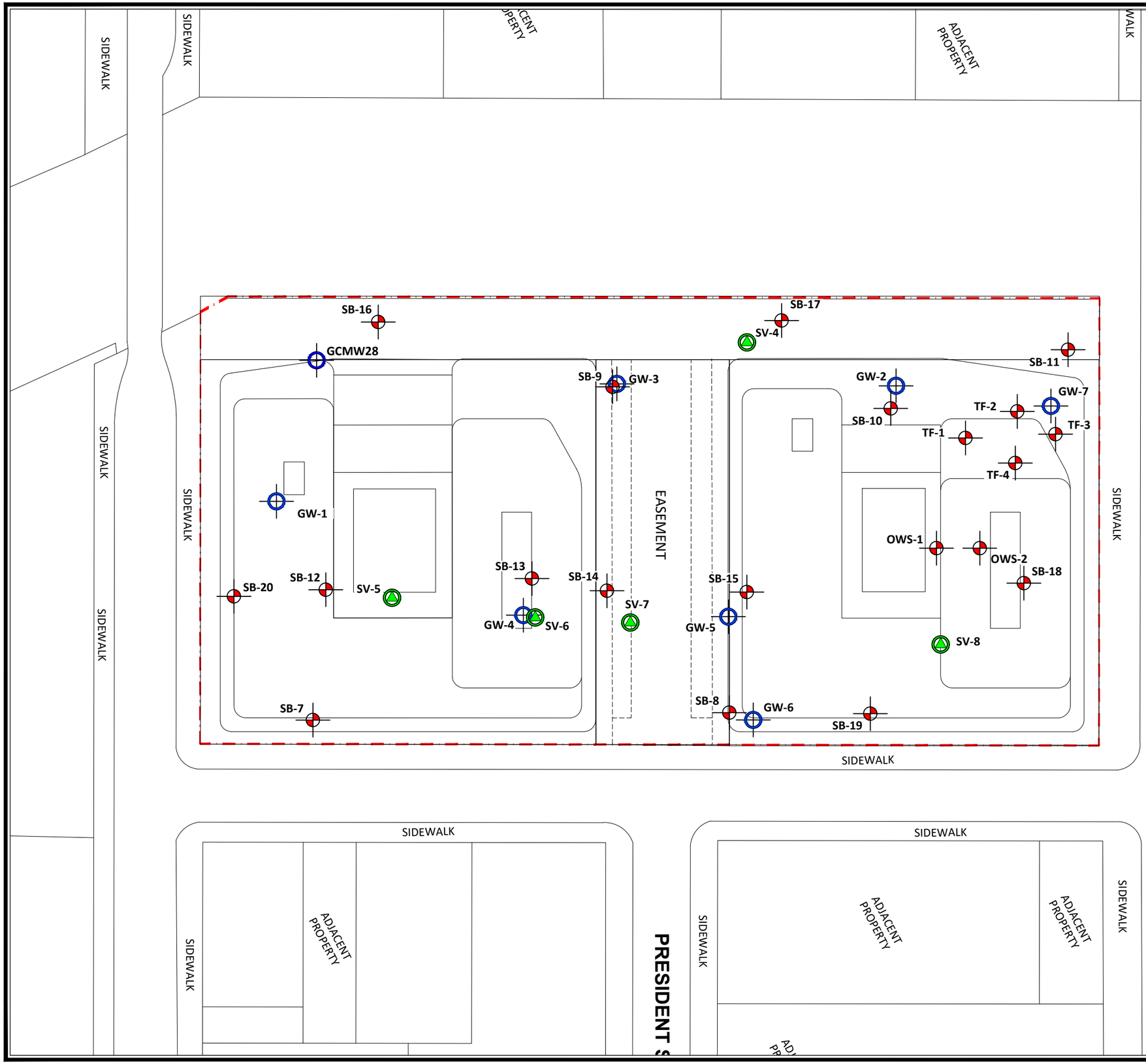
HALF MILE RADIUS MAP

318 Nevins Street
Brooklyn, New York

Figure 3

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	JDF
DATE:	03/01/2023
SCALE:	N.T.S.
REVISIONS	

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BOHEMIA, NEW YORK 11716
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FAX (631) 269-1599



LEGEND

- PROPERTY LINE
- IMPACT RI SOIL BORING LOCATION
- IMPACT RI GROUNDWATER SAMPLE
- IMPACT RI SOIL VAPOR SAMPLE LOCATION

PROJECT NORTH

0' 50' 100'

NOTES:

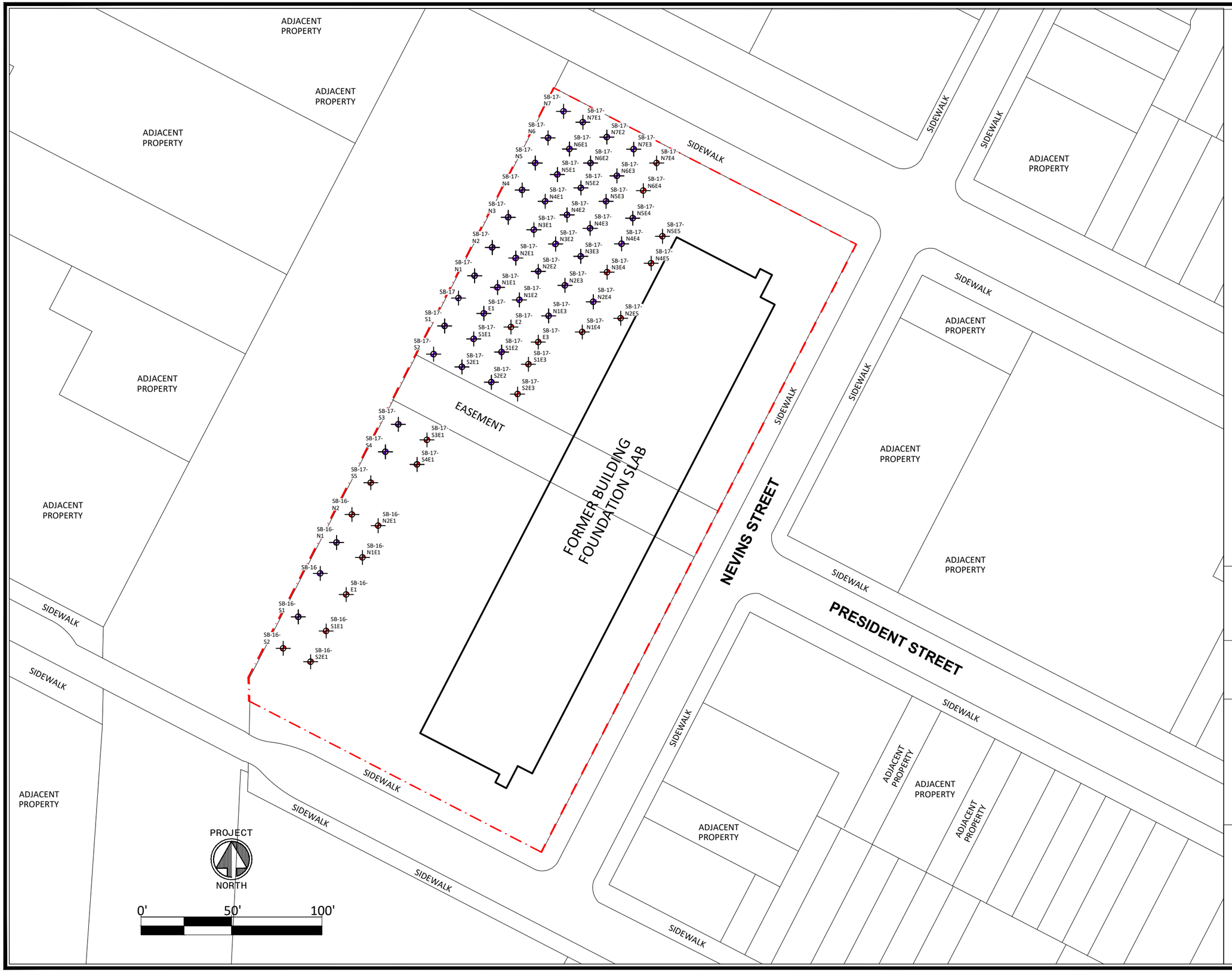
RI SAMPLE LOCATIONS

318 Nevins Street
Brooklyn, New York

Figure 4

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	JDF
DATE:	03/01/2023
SCALE:	1" = 50'
REVISIONS	

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NOTES:

LEGEND

- BORING IDENTIFIED EVIDENCE OF MGP COAL TAR
- NO MGP COAL TAR IDENTIFIED IN BORING
- PROPERTY LINE

SUPPLEMENTAL REMEDIAL INVESTIGATION SAMPLE LOCATIONS FOR DELINEATION OF CONTAMINATION MIGRATING FROM OFF-SITE MGP

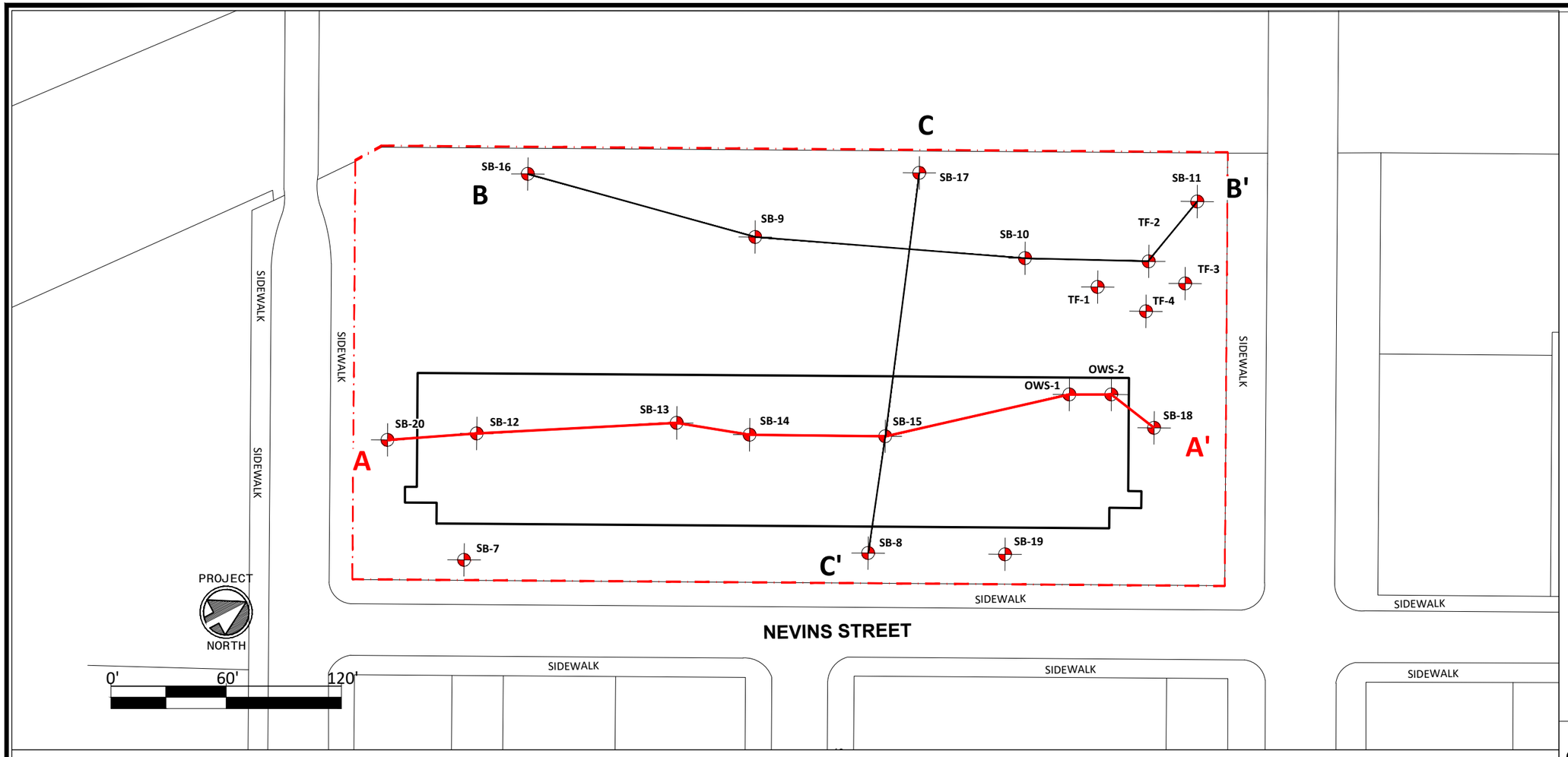
318 Nevins Street
Brooklyn, New York

Figure 5

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	DP
DATE:	2/2/2023
SCALE:	1" = 50'

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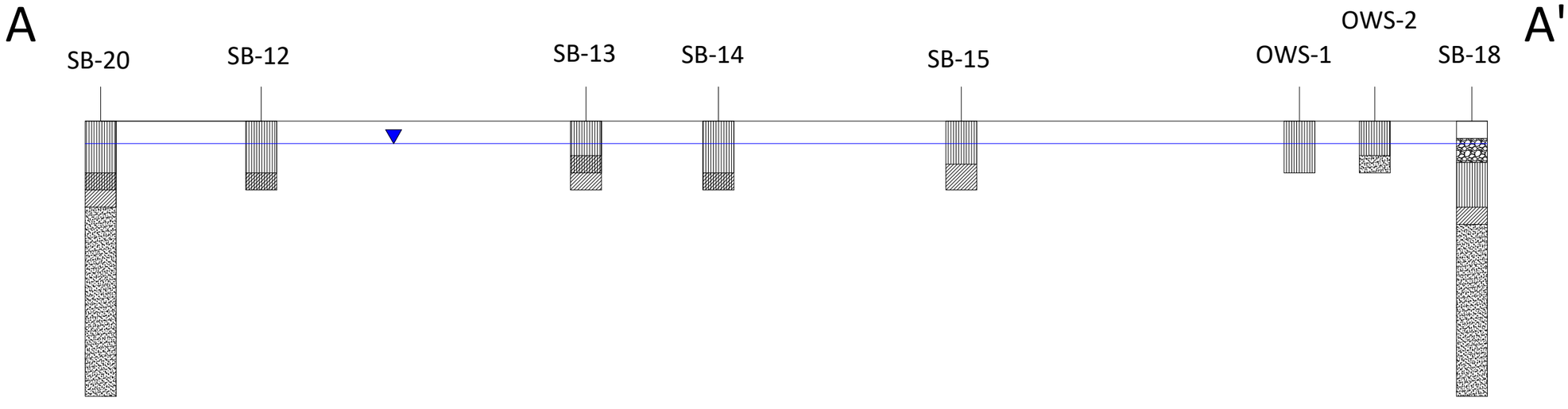
NOTES:

LEGEND

- SOIL BORING LOCATION

USCS SYMBOL

- GRAVEL
- POORLY GRADED SANDS (SP)
- SILTS & FINE SANDS (ML)
- CLAY (CL)



GEOLOGIC CROSS SECTION A - A'

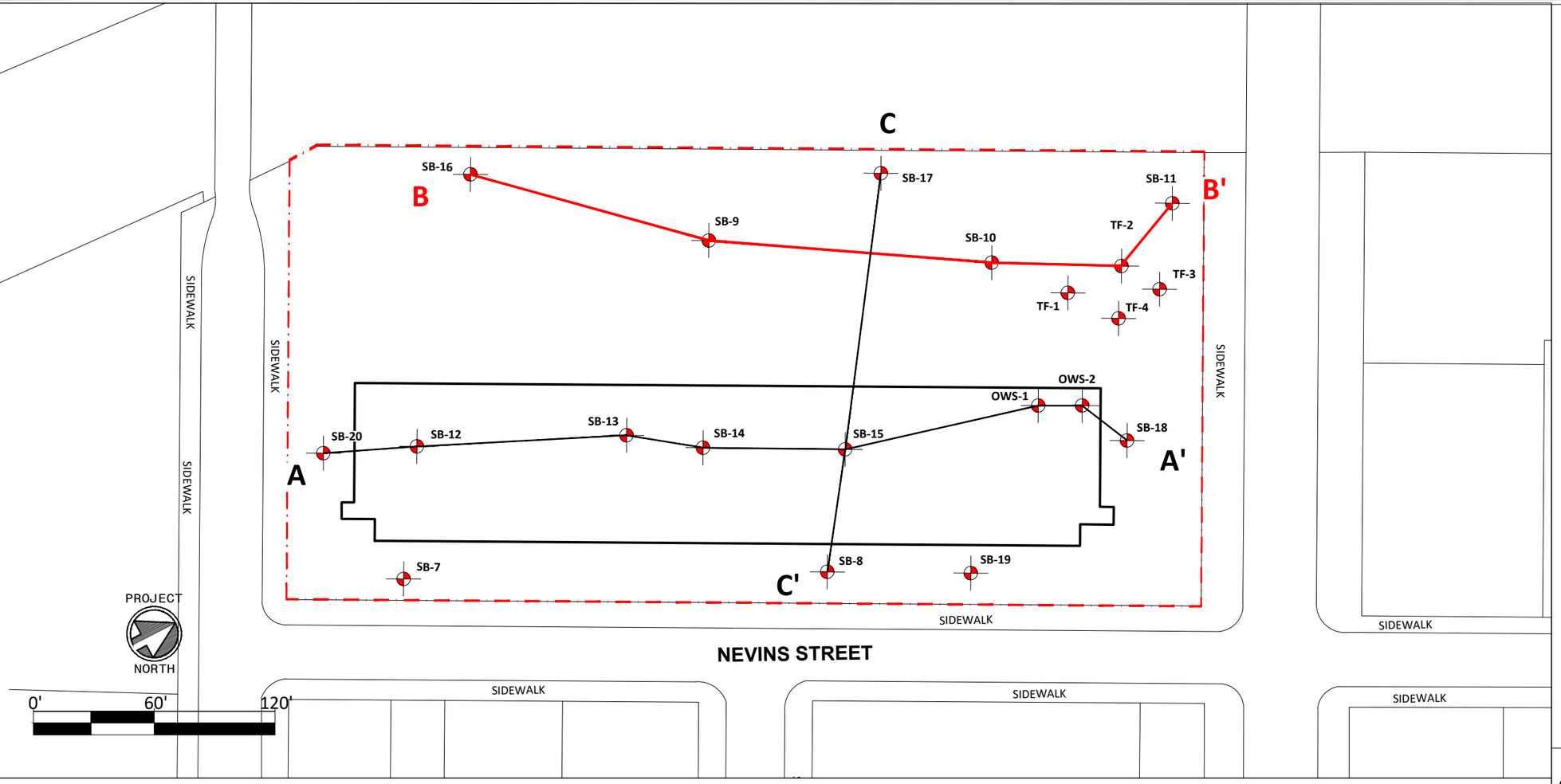
318 Nevins Street
Brooklyn, New York

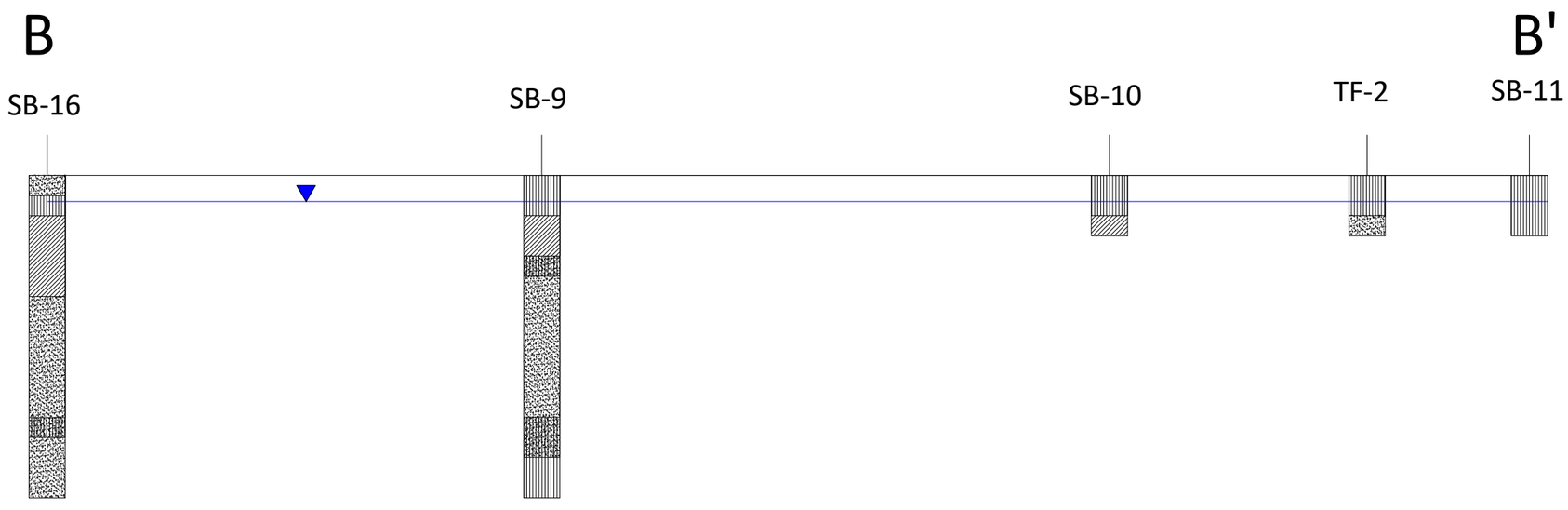
Figure 6A

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	DP
DATE:	11/7/2022
SCALE:	1" = 50'

REVISIONS

IMPACT ENVIRONMENTAL ENGINEERING AND GEOLOGY PLLC
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NOTES:

LEGEND

- SOIL BORING LOCATION

USCS SYMBOL

- GRAVEL
- POORLY GRADED SANDS (SP)
- SILTS & FINE SANDS (ML)
- CLAY (CL)

GEOLOGIC CROSS SECTION B - B'

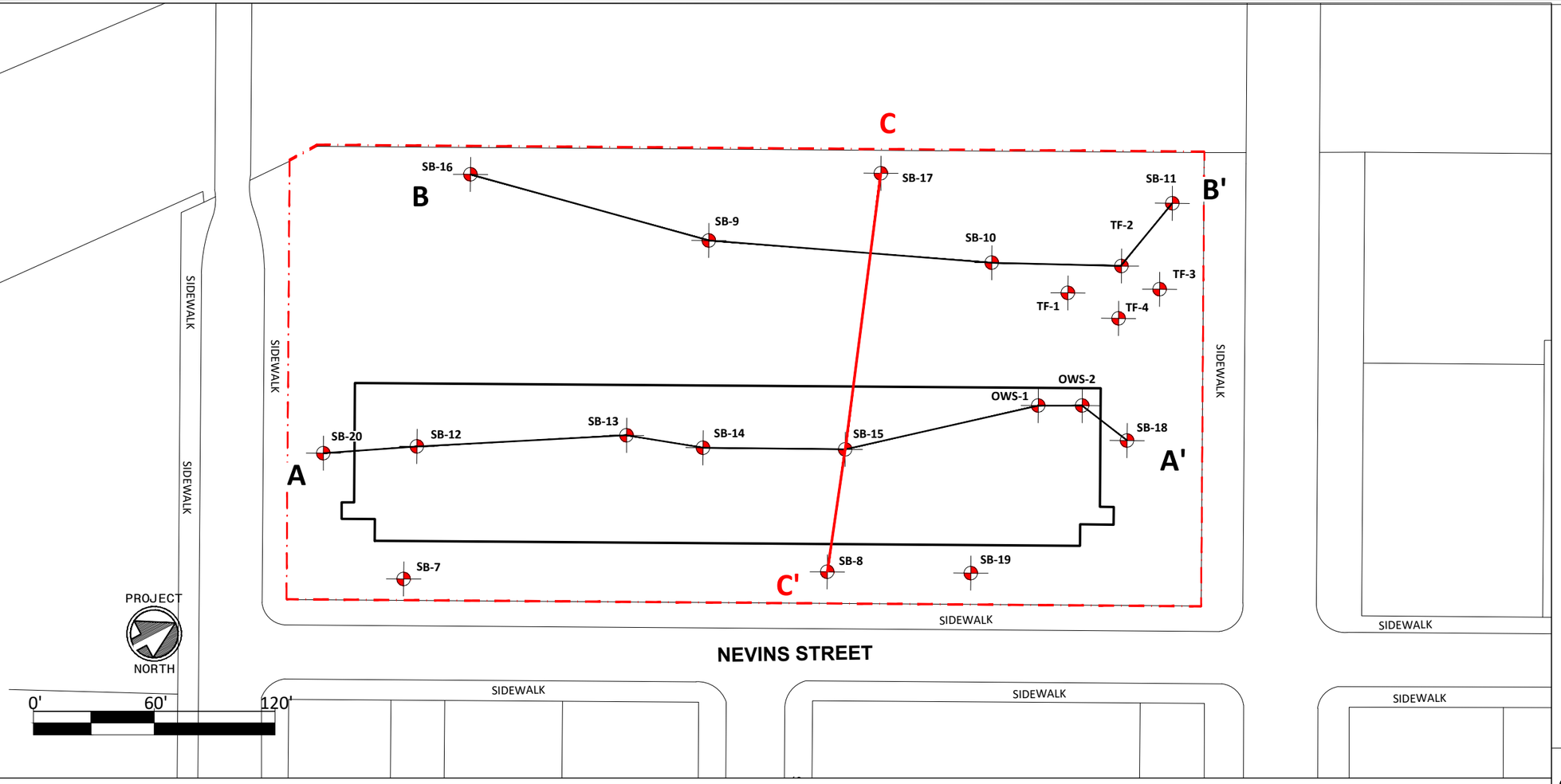
318 Nevins Street
Brooklyn, New York

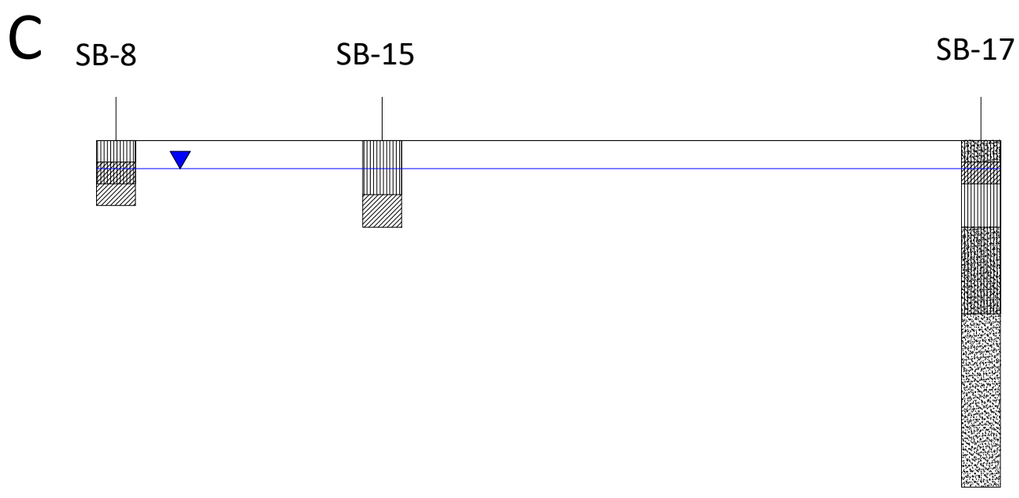
Figure 6B

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	DP
DATE:	11/7/2022
SCALE:	1" = 50'

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NOTES:

LEGEND

- SOIL BORING LOCATION

USCS SYMBOL

- GRAVEL
- POORLY GRADED SANDS (SP)
- SILTS & FINE SANDS (ML)
- CLAY (CL)

GEOLOGIC CROSS SECTION C - C'

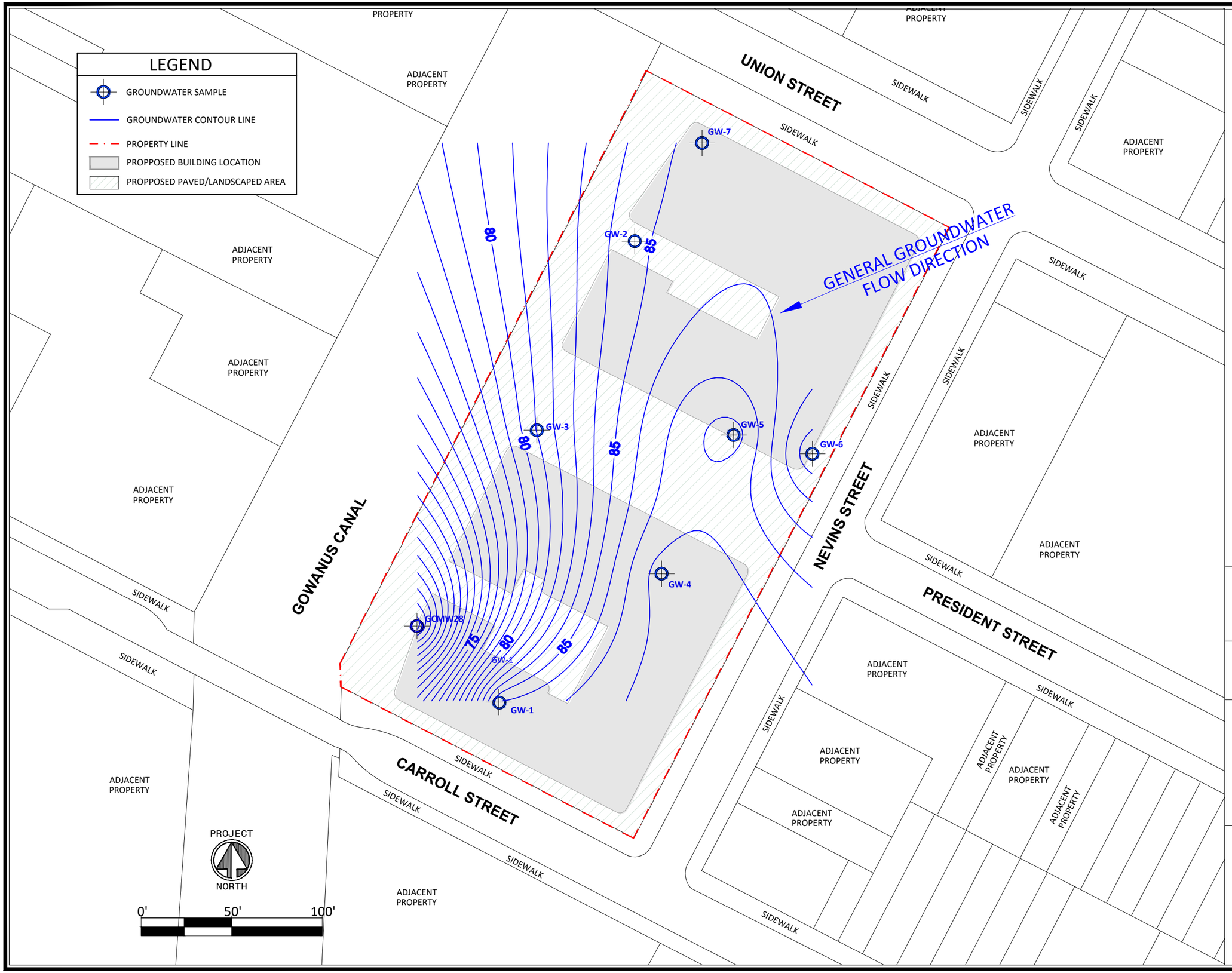
318 Nevins Street
Brooklyn, New York

Figure 6C

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	DP
DATE:	11/7/2022
SCALE:	1" = 50'

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NOTES:
1. GROUNDWATER ELEVATION REPORTED IN FEET ABOVE MEAN SEA LEVEL.

GROUNDWATER CONTOUR MAP

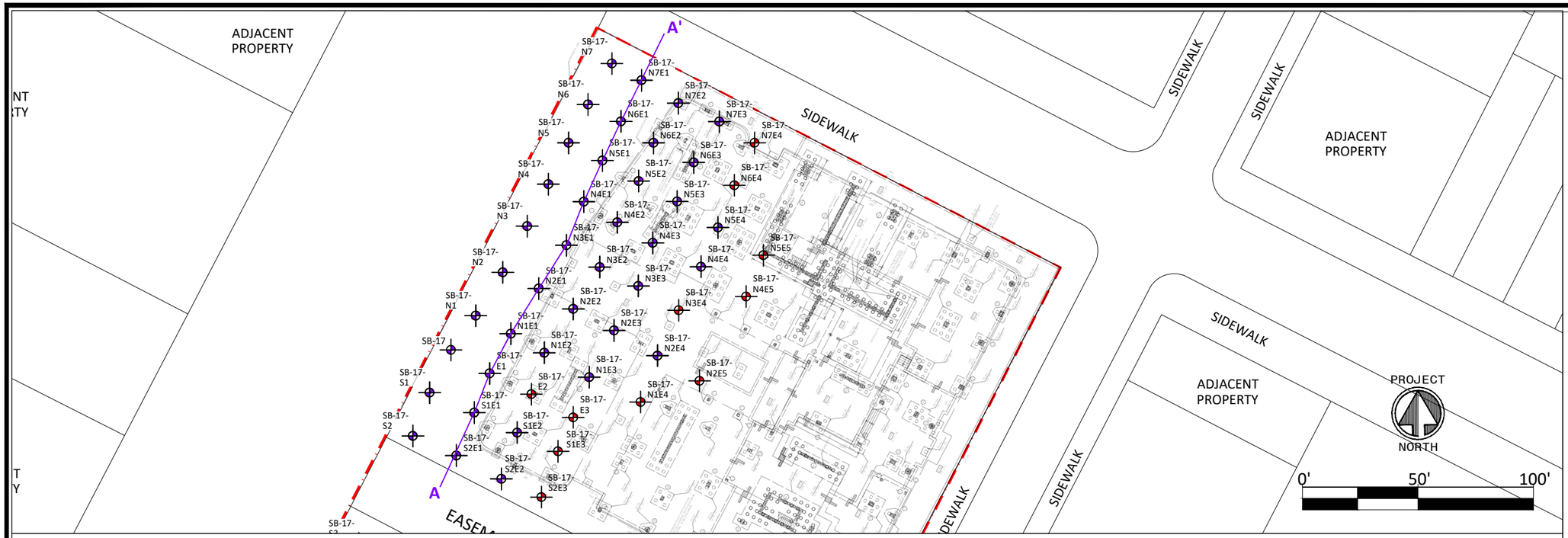
318 Nevins Street
Brooklyn, New York

Figure 7

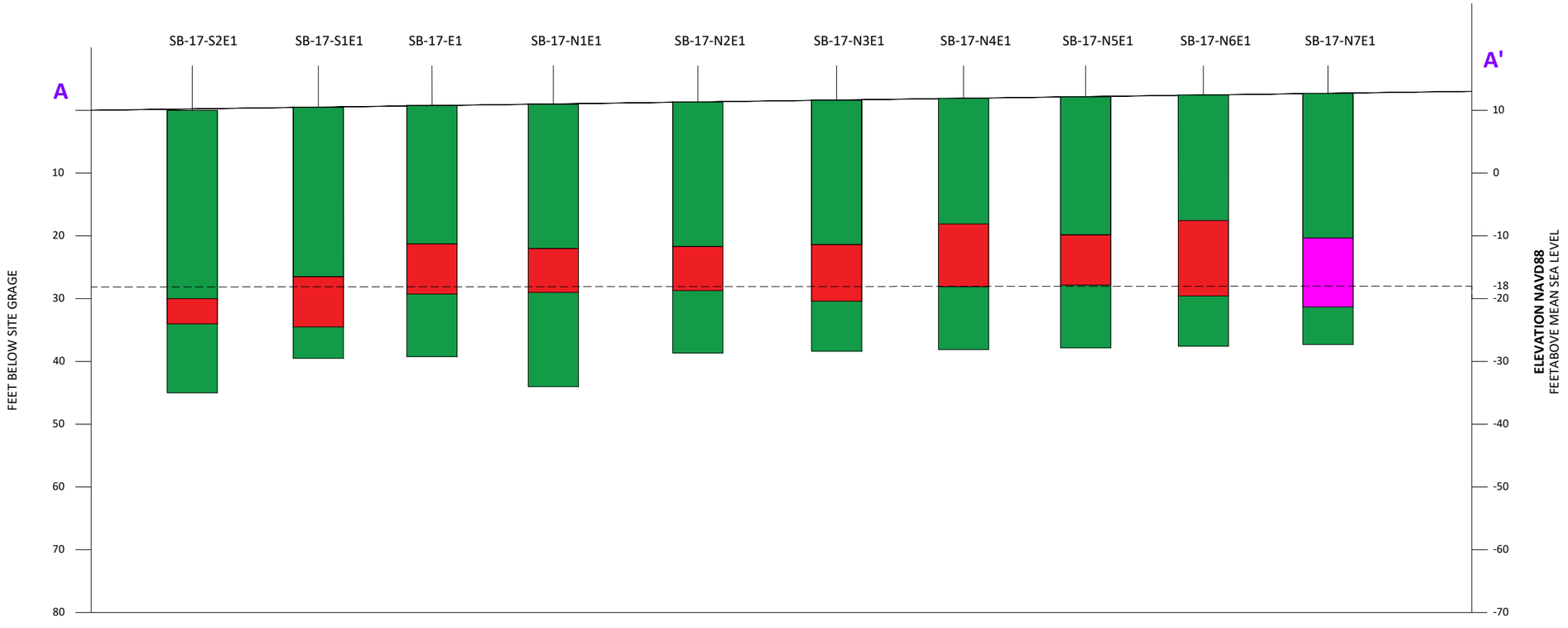
PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	DP
DATE:	10/21/2022
SCALE:	1" = 50'

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FAX (631) 269-1599



SCALE: 1" = 20'



NOTES:

LEGEND

- BORING IDENTIFIED EVIDENCE OF MGP COAL TAR
- NO MGP COAL TAR IDENTIFIED IN BORING
- PROPERTY LINE
- NO OBSERVED IMPACTS
- COAL TAR COATED
- COAL TAR SATURATED

CROSS SECTION NAPL PROFILE (A - A') WITH NAVD 88

318 Nevins Street
Brooklyn, New York

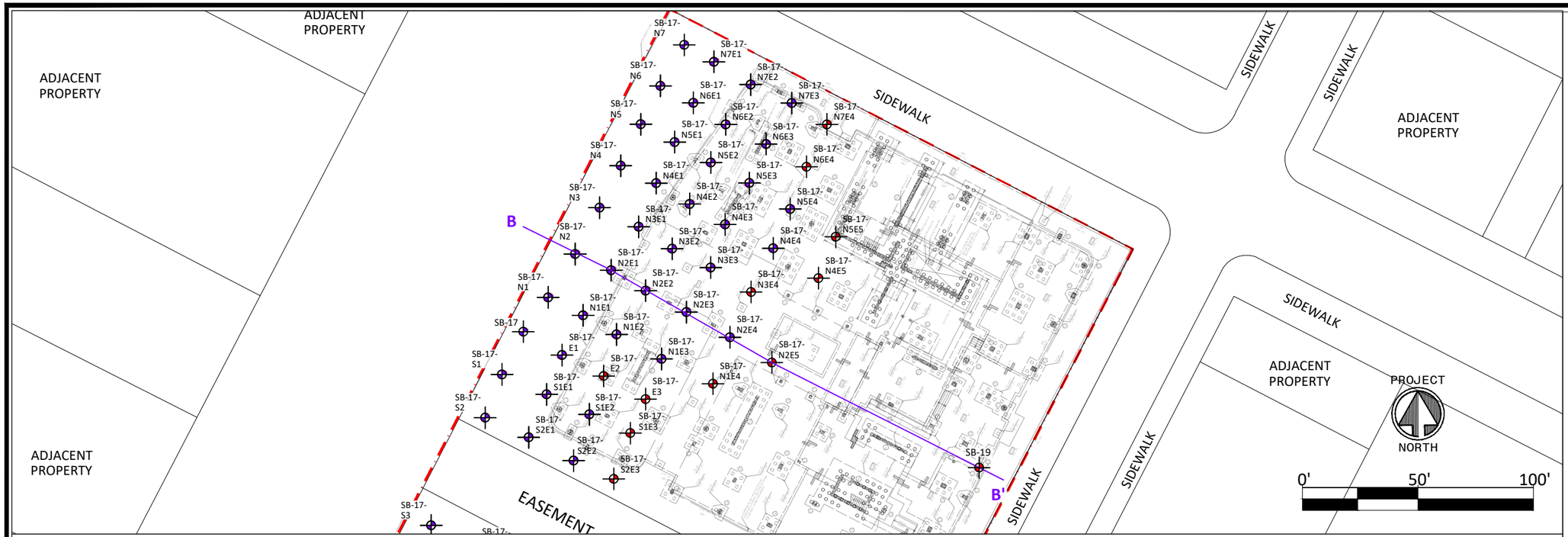
Figure 8A

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	KK/CC
DATE:	4/11/2023
SCALE:	AS SHOWN

REVISIONS

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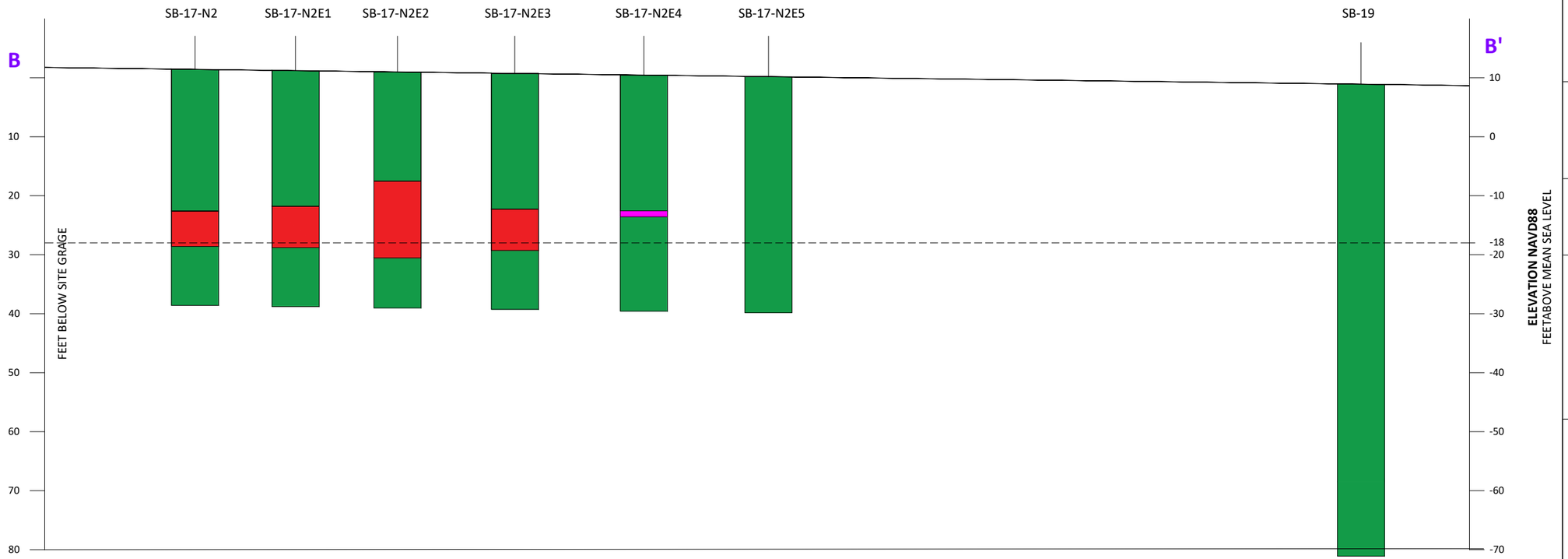


NOTES:

LEGEND

- BORING IDENTIFIED EVIDENCE OF MGP COAL TAR
- NO MGP COAL TAR IDENTIFIED IN BORING
- PROPERTY LINE
- NO OBSERVED IMPACTS
- COAL TAR COATED
- COAL TAR SATURATED

SCALE: 1" = 20'



CROSS SECTION NAPL PROFILE (B - B') WITH NAVD 88

318 Nevins Street
Brooklyn, New York

Figure 8B

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	KK/CC
DATE:	3/20/2023
SCALE:	AS SHOWN

REVISIONS

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FAX (631) 269-1599



NOTES:

LEGEND

- BORING IDENTIFIED EVIDENCE OF MGP COAL TAR
- NO MGP COAL TAR IDENTIFIED IN BORING
- ENTENT OF GCM/NAPL
- PROPERTY LINE

NAPL EXTENT ABOVE -18 NAVD 88

318 Nevins Street
Brooklyn, New York

Figure 8C

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	DP
DATE:	4/11/2023
SCALE:	1" = 50'

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NOTES:

LEGEND

- BORING IDENTIFIED EVIDENCE OF MGP COAL TAR
- NO MGP COAL TAR IDENTIFIED IN BORING
- SOLIDIFICATION/STABILIZATION AREA
- PROPERTY LINE

SOLIDIFICATION/STABILIZATION ZONE MAP

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Brooklyn, New York

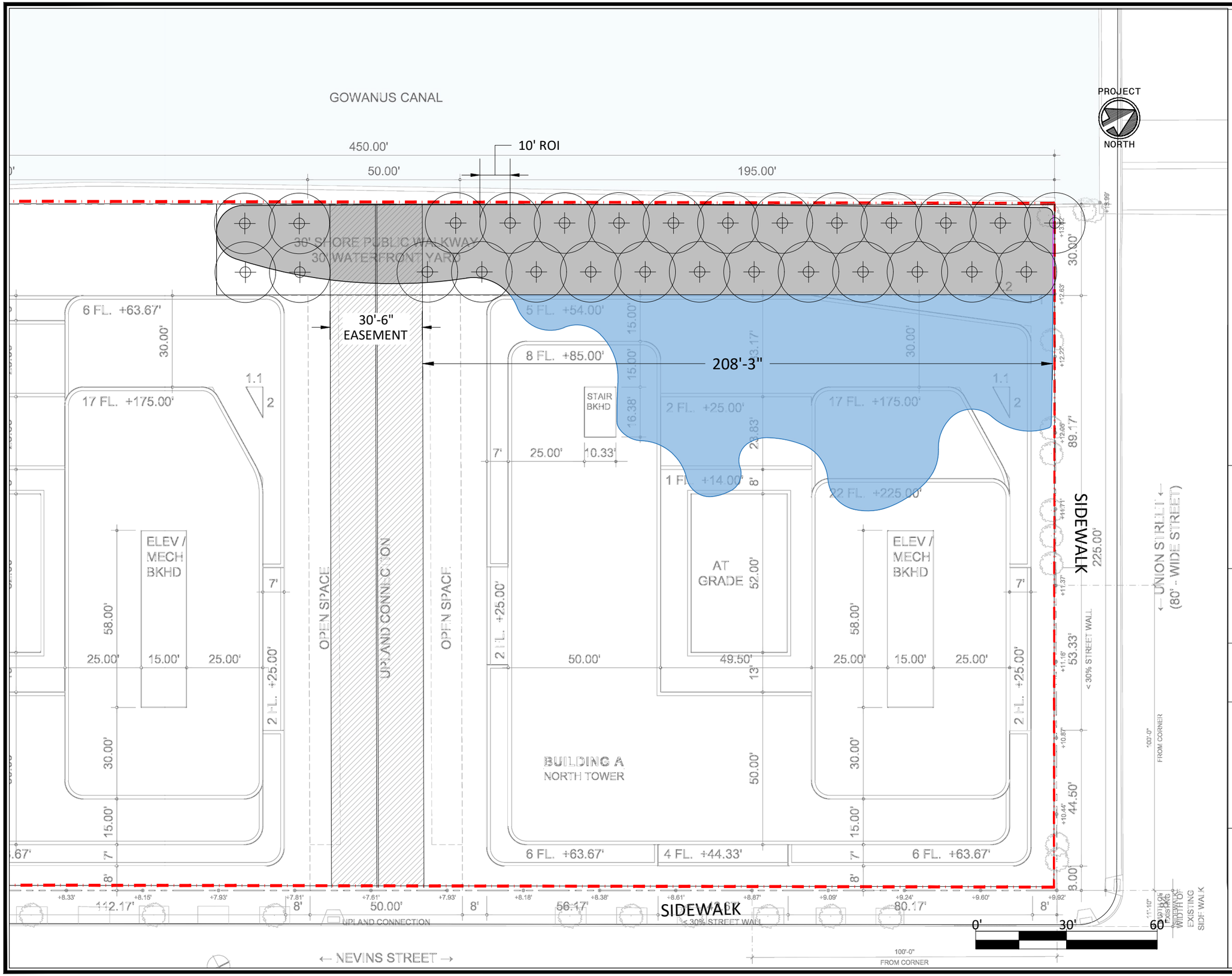
Figure 8D

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	DP
DATE:	05/02/2023
SCALE:	1" = 50'

REVISIONS

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FAX (631) 269-1599



LEGEND

- PROPERTY LINE
- ISS TREATMENT AREA
- ISGS TREATMENT AREA
- PROPOSED INJECTION LOCATON

NOTES:

ISGS TREATMENT AREA

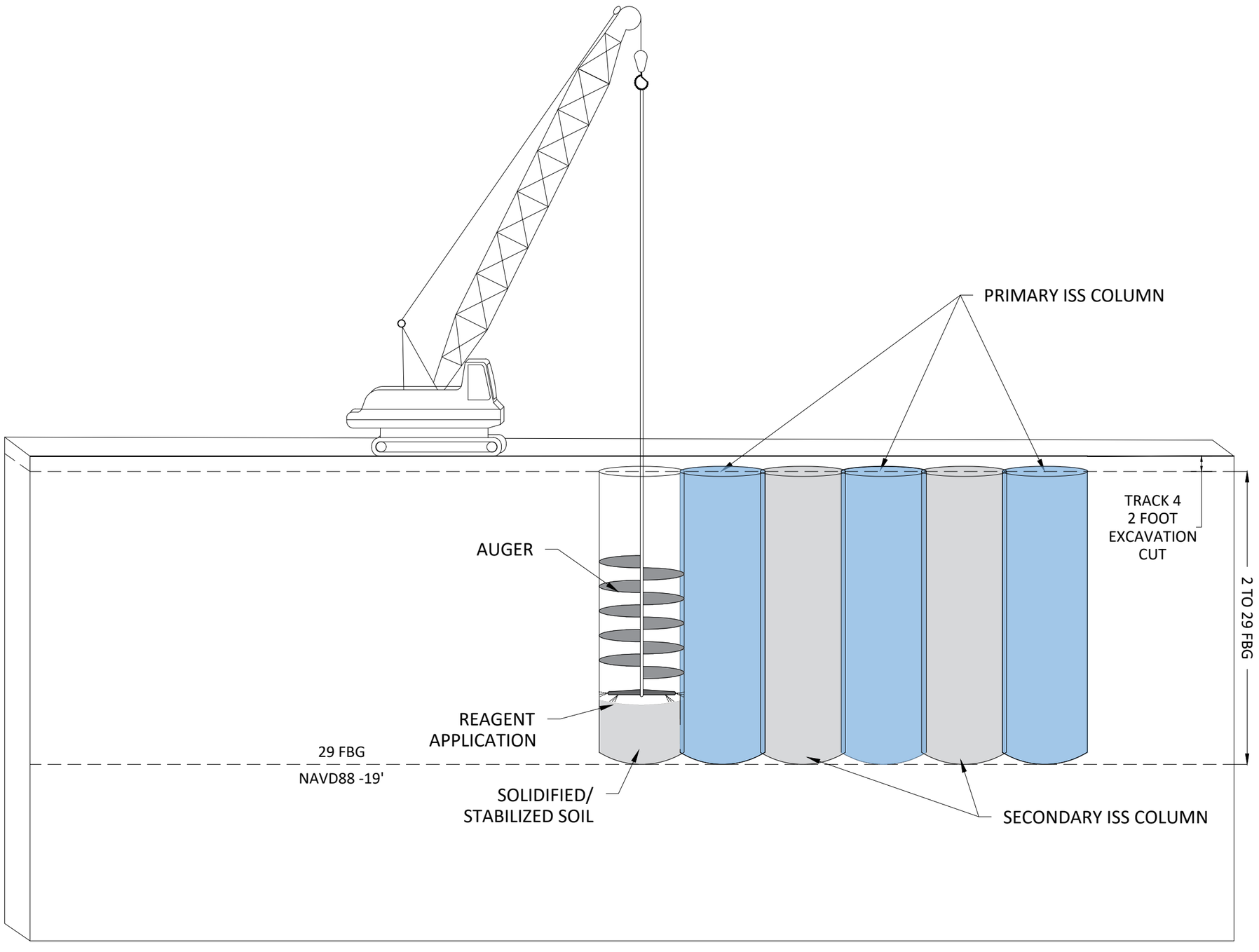
318 Nevins Street
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Figure 8E

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	JDF
DATE:	9/18/2023
SCALE:	1" = 30'

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FAX (631) 269-1599



NOTES:

ISS CROSS SECTION

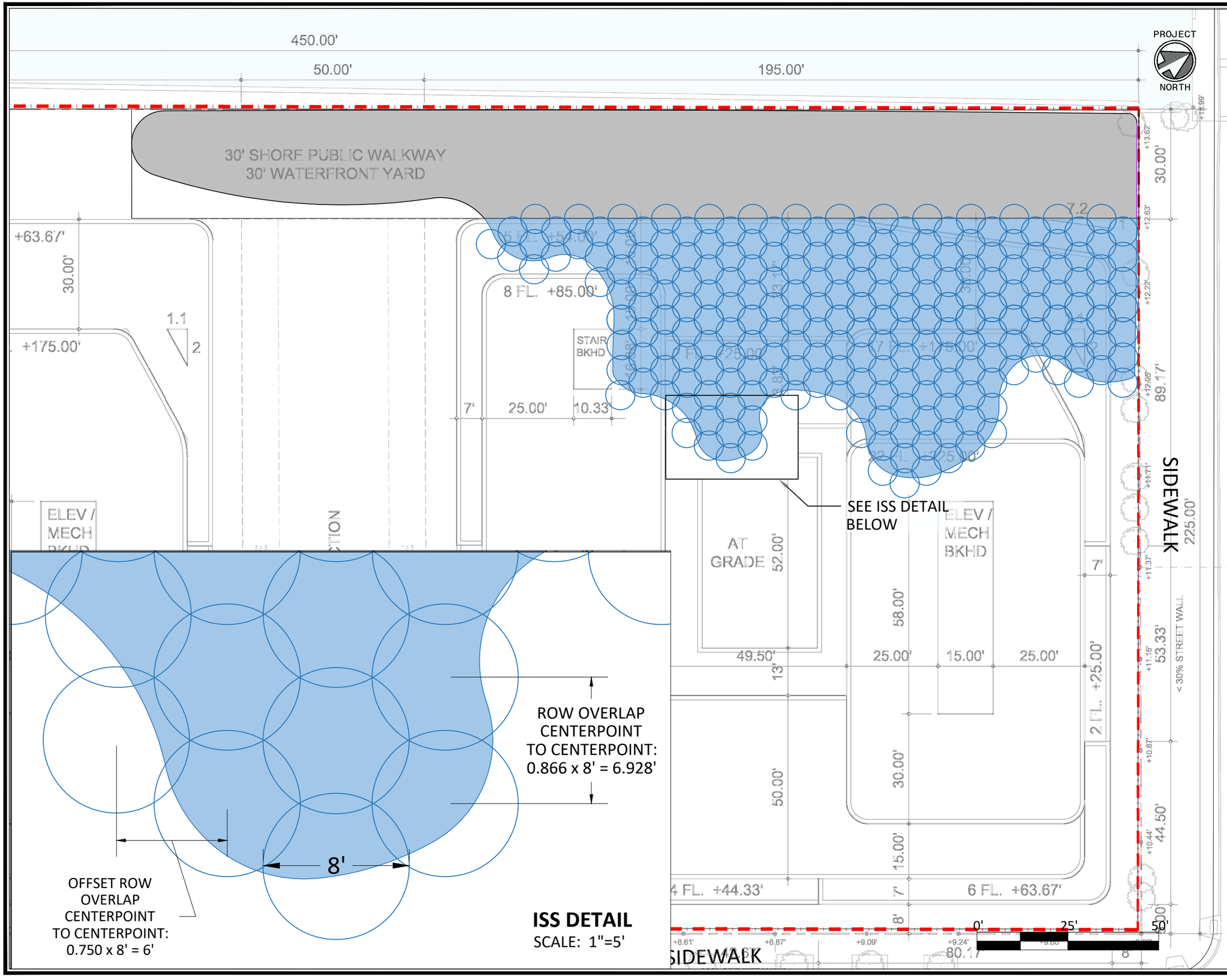
318 Nevins Street
Brooklyn, New York

Figure 8G

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	JDF
DATE:	9/18/2023
SCALE:	1" = 20'

REVISIONS	

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LEGEND

- PROPERTY LINE
- ISS TREATMENT AREA
- ISGS TREATMENT AREA

NOTES:

ISS TREATMENT AREA

318 Nevins Street
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Figure 8F

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	JDF
DATE:	9/18/2023
SCALE:	1" = 25'

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FAX (631) 269-1599

Sample ID	NYSDEC-UNRES	NYSDEC-RESRR	NYSDEC-PGW	SB-17 (0-2)	SB-17 (6-8)	SB-17 (23-25)	SB-17 (37-39)
Sampling Date				9/28/2022	9/28/2022	9/28/2022	9/28/2022
Volatile Organics (mg/kg)							
1,2,4-Trimethylbenzene	3.6	52	3.6	ND	ND	**5.2**	ND
Ethyl Benzene	1	41	1	ND	ND	**8.7**	ND
Methylene chloride	0.05	100	0.05	0.041	0.012	**2.3**	0.022
Xylenes, Total	0.26	100	1.6	ND	ND	**8.8**	ND
Semivolatile Organics (mg/kg)							
2-Methylphenol	0.33	100	0.33	ND	ND	**ND**	ND
3- & 4-Methylphenols	0.33	100	0.33	ND	ND	**ND**	ND
Acenaphthene	20	100	98	ND	ND	**136**	ND
Benzo(a)anthracene	1	1	1	0.399	ND	**45.8**	ND
Benzo(a)pyrene	1	1	22	0.421	ND	**35.5**	ND
Benzo(b)fluoranthene	1	1	1.7	0.371	ND	**16.3**	ND
Benzo(k)fluoranthene	0.8	3.9	1.7	0.339	ND	**19.8**	ND
Chrysene	1	3.9	1	0.404	ND	**41.2**	ND
Dibenzo(a,h)anthracene	0.33	0.33	1000	0.0897	ND	**4.14**	ND
Fluorene	30	100	386	ND	ND	**71.2**	ND
Indeno(1,2,3-cd)pyrene	0.5	0.5	8.2	0.248	ND	**10.2**	ND
Naphthalene	12	100	12	ND	ND	**497**	0.0502
Phenanthrene	100	100	1000	0.296	ND	**259**	ND
Pyrene	100	100	1000	0.726	ND	**125**	ND
Pesticides (mg/kg)							
No Exceedance							
Metals (mg/kg)							
Copper	50	270	1720	**151**	35	6.19	13.8
Lead	63	400	450	**344**	**179**	5.87	10.6
Mercury	0.18	0.81	0.73	**0.61**	**0.853**	ND	ND
Nickel	30	310	130	**33.2**	24.2	7.79	21.8
Zinc	109	10000	2480	**459**	68.4	20.3	37.6
PCB (mg/kg)							
No Exceedance							
PFAS (mg/kg)							
Perfluorooctanesulfonic acid (PFOS)	0.88	44	3.7	**3.15**	0.55	ND	ND

Sample ID	NYSDEC-UNRES	NYSDEC-RESRR	NYSDEC-PGW	SB-9 (0-2)	SB-9 (6-8)	SB-9 (78-80)
Sampling Date				10/5/2022	10/5/2022	10/5/2022
Volatile Organics (mg/kg)						
Methylene chloride	0.05	100	0.05	0.00530	0.00540	**0.066**
Semivolatile Organics (mg/kg)						
Benzo(a)anthracene	1	1	1	**9.26**	ND	ND
Benzo(a)pyrene	1	1	22	**12.7**	ND	ND
Benzo(b)fluoranthene	1	1	1.7	**9.9**	ND	ND
Benzo(k)fluoranthene	0.8	3.9	1.7	**10.9**	ND	ND
Chrysene	1	3.9	1	**8.36**	ND	ND
Dibenzo(a,h)anthracene	0.33	0.33	1000	**1.8**	ND	ND
Indeno(1,2,3-cd)pyrene	0.5	0.5	8.2	**3.76**	ND	ND
Pesticides (mg/kg)						
No Exceedance						
Metals (mg/kg)						
Arsenic	13	16	16	**15.6**	4.3	ND
Copper	50	270	1720	**95.3**	24	8.57
Lead	63	400	450	**249**	25.6	5.77
Mercury	0.18	0.81	0.73	**1.28**	**4.85**	ND
Nickel	30	310	130	20.6	**48**	**33.2**
Selenium	3.9	180	4	**4.27**	**5.03**	ND
Zinc	109	10000	2480	**490**	47.4	18.4
PCB (mg/kg)						
No Exceedance						
PFAS (mg/kg)						
Perfluorooctanesulfonic acid (PFOS)	0.88	44	3.7	0.323	**1.75**	ND

Sample ID	NYSDEC-UNRES	NYSDEC-RESRR	NYSDEC-PGW	SB-16 (0-2)	SB-16 (6-7)	SB-16 (35-37)	SB-16 (45-47)	SB-16 (68-70)	SB-16 (78-80)
Sampling Date				9/27/2022	9/27/2022	9/27/2022	9/27/2022	9/28/2022	9/28/2022
Volatile Organics (mg/kg)									
Ethyl Benzene	1	41	1	ND	ND	0.43	**1.4**	0.0026	0.0025
Methylene chloride	0.05	100	0.05	ND	ND	**2.5**	**2.7**	ND	**0.062**
Xylenes, Total	0.26	100	1.6	ND	ND	ND	**1.5**	ND	ND
Semivolatile Organics (mg/kg)									
Acenaphthene	20	100	98	1.9	1.02	**127**	4.7	ND	ND
Acenaphthylene	100	100	107	1.16	0.486	**107**	2.99	ND	ND
Anthracene	100	100	1000	5.09	2.39	**109**	4.05	ND	ND
Benzo(a)anthracene	1	1	1	**8.73**	**5.22**	**62.9**	**2.32**	ND	ND
Benzo(a)pyrene	1	1	22	**9.14**	**4.96**	**59.9**	**1.75**	ND	ND
Benzo(b)fluoranthene	1	1	1.7	**6.92**	**3.50**	**21.8**	0.714	ND	ND
Benzo(k)fluoranthene	0.8	3.9	1.7	**6.96**	**3.34**	**32.1**	**1.01**	ND	ND
Chrysene	1	3.9	1	**8.66**	**5.07**	**59.3**	**2.16**	ND	ND
Dibenzo(a,h)anthracene	0.33	0.33	1000	**1.22**	**0.661**	**4.69**	0.18	ND	ND
Dibenzofuran	7	59	210	ND	0.545	**11.2**	ND	ND	ND
Fluoranthene	100	100	1000	18.8	11.9	**116**	4.08	ND	ND
Fluorene	30	100	386	2.26	1.02	**120**	4.87	ND	ND
Indeno(1,2,3-cd)pyrene	0.5	0.5	8.2	**5.31**	**1.78**	**20.5**	0.459	ND	ND
Naphthalene	12	100	12	1.03	0.398	**446**	10.4	ND	ND
Phenanthrene	100	100	1000	16.8	10.3	**337**	11.8	ND	ND
Pyrene	100	100	1000	16.4	10.2	**158**	5.65	ND	ND
Pesticides (mg/kg)									
4,4'-DDD	0.0033	13	14	**0.00493**	ND	ND	ND	ND	ND
Metals (mg/kg)									
Copper	50	270	1720	**154**	23	6.76	7.32	18.4	9.68
Lead	63	400	450	**384**	**91.2**	5.66	4.44	8.73	7.41
Mercury	0.18	0.81	0.73	**0.454**	**0.631**	ND	ND	ND	ND
Nickel	30	310	130	**34.3**	**46.1**	12	13.3	**35.5**	**39.8**
Zinc	109	10000	2480	**363**	79.5	21.6	18.2	35.9	20.6
PCBs (mg/kg)									
No Exceedance									
PFAS (mg/kg)									
No Exceedance									

Sample ID	NYSDEC-UNRES	NYSDEC-RESRR	NYSDEC-PGW	SB-12 (4-6)	SB-12 (10-12)	SB-12 (18-20)
Sampling Date				10/7/2022	10/7/2022	10/7/2022
Volatile Organics (mg/kg)						
Acetone	0.05	100	0.05	0.0067	0.017	**0.054**
Semivolatile Organics (mg/kg)						
Benzo(a)anthracene	1	1	1	**2.82**	**2.04**	ND
Benzo(a)pyrene	1	1	22	**2.92**	**1.94**	ND
Benzo(b)fluoranthene	1	1	1.7	**2.39**	**1.75**	ND
Benzo(k)fluoranthene	0.8	3.9	1.7	**2.19**	**1.43**	ND
Chrysene	1	3.9	1	**2.64**	**1.92**	ND
Dibenzo(a,h)anthracene	0.33	0.33	1000	**0.409**	**0.41**	ND
Indeno(1,2,3-cd)pyrene	0.5	0.5	8.2	0.311	**1.32**	ND
Pesticides (mg/kg)						
No Exceedance						
Metals (mg/kg)						
Arsenic	13	16	16	**33.6**	**155**	8.83
Barium	350	400	820	229	**475**	47.3
Beryllium	7.2	72	47	0.267	**16.3**	0.438
Cadmium	2.5	4.3	7.5	0.971	**28.7**	ND
Copper	50	270	1720	**306**	**3,510**	14.2
Lead	63	400	450	**550**	**2,230**	22.2
Mercury	0.18	0.81	0.73	**1.19**	**0.561**	ND
Nickel	30	310	130	**43**	**172**	27.5
Zinc	109	10000	2480	**638**	**1,280**	74.2
PCB (mg/kg)						
No Exceedance						
PFAS (mg/kg)						
No Exceedance						

Sample ID	NYSDEC-UNRES	NYSDEC-RESRR	NYSDEC-PGW	SB-20 (0-2)	SB-20 (3-5)	SB-20 (6-8)	SB-20 (78-80)
Sampling Date				10/3/2022	10/3/2022	10/3/2022	10/3/2022
Volatile Organics (mg/kg)							
Methylene chloride	0.05	100	0.05	0.012	**0.053**	ND	0.01
Semivolatile Organics (mg/kg)							
No Exceedance							
Pesticides (mg/kg)							
No Exceedance							
Metals (mg/kg)							
Chromium, Hexavalent	1	110	19	**13**	ND	ND	ND
Lead	63	400	450	**130**	23.3	24.1	7.02
Nickel	30	310	130	23.2	12	**35.8**	**60.3**
PCB (mg/kg)							
No Exceedance							
PFAS (mg/kg)							
No Exceedance							

Sample ID	NYSDEC-UNRES	NYSDEC-RESRR	NYSDEC-PGW	SB-11 (0-2)	SB-11 (6-8)	SB-11 (13-15)
Sampling Date				10/6/2022	10/6/2022	10/6/2022
Volatile Organics (mg/kg)						
No Exceedance						
Semivolatile Organics (mg/kg)						
Benzo(a)anthracene	1	1	1	0.254	**1.94**	ND
Benzo(a)pyrene	1	1	22	ND	**2.26**	ND
Benzo(b)fluoranthene	1	1	1.7	ND	**1.71**	ND
Benzo(k)fluoranthene	0.8	3.9	1.7	ND	**1.530**	ND
Chrysene	1	3.9	1	0.25	**1.93**	ND
Dibenzo(a,h)anthracene	0.33	0.33	1000	ND	**0.481**	ND
Indeno(1,2,3-cd)pyrene	0.5	0.5	8.2	ND	**1.57**	ND
Pesticides (mg/kg)						
4,4'-DDE	0.0033	8.9	17	**0.00373**	0.00214	ND
Metals (mg/kg)						
Copper	50	270	1720	29.3	**54.4**	11.7
Lead	63	400	450	44.6	**186**	10.8
Mercury	0.18	0.81	0.73	0.0876	**0.647**	ND
Nickel	30	310	130	14.2	**49.2**	12.3
Zinc	109	10000	2480	56.2	**147**	22.3
PCB (mg/kg)						
No Exceedance						
PFAS (mg/kg)						
No Exceedance						

Sample ID	NYSDEC-UNRES	NYSDEC-RESRR	NYSDEC-PGW	SB-10 (0-2)	SB-10 (6-8)	SB-10 (13-15)
Sampling Date				10/6/2022	10/6/2022	10/6/2022
Volatile Organics (mg/kg)						
No Exceedance						
Semivolatile Organics (mg/kg)						
Benzo(a)anthracene	1	1	1	**4.67**	0.539	ND
Benzo(a)pyrene	1	1	22	**4.4**	0.572	ND
Benzo(b)fluoranthene	1	1	1.7	**3.53**	0.435	ND
Benzo(k)fluoranthene	0.8	3.9	1.7	**2.61**	0.422	ND
Chrysene	1	3.9	1	**4.38**	0.537	ND
Dibenzo(a,h)anthracene	0.33	0.33	1000	**0.517**	ND	ND
Indeno(1,2,3-cd)pyrene	0.5	0.5	8.2	**2.19**	0.375	ND
Pesticides (mg/kg)						
4,4'-DDD	0.0033	13	14	**0.00565**	ND	ND
Metals (mg/kg)						
Copper	50	270	1720	35.5	**67**	5.19
Lead	63	400	450	**169**	**337**	6.29
Mercury	0.18	0.81	0.73	**0.36**	**1.52**	ND
Nickel	30	310	130	**42.5**	13.4	6.44
Zinc	109	10000	2480	**119**	**135**	24
PCB (mg/kg)						
No Exceedance						
PFAS (mg/kg)						
No Exceedance						

Sample ID	NYSDEC-UNRES	NYSDEC-RESRR	NYSDEC-PGW	SB-7 (0-2)	SB-7 (6-8)	SB-7 (13-15)
Sampling Date				10/6/2022	10/6/2022	10/6/2022
Volatile Organics (mg/kg)						
No Exceedance						
Semivolatile Organics (mg/kg)						
No Exceedance						
Pesticides (mg/kg)						
No Exceedance						
Metals (mg/kg)						
Copper	50	270	1720	**88**	46.5	13.3
Lead	63	400	450	**242**	**119**	27.1
Mercury	0.18	0.81	0.73	**1.02**	**0.434**	ND
Nickel	30	310	130	**35.4**	**61.6**	17.1
Zinc	109	10000	2480	**239**	104	39.6
PCB (mg/kg)						
No Exceedance						
PFAS (mg/kg)						
No Exceedance						

Sample ID	NYSDEC-UNRES	NYSDEC-RESRR	NYSDEC-PGW	TF-4 (6-7)	TF-4 (8-10)	TF-4 (11-13)
Sampling Date				10/10/2022	10/10/2022	10/10/2022
Volatile Organics (mg/kg)						
Acetone	0.05	100	0.05	ND	**0.75**	0.015
Methylene chloride	0.05	100	0.05	ND	**0.75**	ND
Xylenes, Total	0.26	100	1.6	ND	**1.1**	ND
Semivolatile Organics (mg/kg)						
Benzo(a)anthracene	1	1	1	**1.2**	ND	ND
Benzo(a)pyrene	1	1	22	**1.71**	ND	ND
Benzo(b)fluoranthene	1	1	1.7	**1.11**	ND	ND
Benzo(k)fluoranthene	0.8	3.9	1.7	**1.03**	ND	ND
Chrysene	1	3.9	1	**1.11**	ND	ND
Indeno(1,2,3-cd)pyrene	0.5	0.5	8.2	**1.02**	ND	ND
Pesticides (mg/kg)						
No Exceedance						
Metals (mg/kg)						
Copper	50	270	1720	**240**	48.700	11.6
Lead	63	400	450	**156**	**303**	14.9
Mercury	0.18	0.81	0.73	**0.927**	**1.4**	ND
Nickel	30	310	130	**34.7**	**34.7**	18.2
Zinc	109	10000	2480	**277**	**123**	34.4
PCB (mg/kg)						
No Exceedance						
PFAS (mg/kg)						
No Exceedance						

Sample ID	NYSDEC-UNRES	NYSDEC-RESRR	NYSDEC-PGW	SB-18 (72-74)	SB-18 (78-80)
Sampling Date				9/30/2022	9/30/2022
Volatile Organics (mg/kg)					
Methylene chloride	0.05	100	0.05	ND	**0.073**
Semivolatile Organics (mg/kg)					
Benzo(a)anthracene	1	1	1	**1.200**	**1.6**
Benzo(a)pyrene	1	1	22	**1.03**	**2.04**
Benzo(b)fluoranthene	1	1	1.7	0.915	**2.4**
Benzo(k)fluoranthene	0.8	3.9	1.7	**0.853**	**1.93**
Chrysene	1	3.9	1	**1.13**	**2.38**
Dibenzo(a,h)anthracene	0.33	0.33	1000	0.248	**0.576**
Indeno(1,2,3-cd)pyrene	0.5	0.5	8.2	**0.626**	**2.04**
Pesticides (mg/kg)					
No Exceedance					
Metals (mg/kg)					
Nickel	30	310	130	**46**	**59.2**
PCB (mg/kg)					
No Exceedance					
PFAS (mg/kg)					
No Exceedance					

Sample ID	NYSDEC-UNRES	NYSDEC-RESRR	NYSDEC-PGW	OWS-1 (5-6)	OWS-1 (6-8)
Sampling Date				10/10/2022	10/10/2022
Volatile Organics (mg/kg)					
No Exceedance					
Semivolatile Organics (mg/kg)					
Benzo(a)anthracene	1	1	1	**7.74**	**3.54**
Benzo(a)pyrene	1	1	22	**8.41**	**10.1**
Benzo(b)fluoranthene	1	1	1.7	**5.78**	**3.64**
Benzo(k)fluoranthene	0.8	3.9	1.7	**7.16**	**4.95**
Chrysene	1	3.9	1	**7.39**	**3.11**
Dibenzo(a,h)anthracene	0.33	0.33	1000	**0.98**	0.205
Indeno(1,2,3-cd)pyrene	0.5	0.5	8.2	**4.31**	**4.98**
Pesticides (mg/kg)					
No Exceedance					
Metals (mg/kg)					
Copper	50	270	1720	**1,300**	**80.1**
Lead	63	400	450	**225**	**827**
Mercury	0.18	0.81	0.73	**0.207**	**0.828**
Zinc	109	10000	2480	**215**	75.6
PCB (mg/kg)					
No Exceedance					
PFAS (mg/kg)					
Perfluorooctanesulfonic acid (PFOS)	0.88	44	3.7	3.940	ND

Sample ID	NYSDEC-UNRES	NYSDEC-RESRR	NYSDEC-PGW	OWS-2 (6)
Sampling Date				10/10/2022
Volatile Organics (mg/kg)				
No Exceedance				
Semivolatile Organics (mg/kg)				
Benzo(a)anthracene	1	1	1	**2.2**
Benzo(a)pyrene	1	1	22	**5.4**
Benzo(b)fluoranthene	1	1	1.7	**2.5**
Benzo(k)fluoranthene	0.8	3.9	1.7	**2.44**
Chrysene	1	3.9	1	**2.1**
Dibenzo(a,h)anthracene	0.33	0.33	1000	**0.375**
Indeno(1,2,3-cd)pyrene	0.5	0.5	8.2	**2.65**
Pesticides (mg/kg)				
No Exceedance				
Metals (mg/kg)				
Copper	50	270	1720	**131**
Lead	63	400	450	**357**
Mercury	0.18	0.81	0.73	**0.938**
Zinc	109	10000	2480	**211**
PCB (mg/kg)				
No Exceedance				
PFAS (mg/kg)				
No Exceedance				

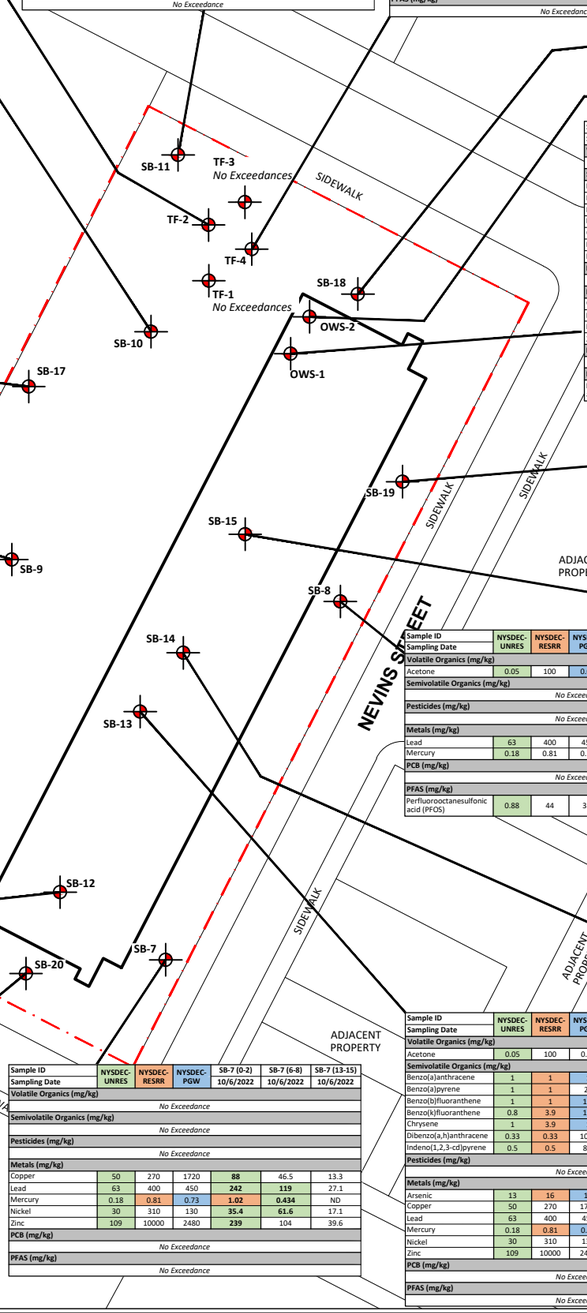
Sample ID	NYSDEC-UNRES	NYSDEC-RESRR	NYSDEC-PGW	SB-19 (0-2)	SB-19 (6-8)	SB-19 (12-14)	SB-19 (83-85)
Sampling Date				9/30/2022	9/30/2022	9/30/2022	10/5/2022
Volatile Organics (mg/kg)							
Methylene chloride	0.05	100	0.05	0.026	**0.055**	ND	ND
Semivolatile Organics (mg/kg)							
Indeno(1,2,3-cd)pyrene	0.5	0.5	8.2	**0.583**	ND	ND	ND
Pesticides (mg/kg)							
No Exceedance							
Metals (mg/kg)							
Lead	63	400	450	**76.3**	**91.7**	**134**	5.24
Mercury	0.18	0.81	0.73	**0.36**	**0.204**	ND	ND
Nickel	30	310	130	21.2	19.4	**33.4**	28.3
Selenium	3.9	180	4	ND	ND	ND	ND
PCB (mg/kg)							
No Exceedance							
PFAS (mg/kg)							
No Exceedance							

Sample ID	NYSDEC-UNRES	NYSDEC-RESRR	NYSDEC-PGW	SB-8 (0-2)	SB-8 (6-8)	SB-8 (13-15)
Sampling Date				10/6/2022	10/6/2022	10/6/2022
Volatile Organics (mg/kg)						
Acetone	0.05	100	0.05	0.00550	**0.0780**	0.0210
Semivolatile Organics (mg/kg)						
No Exceedance						
Pesticides (mg/kg)						
No Exceedance						
Metals (mg/kg)						
Lead	63	400	450	**140**	**156**	18.300
Mercury	0.18	0.81	0.73	**0.190**	ND	ND
PCB (mg/kg)						
No Exceedance						
PFAS (mg/kg)						
Perfluorooctanesulfonic acid (PFOS)	0.88	44	3.7	**2.110**	ND	ND

Sample ID	NYSDEC-UNRES	NYSDEC-RESRR	NYSDEC-PGW	SB-15 (4-6)	SB-15 (10-12)	SB-15 (8-20)
Sampling Date				10/6/2022	10/6/2022	10/6/2022
Volatile Organics (mg/kg)						
Acetone	0.05	100	0.05	ND	0.027	**0.051**
Semivolatile Organics (mg/kg)						
Benzo(a)anthracene	1	1	1	**2.34**	**1.02**	ND
Benzo(a)pyrene	1	1	22	**2.37**	**3.55**	ND
Benzo(b)fluoranthene	1	1	1.7	**2**	**1.58**	ND
Benzo(k)fluoranthene	0.8	3.9	1.7	**1.86**	**1.61**	ND
Chrysene	1	3.9	1	**2.22**	**1.03**	ND
Indeno(1,2,3-cd)pyrene	0.5	0.5	8.2	**1.59**	**2.16**	ND
Pesticides (mg/kg)						
No Exceedance						
Metals (mg/kg)						
Arsenic	13	16	16	2.26	**30.1**	ND
Copper	50	270	1720	**129**	**255**	13.4
Lead	63	400	450	**154**	**2,900**	18
Mercury	0.18	0.81	0.73	**0.408**	**4.99**	ND
Nickel	30	310	130	25.5	**40.6**	23.8
Selenium	3.9	180	4	ND	ND	ND
Zinc	109	10000	2480	**236**	**457**	53
PCB (mg/kg)						
No Exceedance						
PFAS (mg/kg)						
No Exceedance						

Sample ID	NYSDEC-UNRES	NYSDEC-RESRR	NYSDEC-PGW	SB-13 (4-6)	SB-13 (10-12)	SB-13 (18-20)
Sampling Date				10/7/2022	10/7/2022	10/7/2022
Volatile Organics (mg/kg)						
Acetone	0.05	100	0.05	0.037	**0.0580**	0.047
Semivolatile Organics (mg/kg)						
Benzo(a)anthracene	1	1	1	**1.96**	**1.46**	**8.07**
Benzo(a)pyrene	1	1	22	**2.1**	**1.41**	**7.95**
Benzo(b)fluoranthene	1	1	1.7	**1.7**	**1.12**	**7.08**
Benzo(k)fluoranthene	0.8	3.9	1.7	**1.55**	**0.903**	**6.03**
Chrysene	1	3.9	1	**1.9**	**1.39**	**8.46**
Dibenzo(a,h)anthracene	0.33	0.33	1000	**0.364**	0.242	**2.28**
Indeno(1,2,3-cd)pyrene	0.5	0.5	8.2	**1.22**	**0.755**	**3.78**
Pesticides (mg/kg)						
No Exceedance						
Metals (mg/kg)						
Arsenic	13	16	16	**16.7**	**14.6**	11.5
Copper	50	270	1720	**145**	**144**	**121**
Lead	63	400	450	**314**	**393**	**285**
Mercury	0.18	0.81	0.73	**0.871**	**0.96**	ND
Nickel	30	310	130	**30.5**	**30.8**	28.6
Zinc	109	10000	2480	**323**	**233**	**270**
PCB (mg/kg)						
No Exceedance						
PFAS (mg/kg)						
No Exceedance						

Sample ID	NYSDEC-UNRES	NYSDEC-RESRR	NYSDEC-PGW	SB-14 (4-6)	SB-14 (10-12)	SB-14 (18-20)
Sampling Date				10/7/2022	10/7/2022	10/7/2022
Volatile Organics (mg/kg)						
Acetone	0.05	100	0.05	ND	**0.06**	0.025
Semivolatile Organics (mg/kg)						
Benzo(a)anthracene	1	1	1	**4.2**	**9.57**	ND
Benzo(a)pyrene	1	1	22	**4.29**	**8.88**	ND
Benzo(b)fluoranthene	1	1	1.7	**3.49**	**6.71**	ND
Benzo(k)fluoranthene	0.8	3.9	1.7	**3.68**	**7.37**	ND
Chrysene	1	3.9	1	**4.21**	**8.92**	ND
Dibenzo(a,h)anthracene	0.33	0.33	1000	**0.722**	**1.58**	ND
Indeno(1,2,3-cd)pyrene	0.5	0.5	8.2	**2.83**	**4.32**	ND
Pesticides (mg/kg)						
No Exceedance						
Metals (mg/kg)						
Arsenic	13	16	16	**21.8**	10.5	6.06
Copper	50	270	1720	**194**	**104**	**62.3**
Lead	63	400	450	**397**	**302**	**279**
Mercury	0.18	0.81	0.73	**0.943**	**0.863**	0.037
Nickel	30	310	130	**33.4**	**44.3**	**41.5**
Zinc	109	10000	2480	**599**	**315**	**171**
PCB (mg/kg)						
No Exceedance						
PFAS (mg/kg)						
No Exceedance						



NOTES:

1. FORMER ON-SITE STRUCTURE WAS DEMOLISHED IN SEPTEMBER 2022. FOUNDATION SLAB REMAINS IN PLACE ELEVATED 4 FEET ABOVE GROUND SURFACE.
2. NYSDEC-UNRES: NYSDEC PART 375 UNRESTRICTED USE SOIL CLEANUP OBJECTIVES.
3. NYSDEC-RESRR: NYSDEC PART 375 RESTRICTED USE SOIL CLEANUP OBJECTIVES -RESTRICTED RESIDENTIAL.
4. NYSDEC-PGW: NYSDEC PART 375 RESTRICTED USE SOIL CLEANUP OBJECTIVES-PROTECTION OF GROUNDWATER.

LEGEND

- SOIL BORING LOCATION
- PROPERTY LINE

PROJECT

NORTH

0' 50' 100'

SOIL RESULTS MAP

318 Nevins Street
Brooklyn, New York

Figure 9

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	DP
DATE:	10/21/2022
SCALE:	1" = 50'
REVISIONS	

IMPACT ENVIRONMENTAL ENGINEERING AND GEOLOGY PLLC
170 KEYLAND COURT
BOHEMIA, NEW YORK 11716
TEL (631) 269-8800
FAX (631) 269-1599

LEGEND

- GROUNDWATER SAMPLE
- PROPERTY LINE

ADJACENT PROPERTY

Sample ID	NYSDEC - AWQS	GW-3
Sampling Date		10/11/2022
Volatile Organics (ug/L)		
NO EXCEEDANCES		
Semi-Volatile Organics (ug/L)		
Benzo(a)anthracene	0.002	**0.256**
Benzo(a)pyrene	0.002	**0.322**
Benzo(b)fluoranthene	0.002	**0.211**
Benzo(k)fluoranthene	0.002	**0.256**
Chrysene	0.002	**0.256**
Indeno(1,2,3-cd)pyrene	0.002	**0.111**
Pesticides (ug/L)		
NO EXCEEDANCES		
Total Metals (ug/L)		
Arsenic	25	**321**
Manganese	300	**1,270**
Sodium	20000	**312,000**
Dissolved Metals (ug/L)		
Arsenic	25	**106**
Manganese	300	**1,190**
Sodium	20000	**290,000**
PCBs (ug/L)		
NO EXCEEDANCES		
PFAS (ng/L)		
Perfluorohexanesulfonic acid (PFHxS)	100	**272**
Perfluorooctanesulfonic acid (PFOS)	10	**178**
Perfluorooctanoic acid (PFOA)	10	**84.8**

ADJACENT PROPERTY

Sample ID	NYSDEC - AWQS	GW2-100722
Sampling Date		10/7/2022
Volatile Organics (ug/L)		
Methyl tert-butyl ether (MTBE)	10	**11.6**
Semi-Volatile Organics (ug/L)		
NO EXCEEDANCES		
Pesticides (ug/L)		
NO EXCEEDANCES		
Total Metals (ug/L)		
Magnesium	35000	**54,900**
Manganese	300	**1,540**
Selenium	10	**30**
Sodium	20000	**795,000**
Dissolved Metals (ug/L)		
Magnesium	35000	**52,800**
Manganese	300	**1,450**
Selenium	10	**38.4**
Sodium	20000	**753,000**
PCBs (ug/L)		
NO EXCEEDANCES		
PFAS (ng/L)		
Perfluorooctanesulfonic acid (PFOS)	10	**31.5**
Perfluorooctanoic acid (PFOA)	10	**70**

Sample ID	NYSDEC - AWQS	GW-7
Sampling Date		10/11/2022
Volatile Organics (ug/L)		
Benzene	1	**2.45**
Methyl tert-butyl ether (MTBE)	10	**35.6**
Semi-Volatile Organics (ug/L)		
Benzo(a)anthracene	0.002	**0.789**
Benzo(a)pyrene	0.002	**1.09**
Benzo(b)fluoranthene	0.002	**0.756**
Benzo(k)fluoranthene	0.002	**0.833**
Chrysene	0.002	**0.789**
Indeno(1,2,3-cd)pyrene	0.002	**0.333**
Pesticides (ug/L)		
NO EXCEEDANCES		
Total Metals (ug/L)		
Copper	200	**445**
Lead	25	**169**
Magnesium	35000	**56,800**
Manganese	300	**1,090**
Selenium	10	**20.4**
Sodium	20000	**576,000**
Dissolved Metals (ug/L)		
Magnesium	35000	**64,700**
Manganese	300	**1,050**
Selenium	10	**14.5**
Sodium	20000	**554,000**
PCBs (ug/L)		
NO EXCEEDANCES		
PFAS (ng/L)		
Perfluorooctanesulfonic acid (PFOS)	10	**28.5**
Perfluorooctanoic acid (PFOA)	10	**52.8**

Sample ID	NYSDEC - AWQS	GW-5
Sampling Date		10/10/2022
Volatile Organics (ug/L)		
NO EXCEEDANCES		
Semi-Volatile Organics (ug/L)		
NO EXCEEDANCES		
Pesticides (ug/L)		
NO EXCEEDANCES		
Total Metals (ug/L)		
Antimony	3	**4.71**
Magnesium	35000	**160,000**
Manganese	300	**2,190**
Selenium	10	**25.2**
Sodium	20000	**475,000**
Dissolved Metals (ug/L)		
Antimony	3	**4.21**
Magnesium	35000	**160,000**
Manganese	300	**2,190**
Selenium	10	**20.5**
Sodium	20000	**475,000**
PCBs (ug/L)		
NO EXCEEDANCES		
PFAS (ng/L)		
Perfluorooctanoic acid (PFOA)	10	**50.9**

Sample ID	NYSDEC - AWQS	GW-6
Sampling Date		10/12/2022
Volatile Organics (ug/L)		
NO EXCEEDANCES		
Semi-Volatile Organics (ug/L)		
NO EXCEEDANCES		
Pesticides (ug/L)		
NO EXCEEDANCES		
Total Metals (ug/L)		
Manganese	300	**988**
Sodium	20000	**283,000**
Dissolved Metals (ug/L)		
Manganese	300	**902**
Sodium	20000	**278,000**
PCBs (ug/L)		
NO EXCEEDANCES		
PFAS (ng/L)		
Perfluorooctanesulfonic acid (PFOS)	10	**13.3**
Perfluorooctanoic acid (PFOA)	10	**63.5**

Sample ID	NYSDEC - AWQS	GW-4
Sampling Date		10/10/2022
Volatile Organics (ug/L)		
NO EXCEEDANCES		
Semi-Volatile Organics (ug/L)		
NO EXCEEDANCES		
Pesticides (ug/L)		
NO EXCEEDANCES		
Total Metals (ug/L)		
Magnesium	35000	**151,000**
Manganese	300	**1,500**
Sodium	20000	**348,000**
Dissolved Metals (ug/L)		
Magnesium	35000	**151,000**
Manganese	300	**1,500**
Sodium	20000	**348,000**
PCBs (ug/L)		
NO EXCEEDANCES		
PFAS (ng/L)		
Perfluorooctanoic acid (PFOA)	10	**45.9**

Sample ID	NYSDEC - AWQS	GCMW28
Sampling Date		10/11/2022
Volatile Organics (ug/L)		
cis-1,2-Dichloroethylene	5	**12.6**
Semi-Volatile Organics (ug/L)		
Benzo(a)anthracene	0.002	**0.178**
Benzo(a)pyrene	0.002	**0.289**
Benzo(k)fluoranthene	0.002	**0.211**
Chrysene	0.002	**0.178**
Indeno(1,2,3-cd)pyrene	0.002	**0.111**
Pesticides (ug/L)		
NO EXCEEDANCES		
Total Metals (ug/L)		
Manganese	300	**1,080**
Sodium	20000	**133,000**
Dissolved Metals (ug/L)		
Manganese	300	**967**
Sodium	20000	**126,000**
PCBs (ug/L)		
NO EXCEEDANCES		
PFAS (ng/L)		
1H,1H,2H,2H-Perfluorooctanes ulfonic acid (6:2 FTS)	100	**186**
Perfluorooctanoic acid (PFOA)	10	**26.5**

Sample ID	NYSDEC - AWQS	GW-1
Sampling Date		10/10/2022
Volatile Organics (ug/L)		
NO EXCEEDANCES		
Semi-Volatile Organics (ug/L)		
NO EXCEEDANCES		
Pesticides (ug/L)		
NO EXCEEDANCES		
Total Metals (ug/L)		
Magnesium	35000	**41,800**
Manganese	300	**466**
Sodium	20000	**329,000**
Dissolved Metals (ug/L)		
Magnesium	35000	**41,800**
Manganese	300	**466**
Sodium	20000	**329,000**
PCBs (ug/L)		
NO EXCEEDANCES		
PFAS (ng/L)		
Perfluorohexanesulfonic acid (PFHxS)	100	**2,230**
Perfluorohexanoic acid (PFHxA)	100	**131**
Perfluorooctanesulfonic acid (PFOS)	10	**121**
Perfluorooctanoic acid (PFOA)	10	**362**

GW-1 GW-2 GW-3 GW-4 GW-5 GW-6 GW-7 GCMW28

FORMER BUILDING FOUNDATION SLAB

SIDEWALK

ADJACENT PROPERTY

NOTES:
1. FORMER ON-SITE STRUCTURE WAS DEMOLISHED IN SEPTEMBER 2022. FOUNDATION SLAB REMAINS IN PLACE ELEVATED 4 FEET ABOVE GROUND SURFACE.

PROJECT NORTH

0' 50' 100'

GROUNDWATER RESULTS MAP

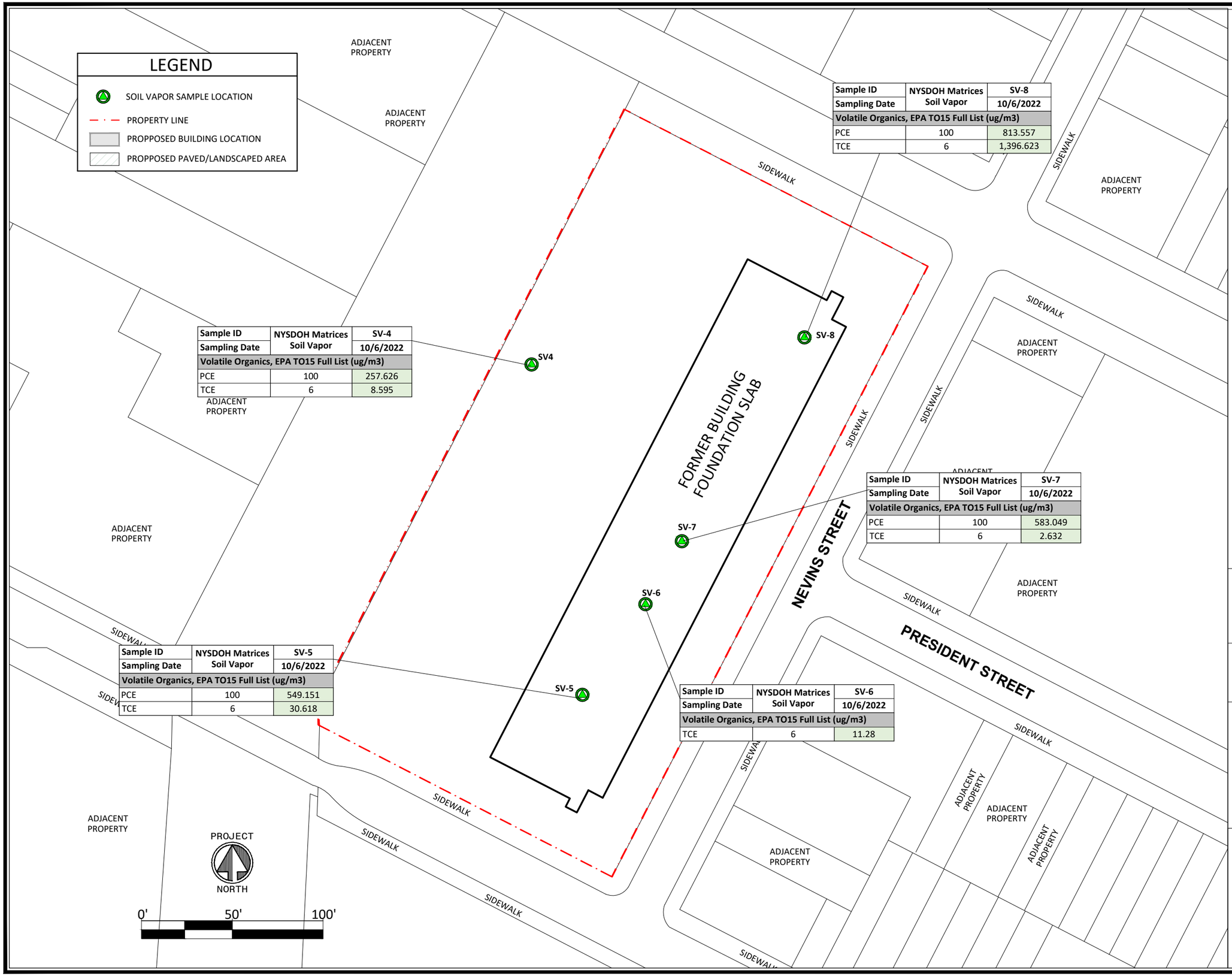
318 Nevins Street
Brooklyn, New York

Figure 10

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	DP
DATE:	10/21/2022
SCALE:	1" = 50'

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FAX (631) 269-1599



Sample ID	NYSDOH Matrices Soil Vapor	SV-4
Sampling Date		10/6/2022
Volatile Organics, EPA TO15 Full List (ug/m3)		
PCE	100	257.626
TCE	6	8.595

Sample ID	NYSDOH Matrices Soil Vapor	SV-8
Sampling Date		10/6/2022
Volatile Organics, EPA TO15 Full List (ug/m3)		
PCE	100	813.557
TCE	6	1,396.623

Sample ID	NYSDOH Matrices Soil Vapor	SV-7
Sampling Date		10/6/2022
Volatile Organics, EPA TO15 Full List (ug/m3)		
PCE	100	583.049
TCE	6	2.632

Sample ID	NYSDOH Matrices Soil Vapor	SV-5
Sampling Date		10/6/2022
Volatile Organics, EPA TO15 Full List (ug/m3)		
PCE	100	549.151
TCE	6	30.618

Sample ID	NYSDOH Matrices Soil Vapor	SV-6
Sampling Date		10/6/2022
Volatile Organics, EPA TO15 Full List (ug/m3)		
TCE	6	11.28

NOTES:
1. FORMER ON-SITE STRUCTURE WAS DEMOLISHED IN SEPTEMBER 2022. FOUNDATION SLAB REMAINS IN PLACE ELEVATED 4 FEET ABOVE GROUND SURFACE.

SOIL VAPOR RESULTS MAP

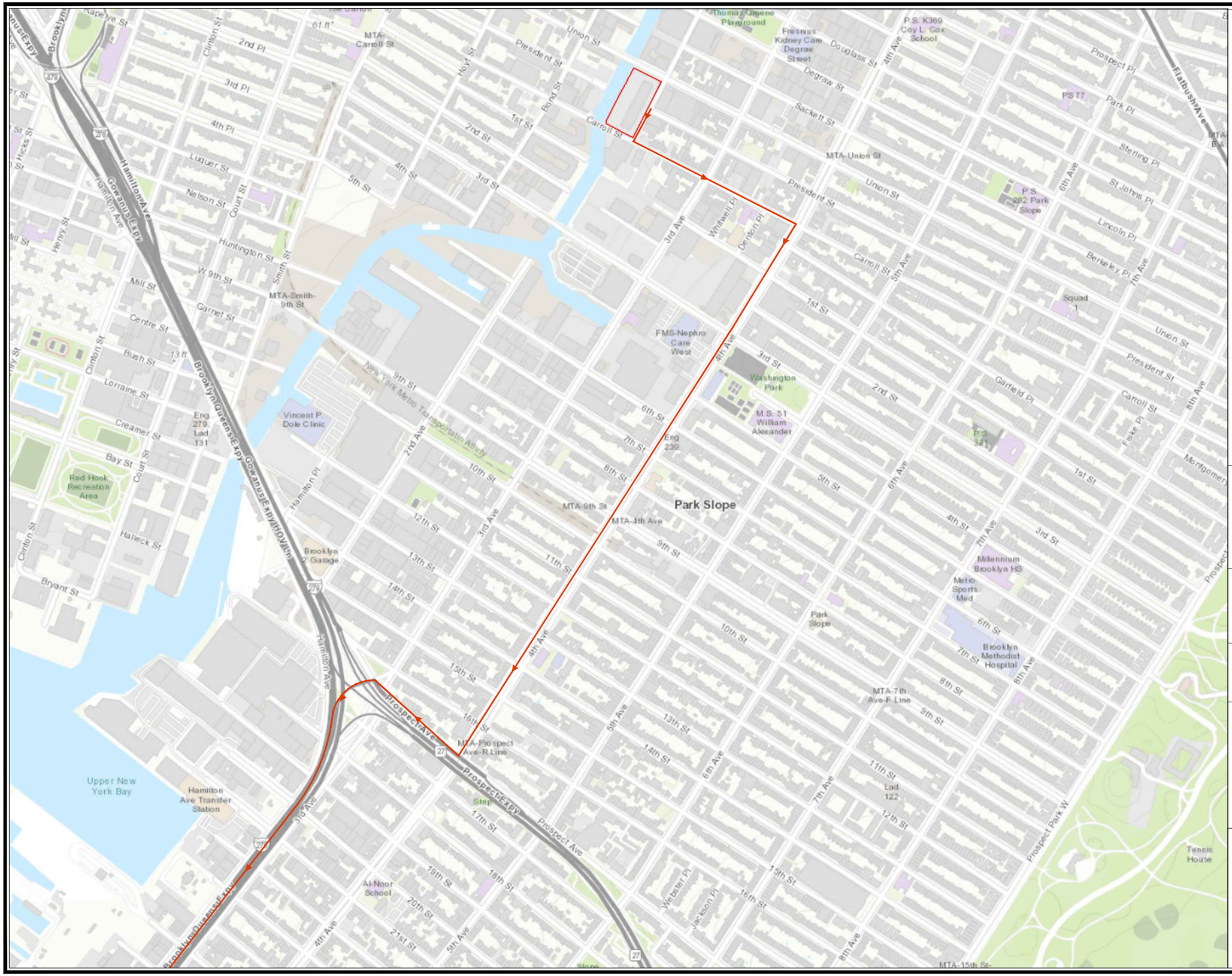
318 Nevins Street
Brooklyn, New York

Figure 11

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	DP
DATE:	10/21/2022
SCALE:	1" = 50'

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LEGEND

- PROPERTY LINE
- TRUCK ROUTE

PROJECT NORTH

NOTES:

TRUCK ROUTE

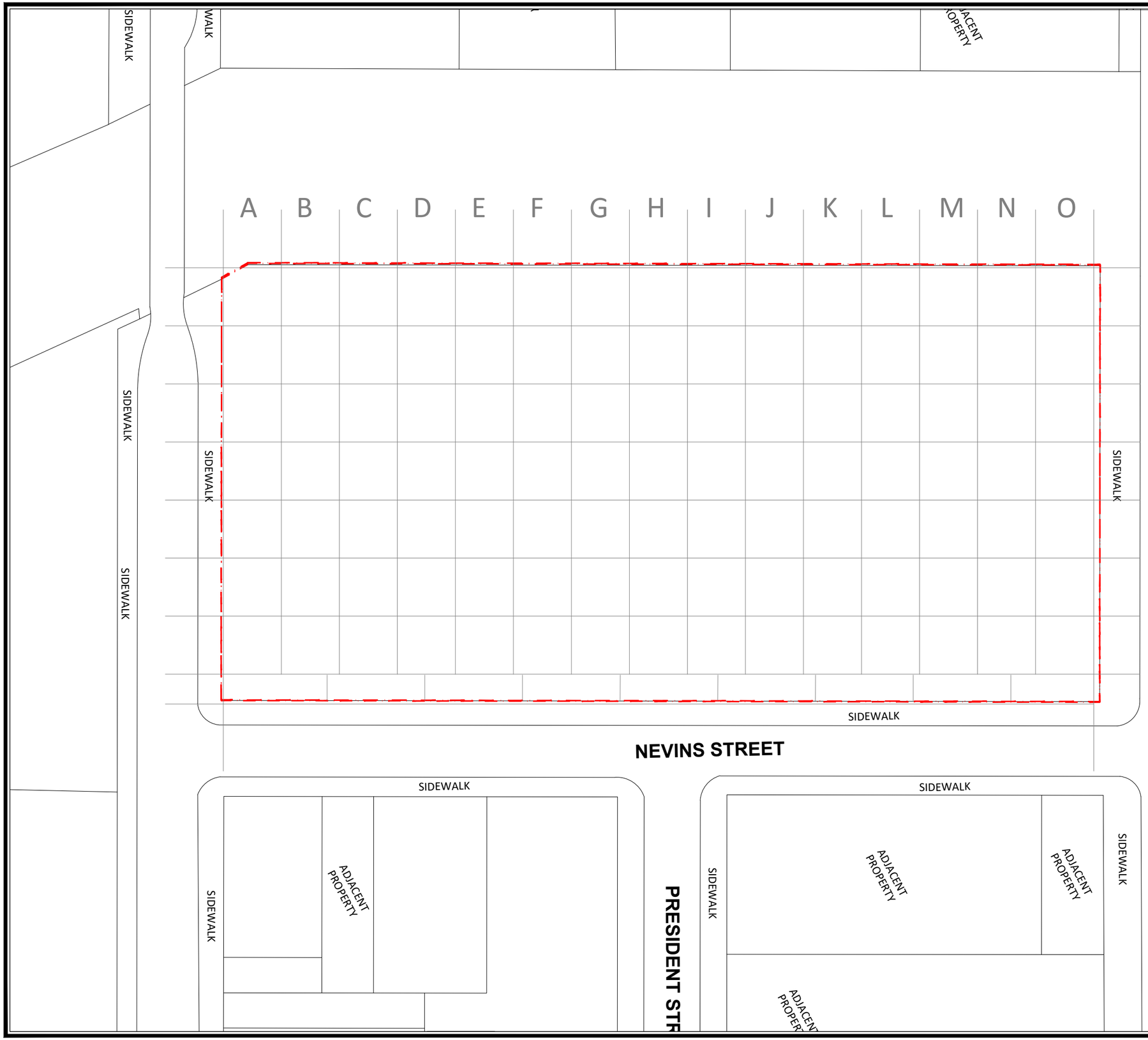
318 Nevins Street
Brooklyn, New York

Figure 12

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	JDF
DATE:	03/01/2023
SCALE:	N.T.S.

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LEGEND

- PROPERTY LINE
- GRID LINE

PROJECT NORTH

0' 50' 100'

NOTES:

ALPHA NUMERIC GRID MAP

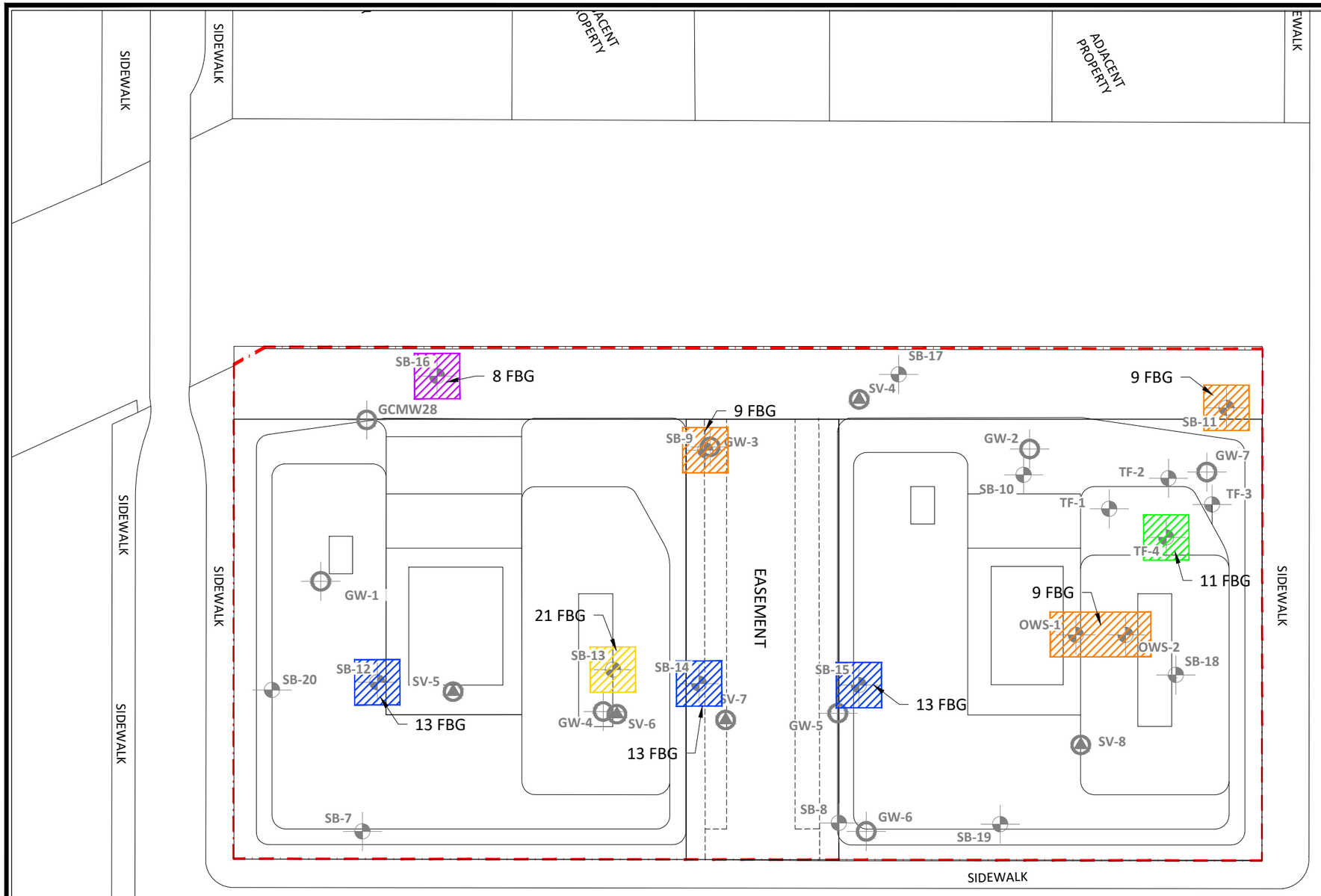
318 Nevins Street
Brooklyn, New York

Figure 13

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	JDF
DATE:	05/02/2023
SCALE:	1" = 50'

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LEGEND

- PROPERTY LINE
- HOTSPOT EXCAVATION TO 8 FBG
- HOTSPOT EXCAVATION TO 9 FBG
- HOTSPOT EXCAVATION TO 11 FBG
- HOTSPOT EXCAVATION TO 13 FBG
- HOTSPOT EXCAVATION TO 21 FBG
- IMPACT RI SOIL BORING LOCATION
- IMPACT RI GROUNDWATER SAMPLE
- IMPACT RI SOIL VAPOR SAMPLE LOCATION

PROJECT NORTH

0' 50' 100'

NOTES:

HOT SPOT EXCAVATION LOCATIONS

318 Nevins Street
Brooklyn, New York

Figure 14

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	JDF
DATE:	05/02/2023
SCALE:	1" = 50'

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LEGEND

- PROPERTY LINE
- TRACK 4 EXCAVATION
- HOTSPOT EXCAVATION TO 8 FBG
- HOTSPOT EXCAVATION TO 9 FBG
- HOTSPOT EXCAVATION TO 11 FBG
- HOTSPOT EXCAVATION TO 13 FBG
- HOTSPOT EXCAVATION TO 21 FBG
- NAPL TREATMENT ZONE

NOTES:
AN ACTIVE SSDS WILL BE INSTALLED WITHIN THE PROPOSED STRUCTURE. A COVER SYSTEM WILL BE INSTALLED OVER THE ENTIRETY OF THE SITE IN THE FORM OF BUILDING FOUNDATION, SOIL COVER OR HARDSCAPE. REFER TO FIGURE 18 A FOR THE COMPOSITE COVER SYSTEM LAYOUT.

REMEDIAL EXCAVATION MAP (TRACK 4) WITH HOTSPOT LOCATIONS

318 Nevins Street
Brooklyn, New York

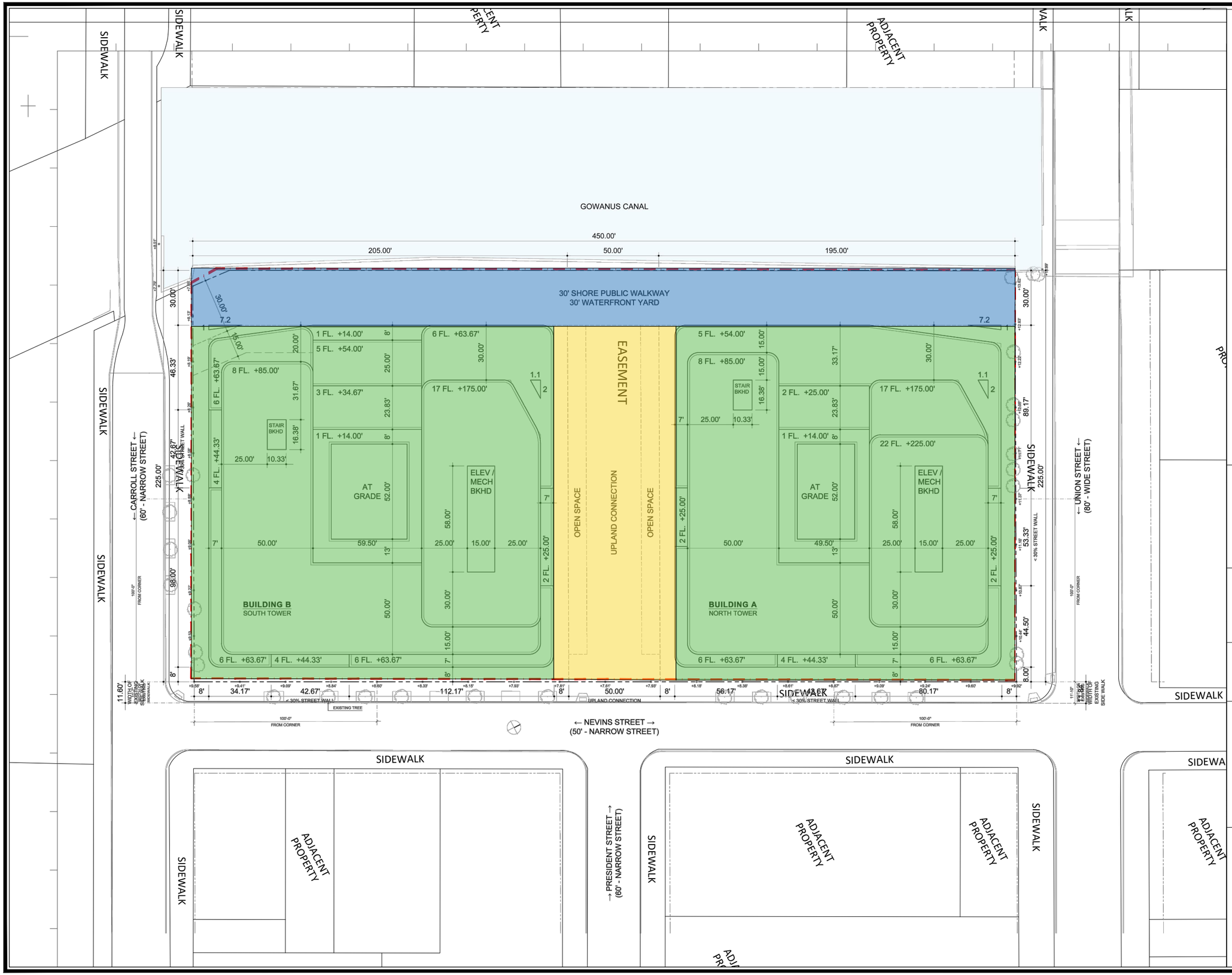
Figure 15

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	JDF
DATE:	04/28/2023
SCALE:	N.T.S.

REVISIONS

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...STREET, BROOKLYN, NY 11215\DWG\SS\STRUCTWORK\DCA\DT-221390.01 S-SOIS.DWG



LEGEND

- PROPERTY LINE
- GENERAL BUILDING FOUNDATION EXCAVATION TO 4 FBG; EXCEPT FOR CELLAR AND ELEVATOR PIT EXCAVATIONS UP TO APPROXIMATELY 16 FBG EXCAVATION
- EXCAVATION UP TO 4 FBG FOR DRAINAGE, FOUNDATION, PLANTER AND WALKWAY INSTALLATIONS
- EXCAVATION RANGING FROM 2 TO 4 FBG FOR PUBLIC WALKWAY SHALLOW PILES AND FOOTINGS FOR WALK, INSTALLATION OF REPLACEMENT BULK HEAD TIE RODS TO DEADMAN, SITE DRAINAGE, PLANTERS AND LANDSCAPE VEGETATION

PROJECT NORTH

0' 50' 100'

NOTES:

CONSTRUCTION EXCAVATION MAP

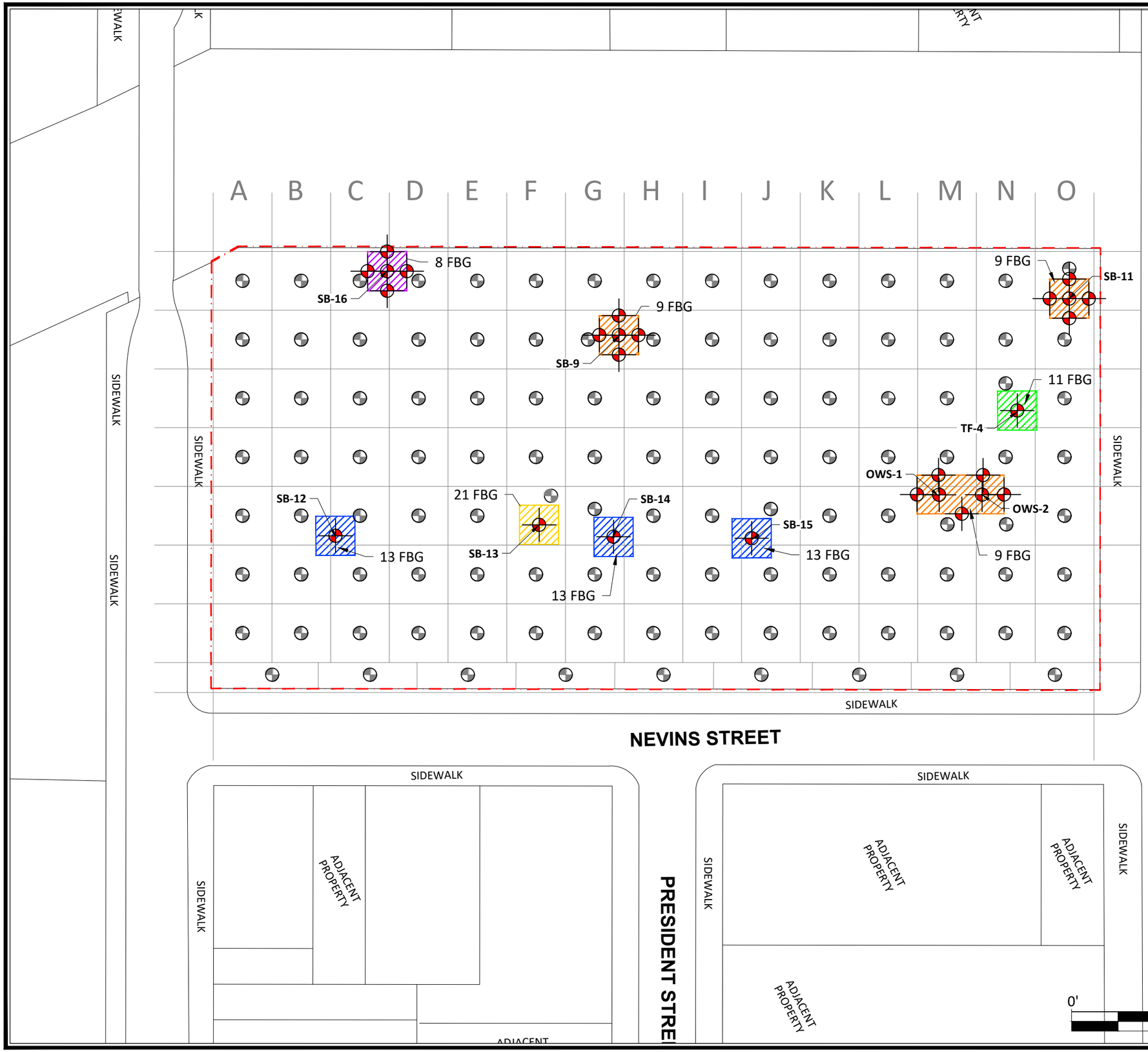
318 Nevins Street
Brooklyn, New York

Figure 16

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	JDF
DATE:	03/01/2023
SCALE:	N.T.S.

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LEGEND

- PROPERTY LINE
- GRID LINE
- PROPOSED DOCUMENTATION SOIL SAMPLE LOCATION
- PROPOSED HOTSPOT CONFIRMATION SOIL SAMPLE LOCATION
- HOTSPOT EXCAVATION TO 8 FBG
- HOTSPOT EXCAVATION TO 9 FBG
- HOTSPOT EXCAVATION TO 11 FBG WITH SHORING
- HOTSPOT EXCAVATION TO 13 FBG WITH SHORING
- HOTSPOT EXCAVATION TO 21 FBG WITH SHORING

NOTES:

1. DOCUMENTATION SOIL SAMPLES COLLECTED AT 2 FBG UNLESS FROM A DEEPER HOTSPOT EXCAVATION.
2. DOCUMENTATION AND CONFIRMATION SAMPLES WILL BE COLLECTED AT A FREQUENCY OF ONE SAMPLE PER 900 SQUARE FEET.
3. SIDE WALL SAMPLES WILL BE COLLECTED ALONG THE SIDE WALLS OF HOT-SPOT EXCAVATIONS LESS THAN 10 FEET TO ENSURE MATERIAL EXCEEDING PGSCOS IS REMOVED.
4. CONFIRMATION SAMPLES WILL BE COLLECTED TO CONFIRM THE REMOVAL OF SOURCE MATERIAL (HOTSPOT EXCAVATIONS).
5. DEPTHS OF SAMPLES SB-12, SB-13, SB-14 AND SB-15 WERE RELATIVE TO THE TOP OF THE FOUNDATION PLATFORM GRADE (APPROXIMATELY 4 FT ABOVE SITE GRADE).

ALPHA NUMERIC GRID MAP WITH PROPOSED DOCUMENTATION/ CONFIRMATION SAMPLE LOCATIONS

318 Nevins Street
Brooklyn, New York

Figure 17

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	JDF
DATE:	9/20/2023
SCALE:	1" = 50'

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FAX (631) 269-1599

SIDEWALK

SIDEWALK

SIDEWALK

ADJACENT PROPERTY

ADJACENT PROPERTY

SIDEWALK

SIDEWALK

EASEMENT

SIDEWALK

SIDEWALK

SIDEWALK

ADJACENT PROPERTY

SIDEWALK

SIDEWALK

ADJACENT PROPERTY

ADJACENT PROPERTY

SIDEWALK

SIDEWALK

ADJACENT PROPERTY

SIDEWALK

PRESIDENT

LEGEND

- PROPERTY LINE
- BUILDING FOUNDATION (*SEE DETAILS 1 & 2)*
- COVER SYSTEMS INCLUDE LANDSCAPE AND HARDSCAPE (*SEE DEATILS 3 & 4)*

PROJECT NORTH

0' 50' 100'

NOTES:

COMPOSITE COVER SYSTEM

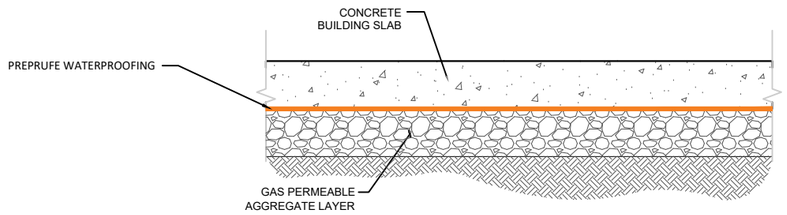
318 Nevins Street
Brooklyn, New York

Figure 18A

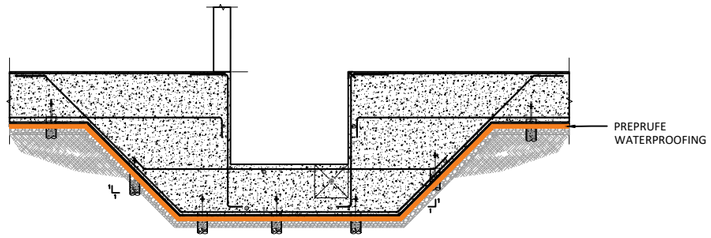
PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	JDF
DATE:	03/10/2023
SCALE:	1" = 50'

REVISIONS

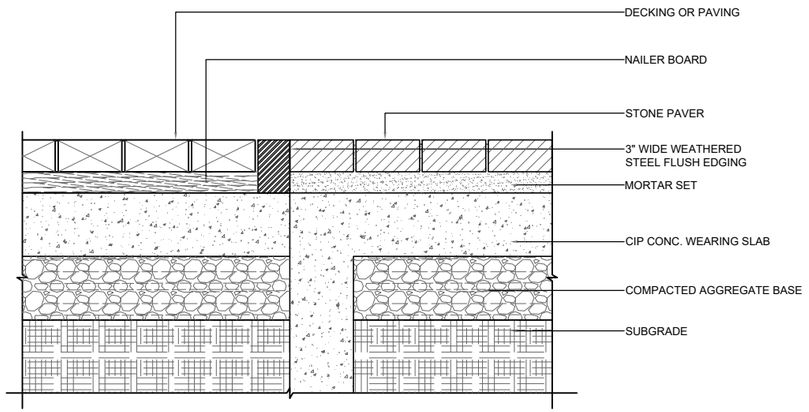
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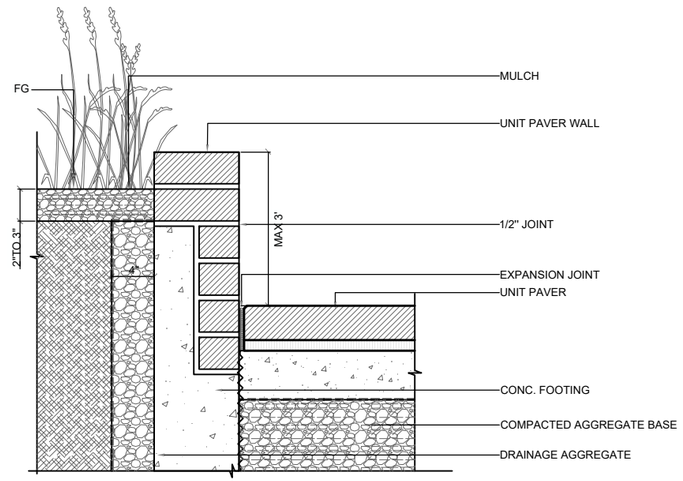
1 COMPOSITE COVER: FOUNDATION SLAB
N.T.S.



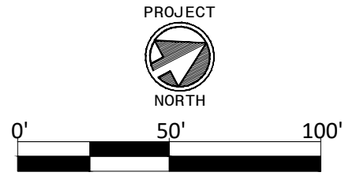
2 TYPICAL ELEVATOR PIT FOUNDATION DETAIL
N.T.S.



3 3' WIDE WEATHERED STEEL EDGE @ DECKING & STONE PAVERS
N.T.S.



3 RAISED PLANTER WALL @ UPLAND CONNECTION TYP.
N.T.S.



NOTES:

COMPOSITE COVER SYSTEM DETAIL

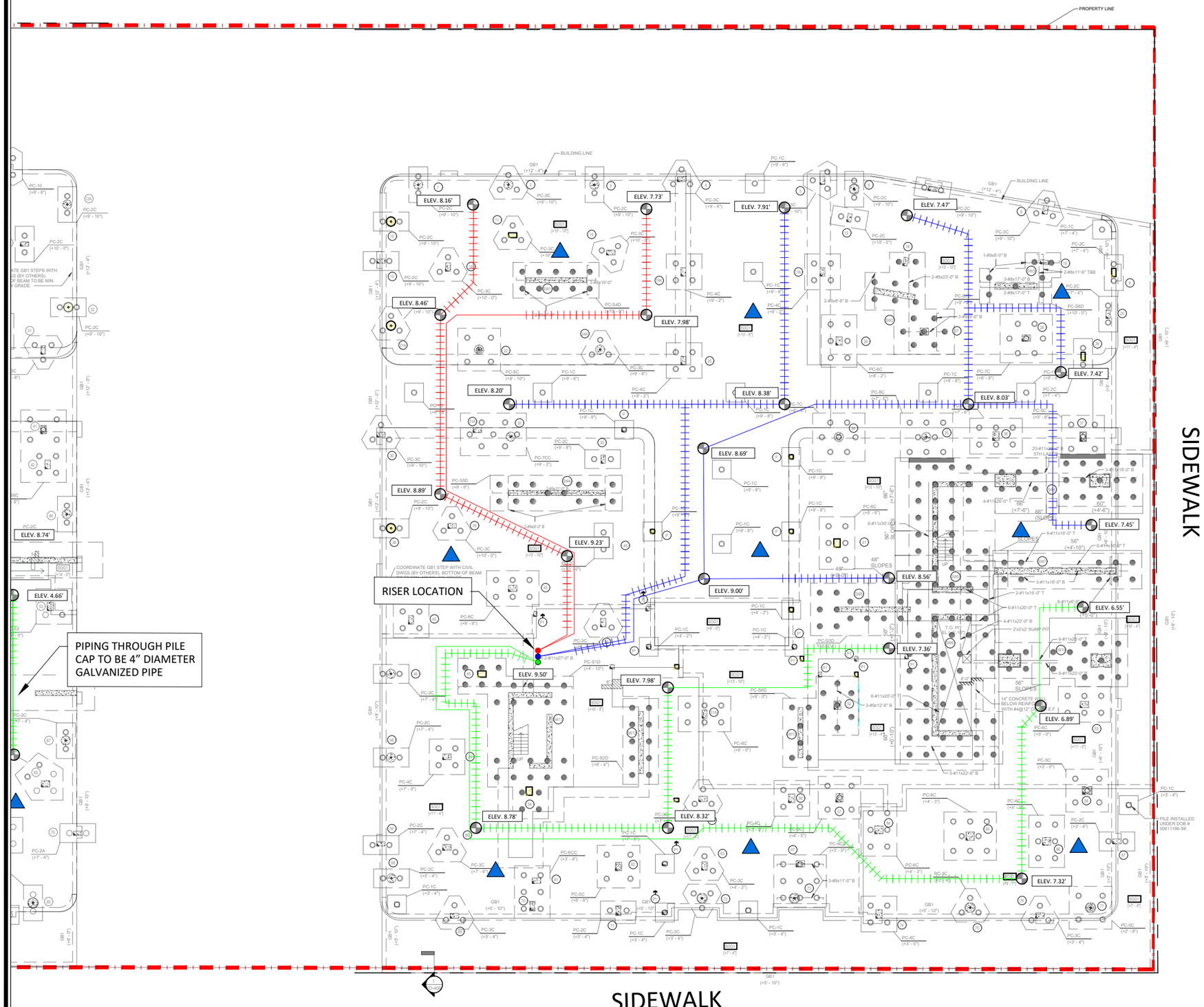
318 Nevins Street
Brooklyn, New York

Figure 18B

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	JDF
DATE:	03/10/2023
SCALE:	1" = 50'

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LEGEND

- PROPERTY LINE
- 4" SOLID SCHEDULE 40 PVC PIPE
- 4" SCHEDULE 40 PVC 0.040 SLOTTED SCREEN
- ELEVATION REFERENCE POINTS
- PROPOSED MONITORING POINT LOCATION

PROJECT NORTH

0' 25' 50'

NOTES:

1. PIPING SLOPE REQUIRED IS 1%.
2. PIPING ELEVATIONS INDICATE TOP OF PIPE.
3. VERTICAL RISERS WILL TERMINATE ABOVE THE ROOF LINE OF THE STAIRWELLS FOR BOTH BUILDINGS. EXACT LOCATIONS TO BE DETERMINED BASED ON FIELD CONDITIONS.
4. EXACT LOCATIONS OF MONITORING POINTS TO BE COORDINATED WITH ARCHITECT DURING CONSTRUCTION.

SSDS LAYOUT - NORTH BUILDING

318 Nevins Street
Brooklyn, New York

Figure 19A

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	HB
DATE:	9/6/2023
SCALE:	1" = 25'

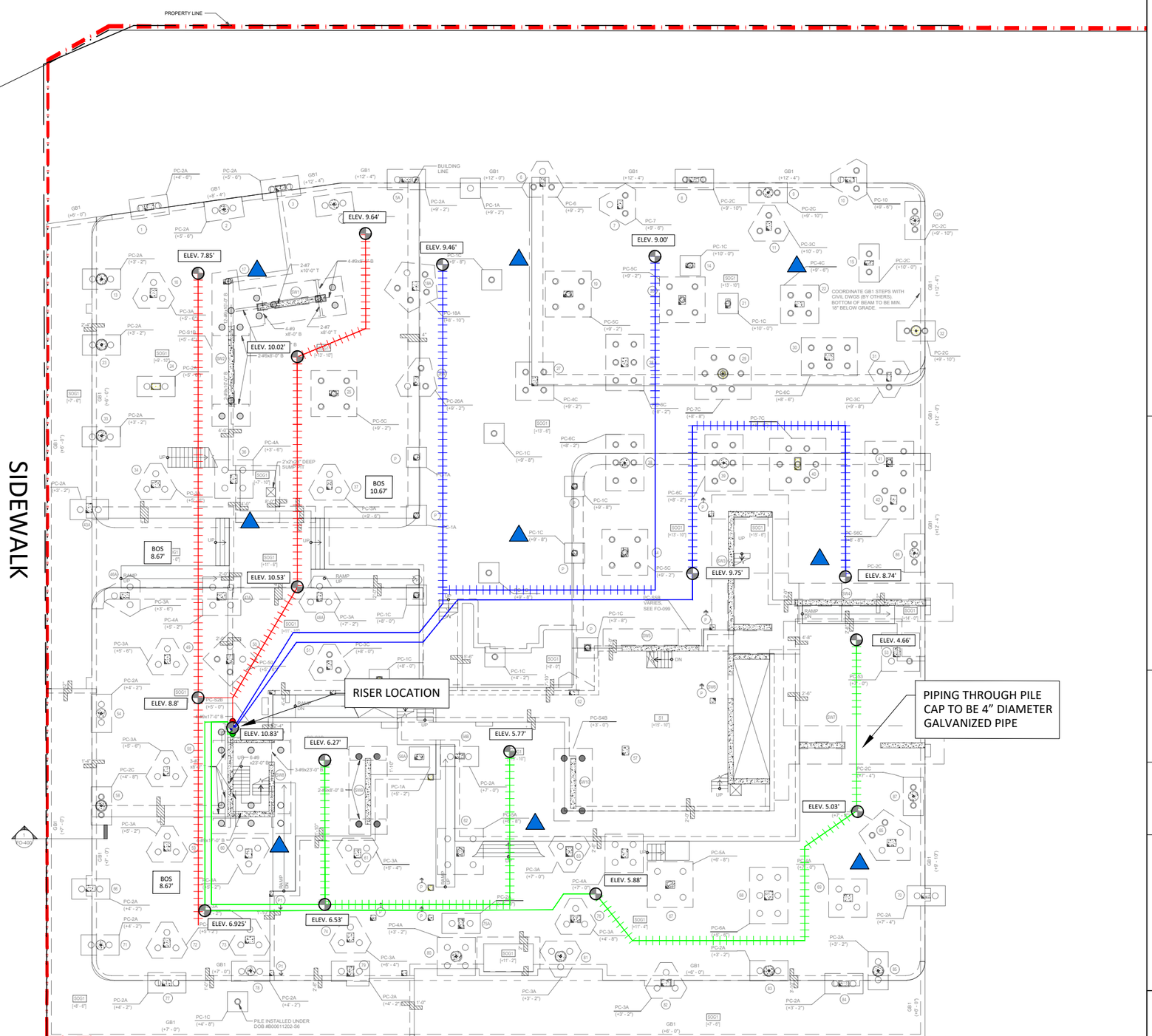
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FAX (631) 269-1599

SIDEWALK

SIDEWALK

SIDEWALK



LEGEND

- PROPERTY LINE
- 4" SOLID SCHEDULE 40 PVC PIPE
- 4" SCHEDULE 40 PVC 0.040 SLOTTED SCREEN
- ELEVATION REFERENCE POINTS
- PROPOSED MONITORING POINT LOCATION

PROJECT NORTH

0' 25' 50'

NOTES:

1. PIPING SLOPE REQUIRED IS 1%.
2. PIPING ELEVATIONS INDICATE TOP OF PIPE.
3. VERTICAL RISERS WILL TERMINATE ABOVE THE ROOF LINE OF THE STAIRWELLS FOR BOTH BUILDINGS. EXACT LOCATIONS TO BE DETERMINED BASED ON FIELD CONDITIONS.
4. EXACT LOCATIONS OF MONITORING POINTS TO BE COORDINATED WITH ARCHITECT DURING CONSTRUCTION.

SSDS LAYOUT- SOUTH BUILDING

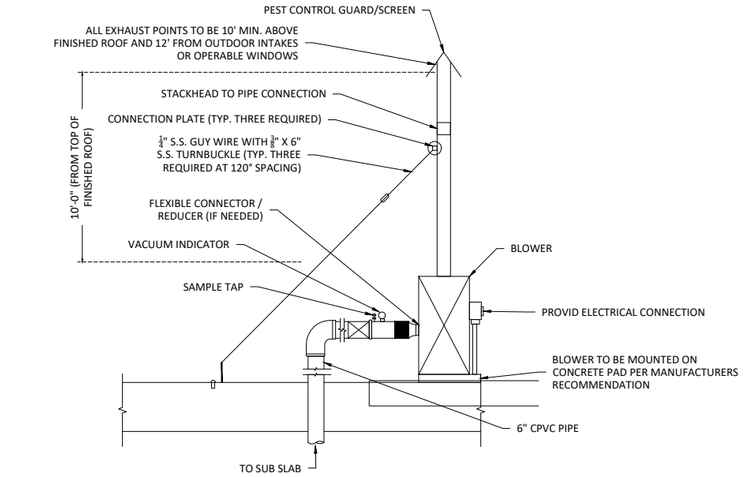
318 Nevins Street
Brooklyn, New York

Figure 19B

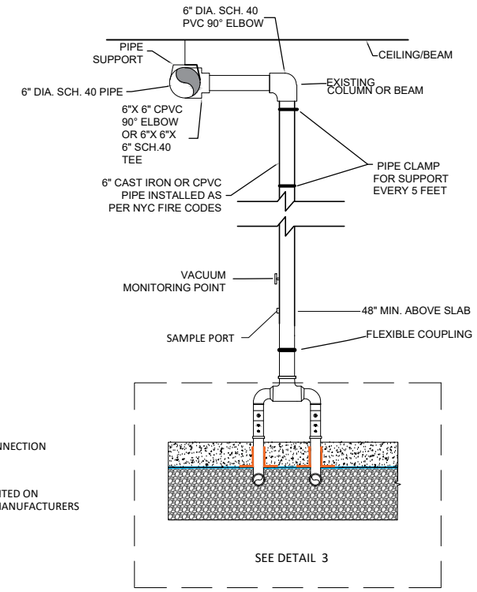
PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	HB
DATE:	9/6/2023
SCALE:	1" = 25'

REVISIONS

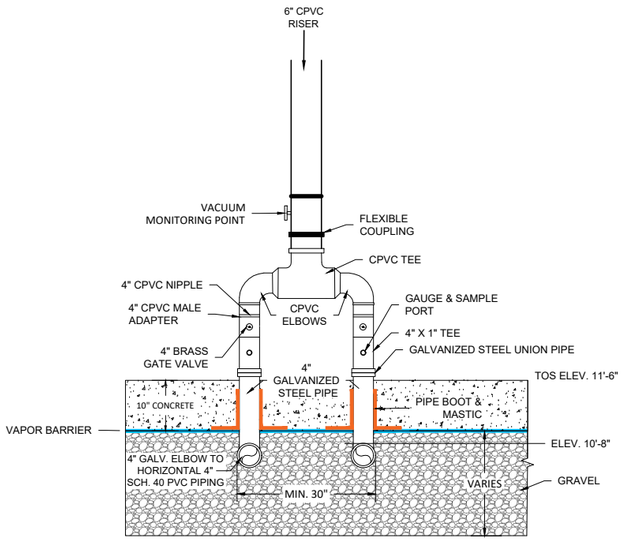
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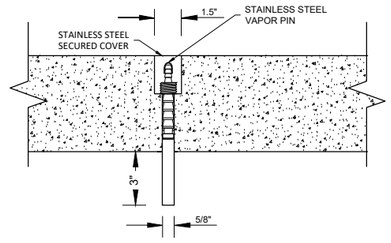
1 SUCTION FAN / EXHAUST STACK CONNECTION DETAIL
N.T.S.



2 TYPICAL EXTRACTION RISER
N.T.S.



3 SSDS HEADER DETAIL
N.T.S.



4 VAPOR MONITORING POINT
N.T.S.

NOTES:
1. VAPOR BARRIER TO BE 20 MIL. STEGO WRAP STEGO MASTIC AND STEGO TAPE

SUB-SLAB DEPRESSURIZATION SYSTEM DETAIL

318 Nevins Street
Brooklyn, New York

Figure No: 19C

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	HB
DATE:	8/30/2023
SCALE:	N.T.S.
REVISIONS	

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GENERAL NOTES

1. THE INTENT OF THE SUB-SLAB DEPRESSURIZATION SYSTEM DESCRIBED IN THIS PLAN IS TO PROMOTE PUBLIC SAFETY AND WELFARE BY CONTROLLING SOIL GAS INTRUSION POTENTIALLY EMANATING FROM BENEATH THE BUILDING SUB GRADE. THE SYSTEM IS NOT INTENDED TO REGULATE FLAMMABLE VAPORS THAT MAY ORIGINATE IN AND PROPAGATE FROM OTHER SOURCES, WHICH INCLUDE, BUT ARE NOT LIMITED TO, RUPTURED HAZARDOUS MATERIAL TRANSMISSION LINES, UNDERGROUND TANKS, OR SIMILAR INSTALLATIONS.
2. DESIGN GOAL IS TO MAINTAIN A SUB-SLAB VACUUM OF 0.004" OF WATER COLUMN (1 PASCAL) ACROSS THE SEVEN (7) MONITORING POINTS INSTALLED INTO THE SLABS WILL BE USED IN STARTUP TESTING AND ONGOING DURING REGULAR OPERATION & MAINTENANCE.
3. SYSTEM INSTALLATION SHALL ADHERE TO: FINAL GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK PREPARED BY NEW YORK STATE DEPARTMENT OF HEALTH (NYSDOH), DATED OCTOBER 2006 AND NEW YORK CITY MECHANICAL CODE, CHAPTER 5, SECTION MC 512-SUBSLAB EXHAUST SYSTEMS.
4. SUB-SLAB DEPRESSURIZATION SYSTEM SHALL CONSIST OF PERFORATED HORIZONTAL PIPES, NON-PERFORATED HEADER PIPES, RISER PIPES, MONITORING POINTS, CLEAN STONE LAID AROUND PERFORATED HORIZONTAL PIPES, IMPERVIOUS VAPOR BARRIER (DESIGNED BY OTHERS), MECHANICAL EXTRACTION SYSTEM AND EXHAUST POINTS.
5. FOUNDATION CONSISTS OF THREE SLABS AS SHOWN IN LAYOUT ABOVE. EACH SLAB WILL BE UNDERLAIN BY A SEPARATE BRANCH OF SSDS PIPING WITH DEDICATED RISER AND EXTRACTION FAN.
6. INSTALLATION OF THE SUB-SLAB COMPONENTS, VENT AND RISER PIPING, AND ROOF PENETRATIONS MUST BE COORDINATED WITH OTHER TRADES FOR THE INSTALLATION OF OTHER UTILITIES AND STRUCTURAL COMPONENTS.
7. RISER PIPE FROM SUB-SLAB TO ROOF SHALL BE COORDINATED WITH THE ARCHITECT AND MECHANICAL ENGINEER. RISER PIPE SHALL BE EXTENDED TO THE ROOF WITH MINIMAL CHANGES IN DIRECTION.
8. COMPONENTS PROPOSED LOCATIONS OF DEPRESSURIZATION SYSTEM RISER PIPES TO BE VERIFIED BY ARCHITECT.

HORIZONTAL PIPES

1. PERFORATED HORIZONTAL PIPES SHALL BE LISTED, MINIMUM SCHEDULE 40, SLOTTED OR PERFORATED POLYVINYL CHLORIDE (PVC) PIPE OR OTHER MATERIALS APPROVED BY THE DEPARTMENT OF BUILDING FOR THE INTENDED USE.
2. NON-PERFORATED HEADER PIPES SHALL BE LISTED, MINIMUM SCHEDULE 40, SOLID PVC PIPE OR OTHER MATERIAL APPROVED BY THE DEPARTMENT OF BUILDING FOR THE INTENDED USE.
3. NON-PERFORATED HEADER PIPES MUST BE INSTALLED WITH A MINIMUM SLOPE OF 1/8-INCH VERTICAL TO 1-FT HORIZONTAL TO ALLOW CONDENSATION/MOISTURE TO DRAIN BACK TO THE PERFORATED PIPE. ALL FITTINGS AND CONNECTIONS SHALL BE MADE BY THE SAME MANUFACTURER AS THE STRAIGHT PIPE AND OF THE TYPE RECOMMENDED BY THE MANUFACTURER FOR USE WITH THE PIPE.

RISER PIPES

1. RISER PIPE SHALL BE METAL PIPE ADHERING TO THE NEW YORK CITY BUILDING CODE.
2. ALL EXTERNAL METAL PIPES SHALL BE PAINTED WITH A CORROSION RESISTANT COATING.
3. VISIBLE AND ACCESSIBLE RISER PIPE MUST BE CLEARLY LABELED "CAUTION: DO NOT ALTER. SUBSURFACE VAPOR VENT PIPE." AT A MINIMUM OF EVERY 10 LINEAR FEET OF RISER PIPE RUN.
4. SAMPLING PORTS SHALL BE INSTALLED FOR EACH BRANCH OF THE SSDS IN AN ACCESSIBLE AREA FOR CONFIRMATION TESTING OF SYSTEM EFFECTIVENESS.

EXHAUST POINT(S)

1. POINT(S) OF EXHAUST SHALL BE:
   - 1.1. ABOVE THE EAVE OF THE ROOF (PREFERABLY, ABOVE THE HIGHEST EAVE OF THE BUILDING AND AT LEAST 12-INCHES ABOVE THE SURFACE OF THE ROOF);
   - 1.2. AT LEAST 10 FEET ABOVE GROUND LEVEL;
   - 1.3. AT LEAST 10 FEET AWAY FROM ANY OPENING THAT IS LESS THAN 2 FEET BELOW THE EXHAUST POINT; AND
   - 1.1. 10 FEET FROM ANY ADJOINING OR ADJACENT BUILDINGS, OR HVAC INTAKES OR SUPPLY REGISTERS.
2. RAIN GUARDS OR CAPS MUST BE PLACED ON THE EXHAUST POINT(S) SO AS NOT TO INCREASE THE POTENTIAL FOR SUBSURFACE VAPORS TO ENTER THE BUILDING BY BLOCKING THE EXHAUST.

GAS PERMEABLE STONE LAYER

1. THE SSDS PIPING WILL SIT SURROUNDED BY A GAS PERMEABLE STONE/GRAVEL LAYER OF MINIMUM 8" THICKNESS.
2. STONE LAYER SHALL NOT BE COMPACTED AND SHALL BE CONTINUOUS ACROSS DEPRESSURIZED AREA (I.E. NOT TRENCHED ALONG PERFORATED PIPING).
3. 3/4-INCH CLEAN STONE SHALL BE CLEAN, COARSE, NATURAL, ANGULAR, WASHED 3/4-INCH AGGREGATE WITH A GRADATION TO BE APPROVED BY THE STRUCTURAL ENGINEER.
4. IF REQUIRED, SLEEVES THROUGH GRADE BEAMS AND OTHER FOUNDATION COMPONENTS WILL BE DESIGNED BY OTHERS.

MECHANICAL EXTRACTION AND ALARMS

1. A DIFFERENTIAL PRESSURE SWITCH SHALL BE INSTALLED (RADONAWAY CHECKPOINT IIA OR SIMILAR) ON THE RISER PIPE BEFORE THE SUCTION THE DIFFERENTIAL PRESSURE SWITCH SHALL BE CONNECTED TO AN AUDIBLE ALARM, TRIGGERED IN THE EVENT OF LOSS OF SUCTION IN THE PIPE.
2. IN ADDITION TO THE DIFFERENTIAL PRESSURE SWITCH, A U-TUBE MANOMETER SHALL BE INSTALLED AT EACH RISER LOCATION, IN PROXIMITY TO THE POINT OF CONNECTION TO THE SUB-SLAB COMPONENTS FOR A VISUAL INDICATION OF SYSTEM OPERATION IN THE EVENT OF ALARM FAILURE.
3. SUPPLY POWER TO FAN(S), INCLUDING ALARM(S), TO BE DESIGNED BY OTHERS IN ACCORDANCE WITH MANUFACTURERS ELECTRICAL SPECIFICATIONS.

NOTES:

SSDS NOTES

318 Nevins Street
Brooklyn, New York

Figure 19D

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	JDF
DATE:	6/27/2023
SCALE:	1" = 40'

REVISIONS

IMPACT ENVIRONMENTAL ENGINEERING AND GEOLOGY PLLC
170 KEYLAND COURT
BOHEMIA, NEW YORK 11716
TEL (631) 269-8800
FAX (631) 269-1599

Figure 20: Estimated Remedial Action Construction Schedule
BCP C224350
318 Nevins Street, Brooklyn, New York

Estimated Project Schedule		2023										2024											
Item	Description	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
1	Preparation and Draft RAWP Sumittial																						
2	NYSDEC and NYSDOH RAWP Review/Approval, Public Comment																						
2	Performance of NAPL Mobility and Groundwater Assessment																						
3	NYSDEC and NYSDOH RAWP Approval/Decision Document Issuance																						
3	Submittal and Implementation of ISGS and ISS Feasibility Study/Pilot Testing Work Plans																						
4	Remedial Design Work Plan																						
5	Implementation of RAWP (Remedial Excavations, Sampling, Implement ISGS/ISS, SSDS, Cover System																						
6	Preparation of FER, EE and SMP with Environmental Easement																						
7	FER, SMP and EE Review and Approval by the NYSDEC and NYSDOH																						

TABLES

318 Nevins Street, Brooklyn, NY

Remedial Action Work Plan
NYSDEC BCP #C224350

Impact Environmental Engineering and Geology PLLC
170 KEYLAND COURT, BOHEMIA, NEW YORK 11716
TEL (631) 269-8800 ▪ FAX (631) 269-1599

Table 1
2022 RI Soil Tank Field Sample Analytical Results Summary
318 Nevins Street, Brooklyn, NY

Sample ID		NYSDEC Part 375 Restricted Use Soil Cleanup Objectives- Commercial	TF-1 (6)		TF-2 (8-10)		TF-2 (10-12)		TF-2 (13-15)		TF-3 (6)		TF-4 (6-7)		TF-4 (8-10)		TF-4 (11-13)		OWS-1 (5-6)		OWS-1 (6-8)		OWS-2 (6)	
York ID			22J0405-13		22J0405-14		22J0405-15		22J0405-16		22J0459-01		22J0459-02		22J0459-03		22J0459-04		22J0459-05		22J0459-06		22J0459-07	
Sampling Date			10/7/2022 12:00:00 PM		10/7/2022 12:10:00 PM		10/7/2022 12:15:00 PM		10/7/2022 12:30:00 PM		10/10/2022 8:15:00 AM		10/10/2022 8:20:00 AM		10/10/2022 8:30:00 AM		10/10/2022 8:40:00 AM		10/10/2022 9:00:00 AM		10/10/2022 9:15:00 AM		10/10/2022 9:20:00 AM	
Client Matrix			Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	CAS Number		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
VOA, 8260 MASTER		mg/Kg	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
1,1,1,2-Tetrachloroethane	630-20-6	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
1,1,1-Trichloroethane	71-55-6	500	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
1,1,2,2-Tetrachloroethane	79-34-5	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
1,1,2-Trichloroethane	79-00-5	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
1,1-Dichloroethane	75-34-3	240	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
1,1-Dichloroethylene	75-35-4	500	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
1,1-Dichloropropylene	563-58-6	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
1,2,3-Trichlorobenzene	87-61-6	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
1,2,3-Trichloropropane	96-18-4	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
1,2,4-Trichlorobenzene	120-82-1	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
1,2,4-Trimethylbenzene	95-63-6	190	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
1,2-Dibromo-3-chloropropane	96-12-8	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
1,2-Dibromoethane	106-93-4	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
1,2-Dichlorobenzene	95-50-1	500	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
1,2-Dichloroethane	107-06-2	30	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
1,2-Dichloropropane	78-87-5	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
1,3,5-Trimethylbenzene	108-67-8	190	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
1,3-Dichlorobenzene	541-73-1	280	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
1,3-Dichloropropane	142-28-9	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
1,4-Dichlorobenzene	106-46-7	130	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
1,4-Dioxane	123-91-1	130	0.0600	U	0.0720	U	0.0900	U	0.0880	U	0.0560	U	0.0800	U	7.500	U	0.0440	U	0.100	U	0.0810	U	0.0760	U
2,2-Dichloropropane	594-20-7	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
2-Butanone	78-93-3	500	0.00870		0.0250		0.0200		0.00500	J	0.00280	U	0.00400	U	0.370	U	0.00440		0.00500	U	0.00410	U	0.00380	U
2-Chlorotoluene	95-49-8	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
2-Hexanone	591-78-6	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
4-Chlorotoluene	106-43-4	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
4-Methyl-2-pentanone	108-10-1	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Acetone	67-64-1	500	0.0240		0.0740		0.0670		0.0190		0.00560	U	0.00800	U	0.750	U	0.0150		0.0100	U	0.0160		0.00760	U
Acrolein	107-02-8	~	0.00600	U	0.00720	U	0.00900	U	0.00880	U	0.00560	U	0.00800	U	0.750	U	0.00440	U	0.0100	U	0.00810	U	0.00760	U
Acrylonitrile	107-13-1	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Benzene	71-43-2	44	0.00300	U	0.00450	J	0.00450	U	0.0290		0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Bromobenzene	108-86-1	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Bromochloromethane	74-97-5	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Bromodichloromethane	75-27-4	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Bromoform	75-25-2	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Bromomethane	74-83-9	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Carbon disulfide	75-15-0	~	0.00300	U	0.00650	J	0.00450	U	0.0150		0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Carbon tetrachloride	56-23-5	22	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Chlorobenzene	108-90-7	500	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Chloroethane	75-00-3	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Chloroform	67-66-3	350	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Chloromethane	74-87-3	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
cis-1,2-Dichloroethylene	156-59-2	500	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
cis-1,3-Dichloropropylene	10061-01-5	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Cyclohexane	110-82-7	~	0.00300	U	0.00720		0.0170		0.00540	J	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Dibromochloromethane	124-48-1	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Dibromomethane	74-95-3	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Dichlorodifluoromethane	75-71-8	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Ethyl Benzene	100-41-4	390	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Hexachlorobutadiene	87-68-3	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Isopropylbenzene	98-82-8	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.560	JD	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Methyl acetate	79-20-9	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Methyl tert-butyl ether (MTBE)	1634-04-4	500	0.00670		0.00690	J	0.0120		0.270		0.00280	U	0.00740	J	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Methylcyclohexane	108-87-2	~	0.00300	U	0.0110		0.0280		0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Methylene chloride	75-09-2	500	0.00600	U	0.00720	U	0.00900	U	0.00880	U	0.00560	U	0.00800	U	0.750	U	0.00440	U	0.0100	U	0.00810	U	0.00760	U
n-Butylbenzene	104-51-8	500	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.780	D	0.00220	U	0.00500	U	0.00410	U	0.00380	U
n-Propylbenzene	103-65-1	500	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	2.100	D	0.00220	U	0.00500	U	0.00410	U	0.00380	U
o-Xylene	95-47-6	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
p- & m- Xylenes	179601-23-1	~	0.00600	U	0.00720	U	0.00900	U	0.00880	U	0.00560	U	0.00800	U	0.750	U	0.00440	U	0.0100	U	0.00810	U	0.00760	U
p-Isopropyltoluene	99-87-6	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.0220		0.00380	U
sec-Butylbenzene	135-98-8	500	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.650	JD	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Styrene	100-42-5	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
tert-Butyl alcohol (TBA)	75-65-0	~	0.0110		0.0890		0.0550		5.800	D	0.00280	U	0.00400	U	0.370	U	0.00670		0.00500	U	0.00410	U	0.00380	U
tert-Butylbenzene	98-06-6	500	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Tetrachloroethylene	127-18-4	150	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Toluene	108-88-3	500	0.00300	U	0.00360	U	0.00450	U	0.00460	J	0.00280	U	0.00400	U	0.370	JD	0.00220	U	0.00500	U	0.00410	U	0.00380	U
trans-1,2-Dichloroethylene	156-60-5	500	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
trans-1,3-Dichloropropylene	10061-02-6	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Trichloroethylene	79-01-6	200	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00990	J	0.00410	U	0.110	
Trichlorofluoromethane	75-69-4	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Vinyl acetate	108-05-4	~	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Vinyl Chloride	75-01-4	13	0.00300	U	0.00360	U	0.00450	U	0.00440	U	0.00280	U	0.00400	U	0.370	U	0.00220	U	0.00500	U	0.00410	U	0.00380	U
Xylenes, Total	1330-20-7	500	0.00900	U	0.0110	U	0.0140	U	0.0130	U	0.00840	U	0.0120	U	1.100	U	0.00660	U	0.0150	U	0.0120	U	0.0110	U

Table 1
2022 RI Soil Tank Field Sample Analytical Results Summary
318 Nevins Street, Brooklyn, NY

Sample ID		NYSDEC Part 375 Restricted Use Soil Cleanup Objectives-	TF-1 (6)		TF-2 (8-10)		TF-2 (10-12)		TF-2 (13-15)		TF-3 (6)		TF-4 (6-7)		TF-4 (8-10)		TF-4 (11-13)		OWS-1 (5-6)		OWS-1 (6-8)		OWS-2 (6)	
York ID			22J0405-13		22J0405-14		22J0405-15		22J0405-16		22J0459-01		22J0459-02		22J0459-03		22J0459-04		22J0459-05		22J0459-06		22J0459-07	
Sampling Date			10/7/2022 12:00:00 PM		10/7/2022 12:10:00 PM		10/7/2022 12:15:00 PM		10/7/2022 12:30:00 PM		10/10/2022 8:15:00 AM		10/10/2022 8:20:00 AM		10/10/2022 8:30:00 AM		10/10/2022 8:40:00 AM		10/10/2022 9:00:00 AM		10/10/2022 9:15:00 AM		10/10/2022 9:20:00 AM	
Client Matrix			Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	**CAS Number**	**Commercial**	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Volatile Organics, Tentatively Identified Cmpds.		~	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
Benzene ethenyl isomer	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Benzene ethyl isomer	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Benzene ethyl methyl isomer	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
benzene isomer	050704-01-3	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Benzene methyl isomer	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Benzene tetramethyl isomer	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Benzene tetramethyl isomer (01)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Benzene tetramethyl isomer (02)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Benzene trimethyl isomer	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Butane isomer rt 4.610	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Cyclohexane dimethyl trans ...	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Cyclohexane isomer	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Cyclohexane isomer rt 6.716	NA	~	NT		NT		0.00960	J	NT		NT		NT		NT		NT		NT		NT		NT	
Cyclohexane trimethyl isomer	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Cyclopentane isomer (01)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Cyclopentane isomer (02)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Cyclopentane isomer (03)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Cyclopentane isomer (04)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Cyclopentane isomer rt 5.553	NA	~	NT		NT		NT		NT		NT		NT		10	JD	NT		NT		NT		NT	
Cyclopentene isomers rt 6.755	NA	~	NT		NT		0.0110	J	NT		NT		NT		NT		NT		NT		NT		NT	
decane isomer	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Heptane isomer	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Heptane isomer rt 6.059	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Heptane isomer rt 7.086	NA	~	NT		NT		NT		NT		NT		NT		16	JD	NT		NT		NT		NT	
Heptene isomer	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Hexane isomer (01)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Hexane isomer (02)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Hexane isomer (03)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Hexane isomer rt 4.379	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Hexane isomer rt 5.325	NA	~	NT		NT		NT		NT		NT		NT		26	JD	NT		NT		NT		NT	
Hexane isomer rt 5.375	NA	~	NT		NT		NT		NT		NT		NT		33	JD	NT		NT		NT		NT	
Hexane isomer rt 6.028	NA	~	NT		NT		NT		NT		NT		NT		8.100	JD	NT		NT		NT		NT	
Hexane isomer rt 6.220	NA	~	NT		NT		NT		NT		NT		NT		28	JD	NT		NT		NT		NT	
Hexane isomer rt 6.221	NA	~	NT		NT		NT		NT		NT		NT		NT		0.00480	J	NT		NT		NT	
Hexane isomer rt 6.780	NA	~	NT		NT		NT		NT		NT		NT		10	JD	NT		NT		NT		NT	
Indane methyl isomer	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Indene dihydro methyl isomer	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
indene isomer	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Methanonaphthalene isomer	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
methylCyclohexane isomer	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Methylindene isomer	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Octane isomer	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
octane isomer rt 8.098	NA	~	NT		NT		NT		NT		NT		NT		6.200	JD	NT		NT		NT		NT	
Octene isomer	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Pentane isomer rt 3.575	NA	~	NT		NT		NT		NT		NT		NT		18	JD	NT		NT		NT		NT	
Pentane isomer rt 4.281	NA	~	NT		NT		NT		NT		NT		NT		31	JD	NT		NT		NT		NT	
pentane isomer rt 4.287	NA	~	NT		NT		NT		NT		NT		NT		NT		0.00490	J	NT		NT		NT	
Pentane isomer rt 4.610	NA	~	NT		NT		NT		NT		NT		NT		NT		0.0320	J	NT		NT		NT	
Pentane isomer rt 4.615	NA	~	NT		NT		NT		NT		NT		NT		150	JD	NT		NT		NT		NT	
Pentane isomer rt 5.709	NA	~	NT		NT		NT		NT		NT		NT		NT		0.0140	J	NT		NT		NT	
Pentane isomer rt 5.711	NA	~	NT		NT		NT		NT		NT		NT		75	JD	NT		NT		NT		NT	
Pentane isomer rt 5.817	NA	~	NT		NT		NT		NT		NT		NT		NT		0.0140	J	NT		NT		NT	
Pentane isomer rt 5.820	NA	~	NT		NT		NT		NT		NT		NT		62	JD	NT		NT		NT		NT	
Pentane trimethyl isomer	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Tentatively Identified Compounds		~	0	U	NT		NT		0	U	0	U	0	U	NT		NT		0	U	0	U	0	U
unknown hydrocarbon rt 11.223	NA	~	NT		NT		0.0100	J	NT		NT		NT		NT		NT		NT		NT		NT	
unknown hydrocarbon rt 11.526	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		0.0140	J	NT	
unknown hydrocarbon rt 14.292	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
unknown hydrocarbon rt 2.623	NA	~	NT		0.00780	J	0.0140	J	NT		NT		NT		NT		NT		NT		NT		NT	
unknown hydrocarbon rt 4.610	NA	~	NT		0.0310	J	0.0850	J	NT		NT		NT		NT		NT		NT		NT		NT	
unknown hydrocarbon rt 4.679	NA	~	NT		NT		0.0130	J	NT		NT		NT		NT		NT		NT		NT		NT	
unknown hydrocarbon rt 5.141	NA	~	NT		NT		0.0120	J	NT		NT		NT		NT		NT		NT		NT		NT	
unknown hydrocarbon rt 5.428	NA	~	NT		NT		NT		NT		NT		NT		6.700	JD	NT		NT		NT		NT	
unknown hydrocarbon rt 5.709	NA	~	NT		0.0100	J	0.0340	J	NT		NT		NT		NT		NT		NT		NT		NT	
unknown hydrocarbon rt 9.392	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		0.00900	J	NT	
unkown hydrocarbon rt 8.357	NA	~	NT		NT		NT		NT		NT		NT		6.600	JD	NT		NT		NT		NT	
Semi-Volatiles, 1,4-Dioxane 8270 SIM-Soil		mg/Kg	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
1,4-Dioxane	123-91-1	130	0.0198	U	0.0198	U	0.0198	U	0.0198	U	0.0196	U	0.0198	U	0.0190	U	0.0194	U	0.0198	U	0.0194	U	0.0198	U

Table 1
2022 RI Soil Tank Field Sample Analytical Results Summary
318 Nevins Street, Brooklyn, NY

Sample ID		NYSDEC Part 375 Restricted Use Soil Cleanup Objectives- Commercial	TF-1 (6)		TF-2 (8-10)		TF-2 (10-12)		TF-2 (13-15)		TF-3 (6)		TF-4 (6-7)		TF-4 (8-10)		TF-4 (11-13)		OWS-1 (5-6)		OWS-1 (6-8)		OWS-2 (6)	
York ID			22J0405-13		22J0405-14		22J0405-15		22J0405-16		22J0459-01		22J0459-02		22J0459-03		22J0459-04		22J0459-05		22J0459-06		22J0459-07	
Sampling Date			10/7/2022 12:00:00 PM		10/7/2022 12:10:00 PM		10/7/2022 12:15:00 PM		10/7/2022 12:30:00 PM		10/10/2022 8:15:00 AM		10/10/2022 8:20:00 AM		10/10/2022 8:30:00 AM		10/10/2022 8:40:00 AM		10/10/2022 9:00:00 AM		10/10/2022 9:15:00 AM		10/10/2022 9:20:00 AM	
Client Matrix			Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	CAS Number		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Semi-Volatiles, Tentatively Identified Cmpds.			mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
9H-Fluorene Isomer RT 9.0 (01)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
9H-Fluorene Isomer RT 9.0 (02)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
9H-Fluorene Isomer RT 9.1	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Anthracenedione Isomer RT 10.6	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Benzene Isomer RT 5.3	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Benzene Isomer RT 5.5	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Benzo Bisbenzofuran Isomer ...	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		1.090	JD	NT		NT	
Cyclohexane Isomer RT 5.1	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Cyclohexane Isomer RT 6.2	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Cyclohexane Isomer RT 6.7	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Dibenzopyrene Isomer RT 21.3	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Dibenzothiophene RT 9.3	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Dibenzothiophene RT 9.4	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Dimethyl Nahthalene Isomer ...	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
dimethyl Naphthalene Isomer RT (01)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
dimethyl Naphthalene Isomer RT (02)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Dimethyl Naphthalene Isomer RT (03)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Dimethyl Naphthalene Isomer RT (04)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
dimethyl Naphthalene Isomer... (01)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
dimethyl Naphthalene Isomer... (02)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
dimethyl Naphthalene Isomer... (03)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Ethyl Naphthalene Isomer RT 7.	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
FLUORENE ISOMER RT 9.9	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Fluorenone Isomer RT 9.2	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Methyl Anthracene Isomer RT 10	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Methyl Pyrene Isomer RT 12.4	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Naphthalene Isomer RT 7.7	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Naphthalene Isomer RT 7.9	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Naphthalene Isomer RT 8.8	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Octadecanal Isomer RT 14.9	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Octadecenal Isomer RT 14.9	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Sulfur RT 11.2	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Tentatively Identified Compounds		~	0	U	0	U	0	U	NT		0	U	NT		NT		0	U	NT		NT		NT	
trimethyl Naphthalene Isome...	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Trimethyl Naphthalene Isomer R	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown Aldehyde RT 14.4	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown Aldehyde RT 15.9	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown Aldehyde RT 17.3	NA	~	NT		NT		NT		2.490	JD	NT		NT		NT		NT		NT		NT		NT	
Unknown Benzene RT 5.1	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown Benzene RT 5.5	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		3.930	JD	NT	
Unknown Benzene RT 5.6	NA	~	NT		NT		NT		NT		NT		NT		1.250	JD	NT		NT		NT		NT	
Unknown Benzene RT 5.7	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
UNKNOWN BENZENE RT 5.8	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown Hdyrocarbon RT 5.2	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown Hydrocarbon RT 13.2	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown Hydrocarbon RT 15.7	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown Hydrocarbon RT 16.3	NA	~	NT		NT		NT		1.580	JD	NT		NT		NT		NT		NT		NT		NT	
Unknown Hydrocarbon RT 16.5	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown Hydrocarbon RT 16.9	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown Hydrocarbon RT 17.6	NA	~	NT		NT		NT		0.551	JD	NT		NT		NT		NT		NT		NT		NT	
Unknown Hydrocarbon RT 4.9	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown Hydrocarbon RT 5.0 (01)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown Hydrocarbon RT 5.0 (02)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown Hydrocarbon RT 5.0 (03)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown Hydrocarbon RT 5.1	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown Hydrocarbon RT 5.2	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 17.9	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 11.0	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		1.180	JD	NT		NT	
Unknown PAH RT 10.1 (01)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 10.1 (02)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 10.2	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 10.2 (01)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 10.2 (02)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 10.3	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 10.3 (01)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 10.3 (02)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 10.5	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 10.6 (01)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 10.6 (02)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 10.7	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 10.8	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 11.0	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		1.460	JD	NT		NT	
Unknown PAH RT 11.1	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		2.560	JD	NT		NT	
Unknown PAH RT 11.1 (01)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 11.1 (02)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 11.2	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 11.3	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 11.4	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 11.4 (01)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 11.4 (02)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 11.5	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 11.6	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 11.6 (01)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 11.6 (02)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 11.7	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 11.9	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	

Table 1
2022 RI Soil Tank Field Sample Analytical Results Summary
318 Nevins Street, Brooklyn, NY

Sample ID		NYSDEC Part 375 Restricted Use Soil Cleanup Objectives-	TF-1 (6)		TF-2 (8-10)		TF-2 (10-12)		TF-2 (13-15)		TF-3 (6)		TF-4 (6-7)		TF-4 (8-10)		TF-4 (11-13)		OWS-1 (5-6)		OWS-1 (6-8)		OWS-2 (6)	
York ID			22J0405-13		22J0405-14		22J0405-15		22J0405-16		22J0459-01		22J0459-02		22J0459-03		22J0459-04		22J0459-05		22J0459-06		22J0459-07	
Sampling Date			10/7/2022 12:00:00 PM		10/7/2022 12:10:00 PM		10/7/2022 12:15:00 PM		10/7/2022 12:30:00 PM		10/10/2022 8:15:00 AM		10/10/2022 8:20:00 AM		10/10/2022 8:30:00 AM		10/10/2022 8:40:00 AM		10/10/2022 9:00:00 AM		10/10/2022 9:15:00 AM		10/10/2022 9:20:00 AM	
Client Matrix		Commercial	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	CAS Number	~	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Unknown PAH RT 12.0	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		1.110	JD	NT		NT	
Unknown PAH RT 12.1	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 12.2	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 12.3	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		1.170	JD	NT		NT	
Unknown PAH RT 12.4	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 12.5	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 12.6	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 12.7	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 13.0	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		2.020	JD	NT		NT	
Unknown PAH RT 13.1	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 13.2	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		4.730	JD	NT		1.290	JD
Unknown PAH RT 13.3	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 13.4	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 13.4 (01)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		1.590	JD	NT		NT	
Unknown PAH RT 13.4 (02)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		2.680	JD	NT		NT	
Unknown PAH RT 13.6	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 13.6 (01)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 13.6 (02)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 13.7	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		1.220	JD	NT		NT	
Unknown PAH RT 13.8	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 13.9	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 14.0	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 14.1	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 14.2	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 14.3	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		1.530	JD	NT		NT	
Unknown PAH RT 14.5	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 14.6	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		1.100	JD	2.460	JD	1.080	JD
Unknown PAH RT 14.8	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		1.260	JD	NT		NT	
Unknown PAH RT 14.9	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 15.2	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 15.3	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		1.580	JD	1.880	JD	0.884	JD
Unknown PAH RT 15.4	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		2.560	JD	0.937	JD
Unknown PAH RT 15.5	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 15.7	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 16.0	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		2.670	JD	NT		NT	
Unknown PAH RT 16.2	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		1.670	JD	NT	
Unknown PAH RT 16.3	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 16.5	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 16.7	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 16.8	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 16.9	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 17.0	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 17.3	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		2.490	JD	NT	
Unknown PAH RT 17.4	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 17.6	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		2.010	JD	NT		0.894	JD
Unknown PAH RT 17.7 (01)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 17.7 (02)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 17.8	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 17.9	NA	~	NT		NT		NT		NT		NT		1.240	JD	NT		NT		3.530	JD	5.920	JD	2.780	JD
Unknown PAH RT 18.5	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 18.6	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 18.8	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 18.9	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 19.0	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 19.2	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 19.3	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 19.3 (01)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 19.3 (02)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 19.4	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 19.7	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 19.9	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 20.3	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 20.4 (01)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	

Table 1
2022 RI Soil Tank Field Sample Analytical Results Summary
318 Nevins Street, Brooklyn, NY

Sample ID		NYSDEC Part 375 Restricted Use Soil Cleanup Objectives-Commercial	TF-1 (6)		TF-2 (8-10)		TF-2 (10-12)		TF-2 (13-15)		TF-3 (6)		TF-4 (6-7)		TF-4 (8-10)		TF-4 (11-13)		OWS-1 (5-6)		OWS-1 (6-8)		OWS-2 (6)	
York ID			22J0405-13		22J0405-14		22J0405-15		22J0405-16		22J0459-01		22J0459-02		22J0459-03		22J0459-04		22J0459-05		22J0459-06		22J0459-07	
Sampling Date			10/7/2022 12:00:00 PM		10/7/2022 12:10:00 PM		10/7/2022 12:15:00 PM		10/7/2022 12:30:00 PM		10/10/2022 8:15:00 AM		10/10/2022 8:20:00 AM		10/10/2022 8:30:00 AM		10/10/2022 8:40:00 AM		10/10/2022 9:00:00 AM		10/10/2022 9:15:00 AM		10/10/2022 9:20:00 AM	
Client Matrix			Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	CAS Number		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Unknown PAH RT 20.4 (02)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 20.6	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 20.7	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 20.9	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 21.3	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 21.4	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 31.4	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 34.2	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 39.6	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
UNKNOWN PAH RT 5.8	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 7.2	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 8.4	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 8.5	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 8.6	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 9.3	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown PAH RT 9.8	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown Phenol RT 11.8	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		12.200	JD	NT	
Unknown RT 10.4	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		2.280	JD	NT	
Unknown RT 11.5	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown RT 11.7	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown RT 12.3	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown RT 13.1	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown RT 13.4	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown RT 14.0	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		2.980	JD	NT	
Unknown RT 14.8	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown RT 15.4	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		1.070	JD	NT		NT	
Unknown RT 16.3	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown RT 17.3	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown RT 17.7	NA	~	NT		NT		NT		0.855	JD	NT		NT		NT		NT		NT		NT		NT	
Unknown RT 18.6	NA	~	NT		NT		NT		1.600	JD	NT		NT		NT		NT		NT		NT		NT	
Unknown RT 19.5	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown RT 19.9	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown RT 20.1	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown RT 3.8	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown RT 4.8	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown RT 5.2	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown RT 5.7 (01)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown RT 5.7 (02)	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown RT 5.8	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown RT 5.9	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown RT 6.1	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown RT 6.3	NA	~	NT		NT		NT		NT		NT		NT		1.110	JD	NT		NT		NT		NT	
Unknown RT 7.2	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		4.060	JD	NT	
Unknown RT 7.3	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		1.970	JD	NT	
Unknown RT 8.3	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown RT 9.5	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown Thiophene RT 10.2	NA	~	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
SVOA, 8270 MASTER		mg/Kg	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
1,1-Biphenyl	92-52-4	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
1,2,4,5-Tetrachlorobenzene	95-94-3	~	0.421	U	0.519	U	0.0979	U	0.105	U	0.0960	U	0.103	U	0.106	U	0.0989	U	0.101	U	0.101	U	0.101	U
1,2,4-Trichlorobenzene	120-82-1	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
1,2-Dichlorobenzene	95-50-1	500	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
1,2-Diphenylhydrazine (as Azobenzene)	122-66-7	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
1,3-Dichlorobenzene	541-73-1	280	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
1,4-Dichlorobenzene	106-46-7	130	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
2,3,4,6-Tetrachlorophenol	58-90-2	~	0.421	U	0.519	U	0.0979	U	0.105	U	0.0960	U	0.103	U	0.106	U	0.0989	U	0.101	U	0.101	U	0.101	U
2,4,5-Trichlorophenol	95-95-4	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
2,4,6-Trichlorophenol	88-06-2	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
2,4-Dichlorophenol	120-83-2	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
2,4-Dimethylphenol	105-67-9	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
2,4-Dinitrophenol	51-28-5	~	0.421	U	0.519	U	0.0979	U	0.105	U	0.0960	U	0.103	U	0.106	U	0.0989	U	0.101	U	0.101	U	0.101	U
2,4-Dinitrotoluene	121-14-2	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
2,6-Dinitrotoluene	606-20-2	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
2-Chloronaphthalene	91-58-7	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
2-Chlorophenol	95-57-8	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
2-Methylnaphthalene	91-57-6	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.312	D	0.0496	U	0.119	D	0.0506	U	0.170	D
2-Methylphenol	95-48-7	500	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
2-Nitroaniline	88-74-4	~	0.421	U	0.519	U	0.0979	U	0.105	U	0.0960	U	0.103	U	0.106	U	0.0989	U	0.101	U	0.101	U	0.101	U
2-Nitrophenol	88-75-5	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
3- & 4-Methylphenols	65794-96-9	500	0.211	U	0.260	U	0.0509	JD	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
3,3-Dichlorobenzidine	91-94-1	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
3-Nitroaniline	99-09-2	~	0.421	U	0.519	U	0.0979	U	0.105	U	0.0960	U	0.103	U	0.106	U	0.0989	U	0.101	U	0.101	U	0.101	U
4,6-Dinitro-2-methylphenol	534-52-1	~	0.421	U	0.519	U	0.0979	U	0.105	U	0.0960	U	0.103	U	0.106	U	0.0989	U	0.101	U	0.101	U	0.101	U
4-Bromophenyl phenyl ether	101-55-3	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
4-Chloro-3-methylphenol	59-50-7	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
4-Chloroaniline	106-47-8	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
4-Chlorophenyl phenyl ether	7005-72-3	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
4-Nitroaniline	100-01-6	~	0.421	U	0.519	U	0.0979	U	0.105	U	0.0960	U	0.103	U	0.106	U	0.0989	U	0.101	U	0.101	U	0.101	U
4-Nitrophenol	100-02-7	~	0.421	U	0.519	U	0.0979	U	0.105	U	0.0960	U	0.103	U	0.106	U	0.0989	U	0.101	U	0.101	U	0.101	U
Acenaphthene	83-32-9	500	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0937	JD	0.0530	U	0.0496	U	0.367	D	0.0928	JD	0.315	D
Acenaphthylene	208-96-8	500	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.337	D	0.0530	U	0.0496	U	0.858	D	1.880	D	0.989	D
Acetophenone	98-86-2	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
Aniline	62-53-3	~	0.843	U	1.040	U	0.196	U	0.211	U	0.192	U	0.206	U	0.212	U	0.198	U	0.202	U	0.202	U	0.203	U
Anthracene	120-12-7	500	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.262	D	0.0530	U	0.0496	U	2.010	D	0.438	D	0.571	D
Atrazine	1912-24-9	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U

Table 1
2022 RI Soil Tank Field Sample Analytical Results Summary
318 Nevins Street, Brooklyn, NY

Sample ID		NYSDEC Part 375 Restricted Use Soil Cleanup Objectives-	TF-1 (6)		TF-2 (8-10)		TF-2 (10-12)		TF-2 (13-15)		TF-3 (6)		TF-4 (6-7)		TF-4 (8-10)		TF-4 (11-13)		OWS-1 (5-6)		OWS-1 (6-8)		OWS-2 (6)	
York ID			22J0405-13		22J0405-14		22J0405-15		22J0405-16		22J0459-01		22J0459-02		22J0459-03		22J0459-04		22J0459-05		22J0459-06		22J0459-07	
Sampling Date			10/7/2022 12:00:00 PM		10/7/2022 12:10:00 PM		10/7/2022 12:15:00 PM		10/7/2022 12:30:00 PM		10/10/2022 8:15:00 AM		10/10/2022 8:20:00 AM		10/10/2022 8:30:00 AM		10/10/2022 8:40:00 AM		10/10/2022 9:00:00 AM		10/10/2022 9:15:00 AM		10/10/2022 9:20:00 AM	
Client Matrix		Commercial	Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	**CAS Number**		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Benzaldehyde	100-52-7	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
Benzidine	92-87-5	~	0.843	U	1.040	U	0.196	U	0.211	U	0.192	U	0.206	U	0.212	U	0.198	U	0.202	U	0.202	U	0.203	U
Benzo(a)anthracene	56-55-3	5.6	0.211	U	0.260	U	0.0829	JD	0.0527	U	0.0481	U	1.200	D	0.0530	U	0.0496	U	**7.740**	D	3.540	D	2.200	D
Benzo(a)pyrene	50-32-8	1	0.211	U	0.260	U	0.0814	JD	0.0527	U	0.0481	U	**1.710**	D	0.0530	U	0.0496	U	**8.410**	D	**10.100**	D	**5.400**	D
Benzo(b)fluoranthene	205-99-2	5.6	0.211	U	0.260	U	0.0681	JD	0.0527	U	0.0481	U	1.110	D	0.0530	U	0.0496	U	**5.780**	D	3.640	D	2.500	D
Benzo(g,h,i)perylene	191-24-2	500	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	1.220	D	0.0530	U	0.0496	U	3.640	D	7.030	D	3.780	D
Benzo(k)fluoranthene	207-08-9	56	0.211	U	0.260	U	0.0540	JD	0.0527	U	0.0481	U	1.030	D	0.0530	U	0.0496	U	7.160	D	4.950	D	2.440	D
Benzoic acid	65-85-0	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
Benzyl alcohol	100-51-6	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
Benzyl butyl phthalate	85-68-7	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
Bis(2-chloroethoxy)methane	111-91-1	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
Bis(2-chloroethyl)ether	111-44-4	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
Bis(2-chloroisopropyl)ether	108-60-1	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
Bis(2-ethylhexyl)phthalate	117-81-7	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
Caprolactam	105-60-2	~	0.421	U	0.519	U	0.0979	U	0.105	U	0.0960	U	0.103	U	0.106	U	0.0989	U	0.101	U	0.101	U	0.101	U
Carbazole	86-74-8	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0896	JD	0.0530	U	0.0496	U	0.486	D	0.0662	JD	0.203	D
Chrysene	218-01-9	56	0.211	U	0.260	U	0.0728	JD	0.0527	U	0.0481	U	1.110	D	0.0530	U	0.0496	U	7.390	D	3.110	D	2.100	D
Dibenzo(a,h)anthracene	53-70-3	0.56	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.196	D	0.0530	U	0.0496	U	**0.980**	D	0.205	D	0.375	D
Dibenzofuran	132-64-9	350	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.265	D	0.0506	U	0.188	D
Diethyl phthalate	84-66-2	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
Dimethyl phthalate	131-11-3	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
Di-n-butyl phthalate	84-74-2	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
Di-n-octyl phthalate	117-84-0	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
Fluoranthene	206-44-0	500	0.211	U	0.324	JD	0.120	D	0.0527	U	0.0481	U	2.030	D	0.0530	U	0.0496	U	13	D	3.750	D	3.220	D
Fluorene	86-73-7	500	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0978	JD	0.0530	U	0.0496	U	0.532	D	0.154	D	0.268	D
Hexachlorobenzene	118-74-1	6	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
Hexachlorobutadiene	87-68-3	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
Hexachlorocyclopentadiene	77-47-4	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
Hexachloroethane	67-72-1	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
Indeno(1,2,3-cd)pyrene	193-39-5	5.6	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	1.020	D	0.0530	U	0.0496	U	4.310	D	4.980	D	2.650	D
Isophorone	78-59-1	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
Naphthalene	91-20-3	500	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.141	D	0.241	D	0.0496	U	0.316	D	0.226	D	0.310	D
Nitrobenzene	98-95-3	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
N-Nitrosodimethylamine	62-75-9	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
N-nitroso-di-n-propylamine	621-64-7	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
N-Nitrosodiphenylamine	86-30-6	~	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
Pentachlorophenol	87-86-5	6.7	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
Phenanthrene	85-01-8	500	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.922	D	0.0530	U	0.0496	U	5.400	D	0.708	D	2.280	D
Phenol	108-95-2	500	0.211	U	0.260	U	0.0491	U	0.0527	U	0.0481	U	0.0515	U	0.0530	U	0.0496	U	0.0506	U	0.0506	U	0.0508	U
Pyrene	129-00-0	500	0.211	U	0.286	JD	0.116	D	0.0527	U	0.0481	U	2.200	D	0.0530	U	0.0496	U	11	D	5.620	D	3.520	D
PEST, 8081 MASTER		mg/Kg	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
4,4'-DDD	72-54-8	92	0.00170	U	0.00205	U	0.00196	U	0.00209	U	0.00189	U	0.00204	U	0.00211	U	0.00194	U	0.00200	U	0.00200	U	0.00199	U
4,4'-DDE	72-55-9	62	0.00170	U	0.00205	U	0.00196	U	0.00209	U	0.00189	U	0.00204	U	0.00211	U	0.00194	U	0.00200	U	0.00200	U	0.00199	U
4,4'-DDT	50-29-3	47	0.00170	U	0.00205	U	0.00196	U	0.00209	U	0.00189	U	0.00210	D	0.00211	U	0.00194	U	0.00200	U	0.00200	U	0.00199	U
Aldrin	309-00-2	0.68	0.00170	U	0.00205	U	0.00196	U	0.00209	U	0.00189	U	0.00204	U	0.00211	U	0.00194	U	0.00200	U	0.00200	U	0.00199	U
alpha-BHC	319-84-6	3.4	0.00170	U	0.00205	U	0.00196	U	0.00209	U	0.00189	U	0.00204	U	0.00211	U	0.00194	U	0.00200	U	0.00200	U	0.00199	U
alpha-Chlordane	5103-71-9	24	0.00170	U	0.00205	U	0.00196	U	0.00209	U	0.00189	U	0.00204	U	0.00211	U	0.00194	U	0.00200	U	0.00200	U	0.00199	U
beta-BHC	319-85-7	3	0.00170	U	0.00205	U	0.00196	U	0.00209	U	0.00189	U	0.00204	U	0.00211	U	0.00194	U	0.00200	U	0.00200	U	0.00199	U
Chlordane, total	12789-03-6	~	0.0341	U	0.0411	U	0.0391	U	0.0419	U	0.0378	U	0.0408	U	0.0421	U	0.0387	U	0.0399	U	0.0401	U	0.0399	U
delta-BHC	319-86-8	500	0.00170	U	0.00205	U	0.00196	U	0.00209	U	0.00189	U	0.00204	U	0.00211	U	0.00194	U	0.00200	U	0.00200	U	0.00199	U
Dieldrin	60-57-1	1.4	0.00170	U	0.00205	U	0.00196	U	0.00209	U	0.00189	U	0.00204	U	0.00211	U	0.00194	U	0.00200	U	0.00200	U	0.00199	U
Endosulfan I	959-98-8	200	0.00170	U	0.00205	U	0.00196	U	0.00209	U	0.00189	U	0.00204	U	0.00211	U	0.00194	U	0.00200	U	0.00200	U	0.00199	U
Endosulfan II	33213-65-9	200	0.00170	U	0.00205	U	0.00196	U	0.00209	U	0.00189	U	0.00204	U	0.00211	U	0.00194	U	0.00200	U	0.00200	U	0.00199	U
Endosulfan sulfate	1031-07-8	200	0.00170	U	0.00205	U	0.00196	U	0.00209	U	0.00189	U	0.00204	U	0.00211	U	0.00194	U	0.00200	U	0.00200	U	0.00199	U
Endrin	72-20-8	89	0.00170	U	0.00205	U	0.00196	U	0.00209	U	0.00189	U	0.00204	U	0.00211	U	0.00194	U	0.00200	U	0.00200	U	0.00199	U
Endrin aldehyde	7421-93-4	~	0.00170	U	0.00205	U	0.00196	U	0.00209	U	0.00189	U	0.00204	U	0.00211	U	0.00194	U	0.00200	U	0.00200	U	0.00199	U
Endrin ketone	53494-70-5	~	0.00170	U	0.00205	U	0.00196	U	0.00209	U	0.00189	U	0.00204	U	0.00211	U	0.00194	U	0.00200	U	0.00200	U	0.00199	U
gamma-BHC (Lindane)	58-89-9	9.2	0.00170	U	0.00205	U	0.00196	U	0.00209	U	0.00189	U	0.00204	U	0.00211	U	0.00194	U	0.00200	U	0.00200	U	0.00199	U
gamma-Chlordane	5566-34-7	~	0.00170	U	0.00205	U	0.00196	U	0.00209	U	0.00189	U	0.00204	U	0.00211	U	0.00194	U	0.00200	U	0.00200	U	0.00199	U
Heptachlor	76-44-8	15	0.00170	U	0.00205	U	0.00196	U	0.00209	U	0.00189	U	0.00204	U	0.00211	U	0.00194	U	0.00200	U	0.00200	U	0.00199	U
Heptachlor epoxide	1024-57-3	~	0.00170	U	0.00205	U	0.00196	U	0.00209	U	0.00189	U	0.00204	U	0.00211	U	0.00194	U	0.00200	U	0.00200	U	0.00199	U
Methoxychlor	72-43-5	~	0.00170	U	0.00205	U	0.00196	U	0.00209	U	0.00189	U	0.00204	U	0.00211	U	0.00194	U	0.00200	U	0.00200	U	0.00199	U
Toxaphene	8001-35-2	~	0.170	U	0.205	U	0.196	U	0.209	U	0.189	U	0.204	U	0.211	U	0.194	U	0.200	U	0.200	U	0.199	U

Table 1
2022 RI Soil Tank Field Sample Analytical Results Summary
318 Nevins Street, Brooklyn, NY

Sample ID		NYSDEC Part 375 Restricted Use Soil Cleanup Objectives- Commercial	TF-1 (6)		TF-2 (8-10)		TF-2 (10-12)		TF-2 (13-15)		TF-3 (6)		TF-4 (6-7)		TF-4 (8-10)		TF-4 (11-13)		OWS-1 (5-6)		OWS-1 (6-8)		OWS-2 (6)	
York ID			22J0405-13		22J0405-14		22J0405-15		22J0405-16		22J0459-01		22J0459-02		22J0459-03		22J0459-04		22J0459-05		22J0459-06		22J0459-07	
Sampling Date			10/7/2022 12:00:00 PM		10/7/2022 12:10:00 PM		10/7/2022 12:15:00 PM		10/7/2022 12:30:00 PM		10/10/2022 8:15:00 AM		10/10/2022 8:20:00 AM		10/10/2022 8:30:00 AM		10/10/2022 8:40:00 AM		10/10/2022 9:00:00 AM		10/10/2022 9:15:00 AM		10/10/2022 9:20:00 AM	
Client Matrix			Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Compound	**CAS Number**		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Metals, Target Analyte		mg/Kg	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Aluminum	7429-90-5	~	9,850		6,880		18,000		8,430		732		4,750		12,800		13,300		6,530		3,670		4,770	
Antimony	7440-36-0	~	2.600	U	3.120	U	5.010		3.180	U	2.890	U	6.890		5.460		3.540		3.440		3.060	U	3.070	U
Arsenic	7440-38-2	16	4.920		12.300		11.600		3.600		1.730	U	8.740		12.900		2.530		8.860		5.050		10.500	
Barium	7440-39-3	400	30.500		136		198		21.200		4.900		129		156		46.900		82.600		225		130	
Beryllium	7440-41-7	590	0.174		0.153		0.438		0.135		0.0580	U	0.0620	U	0.283		0.0620		0.197		0.0610	U	0.0610	U
Cadmium	7440-43-9	9.3	0.312	U	0.375	U	0.357	U	0.382	U	0.347	U	0.372	U	0.384	U	0.357	U	0.365	U	0.367	U	0.368	U
Calcium	7440-70-2	~	26,600	B	85,000	B	4,250	B	365	B	40.500		8,760		4,220		424		6,680		116,000		112,000	
Chromium	7440-47-3	~	13.200		11.400		31.100		15.700		2.260		15.700		23		19.200		13.400		9.900		9.840	
Cobalt	7440-48-4	~	7.130		6.430		11.600		6.210		0.701		10.900		12.600		7.570		6.030		4.840		5.030	
Copper	7440-50-8	270	21.200		36.900		52.500		10.800		2.310	U	240		48.700		11.600		**1,300**		80.100		131	
Iron	7439-89-6	~	21,500		14,700		28,100		13,800		2,280		29,800		21,200		15,400		14,900		7,680		11,300	
Lead	7439-92-1	1000	22.500		554		264		43.800		2.750		156		303		14.900		225		827		357	
Magnesium	7439-95-4	~	17,100		1,800		4,700		2,730		176		3,280		3,480		2,840		2,750		986		3,420	
Manganese	7439-96-5	10000	638		204		305		186		32.700		379		358		152		202		194		165	
Nickel	7440-02-0	310	18.800		15.500		39.800		19.200		1.160	U	34.700		34.700		18.200		21.500		15		13.800	
Potassium	7440-09-7	~	969		938		2,870		1,200		72.900		1,020		1,760		1,030		827		466		701	
Selenium	7782-49-2	1500	2.600	U	3.120	U	2.970	U	3.180	U	2.890	U	3.100	U	3.200	U	2.970	U	3.050	U	3.060	U	3.070	U
Silver	7440-22-4	1500	0.520	U	0.625	U	0.595	U	0.637	U	0.578	U	0.621	U	0.640	U	0.595	U	0.609	U	0.611	U	0.614	U
Sodium	7440-23-5	~	117		903		1,110		534		57.800	U	407		603		363		339		390		575	
Thallium	7440-28-0	~	1.080	U	1.300	U	1.240	U	1.320	U	1.200	U	1.290	U	1.330	U	1.240	U	1.270	U	1.270	U	1.280	U
Vanadium	7440-62-2	~	36.800		20.100		39.700		19.200		3.830		21		37.200		29.600		18.400		11.600		13.300	
Zinc	7440-66-6	10000	51.700		142		113		28.700		3.890		277		123		34.400		215		75.600		211	
Mercury by 7473		mg/Kg	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Mercury	7439-97-6	2.8	0.0312	U	2.280		1.070		0.0382	U	0.0347	U	0.927		1.400		0.0357	U	0.207		0.828		0.938	
Chromium, Hexavalent		mg/Kg	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Chromium, Hexavalent	18540-29-9	400	0.520	U	0.625	U	0.595	U	0.637	U	0.578	U	0.621	U	0.640	U	0.595	U	0.609	U	0.611	U	0.614	U
Cyanide, Total		mg/Kg	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Cyanide, total	57-12-5	27	0.520	U	0.625	U	0.595	U	0.637	U	0.578	U	0.621	U	0.640	U	0.595	U	0.609	U	0.611	U	0.614	U
Total Solids			%		%		%		%		%		%		%		%		%		%		%	
Dilution Factor			1		1		1		1		1		1		1		1		1		1		1	
% Solids	solids	~	96.100		80.100		84.100		78.500		86.500		80.600		78.100		84		82.100		81.800		81.400	
PCB, 8082 MASTER		mg/Kg	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Aroclor 1016	12674-11-2	~	0.0172	U	0.0207	U	0.0197	U	0.0211	U	0.0191	U	0.0206	U	0.0213	U	0.0196	U	0.0202	U	0.0202	U	0.0201	U
Aroclor 1221	11104-28-2	~	0.0172	U	0.0207	U	0.0197	U	0.0211	U	0.0191	U	0.0206	U	0.0213	U	0.0196	U	0.0202	U	0.0202	U	0.0201	U
Aroclor 1232	11141-16-5	~	0.0172	U	0.0207	U	0.0197	U	0.0211	U	0.0191	U	0.0206	U	0.0213	U	0.0196	U	0.0202	U	0.0202	U	0.0201	U
Aroclor 1242	53469-21-9	~	0.0172	U	0.0207	U	0.0197	U	0.0211	U	0.0191	U	0.0206	U	0.0213	U	0.0196	U	0.0202	U	0.0202	U	0.0201	U
Aroclor 1248	12672-29-6	~	0.0172	U	0.0207	U	0.0197	U	0.0211	U	0.0191	U	0.0206	U	0.0213	U	0.0196	U	0.0202	U	0.0202	U	0.0201	U
Aroclor 1254	11097-69-1	~	0.0172	U	0.0207	U	0.0197	U	0.0211	U	0.0191	U	0.0206	U	0.0213	U	0.0196	U	0.0202	U	0.0202	U	0.0201	U
Aroclor 1260	11096-82-5	~	0.0172	U	0.0207	U	0.0197	U	0.0211	U	0.0191	U	0.0206	U	0.0213	U	0.0196	U	0.0202	U	0.0202	U	0.0201	U
Total PCBs	1336-36-3	1	0.0172	U	0.0207	U	0.0197	U	0.0211	U	0.0191	U	0.0206	U	0.0213	U	0.0196	U	0.0202	U	0.0202	U	0.0201	U
PFAS, NYSDEC Target List		ug/kg			ug/kg		ug/kg		ug/kg		ug/kg		ug/kg		ug/kg		ug/kg		ug/kg		ug/kg		ug/kg	
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS	39108-34-4	~	NT		0.286	U	0.293	U	0.309	U	0.280	U	0.306	U	0.304	U	0.292	U	0.277	U	0.303	U	0.293	U
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS	27619-97-2	~	NT		0.286	U	0.293	U	0.309	U	0.280	U	0.306	U	0.304	U	0.292	U	0.277	U	0.303	U	0.293	U
N-EtFOSAA	2991-50-6	~	NT		0.286	U	0.293	U	0.309	U	0.280	U	0.306	U	0.304	U	0.292	U	0.277	U	0.303	U	0.293	U
N-MeFOSAA	2355-31-9	~	NT		0.286	U	0.293	U	0.309	U	0.280	U	0.306	U	0.304	U	0.292	U	0.277	U	0.303	U	0.293	U
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	~	NT		0.286	U	0.293	U	0.309	U	0.280	U	0.306	U	0.304	U	0.292	U	0.277	U	0.303	U	0.293	U
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	~	NT		0.286	U	0.293	U	0.309	U	0.280	U	0.306	U	0.304	U	0.292	U	0.277	U	0.303	U	0.293	U
Perfluoro-1-octanesulfonamide (FOSA)	754-91-6	~	NT		0.286	U	0.293	U	0.309	U	0.280	U	0.306	U	0.304	U	0.292	U	0.277	U	0.303	U	0.293	U
Perfluorobutanesulfonic acid (PFBS)	375-73-5	~	NT		0.286	U	0.293	U	0.309	U	0.280	U	0.306	U	0.304	U	0.292	U	0.277	U	0.303	U	0.293	U
Perfluorodecanoic acid (PFDA)	335-76-2	~	NT		0.286	U	0.293	U	0.309	U	0.280	U	0.306	U	0.304	U	0.292	U	0.277	U	0.303	U	0.293	U
Perfluorododecanoic acid (PFDoA)	307-55-1	~	NT		0.286	U	0.293	U	0.309	U	0.280	U	0.306	U	0.304	U	0.292	U	0.277	U	0.303	U	0.293	U
Perfluoroheptanoic acid (PFHpA)	375-85-9	~	NT		0.286	U	0.293	U	0.309	U	0.280	U	0.733		0.304	U	0.292	U	0.277	U	0.303	U	0.293	U
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	~	NT		0.286	U	0.293	U	0.309	U	0.280	U	0.408		0.304	U	0.292	U	5.610		1.350		0.293	U
Perfluorohexanoic acid (PFHxA)	307-24-4	~	NT		0.286	U	0.293	U	0.309	U	0.280	U	0.306	U	0.304	U	0.292	U	0.277	U	0.303	U	0.293	U
Perfluoro-n-butanoic acid (PFBA)	375-22-4	~	NT		0.286	U	0.293	U	0.309	U	0.280	U	1.730		0.304	U	0.292	U	0.277	U	0.303	U	0.293	U
Perfluorononanoic acid (PFNA)	375-95-1	~	NT		0.286	U	0.293	U	0.309	U	0.280	U	0.306	U	0.304	U	0.292	U	0.277	U	0.303	U	0.293	U
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	440	NT		0.286	U	0.293	U	0.309	U	0.280	U	0.306	U	0.304	U	0.292	U	3.940		0.303	U	0.293	U
Perfluorooctanoic acid (PFOA)	335-67-1	500	NT		0.286	U	0.293	U	0.309	U	0.280	U	0.604		0.304	U	0.292	U	0.277	U	0.303	U	0.293	U
Perfluoropentanoic acid (PFPeA)	2706-90-3	~	NT		0.286	U	0.293	U	0.309	U	0.280	U	0.306	U	0.304	U	0.292	U	0.277	U	0.303	U	0.293	U
Perfluorotetradecanoic acid (PFTA)	376-06-7	~	NT		0.286	U	0.293	U	0.309	U	0.280	U	0.306	U	0.304	U	0.292	U	0.277	U	0.303	U	0.293	U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	~	NT		0.286	U	0.293	U	0.309	U	0.280	U	0.306	U	0.304	U	0.292	U	0.277	U	0.303	U	0.293	U
Perfluoroundecanoic acid (PFUnA)	2058-94-8	~	NT		0.286	U	0.293	U	0.309	U	0.280	U	0.306	U	0.304	U	0.292	U	0.277	U	0.303	U	0.293	U

NOTES:
Any Regulatory Exceedences are color coded by Regulation

Q is the Qualifier Column with definitions as follows:
D=result is from an analysis that required a dilution
J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
U=analyte not detected at or above the level indicated
B=analyte found in the analysis batch blank
E=result is estimated and cannot be accurately reported due to levels encountered or interferences
P=this flag is used for pesticide and PCB (Aroclor) target compounds when there is a % difference for detected concentrations that exceed method dictated limits between the two GC columns used for analysis
NT=this indicates the analyte was not a target for this sample
~=this indicates that no regulatory limit has been established for this analyte

Table 1
Supplemental RI Soil Volatile Organic Compounds Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION						SB-16-N1 (34-35)		SB-16-N1 (34-35)		SB-16-N1 (37-38)		SB-16-S1 (50-51)		SB-16-S1 (55-56)		SB-17-E1 (24-25)		SB-17-E1 (24-25)		SB-17-E1 (30-31)		SB-17-S2 35-37		SB-17-N1 (24-25)	
SAMPLING DATE						1/11/2023		1/11/2023		1/11/2023		1/11/2023		1/11/2023		1/16/2023		1/16/2023		1/16/2023		1/17/2023		1/17/2023	
LAB SAMPLE ID						L2301629-01		L2301629-01 R1		L2301629-02		L2301629-03		L2301629-04		L2302487-01		L2302487-01 R1		L2302487-02		L2302691-01		L2302692-01	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum	NY-RESGW	NY-RESRR	NY-UNRES	Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organics by EPA 5035																									
Methylene chloride	75-09-2	0.05	100	0.05	mg/kg	1.5	U	-	-	0.0058	U	0.0054	U	0.0062	U	16	U	-	-	0.0054	U	0.0063	U	14	U
1,1-Dichloroethane	75-34-3	0.27	26	0.27	mg/kg	0.3	U	-	-	0.0012	U	0.0011	U	0.0012	U	3.2	U	-	-	0.0011	U	0.0013	U	2.8	U
Chloroform	67-66-3	0.37	49	0.37	mg/kg	0.45	U	-	-	0.0018	U	0.0016	U	0.0019	U	4.8	U	-	-	0.0016	U	0.0019	U	4.1	U
Carbon tetrachloride	56-23-5	0.76	2.4	0.76	mg/kg	0.3	U	-	-	0.0012	U	0.0011	U	0.0012	U	3.2	U	-	-	0.0011	U	0.0013	U	2.8	U
1,2-Dichloropropane	78-87-5				mg/kg	0.3	U	-	-	0.0012	U	0.0011	U	0.0012	U	3.2	U	-	-	0.0011	U	0.0013	U	2.8	U
Dibromochloromethane	124-48-1				mg/kg	0.3	U	-	-	0.0012	U	0.0011	U	0.0012	U	3.2	U	-	-	0.0011	U	0.0013	U	2.8	U
1,1,2-Trichloroethane	79-00-5				mg/kg	0.3	U	-	-	0.0012	U	0.0011	U	0.0012	U	3.2	U	-	-	0.0011	U	0.0013	U	2.8	U
Tetrachloroethene	127-18-4	1.3	19	1.3	mg/kg	0.11	J	-	-	0.00058	U	0.00036	J	0.0016		1.6	U	-	-	0.00054	U	0.00063	U	1.4	U
Chlorobenzene	108-90-7	1.1	100	1.1	mg/kg	0.15	U	-	-	0.00058	U	0.00054	U	0.00062	U	1.6	U	-	-	0.00054	U	0.00063	U	1.4	U
Trichlorofluoromethane	75-69-4				mg/kg	1.2	U	-	-	0.0047	U	0.0043	U	0.005	U	13	U	-	-	0.0044	U	0.005	U	11	U
1,2-Dichloroethane	107-06-2	0.02	3.1	0.02	mg/kg	0.3	U	-	-	0.0012	U	0.0011	U	0.0012	U	3.2	U	-	-	0.0011	U	0.0013	U	2.8	U
1,1,1-Trichloroethane	71-55-6	0.68	100	0.68	mg/kg	0.15	U	-	-	0.00058	U	0.00054	U	0.00062	U	1.6	U	-	-	0.00054	U	0.00063	U	1.4	U
Bromodichloromethane	75-27-4				mg/kg	0.15	U	-	-	0.00058	U	0.00054	U	0.00062	U	1.6	U	-	-	0.00054	U	0.00063	U	1.4	U
trans-1,3-Dichloropropene	10061-02-6				mg/kg	0.3	U	-	-	0.0012	U	0.0011	U	0.0012	U	3.2	U	-	-	0.0011	U	0.0013	U	2.8	U
cis-1,3-Dichloropropene	10061-01-5				mg/kg	0.15	U	-	-	0.00058	U	0.00054	U	0.00062	U	1.6	U	-	-	0.00054	U	0.00063	U	1.4	U
1,3-Dichloropropene, Total	542-75-6				mg/kg	0.15	U	-	-	0.00058	U	0.00054	U	0.00062	U	1.6	U	-	-	0.00054	U	0.00063	U	1.4	U
1,1-Dichloropropene	563-58-6				mg/kg	0.15	U	-	-	0.00058	U	0.00054	U	0.00062	U	1.6	U	-	-	0.00054	U	0.00063	U	1.4	U
Bromoform	75-25-2				mg/kg	1.2	U	-	-	0.0047	U	0.0043	U	0.005	U	13	U	-	-	0.0044	U	0.005	U	11	U
1,1,2,2-Tetrachloroethane	79-34-5				mg/kg	0.15	U	-	-	0.00058	U	0.00054	U	0.00062	U	1.6	U	-	-	0.00054	U	0.00063	U	1.4	U
Benzene	71-43-2	0.06	4.8	0.06	mg/kg	0.15	U	-	-	0.00058	U	0.00054	U	0.00062	U	3		-	-	0.0023		0.00051	J	0.6	J
Toluene	108-88-3	0.7	100	0.7	mg/kg	0.3	U	-	-	0.004		0.0047		0.0049		25		-	-	0.0035		0.003		5.4	
Ethylbenzene	100-41-4	1	41	1	mg/kg	7.7		-	-	0.0026		0.0011	U	0.0012	U	67		-	-	0.019		0.0025		24	
Chloromethane	74-87-3				mg/kg	1.2	U	-	-	0.0047	U	0.0043	U	0.005	U	13	U	-	-	0.0044	U	0.005	U	11	U
Bromomethane	74-83-9				mg/kg	0.6	U	-	-	0.0023	U	0.0022	U	0.0025	U	6.4	U	-	-	0.0022	U	0.0025	U	5.5	U
Vinyl chloride	75-01-4	0.02	0.9	0.02	mg/kg	0.3	U	-	-	0.0012	U	0.0011	U	0.0012	U	3.2	U	-	-	0.0011	U	0.001	J	2.8	U
Chloroethane	75-00-3				mg/kg	0.6	U	-	-	0.0023	U	0.0022	U	0.0025	U	6.4	U	-	-	0.0022	U	0.0025	U	5.5	U
1,1-Dichloroethene	75-35-4	0.33	100	0.33	mg/kg	0.3	U	-	-	0.0012	U	0.0011	U	0.0012	U	3.2	U	-	-	0.0011	U	0.0013	U	2.8	U
trans-1,2-Dichloroethene	156-60-5	0.19	100	0.19	mg/kg	0.45	U	-	-	0.0018	U	0.0016	U	0.0019	U	4.8	U	-	-	0.0016	U	0.0019	U	4.1	U
Trichloroethene	79-01-6	0.47	21	0.47	mg/kg	0.15	U	-	-	0.00058	U	0.00037	J	0.00062	U	1.6	U	-	-	0.00054	U	0.00063	U	1.4	U
1,2-Dichlorobenzene	95-50-1	1.1	100	1.1	mg/kg	0.6	U	-	-	0.0023	U	0.0022	U	0.0025	U	6.4	U	-	-	0.0022	U	0.0025	U	5.5	U
1,3-Dichlorobenzene	541-73-1	2.4	49	2.4	mg/kg	0.6	U	-	-	0.0023	U	0.0022	U	0.0025	U	6.4	U	-	-	0.0022	U	0.0025	U	5.5	U
1,4-Dichlorobenzene	106-46-7	1.8	13	1.8	mg/kg	0.6	U	-	-	0.0023	U	0.0022	U	0.0025	U	6.4	U	-	-	0.0022	U	0.0025	U	5.5	U
Methyl tert butyl ether	1634-04-4	0.93	100	0.93	mg/kg	0.6	U	-	-	0.0023	U	0.0022	U	0.0025	U	6.4	U	-	-	0.0022	U	0.0025	U	5.5	U
p/m-Xylene	179601-23-1				mg/kg	5.8		-	-	0.0023	U	0.0022	U	0.0025	U	47		-	-	0.01		0.0015	J	17	
o-Xylene	95-47-6				mg/kg	2.8		-	-	0.00092	J	0.0011	U	0.0012	U	22		-	-	0.0082		0.0015		8.3	
Xylenes, Total	1330-20-7	1.6	100	0.26	mg/kg	8.6		-	-	0.00092	J	0.0011	U	0.0012	U	69		-	-	0.018		0.003	J	25	
cis-1,2-Dichloroethene	156-59-2	0.25	100	0.25	mg/kg	0.3	U	-	-	0.0014		0.0023		0.00024	J	3.2	U	-	-	0.00032	J	0.0069		2.8	U
1,2-Dichloroethene, Total	540-59-0				mg/kg	0.3	U	-	-	0.0014		0.0023		0.00024	J	3.2	U	-	-	0.00032	J	0.0069		2.8	U
Dibromomethane	74-95-3				mg/kg	0.6	U	-	-	0.0023	U	0.0022	U	0.0025	U	6.4	U	-	-	0.0022	U	0.0025	U	5.5	U
Styrene	100-42-5				mg/kg	0.29	J	-	-	0.00035	J	0.00038	J	0.00027	J	4		-	-	0.0011	U	0.00028	J	2.8	U
Dichlorodifluoromethane	75-71-8				mg/kg	3	U	-	-	0.012	U	0.011	U	0.012	U	32	U	-	-	0.011	U	0.013	U	28	U
Acetone	67-64-1	0.05	100	0.05	mg/kg	3	U	-	-	0.0088	J	0.012		0.012	U	32	U	-	-	0.0087	J	0.01	J	28	U
Carbon disulfide	75-15-0				mg/kg	3	U	-	-	0.012	U	0.013		0.012	U	32	U	-	-	0.0061	J	0.013	U	28	U
2-Butanone	78-93-3	0.12	100	0.12	mg/kg	3	U	-	-	0.012	U	0.011	U	0.012	U	32	U	-	-	0.011	U	0.013	U	28	U
Vinyl acetate	108-05-4				mg/kg	3	U	-	-	0.012	U	0.011	U	0.012	U	32	U	-	-	0.011	U	0.013	U	28	U
4-Methyl-2-pentanone	108-10-1				mg/kg	3	U	-	-	0.012	U	0.011	U	0.012	U	32	U	-	-	0.011	U	0.013	U	28	U
1,2,3-Trichloropropane	96-18-4				mg/kg	0.6	U	-	-	0.0023	U	0.0022	U	0.0025	U	6.4	U	-	-	0.0022	U	0.0025	U	5.5	U
2-Hexanone	591-78-6				mg/kg	3	U	-	-	0.012	U	0.011	U	0.012	U	32	U	-	-	0.011	U	0.013	U	28	U
Bromochloromethane	74-97-5				mg/kg	0.6	U	-	-	0.0023	U	0.0022	U	0.0025	U	6.4	U	-	-	0.0022	U	0.0025	U	5.5	U
2,2-Dichloropropane	594-20-7				mg/kg	0.6	U	-	-	0.0023	U	0.0022	U	0.0025	U	6.4	U	-	-	0.0022	U	0.0025	U	5.5	U
1,2-Dibromoethane	106-93-4				mg/kg	0.3	U	-	-	0.0012	U	0.0011	U	0.0012	U	3.2	U	-	-	0.0011	U	0.0013	U	2.8	U
1,3-Dichloropropane	142-28-9				mg/kg	0.6	U	-	-	0.0023	U	0.0022	U	0.0025	U	6.4	U	-	-	0.0022	U	0.0025	U	5.5	U
1,1,1,2-Tetrachloroethane	630-20-6				mg/kg	0.15	U	-	-	0.00058	U	0.00054	U	0.00062	U	1.6	U	-	-	0.00054	U	0.00063	U	1.4	U
Bromobenzene	108-86-1				mg/kg	0.6	U	-	-	0.0023	U	0.0022	U	0.0025	U	6.4	U	-	-	0.0022	U	0.0025	U	5.5	U
n-Butylbenzene	104-51-8	12	100	12	mg/kg	0.38		-	-	0.00045	J	0.00026	J	0.0012	U	1.4	J	-	-	0.0011	U	0.0013	U	0.82	J
sec-Butylbenzene	135-98-8	11	100	11	mg/kg	0.098	J	-	-	0.0012	U	0.00036	J	0.0012	U	0.52	J	-	-	0.0011	U	0.0013	U	2.8	U
tert-Butylbenzene	98-06-6	5.9	100	5.9	mg/kg	0.6	U	-	-	0.0023	U	0.0022	U	0.0025	U	6.4	U	-	-	0.0022	U	0.0025	U	5.5	U
o-Chlorotoluene	95-49-8				mg/kg	0.6	U	-	-	0.0023	U	0.0022	U	0.0025	U	6.4	U	-	-	0.0022	U	0.0025	U	5.5	U
p-Chlorotoluene	106-43-4				mg/kg	0.6	U	-	-	0.0023	U	0.0022	U	0.0025	U	6.4	U	-	-	0.0022	U	0.0025	U	5.5	U
1,2-Dibromo-3-chloropropane	96-12-8				mg/kg	0.9	U	-	-	0.0035	U	0.0032	U	0.0037	U	9.6	U	-	-	0.0033	U	0.0038	U	8.3	U
Hexachlorobutadiene	87-68-3				mg/kg	1.2	U	-	-	0.0047	U	0.0043	U	0.005	U	13	U	-	-	0.0044	U	0.005	U	11	U
Isopropylbenzene	98-82-8				mg/kg	0.96		-	-	0.0016		0.0011	U	0.0012	U	3.6		-	-	0.0011		0.00084	J	4.6	
p-Isopropyltoluene	99-87-6				mg/kg	1.1		-	-	0.0011	J	0.00082	J	0.0012	U	3.5		-	-	0.00042	J	0.00045	J	2.5	J
Naphthalene	91-20-3	12	100	12	mg/kg	270		200	E	0.03		0.0016	J	0.005	U	1500		1200	E	0.6	E	0.065		630	
Acrylonitrile	107-13-1				mg/kg	1.2	U	-	-	0.0047	U	0.0043	U	0.005	U	13	U	-	-	0.0044	U	0.005	U	11	U
n-Propylbenzene	103-65-1	3.9	100	3.9	mg/kg	0.77		-	-	0.0016		0.0011	U	0.0012	U	3.3		-	-	0.00057	J	0.00026	J	2	J
1,2,3-Trichlorobenzene	87-61-6				mg/kg	0.6	U	-	-	0.0023	U	0.0022	U	0.0025	U	6.4	U	-	-	0.0022	U	0.0025	U	5.5	U
1,2,4-Trichlorobenzene	120-82-1				mg/kg	0.6	U	-	-	0.0023	U	0.0022	U	0.0025	U	6.4	U	-	-	0.0022	U	0.0025	U	5.5	U
1,3,5-Trimethylbenzene	108-67-8	8.4	52	8.4	mg/kg	2.6		-	-	0.0016	J	0.0022	U	0.0025	U	11		-	-	0.0019	J	0.00067	J	7.7	
1,2,4-Trimethylbenzene	95-63-6	3.6	52	3.6	mg/kg	9.1		-	-	0.0033		0.0022	U	0.0025	U	39		-	-	0.0078		0.0023	J	25	
1,4-Dioxane	123-91-1	0.1	13	0.1	mg/kg	24	U	-	-	0.093	U	0.086	U	0.1	U	260	U	-	-	0.087	U	0.1	U	220	U
p-Diethylbenzene	105-05-5				mg/kg	3.1		-	-	0.0018	J	0.0058		0.0025	U	6.4	U	-	-	0.0022	U	0.0019	J	5.5	U
p-Ethyltoluene	622-96-8				mg/kg	17		-	-	0.004		0.0022	U	0.0025	U	40		-	-	0.011		0.0039		38	
1,2,4,5-Tetramethylbenzene	95-93-2				mg/kg	1.6		-	-	0.0022	J	0.0024		0.0025	U	5.9	J	-	-	0.0012	J	0.0025		3.9	J
Ethyl ether	60-29-7				mg/kg	0.6	U	-	-	0.0023	U	0.0022	U	0.0025	U	6.4	U	-	-	0.0022	U	0.0025	U	5.5	U
trans-1,4-Dichloro-2-butene	110-57-6				mg/kg	1.5	U	-	-	0.0058	U	0.0054	U	0.0062	U	16	U	-	-	0.0054	U	0.0063	U	14	U
Volatile Organics by EPA 5035 High																									
Methylene chloride	75-09-2	0.05	100	0.05	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.43	U	-	-	-	-
1,1-Dichloroethane	75-34-3	0.27	26	0.27	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.085	U	-	-	-	-
Chloroform	67-66-3	0.37	49	0.37	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.13	U	-	-	-	-
Carbon tetrachloride	56-23-5	0.76	2.4	0.76	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.085	U	-	-	-	-
1,2-Dichloropropane	78-87-5				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.085	U	-	-	-	-
Dibromochloromethane	124-48-1				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.085	U	-	-	-	-
1,1,2-Trichloroethane	79-00-5				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.085	U	-	-	-	-
Tetrachloroethene	127-18-4	1.3	19	1.3	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.043	U	-	-	-	-
Chlorobenzene	108-90-7	1.1	100	1.1	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.043	U	-	-	-	-
Trichlorofluoromethane	75-69-4				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.34	U	-	-	-	-
1,2-Dichloroethane	107-06-2	0.02	3.1	0.02	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.085	U	-	-	-	-
1,1,1-Trichloroethane	71-55-6	0.68	100	0.68	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.043	U	-	-	-	-
Bromodichloromethane	75-27-4				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.043	U	-	-	-	-
trans-1,3-Dichloropropene	10061-02-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.085	U	-	-	-	-
cis-1,3-Dichloropropene	10061-01-5				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.043	U	-	-	-	-
1,3-Dichloropropene, Total	542-75-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.043	U	-	-	-	-
1,1-Dichloropropene	563-58-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.043	U	-	-	-	-
Bromoform	75-25-2				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.34	U	-	-	-	-
1,1,2,2-Tetrachloroethane	79-34-5				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.043	U	-	-	-	-
Benzene	71-43-2	0.06	4.8	0.06	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.027	J	-	-	-	-
Toluene	108-88-3	0.7	100	0.7	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.085	U	-	-	-	-
Ethylbenzene	100-41-4	1	41	1	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.13		-	-	-	-
Chloromethane	74-87-3				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.34	U	-	-	-	-
Bromomethane	74-83-9				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17	U	-	-	-	-
Vinyl chloride	75-01-4	0.02	0.9	0.02	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.085	U	-	-	-	-
Chloroethane	75-00-3				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17	U	-	-	-	-
1,1-Dichloroethene	75-35-4	0.33	100	0.33	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.085	U	-	-	-	-
trans-1,2-Dichloroethene	156-60-5	0.19	100	0.19	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.13	U	-	-	-	-
Trichloroethene	79-01-6	0.47	21	0.47	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.043	U	-	-	-	-
1,2-Dichlorobenzene	95-50-1	1.1	100	1.1	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17	U	-	-	-	-
1,3-Dichlorobenzene	541-73-1	2.4	49	2.4	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17	U	-	-	-	-
1,4-Dichlorobenzene	106-46-7	1.8	13	1.8	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17	U	-	-	-	-
Methyl tert butyl ether	1634-04-4	0.93	100	0.93	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17	U	-	-	-	-
p/m-Xylene	179601-23-1				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.069	J	-	-	-	-
o-Xylene	95-47-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04	J	-	-	-	-
Xylenes, Total	1330-20-7	1.6	100	0.26	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.11	J	-	-	-	-
cis-1,2-Dichloroethene	156-59-2	0.25	100	0.25	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.085	U	-	-	-	-
1,2-Dichloroethene, Total	540-59-0				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.085	U	-	-	-	-
Dibromomethane	74-95-3				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17	U	-	-	-	-
Styrene	100-42-5				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.085	U	-	-	-	-
Dichlorodifluoromethane	75-71-8				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.85	U	-	-	-	-
Acetone	67-64-1	0.05	100	0.05	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.85	U	-	-	-	-
Carbon disulfide	75-15-0				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.85	U	-	-	-	-
2-Butanone	78-93-3	0.12	100	0.12	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.85	U	-	-	-	-
Vinyl acetate	108-05-4				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.85	U	-	-	-	-
4-Methyl-2-pentanone	108-10-1				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.85	U	-	-	-	-
1,2,3-Trichloropropane	96-18-4				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17	U	-	-	-	-
2-Hexanone	591-78-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.85	U	-	-	-	-
Bromochloromethane	74-97-5				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17	U	-	-	-	-
2,2-Dichloropropane	594-20-7				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17	U	-	-	-	-
1,2-Dibromoethane	106-93-4				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.085	U	-	-	-	-
1,3-Dichloropropane	142-28-9				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17	U	-	-	-	-
1,1,1,2-Tetrachloroethane	630-20-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.043	U	-	-	-	-
Bromobenzene	108-86-1				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17	U	-	-	-	-
n-Butylbenzene	104-51-8	12	100	12	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.085	U	-	-	-	-
sec-Butylbenzene	135-98-8	11	100	11	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.085	U	-	-	-	-
tert-Butylbenzene	98-06-6	5.9	100	5.9	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17	U	-	-	-	-
o-Chlorotoluene	95-49-8				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17	U	-	-	-	-
p-Chlorotoluene	106-43-4				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17	U	-	-	-	-
1,2-Dibromo-3-chloropropane	96-12-8				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.26	U	-	-	-	-
Hexachlorobutadiene	87-68-3				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.34	U	-	-	-	-
Isopropylbenzene	98-82-8				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.085	U	-	-	-	-
p-Isopropyltoluene	99-87-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.085	U	-	-	-	-
Naphthalene	91-20-3	12	100	12	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.96		-	-	-	-
Acrylonitrile	107-13-1				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.34	U	-	-	-	-
n-Propylbenzene	103-65-1	3.9	100	3.9	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.085	U	-	-	-	-
1,2,3-Trichlorobenzene	87-61-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17	U	-	-	-	-
1,2,4-Trichlorobenzene	120-82-1				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17	U	-	-	-	-
1,3,5-Trimethylbenzene	108-67-8	8.4	52	8.4	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17	U	-	-	-	-
1,2,4-Trimethylbenzene	95-63-6	3.6	52	3.6	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.032	J	-	-	-	-
1,4-Dioxane	123-91-1	0.1	13	0.1	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.8	U	-	-	-	-
p-Diethylbenzene	105-05-5				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17	U	-	-	-	-
p-Ethyltoluene	622-96-8				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.056	J	-	-	-	-
1,2,4,5-Tetramethylbenzene	95-93-2				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17	U	-	-	-	-
Ethyl ether	60-29-7				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17	U	-	-	-	-
trans-1,4-Dichloro-2-butene	110-57-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.43	U	-	-	-	-

LOCATION	SB-17-N1 (24-25)		SB-17-N1 (33-34)		SB-17-S1 (23-24)		SB-17-S1 (23-24)		SB-17-S1 (35-36)		SB-17-N1E1 (23-25)		SB-17-N1E1 (23-25)		SB-17-N1E1 (33-35)		SB-17-S1E1 (28-30)		SB-17-S1E1 (35-37)	
SAMPLING DATE	1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023	
LAB SAMPLE ID	L2302692-01 R1		L2302692-02		L2302692-03		L2302692-03 R1		L2302692-04		L2302692-05		L2302692-05 R1		L2302692-06		L2302692-07		L2302692-09	
SAMPLE TYPE	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organics by EPA 5035																				
Methylene chloride	-	-	0.0062	U	1.9	U	-	-	0.005	U	17	U	-	-	0.0056	U	0.0061	U	0.0064	U
1,1-Dichloroethane	-	-	0.0012	U	0.38	U	-	-	0.001	U	3.4	U	-	-	0.0011	U	0.0012	U	0.0013	U
Chloroform	-	-	0.0019	U	0.58	U	-	-	0.0015	U	5.1	U	-	-	0.0017	U	0.0018	U	0.0019	U
Carbon tetrachloride	-	-	0.0012	U	0.38	U	-	-	0.001	U	3.4	U	-	-	0.0011	U	0.0012	U	0.0013	U
1,2-Dichloropropane	-	-	0.0012	U	0.38	U	-	-	0.001	U	3.4	U	-	-	0.0011	U	0.0012	U	0.0013	U
Dibromochloromethane	-	-	0.0012	U	0.38	U	-	-	0.001	U	3.4	U	-	-	0.0011	U	0.0012	U	0.0013	U
1,1,2-Trichloroethane	-	-	0.0012	U	0.38	U	-	-	0.001	U	3.4	U	-	-	0.0011	U	0.0012	U	0.0013	U
Tetrachloroethene	-	-	0.00062	U	0.19	U	-	-	0.0005	U	1.7	U	-	-	0.00056	U	0.00061	U	0.00064	U
Chlorobenzene	-	-	0.00062	U	0.19	U	-	-	0.0005	U	1.7	U	-	-	0.00056	U	0.00061	U	0.00064	U
Trichlorofluoromethane	-	-	0.005	U	1.5	U	-	-	0.004	U	14	U	-	-	0.0045	U	0.0048	U	0.0051	U
1,2-Dichloroethane	-	-	0.0012	U	0.38	U	-	-	0.001	U	3.4	U	-	-	0.0011	U	0.0012	U	0.0013	U
1,1,1-Trichloroethane	-	-	0.00062	U	0.19	U	-	-	0.0005	U	1.7	U	-	-	0.00056	U	0.00061	U	0.00064	U
Bromodichloromethane	-	-	0.00062	U	0.19	U	-	-	0.0005	U	1.7	U	-	-	0.00056	U	0.00061	U	0.00064	U
trans-1,3-Dichloropropene	-	-	0.0012	U	0.38	U	-	-	0.001	U	3.4	U	-	-	0.0011	U	0.0012	U	0.0013	U
cis-1,3-Dichloropropene	-	-	0.00062	U	0.19	U	-	-	0.0005	U	1.7	U	-	-	0.00056	U	0.00061	U	0.00064	U
1,3-Dichloropropene, Total	-	-	0.00062	U	0.19	U	-	-	0.0005	U	1.7	U	-	-	0.00056	U	0.00061	U	0.00064	U
1,1-Dichloropropene	-	-	0.00062	U	0.19	U	-	-	0.0005	U	1.7	U	-	-	0.00056	U	0.00061	U	0.00064	U
Bromoform	-	-	0.005	U	1.5	U	-	-	0.004	U	14	U	-	-	0.0045	U	0.0048	U	0.0051	U
1,1,2,2-Tetrachloroethane	-	-	0.00062	U	0.19	U	-	-	0.0005	U	1.7	U	-	-	0.00056	U	0.00061	U	0.00064	U
Benzene	-	-	0.0039		0.19	U	-	-	0.00019	J	1.5	J	-	-	0.0026		0.00061	U	0.00064	U
Toluene	-	-	0.0025		0.38	U	-	-	0.003		9.5		-	-	0.0029		0.002		0.004	
Ethylbenzene	-	-	0.01		4.5		-	-	0.001	U	70		-	-	0.0016		0.00021	J	0.00048	J
Chloromethane	-	-	0.005	U	1.5	U	-	-	0.004	U	14	U	-	-	0.0045	U	0.0048	U	0.0051	U
Bromomethane	-	-	0.0025	U	0.77	U	-	-	0.002	U	6.8	U	-	-	0.0022	U	0.0024	U	0.0026	U
Vinyl chloride	-	-	0.0012	U	0.38	U	-	-	0.001	U	3.4	U	-	-	0.0011		0.0012	U	0.0013	U
Chloroethane	-	-	0.0025	U	0.77	U	-	-	0.002	U	6.8	U	-	-	0.0022	U	0.0024	U	0.0026	U
1,1-Dichloroethene	-	-	0.0012	U	0.38	U	-	-	0.001	U	3.4	U	-	-	0.0011	U	0.0012	U	0.0013	U
trans-1,2-Dichloroethene	-	-	0.0019	U	0.58	U	-	-	0.0015	U	5.1	U	-	-	0.0017	U	0.0018	U	0.0019	U
Trichloroethene	-	-	0.00062	U	0.19	U	-	-	0.0005	U	1.7	U	-	-	0.00056	U	0.00061	U	0.00064	U
1,2-Dichlorobenzene	-	-	0.0025	U	0.77	U	-	-	0.002	U	6.8	U	-	-	0.0022	U	0.0024	U	0.0026	U
1,3-Dichlorobenzene	-	-	0.0025	U	0.77	U	-	-	0.002	U	6.8	U	-	-	0.0022	U	0.0024	U	0.0026	U
1,4-Dichlorobenzene	-	-	0.0025	U	0.77	U	-	-	0.002	U	6.8	U	-	-	0.0022	U	0.0024	U	0.0026	U
Methyl tert butyl ether	-	-	0.0025	U	0.77	U	-	-	0.002	U	6.8	U	-	-	0.0022	U	0.0024	U	0.0026	U
p/m-Xylene	-	-	0.0013	J	2.2		-	-	0.002	U	54		-	-	0.0022	U	0.0024	U	0.0026	U
o-Xylene	-	-	0.0014		1.5		-	-	0.001	U	26		-	-	0.00039	J	0.0012	U	0.0013	U
Xylenes, Total	-	-	0.0027	J	3.7		-	-	0.001	U	80		-	-	0.00039	J	0.0012	U	0.0013	U
cis-1,2-Dichloroethene	-	-	0.0012	U	0.38	U	-	-	0.001	U	3.4	U	-	-	0.0014		0.0019		0.0013	U
1,2-Dichloroethene, Total	-	-	0.0012	U	0.38	U	-	-	0.001	U	3.4	U	-	-	0.0014		0.0019		0.0013	U
Dibromomethane	-	-	0.0025	U	0.77	U	-	-	0.002	U	6.8	U	-	-	0.0022	U	0.0024	U	0.0026	U
Styrene	-	-	0.0003	J	0.38	U	-	-	0.001	U	3.4	U	-	-	0.00034	J	0.00036	J	0.00036	J
Dichlorodifluoromethane	-	-	0.012	U	3.8	U	-	-	0.01	U	34	U	-	-	0.011	U	0.012	U	0.013	U
Acetone	-	-	0.023		3.8	U	-	-	0.0071	J	34	U	-	-	0.015		0.0076	J	0.009	J
Carbon disulfide	-	-	0.012	U	3.8	U	-	-	0.01	U	34	U	-	-	0.011	U	0.0056	J	0.013	U
2-Butanone	-	-	0.0029	J	3.8	U	-	-	0.0039	J	34	U	-	-	0.011	U	0.012	U	0.013	U
Vinyl acetate	-	-	0.012	U	3.8	U	-	-	0.01	U	34	U	-	-	0.011	U	0.012	U	0.013	U
4-Methyl-2-pentanone	-	-	0.012	U	3.8	U	-	-	0.01	U	34	U	-	-	0.011	U	0.012	U	0.013	U
1,2,3-Trichloropropane	-	-	0.0025	U	0.77	U	-	-	0.002	U	6.8	U	-	-	0.0022	U	0.0024	U	0.0026	U
2-Hexanone	-	-	0.012	U	3.8	U	-	-	0.01	U	34	U	-	-	0.011	U	0.012	U	0.013	U
Bromochloromethane	-	-	0.0025	U	0.77	U	-	-	0.002	U	6.8	U	-	-	0.0022	U	0.0024	U	0.0026	U
2,2-Dichloropropane	-	-	0.0025	U	0.77	U	-	-	0.002	U	6.8	U	-	-	0.0022	U	0.0024	U	0.0026	U
1,2-Dibromoethane	-	-	0.0012	U	0.38	U	-	-	0.001	U	3.4	U	-	-	0.0011	U	0.0012	U	0.0013	U
1,3-Dichloropropane	-	-	0.0025	U	0.77	U	-	-	0.002	U	6.8	U	-	-	0.0022	U	0.0024	U	0.0026	U
1,1,1,2-Tetrachloroethane	-	-	0.00062	U	0.19	U	-	-	0.0005	U	1.7	U	-	-	0.00056	U	0.00061	U	0.00064	U
Bromobenzene	-	-	0.0025	U	0.77	U	-	-	0.002	U	6.8	U	-	-	0.0022	U	0.0024	U	0.0026	U
n-Butylbenzene	-	-	0.0012	U	1.4		-	-	0.001	U	1.7	J	-	-	0.0011	U	0.0012	U	0.0013	U
sec-Butylbenzene	-	-	0.0012	U	0.33	J	-	-	0.001	U	3.4	U	-	-	0.0011	U	0.0012	U	0.0013	U
tert-Butylbenzene	-	-	0.0025	U	0.77	U	-	-	0.002	U	6.8	U	-	-	0.0022	U	0.0024	U	0.0026	U
o-Chlorotoluene	-	-	0.0025	U	0.77	U	-	-	0.002	U	6.8	U	-	-	0.0022	U	0.0024	U	0.0026	U
p-Chlorotoluene	-	-	0.0025	U	0.77	U	-	-	0.002	U	6.8	U	-	-	0.0022	U	0.0024	U	0.0026	U
1,2-Dibromo-3-chloropropane	-	-	0.0038	U	1.2	U	-	-	0.003	U	10	U	-	-	0.0034	U	0.0036	U	0.0038	U
Hexachlorobutadiene	-	-	0.005	U	1.5	U	-	-	0.004	U	14	U	-	-	0.0045	U	0.0048	U	0.0051	U
Isopropylbenzene	-	-	0.00061	J	2.1		-	-	0.001	U	9.2		-	-	0.00033	J	0.0012	U	0.0013	U
p-Isopropyltoluene	-	-	0.00034	J	3.3		-	-	0.001	U	4.9		-	-	0.0011	U	0.00027	J	0.0013	U
Naphthalene	860	E	0.25		130		170	E	0.0011	J	1400	E	1800		0.01		0.005		0.0032	J
Acrylonitrile	-	-	0.005	U	1.5	U	-	-	0.004	U	14	U	-	-	0.0045	U	0.0048	U	0.0051	U
n-Propylbenzene	-	-	0.0012		2		-	-	0.001	U	4.9		-	-	0.00044	J	0.0012	U	0.0013	U
1,2,3-Trichlorobenzene	-	-	0.0025	U	0.77	U	-	-	0.002	U	6.8	U	-	-	0.0022	U	0.0024	U	0.0026	U
1,2,4-Trichlorobenzene	-	-	0.0025	U	0.77	U	-	-	0.002	U	6.8	U	-	-	0.0022	U	0.0024	U	0.0026	U
1,3,5-Trimethylbenzene	-	-	0.00063	J	4.2		-	-	0.002	U	16		-	-	0.0022	U	0.0024	U	0.0026	U
1,2,4-Trimethylbenzene	-	-	0.0023	J	13		-	-	0.002	U	52		-	-	0.00041	J	0.0024	U	0.0026	U
1,4-Dioxane	-	-	0.1	U	31	U	-	-	0.081	U	270	U	-	-	0.09	U	0.097	U	0.1	U
p-Diethylbenzene	-	-	0.00063	J	0.77	U	-	-	0.002	U	6.8	U	-	-	0.00058	J	0.00072	J	0.0026	U
p-Ethyltoluene	-	-	0.0035		11		-	-	0.002	U	82		-	-	0.00073	J	0.0024	U	0.0026	U
1,2,4,5-Tetramethylbenzene	-	-	0.0011	J	5.5		-	-	0.002	U	6.6	J	-	-	0.00049	J	0.00058	J	0.0026	U
Ethyl ether	-	-	0.0025	U	0.77	U	-	-	0.002	U	6.8	U	-	-	0.0022	U	0.0024	U	0.0026	U
trans-1,4-Dichloro-2-butene	-	-	0.0062	U	1.9	U	-	-	0.005	U	17	U	-	-	0.0056	U	0.0061	U	0.0064	U
Volatile Organics by EPA 5035 High																				
Methylene chloride	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichloropropene, Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl tert butyl ether	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p/m-Xylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes, Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethene, Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromomethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acetone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon disulfide	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Butanone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl acetate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Methyl-2-pentanone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Hexanone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromochloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,2-Dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dibromoethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
n-Butylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
sec-Butylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
tert-Butylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Chlorotoluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Chlorotoluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acrylonitrile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
n-Propylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dioxane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Diethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Ethyltoluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4,5-Tetramethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethyl ether	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,4-Dichloro-2-butene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

LOCATION	SB-17-S2 (23-25)		SB-17-S2 (23-25)		SB-17-N2 (24-25)		SB-17-N2 (35-37)		SB-17-S1E2 (32-34)		SB-17-S1E2 (35-37)		SB-17-N3 (23-25)		SB-17-N3 (23-25)		SB-17-N3 (33-3
SAMPLING DATE	1/17/2023		1/17/2023		1/18/2023		1/18/2023		1/18/2023		1/18/2023		1/18/2023		1/18/2023		1/18/2023
LAB SAMPLE ID	L2302692-10		L2302692-10 R1		L2302962-01		L2302962-02		L2302962-03		L2302962-04		L2302962-05		L2302962-05 R3		L2302962-06
SAMPLE TYPE	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL
	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results
Volatile Organics by EPA 5035																	
Methylene chloride	3.2	U	-	-	-	-	0.0068	U	0.007	U	0.0061	U	3.8	U	-	-	0.0064
1,1-Dichloroethane	0.65	U	-	-	-	-	0.0014	U	0.0014	U	0.0012	U	0.77	U	-	-	0.0013
Chloroform	0.97	U	-	-	-	-	0.002	U	0.0021	U	0.0018	U	1.2	U	-	-	0.0019
Carbon tetrachloride	0.65	U	-	-	-	-	0.0014	U	0.0014	U	0.0012	U	0.77	U	-	-	0.0013
1,2-Dichloropropane	0.65	U	-	-	-	-	0.0014	U	0.0014	U	0.0012	U	0.77	U	-	-	0.0013
Dibromochloromethane	0.65	U	-	-	-	-	0.0014	U	0.0014	U	0.0012	U	0.77	U	-	-	0.0013
1,1,2-Trichloroethane	0.65	U	-	-	-	-	0.0014	U	0.0014	U	0.0012	U	0.77	U	-	-	0.0013
Tetrachloroethene	0.32	U	-	-	-	-	0.0013		0.0007	U	0.00061	U	0.38	U	-	-	0.00064
Chlorobenzene	0.32	U	-	-	-	-	0.00068	U	0.0007	U	0.00061	U	0.38	U	-	-	0.00064
Trichlorofluoromethane	2.6	U	-	-	-	-	0.0054	U	0.0056	U	0.0048	U	3.1	U	-	-	0.0051
1,2-Dichloroethane	0.65	U	-	-	-	-	0.0014	U	0.0014	U	0.0012	U	0.77	U	-	-	0.0013
1,1,1-Trichloroethane	0.32	U	-	-	-	-	0.00068	U	0.0007	U	0.00061	U	0.38	U	-	-	0.00064
Bromodichloromethane	0.32	U	-	-	-	-	0.00068	U	0.0007	U	0.00061	U	0.38	U	-	-	0.00064
trans-1,3-Dichloropropene	0.65	U	-	-	-	-	0.0014	U	0.0014	U	0.0012	U	0.77	U	-	-	0.0013
cis-1,3-Dichloropropene	0.32	U	-	-	-	-	0.00068	U	0.0007	U	0.00061	U	0.38	U	-	-	0.00064
1,3-Dichloropropene, Total	0.32	U	-	-	-	-	0.00068	U	0.0007	U	0.00061	U	0.38	U	-	-	0.00064
1,1-Dichloropropene	0.32	U	-	-	-	-	0.00068	U	0.0007	U	0.00061	U	0.38	U	-	-	0.00064
Bromoform	2.6	U	-	-	-	-	0.0054	U	0.0056	U	0.0048	U	3.1	U	-	-	0.0051
1,1,2,2-Tetrachloroethane	0.32	U	-	-	-	-	0.00068	U	0.0007	U	0.00061	U	0.38	U	-	-	0.00064
Benzene	0.32	U	-	-	-	-	0.0033		0.00045	J	0.00061	U	1.9		-	-	0.032
Toluene	0.65	U	-	-	-	-	0.022		0.0066		0.004		9.2		-	-	0.0029
Ethylbenzene	8.2		-	-	-	-	0.035		0.029		0.0012	U	30		-	-	0.059
Chloromethane	2.6	U	-	-	-	-	0.0054	U	0.0056	U	0.0048	U	3.1	U	-	-	0.0051
Bromomethane	1.3	U	-	-	-	-	0.0027	U	0.0028	U	0.0024	U	1.5	U	-	-	0.0026
Vinyl chloride	0.65	U	-	-	-	-	0.0039		0.0014	U	0.0012	U	0.77	U	-	-	0.0013
Chloroethane	1.3	U	-	-	-	-	0.0027	U	0.0028	U	0.0024	U	1.5	U	-	-	0.0026
1,1-Dichloroethene	0.65	U	-	-	-	-	0.0014	U	0.0014	U	0.0012	U	0.77	U	-	-	0.0013
trans-1,2-Dichloroethene	0.97	U	-	-	-	-	0.002	U	0.0021	U	0.0018	U	1.2	U	-	-	0.0019
Trichloroethene	0.32	U	-	-	-	-	0.0014		0.0007	U	0.00061	U	0.38	U	-	-	0.00038
1,2-Dichlorobenzene	1.3	U	-	-	-	-	0.0027	U	0.0028	U	0.0024	U	1.5	U	-	-	0.0026
1,3-Dichlorobenzene	1.3	U	-	-	-	-	0.0027	U	0.0028	U	0.0024	U	1.5	U	-	-	0.0026
1,4-Dichlorobenzene	1.3	U	-	-	-	-	0.0027	U	0.0028	U	0.0024	U	1.5	U	-	-	0.0026
Methyl tert butyl ether	1.3	U	-	-	-	-	0.0027	U	0.0028	U	0.0024	U	1.5	U	-	-	0.0026
p/m-Xylene	5.1		-	-	-	-	0.029		0.005		0.0024	U	24		-	-	0.0051
o-Xylene	2.6		-	-	-	-	0.015		0.0074		0.0012	U	12		-	-	0.0016
Xylenes, Total	7.7		-	-	-	-	0.044		0.012		0.0012	U	36		-	-	0.0067
cis-1,2-Dichloroethene	0.65	U	-	-	-	-	0.006		0.0087		0.00021	J	0.77	U	-	-	0.0043
1,2-Dichloroethene, Total	0.65	U	-	-	-	-	0.006		0.0087		0.00021	J	0.77	U	-	-	0.0043
Dibromomethane	1.3	U	-	-	-	-	0.0027	U	0.0028	U	0.0024	U	1.5	U	-	-	0.0026
Styrene	0.65	U	-	-	-	-	0.0056		0.0005	J	0.00026	J	2.1		-	-	0.00093
Dichlorodifluoromethane	6.5	U	-	-	-	-	0.014	U	0.014	U	0.012	U	7.7	U	-	-	0.013
Acetone	6.5	U	-	-	-	-	0.01	J	0.015		0.015		7.7	U	-	-	0.013
Carbon disulfide	6.5	U	-	-	-	-	0.014	U	0.014	U	0.012	U	7.7	U	-	-	0.013
2-Butanone	6.5	U	-	-	-	-	0.014	U	0.0038	J	0.012	U	7.7	U	-	-	0.013
Vinyl acetate	6.5	U	-	-	-	-	0.014	U	0.014	U	0.012	U	7.7	U	-	-	0.013
4-Methyl-2-pentanone	6.5	U	-	-	-	-	0.014	U	0.014	U	0.012	U	7.7	U	-	-	0.013
1,2,3-Trichloropropane	1.3	U	-	-	-	-	0.0027	U	0.0028	U	0.0024	U	1.5	U	-	-	0.0026
2-Hexanone	6.5	U	-	-	-	-	0.014	U	0.014	U	0.012	U	7.7	U	-	-	0.013
Bromochloromethane	1.3	U	-	-	-	-	0.0027	U	0.0028	U	0.0024	U	1.5	U	-	-	0.0026
2,2-Dichloropropane	1.3	U	-	-	-	-	0.0027	U	0.0028	U	0.0024	U	1.5	U	-	-	0.0026
1,2-Dibromoethane	0.65	U	-	-	-	-	0.0014	U	0.0014	U	0.0012	U	0.77	U	-	-	0.0013
1,3-Dichloropropane	1.3	U	-	-	-	-	0.0027	U	0.0028	U	0.0024	U	1.5	U	-	-	0.0026
1,1,1,2-Tetrachloroethane	0.32	U	-	-	-	-	0.00068	U	0.0007	U	0.00061	U	0.38	U	-	-	0.00064
Bromobenzene	1.3	U	-	-	-	-	0.0027	U	0.0028	U	0.0024	U	1.5	U	-	-	0.0026
n-Butylbenzene	0.65	U	-	-	-	-	0.001	J	0.00045	J	0.0012	U	1.3		-	-	0.00021
sec-Butylbenzene	0.14	J	-	-	-	-	0.0014	U	0.0014	U	0.0012	U	0.77	U	-	-	0.0013
tert-Butylbenzene	1.3	U	-	-	-	-	0.0027	U	0.0028	U	0.0024	U	1.5	U	-	-	0.0026
o-Chlorotoluene	1.3	U	-	-	-	-	0.0027	U	0.0028	U	0.0024	U	1.5	U	-	-	0.0026
p-Chlorotoluene	1.3	U	-	-	-	-	0.0027	U	0.0028	U	0.0024	U	1.5	U	-	-	0.0026
1,2-Dibromo-3-chloropropane	1.9	U	-	-	-	-	0.004	U	0.0042	U	0.0036	U	2.3	U	-	-	0.0038
Hexachlorobutadiene	2.6	U	-	-	-	-	0.0054	U	0.0056	U	0.0048	U	3.1	U	-	-	0.0051
Isopropylbenzene	1.8		-	-	-	-	0.0028		0.0042		0.0012	U	6.4		-	-	0.0023
p-Isopropyltoluene	1.2		-	-	-	-	0.003		0.00032	J	0.0012	U	3.9		-	-	0.00052
Naphthalene	270	E	310		1100		0.77	E	0.055		0.0048	U	750	E	1200		0.36
Acrylonitrile	2.6	U	-	-	-	-	0.0054	U	0.0056	U	0.0048	U	3.1	U	-	-	0.0051
n-Propylbenzene	0.94		-	-	-	-	0.0025		0.0036		0.0012	U	2.9		-	-	0.0022
1,2,3-Trichlorobenzene	1.3	U	-	-	-	-	0.0027	U	0.0028	U	0.0024	U	1.5	U	-	-	0.0026
1,2,4-Trichlorobenzene	1.3	U	-	-	-	-	0.0027	U	0.0028	U	0.0024	U	1.5	U	-	-	0.0026
1,3,5-Trimethylbenzene	2.9		-	-	-	-	0.009		0.00079	J	0.0024	U	12		-	-	0.002
1,2,4-Trimethylbenzene	10		-	-	-	-	0.029		0.0063		0.0024	U	42		-	-	0.01
1,4-Dioxane	52	U	-	-	-	-	0.11	U	0.11	U	0.097	U	62	U	-	-	0.1
p-Diethylbenzene	1.3	U	-	-	-	-	0.0027	U	0.0027	J	0.0024	U	1.5	U	-	-	0.0026
p-Ethyltoluene	16		-	-	-	-	0.031		0.0036		0.0024	U	40		-	-	0.0085
1,2,4,5-Tetramethylbenzene	1.8		-	-	-	-	0.0043		0.0019	J	0.0024	U	6.3		-	-	0.0019
Ethyl ether	1.3	U	-	-	-	-	0.0027	U	0.0028	U	0.0024	U	1.5	U	-	-	0.0026
trans-1,4-Dichloro-2-butene	3.2	U	-	-	-	-	0.0068	U	0.007	U	0.0061	U	3.8	U	-	-	0.0064
Volatile Organics by EPA 5035 High																	
Methylene chloride	-	-	-	-	-	-	0.43	U	-	-	-	-	-	-	-	-	0.42
1,1-Dichloroethane	-	-	-	-	-	-	0.085	U	-	-	-	-	-	-	-	-	0.084
Chloroform	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	0.13
Carbon tetrachloride	-	-	-	-	-	-	0.085	U	-	-	-	-	-	-	-	-	0.084
1,2-Dichloropropane	-	-	-	-	-	-	0.085	U	-	-	-	-	-	-	-	-	0.084
Dibromochloromethane	-	-	-	-	-	-	0.085	U	-	-	-	-	-	-	-	-	0.084
1,1,2-Trichloroethane	-	-	-	-	-	-	0.085	U	-	-	-	-	-	-	-	-	0.084
Tetrachloroethene	-	-	-	-	-	-	0.043	U	-	-	-	-	-	-	-	-	0.042
Chlorobenzene	-	-	-	-	-	-	0.043	U	-	-	-	-	-	-	-	-	0.042
Trichlorofluoromethane	-	-	-	-	-	-	0.34	U	-	-	-	-	-	-	-	-	0.34
1,2-Dichloroethane	-	-	-	-	-	-	0.085	U	-	-	-	-	-	-	-	-	0.084
1,1,1-Trichloroethane	-	-	-	-	-	-	0.043	U	-	-	-	-	-	-	-	-	0.042
Bromodichloromethane	-	-	-	-	-	-	0.043	U	-	-	-	-	-	-	-	-	0.042
trans-1,3-Dichloropropene	-	-	-	-	-	-	0.085	U	-	-	-	-	-	-	-	-	0.084
cis-1,3-Dichloropropene	-	-	-	-	-	-	0.043	U	-	-	-	-	-	-	-	-	0.042
1,3-Dichloropropene, Total	-	-	-	-	-	-	0.043	U	-	-	-	-	-	-	-	-	0.042
1,1-Dichloropropene	-	-	-	-	-	-	0.043	U	-	-	-	-	-	-	-	-	0.042
Bromoform	-	-	-	-	-	-	0.34	U	-	-	-	-	-	-	-	-	0.34
1,1,2,2-Tetrachloroethane	-	-	-	-	-	-	0.043	U	-	-	-	-	-	-	-	-	0.042
Benzene	-	-	-	-	-	-	0.043	U	-	-	-	-	-	-	-	-	0.16
Toluene	-	-	-	-	-	-	0.05	J	-	-	-	-	-	-	-	-	0.084
Ethylbenzene	-	-	-	-	-	-	0.074	J	-	-	-	-	-	-	-	-	0.87
Chloromethane	-	-	-	-	-	-	0.34	U	-	-	-	-	-	-	-	-	0.34
Bromomethane	-	-	-	-	-	-	0.17	U	-	-	-	-	-	-	-	-	0.17
Vinyl chloride	-	-	-	-	-	-	0.085	U	-	-	-	-	-	-	-	-	0.084
Chloroethane	-	-	-	-	-	-	0.17	U	-	-	-	-	-	-	-	-	0.17
1,1-Dichloroethene	-	-	-	-	-	-	0.085	U	-	-	-	-	-	-	-	-	0.084
trans-1,2-Dichloroethene	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	0.13
Trichloroethene	-	-	-	-	-	-	0.043	U	-	-	-	-	-	-	-	-	0.042
1,2-Dichlorobenzene	-	-	-	-	-	-	0.17	U	-	-	-	-	-	-	-	-	0.17
1,3-Dichlorobenzene	-	-	-	-	-	-	0.17	U	-	-	-	-	-	-	-	-	0.17
1,4-Dichlorobenzene	-	-	-	-	-	-	0.17	U	-	-	-	-	-	-	-	-	0.17
Methyl tert butyl ether	-	-	-	-	-	-	0.17	U	-	-	-	-	-	-	-	-	0.17
p/m-Xylene	-	-	-	-	-	-	0.071	J	-	-	-	-	-	-	-	-	0.052
o-Xylene	-	-	-	-	-	-	0.031	J	-	-	-	-	-	-	-	-	0.084
Xylenes, Total	-	-	-	-	-	-	0.1	J	-	-	-	-	-	-	-	-	0.052
cis-1,2-Dichloroethene	-	-	-	-	-	-	0.085	U	-	-	-	-	-	-	-	-	0.018
1,2-Dichloroethene, Total	-	-	-	-	-	-	0.085	U	-	-	-	-	-	-	-	-	0.018
Dibromomethane	-	-	-	-	-	-	0.17	U	-	-	-	-	-	-	-	-	0.17
Styrene	-	-	-	-	-	-	0.085	U	-	-	-	-	-	-	-	-	0.017
Dichlorodifluoromethane	-	-	-	-	-	-	0.85	U	-	-	-	-	-	-	-	-	0.84
Acetone	-	-	-	-	-	-	0.85	U	-	-	-	-	-	-	-	-	0.84
Carbon disulfide	-	-	-	-	-	-	0.85	U	-	-	-	-	-	-	-	-	0.84
2-Butanone	-	-	-	-	-	-	0.85	U	-	-	-	-	-	-	-	-	0.84
Vinyl acetate	-	-	-	-	-	-	0.85	U	-	-	-	-	-	-	-	-	0.84
4-Methyl-2-pentanone	-	-	-	-	-	-	0.85	U	-	-	-	-	-	-	-	-	0.84
1,2,3-Trichloropropane	-	-	-	-	-	-	0.17	U	-	-	-	-	-	-	-	-	0.17
2-Hexanone	-	-	-	-	-	-	0.85	U	-	-	-	-	-	-	-	-	0.84
Bromochloromethane	-	-	-	-	-	-	0.17	U	-	-	-	-	-	-	-	-	0.17
2,2-Dichloropropane	-	-	-	-	-	-	0.17	U	-	-	-	-	-	-	-	-	0.17
1,2-Dibromoethane	-	-	-	-	-	-	0.085	U	-	-	-	-	-	-	-	-	0.084
1,3-Dichloropropane	-	-	-	-	-	-	0.17	U	-	-	-	-	-	-	-	-	0.17
1,1,1,2-Tetrachloroethane	-	-	-	-	-	-	0.043	U	-	-	-	-	-	-	-	-	0.042
Bromobenzene	-	-	-	-	-	-	0.17	U	-	-	-	-	-	-	-	-	0.17
n-Butylbenzene	-	-	-	-	-	-	0.085	U	-	-	-	-	-	-	-	-	0.084
sec-Butylbenzene	-	-	-	-	-	-	0.085	U	-	-	-	-	-	-	-	-	0.084
tert-Butylbenzene	-	-	-	-	-	-	0.17	U	-	-	-	-	-	-	-	-	0.17
o-Chlorotoluene	-	-	-	-	-	-	0.17	U	-	-	-	-	-	-	-	-	0.17
p-Chlorotoluene	-	-	-	-	-	-	0.17	U	-	-	-	-	-	-	-	-	0.17
1,2-Dibromo-3-chloropropane	-	-	-	-	-	-	0.26	U	-	-	-	-	-	-	-	-	0.25
Hexachlorobutadiene	-	-	-	-	-	-	0.34	U	-	-	-	-	-	-	-	-	0.34
Isopropylbenzene	-	-	-	-	-	-	0.085	U	-	-	-	-	-	-	-	-	0.04
p-Isopropyltoluene	-	-	-	-	-	-	0.085	U	-	-	-	-	-	-	-	-	0.084
Naphthalene	-	-	-	-	-	-	1.2		-	-	-	-	-	-	-	-	1.2
Acrylonitrile	-	-	-	-	-	-	0.34	U	-	-	-	-	-	-	-	-	0.34
n-Propylbenzene	-	-	-	-	-	-	0.085	U	-	-	-	-	-	-	-	-	0.049
1,2,3-Trichlorobenzene	-	-	-	-	-	-	0.17	U	-	-	-	-	-	-	-	-	0.17
1,2,4-Trichlorobenzene	-	-	-	-	-	-	0.17	U	-	-	-	-	-	-	-	-	0.17
1,3,5-Trimethylbenzene	-	-	-	-	-	-	0.018	J	-	-	-	-	-	-	-	-	0.02
1,2,4-Trimethylbenzene	-	-	-	-	-	-	0.058	J	-	-	-	-	-	-	-	-	0.12
1,4-Dioxane	-	-	-	-	-	-	6.8	U	-	-	-	-	-	-	-	-	6.7
p-Diethylbenzene	-	-	-	-	-	-	0.17	U	-	-	-	-	-	-	-	-	0.17
p-Ethyltoluene	-	-	-	-	-	-	0.066	J	-	-	-	-	-	-	-	-	0.12
1,2,4,5-Tetramethylbenzene	-	-	-	-	-	-	0.17	U	-	-	-	-	-	-	-	-	0.17
Ethyl ether	-	-	-	-	-	-	0.17	U	-	-	-	-	-	-	-	-	0.17
trans-1,4-Dichloro-2-butene	-	-	-	-	-	-	0.43	U	-	-	-	-	-	-	-	-	0.42

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.

Table 1
Supplemental RI Soil Volatile Organic Compounds Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES	SS	
SAMPLING DATE						
LAB SAMPLE ID						
SAMPLE TYPE						
	CasNum				Units	Qual
Volatile Organics by EPA 5035						
Methylene chloride	75-09-2	0.05	100	0.05	mg/kg	U
1,1-Dichloroethane	75-34-3	0.27	26	0.27	mg/kg	U
Chloroform	67-66-3	0.37	49	0.37	mg/kg	U
Carbon tetrachloride	56-23-5	0.76	2.4	0.76	mg/kg	U
1,2-Dichloropropane	78-87-5				mg/kg	U
Dibromochloromethane	124-48-1				mg/kg	U
1,1,2-Trichloroethane	79-00-5				mg/kg	U
Tetrachloroethene	127-18-4	1.3	19	1.3	mg/kg	U
Chlorobenzene	108-90-7	1.1	100	1.1	mg/kg	U
Trichlorofluoromethane	75-69-4				mg/kg	U
1,2-Dichloroethane	107-06-2	0.02	3.1	0.02	mg/kg	U
1,1,1-Trichloroethane	71-55-6	0.68	100	0.68	mg/kg	U
Bromodichloromethane	75-27-4				mg/kg	U
trans-1,3-Dichloropropene	10061-02-6				mg/kg	U
cis-1,3-Dichloropropene	10061-01-5				mg/kg	U
1,3-Dichloropropene, Total	542-75-6				mg/kg	U
1,1-Dichloropropene	563-58-6				mg/kg	U
Bromoform	75-25-2				mg/kg	U
1,1,2,2-Tetrachloroethane	79-34-5				mg/kg	U
Benzene	71-43-2	0.06	4.8	0.06	mg/kg	
Toluene	108-88-3	0.7	100	0.7	mg/kg	
Ethylbenzene	100-41-4	1	41	1	mg/kg	
Chloromethane	74-87-3				mg/kg	U
Bromomethane	74-83-9				mg/kg	U
Vinyl chloride	75-01-4	0.02	0.9	0.02	mg/kg	U
Chloroethane	75-00-3				mg/kg	U
1,1-Dichloroethene	75-35-4	0.33	100	0.33	mg/kg	U
trans-1,2-Dichloroethene	156-60-5	0.19	100	0.19	mg/kg	U
Trichloroethene	79-01-6	0.47	21	0.47	mg/kg	J
1,2-Dichlorobenzene	95-50-1	1.1	100	1.1	mg/kg	U
1,3-Dichlorobenzene	541-73-1	2.4	49	2.4	mg/kg	U
1,4-Dichlorobenzene	106-46-7	1.8	13	1.8	mg/kg	U
Methyl tert-butyl ether	1634-04-4	0.93	100	0.93	mg/kg	U
p/m-Xylene	179601-23-1				mg/kg	
o-Xylene	95-47-6				mg/kg	
Xylenes, Total	1330-20-7	1.6	100	0.26	mg/kg	J
cis-1,2-Dichloroethene	156-59-2	0.25	100	0.25	mg/kg	J
1,2-Dichloroethene, Total	540-59-0				mg/kg	J
Dibromomethane	74-95-3				mg/kg	U
Styrene	100-42-5				mg/kg	J
Dichlorodifluoromethane	75-71-8				mg/kg	U
Acetone	67-64-1	0.05	100	0.05	mg/kg	
Carbon disulfide	75-15-0				mg/kg	U
2-Butanone	78-93-3	0.12	100	0.12	mg/kg	U
Vinyl acetate	108-05-4				mg/kg	U
4-Methyl-2-pentanone	108-10-1				mg/kg	U
1,2,3-Trichloropropane	96-18-4				mg/kg	U
2-Hexanone	591-78-6				mg/kg	U
Bromochloromethane	74-97-5				mg/kg	U
2,2-Dichloropropane	594-20-7				mg/kg	U
1,2-Dibromoethane	106-93-4				mg/kg	U
1,3-Dichloropropane	142-28-9				mg/kg	U
1,1,1,2-Tetrachloroethane	630-20-6				mg/kg	U
Bromobenzene	108-86-1				mg/kg	U
n-Butylbenzene	104-51-8	12	100	12	mg/kg	J
sec-Butylbenzene	135-98-8	11	100	11	mg/kg	U
tert-Butylbenzene	98-06-6	5.9	100	5.9	mg/kg	U
o-Chlorotoluene	95-49-8				mg/kg	U
p-Chlorotoluene	106-43-4				mg/kg	U
1,2-Dibromo-3-chloropropane	96-12-8				mg/kg	U
Hexachlorobutadiene	87-68-3				mg/kg	U
Isopropylbenzene	98-82-8				mg/kg	J
p-Isopropyltoluene	99-87-6				mg/kg	J
Naphthalene	91-20-3	12	100	12	mg/kg	
Acrylonitrile	107-13-1				mg/kg	U
n-Propylbenzene	103-65-1	3.9	100	3.9	mg/kg	J
1,2,3-Trichlorobenzene	87-61-6				mg/kg	U
1,2,4-Trichlorobenzene	120-82-1				mg/kg	U
1,3,5-Trimethylbenzene	108-67-8	8.4	52	8.4	mg/kg	J
1,2,4-Trimethylbenzene	95-63-6	3.6	52	3.6	mg/kg	J
1,4-Dioxane	123-91-1	0.1	13	0.1	mg/kg	U
p-Diethylbenzene	105-05-5				mg/kg	U
p-Ethyltoluene	622-96-8				mg/kg	J
1,2,4,5-Tetramethylbenzene	95-93-2				mg/kg	J
Ethyl ether	60-29-7				mg/kg	U
trans-1,4-Dichloro-2-butene	110-57-6				mg/kg	U
Volatile Organics by EPA 5035 High						
Methylene chloride	75-09-2	0.05	100	0.05	mg/kg	U
1,1-Dichloroethane	75-34-3	0.27	26	0.27	mg/kg	U
Chloroform	67-66-3	0.37	49	0.37	mg/kg	U
Carbon tetrachloride	56-23-5	0.76	2.4	0.76	mg/kg	U
1,2-Dichloropropane	78-87-5				mg/kg	U
Dibromochloromethane	124-48-1				mg/kg	U
1,1,2-Trichloroethane	79-00-5				mg/kg	U
Tetrachloroethene	127-18-4	1.3	19	1.3	mg/kg	U
Chlorobenzene	108-90-7	1.1	100	1.1	mg/kg	U
Trichlorofluoromethane	75-69-4				mg/kg	U
1,2-Dichloroethane	107-06-2	0.02	3.1	0.02	mg/kg	U
1,1,1-Trichloroethane	71-55-6	0.68	100	0.68	mg/kg	U
Bromodichloromethane	75-27-4				mg/kg	U
trans-1,3-Dichloropropene	10061-02-6				mg/kg	U
cis-1,3-Dichloropropene	10061-01-5				mg/kg	U
1,3-Dichloropropene, Total	542-75-6				mg/kg	U
1,1-Dichloropropene	563-58-6				mg/kg	U
Bromoform	75-25-2				mg/kg	U
1,1,2,2-Tetrachloroethane	79-34-5				mg/kg	U
Benzene	71-43-2	0.06	4.8	0.06	mg/kg	
Toluene	108-88-3	0.7	100	0.7	mg/kg	U
Ethylbenzene	100-41-4	1	41	1	mg/kg	
Chloromethane	74-87-3				mg/kg	U
Bromomethane	74-83-9				mg/kg	U
Vinyl chloride	75-01-4	0.02	0.9	0.02	mg/kg	U
Chloroethane	75-00-3				mg/kg	U
1,1-Dichloroethene	75-35-4	0.33	100	0.33	mg/kg	U
trans-1,2-Dichloroethene	156-60-5	0.19	100	0.19	mg/kg	U
Trichloroethene	79-01-6	0.47	21	0.47	mg/kg	U
1,2-Dichlorobenzene	95-50-1	1.1	100	1.1	mg/kg	U
1,3-Dichlorobenzene	541-73-1	2.4	49	2.4	mg/kg	U
1,4-Dichlorobenzene	106-46-7	1.8	13	1.8	mg/kg	U
Methyl tert-butyl ether	1634-04-4	0.93	100	0.93	mg/kg	U
p/m-Xylene	179601-23-1				mg/kg	J
o-Xylene	95-47-6				mg/kg	U
Xylenes, Total	1330-20-7	1.6	100	0.26	mg/kg	J
cis-1,2-Dichloroethene	156-59-2	0.25	100	0.25	mg/kg	J
1,2-Dichloroethene, Total	540-59-0				mg/kg	J
Dibromomethane	74-95-3				mg/kg	U
Styrene	100-42-5				mg/kg	J
Dichlorodifluoromethane	75-71-8				mg/kg	U
Acetone	67-64-1	0.05	100	0.05	mg/kg	U
Carbon disulfide	75-15-0				mg/kg	U
2-Butanone	78-93-3	0.12	100	0.12	mg/kg	U
Vinyl acetate	108-05-4				mg/kg	U
4-Methyl-2-pentanone	108-10-1				mg/kg	U
1,2,3-Trichloropropane	96-18-4				mg/kg	U
2-Hexanone	591-78-6				mg/kg	U
Bromochloromethane	74-97-5				mg/kg	U
2,2-Dichloropropane	594-20-7				mg/kg	U
1,2-Dibromoethane	106-93-4				mg/kg	U
1,3-Dichloropropane	142-28-9				mg/kg	U
1,1,1,2-Tetrachloroethane	630-20-6				mg/kg	U
Bromobenzene	108-86-1				mg/kg	U
n-Butylbenzene	104-51-8	12	100	12	mg/kg	U
sec-Butylbenzene	135-98-8	11	100	11	mg/kg	U
tert-Butylbenzene	98-06-6	5.9	100	5.9	mg/kg	U
o-Chlorotoluene	95-49-8				mg/kg	U
p-Chlorotoluene	106-43-4				mg/kg	U
1,2-Dibromo-3-chloropropane	96-12-8				mg/kg	U
Hexachlorobutadiene	87-68-3				mg/kg	U
Isopropylbenzene	98-82-8				mg/kg	J
p-Isopropyltoluene	99-87-6				mg/kg	U
Naphthalene	91-20-3	12	100	12	mg/kg	
Acrylonitrile	107-13-1				mg/kg	U
n-Propylbenzene	103-65-1	3.9	100	3.9	mg/kg	J
1,2,3-Trichlorobenzene	87-61-6				mg/kg	U
1,2,4-Trichlorobenzene	120-82-1				mg/kg	U
1,3,5-Trimethylbenzene	108-67-8	8.4	52	8.4	mg/kg	J
1,2,4-Trimethylbenzene	95-63-6	3.6	52	3.6	mg/kg	J
1,4-Dioxane	123-91-1	0.1	13	0.1	mg/kg	U
p-Diethylbenzene	105-05-5				mg/kg	U
p-Ethyltoluene	622-96-8				mg/kg	J
1,2,4,5-Tetramethylbenzene	95-93-2				mg/kg	U
Ethyl ether	60-29-7				mg/kg	U
trans-1,4-Dichloro-2-butene	110-57-6				mg/kg	U

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Crite
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part

Table 1
Supplemental RI Soil Volatile Organic Compounds Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION						SB-17-N1E2 (23-25)		SB-17-N1E2 (23-25)		SB-17-N1E2 (30-31)		SB-DUP		SB-17-N1E3 (22-24)		SB-17-N1E3 (22-24)		SB-17-N1E3 (28-30)	
SAMPLING DATE		NY-RESGW	NY-RESRR	NY-UNRES		1/18/2023		1/18/2023		1/18/2023		1/18/2023		1/19/2023		1/19/2023		1/19/2023	
LAB SAMPLE ID						L2302962-07		L2302962-07 R2		L2302962-08		L2302962-11		L2303262-01		L2303262-01 R1		L2303262-02	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organics by EPA 5035																			
Methylene chloride	75-09-2	0.05	100	0.05	mg/kg	0.006	U	-	-	0.0073	U	0.006	U	29	U	-	-	0.0071	U
1,1-Dichloroethane	75-34-3	0.27	26	0.27	mg/kg	0.0012	U	-	-	0.0015	U	0.0012	U	5.9	U	-	-	0.0014	U
Chloroform	67-66-3	0.37	49	0.37	mg/kg	0.0018	U	-	-	0.0022	U	0.0018	U	8.8	U	-	-	0.0021	U
Carbon tetrachloride	56-23-5	0.76	2.4	0.76	mg/kg	0.0012	U	-	-	0.0015	U	0.0012	U	5.9	U	-	-	0.0014	U
1,2-Dichloropropane	78-87-5				mg/kg	0.0012	U	-	-	0.0015	U	0.0012	U	5.9	U	-	-	0.0014	U
Dibromochloromethane	124-48-1				mg/kg	0.0012	U	-	-	0.0015	U	0.0012	U	5.9	U	-	-	0.0014	U
1,1,2-Trichloroethane	79-00-5				mg/kg	0.0012	U	-	-	0.0015	U	0.0012	U	5.9	U	-	-	0.0014	U
Tetrachloroethene	127-18-4	1.3	19	1.3	mg/kg	0.0006	U	-	-	0.00073	U	0.00026	J	2.9	U	-	-	0.00071	U
Chlorobenzene	108-90-7	1.1	100	1.1	mg/kg	0.0006	U	-	-	0.00073	U	0.0006	U	2.9	U	-	-	0.00071	U
Trichlorofluoromethane	75-69-4				mg/kg	0.0048	U	-	-	0.0058	U	0.0048	U	23	U	-	-	0.0057	U
1,2-Dichloroethane	107-06-2	0.02	3.1	0.02	mg/kg	0.0012	U	-	-	0.0015	U	0.0012	U	5.9	U	-	-	0.0014	U
1,1,1-Trichloroethane	71-55-6	0.68	100	0.68	mg/kg	0.0006	U	-	-	0.00073	U	0.0006	U	2.9	U	-	-	0.00071	U
Bromodichloromethane	75-27-4				mg/kg	0.0006	U	-	-	0.00073	U	0.0006	U	2.9	U	-	-	0.00071	U
trans-1,3-Dichloropropene	10061-02-6				mg/kg	0.0012	U	-	-	0.0015	U	0.0012	U	5.9	U	-	-	0.0014	U
cis-1,3-Dichloropropene	10061-01-5				mg/kg	0.0006	U	-	-	0.00073	U	0.0006	U	2.9	U	-	-	0.00071	U
1,3-Dichloropropene, Total	542-75-6				mg/kg	0.0006	U	-	-	0.00073	U	0.0006	U	2.9	U	-	-	0.00071	U
1,1-Dichloropropene	563-58-6				mg/kg	0.0006	U	-	-	0.00073	U	0.0006	U	2.9	U	-	-	0.00071	U
Bromoform	75-25-2				mg/kg	0.0048	U	-	-	0.0058	U	0.0048	U	23	U	-	-	0.0057	U
1,1,2,2-Tetrachloroethane	79-34-5				mg/kg	0.0006	U	-	-	0.00073	U	0.0006	U	2.9	U	-	-	0.00071	U
Benzene	71-43-2	0.06	4.8	0.06	mg/kg	1.2	E	-	-	0.00045	J	0.00097		1.2	J	-	-	0.00071	U
Toluene	108-88-3	0.7	100	0.7	mg/kg	5.5	E	-	-	0.0045		0.0016		7.1		-	-	0.0057	
Ethylbenzene	100-41-4	1	41	1	mg/kg	3.8	E	-	-	0.0023		0.001	J	59		-	-	0.0014	U
Chloromethane	74-87-3				mg/kg	0.0048	U	-	-	0.0058	U	0.0048	U	23	U	-	-	0.0057	U
Bromomethane	74-83-9				mg/kg	0.0024	U	-	-	0.0029	U	0.0024	U	12	U	-	-	0.0028	U
Vinyl chloride	75-01-4	0.02	0.9	0.02	mg/kg	0.0012	U	-	-	0.0015	U	0.00053	J	5.9	U	-	-	0.0014	U
Chloroethane	75-00-3				mg/kg	0.0024	U	-	-	0.0029	U	0.0024	U	12	U	-	-	0.0028	U
1,1-Dichloroethene	75-35-4	0.33	100	0.33	mg/kg	0.0012	U	-	-	0.0015	U	0.0012	U	5.9	U	-	-	0.0014	U
trans-1,2-Dichloroethene	156-60-5	0.19	100	0.19	mg/kg	0.0018	U	-	-	0.0022	U	0.0018	U	8.8	U	-	-	0.0021	U
Trichloroethene	79-01-6	0.47	21	0.47	mg/kg	0.0006	U	-	-	0.00073	U	0.0027		2.9	U	-	-	0.00071	U
1,2-Dichlorobenzene	95-50-1	1.1	100	1.1	mg/kg	0.0024	U	-	-	0.0029	U	0.0024	U	12	U	-	-	0.0028	U
1,3-Dichlorobenzene	541-73-1	2.4	49	2.4	mg/kg	0.0024	U	-	-	0.0029	U	0.0024	U	12	U	-	-	0.0028	U
1,4-Dichlorobenzene	106-46-7	1.8	13	1.8	mg/kg	0.0024	U	-	-	0.0029	U	0.0024	U	12	U	-	-	0.0028	U
Methyl tert butyl ether	1634-04-4	0.93	100	0.93	mg/kg	0.0024	U	-	-	0.0029	U	0.0024	U	12	U	-	-	0.0028	U
p/m-Xylene	179601-23-1				mg/kg	7	E	-	-	0.0017	J	0.0024	U	48		-	-	0.0028	U
o-Xylene	95-47-6				mg/kg	5.4	E	-	-	0.00093	J	0.0012	U	21		-	-	0.0014	U
Xylenes, Total	1330-20-7	1.6	100	0.26	mg/kg	-	-	-	-	0.0026	J	0.0012	U	69		-	-	0.0014	U
cis-1,2-Dichloroethene	156-59-2	0.25	100	0.25	mg/kg	0.0026		-	-	0.0063		0.0066		5.9	U	-	-	0.00058	J
1,2-Dichloroethene, Total	540-59-0				mg/kg	0.0026		-	-	0.0063		0.0066		5.9	U	-	-	0.00058	J
Dibromomethane	74-95-3				mg/kg	0.0024	U	-	-	0.0029	U	0.0024	U	12	U	-	-	0.0028	U
Styrene	100-42-5				mg/kg	1.4	E	-	-	0.0015	U	0.0012	U	5.9	U	-	-	0.00042	J
Dichlorodifluoromethane	75-71-8				mg/kg	0.012	U	-	-	0.015	U	0.012	U	59	U	-	-	0.014	U
Acetone	67-64-1	0.05	100	0.05	mg/kg	0.0082	J	-	-	0.016		0.0072	J	59	U	-	-	0.012	J
Carbon disulfide	75-15-0				mg/kg	0.0077	J	-	-	0.015	U	0.012	U	59	U	-	-	0.014	U
2-Butanone	78-93-3	0.12	100	0.12	mg/kg	0.012	U	-	-	0.0036	J	0.012	U	59	U	-	-	0.014	U
Vinyl acetate	108-05-4				mg/kg	0.012	U	-	-	0.015	U	0.012	U	59	U	-	-	0.014	U
4-Methyl-2-pentanone	108-10-1				mg/kg	0.012	U	-	-	0.015	U	0.012	U	59	U	-	-	0.014	U
1,2,3-Trichloropropane	96-18-4				mg/kg	0.0024	U	-	-	0.0029	U	0.0024	U	12	U	-	-	0.0028	U
2-Hexanone	591-78-6				mg/kg	0.012	U	-	-	0.015	U	0.012	U	59	U	-	-	0.014	U
Bromochloromethane	74-97-5				mg/kg	0.0024	U	-	-	0.0029	U	0.0024	U	12	U	-	-	0.0028	U
2,2-Dichloropropane	594-20-7				mg/kg	0.0024	U	-	-	0.0029	U	0.0024	U	12	U	-	-	0.0028	U
1,2-Dibromoethane	106-93-4				mg/kg	0.0012	U	-	-	0.0015	U	0.0012	U	5.9	U	-	-	0.0014	U
1,3-Dichloropropane	142-28-9				mg/kg	0.0024	U	-	-	0.0029	U	0.0024	U	12	U	-	-	0.0028	U
1,1,1,2-Tetrachloroethane	630-20-6				mg/kg	0.0006	U	-	-	0.00073	U	0.0006	U	2.9	U	-	-	0.00071	U
Bromobenzene	108-86-1				mg/kg	0.0024	U	-	-	0.0029	U	0.0024	U	12	U	-	-	0.0028	U
n-Butylbenzene	104-51-8	12	100	12	mg/kg	0.0012	U	-	-	0.0015	U	0.0012	U	2.3	J	-	-	0.0014	U
sec-Butylbenzene	135-98-8	11	100	11	mg/kg	0.16		-	-	0.0015	U	0.0012	U	5.9	U	-	-	0.0014	U
tert-Butylbenzene	98-06-6	5.9	100	5.9	mg/kg	0.0024	U	-	-	0.0029	U	0.0024	U	12	U	-	-	0.0028	U
o-Chlorotoluene	95-49-8				mg/kg	0.0024	U	-	-	0.0029	U	0.0024	U	12	U	-	-	0.0028	U
p-Chlorotoluene	106-43-4				mg/kg	0.0024	U	-	-	0.0029	U	0.0024	U	12	U	-	-	0.0028	U
1,2-Dibromo-3-chloropropane	96-12-8				mg/kg	0.0036	U	-	-	0.0044	U	0.0036	U	18	U	-	-	0.0043	U
Hexachlorobutadiene	87-68-3				mg/kg	0.0048	U	-	-	0.0058	U	0.0048	U	23	U	-	-	0.0057	U
Isopropylbenzene	98-82-8				mg/kg	1.8	E	-	-	0.0015	U	0.0012	U	6		-	-	0.0014	U
p-Isopropyltoluene	99-87-6				mg/kg	3.1	E	-	-	0.0002	J	0.0012	U	5.2	J	-	-	0.0014	U
Naphthalene	91-20-3	12	100	12	mg/kg	3.1	E	-	-	0.16		0.0031	J	1800	E	1300		0.0011	J
Acrylonitrile	107-13-1				mg/kg	0.0048	U	-	-	0.0058	U	0.0048	U	23	U	-	-	0.0057	U
n-Propylbenzene	103-65-1	3.9	100	3.9	mg/kg	1.6	E	-	-	0.0015	U	0.0012	U	3.6	J	-	-	0.0014	U
1,2,3-Trichlorobenzene	87-61-6				mg/kg	0.0024	U	-	-	0.0029	U	0.0024	U	12	U	-	-	0.0028	U
1,2,4-Trichlorobenzene	120-82-1				mg/kg	0.0024	U	-	-	0.0029	U	0.0024	U	12	U	-	-	0.0028	U
1,3,5-Trimethylbenzene	108-67-8	8.4	52	8.4	mg/kg	2.2	E	-	-	0.00056	J	0.0024	U	12		-	-	0.0028	U
1,2,4-Trimethylbenzene	95-63-6	3.6	52	3.6	mg/kg	3.2	E	-	-	0.0017	J	0.00046	J	41		-	-	0.0028	U
1,4-Dioxane	123-91-1	0.1	13	0.1	mg/kg	0.095	U	-	-	0.12	U	0.097	U	470	U	-	-	0.11	U
p-Diethylbenzene	105-05-5				mg/kg	0.0024	U	-	-	0.0029	U	0.0024	U	12	U	-	-	0.0028	U
p-Ethyltoluene	622-96-8				mg/kg	3.7	E	-	-	0.0016	J	0.0024	U	40		-	-	0.0028	U
1,2,4,5-Tetramethylbenzene	95-93-2				mg/kg	0.55	E	-	-	0.00044	J	0.0024	U	7.1	J	-	-	0.0028	U
Ethyl ether	60-29-7				mg/kg	0.0024	U	-	-	0.0029	U	0.0024	U	12	U	-	-	0.0028	U
trans-1,4-Dichloro-2-butene	110-57-6				mg/kg	0.006	U	-	-	0.0073	U	0.006	U	29	U	-	-	0.0071	U
Volatile Organics by EPA 5035 High																			
Methylene chloride	75-09-2	0.05	100	0.05	mg/kg	0.36	U	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	75-34-3	0.27	26	0.27	mg/kg	0.071	U	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	67-66-3	0.37	49	0.37	mg/kg	0.11	U	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride	56-23-5	0.76	2.4	0.76	mg/kg	0.071	U	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	78-87-5				mg/kg	0.071	U	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	124-48-1				mg/kg	0.071	U	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	79-00-5				mg/kg	0.071	U	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	127-18-4	1.3	19	1.3	mg/kg	0.036	U	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	108-90-7	1.1	100	1.1	mg/kg	0.036	U	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	75-69-4				mg/kg	0.28	U	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	107-06-2	0.02	3.1	0.02	mg/kg	0.071	U	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	71-55-6	0.68	100	0.68	mg/kg	0.036	U	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	75-27-4				mg/kg	0.036	U	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	10061-02-6				mg/kg	0.071	U	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	10061-01-5				mg/kg	0.036	U	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichloropropene, Total	542-75-6				mg/kg	0.036	U	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloropropene	563-58-6				mg/kg	0.036	U	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform	75-25-2				mg/kg	0.28	U	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	79-34-5				mg/kg	0.036	U	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	71-43-2	0.06	4.8	0.06	mg/kg	1.5		-	-	-	-	-	-	-	-	-	-	-	-
Toluene	108-88-3	0.7	100	0.7	mg/kg	12		-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	100-41-4	1	41	1	mg/kg	43	E	51		-	-	-	-	-	-	-	-	-	-
Chloromethane	74-87-3				mg/kg	0.28	U	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane	74-83-9				mg/kg	0.14	U	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	75-01-4	0.02	0.9	0.02	mg/kg	0.071	U	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane	75-00-3				mg/kg	0.14	U	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	75-35-4	0.33	100	0.33	mg/kg	0.071	U	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	156-60-5	0.19	100	0.19	mg/kg	0.11	U	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	79-01-6	0.47	21	0.47	mg/kg	0.036	U	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	95-50-1	1.1	100	1.1	mg/kg	0.14	U	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	541-73-1	2.4	49	2.4	mg/kg	0.14	U	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	106-46-7	1.8	13	1.8	mg/kg	0.14	U	-	-	-	-	-	-	-	-	-	-	-	-
Methyl tert butyl ether	1634-04-4	0.93	100	0.93	mg/kg	0.14	U	-	-	-	-	-	-	-	-	-	-	-	-
p/m-Xylene	179601-23-1				mg/kg	32		-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	95-47-6				mg/kg	15		-	-	-	-	-	-	-	-	-	-	-	-
Xylenes, Total	1330-20-7	1.6	100	0.26	mg/kg	47		-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	156-59-2	0.25	100	0.25	mg/kg	0.071	U	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethene, Total	540-59-0				mg/kg	0.071	U	-	-	-	-	-	-	-	-	-	-	-	-
Dibromomethane	74-95-3				mg/kg	0.14	U	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	100-42-5				mg/kg	1.4		-	-	-	-	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	75-71-8				mg/kg	0.71	U	-	-	-	-	-	-	-	-	-	-	-	-
Acetone	67-64-1	0.05	100	0.05	mg/kg	0.71	U	-	-	-	-	-	-	-	-	-	-	-	-
Carbon disulfide	75-15-0				mg/kg	0.71	U	-	-	-	-	-	-	-	-	-	-	-	-
2-Butanone	78-93-3	0.12	100	0.12	mg/kg	0.71	U	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl acetate	108-05-4				mg/kg	0.71	U	-	-	-	-	-	-	-	-	-	-	-	-
4-Methyl-2-pentanone	108-10-1				mg/kg	0.71	U	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichloropropane	96-18-4				mg/kg	0.14	U	-	-	-	-	-	-	-	-	-	-	-	-
2-Hexanone	591-78-6				mg/kg	0.71	U	-	-	-	-	-	-	-	-	-	-	-	-
Bromochloromethane	74-97-5				mg/kg	0.14	U	-	-	-	-	-	-	-	-	-	-	-	-
2,2-Dichloropropane	594-20-7				mg/kg	0.14	U	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dibromoethane	106-93-4				mg/kg	0.071	U	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichloropropane	142-28-9				mg/kg	0.14	U	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	630-20-6				mg/kg	0.036	U	-	-	-	-	-	-	-	-	-	-	-	-
Bromobenzene	108-86-1				mg/kg	0.14	U	-	-	-	-	-	-	-	-	-	-	-	-
n-Butylbenzene	104-51-8	12	100	12	mg/kg	0.91		-	-	-	-	-	-	-	-	-	-	-	-
sec-Butylbenzene	135-98-8	11	100	11	mg/kg	0.071	U	-	-	-	-	-	-	-	-	-	-	-	-
tert-Butylbenzene	98-06-6	5.9	100	5.9	mg/kg	0.14	U	-	-	-	-	-	-	-	-	-	-	-	-
o-Chlorotoluene	95-49-8				mg/kg	0.14	U	-	-	-	-	-	-	-	-	-	-	-	-
p-Chlorotoluene	106-43-4				mg/kg	0.14	U	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane	96-12-8				mg/kg	0.21	U	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	87-68-3				mg/kg	0.28	U	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene	98-82-8				mg/kg	2.9		-	-	-	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene	99-87-6				mg/kg	2.6		-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	91-20-3	12	100	12	mg/kg	0.28	U	-	-	-	-	-	-	-	-	-	-	-	-
Acrylonitrile	107-13-1				mg/kg	0.28	U	-	-	-	-	-	-	-	-	-	-	-	-
n-Propylbenzene	103-65-1	3.9	100	3.9	mg/kg	2.5		-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	87-61-6				mg/kg	0.14	U	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	120-82-1				mg/kg	0.14	U	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	108-67-8	8.4	52	8.4	mg/kg	7.7		-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	95-63-6	3.6	52	3.6	mg/kg	26	E	30		-	-	-	-	-	-	-	-	-	-
1,4-Dioxane	123-91-1	0.1	13	0.1	mg/kg	5.7	U	-	-	-	-	-	-	-	-	-	-	-	-
p-Diethylbenzene	105-05-5				mg/kg	0.14	U	-	-	-	-	-	-	-	-	-	-	-	-
p-Ethyltoluene	622-96-8				mg/kg	38	E	44		-	-	-	-	-	-	-	-	-	-
1,2,4,5-Tetramethylbenzene	95-93-2				mg/kg	3.2		-	-	-	-	-	-	-	-	-	-	-	-
Ethyl ether	60-29-7				mg/kg	0.14	U	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,4-Dichloro-2-butene	110-57-6				mg/kg	0.36	U	-	-	-	-	-	-	-	-	-	-	-	-

LOCATION	SB-17-N4 (25-30)		SB-17-N4 (25-30)		SB-17-N4 (38-40)		SB-17-N5 (25-27)		SB-17-N5 (25-27)		SB-17-N5 (33-35)		SB-17-N6 (23-25)	
SAMPLING DATE	1/19/2023		1/19/2023		1/19/2023		1/19/2023		1/19/2023		1/19/2023		1/19/2023	
LAB SAMPLE ID	L2303262-03		L2303262-03 R1		L2303262-04		L2303262-05		L2303262-05 R1		L2303262-06		L2303262-07	
SAMPLE TYPE	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organics by EPA 5035														
Methylene chloride	36	U	-	-	0.0073	U	0.36	U	-	-	0.0052	U	7.3	U
1,1-Dichloroethane	7.2	U	-	-	0.0014	U	0.072	U	-	-	0.001	U	1.4	U
Chloroform	11	U	-	-	0.0022	U	0.11	U	-	-	0.0016	U	2.2	U
Carbon tetrachloride	7.2	U	-	-	0.0014	U	0.072	U	-	-	0.001	U	1.4	U
1,2-Dichloropropane	7.2	U	-	-	0.0014	U	0.072	U	-	-	0.001	U	1.4	U
Dibromochloromethane	7.2	U	-	-	0.0014	U	0.072	U	-	-	0.001	U	1.4	U
1,1,2-Trichloroethane	7.2	U	-	-	0.0014	U	0.072	U	-	-	0.001	U	1.4	U
Tetrachloroethene	3.6	U	-	-	0.0039		0.036	U	-	-	0.03		0.73	U
Chlorobenzene	3.6	U	-	-	0.00073	U	0.036	U	-	-	0.00052	U	0.73	U
Trichlorofluoromethane	29	U	-	-	0.0058	U	0.29	U	-	-	0.0041	U	5.8	U
1,2-Dichloroethane	7.2	U	-	-	0.0014	U	0.072	U	-	-	0.001	U	1.4	U
1,1,1-Trichloroethane	3.6	U	-	-	0.00073	U	0.036	U	-	-	0.00052	U	0.73	U
Bromodichloromethane	3.6	U	-	-	0.00073	U	0.036	U	-	-	0.00052	U	0.73	U
trans-1,3-Dichloropropene	7.2	U	-	-	0.0014	U	0.072	U	-	-	0.001	U	1.4	U
cis-1,3-Dichloropropene	3.6	U	-	-	0.00073	U	0.036	U	-	-	0.00052	U	0.73	U
1,3-Dichloropropene, Total	3.6	U	-	-	0.00073	U	0.036	U	-	-	0.00052	U	0.73	U
1,1-Dichloropropene	3.6	U	-	-	0.00073	U	0.036	U	-	-	0.00052	U	0.73	U
Bromoform	29	U	-	-	0.0058	U	0.29	U	-	-	0.0041	U	5.8	U
1,1,2,2-Tetrachloroethane	3.6	U	-	-	0.00073	U	0.036	U	-	-	0.00052	U	0.73	U
Benzene	7.8		-	-	0.0015		0.23		-	-	0.0014		1	
Toluene	24		-	-	0.014		0.52		-	-	0.0038		1.4	U
Ethylbenzene	73		-	-	0.056		1.4		-	-	0.0077		29	
Chloromethane	29	U	-	-	0.0058	U	0.29	U	-	-	0.0041	U	5.8	U
Bromomethane	14	U	-	-	0.0029	U	0.14	U	-	-	0.0021	U	2.9	U
Vinyl chloride	7.2	U	-	-	0.0014	U	0.072	U	-	-	0.0016		1.4	U
Chloroethane	14	U	-	-	0.0029	U	0.14	U	-	-	0.0021	U	2.9	U
1,1-Dichloroethene	7.2	U	-	-	0.0014	U	0.072	U	-	-	0.001	U	1.4	U
trans-1,2-Dichloroethene	11	U	-	-	0.0022	U	0.11	U	-	-	0.0016	U	2.2	U
Trichloroethene	3.6	U	-	-	0.00055	J	0.036	U	-	-	0.017		0.73	U
1,2-Dichlorobenzene	14	U	-	-	0.0029	U	0.14	U	-	-	0.0021	U	2.9	U
1,3-Dichlorobenzene	14	U	-	-	0.0029	U	0.14	U	-	-	0.0021	U	2.9	U
1,4-Dichlorobenzene	14	U	-	-	0.0029	U	0.14	U	-	-	0.0021	U	2.9	U
Methyl tert butyl ether	14	U	-	-	0.0029	U	0.14	U	-	-	0.0021	U	2.9	U
p/m-Xylene	69		-	-	0.046		1.1		-	-	0.0039		20	
o-Xylene	30		-	-	0.023		0.58		-	-	0.0018		10	
Xylenes, Total	99		-	-	0.069		1.7		-	-	0.0057		30	
cis-1,2-Dichloroethene	7.2	U	-	-	0.00052	J	0.017	J	-	-	0.026		1.4	U
1,2-Dichloroethene, Total	7.2	U	-	-	0.00052	J	0.017	J	-	-	0.026		1.4	U
Dibromomethane	14	U	-	-	0.0029	U	0.14	U	-	-	0.0021	U	2.9	U
Styrene	16		-	-	0.007		0.34		-	-	0.00052	J	1.4	U
Dichlorodifluoromethane	72	U	-	-	0.014	U	0.72	U	-	-	0.01	U	14	U
Acetone	72	U	-	-	0.0073	J	0.72	U	-	-	0.014		14	U
Carbon disulfide	72	U	-	-	0.014	U	0.72	U	-	-	0.01	U	14	U
2-Butanone	72	U	-	-	0.0052	J	0.72	U	-	-	0.0026	J	14	U
Vinyl acetate	72	U	-	-	0.014	U	0.72	U	-	-	0.01	U	14	U
4-Methyl-2-pentanone	72	U	-	-	0.014	U	0.72	U	-	-	0.01	U	14	U
1,2,3-Trichloropropane	14	U	-	-	0.0029	U	0.14	U	-	-	0.0021	U	2.9	U
2-Hexanone	72	U	-	-	0.014	U	0.72	U	-	-	0.01	U	14	U
Bromochloromethane	14	U	-	-	0.0029	U	0.14	U	-	-	0.0021	U	2.9	U
2,2-Dichloropropane	14	U	-	-	0.0029	U	0.14	U	-	-	0.0021	U	2.9	U
1,2-Dibromoethane	7.2	U	-	-	0.0014	U	0.072	U	-	-	0.001	U	1.4	U
1,3-Dichloropropane	14	U	-	-	0.0029	U	0.14	U	-	-	0.0021	U	2.9	U
1,1,1,2-Tetrachloroethane	3.6	U	-	-	0.00073	U	0.036	U	-	-	0.00052	U	0.73	U
Bromobenzene	14	U	-	-	0.0029	U	0.14	U	-	-	0.0021	U	2.9	U
n-Butylbenzene	1.9	J	-	-	0.003		0.029	J	-	-	0.001	U	0.63	J
sec-Butylbenzene	7.2	U	-	-	0.0014	U	0.072	U	-	-	0.001	U	1.4	U
tert-Butylbenzene	14	U	-	-	0.0029	U	0.14	U	-	-	0.0021	U	2.9	U
o-Chlorotoluene	14	U	-	-	0.0029	U	0.14	U	-	-	0.0021	U	2.9	U
p-Chlorotoluene	14	U	-	-	0.0029	U	0.14	U	-	-	0.0021	U	2.9	U
1,2-Dibromo-3-chloropropane	22	U	-	-	0.0044	U	0.21	U	-	-	0.0031	U	4.4	U
Hexachlorobutadiene	29	U	-	-	0.0058	U	0.29	U	-	-	0.0041	U	5.8	U
Isopropylbenzene	2	J	-	-	0.0044		0.065	J	-	-	0.00084	J	4	
p-Isopropyltoluene	4.2	J	-	-	0.0083		0.075		-	-	0.00046	J	2	
Naphthalene	2300	E	1900		1.4	E	40		35	E	0.15		830	
Acrylonitrile	29	U	-	-	0.0058	U	0.29	U	-	-	0.0041	U	5.8	U
n-Propylbenzene	4	J	-	-	0.0056		0.088		-	-	0.0009	J	1.7	
1,2,3-Trichlorobenzene	14	U	-	-	0.0029	U	0.14	U	-	-	0.0021	U	2.9	U
1,2,4-Trichlorobenzene	14	U	-	-	0.0029	U	0.14	U	-	-	0.0021	U	2.9	U
1,3,5-Trimethylbenzene	14		-	-	0.024		0.33		-	-	0.0016	J	6.4	
1,2,4-Trimethylbenzene	45		-	-	0.077		1.1		-	-	0.0041		21	
1,4-Dioxane	580	U	-	-	0.12	U	5.7	U	-	-	0.083	U	120	U
p-Diethylbenzene	14	U	-	-	0.0029	U	0.14	U	-	-	0.0021	U	2.9	U
p-Ethyltoluene	54		-	-	0.084		0.88		-	-	0.0065		22	
1,2,4,5-Tetramethylbenzene	7.6	J	-	-	0.014		0.16		-	-	0.0011	J	3.3	
Ethyl ether	14	U	-	-	0.0029	U	0.14	U	-	-	0.0021	U	2.9	U
trans-1,4-Dichloro-2-butene	36	U	-	-	0.0073	U	0.36	U	-	-	0.0052	U	7.3	U
Volatile Organics by EPA 5035 High														
Methylene chloride	-	-	-	-	0.46	U	-	-	-	-	-	-	-	-
1,1-Dichloroethane	-	-	-	-	0.092	U	-	-	-	-	-	-	-	-
Chloroform	-	-	-	-	0.14	U	-	-	-	-	-	-	-	-
Carbon tetrachloride	-	-	-	-	0.092	U	-	-	-	-	-	-	-	-
1,2-Dichloropropane	-	-	-	-	0.092	U	-	-	-	-	-	-	-	-
Dibromochloromethane	-	-	-	-	0.092	U	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	-	-	-	-	0.092	U	-	-	-	-	-	-	-	-
Tetrachloroethene	-	-	-	-	0.046		-	-	-	-	-	-	-	-
Chlorobenzene	-	-	-	-	0.046	U	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	0.37	U	-	-	-	-	-	-	-	-
1,2-Dichloroethane	-	-	-	-	0.092	U	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	0.046	U	-	-	-	-	-	-	-	-
Bromodichloromethane	-	-	-	-	0.046	U	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	-	-	-	-	0.092	U	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	-	-	-	-	0.046	U	-	-	-	-	-	-	-	-
1,3-Dichloropropene, Total	-	-	-	-	0.046	U	-	-	-	-	-	-	-	-
1,1-Dichloropropene	-	-	-	-	0.046	U	-	-	-	-	-	-	-	-
Bromoform	-	-	-	-	0.37	U	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	-	-	-	-	0.046	U	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	0.046	U	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	0.092	U	-	-	-	-	-	-	-	-
Ethylbenzene	-	-	-	-	0.063	J	-	-	-	-	-	-	-	-
Chloromethane	-	-	-	-	0.37	U	-	-	-	-	-	-	-	-
Bromomethane	-	-	-	-	0.089	J	-	-	-	-	-	-	-	-
Vinyl chloride	-	-	-	-	0.092	U	-	-	-	-	-	-	-	-
Chloroethane	-	-	-	-	0.18	U	-	-	-	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	0.092	U	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	-	-	-	-	0.14	U	-	-	-	-	-	-	-	-
Trichloroethene	-	-	-	-	0.046	U	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	-	-	-	-	0.18	U	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	-	-	-	-	0.18	U	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	-	-	-	-	0.18	U	-	-	-	-	-	-	-	-
Methyl tert butyl ether	-	-	-	-	0.18	U	-	-	-	-	-	-	-	-
p/m-Xylene	-	-	-	-	0.18	U	-	-	-	-	-	-	-	-
o-Xylene	-	-	-	-	0.092	U	-	-	-	-	-	-	-	-
Xylenes, Total	-	-	-	-	0.092	U	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	-	-	-	-	0.092	U	-	-	-	-	-	-	-	-
1,2-Dichloroethene, Total	-	-	-	-	0.092	U	-	-	-	-	-	-	-	-
Dibromomethane	-	-	-	-	0.18	U	-	-	-	-	-	-	-	-
Styrene	-	-	-	-	0.092	U	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	-	-	-	-	0.92	U	-	-	-	-	-	-	-	-
Acetone	-	-	-	-	0.92	U	-	-	-	-	-	-	-	-
Carbon disulfide	-	-	-	-	0.92	U	-	-	-	-	-	-	-	-
2-Butanone	-	-	-	-	0.92	U	-	-	-	-	-	-	-	-
Vinyl acetate	-	-	-	-	0.92	U	-	-	-	-	-	-	-	-
4-Methyl-2-pentanone	-	-	-	-	0.92	U	-	-	-	-	-	-	-	-
1,2,3-Trichloropropane	-	-	-	-	0.18	U	-	-	-	-	-	-	-	-
2-Hexanone	-	-	-	-	0.92	U	-	-	-	-	-	-	-	-
Bromochloromethane	-	-	-	-	0.18	U	-	-	-	-	-	-	-	-
2,2-Dichloropropane	-	-	-	-	0.18	U	-	-	-	-	-	-	-	-
1,2-Dibromoethane	-	-	-	-	0.092	U	-	-	-	-	-	-	-	-
1,3-Dichloropropane	-	-	-	-	0.18	U	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	-	-	-	-	0.046	U	-	-	-	-	-	-	-	-
Bromobenzene	-	-	-	-	0.18	U	-	-	-	-	-	-	-	-
n-Butylbenzene	-	-	-	-	0.092	U	-	-	-	-	-	-	-	-
sec-Butylbenzene	-	-	-	-	0.092	U	-	-	-	-	-	-	-	-
tert-Butylbenzene	-	-	-	-	0.18	U	-	-	-	-	-	-	-	-
o-Chlorotoluene	-	-	-	-	0.18	U	-	-	-	-	-	-	-	-
p-Chlorotoluene	-	-	-	-	0.18	U	-	-	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane	-	-	-	-	0.27	U	-	-	-	-	-	-	-	-
Hexachlorobutadiene	-	-	-	-	0.37	U	-	-	-	-	-	-	-	-
Isopropylbenzene	-	-	-	-	0.092	U	-	-	-	-	-	-	-	-
p-Isopropyltoluene	-	-	-	-	0.092	U	-	-	-	-	-	-	-	-
Naphthalene	-	-	-	-	2.9		-	-	-	-	-	-	-	-
Acrylonitrile	-	-	-	-	0.37	U	-	-	-	-	-	-	-	-
n-Propylbenzene	-	-	-	-	0.092	U	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	-	-	-	-	0.18	U	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	-	-	-	-	0.18	U	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	-	-	-	-	0.018	J	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	-	-	-	-	0.048	J	-	-	-	-	-	-	-	-
1,4-Dioxane	-	-	-	-	7.3	U	-	-	-	-	-	-	-	-
p-Diethylbenzene	-	-	-	-	0.18	U	-	-	-	-	-	-	-	-
p-Ethyltoluene	-	-	-	-	0.061	J	-	-	-	-	-	-	-	-
1,2,4,5-Tetramethylbenzene	-	-	-	-	0.18	U	-	-	-	-	-	-	-	-
Ethyl ether	-	-	-	-	0.18	U	-	-	-	-	-	-	-	-
trans-1,4-Dichloro-2-butene	-	-	-	-	0.46	U	-	-	-	-	-	-	-	-

LOCATION	SB-17-N6 (23-25)		SB-17-N6 (37-39)		SB-17-N7 (23-25)		SB-17-N7 (30-32)		SB-17-N2E1 (23-25)		SB-17-N2E1 (23-25)		SB-17-N2E1 (30-32)	
SAMPLING DATE	1/19/2023		1/20/2023		1/20/2023		1/20/2023		1/20/2023		1/20/2023		1/20/2023	
LAB SAMPLE ID	L2303262-07 R1		L2303515-01		L2303515-02		L2303515-03		L2303515-04		L2303515-04 R1		L2303515-05	
SAMPLE TYPE	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organics by EPA 5035														
Methylene chloride	-	-	0.0077	U	0.0064	U	0.0064	U	3.5	U	-	-	0.0058	U
1,1-Dichloroethane	-	-	0.0015	U	0.0013	U	0.0013	U	0.71	U	-	-	0.0012	U
Chloroform	-	-	0.0023	U	0.0019	U	0.0019	U	1.1	U	-	-	0.0017	U
Carbon tetrachloride	-	-	0.0015	U	0.0013	U	0.0013	U	0.71	U	-	-	0.0012	U
1,2-Dichloropropane	-	-	0.0015	U	0.0013	U	0.0013	U	0.71	U	-	-	0.0012	U
Dibromochloromethane	-	-	0.0015	U	0.0013	U	0.0013	U	0.71	U	-	-	0.0012	U
1,1,2-Trichloroethane	-	-	0.0015	U	0.0013	U	0.0013	U	0.71	U	-	-	0.0012	U
Tetrachloroethene	-	-	0.0014		0.00064	U	0.00064	U	0.35	U	-	-	0.00024	J
Chlorobenzene	-	-	0.00077	U	0.00064	U	0.00064	U	0.35	U	-	-	0.00058	U
Trichlorofluoromethane	-	-	0.0062	U	0.0051	U	0.0051	U	2.8	U	-	-	0.0046	U
1,2-Dichloroethane	-	-	0.0015	U	0.0013	U	0.0013	U	0.71	U	-	-	0.0012	U
1,1,1-Trichloroethane	-	-	0.00077	U	0.00064	U	0.00064	U	0.35	U	-	-	0.00058	U
Bromodichloromethane	-	-	0.00077	U	0.00064	U	0.00064	U	0.35	U	-	-	0.00058	U
trans-1,3-Dichloropropene	-	-	0.0015	U	0.0013	U	0.0013	U	0.71	U	-	-	0.0012	U
cis-1,3-Dichloropropene	-	-	0.00077	U	0.00064	U	0.00064	U	0.35	U	-	-	0.00058	U
1,3-Dichloropropene, Total	-	-	0.00077	U	0.00064	U	0.00064	U	0.35	U	-	-	0.00058	U
1,1-Dichloropropene	-	-	0.00077	U	0.00064	U	0.00064	U	0.35	U	-	-	0.00058	U
Bromoform	-	-	0.0062	U	0.0051	U	0.0051	U	2.8	U	-	-	0.0046	U
1,1,2,2-Tetrachloroethane	-	-	0.00077	U	0.00064	U	0.00064	U	0.35	U	-	-	0.00058	U
Benzene	-	-	0.00077	U	0.0046		0.098		0.22	J	-	-	0.0025	
Toluene	-	-	0.0068		0.0061		0.012		1.8		-	-	0.0061	
Ethylbenzene	-	-	0.00077	J	0.0026		0.097		12		-	-	0.027	
Chloromethane	-	-	0.0062	U	0.0051	U	0.0051	U	2.8	U	-	-	0.0046	U
Bromomethane	-	-	0.0031	U	0.0026	U	0.0026	U	1.4	U	-	-	0.0023	U
Vinyl chloride	-	-	0.0015	U	0.0013	U	0.0035		0.71	U	-	-	0.00062	J
Chloroethane	-	-	0.0031	U	0.0026	U	0.0026	U	1.4	U	-	-	0.0023	U
1,1-Dichloroethene	-	-	0.0015	U	0.0013	U	0.0013	U	0.71	U	-	-	0.0012	U
trans-1,2-Dichloroethene	-	-	0.0023	U	0.0019	U	0.0019	U	1.1	U	-	-	0.0017	U
Trichloroethene	-	-	0.001		0.00064	U	0.00025	J	0.35	U	-	-	0.00058	U
1,2-Dichlorobenzene	-	-	0.0031	U	0.0026	U	0.0026	U	1.4	U	-	-	0.0023	U
1,3-Dichlorobenzene	-	-	0.0031	U	0.0026	U	0.0026	U	1.4	U	-	-	0.0023	U
1,4-Dichlorobenzene	-	-	0.0031	U	0.0026	U	0.0026	U	1.4	U	-	-	0.0023	U
Methyl tert butyl ether	-	-	0.0031	U	0.0012	J	0.00029	J	1.4	U	-	-	0.00024	J
p/m-Xylene	-	-	0.0031	U	0.0026	U	0.018		10		-	-	0.018	
o-Xylene	-	-	0.0015	U	0.0016		0.022		4.6		-	-	0.0093	
Xylenes, Total	-	-	0.0015	U	0.0016		0.04		15		-	-	0.027	
cis-1,2-Dichloroethene	-	-	0.0011	J	0.0013	U	0.0074		0.71	U	-	-	0.0098	
1,2-Dichloroethene, Total	-	-	0.0011	J	0.0013	U	0.0074		0.71	U	-	-	0.0098	
Dibromomethane	-	-	0.0031	U	0.0026	U	0.0026	U	1.4	U	-	-	0.0023	U
Styrene	-	-	0.0015	U	0.00045	J	0.0037		0.71	U	-	-	0.00083	J
Dichlorodifluoromethane	-	-	0.015	U	0.013	U	0.013	U	7.1	U	-	-	0.012	U
Acetone	-	-	0.015		0.012	J	0.0084	J	7.1	U	-	-	0.0092	J
Carbon disulfide	-	-	0.015	U	0.0099	J	0.013	U	7.1	U	-	-	0.012	U
2-Butanone	-	-	0.0083	J	0.0062	J	0.0048	J	7.1	U	-	-	0.0042	J
Vinyl acetate	-	-	0.015	U	0.013	U	0.013	U	7.1	U	-	-	0.012	U
4-Methyl-2-pentanone	-	-	0.015	U	0.013	U	0.013	U	7.1	U	-	-	0.012	U
1,2,3-Trichloropropane	-	-	0.0031	U	0.0026	U	0.0026	U	1.4	U	-	-	0.0023	U
2-Hexanone	-	-	0.015	U	0.013	U	0.013	U	7.1	U	-	-	0.012	U
Bromochloromethane	-	-	0.0031	U	0.0026	U	0.0026	U	1.4	U	-	-	0.0023	U
2,2-Dichloropropane	-	-	0.0031	U	0.0026	U	0.0026	U	1.4	U	-	-	0.0023	U
1,2-Dibromoethane	-	-	0.0015	U	0.0013	U	0.0013	U	0.71	U	-	-	0.0012	U
1,3-Dichloropropane	-	-	0.0031	U	0.0026	U	0.0026	U	1.4	U	-	-	0.0023	U
1,1,1,2-Tetrachloroethane	-	-	0.00077	U	0.00064	U	0.00064	U	0.35	U	-	-	0.00058	U
Bromobenzene	-	-	0.0031	U	0.0026	U	0.0026	U	1.4	U	-	-	0.0023	U
n-Butylbenzene	-	-	0.0015	U	0.0012	J	0.0013	U	0.43	J	-	-	0.0011	J
sec-Butylbenzene	-	-	0.0015	U	0.00034	J	0.0013	U	0.71	U	-	-	0.00032	J
tert-Butylbenzene	-	-	0.0031	U	0.0026	U	0.0026	U	1.4	U	-	-	0.0023	U
o-Chlorotoluene	-	-	0.0031	U	0.0026	U	0.0026	U	1.4	U	-	-	0.0023	U
p-Chlorotoluene	-	-	0.0031	U	0.0026	U	0.0026	U	1.4	U	-	-	0.0023	U
1,2-Dibromo-3-chloropropane	-	-	0.0046	U	0.0038	U	0.0039	U	2.1	U	-	-	0.0035	U
Hexachlorobutadiene	-	-	0.0062	U	0.0051	U	0.0051	U	2.8	U	-	-	0.0046	U
Isopropylbenzene	-	-	0.0015	U	0.0018		0.0022		1.5		-	-	0.004	
p-Isopropyltoluene	-	-	0.0015	U	0.003		0.00053	J	1.2		-	-	0.0024	
Naphthalene	660	E	0.028		0.5	E	0.31		360		440	E	0.62	E
Acrylonitrile	-	-	0.0062	U	0.0051	U	0.0051	U	2.8	U	-	-	0.0046	U
n-Propylbenzene	-	-	0.0015	U	0.001	J	0.0015		0.79		-	-	0.003	
1,2,3-Trichlorobenzene	-	-	0.0031	U	0.0026	U	0.0026	U	1.4	U	-	-	0.0023	U
1,2,4-Trichlorobenzene	-	-	0.0031	U	0.0026	U	0.0026	U	1.4	U	-	-	0.0023	U
1,3,5-Trimethylbenzene	-	-	0.0031	U	0.0021	J	0.0036		3		-	-	0.0076	
1,2,4-Trimethylbenzene	-	-	0.00078	J	0.0088		0.0086		9.9		-	-	0.024	
1,4-Dioxane	-	-	0.12	U	0.1	U	0.1	U	56	U	-	-	0.093	U
p-Diethylbenzene	-	-	0.00027	J	0.0026	U	0.0026	U	1.4	U	-	-	0.0023	U
p-Ethyltoluene	-	-	0.00088	J	0.0015	J	0.0095		15		-	-	0.033	
1,2,4,5-Tetramethylbenzene	-	-	0.0031	U	0.0054		0.00095	J	1.7		-	-	0.0046	
Ethyl ether	-	-	0.0031	U	0.0026	U	0.0026	U	1.4	U	-	-	0.0023	U
trans-1,4-Dichloro-2-butene	-	-	0.0077	U	0.0064	U	0.0064	U	3.5	U	-	-	0.0058	U
Volatile Organics by EPA 5035 High														
Methylene chloride	-	-	-	-	0.41	U	-	-	-	-	-	-	0.39	U
1,1-Dichloroethane	-	-	-	-	0.083	U	-	-	-	-	-	-	0.077	U
Chloroform	-	-	-	-	0.12	U	-	-	-	-	-	-	0.12	U
Carbon tetrachloride	-	-	-	-	0.083	U	-	-	-	-	-	-	0.077	U
1,2-Dichloropropane	-	-	-	-	0.083	U	-	-	-	-	-	-	0.077	U
Dibromochloromethane	-	-	-	-	0.083	U	-	-	-	-	-	-	0.077	U
1,1,2-Trichloroethane	-	-	-	-	0.083	U	-	-	-	-	-	-	0.077	U
Tetrachloroethene	-	-	-	-	0.041	U	-	-	-	-	-	-	0.039	U
Chlorobenzene	-	-	-	-	0.041	U	-	-	-	-	-	-	0.039	U
Trichlorofluoromethane	-	-	-	-	0.33	U	-	-	-	-	-	-	0.31	U
1,2-Dichloroethane	-	-	-	-	0.083	U	-	-	-	-	-	-	0.077	U
1,1,1-Trichloroethane	-	-	-	-	0.041	U	-	-	-	-	-	-	0.039	U
Bromodichloromethane	-	-	-	-	0.041	U	-	-	-	-	-	-	0.039	U
trans-1,3-Dichloropropene	-	-	-	-	0.083	U	-	-	-	-	-	-	0.077	U
cis-1,3-Dichloropropene	-	-	-	-	0.041	U	-	-	-	-	-	-	0.039	U
1,3-Dichloropropene, Total	-	-	-	-	0.041	U	-	-	-	-	-	-	0.039	U
1,1-Dichloropropene	-	-	-	-	0.041	U	-	-	-	-	-	-	0.039	U
Bromoform	-	-	-	-	0.33	U	-	-	-	-	-	-	0.31	U
1,1,2,2-Tetrachloroethane	-	-	-	-	0.041	U	-	-	-	-	-	-	0.039	U
Benzene	-	-	-	-	0.12		-	-	-	-	-	-	0.039	U
Toluene	-	-	-	-	0.083	U	-	-	-	-	-	-	0.077	U
Ethylbenzene	-	-	-	-	0.024	J	-	-	-	-	-	-	0.077	U
Chloromethane	-	-	-	-	0.33	U	-	-	-	-	-	-	0.31	U
Bromomethane	-	-	-	-	0.078	J	-	-	-	-	-	-	0.075	J
Vinyl chloride	-	-	-	-	0.083	U	-	-	-	-	-	-	0.077	U
Chloroethane	-	-	-	-	0.16	U	-	-	-	-	-	-	0.15	U
1,1-Dichloroethene	-	-	-	-	0.083	U	-	-	-	-	-	-	0.077	U
trans-1,2-Dichloroethene	-	-	-	-	0.12	U	-	-	-	-	-	-	0.12	U
Trichloroethene	-	-	-	-	0.041	U	-	-	-	-	-	-	0.039	U
1,2-Dichlorobenzene	-	-	-	-	0.16	U	-	-	-	-	-	-	0.15	U
1,3-Dichlorobenzene	-	-	-	-	0.16	U	-	-	-	-	-	-	0.15	U
1,4-Dichlorobenzene	-	-	-	-	0.16	U	-	-	-	-	-	-	0.15	U
Methyl tert butyl ether	-	-	-	-	0.16	U	-	-	-	-	-	-	0.15	U
p/m-Xylene	-	-	-	-	0.16	U	-	-	-	-	-	-	0.15	U
o-Xylene	-	-	-	-	0.083	U	-	-	-	-	-	-	0.077	U
Xylenes, Total	-	-	-	-	0.083	U	-	-	-	-	-	-	0.077	U
cis-1,2-Dichloroethene	-	-	-	-	0.083	U	-	-	-	-	-	-	0.077	U
1,2-Dichloroethene, Total	-	-	-	-	0.083	U	-	-	-	-	-	-	0.077	U
Dibromomethane	-	-	-	-	0.16	U	-	-	-	-	-	-	0.15	U
Styrene	-	-	-	-	0.083	U	-	-	-	-	-	-	0.077	U
Dichlorodifluoromethane	-	-	-	-	0.83	U	-	-	-	-	-	-	0.77	U
Acetone	-	-	-	-	0.83	U	-	-	-	-	-	-	0.77	U
Carbon disulfide	-	-	-	-	0.83	U	-	-	-	-	-	-	0.77	U
2-Butanone	-	-	-	-	0.83	U	-	-	-	-	-	-	0.77	U
Vinyl acetate	-	-	-	-	0.83	U	-	-	-	-	-	-	0.77	U
4-Methyl-2-pentanone	-	-	-	-	0.83	U	-	-	-	-	-	-	0.77	U
1,2,3-Trichloropropane	-	-	-	-	0.16	U	-	-	-	-	-	-	0.15	U
2-Hexanone	-	-	-	-	0.83	U	-	-	-	-	-	-	0.77	U
Bromochloromethane	-	-	-	-	0.16	U	-	-	-	-	-	-	0.15	U
2,2-Dichloropropane	-	-	-	-	0.16	U	-	-	-	-	-	-	0.15	U
1,2-Dibromoethane	-	-	-	-	0.083	U	-	-	-	-	-	-	0.077	U
1,3-Dichloropropane	-	-	-	-	0.16	U	-	-	-	-	-	-	0.15	U
1,1,1,2-Tetrachloroethane	-	-	-	-	0.041	U	-	-	-	-	-	-	0.039	U
Bromobenzene	-	-	-	-	0.16	U	-	-	-	-	-	-	0.15	U
n-Butylbenzene	-	-	-	-	0.083	U	-	-	-	-	-	-	0.077	U
sec-Butylbenzene	-	-	-	-	0.083	U	-	-	-	-	-	-	0.077	U
tert-Butylbenzene	-	-	-	-	0.16	U	-	-	-	-	-	-	0.15	U
o-Chlorotoluene	-	-	-	-	0.16	U	-	-	-	-	-	-	0.15	U
p-Chlorotoluene	-	-	-	-	0.16	U	-	-	-	-	-	-	0.15	U
1,2-Dibromo-3-chloropropane	-	-	-	-	0.25	U	-	-	-	-	-	-	0.23	U
Hexachlorobutadiene	-	-	-	-	0.33	U	-	-	-	-	-	-	0.31	U
Isopropylbenzene	-	-	-	-	0.083	U	-	-	-	-	-	-	0.077	U
p-Isopropyltoluene	-	-	-	-	0.083	U	-	-	-	-	-	-	0.077	U
Naphthalene	-	-	-	-	0.86		-	-	-	-	-	-	0.11	J
Acrylonitrile	-	-	-	-	0.33	U	-	-	-	-	-	-	0.31	U
n-Propylbenzene	-	-	-	-	0.083	U	-	-	-	-	-	-	0.077	U
1,2,3-Trichlorobenzene	-	-	-	-	0.16	U	-	-	-	-	-	-	0.15	U
1,2,4-Trichlorobenzene	-	-	-	-	0.16	U	-	-	-	-	-	-	0.15	U
1,3,5-Trimethylbenzene	-	-	-	-	0.16	U	-	-	-	-	-	-	0.15	U
1,2,4-Trimethylbenzene	-	-	-	-	0.16	U	-	-	-	-	-	-	0.15	U
1,4-Dioxane	-	-	-	-	6.6	U	-	-	-	-	-	-	6.2	U
p-Diethylbenzene	-	-	-	-	0.16	U	-	-	-	-	-	-	0.15	U
p-Ethyltoluene	-	-	-	-	0.16	U	-	-	-	-	-	-	0.15	U
1,2,4,5-Tetramethylbenzene	-	-	-	-	0.16	U	-	-	-	-	-	-	0.15	U
Ethyl ether	-	-	-	-	0.16	U	-	-	-	-	-	-	0.15	U
trans-1,4-Dichloro-2-butene	-	-	-	-	0.41	U	-	-	-	-	-	-	0.39	U

LOCATION	SB-17-N7E1 (25-27)		SB-17-N7E1 (33-35)		SB-17-N3E1 (21-23)		SB-17-N3E1 (21-23)		SB-17-N3E1 (32-34)		SB-17 N6E1 (22-24)		SB-17 N6E1 (22-2
SAMPLING DATE	1/20/2023		1/20/2023		1/20/2023		1/20/2023		1/20/2023		1/23/2023		1/23/2023
LAB SAMPLE ID	L2303515-06		L2303515-07		L2303515-08		L2303515-08 R1		L2303515-10		L2303779-01		L2303779-01 R1
SAMPLE TYPE	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL
	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results
Volatile Organics by EPA 5035													
Methylene chloride	0.36	U	0.0064	U	23	U	-	-	0.0052	U	16	U	-
1,1-Dichloroethane	0.072	U	0.0013	U	4.5	U	-	-	0.001	U	3.1	U	-
Chloroform	0.11	U	0.0019	U	6.8	U	-	-	0.0016	U	4.7	U	-
Carbon tetrachloride	0.072	U	0.0013	U	4.5	U	-	-	0.001	U	3.1	U	-
1,2-Dichloropropane	0.072	U	0.0013	U	4.5	U	-	-	0.001	U	3.1	U	-
Dibromochloromethane	0.072	U	0.0013	U	4.5	U	-	-	0.001	U	3.1	U	-
1,1,2-Trichloroethane	0.072	U	0.0013	U	4.5	U	-	-	0.001	U	3.1	U	-
Tetrachloroethene	0.036	U	0.00045	J	2.3	U	-	-	0.00052	U	1.6	U	-
Chlorobenzene	0.036	U	0.00064	U	2.3	U	-	-	0.00052	U	1.6	U	-
Trichlorofluoromethane	0.29	U	0.0051	U	18	U	-	-	0.0042	U	12	U	-
1,2-Dichloroethane	0.072	U	0.0013	U	4.5	U	-	-	0.001	U	3.1	U	-
1,1,1-Trichloroethane	0.036	U	0.00064	U	2.3	U	-	-	0.00052	U	1.6	U	-
Bromodichloromethane	0.036	U	0.00064	U	2.3	U	-	-	0.00052	U	1.6	U	-
trans-1,3-Dichloropropene	0.072	U	0.0013	U	4.5	U	-	-	0.001	U	3.1	U	-
cis-1,3-Dichloropropene	0.036	U	0.00064	U	2.3	U	-	-	0.00052	U	1.6	U	-
1,3-Dichloropropene, Total	0.036	U	0.00064	U	2.3	U	-	-	0.00052	U	1.6	U	-
1,1-Dichloropropene	0.036	U	0.00064	U	2.3	U	-	-	0.00052	U	1.6	U	-
Bromoform	0.29	U	0.0051	U	18	U	-	-	0.0042	U	12	U	-
1,1,2,2-Tetrachloroethane	0.036	U	0.00064	U	2.3	U	-	-	0.00052	U	1.6	U	-
Benzene	0.27		0.00041	J	1.2	J	-	-	0.001		0.86	J	-
Toluene	0.082		0.0058		18		-	-	0.0053		4.2		-
Ethylbenzene	0.41		0.00019	J	94		-	-	0.0029		68		-
Chloromethane	0.29	U	0.0051	U	18	U	-	-	0.0042	U	12	U	-
Bromomethane	0.14	U	0.0025	U	9.1	U	-	-	0.0021	U	6.3	U	-
Vinyl chloride	0.072	U	0.0013	U	4.5	U	-	-	0.001	U	3.1	U	-
Chloroethane	0.14	U	0.0025	U	9.1	U	-	-	0.0021	U	6.3	U	-
1,1-Dichloroethene	0.072	U	0.0013	U	4.5	U	-	-	0.001	U	3.1	U	-
trans-1,2-Dichloroethene	0.11	U	0.0019	U	6.8	U	-	-	0.0016	U	4.7	U	-
Trichloroethene	0.036	U	0.0005	J	2.3	U	-	-	0.00052	U	1.6	U	-
1,2-Dichlorobenzene	0.14	U	0.0025	U	9.1	U	-	-	0.0021	U	6.3	U	-
1,3-Dichlorobenzene	0.14	U	0.0025	U	9.1	U	-	-	0.0021	U	6.3	U	-
1,4-Dichlorobenzene	0.14	U	0.0025	U	9.1	U	-	-	0.0021	U	6.3	U	-
Methyl tert butyl ether	0.14	U	0.0025	U	9.1	U	-	-	0.0021	U	6.3	U	-
p/m-Xylene	0.19		0.0025	U	78		-	-	0.0021		49		-
o-Xylene	0.11		0.0013	U	32		-	-	0.0012		21		-
Xylenes, Total	0.3		0.0013	U	110		-	-	0.0033		70		-
cis-1,2-Dichloroethene	0.072	U	0.0013	U	4.5	U	-	-	0.0033		3.1	U	-
1,2-Dichloroethene, Total	0.072	U	0.0013	U	4.5	U	-	-	0.0033		3.1	U	-
Dibromomethane	0.14	U	0.0025	U	9.1	U	-	-	0.0021	U	6.3	U	-
Styrene	0.072	U	0.00036	J	4.5	U	-	-	0.00038	J	3.1	U	-
Dichlorodifluoromethane	0.72	U	0.013	U	45	U	-	-	0.01	U	31	U	-
Acetone	0.72	U	0.016		45	U	-	-	0.015		31	U	-
Carbon disulfide	0.72	U	0.013	U	45	U	-	-	0.01	U	31	U	-
2-Butanone	0.72	U	0.0092	J	45	U	-	-	0.0064	J	31	U	-
Vinyl acetate	0.72	U	0.013	U	45	U	-	-	0.01	U	31	U	-
4-Methyl-2-pentanone	0.72	U	0.013	U	45	U	-	-	0.01	U	31	U	-
1,2,3-Trichloropropane	0.14	U	0.0025	U	9.1	U	-	-	0.0021	U	6.3	U	-
2-Hexanone	0.72	U	0.013	U	45	U	-	-	0.01	U	31	U	-
Bromochloromethane	0.14	U	0.0025	U	9.1	U	-	-	0.0021	U	6.3	U	-
2,2-Dichloropropane	0.14	U	0.0025	U	9.1	U	-	-	0.0021	U	6.3	U	-
1,2-Dibromoethane	0.072	U	0.0013	U	4.5	U	-	-	0.001	U	3.1	U	-
1,3-Dichloropropane	0.14	U	0.0025	U	9.1	U	-	-	0.0021	U	6.3	U	-
1,1,1,2-Tetrachloroethane	0.036	U	0.00064	U	2.3	U	-	-	0.00052	U	1.6	U	-
Bromobenzene	0.14	U	0.0025	U	9.1	U	-	-	0.0021	U	6.3	U	-
n-Butylbenzene	0.072	U	0.0013	U	1.5	J	-	-	0.001	U	1.4	J	-
sec-Butylbenzene	0.072	U	0.0013	U	4.5	U	-	-	0.001	U	3.1	U	-
tert-Butylbenzene	0.14	U	0.0025	U	9.1	U	-	-	0.0021	U	6.3	U	-
o-Chlorotoluene	0.14	U	0.0025	U	9.1	U	-	-	0.0021	U	6.3	U	-
p-Chlorotoluene	0.14	U	0.0025	U	9.1	U	-	-	0.0021	U	6.3	U	-
1,2-Dibromo-3-chloropropane	0.22	U	0.0038	U	14	U	-	-	0.0031	U	9.4	U	-
Hexachlorobutadiene	0.29	U	0.0051	U	18	U	-	-	0.0042	U	12	U	-
Isopropylbenzene	0.048	J	0.0013	U	9.2		-	-	0.0003	J	5.4		-
p-Isopropyltoluene	0.031	J	0.0013	U	4.9		-	-	0.00015	J	3.5		-
Naphthalene	8		0.021		2400		2200	E	0.051		1300		1800
Acrylonitrile	0.29	U	0.0051	U	18	U	-	-	0.0042	U	12	U	-
n-Propylbenzene	0.024	J	0.0013	U	4.9		-	-	0.00024	J	3	J	-
1,2,3-Trichlorobenzene	0.14	U	0.0025	U	9.1	U	-	-	0.0021	U	6.3	U	-
1,2,4-Trichlorobenzene	0.14	U	0.0025	U	9.1	U	-	-	0.0021	U	6.3	U	-
1,3,5-Trimethylbenzene	0.056	J	0.0025	U	16		-	-	0.00057	J	10		-
1,2,4-Trimethylbenzene	0.25		0.0025	U	51		-	-	0.0018	J	34		-
1,4-Dioxane	5.8	U	0.1	U	360	U	-	-	0.084	U	250	U	-
p-Diethylbenzene	0.14	U	0.0025	U	9.1	U	-	-	0.0021	U	5.2	J	-
p-Ethyltoluene	0.28		0.0025	U	66		-	-	0.0018	J	72		-
1,2,4,5-Tetramethylbenzene	0.042	J	0.0025	U	6.2	J	-	-	0.0004	J	5.3	J	-
Ethyl ether	0.14	U	0.0025	U	9.1	U	-	-	0.0021	U	6.3	U	-
trans-1,4-Dichloro-2-butene	0.36	U	0.0064	U	23	U	-	-	0.0052	U	16	U	-
Volatile Organics by EPA 5035 High													
Methylene chloride	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichloropropene, Total	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl tert butyl ether	-	-	-	-	-	-	-	-	-	-	-	-	-
p/m-Xylene	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes, Total	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethene, Total	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromomethane	-	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-	-	-	-	-
Acetone	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon disulfide	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Butanone	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl acetate	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Methyl-2-pentanone	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Hexanone	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromochloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-
2,2-Dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dibromoethane	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-
n-Butylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-
sec-Butylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-
tert-Butylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Chlorotoluene	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Chlorotoluene	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	-	-	-	-	-	-	-	-	-	-	-	-	-
Acrylonitrile	-	-	-	-	-	-	-	-	-	-	-	-	-
n-Propylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dioxane	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Diethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Ethyltoluene	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4,5-Tetramethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethyl ether	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,4-Dichloro-2-butene	-	-	-	-	-	-	-	-	-	-	-	-	-

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Crit
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part

Table 1
Supplemental RI Soil Volatile Organic Compounds Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION						ij		SB-17 N4I3 (23-25)	
SAMPLING DATE		NY-RESGW	NY-RESRR	NY-UNRES				1/12/2023	
LAB SAMPLE ID								L2303779-02	
SAMPLE TYPE								SOIL	
	CasNum				Units	Qual		Results	Qual
Volatile Organics by EPA 5035									
Methylene chloride	75-09-2	0.05	100	0.05	mg/kg	-		6.4	U
1,1-Dichloroethane	75-34-3	0.27	26	0.27	mg/kg	-		1.3	U
Chloroform	67-66-3	0.37	49	0.37	mg/kg	-		1.9	U
Carbon tetrachloride	56-23-5	0.76	2.4	0.76	mg/kg	-		1.3	U
1,2-Dichloropropane	78-87-5				mg/kg	-		1.3	U
Dibromochloromethane	124-48-1				mg/kg	-		1.3	U
1,1,2-Trichloroethane	79-00-5				mg/kg	-		1.3	U
Tetrachloroethene	127-18-4	1.3	19	1.3	mg/kg	-		0.64	U
Chlorobenzene	108-90-7	1.1	100	1.1	mg/kg	-		0.64	U
Trichlorofluoromethane	75-69-4				mg/kg	-		5.1	U
1,2-Dichloroethane	107-06-2	0.02	3.1	0.02	mg/kg	-		1.3	U
1,1,1-Trichloroethane	71-55-6	0.68	100	0.68	mg/kg	-		0.64	U
Bromodichloromethane	75-27-4				mg/kg	-		0.64	U
trans-1,3-Dichloropropene	10061-02-6				mg/kg	-		1.3	U
cis-1,3-Dichloropropene	10061-01-5				mg/kg	-		0.64	U
1,3-Dichloropropene, Total	542-75-6				mg/kg	-		0.64	U
1,1-Dichloropropene	563-58-6				mg/kg	-		0.64	U
Bromoform	75-25-2				mg/kg	-		5.1	U
1,1,2,2-Tetrachloroethane	79-34-5				mg/kg	-		0.64	U
Benzene	71-43-2	0.06	4.8	0.06	mg/kg	-		0.76	
Toluene	108-88-3	0.7	100	0.7	mg/kg	-		3.4	
Ethylbenzene	100-41-4	1	41	1	mg/kg	-		2.6	
Chloromethane	74-87-3				mg/kg	-		5.1	U
Bromomethane	74-83-9				mg/kg	-		2.6	U
Vinyl chloride	75-01-4	0.02	0.9	0.02	mg/kg	-		1.3	U
Chloroethane	75-00-3				mg/kg	-		2.6	U
1,1-Dichloroethene	75-35-4	0.33	100	0.33	mg/kg	-		1.3	U
trans-1,2-Dichloroethene	156-60-5	0.19	100	0.19	mg/kg	-		1.9	U
Trichloroethene	79-01-6	0.47	21	0.47	mg/kg	-		0.64	U
1,2-Dichlorobenzene	95-50-1	1.1	100	1.1	mg/kg	-		2.6	U
1,3-Dichlorobenzene	541-73-1	2.4	49	2.4	mg/kg	-		2.6	U
1,4-Dichlorobenzene	106-46-7	1.8	13	1.8	mg/kg	-		2.6	U
Methyl tert butyl ether	1634-04-4	0.93	100	0.93	mg/kg	-		2.6	U
p/m-Xylene	179601-23-1				mg/kg	-		26	
o-Xylene	95-47-6				mg/kg	-		11	
Xylenes, Total	1330-20-7	1.6	100	0.26	mg/kg	-		37	
cis-1,2-Dichloroethene	156-59-2	0.25	100	0.25	mg/kg	-		1.3	U
1,2-Dichloroethene, Total	540-59-0				mg/kg	-		1.3	U
Dibromomethane	74-95-3				mg/kg	-		2.6	U
Styrene	100-42-5				mg/kg	-		1.3	U
Dichlorodifluoromethane	75-71-8				mg/kg	-		13	U
Acetone	67-64-1	0.05	100	0.05	mg/kg	-		13	U
Carbon disulfide	75-15-0				mg/kg	-		13	U
2-Butanone	78-93-3	0.12	100	0.12	mg/kg	-		13	U
Vinyl acetate	108-05-4				mg/kg	-		13	U
4-Methyl-2-pentanone	108-10-1				mg/kg	-		13	U
1,2,3-Trichloropropane	96-18-4				mg/kg	-		2.6	U
2-Hexanone	591-78-6				mg/kg	-		13	U
Bromochloromethane	74-97-5				mg/kg	-		2.6	U
2,2-Dichloropropane	594-20-7				mg/kg	-		2.6	U
1,2-Dibromoethane	106-93-4				mg/kg	-		1.3	U
1,3-Dichloropropane	142-28-9				mg/kg	-		2.6	U
1,1,1,2-Tetrachloroethane	630-20-6				mg/kg	-		0.64	U
Bromobenzene	108-86-1				mg/kg	-		2.6	U
n-Butylbenzene	104-51-8	12	100	12	mg/kg	-		0.76	J
sec-Butylbenzene	135-98-8	11	100	11	mg/kg	-		0.22	J
tert-Butylbenzene	98-06-6	5.9	100	5.9	mg/kg	-		2.6	U
o-Chlorotoluene	95-49-8				mg/kg	-		2.6	U
p-Chlorotoluene	106-43-4				mg/kg	-		2.6	U
1,2-Dibromo-3-chloropropane	96-12-8				mg/kg	-		3.8	U
Hexachlorobutadiene	87-68-3				mg/kg	-		5.1	U
Isopropylbenzene	98-82-8				mg/kg	-		3.1	
p-Isopropyltoluene	99-87-6				mg/kg	-		2	
Naphthalene	91-20-3	12	100	12	mg/kg	E		650	
Acrylonitrile	107-13-1				mg/kg	-		5.1	U
n-Propylbenzene	103-65-1	3.9	100	3.9	mg/kg	-		1.6	
1,2,3-Trichlorobenzene	87-61-6				mg/kg	-		2.6	U
1,2,4-Trichlorobenzene	120-82-1				mg/kg	-		2.6	U
1,3,5-Trimethylbenzene	108-67-8	8.4	52	8.4	mg/kg	-		5.7	
1,2,4-Trimethylbenzene	95-63-6	3.6	52	3.6	mg/kg	-		17	
1,4-Dioxane	123-91-1	0.1	13	0.1	mg/kg	-		100	U
p-Diethylbenzene	105-05-5				mg/kg	-		1.4	J
p-Ethyltoluene	622-96-8				mg/kg	-		27	
1,2,4,5-Tetramethylbenzene	95-93-2				mg/kg	-		2.8	
Ethyl ether	60-29-7				mg/kg	-		2.6	U
trans-1,4-Dichloro-2-butene	110-57-6				mg/kg	-		6.4	U
Volatile Organics by EPA 5035 High									
Methylene chloride	75-09-2	0.05	100	0.05	mg/kg	-		-	-
1,1-Dichloroethane	75-34-3	0.27	26	0.27	mg/kg	-		-	-
Chloroform	67-66-3	0.37	49	0.37	mg/kg	-		-	-
Carbon tetrachloride	56-23-5	0.76	2.4	0.76	mg/kg	-		-	-
1,2-Dichloropropane	78-87-5				mg/kg	-		-	-
Dibromochloromethane	124-48-1				mg/kg	-		-	-
1,1,2-Trichloroethane	79-00-5				mg/kg	-		-	-
Tetrachloroethene	127-18-4	1.3	19	1.3	mg/kg	-		-	-
Chlorobenzene	108-90-7	1.1	100	1.1	mg/kg	-		-	-
Trichlorofluoromethane	75-69-4				mg/kg	-		-	-
1,2-Dichloroethane	107-06-2	0.02	3.1	0.02	mg/kg	-		-	-
1,1,1-Trichloroethane	71-55-6	0.68	100	0.68	mg/kg	-		-	-
Bromodichloromethane	75-27-4				mg/kg	-		-	-
trans-1,3-Dichloropropene	10061-02-6				mg/kg	-		-	-
cis-1,3-Dichloropropene	10061-01-5				mg/kg	-		-	-
1,3-Dichloropropene, Total	542-75-6				mg/kg	-		-	-
1,1-Dichloropropene	563-58-6				mg/kg	-		-	-
Bromoform	75-25-2				mg/kg	-		-	-
1,1,2,2-Tetrachloroethane	79-34-5				mg/kg	-		-	-
Benzene	71-43-2	0.06	4.8	0.06	mg/kg	-		-	-
Toluene	108-88-3	0.7	100	0.7	mg/kg	-		-	-
Ethylbenzene	100-41-4	1	41	1	mg/kg	-		-	-
Chloromethane	74-87-3				mg/kg	-		-	-
Bromomethane	74-83-9				mg/kg	-		-	-
Vinyl chloride	75-01-4	0.02	0.9	0.02	mg/kg	-		-	-
Chloroethane	75-00-3				mg/kg	-		-	-
1,1-Dichloroethene	75-35-4	0.33	100	0.33	mg/kg	-		-	-
trans-1,2-Dichloroethene	156-60-5	0.19	100	0.19	mg/kg	-		-	-
Trichloroethene	79-01-6	0.47	21	0.47	mg/kg	-		-	-
1,2-Dichlorobenzene	95-50-1	1.1	100	1.1	mg/kg	-		-	-
1,3-Dichlorobenzene	541-73-1	2.4	49	2.4	mg/kg	-		-	-
1,4-Dichlorobenzene	106-46-7	1.8	13	1.8	mg/kg	-		-	-
Methyl tert butyl ether	1634-04-4	0.93	100	0.93	mg/kg	-		-	-
p/m-Xylene	179601-23-1				mg/kg	-		-	-
o-Xylene	95-47-6				mg/kg	-		-	-
Xylenes, Total	1330-20-7	1.6	100	0.26	mg/kg	-		-	-
cis-1,2-Dichloroethene	156-59-2	0.25	100	0.25	mg/kg	-		-	-
1,2-Dichloroethene, Total	540-59-0				mg/kg	-		-	-
Dibromomethane	74-95-3				mg/kg	-		-	-
Styrene	100-42-5				mg/kg	-		-	-
Dichlorodifluoromethane	75-71-8				mg/kg	-		-	-
Acetone	67-64-1	0.05	100	0.05	mg/kg	-		-	-
Carbon disulfide	75-15-0				mg/kg	-		-	-
2-Butanone	78-93-3	0.12	100	0.12	mg/kg	-		-	-
Vinyl acetate	108-05-4				mg/kg	-		-	-
4-Methyl-2-pentanone	108-10-1				mg/kg	-		-	-
1,2,3-Trichloropropane	96-18-4				mg/kg	-		-	-
2-Hexanone	591-78-6				mg/kg	-		-	-
Bromochloromethane	74-97-5				mg/kg	-		-	-
2,2-Dichloropropane	594-20-7				mg/kg	-		-	-
1,2-Dibromoethane	106-93-4				mg/kg	-		-	-
1,3-Dichloropropane	142-28-9				mg/kg	-		-	-
1,1,1,2-Tetrachloroethane	630-20-6				mg/kg	-		-	-
Bromobenzene	108-86-1				mg/kg	-		-	-
n-Butylbenzene	104-51-8	12	100	12	mg/kg	-		-	-
sec-Butylbenzene	135-98-8	11	100	11	mg/kg	-		-	-
tert-Butylbenzene	98-06-6	5.9	100	5.9	mg/kg	-		-	-
o-Chlorotoluene	95-49-8				mg/kg	-		-	-
p-Chlorotoluene	106-43-4				mg/kg	-		-	-
1,2-Dibromo-3-chloropropane	96-12-8				mg/kg	-		-	-
Hexachlorobutadiene	87-68-3				mg/kg	-		-	-
Isopropylbenzene	98-82-8				mg/kg	-		-	-
p-Isopropyltoluene	99-87-6				mg/kg	-		-	-
Naphthalene	91-20-3	12	100	12	mg/kg	-		-	-
Acrylonitrile	107-13-1				mg/kg	-		-	-
n-Propylbenzene	103-65-1	3.9	100	3.9	mg/kg	-		-	-
1,2,3-Trichlorobenzene	87-61-6				mg/kg	-		-	-
1,2,4-Trichlorobenzene	120-82-1				mg/kg	-		-	-
1,3,5-Trimethylbenzene	108-67-8	8.4	52	8.4	mg/kg	-		-	-
1,2,4-Trimethylbenzene	95-63-6	3.6	52	3.6	mg/kg	-		-	-
1,4-Dioxane	123-91-1	0.1	13	0.1	mg/kg	-		-	-
p-Diethylbenzene	105-05-5				mg/kg	-		-	-
p-Ethyltoluene	622-96-8				mg/kg	-		-	-
1,2,4,5-Tetramethylbenzene	95-93-2				mg/kg	-		-	-
Ethyl ether	60-29-7				mg/kg	-		-	-
trans-1,4-Dichloro-2-butene	110-57-6				mg/kg	-		-	-

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Crite
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part

Table 1
Supplemental RI Soil Volatile Organic Compounds Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION						SB-17 N4E1 (23-25)		SB-17 N6E1 (33-35)		SB-17 N4E1 (33-35)		SB-17 N2E2 (18-20)		SB-17 N2E2 (18-20)		SB-17 N2E2 (33-35)	
SAMPLING DATE		NY-RESGW	NY-RESRR	NY-UNRES		1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/23/2023	
LAB SAMPLE ID						L2303779-02 R1		L2303779-03		L2303779-04		L2303779-05		L2303779-05 R1		L2303779-06	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organics by EPA 5035																	
Methylene chloride	75-09-2	0.05	100	0.05	mg/kg	-	-	0.0059	U	0.0063	U	7.6	U	-	-	0.0053	U
1,1-Dichloroethane	75-34-3	0.27	26	0.27	mg/kg	-	-	0.0012	U	0.0012	U	1.5	U	-	-	0.001	U
Chloroform	67-66-3	0.37	49	0.37	mg/kg	-	-	0.0018	U	0.0019	U	2.3	U	-	-	0.0016	U
Carbon tetrachloride	56-23-5	0.76	2.4	0.76	mg/kg	-	-	0.0012	U	0.0012	U	1.5	U	-	-	0.001	U
1,2-Dichloropropane	78-87-5				mg/kg	-	-	0.0012	U	0.0012	U	1.5	U	-	-	0.001	U
Dibromochloromethane	124-48-1				mg/kg	-	-	0.0012	U	0.0012	U	1.5	U	-	-	0.001	U
1,1,2-Trichloroethane	79-00-5				mg/kg	-	-	0.0012	U	0.0012	U	1.5	U	-	-	0.001	U
Tetrachloroethene	127-18-4	1.3	19	1.3	mg/kg	-	-	0.0028		0.00063	U	0.76	U	-	-	0.00053	U
Chlorobenzene	108-90-7	1.1	100	1.1	mg/kg	-	-	0.00059	U	0.00063	U	0.76	U	-	-	0.00053	U
Trichlorofluoromethane	75-69-4				mg/kg	-	-	0.0047	U	0.005	U	6	U	-	-	0.0042	U
1,2-Dichloroethane	107-06-2	0.02	3.1	0.02	mg/kg	-	-	0.0012	U	0.0012	U	1.5	U	-	-	0.001	U
1,1,1-Trichloroethane	71-55-6	0.68	100	0.68	mg/kg	-	-	0.00059	U	0.00063	U	0.76	U	-	-	0.00053	U
Bromodichloromethane	75-27-4				mg/kg	-	-	0.00059	U	0.00063	U	0.76	U	-	-	0.00053	U
trans-1,3-Dichloropropene	10061-02-6				mg/kg	-	-	0.0012	U	0.0012	U	1.5	U	-	-	0.001	U
cis-1,3-Dichloropropene	10061-01-5				mg/kg	-	-	0.00059	U	0.00063	U	0.76	U	-	-	0.00053	U
1,3-Dichloropropene, Total	542-75-6				mg/kg	-	-	0.00059	U	0.00063	U	0.76	U	-	-	0.00053	U
1,1-Dichloropropene	563-58-6				mg/kg	-	-	0.00059	U	0.00063	U	0.76	U	-	-	0.00053	U
Bromoform	75-25-2				mg/kg	-	-	0.0047	U	0.005	U	6	U	-	-	0.0042	U
1,1,2,2-Tetrachloroethane	79-34-5				mg/kg	-	-	0.00059	U	0.00063	U	0.76	U	-	-	0.00053	U
Benzene	71-43-2	0.06	4.8	0.06	mg/kg	-	-	0.001		0.0017		0.75	J	-	-	0.0026	
Toluene	108-88-3	0.7	100	0.7	mg/kg	-	-	0.0028		0.0012	U	5.1		-	-	0.001	U
Ethylbenzene	100-41-4	1	41	1	mg/kg	-	-	0.0058		0.0017		32		-	-	0.0016	
Chloromethane	74-87-3				mg/kg	-	-	0.0047	U	0.005	U	6	U	-	-	0.0042	U
Bromomethane	74-83-9				mg/kg	-	-	0.0024	U	0.0025	U	3	U	-	-	0.0021	U
Vinyl chloride	75-01-4	0.02	0.9	0.02	mg/kg	-	-	0.0012	U	0.0037		1.5	U	-	-	0.001	U
Chloroethane	75-00-3				mg/kg	-	-	0.0024	U	0.0025	U	3	U	-	-	0.0021	U
1,1-Dichloroethene	75-35-4	0.33	100	0.33	mg/kg	-	-	0.0012	U	0.0012	U	1.5	U	-	-	0.001	U
trans-1,2-Dichloroethene	156-60-5	0.19	100	0.19	mg/kg	-	-	0.0018	U	0.0019	U	2.3	U	-	-	0.0016	U
Trichloroethene	79-01-6	0.47	21	0.47	mg/kg	-	-	0.0014		0.00026	J	0.76	U	-	-	0.00053	U
1,2-Dichlorobenzene	95-50-1	1.1	100	1.1	mg/kg	-	-	0.0024	U	0.0025	U	3	U	-	-	0.0021	U
1,3-Dichlorobenzene	541-73-1	2.4	49	2.4	mg/kg	-	-	0.0024	U	0.0025	U	3	U	-	-	0.0021	U
1,4-Dichlorobenzene	106-46-7	1.8	13	1.8	mg/kg	-	-	0.0024	U	0.0025	U	3	U	-	-	0.0021	U
Methyl tert butyl ether	1634-04-4	0.93	100	0.93	mg/kg	-	-	0.0024	U	0.0025	U	3	U	-	-	0.0021	U
p/m-Xylene	179601-23-1				mg/kg	-	-	0.0039		0.0012	J	23		-	-	0.0021	U
o-Xylene	95-47-6				mg/kg	-	-	0.002		0.00059	J	9.9		-	-	0.001	U
Xylenes, Total	1330-20-7	1.6	100	0.26	mg/kg	-	-	0.0059		0.0018	J	33		-	-	0.001	U
cis-1,2-Dichloroethene	156-59-2	0.25	100	0.25	mg/kg	-	-	0.0018		0.0037		1.5	U	-	-	0.0035	
1,2-Dichloroethene, Total	540-59-0				mg/kg	-	-	0.0018		0.0037		1.5	U	-	-	0.0035	
Dibromomethane	74-95-3				mg/kg	-	-	0.0024	U	0.0025	U	3	U	-	-	0.0021	U
Styrene	100-42-5				mg/kg	-	-	0.00041	J	0.0012	U	0.37	J	-	-	0.001	U
Dichlorodifluoromethane	75-71-8				mg/kg	-	-	0.012	U	0.012	U	15	U	-	-	0.01	U
Acetone	67-64-1	0.05	100	0.05	mg/kg	-	-	0.016		0.019		15	U	-	-	0.022	
Carbon disulfide	75-15-0				mg/kg	-	-	0.012	U	0.012	U	15	U	-	-	0.01	U
2-Butanone	78-93-3	0.12	100	0.12	mg/kg	-	-	0.012	U	0.012	U	15	U	-	-	0.01	U
Vinyl acetate	108-05-4				mg/kg	-	-	0.012	U	0.012	U	15	U	-	-	0.01	U
4-Methyl-2-pentanone	108-10-1				mg/kg	-	-	0.012	U	0.012	U	15	U	-	-	0.01	U
1,2,3-Trichloropropane	96-18-4				mg/kg	-	-	0.0024	U	0.0025	U	3	U	-	-	0.0021	U
2-Hexanone	591-78-6				mg/kg	-	-	0.012	U	0.012	U	15	U	-	-	0.01	U
Bromochloromethane	74-97-5				mg/kg	-	-	0.0024	U	0.0025	U	3	U	-	-	0.0021	U
2,2-Dichloropropane	594-20-7				mg/kg	-	-	0.0024	U	0.0025	U	3	U	-	-	0.0021	U
1,2-Dibromoethane	106-93-4				mg/kg	-	-	0.0012	U	0.0012	U	1.5	U	-	-	0.001	U
1,3-Dichloropropane	142-28-9				mg/kg	-	-	0.0024	U	0.0025	U	3	U	-	-	0.0021	U
1,1,1,2-Tetrachloroethane	630-20-6				mg/kg	-	-	0.00059	U	0.00063	U	0.76	U	-	-	0.00053	U
Bromobenzene	108-86-1				mg/kg	-	-	0.0024	U	0.0025	U	3	U	-	-	0.0021	U
n-Butylbenzene	104-51-8	12	100	12	mg/kg	-	-	0.0002	J	0.0012	U	0.65	J	-	-	0.001	U
sec-Butylbenzene	135-98-8	11	100	11	mg/kg	-	-	0.0012	U	0.0012	U	1.5	U	-	-	0.001	U
tert-Butylbenzene	98-06-6	5.9	100	5.9	mg/kg	-	-	0.0024	U	0.0025	U	3	U	-	-	0.0021	U
o-Chlorotoluene	95-49-8				mg/kg	-	-	0.0024	U	0.0025	U	3	U	-	-	0.0021	U
p-Chlorotoluene	106-43-4				mg/kg	-	-	0.0024	U	0.0025	U	3	U	-	-	0.0021	U
1,2-Dibromo-3-chloropropane	96-12-8				mg/kg	-	-	0.0036	U	0.0038	U	4.5	U	-	-	0.0032	U
Hexachlorobutadiene	87-68-3				mg/kg	-	-	0.0047	U	0.005	U	6	U	-	-	0.0042	U
Isopropylbenzene	98-82-8				mg/kg	-	-	0.0003	J	0.0002	J	2.2		-	-	0.001	U
p-Isopropyltoluene	99-87-6				mg/kg	-	-	0.00047	J	0.0012	U	1.7		-	-	0.001	U
Naphthalene	91-20-3	12	100	12	mg/kg	780	E	0.13		0.031		650		770	E	0.012	
Acrylonitrile	107-13-1				mg/kg	-	-	0.0047	U	0.005	U	6	U	-	-	0.0042	U
n-Propylbenzene	103-65-1	3.9	100	3.9	mg/kg	-	-	0.00045	J	0.00022	J	1.6		-	-	0.00038	J
1,2,3-Trichlorobenzene	87-61-6				mg/kg	-	-	0.0024	U	0.0025	U	3	U	-	-	0.0021	U
1,2,4-Trichlorobenzene	120-82-1				mg/kg	-	-	0.0024	U	0.0025	U	3	U	-	-	0.0021	U
1,3,5-Trimethylbenzene	108-67-8	8.4	52	8.4	mg/kg	-	-	0.0015	J	0.0025	U	5.1		-	-	0.0021	U
1,2,4-Trimethylbenzene	95-63-6	3.6	52	3.6	mg/kg	-	-	0.0046		0.00071	J	16		-	-	0.0021	U
1,4-Dioxane	123-91-1	0.1	13	0.1	mg/kg	-	-	0.095	U	0.1	U	120	U	-	-	0.084	U
p-Diethylbenzene	105-05-5				mg/kg	-	-	0.0024	U	0.00058	J	4.8		-	-	0.00024	J
p-Ethyltoluene	622-96-8				mg/kg	-	-	0.0084		0.001	J	19		-	-	0.0021	U
1,2,4,5-Tetramethylbenzene	95-93-2				mg/kg	-	-	0.0011	J	0.00034	J	2.1	J	-	-	0.00023	J
Ethyl ether	60-29-7				mg/kg	-	-	0.0024	U	0.0025	U	3	U	-	-	0.0021	U
trans-1,4-Dichloro-2-butene	110-57-6				mg/kg	-	-	0.0059	U	0.0063	U	7.6	U	-	-	0.0053	U
Volatile Organics by EPA 5035 High																	
Methylene chloride	75-09-2	0.05	100	0.05	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	75-34-3	0.27	26	0.27	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	67-66-3	0.37	49	0.37	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride	56-23-5	0.76	2.4	0.76	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	78-87-5				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	124-48-1				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	79-00-5				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	127-18-4	1.3	19	1.3	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	108-90-7	1.1	100	1.1	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	75-69-4				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	107-06-2	0.02	3.1	0.02	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	71-55-6	0.68	100	0.68	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	75-27-4				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	10061-02-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	10061-01-5				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichloropropene, Total	542-75-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloropropene	563-58-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform	75-25-2				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	79-34-5				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	71-43-2	0.06	4.8	0.06	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	108-88-3	0.7	100	0.7	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	100-41-4	1	41	1	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Chloromethane	74-87-3				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane	74-83-9				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	75-01-4	0.02	0.9	0.02	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane	75-00-3				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	75-35-4	0.33	100	0.33	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	156-60-5	0.19	100	0.19	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	79-01-6	0.47	21	0.47	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	95-50-1	1.1	100	1.1	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	541-73-1	2.4	49	2.4	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	106-46-7	1.8	13	1.8	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Methyl tert butyl ether	1634-04-4	0.93	100	0.93	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
p/m-Xylene	179601-23-1				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	95-47-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes, Total	1330-20-7	1.6	100	0.26	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	156-59-2	0.25	100	0.25	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethene, Total	540-59-0				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Dibromomethane	74-95-3				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	100-42-5				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	75-71-8				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Acetone	67-64-1	0.05	100	0.05	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Carbon disulfide	75-15-0				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
2-Butanone	78-93-3	0.12	100	0.12	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl acetate	108-05-4				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
4-Methyl-2-pentanone	108-10-1				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichloropropane	96-18-4				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
2-Hexanone	591-78-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Bromochloromethane	74-97-5				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
2,2-Dichloropropane	594-20-7				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dibromoethane	106-93-4				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichloropropane	142-28-9				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	630-20-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Bromobenzene	108-86-1				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
n-Butylbenzene	104-51-8	12	100	12	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
sec-Butylbenzene	135-98-8	11	100	11	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
tert-Butylbenzene	98-06-6	5.9	100	5.9	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
o-Chlorotoluene	95-49-8				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
p-Chlorotoluene	106-43-4				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane	96-12-8				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	87-68-3				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene	98-82-8				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene	99-87-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	91-20-3	12	100	12	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Acrylonitrile	107-13-1				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
n-Propylbenzene	103-65-1	3.9	100	3.9	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	87-61-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	120-82-1				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	108-67-8	8.4	52	8.4	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	95-63-6	3.6	52	3.6	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dioxane	123-91-1	0.1	13	0.1	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
p-Diethylbenzene	105-05-5				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
p-Ethyltoluene	622-96-8				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4,5-Tetramethylbenzene	95-93-2				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
Ethyl ether	60-29-7				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,4-Dichloro-2-butene	110-57-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-

LOCATION	SB-17 N2E2 (33-35)		SB-17 N5E1 (23-25)		SB-17 N5E1 (33-35)		SB-DUP 2		SB-17 N5E2 (23-25)		SB-17 N5E2 (23-25)		SB-17 N5E2 (33-35)		SB-17 N2E3 (23-25)		SB-17 N2E3 (23-25)		SB-17 N2E3 (33-35)		SB-17 N7E2 (25-27)	
SAMPLING DATE	1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023	
LAB SAMPLE ID	L2303779-06 R1		L2303779-07		L2303779-08		L2303779-11		L2303942-01		L2303942-01 R1		L2303942-02		L2303942-03		L2303942-03 R1		L2303942-04		L2303942-05	
SAMPLE TYPE	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organics by EPA 5035																						
Methylene chloride	0.0069	U	0.41	U	0.0063	U	0.0066	U	17	U	-	-	0.007	U	3.2	U	-	-	0.0058	U	40	U
1,1-Dichloroethane	0.0014	U	0.082	U	0.0012	U	0.0013	U	3.4	U	-	-	0.0014	U	0.65	U	-	-	0.0012	U	8.1	U
Chloroform	0.0021	U	0.12	U	0.0019	U	0.002	U	5	U	-	-	0.0021	U	0.98	U	-	-	0.0017	U	12	U
Carbon tetrachloride	0.0014	U	0.082	U	0.0012	U	0.0013	U	3.4	U	-	-	0.0014	U	0.65	U	-	-	0.0012	U	8.1	U
1,2-Dichloropropane	0.0014	U	0.082	U	0.0012	U	0.0013	U	3.4	U	-	-	0.0014	U	0.65	U	-	-	0.0012	U	8.1	U
Dibromochloromethane	0.0014	U	0.082	U	0.0012	U	0.0013	U	3.4	U	-	-	0.0014	U	0.65	U	-	-	0.0012	U	8.1	U
1,1,2-Trichloroethane	0.0014	U	0.082	U	0.0012	U	0.0013	U	3.4	U	-	-	0.0014	U	0.65	U	-	-	0.0012	U	8.1	U
Tetrachloroethene	0.00069	U	0.041	U	0.0037		0.0036		1.7	U	-	-	0.0007	U	0.32	U	-	-	0.00058	U	4	U
Chlorobenzene	0.00069	U	0.041	U	0.00063	U	0.00066	U	1.7	U	-	-	0.0007	U	0.32	U	-	-	0.00058	U	4	U
Trichlorofluoromethane	0.0055	U	0.33	U	0.005	U	0.0052	U	13	U	-	-	0.0056	U	2.6	U	-	-	0.0046	U	32	U
1,2-Dichloroethane	0.0014	U	0.082	U	0.0012	U	0.0013	U	3.4	U	-	-	0.0014	U	0.65	U	-	-	0.0012	U	8.1	U
1,1,1-Trichloroethane	0.00069	U	0.041	U	0.00063	U	0.00066	U	1.7	U	-	-	0.0007	U	0.32	U	-	-	0.00058	U	4	U
Bromodichloromethane	0.00069	U	0.041	U	0.00063	U	0.00066	U	1.7	U	-	-	0.0007	U	0.32	U	-	-	0.00058	U	4	U
trans-1,3-Dichloropropene	0.0014	U	0.082	U	0.0012	U	0.0013	U	3.4	U	-	-	0.0014	U	0.65	U	-	-	0.0012	U	8.1	U
cis-1,3-Dichloropropene	0.00069	U	0.041	U	0.00063	U	0.00066	U	1.7	U	-	-	0.0007	U	0.32	U	-	-	0.00058	U	4	U
1,3-Dichloropropene, Total	0.00069	U	0.041	U	0.00063	U	0.00066	U	1.7	U	-	-	0.0007	U	0.32	U	-	-	0.00058	U	4	U
1,1-Dichloropropene	0.00069	U	0.041	U	0.00063	U	0.00066	U	1.7	U	-	-	0.0007	U	0.32	U	-	-	0.00058	U	4	U
Bromoform	0.0055	U	0.33	U	0.005	U	0.0052	U	13	U	-	-	0.0056	U	2.6	U	-	-	0.0046	U	32	U
1,1,2,2-Tetrachloroethane	0.00069	U	0.041	U	0.00063	U	0.00066	U	1.7	U	-	-	0.0007	U	0.32	U	-	-	0.00058	U	4	U
Benzene	0.00091		0.041	U	0.00063	U	0.00066	U	1.7	U	-	-	0.0004	J	0.32	U	-	-	0.0024		19	
Toluene	0.00076	J	0.082	U	0.0012	U	0.00079	J	5.7		-	-	0.004		0.65	U	-	-	0.0028		67	
Ethylbenzene	0.0014		0.053	J	0.00095	J	0.0006	J	47		-	-	0.00028	J	5		-	-	0.0073		160	
Chloromethane	0.0055	U	0.33	U	0.005	U	0.0052	U	13	U	-	-	0.0056	U	2.6	U	-	-	0.0046	U	32	U
Bromomethane	0.0028	U	0.16	U	0.0025	U	0.0026	U	6.7	U	-	-	0.0028	U	1.3	U	-	-	0.0023	U	16	U
Vinyl chloride	0.0014	U	0.082	U	0.0012	U	0.0013	U	3.4	U	-	-	0.0014	U	0.65	U	-	-	0.0012	U	8.1	U
Chloroethane	0.0028	U	0.16	U	0.0025	U	0.0026	U	6.7	U	-	-	0.0028	U	1.3	U	-	-	0.0023	U	16	U
1,1-Dichloroethene	0.0014	U	0.082	U	0.0012	U	0.0013	U	3.4	U	-	-	0.0014	U	0.65	U	-	-	0.0012	U	8.1	U
trans-1,2-Dichloroethene	0.0021	U	0.12	U	0.0019	U	0.002	U	5	U	-	-	0.0021	U	0.98	U	-	-	0.0017	U	12	U
Trichloroethene	0.00069	U	0.041	U	0.002		0.0011		1.7	U	-	-	0.0007	U	0.32	U	-	-	0.00058	U	4	U
1,2-Dichlorobenzene	0.0028	U	0.16	U	0.0025	U	0.0026	U	6.7	U	-	-	0.0028	U	1.3	U	-	-	0.0023	U	16	U
1,3-Dichlorobenzene	0.0028	U	0.16	U	0.0025	U	0.0026	U	6.7	U	-	-	0.0028	U	1.3	U	-	-	0.0023	U	16	U
1,4-Dichlorobenzene	0.0028	U	0.16	U	0.0025	U	0.0026	U	6.7	U	-	-	0.0028	U	1.3	U	-	-	0.0023	U	16	U
Methyl tert butyl ether	0.0028	U	0.16	U	0.0025	U	0.0026	U	6.7	U	-	-	0.0028	U	1.3	U	-	-	0.0023	U	16	U
p/m-Xylene	0.00079	J	0.056	J	0.0025	U	0.0026	U	34		-	-	0.0011	J	4.1		-	-	0.0014	J	100	
o-Xylene	0.0014	U	0.031	J	0.0012	U	0.0013	U	17		-	-	0.0014	U	2.2		-	-	0.0013		49	
Xylenes, Total	0.00079	J	0.087	J	0.0012	U	0.0013	U	51		-	-	0.0011	J	6.3		-	-	0.0027	J	150	
cis-1,2-Dichloroethene	0.00078	J	0.082	U	0.0032		0.00088	J	3.4	U	-	-	0.0014	U	0.65	U	-	-	0.0048		8.1	U
1,2-Dichloroethene, Total	0.00078	J	0.082	U	0.0032		0.00088	J	3.4	U	-	-	0.0014	U	0.65	U	-	-	0.0048		8.1	U
Dibromomethane	0.0028	U	0.16	U	0.0025	U	0.0026	U	6.7	U	-	-	0.0028	U	1.3	U	-	-	0.0023	U	16	U
Styrene	0.00035	J	0.082	U	0.0012	U	0.0013	U	2.8	J	-	-	0.0014	U	0.15	J	-	-	0.0011	J	9.4	
Dichlorodifluoromethane	0.014	U	0.82	U	0.012	U	0.013	U	34	U	-	-	0.014	U	6.5	U	-	-	0.012	U	81	U
Acetone	0.02		0.82	U	0.007	J	0.016		34	U	-	-	0.02		6.5	U	-	-	0.016		81	U
Carbon disulfide	0.014	U	0.82	U	0.012	U	0.013	U	34	U	-	-	0.014	U	6.5	U	-	-	0.012	U	81	U
2-Butanone	0.014	U	0.82	U	0.005	J	0.013	U	34	U	-	-	0.014	U	6.5	U	-	-	0.012	U	81	U
Vinyl acetate	0.014	U	0.82	U	0.012	U	0.013	U	34	U	-	-	0.014	U	6.5	U	-	-	0.012	U	81	U
4-Methyl-2-pentanone	0.014	U	0.82	U	0.012	U	0.013	U	34	U	-	-	0.014	U	6.5	U	-	-	0.012	U	81	U
1,2,3-Trichloropropane	0.0028	U	0.16	U	0.0025	U	0.0026	U	6.7	U	-	-	0.0028	U	1.3	U	-	-	0.0023	U	16	U
2-Hexanone	0.014	U	0.82	U	0.012	U	0.013	U	34	U	-	-	0.014	U	6.5	U	-	-	0.012	U	81	U
Bromochloromethane	0.0028	U	0.16	U	0.0025	U	0.0026	U	6.7	U	-	-	0.0028	U	1.3	U	-	-	0.0023	U	16	U
2,2-Dichloropropane	0.0028	U	0.16	U	0.0025	U	0.0026	U	6.7	U	-	-	0.0028	U	1.3	U	-	-	0.0023	U	16	U
1,2-Dibromoethane	0.0014	U	0.082	U	0.0012	U	0.0013	U	3.4	U	-	-	0.0014	U	0.65	U	-	-	0.0012	U	8.1	U
1,3-Dichloropropane	0.0028	U	0.16	U	0.0025	U	0.0026	U	6.7	U	-	-	0.0028	U	1.3	U	-	-	0.0023	U	16	U
1,1,1,2-Tetrachloroethane	0.00069	U	0.041	U	0.00063	U	0.00066	U	1.7	U	-	-	0.0007	U	0.32	U	-	-	0.00058	U	4	U
Bromobenzene	0.0028	U	0.16	U	0.0025	U	0.0026	U	6.7	U	-	-	0.0028	U	1.3	U	-	-	0.0023	U	16	U
n-Butylbenzene	0.0014	U	0.082	U	0.0012	U	0.0013	U	3	J	-	-	0.0014	U	0.24	J	-	-	0.00072	J	7.3	J
sec-Butylbenzene	0.0014	U	0.082	U	0.0012	U	0.0013	U	3.4	U	-	-	0.0014	U	0.65	U	-	-	0.0012	U	8.1	U
tert-Butylbenzene	0.0028	U	0.16	U	0.0025	U	0.0026	U	6.7	U	-	-	0.0028	U	1.3	U	-	-	0.0023	U	16	U
o-Chlorotoluene	0.0028	U	0.16	U	0.0025	U	0.0026	U	6.7	U	-	-	0.0028	U	1.3	U	-	-	0.0023	U	16	U
p-Chlorotoluene	0.0028	U	0.16	U	0.0025	U	0.0026	U	6.7	U	-	-	0.0028	U	1.3	U	-	-	0.0023	U	16	U
1,2-Dibromo-3-chloropropane	0.0041	U	0.25	U	0.0038	U	0.0039	U	10	U	-	-	0.0042	U	2	U	-	-	0.0035	U	24	U
Hexachlorobutadiene	0.0055	U	0.33	U	0.005	U	0.0052	U	13	U	-	-	0.0056	U	2.6	U	-	-	0.0046	U	32	U
Isopropylbenzene	0.0014	U	0.0094	J	0.0012	U	0.0013	U	6		-	-	0.0014	U	0.6	J	-	-	0.0014		13	
p-Isopropyltoluene	0.0014	U	0.0094	J	0.0012	U	0.0013	U	4.8		-	-	0.0014	U	0.65		-	-	0.001	J	14	
Naphthalene	0.011		4.2		0.005	U	0.013		1700		1200	E	0.013		260		280	E	0.028		2700	E
Acrylonitrile	0.0055	U	0.33	U	0.005	U	0.0052	U	13	U	-	-	0.0056	U	2.6	U	-	-	0.0046	U	32	U
n-Propylbenzene	0.00055	J	0.082	U	0.0012	U	0.0013	U	2.5	J	-	-	0.0014	U	0.42	J	-	-	0.0014		6.3	J
1,2,3-Trichlorobenzene	0.0028	U	0.16	U	0.0025	U	0.0026	U	6.7	U	-	-	0.0028	U	1.3	U	-	-	0.0023	U	16	U
1,2,4-Trichlorobenzene	0.0028	U	0.16	U	0.0025	U	0.0026	U	6.7	U	-	-	0.0028	U	1.3	U	-	-	0.0023	U	16	U
1,3,5-Trimethylbenzene	0.0028	U	0.023	J	0.0025	U	0.0026	U	9.1		-	-	0.0028	U	1.5		-	-	0.00032	J	23	
1,2,4-Trimethylbenzene	0.00055	J	0.074	J	0.0025	U	0.0026	U	29		-	-	0.0028	U	5.3		-	-	0.00055	J	78	
1,4-Dioxane	0.11	U	6.6	U	0.1	U	0.1	U	270	U	-	-	0.11	U	52	U	-	-	0.093	U	650	U
p-Diethylbenzene	0.0028	U	0.16	U	0.0025	U	0.0026	U	2.1	J	-	-	0.0028	U	1.8		-	-	0.0023	U	16	U
p-Ethyltoluene	0.00071	J	0.092	J	0.0025	U	0.0005	J	36		-	-	0.0028	U	5.1		-	-	0.0011	J	120	
1,2,4,5-Tetramethylbenzene	0.00028	J	0.16	U	0.0025	U	0.0026	U	8.2		-	-	0.0021	J	0.94	J	-	-	0.0021	J	21	
Ethyl ether	0.0028	U	0.16	U	0.0025	U	0.0026	U	6.7	U	-	-	0.0028	U	1.3	U	-	-	0.0023	U	16	U
trans-1,4-Dichloro-2-butene	0.0069	U	0.41	U	0.0063	U	0.0066	U	17	U	-	-	0.007	U	3.2	U	-	-	0.0058	U	40	U
Volatile Organics by EPA 5035 High																						
Methylene chloride	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichloropropene, Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl tert butyl ether	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p/m-Xylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes, Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethene, Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromomethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acetone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon disulfide	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Butanone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl acetate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Methyl-2-pentanone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Hexanone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromochloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,2-Dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dibromoethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
n-Butylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
sec-Butylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
tert-Butylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Chlorotoluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Chlorotoluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acrylonitrile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
n-Propylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dioxane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Diethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Ethyltoluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4,5-Tetramethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethyl ether	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,4-Dichloro-2-butene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

LOCATION	SB-17 N7E2 (25-27)		SB-17 N7E2 (33-35)		SB-17 N2E4 (23-25)		SB-17 N2E4 (23-25)		SB-17 N2E4 (25-27)		SB-17 N7E3 (25-27)		SB-17 N7E3 (30-32)		SB-17-N3E2 20-22		SB-17-N3E2 20-22		SB-17-N3E2 26-28	
SAMPLING DATE	1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/25/2023		1/25/2023		1/25/2023	
LAB SAMPLE ID	L2303942-05 R2		L2303942-06		L2303942-07		L2303942-07 R1		L2303942-08		L2303942-09		L2303942-11		L2304246-01		L2304246-01 R1		L2304246-02	
SAMPLE TYPE	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organics by EPA 5035																				
Methylene chloride	-	-	0.0068	U	0.77	U	-	-	0.0057	U	0.4	U	0.0067	U	9	U	-	-	0.0067	U
1,1-Dichloroethane	-	-	0.0014	U	0.15	U	-	-	0.0011	U	0.08	U	0.0013	U	1.8	U	-	-	0.0013	U
Chloroform	-	-	0.002	U	0.23	U	-	-	0.0017	U	0.12	U	0.002	U	2.7	U	-	-	0.002	U
Carbon tetrachloride	-	-	0.0014	U	0.15	U	-	-	0.0011	U	0.08	U	0.0013	U	1.8	U	-	-	0.0013	U
1,2-Dichloropropane	-	-	0.0014	U	0.15	U	-	-	0.0011	U	0.08	U	0.0013	U	1.8	U	-	-	0.0013	U
Dibromochloromethane	-	-	0.0014	U	0.15	U	-	-	0.0011	U	0.08	U	0.0013	U	1.8	U	-	-	0.0013	U
1,1,2-Trichloroethane	-	-	0.0014	U	0.15	U	-	-	0.0011	U	0.08	U	0.0013	U	1.8	U	-	-	0.0013	U
Tetrachloroethene	-	-	0.00068	U	0.077	U	-	-	0.00057	U	0.04	U	0.00067	U	0.9	U	-	-	0.00067	U
Chlorobenzene	-	-	0.00068	U	0.077	U	-	-	0.00057	U	0.04	U	0.00067	U	0.9	U	-	-	0.00067	U
Trichlorofluoromethane	-	-	0.0054	U	0.62	U	-	-	0.0045	U	0.32	U	0.0053	U	7.2	U	-	-	0.0054	U
1,2-Dichloroethane	-	-	0.0014	U	0.15	U	-	-	0.0011	U	0.08	U	0.0013	U	1.8	U	-	-	0.0013	U
1,1,1-Trichloroethane	-	-	0.00068	U	0.077	U	-	-	0.00057	U	0.04	U	0.00067	U	0.9	U	-	-	0.00067	U
Bromodichloromethane	-	-	0.00068	U	0.077	U	-	-	0.00057	U	0.04	U	0.00067	U	0.9	U	-	-	0.00067	U
trans-1,3-Dichloropropene	-	-	0.0014	U	0.15	U	-	-	0.0011	U	0.08	U	0.0013	U	1.8	U	-	-	0.0013	U
cis-1,3-Dichloropropene	-	-	0.00068	U	0.077	U	-	-	0.00057	U	0.04	U	0.00067	U	0.9	U	-	-	0.00067	U
1,3-Dichloropropene, Total	-	-	0.00068	U	0.077	U	-	-	0.00057	U	0.04	U	0.00067	U	0.9	U	-	-	0.00067	U
1,1-Dichloropropene	-	-	0.00068	U	0.077	U	-	-	0.00057	U	0.04	U	0.00067	U	0.9	U	-	-	0.00067	U
Bromoform	-	-	0.0054	U	0.62	U	-	-	0.0045	U	0.32	U	0.0053	U	7.2	U	-	-	0.0054	U
1,1,2,2-Tetrachloroethane	-	-	0.00068	U	0.077	U	-	-	0.00057	U	0.04	U	0.00067	U	0.9	U	-	-	0.00067	U
Benzene	-	-	0.0003	J	0.077	U	-	-	0.0052		0.022	J	0.00087		0.73	J	-	-	0.0067	
Toluene	-	-	0.0036		0.15	U	-	-	0.0069		0.13		0.0051		16		-	-	0.004	
Ethylbenzene	-	-	0.0003	J	0.32		-	-	0.024		0.58		0.0015		56		-	-	0.018	
Chloromethane	-	-	0.0054	U	0.62	U	-	-	0.0045	U	0.32	U	0.0053	U	7.2	U	-	-	0.0054	U
Bromomethane	-	-	0.0027	U	0.31	U	-	-	0.0023	U	0.16	U	0.0027	U	3.6	U	-	-	0.0027	U
Vinyl chloride	-	-	0.0022		0.15	U	-	-	0.0011	U	0.08	U	0.00071	J	1.8	U	-	-	0.0013	U
Chloroethane	-	-	0.0027	U	0.31	U	-	-	0.0023	U	0.16	U	0.0027	U	3.6	U	-	-	0.0027	U
1,1-Dichloroethene	-	-	0.0014	U	0.15	U	-	-	0.0011	U	0.08	U	0.0013	U	1.8	U	-	-	0.0013	U
trans-1,2-Dichloroethene	-	-	0.002	U	0.23	U	-	-	0.0017	U	0.12	U	0.002	U	2.7	U	-	-	0.002	U
Trichloroethene	-	-	0.00068	U	0.077	U	-	-	0.00057	U	0.04	U	0.00067	U	0.9	U	-	-	0.00067	U
1,2-Dichlorobenzene	-	-	0.0027	U	0.31	U	-	-	0.0023	U	0.16	U	0.0027	U	3.6	U	-	-	0.0027	U
1,3-Dichlorobenzene	-	-	0.0027	U	0.31	U	-	-	0.0023	U	0.16	U	0.0027	U	3.6	U	-	-	0.0027	U
1,4-Dichlorobenzene	-	-	0.0027	U	0.31	U	-	-	0.0023	U	0.16	U	0.0027	U	3.6	U	-	-	0.0027	U
Methyl tert butyl ether	-	-	0.0027	U	0.31	U	-	-	0.0023	U	0.16	U	0.0027	U	3.6	U	-	-	0.0027	U
p/m-Xylene	-	-	0.0027	U	0.34		-	-	0.011		0.38		0.0018	J	41		-	-	0.0067	
o-Xylene	-	-	0.0014	U	0.25		-	-	0.0064		0.21		0.0014		20		-	-	0.0038	
Xylenes, Total	-	-	0.0014	U	0.59		-	-	0.017		0.59		0.0032	J	61		-	-	0.011	
cis-1,2-Dichloroethene	-	-	0.00066	J	0.15	U	-	-	0.0011	U	0.08	U	0.0013	U	1.8	U	-	-	0.0013	U
1,2-Dichloroethene, Total	-	-	0.00066	J	0.15	U	-	-	0.0011	U	0.08	U	0.0013	U	1.8	U	-	-	0.0013	U
Dibromomethane	-	-	0.0027	U	0.31	U	-	-	0.0023	U	0.16	U	0.0027	U	3.6	U	-	-	0.0027	U
Styrene	-	-	0.0014	U	0.15	U	-	-	0.001	J	0.07	J	0.0011	J	0.6	J	-	-	0.00062	J
Dichlorodifluoromethane	-	-	0.014	U	1.5	U	-	-	0.011	U	0.8	U	0.013	U	18	U	-	-	0.013	U
Acetone	-	-	0.014		1.5	U	-	-	0.011		0.8	U	0.012	J	18	U	-	-	0.022	
Carbon disulfide	-	-	0.014	U	1.5	U	-	-	0.0077	J	0.8	U	0.013	U	18	U	-	-	0.0078	J
2-Butanone	-	-	0.014	U	1.5	U	-	-	0.0037	J	0.8	U	0.013	U	18	U	-	-	0.013	U
Vinyl acetate	-	-	0.014	U	1.5	U	-	-	0.011	U	0.8	U	0.013	U	18	U	-	-	0.013	U
4-Methyl-2-pentanone	-	-	0.014	U	1.5	U	-	-	0.011	U	0.8	U	0.013	U	18	U	-	-	0.013	U
1,2,3-Trichloropropane	-	-	0.0027	U	0.31	U	-	-	0.0023	U	0.16	U	0.0027	U	3.6	U	-	-	0.0027	U
2-Hexanone	-	-	0.014	U	1.5	U	-	-	0.011	U	0.8	U	0.013	U	18	U	-	-	0.013	U
Bromochloromethane	-	-	0.0027	U	0.31	U	-	-	0.0023	U	0.16	U	0.0027	U	3.6	U	-	-	0.0027	U
2,2-Dichloropropane	-	-	0.0027	U	0.31	U	-	-	0.0023	U	0.16	U	0.0027	U	3.6	U	-	-	0.0027	U
1,2-Dibromoethane	-	-	0.0014	U	0.15	U	-	-	0.0011	U	0.08	U	0.0013	U	1.8	U	-	-	0.0013	U
1,3-Dichloropropane	-	-	0.0027	U	0.31	U	-	-	0.0023	U	0.16	U	0.0027	U	3.6	U	-	-	0.0027	U
1,1,1,2-Tetrachloroethane	-	-	0.00068	U	0.077	U	-	-	0.00057	U	0.04	U	0.00067	U	0.9	U	-	-	0.00067	U
Bromobenzene	-	-	0.0027	U	0.31	U	-	-	0.0023	U	0.16	U	0.0027	U	3.6	U	-	-	0.0027	U
n-Butylbenzene	-	-	0.0014	U	0.2		-	-	0.00088	J	0.055	J	0.00085	J	1.1	J	-	-	0.0003	J
sec-Butylbenzene	-	-	0.0014	U	0.15	U	-	-	0.00084	J	0.08	U	0.001	J	1.8	U	-	-	0.0013	U
tert-Butylbenzene	-	-	0.0027	U	0.31	U	-	-	0.0023	U	0.16	U	0.0027	U	3.6	U	-	-	0.0027	U
o-Chlorotoluene	-	-	0.0027	U	0.31	U	-	-	0.0023	U	0.16	U	0.0027	U	3.6	U	-	-	0.0027	U
p-Chlorotoluene	-	-	0.0027	U	0.31	U	-	-	0.0023	U	0.16	U	0.0027	U	3.6	U	-	-	0.0027	U
1,2-Dibromo-3-chloropropane	-	-	0.0041	U	0.46	U	-	-	0.0034	U	0.24	U	0.004	U	5.4	U	-	-	0.004	U
Hexachlorobutadiene	-	-	0.0054	U	0.62	U	-	-	0.0045	U	0.32	U	0.0053	U	7.2	U	-	-	0.0054	U
Isopropylbenzene	-	-	0.0014	U	0.25		-	-	0.0023		0.083		0.0012	J	5.5		-	-	0.0011	J
p-Isopropyltoluene	-	-	0.0014	U	0.39		-	-	0.0018		0.081		0.0012	J	3.1		-	-	0.00052	J
Naphthalene	2600		0.005	J	48	E	55		0.22		8.9		0.023		990		870	E	0.15	
Acrylonitrile	-	-	0.0054	U	0.62	U	-	-	0.0045	U	0.32	U	0.0053	U	7.2	U	-	-	0.0054	U
n-Propylbenzene	-	-	0.0014	U	0.15		-	-	0.0016		0.023	J	0.0013	U	3		-	-	0.0012	J
1,2,3-Trichlorobenzene	-	-	0.0027	U	0.31	U	-	-	0.0023	U	0.16	U	0.0027	U	3.6	U	-	-	0.0027	U
1,2,4-Trichlorobenzene	-	-	0.0027	U	0.31	U	-	-	0.0023	U	0.16	U	0.0027	U	3.6	U	-	-	0.0027	U
1,3,5-Trimethylbenzene	-	-	0.0027	U	0.42		-	-	0.0016	J	0.073	J	0.00028	J	9.3		-	-	0.0018	J
1,2,4-Trimethylbenzene	-	-	0.0027	U	1.4		-	-	0.0054		0.23		0.00087	J	30		-	-	0.005	
1,4-Dioxane	-	-	0.11	U	12	U	-	-	0.091	U	6.4	U	0.11	U	140	U	-	-	0.11	U
p-Diethylbenzene	-	-	0.0027	U	0.31	U	-	-	0.001	J	0.018	J	0.0027	U	3.6	U	-	-	0.0027	U
p-Ethyltoluene	-	-	0.0027	U	1.3		-	-	0.0082		0.32		0.0012	J	31		-	-	0.0047	
1,2,4,5-Tetramethylbenzene	-	-	0.0027	U	0.58		-	-	0.0028		0.14	J	0.0024	J	3.9		-	-	0.0012	J
Ethyl ether	-	-	0.0027	U	0.31	U	-	-	0.0023	U	0.16	U	0.0027	U	3.6	U	-	-	0.0027	U
trans-1,4-Dichloro-2-butene	-	-	0.0068	U	0.77	U	-	-	0.0057	U	0.4	U	0.0067	U	9	U	-	-	0.0067	U
Volatile Organics by EPA 5035 High																				
Methylene chloride	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichloropropene, Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl tert butyl ether	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p/m-Xylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes, Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethene, Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromomethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acetone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon disulfide	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Butanone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl acetate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Methyl-2-pentanone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Hexanone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromochloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,2-Dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dibromoethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
n-Butylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
sec-Butylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
tert-Butylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Chlorotoluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Chlorotoluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acrylonitrile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
n-Propylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dioxane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Diethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Ethyltoluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4,5-Tetramethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethyl ether	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,4-Dichloro-2-butene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Crit
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part

Table 1
Supplemental RI Soil Volatile Organic Compounds Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-17-N4I2 20-22		SB-17-N4I2 20-22	
SAMPLING DATE						1/25/2023		1/25/2023	
LAB'S SAMPLE ID						L2304246-03		L2304246-03 RI	
SAMPLE TYPE						SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual
Volatile Organics by EPA 5035									
Methylene chloride	75-09-2	0.05	100	0.05	mg/kg	.8	U	-	-
1,1-Dichloroethane	75-34-3	0.27	26	0.27	mg/kg	1.6	U	-	-
Chloroform	67-66-3	0.37	49	0.37	mg/kg	2.4	U	-	-
Carbon tetrachloride	56-23-5	0.76	2.4	0.76	mg/kg	1.6	U	-	-
1,2-Dichloropropane	78-87-5				mg/kg	1.6	U	-	-
Dibromochloromethane	124-48-1				mg/kg	1.6	U	-	-
1,1,2-Trichloroethane	79-00-5				mg/kg	1.6	U	-	-
Tetrachloroethene	127-18-4	1.3	19	1.3	mg/kg	0.8	U	-	-
Chlorobenzene	108-90-7	1.1	100	1.1	mg/kg	0.8	U	-	-
Trichlorofluoromethane	75-69-4				mg/kg	6.4	U	-	-
1,2-Dichloroethene	107-06-2	0.02	3.1	0.02	mg/kg	1.6	U	-	-
1,1,1-Trichloroethane	71-55-6	0.68	100	0.68	mg/kg	0.8	U	-	-
Bromodichloromethane	75-27-4				mg/kg	0.8	U	-	-
trans-1,3-Dichloropropene	10061-02-6				mg/kg	1.6	U	-	-
cis-1,3-Dichloropropene	10061-01-5				mg/kg	0.8	U	-	-
1,3-Dichloropropene, Total	542-75-6				mg/kg	0.8	U	-	-
1,1-Dichloropropene	563-58-6				mg/kg	0.8	U	-	-
Bromoform	75-25-2				mg/kg	6.4	U	-	-
1,1,2,2-Tetrachloroethane	79-34-5				mg/kg	0.8	U	-	-
Benzene	71-43-2	0.06	4.8	0.06	mg/kg	0.84		-	-
Toluene	108-88-3	0.7	100	0.7	mg/kg	4.6		-	-
Ethylbenzene	100-41-4	1	41	1	mg/kg	54		-	-
Chloromethane	74-87-3				mg/kg	6.4	U	-	-
Bromomethane	74-83-9				mg/kg	3.2	U	-	-
Vinyl chloride	75-01-4	0.02	0.9	0.02	mg/kg	1.6	U	-	-
Chloroethane	75-00-3				mg/kg	3.2	U	-	-
1,1-Dichloroethene	75-35-4	0.33	100	0.33	mg/kg	1.6	U	-	-
trans-1,2-Dichloroethene	156-60-5	0.19	100	0.19	mg/kg	2.4	U	-	-
Trichloroethene	79-01-6	0.47	21	0.47	mg/kg	0.8	U	-	-
1,2-Dichlorobenzene	95-50-1	1.1	100	1.1	mg/kg	3.2	U	-	-
1,3-Dichlorobenzene	541-73-1	2.4	49	2.4	mg/kg	3.2	U	-	-
1,4-Dichlorobenzene	106-46-7	1.8	13	1.8	mg/kg	3.2	U	-	-
Methyl tert butyl ether	1634-04-4	0.93	100	0.93	mg/kg	3.2	U	-	-
p/m-Xylene	179601-23-1				mg/kg	40		-	-
o-Xylene	95-47-6				mg/kg	19		-	-
Xylenes, Total	1330-20-7	1.6	100	0.26	mg/kg	59		-	-
cis-1,2-Dichloroethene	156-59-2	0.25	100	0.25	mg/kg	1.6	U	-	-
1,2-Dichloroethene, Total	540-59-0				mg/kg	1.6	U	-	-
Dibromomethane	74-95-3				mg/kg	3.2	U	-	-
Styrene	100-42-5				mg/kg	1.6	U	-	-
Dichlorodifluoromethane	75-71-8				mg/kg	16	U	-	-
Acetone	67-64-1	0.05	100	0.05	mg/kg	16	U	-	-
Carbon disulfide	75-15-0				mg/kg	16	U	-	-
2-Butanone	78-93-3	0.12	100	0.12	mg/kg	16	U	-	-
Vinyl acetate	108-05-4				mg/kg	16	U	-	-
4-Methyl-2-pentanone	108-10-1				mg/kg	16	U	-	-
1,2,3-Trichloropropane	96-18-4				mg/kg	3.2	U	-	-
2-Hexanone	591-78-6				mg/kg	16	U	-	-
Bromochloromethane	74-97-5				mg/kg	3.2	U	-	-
2,2-Dichloropropane	594-20-7				mg/kg	3.2	U	-	-
1,2-Dibromoethane	106-93-4				mg/kg	1.6	U	-	-
1,3-Dichloropropane	142-28-9				mg/kg	3.2	U	-	-
1,1,1,2-Tetrachloroethane	630-20-6				mg/kg	0.8	U	-	-
Bromobenzene	108-86-1				mg/kg	3.2	U	-	-
n-Butylbenzene	104-51-8	12	100	12	mg/kg	1.2	J	-	-
sec-Butylbenzene	135-98-8	11	100	11	mg/kg	1.6	U	-	-
tert-Butylbenzene	98-06-6	5.9	100	5.9	mg/kg	3.2	U	-	-
o-Chlorotoluene	95-49-8				mg/kg	3.2	U	-	-
p-Chlorotoluene	106-43-4				mg/kg	3.2	U	-	-
1,2-Dibromo-3-chloropropane	96-12-8				mg/kg	4.8	U	-	-
Hexachlorobutadiene	87-68-3				mg/kg	6.4	U	-	-
Isopropylbenzene	98-82-8				mg/kg	6.2		-	-
p-Isopropyltoluene	99-87-6				mg/kg	3.3		-	-
Naphthalene	91-20-3	12	100	12	mg/kg	940		870	E
Acrylonitrile	107-13-1				mg/kg	6.4	U	-	-
n-Propylbenzene	103-65-1	3.9	100	3.9	mg/kg	3.1		-	-
1,2,3-Trichlorobenzene	87-61-6				mg/kg	3.2	U	-	-
1,2,4-Trichlorobenzene	120-82-1				mg/kg	3.2	U	-	-
1,3,5-Trimethylbenzene	108-67-8	8.4	52	8.4	mg/kg	9.7		-	-
1,2,4-Trimethylbenzene	95-63-6	3.6	52	3.6	mg/kg	32		-	-
1,4-Dioxane	123-91-1	0.1	13	0.1	mg/kg	130	U	-	-
p-Diethylbenzene	105-05-5				mg/kg	3.2	U	-	-
p-Ethyltoluene	622-96-8				mg/kg	46		-	-
1,2,4,5-Tetramethylbenzene	95-93-2				mg/kg	4.3		-	-
Ethyl ether	60-29-7				mg/kg	3.2	U	-	-
trans-1,4-Dichloro-2-butene	110-57-6				mg/kg	8	U	-	-
Volatile Organics by EPA 5035 High									
Methylene chloride	75-09-2	0.05	100	0.05	mg/kg	-	-	-	-
1,1-Dichloroethane	75-34-3	0.27	26	0.27	mg/kg	-	-	-	-
Chloroform	67-66-3	0.37	49	0.37	mg/kg	-	-	-	-
Carbon tetrachloride	56-23-5	0.76	2.4	0.76	mg/kg	-	-	-	-
1,2-Dichloropropane	78-87-5				mg/kg	-	-	-	-
Dibromochloromethane	124-48-1				mg/kg	-	-	-	-
1,1,2-Trichloroethane	79-00-5				mg/kg	-	-	-	-
Tetrachloroethene	127-18-4	1.3	19	1.3	mg/kg	-	-	-	-
Chlorobenzene	108-90-7	1.1	100	1.1	mg/kg	-	-	-	-
Trichlorofluoromethane	75-69-4				mg/kg	-	-	-	-
1,2-Dichloroethene	107-06-2	0.02	3.1	0.02	mg/kg	-	-	-	-
1,1,1-Trichloroethane	71-55-6	0.68	100	0.68	mg/kg	-	-	-	-
Bromodichloromethane	75-27-4				mg/kg	-	-	-	-
trans-1,3-Dichloropropene	10061-02-6				mg/kg	-	-	-	-
cis-1,3-Dichloropropene	10061-01-5				mg/kg	-	-	-	-
1,3-Dichloropropene, Total	542-75-6				mg/kg	-	-	-	-
1,1-Dichloropropene	563-58-6				mg/kg	-	-	-	-
Bromoform	75-25-2				mg/kg	-	-	-	-
1,1,2,2-Tetrachloroethane	79-34-5				mg/kg	-	-	-	-
Benzene	71-43-2	0.06	4.8	0.06	mg/kg	-	-	-	-
Toluene	108-88-3	0.7	100	0.7	mg/kg	-	-	-	-
Ethylbenzene	100-41-4	1	41	1	mg/kg	-	-	-	-
Chloromethane	74-87-3				mg/kg	-	-	-	-
Bromomethane	74-83-9				mg/kg	-	-	-	-
Vinyl chloride	75-01-4	0.02	0.9	0.02	mg/kg	-	-	-	-
Chloroethane	75-00-3				mg/kg	-	-	-	-
1,1-Dichloroethene	75-35-4	0.33	100	0.33	mg/kg	-	-	-	-
trans-1,2-Dichloroethene	156-60-5	0.19	100	0.19	mg/kg	-	-	-	-
Trichloroethene	79-01-6	0.47	21	0.47	mg/kg	-	-	-	-
1,2-Dichlorobenzene	95-50-1	1.1	100	1.1	mg/kg	-	-	-	-
1,3-Dichlorobenzene	541-73-1	2.4	49	2.4	mg/kg	-	-	-	-
1,4-Dichlorobenzene	106-46-7	1.8	13	1.8	mg/kg	-	-	-	-
Methyl tert butyl ether	1634-04-4	0.93	100	0.93	mg/kg	-	-	-	-
p/m-Xylene	179601-23-1				mg/kg	-	-	-	-
o-Xylene	95-47-6				mg/kg	-	-	-	-
Xylenes, Total	1330-20-7	1.6	100	0.26	mg/kg	-	-	-	-
cis-1,2-Dichloroethene	156-59-2	0.25	100	0.25	mg/kg	-	-	-	-
1,2-Dichloroethene, Total	540-59-0				mg/kg	-	-	-	-
Dibromomethane	74-95-3				mg/kg	-	-	-	-
Styrene	100-42-5				mg/kg	-	-	-	-
Dichlorodifluoromethane	75-71-8				mg/kg	-	-	-	-
Acetone	67-64-1	0.05	100	0.05	mg/kg	-	-	-	-
Carbon disulfide	75-15-0				mg/kg	-	-	-	-
2-Butanone	78-93-3	0.12	100	0.12	mg/kg	-	-	-	-
Vinyl acetate	108-05-4				mg/kg	-	-	-	-
4-Methyl-2-pentanone	108-10-1				mg/kg	-	-	-	-
1,2,3-Trichloropropane	96-18-4				mg/kg	-	-	-	-
2-Hexanone	591-78-6				mg/kg	-	-	-	-
Bromochloromethane	74-97-5				mg/kg	-	-	-	-
2,2-Dichloropropane	594-20-7				mg/kg	-	-	-	-
1,2-Dibromoethane	106-93-4				mg/kg	-	-	-	-
1,3-Dichloropropane	142-28-9				mg/kg	-	-	-	-
1,1,1,2-Tetrachloroethane	630-20-6				mg/kg	-	-	-	-
Bromobenzene	108-86-1				mg/kg	-	-	-	-
n-Butylbenzene	104-51-8	12	100	12	mg/kg	-	-	-	-
sec-Butylbenzene	135-98-8	11	100	11	mg/kg	-	-	-	-
tert-Butylbenzene	98-06-6	5.9	100	5.9	mg/kg	-	-	-	-
o-Chlorotoluene	95-49-8				mg/kg	-	-	-	-
p-Chlorotoluene	106-43-4				mg/kg	-	-	-	-
1,2-Dibromo-3-chloropropane	96-12-8				mg/kg	-	-	-	-
Hexachlorobutadiene	87-68-3				mg/kg	-	-	-	-
Isopropylbenzene	98-82-8				mg/kg	-	-	-	-
p-Isopropyltoluene	99-87-6				mg/kg	-	-	-	-
Naphthalene	91-20-3	12	100	12	mg/kg	-	-	-	-
Acrylonitrile	107-13-1				mg/kg	-	-	-	-
n-Propylbenzene	103-65-1	3.9	100	3.9	mg/kg	-	-	-	-
1,2,3-Trichlorobenzene	87-61-6				mg/kg	-	-	-	-
1,2,4-Trichlorobenzene	120-82-1				mg/kg	-	-	-	-
1,3,5-Trimethylbenzene	108-67-8	8.4	52	8.4	mg/kg	-	-	-	-
1,2,4-Trimethylbenzene	95-63-6	3.6	52	3.6	mg/kg	-	-	-	-
1,4-Dioxane	123-91-1	0.1	13	0.1	mg/kg	-	-	-	-
p-Diethylbenzene	105-05-5				mg/kg	-	-	-	-
p-Ethyltoluene	622-96-8				mg/kg	-	-	-	-
1,2,4,5-Tetramethylbenzene	95-93-2				mg/kg	-	-	-	-
Ethyl ether	60-29-7				mg/kg	-	-	-	-
trans-1,4-Dichloro-2-butene	110-57-6				mg/kg	-	-	-	-

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Crit
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part

Table 1

Supplemental RI Soil Volatile Organic Compounds Sample Results Summary

318 Nevins Street, Brooklyn, NY

LOCATION						SB-17-N4E2 30-32		SB-17-N6E2 23-25		SB-17-N6E2 23-25		SB-DUP3		SB-17-N6E2 30-32		SB-17-N4E3 20-22		SB-17-N4E3 20-22	
SAMPLING DATE		NY-RESGW	NY-RESRR	NY-UNRES		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023	
LAB SAMPLE ID						L2304246-04		L2304246-05		L2304246-05 R1		L2304246-06		L2304246-09		L2304246-10		L2304246-10 R1	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organics by EPA 5035																			
Methylene chloride	75-09-2	0.05	100	0.05	mg/kg	0.007	U	8.3	U	-	-	0.0082	U	0.0065	U	32	U	-	-
1,1-Dichloroethane	75-34-3	0.27	26	0.27	mg/kg	0.0014	U	1.7	U	-	-	0.0016	U	0.0013	U	6.3	U	-	-
Chloroform	67-66-3	0.37	49	0.37	mg/kg	0.0021	U	2.5	U	-	-	0.0024	U	0.002	U	9.5	U	-	-
Carbon tetrachloride	56-23-5	0.76	2.4	0.76	mg/kg	0.0014	U	1.7	U	-	-	0.0016	U	0.0013	U	6.3	U	-	-
1,2-Dichloropropane	78-87-5				mg/kg	0.0014	U	1.7	U	-	-	0.0016	U	0.0013	U	6.3	U	-	-
Dibromochloromethane	124-48-1				mg/kg	0.0014	U	1.7	U	-	-	0.0016	U	0.0013	U	6.3	U	-	-
1,1,2-Trichloroethane	79-00-5				mg/kg	0.0014	U	1.7	U	-	-	0.0016	U	0.0013	U	6.3	U	-	-
Tetrachloroethene	127-18-4	1.3	19	1.3	mg/kg	0.0007	U	0.83	U	-	-	0.00082	U	0.0015		3.2	U	-	-
Chlorobenzene	108-90-7	1.1	100	1.1	mg/kg	0.0007	U	0.83	U	-	-	0.00082	U	0.00065	U	3.2	U	-	-
Trichlorofluoromethane	75-69-4				mg/kg	0.0056	U	6.6	U	-	-	0.0065	U	0.0052	U	25	U	-	-
1,2-Dichloroethane	107-06-2	0.02	3.1	0.02	mg/kg	0.0014	U	1.7	U	-	-	0.0016	U	0.0013	U	6.3	U	-	-
1,1,1-Trichloroethane	71-55-6	0.68	100	0.68	mg/kg	0.0007	U	0.83	U	-	-	0.00082	U	0.00065	U	3.2	U	-	-
Bromodichloromethane	75-27-4				mg/kg	0.0007	U	0.83	U	-	-	0.00082	U	0.00065	U	3.2	U	-	-
trans-1,3-Dichloropropene	10061-02-6				mg/kg	0.0014	U	1.7	U	-	-	0.0016	U	0.0013	U	6.3	U	-	-
cis-1,3-Dichloropropene	10061-01-5				mg/kg	0.0007	U	0.83	U	-	-	0.00082	U	0.00065	U	3.2	U	-	-
1,3-Dichloropropene, Total	542-75-6				mg/kg	0.0007	U	0.83	U	-	-	0.00082	U	0.00065	U	3.2	U	-	-
1,1-Dichloropropene	563-58-6				mg/kg	0.0007	U	0.83	U	-	-	0.00082	U	0.00065	U	3.2	U	-	-
Bromoform	75-25-2				mg/kg	0.0056	U	6.6	U	-	-	0.0065	U	0.0052	U	25	U	-	-
1,1,2,2-Tetrachloroethane	79-34-5				mg/kg	0.0007	U	0.83	U	-	-	0.00082	U	0.00065	U	3.2	U	-	-
Benzene	71-43-2	0.06	4.8	0.06	mg/kg	0.00048	J	2.4		-	-	0.0032		0.00065	U	1.2	J	-	-
Toluene	108-88-3	0.7	100	0.7	mg/kg	0.0021		5		-	-	0.0046		0.0014		30		-	-
Ethylbenzene	100-41-4	1	41	1	mg/kg	0.0038		50		-	-	0.014		0.00074	J	160		-	-
Chloromethane	74-87-3				mg/kg	0.0056	U	6.6	U	-	-	0.0065	U	0.0052	U	25	U	-	-
Bromomethane	74-83-9				mg/kg	0.0028	U	3.3	U	-	-	0.0033	U	0.0026	U	13	U	-	-
Vinyl chloride	75-01-4	0.02	0.9	0.02	mg/kg	0.0014	U	1.7	U	-	-	0.0016	U	0.0013	U	6.3	U	-	-
Chloroethane	75-00-3				mg/kg	0.0028	U	3.3	U	-	-	0.0033	U	0.0026	U	13	U	-	-
1,1-Dichloroethene	75-35-4	0.33	100	0.33	mg/kg	0.0014	U	1.7	U	-	-	0.0016	U	0.0013	U	6.3	U	-	-
trans-1,2-Dichloroethene	156-60-5	0.19	100	0.19	mg/kg	0.0021	U	2.5	U	-	-	0.0024	U	0.002	U	9.5	U	-	-
Trichloroethene	79-01-6	0.47	21	0.47	mg/kg	0.0007	U	0.83	U	-	-	0.00082	U	0.0019		3.2	U	-	-
1,2-Dichlorobenzene	95-50-1	1.1	100	1.1	mg/kg	0.0028	U	3.3	U	-	-	0.0033	U	0.0026	U	13	U	-	-
1,3-Dichlorobenzene	541-73-1	2.4	49	2.4	mg/kg	0.0028	U	3.3	U	-	-	0.0033	U	0.0026	U	13	U	-	-
1,4-Dichlorobenzene	106-46-7	1.8	13	1.8	mg/kg	0.0028	U	3.3	U	-	-	0.0033	U	0.0026	U	13	U	-	-
Methyl tert butyl ether	1634-04-4	0.93	100	0.93	mg/kg	0.0028	U	3.3	U	-	-	0.0033	U	0.0026	U	13	U	-	-
p/m-Xylene	179601-23-1				mg/kg	0.0009	J	30		-	-	0.0074		0.0026	U	120		-	-
o-Xylene	95-47-6				mg/kg	0.00041	J	15		-	-	0.0044		0.0013	U	54		-	-
Xylenes, Total	1330-20-7	1.6	100	0.26	mg/kg	0.0013	J	45		-	-	0.012		0.0013	U	170		-	-
cis-1,2-Dichloroethene	156-59-2	0.25	100	0.25	mg/kg	0.0035		1.7	U	-	-	0.0016	U	0.0015		6.3	U	-	-
1,2-Dichloroethene, Total	540-59-0				mg/kg	0.0035		1.7	U	-	-	0.0016	U	0.0015		6.3	U	-	-
Dibromomethane	74-95-3				mg/kg	0.0028	U	3.3	U	-	-	0.0033	U	0.0026	U	13	U	-	-
Styrene	100-42-5				mg/kg	0.0007	J	1.7	U	-	-	0.00091	J	0.00028	J	1.8	J	-	-
Dichlorodifluoromethane	75-71-8				mg/kg	0.014	U	17	U	-	-	0.016	U	0.013	U	63	U	-	-
Acetone	67-64-1	0.05	100	0.05	mg/kg	0.026		17	U	-	-	0.025		0.0075	J	63	U	-	-
Carbon disulfide	75-15-0				mg/kg	0.014	U	17	U	-	-	0.015	J	0.013	U	63	U	-	-
2-Butanone	78-93-3	0.12	100	0.12	mg/kg	0.0042	J	17	U	-	-	0.016	U	0.013	U	63	U	-	-
Vinyl acetate	108-05-4				mg/kg	0.014	U	17	U	-	-	0.016	U	0.013	U	63	U	-	-
4-Methyl-2-pentanone	108-10-1				mg/kg	0.014	U	17	U	-	-	0.016	U	0.013	U	63	U	-	-
1,2,3-Trichloropropane	96-18-4				mg/kg	0.0028	U	3.3	U	-	-	0.0033	U	0.0026	U	13	U	-	-
2-Hexanone	591-78-6				mg/kg	0.014	U	17	U	-	-	0.016	U	0.013	U	63	U	-	-
Bromochloromethane	74-97-5				mg/kg	0.0028	U	3.3	U	-	-	0.0033	U	0.0026	U	13	U	-	-
2,2-Dichloropropane	594-20-7				mg/kg	0.0028	U	3.3	U	-	-	0.0033	U	0.0026	U	13	U	-	-
1,2-Dibromoethane	106-93-4				mg/kg	0.0014	U	1.7	U	-	-	0.0016	U	0.0013	U	6.3	U	-	-
1,3-Dichloropropane	142-28-9				mg/kg	0.0028	U	3.3	U	-	-	0.0033	U	0.0026	U	13	U	-	-
1,1,1,2-Tetrachloroethane	630-20-6				mg/kg	0.0007	U	0.83	U	-	-	0.00082	U	0.00065	U	3.2	U	-	-
Bromobenzene	108-86-1				mg/kg	0.0028	U	3.3	U	-	-	0.0033	U	0.0026	U	13	U	-	-
n-Butylbenzene	104-51-8	12	100	12	mg/kg	0.0014	U	1.1	J	-	-	0.00051	J	0.0013	U	3	J	-	-
sec-Butylbenzene	135-98-8	11	100	11	mg/kg	0.0014	U	1.7	U	-	-	0.0016	U	0.0013	U	6.3	U	-	-
tert-Butylbenzene	98-06-6	5.9	100	5.9	mg/kg	0.0028	U	3.3	U	-	-	0.0033	U	0.0026	U	13	U	-	-
o-Chlorotoluene	95-49-8				mg/kg	0.0028	U	3.3	U	-	-	0.0033	U	0.0026	U	13	U	-	-
p-Chlorotoluene	106-43-4				mg/kg	0.0028	U	3.3	U	-	-	0.0033	U	0.0026	U	13	U	-	-
1,2-Dibromo-3-chloropropane	96-12-8				mg/kg	0.0042	U	5	U	-	-	0.0049	U	0.0039	U	19	U	-	-
Hexachlorobutadiene	87-68-3				mg/kg	0.0056	U	6.6	U	-	-	0.0065	U	0.0052	U	25	U	-	-
Isopropylbenzene	98-82-8				mg/kg	0.00035	J	5.5		-	-	0.0011	J	0.0013	U	16		-	-
p-Isopropyltoluene	99-87-6				mg/kg	0.0014	U	3.2		-	-	0.001	J	0.0013	U	6.9		-	-
Naphthalene	91-20-3	12	100	12	mg/kg	0.015		990		890	E	0.45		0.014		2000	E	1700	
Acrylonitrile	107-13-1				mg/kg	0.0056	U	6.6	U	-	-	0.0065	U	0.0052	U	25	U	-	-
n-Propylbenzene	103-65-1	3.9	100	3.9	mg/kg	0.00079	J	2.8		-	-	0.0012	J	0.0013	U	8.5		-	-
1,2,3-Trichlorobenzene	87-61-6				mg/kg	0.0028	U	3.3	U	-	-	0.0033	U	0.0026	U	13	U	-	-
1,2,4-Trichlorobenzene	120-82-1				mg/kg	0.0028	U	3.3	U	-	-	0.0033	U	0.0026	U	13	U	-	-
1,3,5-Trimethylbenzene	108-67-8	8.4	52	8.4	mg/kg	0.00053	J	8.4		-	-	0.0029	J	0.0026	U	26		-	-
1,2,4-Trimethylbenzene	95-63-6	3.6	52	3.6	mg/kg	0.00067	J	28		-	-	0.009		0.0026	U	84		-	-
1,4-Dioxane	123-91-1	0.1	13	0.1	mg/kg	0.11	U	130	U	-	-	0.13	U	0.1	U	510	U	-	-
p-Diethylbenzene	105-05-5				mg/kg	0.0028	U	4.8		-	-	0.0033	U	0.0026	U	13	U	-	-
p-Ethyltoluene	622-96-8				mg/kg	0.0013	J	48		-	-	0.0078		0.00072	J	83		-	-
1,2,4,5-Tetramethylbenzene	95-93-2				mg/kg	0.00034	J	4.3		-	-	0.0024	J	0.0026	U	10	J	-	-
Ethyl ether	60-29-7				mg/kg	0.0028	U	3.3	U	-	-	0.0033	U	0.0026	U	13	U	-	-
trans-1,4-Dichloro-2-butene	110-57-6				mg/kg	0.007	U	8.3	U	-	-	0.0082	U	0.0065	U	32	U	-	-

LOCATION	SB-17-N4E3 30-32		SB-17-N6E3 25-27		SB-17-N6E3 30-32		SB-17-N3E3 (23-25)		SB-17-N3E3 (25-27)		SB-17-N5E3 23-25		SB-17-N5E3 23-25		SB-17-N5E3 30-32		SB-17-N4E4 21-23		SB-17-N4E4 21-23		SB-17-N4E4 28-30	
SAMPLING DATE	1/25/2023		1/25/2023		1/25/2023		1/26/2023		1/26/2023		1/26/2023		1/26/2023		1/26/2023		1/26/2023		1/26/2023		1/26/2023	
LAB SAMPLE ID	L2304246-11		L2304246-12		L2304246-13		L2304515-01		L2304515-02		L2304515-03		L2304515-03 R1		L2304515-04		L2304515-05		L2304515-05 R1		L2304515-06	
SAMPLE TYPE	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organics by EPA 5035																						
Methylene chloride	0.0058	U	0.0084	U	0.0066	U	0.006	U	0.0058	U	0.29	U	-	-	0.006	U	32	U	-	-	0.0063	U
1,1-Dichloroethane	0.0012	U	0.0017	U	0.0013	U	0.0012	U	0.0012	U	0.059	U	-	-	0.0012	U	6.3	U	-	-	0.0013	U
Chloroform	0.0017	U	0.0025	U	0.002	U	0.0018	U	0.0017	U	0.088	U	-	-	0.0018	U	9.5	U	-	-	0.0019	U
Carbon tetrachloride	0.0012	U	0.0017	U	0.0013	U	0.0012	U	0.0012	U	0.059	U	-	-	0.0012	U	6.3	U	-	-	0.0013	U
1,2-Dichloropropane	0.0012	U	0.0017	U	0.0013	U	0.0012	U	0.0012	U	0.059	U	-	-	0.0012	U	6.3	U	-	-	0.0013	U
Dibromochloromethane	0.0012	U	0.0017	U	0.0013	U	0.0012	U	0.0012	U	0.059	U	-	-	0.0012	U	6.3	U	-	-	0.0013	U
1,1,2-Trichloroethane	0.0012	U	0.0017	U	0.0013	U	0.0012	U	0.0012	U	0.059	U	-	-	0.0012	U	6.3	U	-	-	0.0013	U
Tetrachloroethene	0.00038	J	0.00084	U	0.00066	U	0.0006	U	0.00058	U	0.029	U	-	-	0.0006	U	3.2	U	-	-	0.00063	U
Chlorobenzene	0.00058	U	0.00084	U	0.00066	U	0.0006	U	0.00058	U	0.029	U	-	-	0.0006	U	3.2	U	-	-	0.00063	U
Trichlorofluoromethane	0.0046	U	0.0067	U	0.0053	U	0.0048	U	0.0046	U	0.24	U	-	-	0.0048	U	25	U	-	-	0.0051	U
1,2-Dichloroethane	0.0012	U	0.0017	U	0.0013	U	0.0012	U	0.0012	U	0.059	U	-	-	0.0012	U	6.3	U	-	-	0.0013	U
1,1,1-Trichloroethane	0.00058	U	0.00084	U	0.00066	U	0.0006	U	0.00058	U	0.029	U	-	-	0.0006	U	3.2	U	-	-	0.00063	U
Bromodichloromethane	0.00058	U	0.00084	U	0.00066	U	0.0006	U	0.00058	U	0.029	U	-	-	0.0006	U	3.2	U	-	-	0.00063	U
trans-1,3-Dichloropropene	0.0012	U	0.0017	U	0.0013	U	0.0012	U	0.0012	U	0.059	U	-	-	0.0012	U	6.3	U	-	-	0.0013	U
cis-1,3-Dichloropropene	0.00058	U	0.00084	U	0.00066	U	0.0006	U	0.00058	U	0.029	U	-	-	0.0006	U	3.2	U	-	-	0.00063	U
1,3-Dichloropropene, Total	0.00058	U	0.00084	U	0.00066	U	0.0006	U	0.00058	U	0.029	U	-	-	0.0006	U	3.2	U	-	-	0.00063	U
1,1-Dichloropropene	0.00058	U	0.00084	U	0.00066	U	0.0006	U	0.00058	U	0.029	U	-	-	0.0006	U	3.2	U	-	-	0.00063	U
Bromoform	0.0046	U	0.0067	U	0.0053	U	0.0048	U	0.0046	U	0.24	U	-	-	0.0048	U	25	U	-	-	0.0051	U
1,1,2,2-Tetrachloroethane	0.00058	U	0.00084	U	0.00066	U	0.0006	U	0.00058	U	0.029	U	-	-	0.0006	U	3.2	U	-	-	0.00063	U
Benzene	0.00047	J	0.00084	U	0.00066	U	0.00044	J	0.016		0.23		-	-	0.00028	J	21		-	-	0.00078	
Toluene	0.0025		0.0023		0.0019		0.00076	J	0.019		2		-	-	0.0012	U	130		-	-	0.0013	
Ethylbenzene	0.0076		0.0017	U	0.0013	U	0.0012		0.014		14		-	-	0.00033	J	200		-	-	0.00081	J
Chloromethane	0.0046	U	0.0067	U	0.0053	U	0.0048	U	0.0046	U	0.24	U	-	-	0.0048	U	25	U	-	-	0.0051	U
Bromomethane	0.0023	U	0.0034	U	0.0026	U	0.0024	U	0.0023	U	0.12	U	-	-	0.0024	U	13	U	-	-	0.0025	U
Vinyl chloride	0.0014		0.0016	J	0.0013	U	0.0012	U	0.0012	U	0.059	U	-	-	0.0012	U	6.3	U	-	-	0.0013	U
Chloroethane	0.0023	U	0.0034	U	0.0026	U	0.0024	U	0.0023	U	0.12	U	-	-	0.0024	U	13	U	-	-	0.0025	U
1,1-Dichloroethene	0.0012	U	0.0017	U	0.0013	U	0.0012	U	0.0012	U	0.059	U	-	-	0.0012	U	6.3	U	-	-	0.0013	U
trans-1,2-Dichloroethene	0.0017	U	0.0025	U	0.002	U	0.0018	U	0.0017	U	0.088	U	-	-	0.0018	U	9.5	U	-	-	0.0019	U
Trichloroethene	0.00058	U	0.00084	U	0.00066	U	0.0006	U	0.00058	U	0.029	U	-	-	0.0006	U	3.2	U	-	-	0.00063	U
1,2-Dichlorobenzene	0.0023	U	0.0034	U	0.0026	U	0.0024	U	0.0023	U	0.12	U	-	-	0.0024	U	13	U	-	-	0.0025	U
1,3-Dichlorobenzene	0.0023	U	0.0034	U	0.0026	U	0.0024	U	0.0023	U	0.12	U	-	-	0.0024	U	13	U	-	-	0.0025	U
1,4-Dichlorobenzene	0.0023	U	0.0034	U	0.0026	U	0.0024	U	0.0023	U	0.12	U	-	-	0.0024	U	13	U	-	-	0.0025	U
Methyl tert butyl ether	0.0023	U	0.0034	U	0.0026	U	0.0024	U	0.0023	U	0.12	U	-	-	0.0024	U	13	U	-	-	0.0025	U
p/m-Xylene	0.0056		0.0034	U	0.0026	U	0.0008	J	0.0077		10		-	-	0.0024	U	140		-	-	0.0025	U
o-Xylene	0.003		0.0017	U	0.0013	U	0.00041	J	0.0048		4.4		-	-	0.0012	U	64		-	-	0.0013	U
Xylenes, Total	0.0086		0.0017	U	0.0013	U	0.0012	J	0.013		14		-	-	0.0012	U	200		-	-	0.0013	U
cis-1,2-Dichloroethene	0.0045		0.0033		0.0013	U	0.0012	U	0.0012	U	0.059	U	-	-	0.0012	U	6.3	U	-	-	0.0013	U
1,2-Dichloroethene, Total	0.0045		0.0033		0.0013	U	0.0012	U	0.0012	U	0.059	U	-	-	0.0012	U	6.3	U	-	-	0.0013	U
Dibromomethane	0.0023	U	0.0034	U	0.0026	U	0.0024	U	0.0023	U	0.12	U	-	-	0.0024	U	13	U	-	-	0.0025	U
Styrene	0.00043	J	0.00068	J	0.0013	U	0.00024	J	0.0013		0.082		-	-	0.0012	U	5	J	-	-	0.00033	J
Dichlorodifluoromethane	0.012	U	0.017	U	0.013	U	0.012	U	0.012	U	0.59	U	-	-	0.012	U	63	U	-	-	0.013	U
Acetone	0.017		0.028		0.022		0.01	J	0.0066	J	0.59	U	-	-	0.0076	J	63	U	-	-	0.013	
Carbon disulfide	0.012	U	0.0089	J	0.013	U	0.0064	J	0.013		0.59		-	-	0.012	U	63	U	-	-	0.013	U
2-Butanone	0.0033	J	0.017	U	0.0047	J	0.012	U	0.012	U	0.59	U	-	-	0.012	U	63	U	-	-	0.013	U
Vinyl acetate	0.012	U	0.017	U	0.013	U	0.012	U	0.012	U	0.59	U	-	-	0.012	U	63	U	-	-	0.013	U
4-Methyl-2-pentanone	0.012	U	0.017	U	0.013	U	0.012	U	0.012	U	0.59	U	-	-	0.012	U	63	U	-	-	0.013	U
1,2,3-Trichloropropane	0.0023	U	0.0034	U	0.0026	U	0.0024	U	0.0023	U	0.12	U	-	-	0.0024	U	13	U	-	-	0.0025	U
2-Hexanone	0.012	U	0.017	U	0.013	U	0.012	U	0.012	U	0.59	U	-	-	0.012	U	63	U	-	-	0.013	U
Bromochloromethane	0.0023	U	0.0034	U	0.0026	U	0.0024	U	0.0023	U	0.12	U	-	-	0.0024	U	13	U	-	-	0.0025	U
2,2-Dichloropropane	0.0023	U	0.0034	U	0.0026	U	0.0024	U	0.0023	U	0.12	U	-	-	0.0024	U	13	U	-	-	0.0025	U
1,2-Dibromoethane	0.0012	U	0.0017	U	0.0013	U	0.0012	U	0.0012	U	0.059	U	-	-	0.0012	U	6.3	U	-	-	0.0013	U
1,3-Dichloropropane	0.0023	U	0.0034	U	0.0026	U	0.0024	U	0.0023	U	0.12	U	-	-	0.0024	U	13	U	-	-	0.0025	U
1,1,1,2-Tetrachloroethane	0.00058	U	0.00084	U	0.00066	U	0.0006	U	0.00058	U	0.029	U	-	-	0.0006	U	3.2	U	-	-	0.00063	U
Bromobenzene	0.0023	U	0.0034	U	0.0026	U	0.0024	U	0.0023	U	0.12	U	-	-	0.0024	U	13	U	-	-	0.0025	U
n-Butylbenzene	0.00021	J	0.00066	J	0.0013	U	0.00037	J	0.0012	U	0.44		-	-	0.0012	U	3.4	J	-	-	0.0013	U
sec-Butylbenzene	0.0012	U	0.0017	U	0.0013	U	0.0012	U	0.0012	U	0.11		-	-	0.0012	U	6.3	U	-	-	0.0013	U
tert-Butylbenzene	0.0023	U	0.0034	U	0.0026	U	0.0024	U	0.0023	U	0.12	U	-	-	0.0024	U	13	U	-	-	0.0025	U
o-Chlorotoluene	0.0023	U	0.0034	U	0.0026	U	0.0024	U	0.0023	U	0.12	U	-	-	0.0024	U	13	U	-	-	0.0025	U
p-Chlorotoluene	0.0023	U	0.0034	U	0.0026	U	0.0024	U	0.0023	U	0.12	U	-	-	0.0024	U	13	U	-	-	0.0025	U
1,2-Dibromo-3-chloropropane	0.0034	U	0.0051	U	0.004	U	0.0036	U	0.0035	U	0.18	U	-	-	0.0036	U	19	U	-	-	0.0038	U
Hexachlorobutadiene	0.0046	U	0.0067	U	0.0053	U	0.0048	U	0.0046	U	0.24	U	-	-	0.0048	U	25	U	-	-	0.0051	U
Isopropylbenzene	0.00068	J	0.0017	U	0.0013	U	0.00047	J	0.00031	J	2		-	-	0.0012	U	11		-	-	0.0013	U
p-Isopropyltoluene	0.00041	J	0.001	J	0.0013	U	0.00092	J	0.0002	J	1.2		-	-	0.0012	U	10		-	-	0.00025	J
Naphthalene	0.14		0.0079		0.0035	J	0.68	E	0.12		97	E	390		0.0052		2400	E	2800		0.047	
Acrylonitrile	0.0046	U	0.0067	U	0.0053	U	0.0048	U	0.0046	U	0.24	U	-	-	0.0048	U	25	U	-	-	0.0051	U
n-Propylbenzene	0.00045	J	0.0005	J	0.0013	U	0.00035	J	0.00052	J	1.2		-	-	0.0012	U	9.2		-	-	0.0013	U
1,2,3-Trichlorobenzene	0.0023	U	0.0034	U	0.0026	U	0.0024	U	0.0023	U	0.12	U	-	-	0.0024	U	13	U	-	-	0.0025	U
1,2,4-Trichlorobenzene	0.0023	U	0.0034	U	0.0026	U	0.0024	U	0.0023	U	0.12	U	-	-	0.0024	U	13	U	-	-	0.0025	U
1,3,5-Trimethylbenzene	0.0015	J	0.00066	J	0.0026	U	0.0012	J	0.00096	J	3.2		-	-	0.0024	U	29		-	-	0.00039	J
1,2,4-Trimethylbenzene	0.0048		0.00059	J	0.0026	U	0.0038		0.0032		10		-	-	0.0024	U	95		-	-	0.0013	J
1,4-Dioxane	0.092	U	0.13	U	0.1	U	0.096	U	0.092	U	4.7	U	-	-	0.096	U	510	U	-	-	0.1	U
p-Diethylbenzene	0.0023	U	0.0034	U	0.0026	U	0.0027		0.00072	J	0.86		-	-	0.0024	U	13	U	-	-	0.0025	U
p-Ethyltoluene	0.0053		0.0011	J	0.0026	U	0.0034		0.0024		17		-	-	0.0024	U	110		-	-	0.0012	J
1,2,4,5-Tetramethylbenzene	0.0007	J	0.0027	J	0.0026	U	0.0014	J	0.00034	J	1.4		-	-	0.0024	U	11	J	-	-	0.00034	J
Ethyl ether	0.0023	U	0.0034	U	0.0026	U	0.0024	U	0.0023	U	0.12	U	-	-	0.0024	U	13	U	-	-	0.0025	U
trans-1,4-Dichloro-2-butene	0.0058	U	0.0084	U	0.0066	U	0.006	U	0.0058	U	0.29	U	-	-	0.006	U	32	U	-	-	0.0063	U

LOCATION	SB-17-N5E4 25-27		SB-17-N5E4 25-27		SB-17-N5E4 28-30		SB-17-S2E1 30-32		SB-17-S2E1 30-32		SB-17-S2E1 35-37		SB-17-S2E2 33-35		SB-17-S2E2 35-37		SB-DUP 4		SB-17-S3 25-27		SB-17-S3 35-
SAMPLING DATE	1/26/2023		1/26/2023		1/26/2023		1/27/2023		1/27/2023		1/27/2023		1/27/2023		1/27/2023		1/27/2023		1/30/2023		1/30/2023
LAB SAMPLE ID	L2304515-07		L2304515-07 R1		L2304515-08		L2304757-01		L2304757-01 R1		L2304757-02		L2304757-03		L2304757-04		L2304757-05		L2304991-01		L2304991-02
SAMPLE TYPE	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL
	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results
Volatile Organics by EPA 5035																					
Methylene chloride	20	U	-	-	0.0062	U	1.1	U	-	-	0.0051	U	0.0066	U	0.0054	U	0.0058	U	0.37	U	0.006
1,1-Dichloroethane	3.9	U	-	-	0.0012	U	0.22	U	-	-	0.001	U	0.0013	U	0.0011	U	0.0012	U	0.075	U	0.0012
Chloroform	5.9	U	-	-	0.0018	U	0.33	U	-	-	0.0015	U	0.002	U	0.0016	U	0.0017	U	0.11	U	0.0018
Carbon tetrachloride	3.9	U	-	-	0.0012	U	0.22	U	-	-	0.001	U	0.0013	U	0.0011	U	0.0012	U	0.075	U	0.0012
1,2-Dichloropropane	3.9	U	-	-	0.0012	U	0.22	U	-	-	0.001	U	0.0013	U	0.0011	U	0.0012	U	0.075	U	0.0012
Dibromochloromethane	3.9	U	-	-	0.0012	U	0.22	U	-	-	0.001	U	0.0013	U	0.0011	U	0.0012	U	0.075	U	0.0012
1,1,2-Trichloroethane	3.9	U	-	-	0.0012	U	0.22	U	-	-	0.001	U	0.0013	U	0.0011	U	0.0012	U	0.075	U	0.0012
Tetrachloroethene	2	U	-	-	0.00062	U	0.11	U	-	-	0.00051	U	0.00088		0.00054	U	0.00058	U	0.037	U	0.0006
Chlorobenzene	2	U	-	-	0.00062	U	0.11	U	-	-	0.00051	U	0.00066	U	0.00054	U	0.00058	U	0.037	U	0.0006
Trichlorofluoromethane	16	U	-	-	0.0049	U	0.88	U	-	-	0.0041	U	0.0053	U	0.0043	U	0.0046	U	0.3	U	0.0048
1,2-Dichloroethane	3.9	U	-	-	0.0012	U	0.22	U	-	-	0.001	U	0.0013	U	0.0011	U	0.0012	U	0.075	U	0.0012
1,1,1-Trichloroethane	2	U	-	-	0.00062	U	0.11	U	-	-	0.00051	U	0.00066	U	0.00054	U	0.00058	U	0.037	U	0.0006
Bromodichloromethane	2	U	-	-	0.00062	U	0.11	U	-	-	0.00051	U	0.00066	U	0.00054	U	0.00058	U	0.037	U	0.0006
trans-1,3-Dichloropropene	3.9	U	-	-	0.0012	U	0.22	U	-	-	0.001	U	0.0013	U	0.0011	U	0.0012	U	0.075	U	0.0012
cis-1,3-Dichloropropene	2	U	-	-	0.00062	U	0.11	U	-	-	0.00051	U	0.00066	U	0.00054	U	0.00058	U	0.037	U	0.0006
1,3-Dichloropropene, Total	2	U	-	-	0.00062	U	0.11	U	-	-	0.00051	U	0.00066	U	0.00054	U	0.00058	U	0.037	U	0.0006
1,1-Dichloropropene	2	U	-	-	0.00062	U	0.11	U	-	-	0.00051	U	0.00066	U	0.00054	U	0.00058	U	0.037	U	0.0006
Bromoform	16	U	-	-	0.0049	U	0.88	U	-	-	0.0041	U	0.0053	U	0.0043	U	0.0046	U	0.3	U	0.0048
1,1,2,2-Tetrachloroethane	2	U	-	-	0.00062	U	0.11	U	-	-	0.00051	U	0.00066	U	0.00054	U	0.00058	U	0.037	U	0.0006
Benzene	2	U	-	-	0.0003	J	0.11	U	-	-	0.00051	U	0.00066	U	0.00054	U	0.00058	U	0.037	U	0.0006
Toluene	3.9	U	-	-	0.00074	J	0.43		-	-	0.0028		0.0029		0.0025		0.0032		0.075	U	0.001
Ethylbenzene	23		-	-	0.0012	U	3.9		-	-	0.0026		0.038		0.0011	U	0.0007	J	0.52		0.0012
Chloromethane	16	U	-	-	0.0049	U	0.88	U	-	-	0.0041	U	0.0053	U	0.0043	U	0.0046	U	0.3	U	0.0048
Bromomethane	7.8	U	-	-	0.0025	U	0.44	U	-	-	0.002	U	0.0026	U	0.0022	U	0.0023	U	0.15	U	0.0024
Vinyl chloride	3.9	U	-	-	0.0012	U	0.22	U	-	-	0.001	U	0.0013	U	0.0011	U	0.0012	U	0.075	U	0.0012
Chloroethane	7.8	U	-	-	0.0025	U	0.44	U	-	-	0.002	U	0.0026	U	0.0022	U	0.0023	U	0.15	U	0.0024
1,1-Dichloroethene	3.9	U	-	-	0.0012	U	0.22	U	-	-	0.001	U	0.0013	U	0.0011	U	0.0012	U	0.075	U	0.0012
trans-1,2-Dichloroethene	5.9	U	-	-	0.0018	U	0.33	U	-	-	0.0015	U	0.002	U	0.0016	U	0.0017	U	0.11	U	0.0018
Trichloroethene	2	U	-	-	0.00062	U	0.11	U	-	-	0.00051	U	0.00052	J	0.00054	U	0.00058	U	0.037	U	0.0006
1,2-Dichlorobenzene	7.8	U	-	-	0.0025	U	0.44	U	-	-	0.002	U	0.0026	U	0.0022	U	0.0023	U	0.15	U	0.0024
1,3-Dichlorobenzene	7.8	U	-	-	0.0025	U	0.44	U	-	-	0.002	U	0.0026	U	0.0022	U	0.0023	U	0.15	U	0.0024
1,4-Dichlorobenzene	7.8	U	-	-	0.0025	U	0.44	U	-	-	0.002	U	0.0026	U	0.0022	U	0.0023	U	0.15	U	0.0024
Methyl tert butyl ether	7.8	U	-	-	0.0025	U	0.44	U	-	-	0.002	U	0.0026	U	0.0022	U	0.0023	U	0.15	U	0.0024
p/m-Xylene	15		-	-	0.0025	U	2.2		-	-	0.00078	J	0.0048		0.0022	U	0.0023	U	0.16		0.0024
o-Xylene	6.7		-	-	0.0012	U	1.1		-	-	0.00092	J	0.005		0.0011	U	0.0012	U	0.12		0.0012
Xylenes, Total	22		-	-	0.0012	U	3.3		-	-	0.0017	J	0.0098		0.0011	U	0.0012	U	0.28		0.0012
cis-1,2-Dichloroethene	3.9	U	-	-	0.00043	J	0.11	J	-	-	0.00024	J	0.0062		0.0011	U	0.0012	U	0.075	U	0.00048
1,2-Dichloroethene, Total	3.9	U	-	-	0.00043	J	0.11	J	-	-	0.00024	J	0.0062		0.0011	U	0.0012	U	0.075	U	0.00048
Dibromomethane	7.8	U	-	-	0.0025	U	0.44	U	-	-	0.002	U	0.0026	U	0.0022	U	0.0023	U	0.15	U	0.0024
Styrene	0.86	J	-	-	0.00027	J	0.099	J	-	-	0.00097	J	0.0014		0.0011	U	0.0012		0.075	U	0.00053
Dichlorodifluoromethane	39	U	-	-	0.012	U	2.2	U	-	-	0.01	U	0.013	U	0.011	U	0.012	U	0.75	U	0.012
Acetone	39	U	-	-	0.014		2.2	U	-	-	0.012		0.019		0.012		0.016		0.75	U	0.015
Carbon disulfide	39	U	-	-	0.012	U	2.2	U	-	-	0.01	U	0.013	U	0.011	U	0.012	U	0.75	U	0.012
2-Butanone	39	U	-	-	0.012	U	2.2	U	-	-	0.014		0.0073	J	0.0082	J	0.0059	J	0.75	U	0.023
Vinyl acetate	39	U	-	-	0.012	U	2.2	U	-	-	0.01	U	0.013	U	0.011	U	0.012	U	0.75	U	0.012
4-Methyl-2-pentanone	39	U	-	-	0.012	U	2.2	U	-	-	0.01	U	0.013	U	0.011	U	0.012	U	0.75	U	0.012
1,2,3-Trichloropropane	7.8	U	-	-	0.0025	U	0.44	U	-	-	0.002	U	0.0026	U	0.0022	U	0.0023	U	0.15	U	0.0024
2-Hexanone	39	U	-	-	0.012	U	2.2	U	-	-	0.01	U	0.013	U	0.011	U	0.012	U	0.75	U	0.012
Bromochloromethane	7.8	U	-	-	0.0025	U	0.44	U	-	-	0.002	U	0.0026	U	0.0022	U	0.0023	U	0.15	U	0.0024
2,2-Dichloropropane	7.8	U	-	-	0.0025	U	0.44	U	-	-	0.002	U	0.0026	U	0.0022	U	0.0023	U	0.15	U	0.0024
1,2-Dibromoethane	3.9	U	-	-	0.0012	U	0.22	U	-	-	0.001	U	0.0013	U	0.0011	U	0.0012	U	0.075	U	0.0012
1,3-Dichloropropane	7.8	U	-	-	0.0025	U	0.44	U	-	-	0.002	U	0.0026	U	0.0022	U	0.0023	U	0.15	U	0.0024
1,1,1,2-Tetrachloroethane	2	U	-	-	0.00062	U	0.11	U	-	-	0.00051	U	0.00066	U	0.00054	U	0.00058	U	0.037	U	0.0006
Bromobenzene	7.8	U	-	-	0.0025	U	0.44	U	-	-	0.002	U	0.0026	U	0.0022	U	0.0023	U	0.15	U	0.0024
n-Butylbenzene	3.4	J	-	-	0.0012	U	0.095	J	-	-	0.001	U	0.0025		0.0011	U	0.0012	U	0.077		0.0012
sec-Butylbenzene	3.9	U	-	-	0.0012	U	0.22	U	-	-	0.001	U	0.0013		0.0011	U	0.0012	U	0.017	J	0.0012
tert-Butylbenzene	7.8	U	-	-	0.0025	U	0.44	U	-	-	0.002	U	0.0026	U	0.0022	U	0.0023	U	0.15	U	0.0024
o-Chlorotoluene	7.8	U	-	-	0.0025	U	0.44	U	-	-	0.002	U	0.0026	U	0.0022	U	0.0023	U	0.15	U	0.0024
p-Chlorotoluene	7.8	U	-	-	0.0025	U	0.44	U	-	-	0.002	U	0.0026	U	0.0022	U	0.0023	U	0.15	U	0.0024
1,2-Dibromo-3-chloropropane	12	U	-	-	0.0037	U	0.66	U	-	-	0.003	U	0.004	U	0.0032	U	0.0035	U	0.22	U	0.0036
Hexachlorobutadiene	16	U	-	-	0.0049	U	0.88	U	-	-	0.0041	U	0.0053	U	0.0043	U	0.0046	U	0.3	U	0.0048
Isopropylbenzene	12		-	-	0.0012	U	0.23		-	-	0.001		0.0066		0.0011	U	0.0012	U	0.22		0.0012
p-Isopropyltoluene	10		-	-	0.0012	U	0.22		-	-	0.001	U	0.0014		0.0011	U	0.0012	U	0.14		0.0012
Naphthalene	1900		2700	E	0.0028	J	86		74	E	0.011		0.022		0.0027	J	0.0055		8.4		0.0023
Acrylonitrile	16	U	-	-	0.0049	U	0.88	U	-	-	0.0041	U	0.0053	U	0.0043	U	0.0046	U	0.3	U	0.0048
n-Propylbenzene	11		-	-	0.0012	U	0.21	J	-	-	0.00019	J	0.0089		0.0011	U	0.0012	U	0.24		0.0012
1,2,3-Trichlorobenzene	7.8	U	-	-	0.0025	U	0.44	U	-	-	0.002	U	0.0026	U	0.0022	U	0.0023	U	0.15	U	0.0024
1,2,4-Trichlorobenzene	7.8	U	-	-	0.0025	U	0.44	U	-	-	0.002	U	0.0026	U	0.0022	U	0.0023	U	0.15	U	0.0024
1,3,5-Trimethylbenzene	32		-	-	0.0025	U	0.7		-	-	0.002	U	0.00054	J	0.0022	U	0.0023	U	0.19		0.0024
1,2,4-Trimethylbenzene	95		-	-	0.0025	U	2.3		-	-	0.002	U	0.0044		0.0022	U	0.0023	U	0.48		0.0024
1,4-Dioxane	310	U	-	-	0.098	U	18	U	-	-	0.081	U	0.1	U	0.086	U	0.093	U	6	U	0.096
p-Diethylbenzene	7.8	U	-	-	0.0025	U	0.73		-	-	0.00018	J	0.01		0.0022	U	0.0023	U	0.97		0.0024
p-Ethyltoluene	160		-	-	0.0025	U	4.5		-	-	0.002	U	0.0045		0.0022	U	0.0023	U	0.74		0.0024
1,2,4,5-Tetramethylbenzene	13		-	-	0.0025	U	0.38	J	-	-	0.0016	J	0.0084		0.0022	U	0.0023	U	0.28		0.0024
Ethyl ether	7.8	U	-	-	0.0025	U	0.44	J	-	-	0.002	U	0.0026	U	0.0022	U	0.0023	U	0.15	U	0.0024
trans-1,4-Dichloro-2-butene	20	U	-	-	0.0062	U	1.1	U	-	-	0.0051	U	0.0066	U	0.0054	U	0.0058	U	0.37	U	0.006

LOCATION	CasNum	NY-RESGW	NY-RESRR	NY-UNRES	Units	SB-17-N4E2 30-32		SB-17-N6E2 23-25		SB-17-N6E2 23-25		SB-DUP3		SB-17-N6E2 30-32		SB-17-N4E3 20-22		SB-17-N4E3 20-22	
Volatile Organics by EPA 5035 High																			
Methylene chloride	75-09-2	0.05	100	0.05	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	75-34-3	0.27	26	0.27	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	67-66-3	0.37	49	0.37	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride	56-23-5	0.76	2.4	0.76	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	78-87-5				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	124-48-1				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	79-00-5				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	127-18-4	1.3	19	1.3	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	108-90-7	1.1	100	1.1	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	75-69-4				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	107-06-2	0.02	3.1	0.02	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	71-55-6	0.68	100	0.68	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	75-27-4				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	10061-02-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	10061-01-5				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichloropropene, Total	542-75-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloropropene	563-58-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform	75-25-2				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	79-34-5				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	71-43-2	0.06	4.8	0.06	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	108-88-3	0.7	100	0.7	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	100-41-4	1	41	1	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloromethane	74-87-3				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane	74-83-9				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	75-01-4	0.02	0.9	0.02	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane	75-00-3				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	75-35-4	0.33	100	0.33	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	156-60-5	0.19	100	0.19	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	79-01-6	0.47	21	0.47	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	95-50-1	1.1	100	1.1	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	541-73-1	2.4	49	2.4	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	106-46-7	1.8	13	1.8	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl tert butyl ether	1634-04-4	0.93	100	0.93	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p/m-Xylene	179601-23-1				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	95-47-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes, Total	1330-20-7	1.6	100	0.26	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	156-59-2	0.25	100	0.25	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethene, Total	540-59-0				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromomethane	74-95-3				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	100-42-5				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	75-71-8				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acetone	67-64-1	0.05	100	0.05	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon disulfide	75-15-0				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Butanone	78-93-3	0.12	100	0.12	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl acetate	108-05-4				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Methyl-2-pentanone	108-10-1				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichloropropane	96-18-4				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Hexanone	591-78-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromochloromethane	74-97-5				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,2-Dichloropropane	594-20-7				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dibromoethane	106-93-4				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichloropropane	142-28-9				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	630-20-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromobenzene	108-86-1				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
n-Butylbenzene	104-51-8	12	100	12	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
sec-Butylbenzene	135-98-8	11	100	11	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
tert-Butylbenzene	98-06-6	5.9	100	5.9	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Chlorotoluene	95-49-8				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Chlorotoluene	106-43-4				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane	96-12-8				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	87-68-3				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene	98-82-8				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene	99-87-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	91-20-3	12	100	12	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acrylonitrile	107-13-1				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
n-Propylbenzene	103-65-1	3.9	100	3.9	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	87-61-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	120-82-1				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	108-67-8	8.4	52	8.4	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	95-63-6	3.6	52	3.6	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dioxane	123-91-1	0.1	13	0.1	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Diethylbenzene	105-05-5				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Ethyltoluene	622-96-8				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4,5-Tetramethylbenzene	95-93-2				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethyl ether	60-29-7				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,4-Dichloro-2-butene	110-57-6				mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-

LOCATION	SB-17-N4E3 30-32		SB-17-N6E3 25-27		SB-17-N6E3 30-32		SB-17-N3E3 (23-25)		SB-17-N3E3 (25-27)		SB-17-N5E3 23-25		SB-17-N5E3 23-25		SB-17-N5E3 30-32		SB-17-N4E4 21-23		SB-17-N4E4 21-23		SB-17-N4E4 28-30	
Volatile Organics by EPA 5035 High																						
Methylene chloride	-	-	-	-	-	-	0.33	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	-	-	-	-	-	-	0.066	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	-	-	-	-	-	-	0.099	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride	-	-	-	-	-	-	0.066	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	-	-	-	-	-	-	0.066	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	-	-	-	-	-	-	0.066	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	-	-	-	-	-	-	0.066	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	-	-	-	-	-	-	0.033	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	-	-	-	-	-	-	0.033	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	0.26	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	-	-	-	-	-	-	0.066	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	0.033	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	-	-	-	-	-	-	0.033	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	-	-	-	-	-	-	0.066	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	-	-	-	-	-	-	0.033	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichloropropene, Total	-	-	-	-	-	-	0.033	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloropropene	-	-	-	-	-	-	0.033	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform	-	-	-	-	-	-	0.26	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	-	-	-	-	-	-	0.033	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	0.033	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	0.066	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	-	-	-	-	-	-	0.01	J	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloromethane	-	-	-	-	-	-	0.26	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	-	-	-	-	-	-	0.066	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	-	-	0.066	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	-	-	-	-	-	-	0.099	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	-	-	-	-	-	-	0.033	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl tert butyl ether	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p/m-Xylene	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	-	-	-	-	-	-	0.066	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes, Total	-	-	-	-	-	-	0.066	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	-	-	-	-	-	-	0.066	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethene, Total	-	-	-	-	-	-	0.066	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromomethane	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	-	-	-	-	-	-	0.066	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	-	-	-	-	-	-	0.66	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acetone	-	-	-	-	-	-	0.66	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon disulfide	-	-	-	-	-	-	0.66	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Butanone	-	-	-	-	-	-	0.66	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl acetate	-	-	-	-	-	-	0.66	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Methyl-2-pentanone	-	-	-	-	-	-	0.66	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichloropropane	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Hexanone	-	-	-	-	-	-	0.66	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromochloromethane	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,2-Dichloropropane	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dibromoethane	-	-	-	-	-	-	0.066	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichloropropane	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	-	-	-	-	-	-	0.033	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromobenzene	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
n-Butylbenzene	-	-	-	-	-	-	0.066	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
sec-Butylbenzene	-	-	-	-	-	-	0.066	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
tert-Butylbenzene	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Chlorotoluene	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Chlorotoluene	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane	-	-	-	-	-	-	0.2	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	-	-	-	-	-	-	0.26	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene	-	-	-	-	-	-	0.066	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene	-	-	-	-	-	-	0.066	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	-	-	-	-	-	-	1.7		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acrylonitrile	-	-	-	-	-	-	0.26	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
n-Propylbenzene	-	-	-	-	-	-	0.066	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dioxane	-	-	-	-	-	-	5.3	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Diethylbenzene	-	-	-	-	-	-	0.012	J	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Ethyltoluene	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4,5-Tetramethylbenzene	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethyl ether	-	-	-	-	-	-	0.13	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,4-Dichloro-2-butene	-	-	-	-	-	-	0.33	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-

LOCATION	SB-17-N5E4 25-27		SB-17-N5E4 25-27		SB-17-N5E4 28-30		SB-17-S2E1 30-32		SB-17-S2E1 30-32		SB-17-S2E1 35-37		SB-17-S2E2 33-35		SB-17-S2E2 35-37		SB-DUP 4		SB-17-S3 25-27		SB-17-S3 35-
Volatile Organics by EPA 5035 High																					
Methylene chloride	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichloropropene, Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl tert butyl ether	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p/m-Xylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes, Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethene, Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromomethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acetone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon disulfide	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Butanone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl acetate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Methyl-2-pentanone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Hexanone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromochloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,2-Dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dibromoethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
n-Butylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
sec-Butylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
tert-Butylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Chlorotoluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Chlorotoluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acrylonitrile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
n-Propylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dioxane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Diethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Ethyltoluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4,5-Tetramethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethyl ether	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,4-Dichloro-2-butene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Crit
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part

Table 1
Supplemental RI Soil Volatile Organic Compounds Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRS	NY-UNRES			I7		SB-17-S4 25-27		SB-17-S4 33-35	
SAMPLING DATE									1/20/2023		1/20/2023	
LAB S AMPLE ID									L2304991-03		L2304991-04	
SAMPLE TYPE									SOIL		SOIL	
	CasNum				Units	Qual	Results	Qual	Results	Qual		
Volatile Organics by EPA 5035												
Methylene chloride	75-09-2	0.05	100	0.05	mg/kg	U	0.35	U	0.0062	U		
1,1-Dichloroethane	75-34-3	0.27	26	0.27	mg/kg	U	0.07	U	0.0012	U		
Chloroform	67-66-3	0.37	49	0.37	mg/kg	U	0.1	U	0.0018	U		
Carbon tetrachloride	56-23-5	0.76	2.4	0.76	mg/kg	U	0.07	U	0.0012	U		
1,2-Dichloropropane	78-87-5				mg/kg	U	0.07	U	0.0012	U		
Dibromochloromethane	124-48-1				mg/kg	U	0.07	U	0.0012	U		
1,1,2-Trichloroethane	79-00-5				mg/kg	U	0.07	U	0.0012	U		
Tetrachloroethene	127-18-4	1.3	19	1.3	mg/kg	U	0.035	U	0.00062	U		
Chlorobenzene	108-90-7	1.1	100	1.1	mg/kg	U	0.035	U	0.00062	U		
Trichlorofluoromethane	75-69-4				mg/kg	U	0.28	U	0.0049	U		
1,2-Dichloroethane	107-06-2	0.02	3.1	0.02	mg/kg	U	0.07	U	0.0012	U		
1,1,1-Trichloroethane	71-55-6	0.68	100	0.68	mg/kg	U	0.035	U	0.00062	U		
Bromodichloromethane	75-27-4				mg/kg	U	0.035	U	0.00062	U		
trans-1,3-Dichloropropene	10061-02-6				mg/kg	U	0.07	U	0.0012	U		
cis-1,3-Dichloropropene	10061-01-5				mg/kg	U	0.035	U	0.00062	U		
1,3-Dichloropropene, Total	542-75-6				mg/kg	U	0.035	U	0.00062	U		
1,1-Dichloropropene	563-58-6				mg/kg	U	0.035	U	0.00062	U		
Bromoform	75-25-2				mg/kg	U	0.28	U	0.0049	U		
1,1,2,2-Tetrachloroethane	79-34-5				mg/kg	U	0.035	U	0.00062	U		
Benzene	71-43-2	0.06	4.8	0.06	mg/kg	U	0.035	U	0.00062	U		
Toluene	108-88-3	0.7	100	0.7	mg/kg	J	0.07	U	0.001	J		
Ethylbenzene	100-41-4	1	41	1	mg/kg	U	0.12		0.0012	U		
Chloromethane	74-87-3				mg/kg	U	0.28	U	0.0049	U		
Bromomethane	74-83-9				mg/kg	U	0.14	U	0.0025	U		
Vinyl chloride	75-01-4	0.02	0.9	0.02	mg/kg	U	0.07	U	0.0012	U		
Chloroethane	75-00-3				mg/kg	U	0.14	U	0.0025	U		
1,1-Dichloroethene	75-35-4	0.33	100	0.33	mg/kg	U	0.07	U	0.0012	U		
trans-1,2-Dichloroethene	156-60-5	0.19	100	0.19	mg/kg	U	0.1	U	0.0018	U		
Trichloroethene	79-01-6	0.47	21	0.47	mg/kg	U	0.035	U	0.00062	U		
1,2-Dichlorobenzene	95-50-1	1.1	100	1.1	mg/kg	U	0.14	U	0.0025	U		
1,3-Dichlorobenzene	541-73-1	2.4	49	2.4	mg/kg	U	0.14	U	0.0025	U		
1,4-Dichlorobenzene	106-46-7	1.8	13	1.8	mg/kg	U	0.14	U	0.0025	U		
Methyl tert butyl ether	1634-04-4	0.93	100	0.93	mg/kg	U	0.14	U	0.0025	U		
p/m-Xylene	179601-23-1				mg/kg	U	0.13	J	0.0025	U		
o-Xylene	95-47-6				mg/kg	U	0.046	J	0.0012	U		
Xylenes, Total	1330-20-7	1.6	100	0.26	mg/kg	U	0.18	J	0.0012	U		
cis-1,2-Dichloroethene	156-59-2	0.25	100	0.25	mg/kg	J	0.056	J	0.0014			
1,2-Dichloroethene, Total	540-59-0				mg/kg	J	0.056	J	0.0014			
Dibromomethane	74-95-3				mg/kg	U	0.14	U	0.0025	U		
Styrene	100-42-5				mg/kg	J	0.07	U	0.00026	J		
Dichlorodifluoromethane	75-71-8				mg/kg	U	0.7	U	0.012	U		
Acetone	67-64-1	0.05	100	0.05	mg/kg		0.7	U	0.018			
Carbon disulfide	75-15-0				mg/kg	U	0.7	U	0.0065	J		
2-Butanone	78-93-3	0.12	100	0.12	mg/kg		0.7	U	0.0075	J		
Vinyl acetate	108-05-4				mg/kg	U	0.7	U	0.012	U		
4-Methyl-2-pentanone	108-10-1				mg/kg	U	0.7	U	0.012	U		
1,2,3-Trichloropropane	96-18-4				mg/kg	U	0.14	U	0.0025	U		
2-Hexanone	591-78-6				mg/kg	U	0.7	U	0.012	U		
Bromochloromethane	74-97-5				mg/kg	U	0.14	U	0.0025	U		
2,2-Dichloropropane	594-20-7				mg/kg	U	0.14	U	0.0025	U		
1,2-Dibromoethane	106-93-4				mg/kg	U	0.07	U	0.0012	U		
1,3-Dichloropropane	142-28-9				mg/kg	U	0.14	U	0.0025	U		
1,1,1,2-Tetrachloroethane	630-20-6				mg/kg	U	0.035	U	0.00062	U		
Bromobenzene	108-86-1				mg/kg	U	0.14	U	0.0025	U		
n-Butylbenzene	104-51-8	12	100	12	mg/kg	U	0.053	J	0.0012	U		
sec-Butylbenzene	135-98-8	11	100	11	mg/kg	U	0.017	J	0.0012	U		
tert-Butylbenzene	98-06-6	5.9	100	5.9	mg/kg	U	0.14	U	0.0025	U		
o-Chlorotoluene	95-49-8				mg/kg	U	0.14	U	0.0025	U		
p-Chlorotoluene	106-43-4				mg/kg	U	0.14	U	0.0025	U		
1,2-Dibromo-3-chloropropane	96-12-8				mg/kg	U	0.21	U	0.0037	U		
Hexachlorobutadiene	87-68-3				mg/kg	U	0.28	U	0.0049	U		
Isopropylbenzene	98-82-8				mg/kg	U	0.14		0.0012	U		
p-Isopropyltoluene	99-87-6				mg/kg	U	0.15		0.0012	U		
Naphthalene	91-20-3	12	100	12	mg/kg	J	17		0.0034	J		
Acrylonitrile	107-13-1				mg/kg	U	0.28	U	0.0049	U		
n-Propylbenzene	103-65-1	3.9	100	3.9	mg/kg	U	0.11		0.0012	U		
1,2,3-Trichlorobenzene	87-61-6				mg/kg	U	0.14	U	0.0025	U		
1,2,4-Trichlorobenzene	120-82-1				mg/kg	U	0.14	U	0.0025	U		
1,3,5-Trimethylbenzene	108-67-8	8.4	52	8.4	mg/kg	U	0.38		0.0025	U		
1,2,4-Trimethylbenzene	95-63-6	3.6	52	3.6	mg/kg	U	1.2		0.0025	U		
1,4-Dioxane	123-91-1	0.1	13	0.1	mg/kg	U	5.6	U	0.099	U		
p-Diethylbenzene	105-05-5				mg/kg	U	0.79		0.0025	U		
p-Ethyltoluene	622-96-8				mg/kg	U	1.9		0.0025	U		
1,2,4,5-Tetramethylbenzene	95-93-2				mg/kg	U	0.23		0.0025	U		
Ethyl ether	60-29-7				mg/kg	U	0.14	U	0.0025	U		
trans-1,4-Dichloro-2-butene	110-57-6				mg/kg	U	0.35	U	0.0062	U		
Volatile Organics by EPA 5035 High												
Methylene chloride	75-09-2	0.05	100	0.05	mg/kg	-	-	-	-	-		
1,1-Dichloroethane	75-34-3	0.27	26	0.27	mg/kg	-	-	-	-	-		
Chloroform	67-66-3	0.37	49	0.37	mg/kg	-	-	-	-	-		
Carbon tetrachloride	56-23-5	0.76	2.4	0.76	mg/kg	-	-	-	-	-		
1,2-Dichloropropane	78-87-5				mg/kg	-	-	-	-	-		
Dibromochloromethane	124-48-1				mg/kg	-	-	-	-	-		
1,1,2-Trichloroethane	79-00-5				mg/kg	-	-	-	-	-		
Tetrachloroethene	127-18-4	1.3	19	1.3	mg/kg	-	-	-	-	-		
Chlorobenzene	108-90-7	1.1	100	1.1	mg/kg	-	-	-	-	-		
Trichlorofluoromethane	75-69-4				mg/kg	-	-	-	-	-		
1,2-Dichloroethane	107-06-2	0.02	3.1	0.02	mg/kg	-	-	-	-	-		
1,1,1-Trichloroethane	71-55-6	0.68	100	0.68	mg/kg	-	-	-	-	-		
Bromodichloromethane	75-27-4				mg/kg	-	-	-	-	-		
trans-1,3-Dichloropropene	10061-02-6				mg/kg	-	-	-	-	-		
cis-1,3-Dichloropropene	10061-01-5				mg/kg	-	-	-	-	-		
1,3-Dichloropropene, Total	542-75-6				mg/kg	-	-	-	-	-		
1,1-Dichloropropene	563-58-6				mg/kg	-	-	-	-	-		
Bromoform	75-25-2				mg/kg	-	-	-	-	-		
1,1,2,2-Tetrachloroethane	79-34-5				mg/kg	-	-	-	-	-		
Benzene	71-43-2	0.06	4.8	0.06	mg/kg	-	-	-	-	-		
Toluene	108-88-3	0.7	100	0.7	mg/kg	-	-	-	-	-		
Ethylbenzene	100-41-4	1	41	1	mg/kg	-	-	-	-	-		
Chloromethane	74-87-3				mg/kg	-	-	-	-	-		
Bromomethane	74-83-9				mg/kg	-	-	-	-	-		
Vinyl chloride	75-01-4	0.02	0.9	0.02	mg/kg	-	-	-	-	-		
Chloroethane	75-00-3				mg/kg	-	-	-	-	-		
1,1-Dichloroethene	75-35-4	0.33	100	0.33	mg/kg	-	-	-	-	-		
trans-1,2-Dichloroethene	156-60-5	0.19	100	0.19	mg/kg	-	-	-	-	-		
Trichloroethene	79-01-6	0.47	21	0.47	mg/kg	-	-	-	-	-		
1,2-Dichlorobenzene	95-50-1	1.1	100	1.1	mg/kg	-	-	-	-	-		
1,3-Dichlorobenzene	541-73-1	2.4	49	2.4	mg/kg	-	-	-	-	-		
1,4-Dichlorobenzene	106-46-7	1.8	13	1.8	mg/kg	-	-	-	-	-		
Methyl tert butyl ether	1634-04-4	0.93	100	0.93	mg/kg	-	-	-	-	-		
p/m-Xylene	179601-23-1				mg/kg	-	-	-	-	-		
o-Xylene	95-47-6				mg/kg	-	-	-	-	-		
Xylenes, Total	1330-20-7	1.6	100	0.26	mg/kg	-	-	-	-	-		
cis-1,2-Dichloroethene	156-59-2	0.25	100	0.25	mg/kg	-	-	-	-	-		
1,2-Dichloroethene, Total	540-59-0				mg/kg	-	-	-	-	-		
Dibromomethane	74-95-3				mg/kg	-	-	-	-	-		
Styrene	100-42-5				mg/kg	-	-	-	-	-		
Dichlorodifluoromethane	75-71-8				mg/kg	-	-	-	-	-		
Acetone	67-64-1	0.05	100	0.05	mg/kg	-	-	-	-	-		
Carbon disulfide	75-15-0				mg/kg	-	-	-	-	-		
2-Butanone	78-93-3	0.12	100	0.12	mg/kg	-	-	-	-	-		
Vinyl acetate	108-05-4				mg/kg	-	-	-	-	-		
4-Methyl-2-pentanone	108-10-1				mg/kg	-	-	-	-	-		
1,2,3-Trichloropropane	96-18-4				mg/kg	-	-	-	-	-		
2-Hexanone	591-78-6				mg/kg	-	-	-	-	-		
Bromochloromethane	74-97-5				mg/kg	-	-	-	-	-		
2,2-Dichloropropane	594-20-7				mg/kg	-	-	-	-	-		
1,2-Dibromoethane	106-93-4				mg/kg	-	-	-	-	-		
1,3-Dichloropropane	142-28-9				mg/kg	-	-	-	-	-		
1,1,1,2-Tetrachloroethane	630-20-6				mg/kg	-	-	-	-	-		
Bromobenzene	108-86-1				mg/kg	-	-	-	-	-		
n-Butylbenzene	104-51-8	12	100	12	mg/kg	-	-	-	-	-		
sec-Butylbenzene	135-98-8	11	100	11	mg/kg	-	-	-	-	-		
tert-Butylbenzene	98-06-6	5.9	100	5.9	mg/kg	-	-	-	-	-		
o-Chlorotoluene	95-49-8				mg/kg	-	-	-	-	-		
p-Chlorotoluene	106-43-4				mg/kg	-	-	-	-	-		
1,2-Dibromo-3-chloropropane	96-12-8				mg/kg	-	-	-	-	-		
Hexachlorobutadiene	87-68-3				mg/kg	-	-	-	-	-		
Isopropylbenzene	98-82-8				mg/kg	-	-	-	-	-		
p-Isopropyltoluene	99-87-6				mg/kg	-	-	-	-	-		
Naphthalene	91-20-3	12	100	12	mg/kg	-	-	-	-	-		
Acrylonitrile	107-13-1				mg/kg	-	-	-	-	-		
n-Propylbenzene	103-65-1	3.9	100	3.9	mg/kg	-	-	-	-	-		
1,2,3-Trichlorobenzene	87-61-6				mg/kg	-	-	-	-	-		
1,2,4-Trichlorobenzene	120-82-1				mg/kg	-	-	-	-	-		
1,3,5-Trimethylbenzene	108-67-8	8.4	52	8.4	mg/kg	-	-	-	-	-		
1,2,4-Trimethylbenzene	95-63-6	3.6	52	3.6	mg/kg	-	-	-	-	-		
1,4-Dioxane	123-91-1	0.1	13	0.1	mg/kg	-	-	-	-	-		
p-Diethylbenzene	105-05-5				mg/kg	-	-	-	-	-		
p-Ethyltoluene	622-96-8				mg/kg	-	-	-	-	-		
1,2,4,5-Tetramethylbenzene	95-93-2				mg/kg	-	-	-	-	-		
Ethyl ether	60-29-7				mg/kg	-	-	-	-	-		
trans-1,4-Dichloro-2-butene	110-57-6				mg/kg	-	-	-	-	-		

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per
NY-RESRS: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Crit
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part

Table 1

Supplemental RI Soil Semi-Volatile Organic Compounds Sample Results Summary

318 Nevins Street, Brooklyn, NY

LOCATION					SB-16-N1 (34-35)		SB-16-N1 (34-35)		SB-16-N1 (37-38)		SB-16-S1 (50-51)		SB-16-S1 (55-56)		SB-17-E1 (24-25)		SB-17-E1 (24-25)		SB-17-E1 (30-31)		SB-17-S2 35-37		SB-17-N1 (24-25)		SB-17-N1 (33-34)		SB-17-S1 (23-24)		SB-17-S1 (35-36)		SB-17-N1E1 (23-25)		SB-17-N1E1 (23-25)		SB-17-N1E1 (33-35)		SB-17-S1E1 (28-30)		SB-17-S1E1 (28-30)		SB-17-S1E1 (35-37)		SB-17-S2 (23-25)		SB-17-N2 (24-25)		SB-17-N2 (35-37)	
SAMPLING DATE		NY-RESGW	NY-RESRR	NY-UNRES	1/11/2023		1/11/2023		1/11/2023		1/11/2023		1/11/2023		1/16/2023		1/16/2023		1/16/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/18/2023		1/18/2023		1/18/2023	
LAB SAMPLE ID					L2301629-01		L2301629-01 R1		L2301629-02		L2301629-03		L2301629-04		L2302487-01		L2302487-01 R1		L2302487-02		L2302691-01		L2302692-01		L2302692-03		L2302692-04		L2302692-05		L2302692-05 R1		L2302692-06		L2302692-07		L2302692-07 R1		L2302692-09		L2302692-10		L2302962-01		L2302962-01 R1		L2302962-02	
SAMPLE TYPE					SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
Cas Num					Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Semivolatile Organics by GC/MS					Units																																										
Acenaphthene	83-32-9	98	100	20	mg/kg	50	-	-	23		4.6		0.74	U	5.5	-	-		0.082	J	0.1	J	0.48		0.18		21	E	46		0.16		3.6	-	-	0.16	U	0.58	-	-	0.022	J	0.069	J	140	-	-	0.065	J
1,2,4-Trichlorobenzene	120-82-1				mg/kg	1.9	U	-	2.1	U	0.15	J	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
Hexachlorobenzene	118-74-1	3.2	1.2	0.33	mg/kg	1.1	U	-	1.2	U	0.54	U	0.56	U	0.57	U	-	-	0.13	U	0.13	U	0.12	U	0.13	U	0.12	U	-	-	0.12	U	0.11	U	-	0.12	U	0.12	U	-	0.11	U	0.11	U	6	U	-	0.12	U
Bis(2-chloroethyl)ether	111-44-4				mg/kg	1.7	U	-	1.9	U	0.8	U	0.83	U	0.86	U	-	-	0.19	U	0.19	U	0.18	U	0.2	U	0.18	U	-	-	0.17	U	0.17	U	-	0.18	U	0.19	U	-	0.17	U	0.17	U	9	U	-	0.18	U
2-Chloronaphthalene	91-58-7				mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
1,2-Dichlorobenzene	95-50-1	1.1	100	1.1	mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
1,3-Dichlorobenzene	541-73-1	2.4	49	2.4	mg/kg	1.9	U	-	2.1	U	0.16	J	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
1,4-Dichlorobenzene	106-46-7	1.8	13	1.8	mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
3,3'-Dichlorobenzidine	91-94-1				mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
2,4-Dinitrotoluene	121-14-2				mg/kg	1.5	J	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
2,6-Dinitrotoluene	606-20-2				mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
Fluoranthene	206-44-0	1000	100	100	mg/kg	50	-	-	17		13		0.56	U	13	-	-		0.025	J	0.13	U	0.25		0.084	J	14	E	30		0.11	J	10	E	15	0.12	U	10	E	14	0.11	U	0.11	U	120	-	-	0.17	
4-Chlorophenyl phenyl ether	7005-72-3				mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
4-Bromophenyl phenyl ether	101-55-3				mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
Bis(2-chloroisopropyl)ether	108-60-1				mg/kg	2.3	U	-	2.5	U	1.1	U	1.1	U	1.1	U	-	-	0.25	U	0.25	U	0.23	U	0.26	U	0.24	U	-	-	0.23	U	0.23	U	-	0.24	U	0.25	U	-	0.23	U	0.23	U	12	U	-	0.24	U
Bis(2-chloroethoxy)methane	111-91-1				mg/kg	2	U	-	2.2	U	0.96	U	1	U	1	U	-	-	0.23	U	0.23	U	0.21	U	0.24	U	0.21	U	-	-	0.21	U	0.2	U	-	0.2	U	0.23	U	-	0.2	U	0.2	U	11	U	-	0.22	U
Hexachlorobutadiene	87-68-3				mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
Hexachlorocyclopentadiene	77-47-4				mg/kg	5.4	U	-	5.9	U	2.6	U	2.6	U	2.7	U	-	-	0.61	U	0.6	U	0.56	U	0.63	U	0.56	U	-	-	0.55	U	0.54	U	-	0.54	U	0.57	U	-	0.54	U	0.54	U	29	U	-	0.58	U
Hexachloroethane	67-72-1				mg/kg	1.5	U	-	1.6	U	0.71	U	0.74	U	0.76	U	-	-	0.17	U	0.17	U	0.16	U	0.18	U	0.16	U	-	-	0.15	U	0.15	U	-	0.16	U	0.16	U	-	0.15	U	0.15	U	8	U	-	0.16	U
Isophorone	78-59-1				mg/kg	1.9	U	-	1.9	U	0.8	U	0.83	U	0.86	U	-	-	0.19	U	0.19	U	0.18	U	0.2	U	0.18	U	-	-	0.17	U	0.17	U	-	0.18	U	0.19	U	-	0.17	U	0.17	U	9	U	-	0.18	U
Naphthalene	91-20-3	12	100	12	mg/kg	140	E	270	16		0.11	J	0.93	U	65	E	100		0.36		0.044	J	2.8		1.4		22	E	62		0.24		24	E	63	0.11	J	0.21	U	-	0.19	U	0.34		560	E	560	0.26	
Nitrobenzene	98-95-3				mg/kg	1.7	U	-	1.9	U	0.8	U	0.83	U	0.86	U	-	-	0.19	U	0.19	U	0.18	U	0.2	U	0.18	U	-	-	0.17	U	0.17	U	-	0.18	U	0.19	U	-	0.17	U	0.17	U	9	U	-	0.18	U
NDPA/DPA	86-30-6				mg/kg	1.5	U	-	1.6	U	0.71	U	0.74	U	0.76	U	-	-	0.17	U	0.17	U	0.16	U	0.18	U	0.16	U	-	-	0.15	U	0.15	U	-	0.16	U	0.17	U	-	0.15	U	0.15	U	8	U	-	0.16	U
n-Nitrosodi-n-propylamine	621-64-7				mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
Bis(2-ethylhexyl)phthalate	117-81-7				mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
Butyl benzyl phthalate	85-68-7				mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
Di-n-butylphthalate	84-74-2				mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
Di-n-octylphthalate	117-84-0				mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
Diethyl phthalate	84-66-2				mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
Dimethyl phthalate	131-11-3				mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
Benzo(a)anthracene	56-55-3	1	1	1	mg/kg	24		-	8.1		6.6		0.56	U	6.8	-	-		0.13	U	0.13	U	0.13	U	0.046	J	9.3	E	16		0.06	J	6.4	-	-	0.11	U	5.3	-	-	0.11	U	0.11	U	62	-	-	0.1	J
Benzo(a)pyrene	50-32-8	22	1	1	mg/kg	20	-	-	7.1		5.9		0.74	U	5.2	-	-		0.17	U	0.17	U	0.16	U	0.18	U	7.6	-	-		0.049	J	4.9	-	-	0.15	U	4.7	-	-	0.15	U	0.15	U	50	-	-	0.087	J
Benzo(b)fluoranthene	205-99-2	1.7	1		mg/kg	14	-	-	4.5		3.8		0.56	U	3.6	-	-		0.13	U	0.13	U	0.07	J	0.13	U	5.9	-	-		0.032	J	3.8	-	-	0.11	U	3.3	-	-	0.11	U	0.11	U	36	-	-	0.064	J
Benzo(k)fluoranthene	207-08-9	1.7	3.9	0.8	mg/kg	4.7	-	-	1.7		1.6		0.56	U	1.2	-	-		0.13	U	0.13	U	0.12	U	0.13	U	1.3	-	-		0.12	U	0.98	-	-	0.12	U	1	-	-	0.11	U	0.11	U	13	-	-	0.12	U
Chrysene	218-01-9	1	3.9	1	mg/kg	22	-	-	7.2		6.4		0.56	U	5.9	-	-		0.13	U	0.13	U	0.12	U	0.04	J	8.5	E	15		0.053	J	5.4	-	-	0.11	U	4.8	-	-	0.11	U	0.11	U	58	-	-	0.083	J
Acenaphthylene	208-96-8	107	100	100	mg/kg	41	-	-	5.2		3.1		0.74	U	20	-	-		0.036	J	0.17	U	0.091	J	0.27		5	-	-		0.15	U	12	E	18	0.053	J	2.6	-	-	0.15	U	0.15	U	72	-	-	0.1	J
Anthracene	120-12-7	1000	100	100	mg/kg	42	-	-	15		7		0.56	U	11	-	-		0.13	U	0.13	U	0.24		0.068	J	13	E	27		0.09	J	8.9	E	12	0.12	U	7.7	-	-	0.11	U	0.11	U	100	-	-	0.11	J
Benzo(ghi)perylene	191-24-2	1000	100	100	mg/kg	7.7	-	-	2.9		2.2		0.74	U	2.1	-	-		0.17	U	0.17	U	0.035	J	0.18	U	2.8	-	-		0.15	U	1.9	-	-	0.16	U	1.8	-	-	0.15	U	0.15	U	20	-	-	0.033	J
Fluorene	86-73-7	386	100	30	mg/kg	43	-	-	14		3.7		0.93	U	12	-	-		0.038	J	0.21	U	0.2	U	0.11	J	13	E	25		0.09	J	9	E	12	0.2	U	1.9	-	-	0.19	U	0.035	J	110	-	-	0.11	J
Phenanthrene	85-01-8	1000	100	100	mg/kg	140	E	250	50		20		0.56	U	36	-	-		0.11	J	0.034	J	0.3		0.28		29	E	90		0.34		21	E	43	0.037	J	16	E	26	0.11	U	0.091	J	360	-	-	0.46	
Dibenz(a,h)anthracene	53-70-3	1000	0.33	0.33	mg/kg	1.9	-	-	0.68	J	0.55		0.56	U	0.5	J	-	-	0.13	U	0.13	U	0.12	U	0.13	U	0.66	-	-		0.12	U	0.43	-	-	0.12	U	0.38	-	-	0.11	U	0.11	U	5	J	-	0.1	J
Indeno(1,2,3-cd)pyrene	193-39-5	8.2	0.5	0.5	mg/kg	7.3	-	-	2.5		1.7		0.74	U	1.9	-	-		0.17	U	0.17	U	0.033	J	0.18	U	2.9	-	-		0.15	U	1.8	-	-	0.16	U	1.8	-	-	0.15	U	0.15	U	15	-	-	0.035	J
Pyrene	129-00-0	1000	100	100	mg/kg	76	-	-	25		20		0.12	J	19	-	-		0.033	J	0.13	U	0.34		0.12	J	18	E	44		0.17		13	E	21	0.12	U	14	E	21	0.11	U	0.023	J	180	-	-	0.24	
Biphenyl	92-52-4				mg/kg	16	-	-	4.9		0.45	J	2.1	U	4.5	-	-		0.48	U	0.48	U	0.1	J	0.071	J	6.2	-	-		0.027	J	3.3	-	-	0.46	U	0.05	J	-	0.43	U	0.43	U	41	-	-	0.027	J
4-Chloroaniline	106-47-8				mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
2-Nitroaniline	88-74-4				mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
3-Nitroaniline	99-09-2				mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
4-Nitroaniline	100-01-6				mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
Dibenzofuran	132-64-9	210	59	7	mg/kg	4.6	-	-	1.4	J	0.4	J	0.93	U	1.2	-	-		0.21	U	0.21	U	0.036	J	0.22	U	1.5	-	-		0.19	U	0.91	-	-	0.2	U	0.059	J	-	0.19	U	0.19	U	9.8	J	-	0.2	U
2-Methylnaphthalene	91-57-6				mg/kg	86	E	160	9.8		1.1	U	1.1	U	35	-	-		0.12	J	0.25	U	0.91		0.34		25	E	44		0.19	J	21	E	31	0.03	J	0.12	J	340	-	-	0.19	U	0.19	J	
1,2,4,5-Tetrachlorobenzene	95-94-3				mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
Acetophenone	98-86-2				mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
2,4,6-Trichlorophenol	88-06-2				mg/kg	1.1	U	-	1.2	U	0.54	U	0.56	U	0.57	U	-	-	0.13	U	0.13	U	0.12	U	0.13	U	0.12	U	-	-	0.11	U	0.11	U	-	0.12	U	0.12	U	-	0.11	U	0.11	U	6	U	-	0.12	U
p-Chloro-m-cresol	59-50-7				mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
2-Chlorophenol	95-57-8				mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
2,4-Dichlorophenol	120-83-2				mg/kg	1.7	U	-	1.9	U	0.8	U	0.83	U	0.86	U	-	-	0.19	U	0.19	U	0.18	U	0.2	U	0.18	U	-	-	0.17	U	0.17	U	-	0.18	U	0.19	U	-	0.17	U	0.17	U	9	U	-	0.18	U
2,4-Dimethylphenol	105-67-9				mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
2-Nitrophenol	88-75-5				mg/kg	4.1	U	-	4.5	U	1.9	U	2	U	2	U	-	-	0.46	U	0.46	U	0.42	U	0.48	U	0.42	U	-	-	0.42	U	0.41	U	-	0.43	U	0.45	U	-	0.41	U	0.41	U	22	U	-	0.44	U
4-Nitrophenol	100-02-7				mg/kg	2.6	U	-	2.9	U	1.2	U	1.3	U	1.3	U	-	-	0.3	U	0.29	U	0.27	U	0.31	U	0.28	U	-	-	0.27	U	0.27	U	-	0.28	U	0.29	U	-	0.28	U	0.26	U	14	U	-	0.29	U
2,4-Dinitrophenol	51-28-5				mg/kg	10	U	-	10	U	4.3	U	4.4	U	4.6	U	-	-	1	U	1	U	0.94	U	1.1	U	1	U	-	-	0.92	U	0.91	U	-	0.96	U	1	U	-	0.91	U	0.91	U	48	U	-	0.95	U
4,6-Dinitro-o-cresol	534-52-1				mg/kg	4.9	U	-	5.4	U	2.3	U	2.4	U	2.5	U	-	-	0.55	U	0.55	U	0.51	U	0.57	U	0.51	U	-	-	0.5	U	0.49	U	-	0.52	U	0.54	U	-	0.49	U	0.49	U	26	U	-	0.53	U
Pentachlorophenol	87-86-5	0.8	6.7	0.8	mg/kg	1.5	U	-	1.6	U	0.71	U	0.74	U	0.76	U	-	-	0.17	U	0.17	U	0.16	U	0.18	U	0.16	U	-	-	0.15	U	0.15	U	-	0.16	U	0.17	U	-	0.15	U	0.15	U	8	U	-	0.16	U
Phenol	108-95-2	0.33	100	0.33	mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
2-Methylphenol	95-48-7	0.33	100	0.33	mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
3-Methylphenol(4-Methylphenol	108-39-4/106-44-5	0.33	100	0.33	mg/kg	2.7	U	-	3	U	1.3	U	1.3	U	1.4	U	-	-	0.3	U	0.3	U	0.28	U	0.32	U	0.28	U	-	-	0.28	U	0.27	U	-	0.29	U	0.3	U	-	0.27	U	0.27	U	14	U	-	0.29	U
2,4,5-Trichlorophenol	95-95-4				mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
Benzoic Acid	65-85-0				mg/kg	6.2	U	-	6.7	U	2.9	U	3	U	3.1	U	-	-	0.69	U	0.68	U	0.63	U	0.72	U	0.64	U	-	-	0.62	U	0.62	U	-	0.65	U	0.68	U	-	0.62	U	0.61	U	32	U	-	0.66	U
Benzyl Alcohol	100-51-6				mg/kg	1.9	U	-	2.1	U	0.89	U	0.93	U	0.95	U	-	-	0.21	U	0.21	U	0.2	U	0.22	U	0.2	U	-	-	0.19	U	0.19	U	-	0.2	U	0.21	U	-	0.19	U	0.19	U	10	U	-	0.2	U
Carbazole	86-74-8				mg/kg	0.79	J	-	0.21	J	0.89	U	0.93	U	0.29	J	-	-	0.21	U	0.21	U	0.038	J	0.22	U	0.24	-	-	-	0.19	U	0.26	-	-	0.2	U	0.21	U	-	0.19	U	0.19	U	2.6	J	-	0.2	U
1,4-Dioxane	123-91-1	0.1	13	0.1	mg/kg	0.28	U	-	0.31	U	0.13	U	0.14	U	0.14	U	-	-	0.032	U	0.032	U	0.029	U	0.033	U	0.029	U	-	-	0.029	U	0.028	U	-	0.03	U	0.031	U	-	0.028	U	0.028	U	1.5	U	-	0.031	U

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.

NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.

NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.

Table 1

Supplemental RI Soil Semi-Volatile Organic Compounds Sample Results Summary

318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-17-SI1E2 (32-34)		SB-17-SI1E2 (32-34)		SB-17-NI1E2 (35-37)		SB-17-N3 (23-25)		SB-17-N3 (23-25)		SB-17-N3 (33-35)		SB-17-NI1E2 (23-25)		SB-17-NI1E2 (30-31)		SB-17-NI1E3 (22-24)		SB-17-NI1E3 (22-24)		SB-17-NI1E3 (28-30)		SB-17-N4 (25-30)		SB-17-N4 (38-40)		SB-17-N5 (25-27)		SB-17-N5 (25-27)		SB-17-N5 (33-35)		SB-17-N6 (23-25)		SB-17-N6 (23-25)		SB-17-N6 (37-39)		SB-17-N7 (23-25)		SB-17-N7 (30-32)		SB-17-N2E1 (23-25)		SB-17-N2E1 (23-25)	
SAMPLING DATE						1/18/2023		1/18/2023		1/18/2023		1/18/2023		1/18/2023		1/18/2023		1/18/2023		1/18/2023		1/19/2023		1/19/2023		1/19/2023		1/19/2023		1/19/2023		1/19/2023		1/19/2023		1/19/2023		1/19/2023		1/19/2023		1/20/2023		1/20/2023		1/20/2023		1/20/2023		1/20/2023	
LAB SAMPLE ID						L2302962-03		L2302962-03 RI		L2302962-04		L2302962-05		L2302962-05 RI		L2302962-06		L2302962-07		L2302962-08		L2302962-11		L2303262-01		L2303262-01 RI		L2303262-02		L2303262-03		L2303262-04		L2303262-05		L2303262-05 RI		L2303262-06		L2303262-07		L2303262-07 RE		L2303515-01		L2303515-02		L2303515-03		L2303515-04		L2303515-04 RI	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
Cas'Num					Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Semivolatile Organics by GC/MS																																																	
Acenaphthene	83-32-9	98	100	20	mg/kg	5.6	-	-	-	0.15	U	42		-	-	0.15	J	12		0.025	J	0.025	J	4	-	-		0.18	U	0.087	J	0.11	J	2	-	-		0.16	U	130	E	140		0.06	J	0.18	U	0.075	J	3.6	-	-	
1,2,4-Trichlorobenzene	120-82-1				mg/kg	0.21	U	-	-	0.19	U	10	U	10	U	0.22	U	0.21	U	0.18	U	0.22	U	0.21	U	0.18	U	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.24	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
Hexachlorobenzene	118-74-1	3.2	1.2	0.33	mg/kg	0.12	U	-	-	0.11	U	6.2	U	6.2	U	0.12	U	0.11	U	0.13	U	0.13	U	0.11	U	-	-	0.13	U	0.13	U	0.13	U	0.12	U	-	-	0.12	U	0.6	U	-	-	0.14	U	0.13	U	0.13	U	0.12	U	-	-
Bis(2-chloroethyl)ether	111-44-4				mg/kg	0.19	U	-	-	0.17	U	9.3	U	-	-	0.18	U	8.4	U	0.19	U	0.19	U	0.16	U	-	-	0.2	U	0.19	U	0.19	U	0.18	U	-	-	0.18	U	0.91	U	-	-	0.22	U	0.2	U	0.18	U	-	-	-	-
2-Chloronaphthalene	91-58-7				mg/kg	0.19	U	-	-	0.19	U	10	U	10	U	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.24	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
1,2-Dichlorobenzene	95-50-1	1.1	100	1.1	mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
1,3-Dichlorobenzene	541-73-1	2.4	49	2.4	mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
1,4-Dichlorobenzene	106-46-7	1.8	13	1.8	mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
3,3'-Dichlorobenzidine	91-94-1				mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
2,4-Dinitrotoluene	121-14-2				mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
2,6-Dinitrotoluene	606-20-2				mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
Fluoranthene	206-44-0	1000	100	100	mg/kg	4.2	-	-	-	0.11	U	79	-	-	-	0.12	-	50	-	0.04	J	0.065	J	11	E	16	-	0.13	U	0.17	-	0.27	-	4.3	-	-	-	0.023	J	85	E	82	-	0.051	J	0.13	U	0.047	J	4	-	-	-
4-Chlorophenyl phenyl ether	7005-72-3				mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
4-Bromophenyl phenyl ether	101-55-3				mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
Bis(2-chloroisopropyl)ether	108-60-1				mg/kg	0.25	U	-	-	0.22	U	12	U	-	-	0.25	U	11	U	0.26	U	0.25	U	0.22	U	-	-	0.26	U	0.25	U	0.25	U	0.24	U	-	-	0.24	U	1.2	U	-	-	0.29	U	0.26	U	0.27	U	0.23	U	-	-
Bis(2-chloroethoxy)methane	111-91-1				mg/kg	0.23	U	-	-	0.2	U	11	U	-	-	0.22	U	10	U	0.23	U	0.22	U	0.2	U	-	-	0.24	U	0.23	U	0.23	U	0.22	U	-	-	0.22	U	1.1	U	-	-	0.26	U	0.24	U	0.24	U	0.21	U	-	-
Hexachlorobutadiene	87-68-3				mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
Hexachlorocyclopentadiene	77-47-4				mg/kg	0.6	U	-	-	0.54	U	30	U	-	-	0.59	U	26	U	0.62	U	0.59	U	0.52	U	-	-	0.63	U	0.61	U	0.6	U	0.58	U	-	-	0.57	U	2.9	U	-	-	0.7	U	0.63	U	0.64	U	0.56	U	-	-
Hexachloroethane	67-72-1				mg/kg	0.17	U	-	-	0.15	U	8.3	U	-	-	0.16	U	7.4	U	0.17	U	0.17	U	0.14	U	-	-	0.18	U	0.17	U	0.17	U	0.16	U	-	-	0.16	U	0.81	U	-	-	0.19	U	0.18	U	0.18	U	0.16	U	-	-
Isophorone	78-59-1				mg/kg	0.19	U	-	-	0.17	U	9.3	U	-	-	0.18	U	8.4	U	0.19	U	0.19	U	0.16	U	-	-	0.2	U	0.19	U	0.19	U	0.18	U	-	-	0.18	U	0.91	U	-	-	0.22	U	0.2	U	0.2	U	0.18	U	-	-
Naphthalene	91-20-3	12	100	12	mg/kg	0.067	J	-	-	0.19	U	490		480	E	0.6		220		0.14	J	0.052	J	33	E	71		0.22	U	1		1		24	E	45		0.05	J	280	E	430		0.12	J	0.083	J	0.26		15	E	20	
Nitrobenzene	98-95-3				mg/kg	0.17	U	-	-	0.17	U	9.3	U	-	-	0.18	U	8.4	U	0.19	U	0.19	U	0.16	U	-	-	0.2	U	0.19	U	0.19	U	0.18	U	-	-	0.18	U	2.1	U	-	-	0.22	U	0.2	U	0.2	U	0.18	U	-	-
NDPA/DPA	86-30-6				mg/kg	0.17	U	-	-	0.15	U	8.3	U	-	-	0.16	U	7.4	U	0.17	U	0.17	U	0.14	U	-	-	0.18	U	0.17	U	0.17	U	0.16	U	-	-	0.16	U	0.81	U	-	-	0.19	U	0.18	U	0.18	U	0.16	U	-	-
n-Nitrosodi-n-propylamine	621-64-7				mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
Bis(2-ethylhexyl)phthalate	117-81-7				mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
Butyl benzyl phthalate	85-68-7				mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
Di-n-butylphthalate	84-74-2				mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
Di-n-octylphthalate	117-84-0				mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
Diethyl phthalate	84-66-2				mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
Dimethyl phthalate	131-11-3				mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
Benzo(a)anthracene	56-55-3	1	1	1	mg/kg	1.9		-	-	0.11	U	39		-	-	0.058	J	24		0.026	J	0.035	J	6.2		-	-	0.13	U	0.086	J	0.14		2.1		-	-	0.12		39		-	-	0.027	J	0.13	U	0.13	U	2.2		-	-
Benzo(a)pyrene	50-32-8	22	1	1	mg/kg	1.9		-	-	0.15	U	37		-	-	0.16	U	22		0.17	U	0.17	U	5.2		-	-	0.18	U	0.075	J	0.13	J	1.9		-	-	0.16	U	32		-	-	0.19	U	0.18	U	0.18	U	1.9		-	-
Benzo(b)fluoranthene	205-99-2	1.7	1	1	mg/kg	1.3		-	-	0.11	U	22		-	-	0.041	J	14		0.13	U	0.12	U	3.7		-	-	0.13	U	0.058	J	0.084	J	1.4		-	-	0.12	U	24		-	-	0.14	U	0.13	U	0.13	U	1.4		-	-
Benzo(k)fluoranthene	207-08-9	1.7	3.9	0.8	mg/kg	0.42		-	-	0.11	U	8.5		-	-	0.12	U	6.3		0.13	U	0.12	U	1.2		-	-	0.13	U	0.13	U	0.13	U	0.38		-	-	0.12	U	5.8		-	-	0.14	U	0.13	U	0.13	U	0.45		-	-
Chrysene	218-01-9	1	3.9	1	mg/kg	1.7		-	-	0.11	U	39		-	-	0.057	J	23		0.13	U	0.031	J	5.9		-	-	0.13	U	0.078	J	0.13		1.9		-	-	0.12	U	33		-	-	0.14	U	0.13	U	0.13	U	1.9		-	-
Acenaphthylene	208-96-8	107	100	100	mg/kg	0.91		-	-	0.15	U	130		-	-	0.43		69		0.042	J	0.04	J	15	E	23		0.18	U	0.33		0.34		7.6		-	-	0.16	U	37		-	-	0.19	U	0.18	U	0.035	J	4.4		-	-
Anthracene	120-12-7	1000	100	100	mg/kg	3.4		-	-	0.11	U	70		-	-	0.097	J	39		0.13	U	0.043	J	10	E	13		0.13	U	0.15		0.22		3.5		-	-	0.12	U	72	E	72		0.14	U	0.13	U	0.043	J	3.5		-	-
Benzo(ghi)perylene	191-24-2	1000	100	100	mg/kg	0.73		-	-	0.15	U	13		-	-	0.16	U	7.6		0.17	U	0.17	U	2		-	-	0.18	U	0.03	J	0.047	J	0.66		-	-	0.16	U	12		-	-	0.19	U	0.18	U	0.18	U	0.68		-	-
Fluorene	86-73-7	386	100	30	mg/kg	3.6		-	-	0.19	U	81		-	-	0.16	J	41		0.028	J	0.036	J	10	E	13		0.22	U	0.17	J	0.26		4.5		-	-	0.2	U	76	E	76		0.047	J	0.22	U	0.045	J	4		-	-
Phenanthrene	85-01-8	1000	100	100	mg/kg	12	E	14		0.11	U	250		-	-	0.38		140		0.1	J	0.15	J	25	E	43		0.13	U	0.59		0.82		12	E	18		0.068	J	180	E	250		0.14		0.028	J	0.16		11	E	10	
Dibenz(a,h)anthracene	53-70-3	1000	0.33	0.33	mg/kg	0.17		-	-	0.11	U	3.7	J	-	-	0.12	U	1.9	J	0.13	U	0.12	U	0.44		-	-	0.13	U	0.13	U	0.15		-	-	0.14	U	2.7		-	-	0.14	U	0.13	U	0.13	U	0.16		-	-
Indeno(1,2,3-cd)pyrene	193-39-5	8.2	0.5	0.5	mg/kg	0.72		-	-	0.15	U	16		-	-	0.16		5.9	J	0.17	U	0.17	U	1.9		-	-	0.18	U	0.17	U	0.045	J	0.66		-	-	0.16	U	12		-	-	0.19	U	0.18	U	0.18	U	0.68		-	-
Pyrene	129-00-0	1000	100	100	mg/kg	6.4		-	-	0.11	U	110		-	-	0.17		73		0.064	J	0.097	J	16	E	24		0.13	U	0.25		0.4		6.3		-	-	0.032	J	120	E	120		0.071	J	0.13	U	0.068	J	5.7		-	-
Biphenyl	92-52-4				mg/kg	1.2		-	-	0.43	U	30		-	-	0.1	J	15	J	0.49	U	0.47	U	4.1		-	-	0.5	U	0.078	J	0.089	J	1.9		-	-	0.46	U	32		-	-	0.55	U	0.5	U	0.51	U	1.4		-	-
4-Chloroaniline	106-47-8				mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
2-Nitroaniline	88-74-4				mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
3-Nitroaniline	99-09-2				mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
4-Nitroaniline	100-01-6				mg/kg	0.19	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
Dibenzofuran	132-64-9	210	59	7	mg/kg	0.33		-	-	0.19	U	7.5	J	-	-	0.2	U	3.8	J	0.22	U	0.21	U	1		-	-	0.22	U	0.021	J	0.024	J	0.43		-	-	0.2	U	7.5		-	-	0.24	U	0.22	U	0.22	U	0.38		-	-
2-Methylnaphthalene	91-57-6				mg/kg	0.25	U	-	-	0.22	U	290		-	-	0.32		120		0.062	J	0.042	J	31	E	40		0.26	U	0.54		0.69		17	E	22		0.034	J	260	E	260		0.082	J	0.26	U	0.093	J	11	E	9.6	
1,2,4,5-Tetrachlorobenzene	95-94-3				mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
Acetophenone	98-86-2				mg/kg	0.03	J	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
2,4,6-Trichlorophenol	88-06-2				mg/kg	0.12	U	-	-	0.11	U	6.2	U	-	-	0.12	U	5.6	U	0.13	U	0.12	U	0.11	U	-	-	0.13	U	0.13	U	0.13	U	0.12	U	-	-	0.12	U	0.6	U	-	-	0.14	U	0.13	U	0.13	U	0.12	U	-	-
p-Chloro-m-cresol	59-50-7				mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
2-Chlorophenol	95-57-8				mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
2,4-Dichlorophenol	120-83-2				mg/kg	0.19	U	-	-	0.17	U	9.3	U	-	-	0.18	U	8.4	U	0.19	U	0.19	U	0.16	U	-	-	0.2	U	0.19	U	0.19	U	0.18	U	-	-	0.18	U	0.91	U	-	-	0.22	U	0.2	U	0.2	U	0.18	U	-	-
2,4-Dimethylphenol	105-67-9				mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
2-Nitrophenol	88-75-5				mg/kg	0.45	U	-	-	0.4	U	22	U	-	-	0.44	U	20	U	0.46	U	0.45	U	0.39	U	-	-	0.48	U	0.46	U	0.46	U	0.44	U	-	-	0.43	U	2.2	U	-	-	0.52	U	0.48	U	0.48	U	0.42	U	-	-
4-Nitrophenol	100-02-7				mg/kg	0.29	U	-	-	0.26	U	14	U	-	-	0.29	U	13	U	0.3	U	0.29	U	0.25	U	-	-	0.31	U	0.3	U	0.3	U	0.29	U	-	-	0.28	U	1.4	U	-	-	0.34	U	0.31	U	0.31	U	0.27	U	-	-
2,4-Dinitrophenol	51-28-5				mg/kg	1	U	-	-	0.9	U	50	U	-	-	0.98	U	45	U	1	U	1	U	0.87	U	-	-	1.1	U	1	U	1	U	0.95	U	-	-	0.96	U	4.8	U	-	-	1.2	U	1	U	1.1	U	0.94	U	-	-
4,6-Dinitro-o-cresol	534-52-1				mg/kg	0.54	U	-	-	0.49	U	27	U	-	-	0.53	U	24	U	0.56	U	0.54	U	0.47	U	-	-	0.58	U	0.55	U	0.55	U	0.53	U	-	-	0.52	U	2.6	U	-	-	0.63	U	0.57	U	0.58	U	0.51	U	-	-
Pentachlorophenol	87-86-5	0.8	6.7	0.8	mg/kg	0.17	U	-	-	0.15	U	8.3	U	-	-	0.16	U	7.4	U	0.17	U	0.17	U	0.14	U	-	-	0.18	U	0.17	U	0.17	U	0.16	U	-	-	0.16	U	0.81	U	-	-	0.19	U	0.18	U	0.18	U	0.16	U	-	-
Phenol	108-95-2	0.33	100	0.33	mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
2-Methylphenol	95-48-7	0.33	100	0.33	mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
3-Methylphenol/4-Methylphenol	108-39-4/106-44-5	0.33	100	0.33	mg/kg	0.3	U	-	-	0.27	U	15	U	-	-	0.29	U	13	U	0.31	U	0.3	U	0.26	U	-	-	0.32	U	0.3	U	0.3	U	0.29	U	-	-	0.28	U	1.4	U	-	-	0.35	U	0.32	U	0.32	U	0.28	U	-	-
2,4,5-Trichlorophenol	95-95-4				mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
Benzoic Acid	65-85-0				mg/kg	0.68	U	-	-	0.61	U	34	U	-	-	0.66	U	30	U	0.7	U	0.67	U	0.59	U	-	-	0.72	U	0.69	U	0.68	U	0.66	U	-	-	0.65	U	3.3	U	-	-	0.79	U	0.71	U	0.72	U	0.63	U	-	-
Benzyl Alcohol	100-51-6				mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.2	U	9.3	U	0.22	U	0.21	U	0.18	U	-	-	0.22	U	0.21	U	0.21	U	0.2	U	-	-	0.2	U	1	U	-	-	0.24	U	0.22	U	0.22	U	0.2	U	-	-
Carbazole	86-74-8				mg/kg	0.21	U	-	-	0.19	U	10	U	-	-	0.021	J	1.1	J	0.22	U	0.21	U	0.27	-	-	-	0.22	U	0.21	U	0.21	U	0.088	J	-	-	0.2	U	1.8	-	-	-	0.24	U	0.22	U	0.22	U	0.13	J	-	-
1,4-Dioxane	123-91-1	0.1	13	0.1	mg/kg	0.031	U	-	-	0.028	U	1.6	U	-	-	0.031	U	1.4	U	0.032	U	0.031	U	0.027	U	-	-	0.033	U	0.032	U	0.032	U	0.031	U	-	-	0.03	U	0.15	U	-	-	0.036	U	0.033	U	0.033	U	0.029	U	-	-

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Cr
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricte
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 N

Table 1

Supplemental RI Soil Semi-Volatile Organic Compounds Sample Results Summary

318 Nevins Street, Brooklyn, NY

LOCATION					SB-17-N2E1 (30-32)		SB-17-N7E1 (25-27)		SB-17-N7E1 (25-27)		SB-17-N7E1 (33-35)		SB-17-N3E1 (21-23)		SB-17-N3E1 (32-34)		SB-17 N6E1 (22-24)		SB-17 N6E1 (22-24)		SB-17 N4E1 (23-25)		SB-17 N4E1 (23-25)		SB-17 N6E1 (33-35)		SB-17 N4E1 (33-35)		SB-17 N2E2 (18-20)		SB-17 N2E2 (18-20)		SB-17 N2E2 (33-35)		SB-17 N5E1 (23-25)		SB-17 N5E1 (23-25)		SB-DUP 2		SB-17 N5E2 (23-25)		SB-17 N5E2 (23-25)		SB-17 N5E1 (33-35)		SB-17 N5E2 (33-35)		SB-17 N2E3 (23-25)		SB-17 N2E3 (23-25)		SB-17 N2E3 (23-25)	
SAMPLING DATE		NY-RESGW	NY-RESRR	NY-UNRES	1/20/2023		1/20/2023		1/20/2023		1/20/2023		1/20/2023		1/20/2023		1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023	
LAB SAMPLE ID					L2303515-05		L2303515-06		L2303515-06 R3		L2303515-07		L2303515-08		L2303515-10		L2303779-01		L2303779-01 R1		L2303779-02		L2303779-02 R1		L2303779-03		L2303779-04		L2303779-05		L2303779-05 R1		L2303779-06		L2303779-07		L2303779-07 R3		L2303779-08		L2303779-11		L2303942-01		L2303942-01 R2		L2303942-02		L2303942-03		L2303942-03 R1		L2303942-03	
SAMPLE TYPE					SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
Cas/Num					Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Semivolatile Organics by GC/MS																																																					
Acenaphthene	83-32-9	98	100	20	mg/kg	0.044	J	140	E	200		0.18		0.088	J	0.15	J	170	E	190		44	E	38		0.16	U	0.17	U	4.4		-	-	0.039	J	18		-	-	0.16	U	0.16	U	25		-	-	0.028	J	7.8		-	-		
1,2,4-Trichlorobenzene	120-82-1				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.21	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
Hexachlorobenzene	118-74-1	3.2	1.2	0.33	mg/kg	0.12	U	1.2	U	-	-	0.12	U	0.14	U	0.12	U	1.2	U	-	-	0.58	U	-	-	0.12	U	0.13	U	0.13	U	-	-	0.12	U	2.7	U	-	-	0.12	U	0.12	U	1.1	U	-	-	0.13	U	1.2	U	-	-		
Bis(2-chloroethyl)ether	111-44-4				mg/kg	0.19	U	1.7	U	-	-	0.18	U	0.2	U	0.19	U	1.8	U	-	-	0.87	U	-	-	0.18	U	0.19	U	0.2	U	-	-	0.18	U	4.1	U	-	-	0.18	U	0.18	U	1.7	U	-	-	0.19	U	1.7	U	-	-		
2-Chloronaphthalene	91-58-7				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.21	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
1,2-Dichlorobenzene	95-50-1	1.1	100	1.1	mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
1,3-Dichlorobenzene	541-73-1	2.4	49	2.4	mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
1,4-Dichlorobenzene	106-46-7	1.8	13	1.8	mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
3,3'-Dichlorobenzidine	91-94-1				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
2,4-Dinitrotoluene	121-14-2				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
2,6-Dinitrotoluene	606-20-2				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
Fluoranthene	206-44-0	1000	100	100	mg/kg	0.036	J	120	E	200		0.47		0.068	J	0.044	J	160	E	180		41	E	32		0.12	U	0.13	U	24	E	32		0.12	U	52		-	-	0.12	U	0.12	U	28		-	-	0.03	J	31		-	-		
4-Chlorophenyl phenyl ether	7005-72-3				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
4-Bromophenyl phenyl ether	101-55-3				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
Bis(2-chloroisopropyl)ether	108-60-1				mg/kg	0.25	U	2.3	U	-	-	0.24	U	0.27	U	0.25	U	2.4	U	-	-	1.2	U	-	-	0.25	U	0.25	U	0.26	U	-	-	0.24	U	5.4	U	-	-	0.24	U	0.25	U	2.3	U	-	-	0.25	U	2.3	U	-	-		
Bis(2-chloroethoxy)methane	111-91-1				mg/kg	0.22	U	2.1	U	-	-	0.22	U	0.24	U	0.22	U	2.2	U	-	-	1	U	-	-	0.22	U	0.23	U	0.23	U	-	-	0.22	U	4.9	U	-	-	0.22	U	0.22	U	2.1	U	-	-	0.23	U	2.1	U	-	-		
Hexachlorobutadiene	87-68-3				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
Hexachlorocyclopentadiene	77-47-4				mg/kg	0.59	U	5.5	U	-	-	0.58	U	0.65	U	0.59	U	5.8	U	-	-	2.8	U	-	-	0.59	U	0.6	U	0.62	U	-	-	0.58	U	13	U	-	-	0.59	U	0.59	U	5.4	U	-	-	0.6	U	5.5	U	-	-		
Hexachloroethane	67-72-1				mg/kg	0.16	U	1.5	U	-	-	0.16	U	0.18	U	0.17	U	1.6	U	-	-	0.77	U	-	-	0.16	U	0.17	U	0.17	U	-	-	0.16	U	3.6	U	-	-	0.16	U	0.16	U	1.5	U	-	-	0.17	U	1.5	U	-	-		
Isophorone	78-59-1				mg/kg	0.18	U	1.7	U	-	-	0.18	U	0.2	U	0.19	U	1.8	U	-	-	0.87	U	-	-	0.18	U	0.19	U	0.2	U	-	-	0.18	U	4.1	U	-	-	0.18	U	0.18	U	1.7	U	-	-	0.19	U	1.7	U	-	-		
Naphthalene	91-20-3	12	100	12	mg/kg	0.1	J	300	E	1200		1.4		3		0.2	J	420	E	740		130	E	140		0.2	U	0.033	J	47	E	110		0.06	J	2.7		260	E	0.2	U	0.2	U	140	E	160		0.21		92		130	E		
Nitrobenzene	98-95-3				mg/kg	0.19	U	1.7	U	-	-	0.18	U	0.2	U	0.19	U	1.8	U	-	-	0.87	U	-	-	0.18	U	0.19	U	0.2	U	-	-	0.18	U	4.1	U	-	-	0.18	U	0.18	U	1.7	U	-	-	0.19	U	1.7	U	-	-		
NDPA/DPA	86-30-6				mg/kg	0.16	U	1.5	U	-	-	0.16	U	0.18	U	0.17	U	1.6	U	-	-	0.77	U	-	-	0.16	U	0.17	U	0.17	U	-	-	0.16	U	3.6	U	-	-	0.16	U	0.16	U	1.5	U	-	-	0.17	U	1.5	U	-	-		
n-Nitrosodi-n-propylamine	621-64-7				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
Bis(2-ethylhexyl)phthalate	117-81-7				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
Butyl benzyl phthalate	85-68-7				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
Di-n-butylphthalate	84-74-2				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
Di-n-octylphthalate	117-84-0				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
Diethyl phthalate	84-66-2				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
Dimethyl phthalate	131-11-3				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
Benzo(a)anthracene	56-55-3	1	1	1	mg/kg	0.12	U	84	E	100		0.24		0.043	J	0.12	U	84	E	85		21		-	-	0.13	U	0.13	U	14	E	16		0.12	U	24		-	-	0.12	U	0.12	U	15		-	-	0.13	U	15		-	-		
Benzo(a)pyrene	50-32-8	22	1	1	mg/kg	0.16	U	76		-	-	0.2	U	0.18	U	0.17	U	65		-	-	17		-	-	0.16	U	0.17	U	11	E	14		0.16	U	21		-	-	0.16	U	0.16	U	12		-	-	0.17	U	12		-	-		
Benzo(b)fluoranthene	205-99-2	1.7	1	1	mg/kg	0.12	U	55		-	-	0.16		0.14	U	0.12	U	44		-	-	12		-	-	0.12	U	0.13	U	7.7		-	-	0.12	U	17		-	-	0.12	U	0.12	U	8.8		-	-	0.13	U	7.7		-	-		
Benzo(k)fluoranthene	207-08-9	1.7	3.9	0.8	mg/kg	0.12	U	16		-	-	0.044	J	0.14	U	0.12	U	17		-	-	4.9		-	-	0.12	U	0.13	U	2.5		-	-	0.12	U	4.8		-	-	0.12	U	0.12	U	2.9		-	-	0.13	U	2.9		-	-		
Chrysene	218-01-9	1	3.9	1	mg/kg	0.12	U	69		-	-	0.2		0.033	J	0.12	U	74		-	-	19		-	-	0.12	U	0.13	U	12	E	15		0.12	U	22		-	-	0.12	U	0.12	U	14		-	-	0.13	U	14		-	-		
Acenaphthylene	208-96-8	107	100	100	mg/kg	0.041	J	110	E	170		0.68		0.095	J	0.28		54		-	-	14		-	-	0.16	U	0.17	U	27	E	39		0.056	J	86		-	-	0.052	J	0.16	U	13		-	-	0.17	U	39		-	-		
Anthracene	120-12-7	1000	100	100	mg/kg	0.12	U	100	E	160		0.41		0.077	J	0.12	U	130	E	140		34		-	-	0.12	U	0.13	U	19	E	24		0.12	U	43		-	-	0.12	U	0.12	U	22		-	-	0.13	U	25		-	-		
Benzo(ghi)perylene	191-24-2	1000	100	100	mg/kg	0.16	U	30		-	-	0.069	J	0.18	U	0.17	U	25		-	-	6.8		-	-	0.16	U	0.17	U	4.5		-	-	0.16	U	8.3		-	-	0.16	U	0.16	U	4.7		-	-	0.17	U	4.7		-	-		
Fluorene	86-73-7	386	100	30	mg/kg	0.042	J	130	E	200		0.48		0.14	J	0.071	J	130	E	130		31		-	-	0.2	U	0.21	U	18	E	24		0.2	U	48		-	-	0.2	U	0.2	U	21		-	-	0.036	J	26		-	-		
Phenanthrene	85-01-8	1000	100	100	mg/kg	0.14		220	E	590		1.4		0.32		0.17		330	E	480		100	E	96		0.049	J	0.13	U	48	E	84		0.036	J	150		-	-	0.12	U	0.12	U	78	E	89		0.11	J	62		88	E		
Dibenz(a,h)anthracene	53-70-3	1000	0.33	0.33	mg/kg	0.12	U	6.1		-	-	0.14	U	0.14	U	0.12	U	7		-	-	2		-	-	0.12	U	0.13	U	1.3		-	-	0.12	U	2	J	-	-	0.13	U	0.13	U	1.3		-	-	0.13	U	1.3		-	-		
Indeno(1,2,3-cd)pyrene	193-39-5	8.2	0.5	0.5	mg/kg	0.16	U	29		-	-	0.08	J	0.18	U	0.17	U	19		0.5	J	5.5		-	-	0.16	U	0.17	U	3.4		-	-	0.16	U	6		-	-	0.16	U	0.16	U	3.6		-	-	0.17	U	3.7		-	-		
Pyrene	129-00-0	1000	100	100	mg/kg	0.048	J	150	E	290		0.71		0.094	J	0.06	J	200	E	250		58	E	46		0.028	J	0.13	U	30	E	47		0.028	J	77		-	-	0.12	U	0.12	U	39		-	-	0.041	J	44		-	-		
Biphenyl	92-52-4				mg/kg	0.47	U	63		-	-	0.16	J	0.076	J	0.065	J	46		-	-	12		-	-	0.47	U	0.48	U	6.3		-	-	0.46	U	18		-	-	0.47	U	0.47	U	8.4		-	-	0.48	U	9.8		-	-		
4-Chloroaniline	106-47-8				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
2-Nitroaniline	88-74-4				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
3-Nitroaniline	99-09-2				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
4-Nitroaniline	100-01-6				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
Dibenzofuran	132-64-9	210	59	7	mg/kg	0.21	U	14		-	-	0.047	J	0.23	U	0.21	U	12		-	-	2.8		-	-	0.2	U	0.21	U	1.5		-	-	0.2	U	4.7		-	-	0.2	U	0.2	U	1.8	J	-	-	0.21	U	2.3		-	-		
2-Methylnaphthalene	91-57-6	0.077	J		330	E	610		-	-	1.1		0.73		0.13	J	330	E	370		90	E	76		0.25	U	0.25	U	41	E	57		0.026	J	150		-	-	0.24	U	0.25	U	62		-	-	0.073	J	76		-	-		
1,2,4,5-Tetrachlorobenzene	95-94-3				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
Acetophenone	98-86-2				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
2,4,6-Trichlorophenol	88-06-2				mg/kg	0.12	U	1.2	U	-	-	0.12	U	0.14	U	0.12	U	1.2	U	-	-	0.58	U	-	-	0.12	U	0.13	U	0.13	U	-	-	0.12	U	2.7	U	-	-	0.12	U	0.12	U	1.1	U	-	-	0.13	U	1.2	U	-	-		
p-Chloro-m-cresol	59-50-7				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
2-Chlorophenol	95-57-8				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
2,4-Dichlorophenol	120-83-2				mg/kg	0.19	U	1.7	U	-	-	0.18	U	0.2	U	0.19	U	1.8	U	-	-	0.87	U	-	-	0.18	U	0.19	U	0.2	U	-	-	0.18	U	4.1	U	-	-	0.18	U	0.18	U	1.7	U	-	-	0.19	U	1.7	U	-	-		
2,4-Dimethylphenol	105-67-9				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
2-Nitrophenol	88-75-5				mg/kg	0.45	U	4.1	U	-	-	0.44	U	0.49	U	0.45	U	4.4	U	-	-	2.1	U	-	-	0.44	U	0.46	U	0.47	U	-	-	0.43	U	9.8	U	-	-	0.44	U	0.44	U	4.1	U	-	-	0.46	U	4.1	U	-	-		
4-Nitrophenol	100-02-7				mg/kg	0.29	U	2.7	U	-	-	0.28	U	0.32	U	0.29	U	2.8	U	-	-	1.3	U	-	-	0.29	U	0.3	U	0.3	U	-	-	0.28	U	6.4	U	-	-	0.29	U	0.29	U	2.7	U	-	-	0.3	U	2.7	U	-	-		
2,4-Dinitrophenol	51-28-5				mg/kg	0.99	U	9.2	U	-	-	0.98	U	1.1	U	1	U	9.8	U	-	-	4.6	U	-	-	0.99	U	1	U	1	U	-	-	0.96	U	22	U	-	-	0.98	U	0.99	U	9.2	U	-	-	1	U	9.2	U	-	-		
4,6-Dinitro-o-cresol	534-52-1				mg/kg	0.54	U	5	U	-	-	0.53	U	0.59	U	0.54	U	5.3	U	-	-	2.5	U	-	-	0.54	U	0.55	U	0.56	U	-	-	0.52	U	12	U	-	-	0.53	U	0.54	U	5	U	-	-	0.55	U	5	U	-	-		
Pentachlorophenol	87-86-5	0.8	6.7	0.8	mg/kg	0.16	U	1.5	U	-	-	0.16	U	0.18	U	0.17	U	1.6	U	-	-	0.77	U	-	-	0.16	U	0.17	U	0.17	U	-	-	0.16	U	3.6	U	-	-	0.16	U	0.16	U	1.5	U	-	-	0.17	U	1.5	U	-	-		
Phenol	108-95-2	0.33	100	0.33	mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.07	J	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
2-Methylphenol	95-48-7	0.33	100	0.33	mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
3-Methylphenol/4-Methylphenol	108-39-4/106-44-5	0.33	100	0.33	mg/kg	0.3	J	2.8	U	-	-	0.29	U	0.076	J	0.3	J	2.9	U	-	-	1.4	U	-	-	0.29	U	0.3	U	0.31	J	-	-	0.29	U	6.5	U	-	-	0.3	U	0.3	U	2.7	U	-	-	0.3	U	2.8	U	-	-		
2,4,5-Trichlorophenol	95-95-4				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
Benzoic Acid	65-85-0				mg/kg	0.67	U	6.2	U	-	-	0.66	U	0.73	U	0.67	U	6.6	U	-	-	3.1	U	-	-	0.67	U	0.68	U	0.7	U	-	-	0.65	U	15	U	-	-	0.66	U	0.67	U	6.2	U	-	-	0.68	U	6.2	U	-	-		
Benzyl Alcohol	100-51-6				mg/kg	0.21	U	1.9	U	-	-	0.2	U	0.23	U	0.21	U	2	U	-	-	0.96	U	-	-	0.2	U	0.21	U	0.22	U	-	-	0.2	U	4.5	U	-	-	0.2	U	0.2	U	1.9	U	-	-	0.21	U	1.9	U	-	-		
Carbazole	86-74-8				mg/kg	0.21	U	3.6		-	-	0.2	U	0.031	J	0.21	U	3.5	U	-	-	0.79	J	-	-	0.2	U	0.21	U	0.48	J	-	-	0.2	U	1.1	J	-	-	0.2	U	0.2	U	0.48	J	-	-	0.21	U	0.51	J	-	-		
1,4-Dioxane	123-91-1	0.1	13	0.1	mg/kg	0.031	U	0.29	U	-	-	0.03	U	0.034	U	0.031	U	0.3	U	-	-	0.14	U	-	-	0.031	U	0.032	U	0.032	U	-	-	0.03	U	0.68	U	-	-	0.031	U	0.031	U	0.29	U	-	-	0.032	U	0.29	U	-	-		

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Cr
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricte
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 N

Table 1

Supplemental RI Soil Semi-Volatile Organic Compounds Sample Results Summary

318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESNR	NY-UNRES	SB-17 N2E3 (33-35)		SB-17 N7E2 (25-27)		SB-17 N7E2 (25-27)		SB-17 N7E2 (33-35)		SB-17 N2E4 (23-25)		SB-17 N2E4 (25-27)		SB-17 N7E3 (25-27)		SB-17 N7E3 (30-32)		SB-17-N3E2 20-22		SB-17-N3E2 20-22		SB-17-N3E2 26-28		SB-17-N4E2 20-22		SB-17-N4E2 20-22		SB-17-N4E2 30-32		SB-17-N6E2 23-25		SB-DUP3		SB-17-N6E2 30-32		SB-17-N4E3 20-22		SB-17-N4E3 20-22		SB-17-N4E3 20-22		SB-17-N4E3 30-32		SB-17-N6E3 25-27	
SAMPLING DATE					1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023	
LAB SAMPLE ID					L2303942-04		L2303942-05		L2303942-05 R1		L2303942-06		L2303942-07		L2303942-08		L2303942-09		L2303942-11		L2304246-01		L2304246-01 R1		L2304246-02		L2304246-03		L2304246-03 R1		L2304246-03 R2		L2304246-04		L2304246-05		L2304246-06		L2304246-09		L2304246-10		L2304246-10 R1		L2304246-10 R2		L2304246-11		L2304246-12	
SAMPLE TYPE					SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum			Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Semivolatile Organics by GC/MS																																																	
Acenaphthene	83-32-9	98	100	20	0.17		56		-	-	0.18	U	0.13	J	0.059	J	0.77		0.17	U	9.8	E	-	-	0.026	J	28	E	-	-	63		0.032	J	0.29		0.16	U	19	E	-	-	25		0.15	U	3.5	
1,2,4-Trichlorobenzene	120-82-1				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
Hexachlorobenzene	118-74-1	3.2	1.2	0.33	0.12	U	3	U	-	-	0.13	U	0.12	U	0.12	U	0.12	U	0.13	U	0.12	U	-	-	0.12	U	0.12	U	-	-	-	-	0.12	U	0.12	U	0.12	U	0.12	U	0.11	U	-	-	-	-	0.11	U	0.37	U
Bis(2-chloroethyl)ether	111-44-4				0.18	U	4.5	U	-	-	0.2	U	0.19	U	0.18	U	0.19	U	0.19	U	0.19	U	-	-	0.18	U	0.18	U	-	-	-	-	0.18	U	0.17	U	0.18	U	0.18	U	0.17	U	-	-	-	-	0.17	U	0.55	U
2-Chloronaphthalene	91-58-7				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
1,2-Dichlorobenzene	95-50-1	1.1	100	1.1	0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
1,3-Dichlorobenzene	541-73-1	2.4	49	2.4	0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
1,4-Dichlorobenzene	106-46-7	1.8	13	1.8	0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
3,3-Dichlorobenzidine	91-94-1				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
2,4-Dinitrotoluene	121-14-2				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
2,6-Dinitrotoluene	606-20-2				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
Fluoranthene	206-44-0	1000	100	100	0.12	U	190		-	-	0.13	U	0.4		0.059	J	1.2		0.13	U	21	E	-	-	0.12	U	18	E	-	-	51		0.029	J	0.2		0.12	U	38	E	-	-	81		0.11	U	2.5	
4-Chlorophenyl phenyl ether	7005-72-3				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
4-Bromophenyl phenyl ether	101-55-3				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
Bis(2-chloroisopropyl)ether	108-60-1				0.24	U	6	U	-	-	0.26	U	0.25	U	0.24	U	0.24	U	0.25	U	0.25	U	-	-	0.25	U	0.24	U	-	-	-	-	0.25	U	0.23	U	0.24	U	0.25	U	0.23	U	-	-	-	-	0.22	U	0.74	U
Bis(2-chloroethoxy)methane	111-91-1				0.22	U	5.4	U	-	-	0.24	U	0.23	U	0.22	U	0.22	U	0.23	U	0.23	U	-	-	0.23	U	0.22	U	-	-	-	-	0.22	U	0.21	U	0.22	U	0.2	U	0.21	U	-	-	-	-	0.2	U	0.66	U
Hexachlorobutadiene	87-68-3				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
Hexachlorocyclopentadiene	77-47-4				0.58	U	14	U	-	-	0.63	U	0.6	U	0.58	U	0.58	U	0.61	U	0.6	U	-	-	0.59	U	0.56	U	-	-	-	-	0.59	U	0.55	U	0.58	U	0.59	U	0.54	U	-	-	-	-	0.53	U	1.8	U
Hexachloroethane	67-72-1				0.16	U	4	U	-	-	0.18	U	0.17	U	0.16	U	0.16	U	0.17	U	0.17	U	-	-	0.16	U	0.16	U	-	-	-	-	0.16	U	0.15	U	0.16	U	0.16	U	0.15	U	-	-	-	-	0.15	U	0.49	U
Isophorone	78-59-1				0.18	U	4.5	U	-	-	0.2	U	0.19	U	0.18	U	0.18	U	0.19	U	0.19	U	-	-	0.18	U	0.18	U	-	-	-	-	0.18	U	0.17	U	0.18	U	0.18	U	0.17	U	-	-	-	-	0.17	U	0.55	U
Naphthalene	91-20-3	12	100	12	0.17	J	960	E	1300	E	0.04	J	0.77		0.18	J	6.6		0.091	J	44	E	-	-	0.05	J	39	E	-	-	260		0.21		0.93		0.2	U	0.051	J	89	E	-	-	410		0.05	J	0.62	U
Nitrobenzene	98-95-3				0.18	U	4.5	U	-	-	0.2	U	0.19	U	0.18	U	0.18	U	0.19	U	0.19	U	-	-	0.18	U	0.18	U	-	-	-	-	0.18	U	0.17	U	0.18	U	0.18	U	0.17	U	-	-	-	-	0.17	U	0.55	U
NDPA/DPA	86-30-6				0.16	U	4	U	-	-	0.18	U	0.17	U	0.16	U	0.16	U	0.17	U	0.17	U	-	-	0.16	U	0.16	U	-	-	-	-	0.16	U	0.15	U	0.16	U	0.16	U	0.15	U	-	-	-	-	0.15	U	0.49	U
n-Nitrosodi-n-propylamine	621-64-7				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
Bis(2-ethylhexyl)phthalate	117-81-7				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
Butyl benzyl phthalate	85-68-7				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
Di-n-butylphthalate	84-74-2				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
Di-n-octylphthalate	117-84-0				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
Diethyl phthalate	84-66-2				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
Dimethyl phthalate	131-11-3				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
Benzo(a)anthracene	56-55-3	1	1	1	0.12	U	97		-	-	0.13	U	0.2		0.12		0.59		0.13	U	19	E	-	-	1.4		32	E	-	-	26		0.12	U	0.097	J	0.12	U	37	E	-	-	45		0.11	U	1.3	
Benzo(a)pyrene	50-32-8	22	1	1	0.16	U	81		-	-	0.18	U	0.2	U	0.16	U	0.55		0.17	U	17	E	-	-	2.6		26	E	-	-	22		0.16	U	0.074	J	0.16	U	36	E	-	-	36		0.15	U	1.1	
Benzo(b)fluoranthene	205-99-2	1.7	1	1	0.12	U	55		-	-	0.13	U	0.13		0.12	U	0.37		0.13	U	13	E	-	-	1.8		19	E	-	-	15		0.12	U	0.054	J	0.12	U	30	E	-	-	25		0.11	U	0.8	
Benzo(k)fluoranthene	207-08-9	1.7	3.9	0.8	0.12	U	18		-	-	0.13	U	0.046	J	0.12	U	0.13		0.13	U	37	E	-	-	5		6	E	-	-	3		0.12	U	0.12	U	0.12	U	5.2		-	-	-	-	0.11	U	0.27	J
Chrysene	218-01-9	1	3.9	1	0.12	U	85		-	-	0.13	U	0.2		0.12	U	0.54		0.13	U	15	E	-	-	2.9		29	E	-	-	25		0.12	U	0.086	J	0.12	U	25	E	-	-	40		0.11	U	1.2	
Acenaphthylene	208-96-8	107	100	100	0.34		310	E	380		0.18	U	0.36		0.032	J	1.4		0.17	U	22	E	-	-	0.057	J	10	E	-	-	14		0.05	J	0.037	J	0.16	U	0.16	U	43	E	-	-	89		0.15	U	0.79	
Anthracene	120-12-7	1000	100	100	0.12	U	160		-	-	0.13	U	0.4		0.12	U	0.93		0.13	U	17	E	-	-	0.12	U	46	E	-	-	40		0.12	U	0.16		0.12	U	62	E	-	-	62		0.11	U	2.1	
Benzo(ghi)perylene	191-24-2	1000	100	100	0.16	U	31		-	-	0.18	U	0.069	J	0.16	U	0.21		0.17	U	7	E	-	-	0.16	U	6		-	-	-		0.16	U	0.029	J	0.16	U	0.16	U	14	E	11		-	-	0.15	U	0.43	J
Fluorene	86-73-7	386	100	30	0.079	J	170		-	-	0.22	U	0.34		0.022	J	1		0.21	U	21	E	-	-	0.2	U	50		-	-	41		0.034	J	0.18	J	0.2	U	0.022	J	28	E	-	-	66		0.18	U	2.3	
Phenanthrene	85-01-8	1000	100	100	0.036	J	560	E	690		0.045	J	1.4		0.5		3.5		0.047	J	34	E	-	-	0.055	J	170		-	-	140		0.12	U	0.032	J	0.072	J	70	E	-	-	230		0.052	J	7.9	
Dibenzo(a,h)anthracene	53-70-3	1000	0.33	0.33	0.12	U	8		-	-	0.13	U	0.12	U	0.12	U	0.05	J	0.13	U	1.4		-	-	-		1.4		-	-	-		0.12	U	0.12	U	0.12	U	3.8		-	-	-	-	0.11	U	0.1	J
Indeno(1,2,3-cd)pyrene	193-39-5	8.2	0.5	0.5	0.16	U	24		-	-	0.18	U	0.053	J	0.16	U	0.15	J	0.17	U	5.8		-	-	0.16	U	5.8		-	-	-		0.16	U	0.15	U	0.16	U	0.16	U	14	E	11		-	-	0.15	U	0.41	J
Pyrene	129-00-0	1000	100	100	0.12	U	280	E	340		0.023	J	0.58		0.089	J	1.7		0.029	J	25	E	-	-	0.12	U	82	E	-	-	72		0.044	J	0.26		0.12	U	0.03	J	48	E	-	-	110		0.023	J	3.8	
Biphenyl	92-52-4				0.096	J	69		-	-	0.5	U	0.1	J	0.46	U	0.39	J	0.48	U	12	E	16		-	-	0.47	U	10	E	14		-	-	0.47	U	0.059	J	0.47	U	24	E	21		-	-	0.42	U	0.74	J
4-Chloroaniline	106-47-8				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
2-Nitroaniline	88-74-4				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
3-Nitroaniline	99-09-2				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
4-Nitroaniline	100-01-6				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
Dibenzofuran	132-64-9	210	59	7	0.2	U	16		-	-	0.22	U	0.034	J	0.2	U	0.097	J	0.21	U	2.9		-	-	0.21	U	2.5		-	-	-		0.2	U	0.019	J	0.2	U	0.21	U	5.2		-	-	-	-	0.18	U	0.23	J
2-Methylnaphthalene	91-57-6				0.074	J	580	E	680		0.26	U	0.78		0.054	J	3.2		0.034	J	43	E	-	-	0.25	U	38	E	-	-	120		0.097	J	0.41		0.24	U	0.039	J	90	E	-	-	180		0.026	J	0.74	U
1,2,4,5-Tetrachlorobenzene	95-94-3				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
Acetophenone	98-86-2				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
2,4,6-Trichlorophenol	88-06-2				0.12	U	3	U	-	-	0.13	U	0.12	U	0.12	U	0.12	U	0.13	U	0.12	U	-	-	0.12	U	0.12	U	-	-	-	-	0.12	U	0.11	U	0.12	U	0.12	U	0.11	U	-	-	-	-	0.11	U	0.37	U
p-Chloro-m-cresol	59-50-7				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
2-Chlorophenol	95-57-8				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
2,4-Dichlorophenol	120-83-2				0.18	U	4.5	U	-	-	0.2	U	0.19	U	0.18	U	0.18	U	0.19	U	0.19	U	-	-	0.18	U	0.18	U	-	-	-	-	0.18	U	0.17	U	0.18	U	0.18	U	0.17	U	-	-	-	-	0.17	U	0.55	U
2,4-Dimethylphenol	105-67-9				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
2-Nitrophenol	88-75-5				0.44	U	11	U	-	-	0.48	U	0.45	U	0.44	U	0.44	U	0.46	U	0.45	U	-	-	0.44	U	0.42	U	-	-	-	-	0.44	U	0.42	U	0.44	U	0.44	U	0.41	U	-	-	-	-	0.4	U	1.3	U
4-Nitrophenol	100-02-7				0.28	U	7	U	-	-	0.31	U	0.29	U	0.28	U	0.28	U	0.3	U	0.29	U	-	-	0.29	U	0.27	U	-	-	-	-	0.29	U	0.27	U	0.29	U	0.29	U	0.27	U	-	-	-	-	0.26	U	0.86	U
2,4-Dinitrophenol	51-28-5				0.97	U	24	U	-	-	1	U	1	U	0.97	U	0.98	U	1	U	1	U	-	-	0.99	U	0.94	U	-	-	-	-	0.98	U	0.93	U	0.98	U	0.99	U	0.92	U	-	-	-	-	0.89	U	3	U
4,6-Dinitro-o-cresol	534-52-1				0.53	U	13	U	-	-	0.57	U	0.54	U	0.52	U	0.53	U	0.55	U	0.54	U	-	-	0.54	U	0.51	U	-	-	-	-	0.53	U	0.5	U	0.53	U	0.54	U	0.5	U	-	-	-	-	0.48	U	1.6	U
Pentachlorophenol	87-86-5	0.8	6.7	0.8	0.16	U	4	U	-	-	0.18	U	0.17	U	0.16	U	0.16	U	0.17	U	0.17	U	-	-	0.16	U	0.16	U	-	-	-	-	0.16	U	0.15	U	0.16	U	0.16	U	0.15	U	-	-	-	-	0.15	U	0.49	U
Phenol	108-95-2	0.33	100	0.33	0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
2-Methylphenol	95-48-7	0.33	100	0.33	0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
3-Methylphenol/4-Methylphenol	108-39-4/106-44-5	0.33	100	0.33	0.29	U	7.2	U	-	-	0.32	U	0.3	U	0.29	U	0.29	U	0.3	U	0.3	U	-	-	0.28	U	0.28	U	-	-	-	-	0.28	U	0.26	U	0.29	U	0.3	U	0.27	U	-	-	-	-	0.27	U	0.88	U
2,4,5-Trichlorophenol	95-95-4				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
Benzoic Acid	65-85-0				0.66	U	16	U	-	-	0.72	U	0.68	U	0.65	U	0.66	U	0.69	U	0.68	U	-	-	0.67	U	0.64	U	-	-	-	-	0.66	U	0.62	U	0.66	U	0.67	U	0.62	U	-	-	-	-	0.6	U	2	U
Benzyl Alcohol	100-51-6				0.2	U	5	U	-	-	0.22	U	0.21	U	0.2	U	0.2	U	0.21	U	0.21	U	-	-	0.21	U	0.2	U	-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	0.19	U	-	-	-	-	0.18	U	0.62	U
Carbazole	86-74-8				0.2	U	4.3	J	-	-	0.22	U	0.21	U	0.2	U	0.028	J	0.21	U	0.8		-	-	0.21	U	0.68		-	-	-	-	0.2	U	0.19	U	0.2	U	0.21	U	2.3		-	-	-	-	0.18	U	0.62	U
1,4-Dioxane	123-91-1	0.1	13	0.1	0.03	U	0.75	U	-	-	0.033	U	0.031	U	0.03	U	0.03	U	0.032	U	0.031	U	-	-	0.031	U	0.029	U	-	-	-	-	0.031	U	0.029	U	0.031	U	0.031	U	0.029	U	-	-	-	-	0.028	U	0.092	U

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Cr
NY-RESNR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricte
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 N

Table 1

Supplemental RI Soil Semi-Volatile Organic Compounds Sample Results Summary

318 Nevins Street, Brooklyn, NY

LOCATION					SB-17-N6E3 30-32		SB-17-N3E3 (23-25)		SB-17-N5E3 23-25		SB-17-N5E3 30-32		SB-17-N4E4 21-23		SB-17-N4E4 21-23		SB-17-N4E4 28-30		SB-17-N5E4 25-27		SB-17-N5E4 25-27		SB-17-N5E4 28-30		SB-17-S2E1 30-32		SB-17-S2E1 30-32		SB-17-S2E1 35-37		SB-17-S2E2 33-35		SB-17-S2E2 35-37		SB-DUP 4		SB-17-S3 25-27		SB-17-S3 25-27		SB-17-S3 35-37		SB-17-S4 25-27		SB-17-S4 25-27		SB-17-S4 33-35	
SAMPLING DATE		NY-RESGW	NY-RESRR	NY-UNRES	1/25/2023		1/26/2023		1/26/2023		1/26/2023		1/26/2023		1/26/2023		1/26/2023		1/26/2023		1/26/2023		1/26/2023		1/27/2023		1/27/2023		1/27/2023		1/27/2023		1/27/2023		1/27/2023		1/30/2023		1/30/2023		1/30/2023		1/30/2023		1/30/2023		1/30/2023	
LAB SAMPLE ID					L2304246-13		L2304515-01		L2304515-02		L2304515-03		L2304515-04		L2304515-05		L2304515-05 R3		L2304515-06		L2304515-07		L2304515-07 R1		L2304515-08		L2304757-01		L2304757-01 R2		L2304757-02		L2304757-03		L2304757-04		L2304757-05		L2304991-01		L2304991-01 R1		L2304991-02		L2304991-03		L2304991-03 R1		L2304991-04	
SAMPLE TYPE					SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Cas Num				Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Semivolatile Organics by GC/MS																																															
Acenaphthene	83-32-9	98	100	20	mg/kg	0.15	U	0.05	J	0.16	U	0.17	U	0.16	U	48		-	-	0.44		2		-	-	0.12	J	630	E	1500		0.05	J	0.39		0.15	U	0.047	J	79	E	47		0.089	J	26	E	54		0.054	J
1,2,4-Trichlorobenzene	120-82-1				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.19	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
Hexachlorobenzene	118-74-1	3.2	1.2	0.33	mg/kg	0.11	U	0.12	U	0.12	U	0.11	U	0.12	U	1.1	U	-	-	0.11	U	0.12	U	-	-	0.12	U	3.6	U	-	-	0.11	U	0.13	U	0.11	U	0.11	U	0.59	U	-	-	0.12	U	0.11	U	-	-	0.12	U
Bis(2-chloroethyl)ether	111-44-4				mg/kg	0.17	U	0.18	U	0.18	U	0.17	U	0.18	U	1.7	U	-	-	0.18	U	0.19	U	-	-	0.17	U	5.4	U	-	-	0.17	U	0.2	U	0.17	U	0.17	U	0.89	U	-	-	0.18	U	0.17	U	-	-	0.19	U
2-Chloronaphthalene	91-58-7				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
1,2-Dichlorobenzene	95-50-1	1.1	100	1.1	mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
1,3-Dichlorobenzene	541-73-1	2.4	49	2.4	mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
1,4-Dichlorobenzene	106-46-7	1.8	13	1.8	mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
3,3'-Dichlorobenzidine	91-94-1				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
2,4-Dinitrotoluene	121-14-2				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
2,6-Dinitrotoluene	606-20-2				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
Fluoranthene	206-44-0	1000	100	100	mg/kg	0.11	U	0.18		0.029	J	0.21		0.12	U	120	E	160		0.11	U	8.4	E	9		0.12	U	460	E	940		0.05	J	1		0.11	U	0.074	J	60	E	37		0.048	J	20	E	47		0.12	U
4-Chlorophenyl phenyl ether	7005-72-3				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
4-Bromophenyl phenyl ether	101-55-3				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
Bis(2-chloroisopropyl)ether	108-60-1				mg/kg	0.23	U	0.24	U	0.25	U	0.22	U	0.25	U	2.2	U	-	-	0.22	U	0.25	U	-	-	0.24	U	7.3	U	-	-	0.22	U	0.26	U	0.22	U	0.22	U	1.2	U	-	-	0.24	U	0.23	U	-	-	0.25	U
Bis(2-chloroethoxy)methane	111-91-1				mg/kg	0.2	U	0.22	U	0.22	U	0.2	U	0.22	U	2	U	-	-	0.2	U	0.22	U	-	-	0.22	U	6.6	U	-	-	0.2	U	0.24	U	0.2	U	0.2	U	1.1	U	-	-	0.21	U	0.21	U	-	-	0.22	U
Hexachlorobutadiene	87-68-3				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
Hexachlorocyclopentadiene	77-47-4				mg/kg	0.54	U	0.58	U	0.59	U	0.54	U	0.59	U	5.4	U	-	-	0.53	U	0.6	U	-	-	0.57	U	17	U	-	-	0.53	U	0.63	U	0.53	U	0.53	U	2.8	U	-	-	0.56	U	0.55	U	-	-	0.59	U
Hexachloroethane	67-72-1				mg/kg	0.15	U	0.16	U	0.16	U	0.15	U	0.16	U	1.5	U	-	-	0.15	U	0.17	U	-	-	0.16	U	4.8	U	-	-	0.15	U	0.18	U	0.15	U	0.15	U	0.79	U	-	-	0.16	U	0.15	U	-	-	0.17	U
Isophorone	78-59-1				mg/kg	0.17	U	0.18	U	0.18	U	0.17	U	0.18	U	1.7	U	-	-	0.16	U	0.19	U	-	-	0.18	U	5.4	U	-	-	0.17	U	0.2	U	0.17	U	0.17	U	0.89	U	-	-	0.18	U	0.17	U	-	-	0.19	U
Naphthalene	91-20-3	12	100	12	mg/kg	0.19	U	0.47		0.27		0.38		0.2	U	280	E	820		0.023	J	25	E	28		0.2	U	2500	E	5800		0.08	J	2.1		0.19	U	0.18	U	54	E	31		0.033	J	29	E	110		0.21	U
Nitrobenzene	98-95-3				mg/kg	0.17	U	0.18	U	0.18	U	0.17	U	0.18	U	1.7	U	-	-	0.17	U	0.19	U	-	-	0.18	U	5.4	U	-	-	0.17	U	0.2	U	0.17	U	0.17	U	0.89	U	-	-	0.18	U	0.17	U	-	-	0.19	U
NDPA/DPA	86-30-6				mg/kg	0.15	U	0.16	U	0.16	U	0.15	U	0.16	U	1.5	U	-	-	0.15	U	0.17	U	-	-	0.16	U	4.8	U	-	-	0.15	U	0.18	U	0.15	U	0.15	U	0.79	U	-	-	0.16	U	0.15	U	-	-	0.17	U
n-Nitrosodi-n-propylamine	621-64-7				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
Bis(2-ethylhexyl)phthalate	117-81-7				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
Butyl benzyl phthalate	85-68-7				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
Di-n-butylphthalate	84-74-2				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
Di-n-octylphthalate	117-84-0				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
Diethyl phthalate	84-66-2				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
Dimethyl phthalate	131-11-3				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
Benzo(a)anthracene	56-55-3	1	1	1	mg/kg	0.11	U	0.079	J	0.12	U	0.093	J	0.12	U	79	E	78		0.11	U	4.2		-	-	0.12	U	220		-	-	0.03	J	0.53		0.11	U	0.035	J	35		-	-	0.033	J	16	E	25		0.12	U
Benzo(a)pyrene	50-32-8	22	1	1	mg/kg	0.15	U	0.061	J	0.16	U	0.071	J	0.16	U	73		-	-	0.15	U	3.6		-	-	0.16	U	190		-	-	0.04	J	0.49		0.15	U	0.028	J	28		-	-	0.16	U	13	E	21		0.17	U
Benzo(b)fluoranthene	205-99-2	1.7	1	1	mg/kg	0.11	U	0.038	J	0.12	U	0.045	J	0.12	U	53		-	-	0.11	U	2.4		-	-	0.12	U	120		-	-	0.03	J	0.35		0.11	U	0.11	U	19		-	-	0.12	U	10	E	15		0.12	U
Benzo(k)fluoranthene	207-08-9	1.7	3.9	0.8	mg/kg	0.11	U	0.12	U	0.12	U	0.11	U	0.12	U	15		-	-	0.11	U	0.89		-	-	0.12	U	38		-	-	0.11	U	0.1	J	0.11	U	0.11	U	6.9		-	-	0.12	U	2.4		-	-	0.12	U
Chrysene	218-01-9	1	3.9	1	mg/kg	0.11	U	0.073	J	0.12	U	0.084	J	0.12	U	65		-	-	0.11	U	3.9		-	-	0.12	U	180		-	-	0.024	J	0.49		0.11	U	0.03	J	31		-	-	0.03	J	13	E	22		0.12	U
Acenaphthylene	208-96-8	107	100	100	mg/kg	0.15	U	0.19		0.064	J	0.11	J	0.16	U	140	E	240		1.1		11	E	9.4		0.29		200		-	-	0.15	U	0.9		0.15	U	0.15	U	17		-	-	0.082	J	17	E	34		0.085	J
Anthracene	120-12-7	1000	100	100	mg/kg	0.11	U	0.15		0.12	U	0.16		0.12	U	93	E	130		0.18		6.9		-	-	0.04	J	390	E	840		0.057	J	0.72		0.11	U	0.04	J	53	E	34		0.045	J	14	E	42		0.12	U
Benzo(ghi)perylene	191-24-2	1000	100	100	mg/kg	0.15	U	0.026	J	0.16	U	0.03	J	0.16	U	27		-	-	0.81		1.4		-	-	0.16	U	68		-	-	0.15	U	0.19		0.15	U	0.15	U	11		-	-	0.16	U	5.5	E	-	-	0.17	U
Fluorene	86-73-7	386	100	30	mg/kg	0.19	U	0.16	J	0.028	J	0.16	J	0.2	U	140	E	140		0.18	U	6.7		-	-	0.2	U	410	E	940		0.045	J	0.73		0.19	U	0.032	J	49	E	28		0.04	J	20	E	40		0.21	U
Phenanthrene	85-01-8	1000	100	100	mg/kg	0.11	U	0.55		0.097	J	0.6		0.12	U	220	E	460		0.052	J	23	E	24		0.12	U	1200	E	3000		0.14		2.6		0.11	U	0.17		110	E	110		0.12		33	E	140		0.12	U
Dibenzo(a,h)anthracene	53-70-3	1000	0.33	0.33	mg/kg	0.11	U	0.12	U	0.12	U	0.11	U	0.12	U	5.7		-	-	0.11	U	0.46		-	-	0.12	U	16		-	-	0.11	U	0.041	J	0.11	U	0.11	U	2.6		-	-	0.12	U	1.3		-	-	0.12	U
Indeno(1,2,3-cd)pyrene	193-39-5	8.2	0.5	0.5	mg/kg	0.15	U	0.16	U	0.16	U	0.15	U	0.16	U	26		-	-	0.2		1.1		-	-	0.16	U	67		-	-	0.15	U	0.18		0.15	U	0.15	U	11		-	-	0.16	U	5.6		-	-	0.17	U
Pyrene	129-00-0	1000	100	100	mg/kg	0.11	U	0.25		0.043	J	0.29		0.12	U	140	E	240		0.11	U	11	E	12		0.12	U	660	E	1400		0.081	J	1.5		0.11	U	0.1	J	80	E	54		0.083	J	26	E	71		0.12	U
Biphenyl	92-52-4				mg/kg	0.43	U	0.048	J	0.47	U	0.048	J	0.47	U	55		-	-	0.42	U	2.4		-	-	0.46	U	160		-	-	0.42	U	0.21	J	0.42	U	0.42	U	16		-	-	0.45	U	12	E	15		0.47	U
4-Chloroaniline	106-47-8				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
2-Nitroaniline	88-74-4				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
3-Nitroaniline	99-09-2				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
4-Nitroaniline	100-01-6				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
Dibenzofuran	132-64-9	210	59	7	mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	14		-	-	0.18	U	0.56		-	-	0.2	U	37		-	-	0.19	U	0.074	J	0.19	U	0.18	U	4.8		-	-	0.2	U	2.9		-	-	0.21	U
2-Methylnaphthalene	91-57-6				mg/kg	0.23	U	0.3		0.081	J	0.27		0.25	U	300	E	440		0.22	U	16	E	17		0.24	U	1400	E	2900		0.054	J	1.2		0.22	U	0.22	U	10		-	-	0.24	U	25	E	41		0.25	U
1,2,4,5-Tetrachlorobenzene	95-94-3				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
Acetophenone	98-86-2				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.6	J	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
2,4,6-Trichlorophenol	88-06-2				mg/kg	0.11	U	0.12	U	0.12	U	0.11	U	0.12	U	1.1	U	-	-	0.11	U	0.12	U	-	-	0.12	U	3.6	U	-	-	0.11	U	0.13	U	0.11	U	0.11	U	0.59	U	-	-	0.12	U	0.11	U	-	-	0.12	U
p-Chloro-m-cresol	59-50-7				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
2-Chlorophenol	95-57-8				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
2,4-Dichlorophenol	120-83-2				mg/kg	0.17	U	0.18	U	0.18	U	0.17	U	0.18	U	1.7	U	-	-	0.17	U	0.19	U	-	-	0.18	U	5.4	U	-	-	0.17	U	0.2	U	0.17	U	0.17	U	0.89	U	-	-	0.18	U	0.17	U	-	-	0.19	U
2,4-Dimethylphenol	105-67-9				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
2-Nitrophenol	88-75-5				mg/kg	0.41	U	0.44	U	0.44	U	0.4	U	0.44	U	4	U	-	-	0.4	U	0.45	U	-	-	0.43	U	13	U	-	-	0.4	U	0.48	U	0.4	U	0.4	U	2.1	U	-	-	0.42	U	0.41	U	-	-	0.45	U
4-Nitrophenol	100-02-7				mg/kg	0.27	U	0.28	U	0.29	U	0.26	U	0.29	U	2.6	U	-	-	0.26	U	0.29	U	-	-	0.28	U	8.5	U	-	-	0.26	U	0.31	U	0.26	U	0.26	U	1.4	U	-	-	0.28	U	0.27	U	-	-	0.29	U
2,4-Dinitrophenol	51-28-5				mg/kg	0.91	U	0.97	U	0.99	U	0.9	U	9	U	-	-	0.89	U	1	U	0.96	U	9	U	-	-	0.9	U	29	U	-	-	0.9	U	1	U	0.89	U	4.7	U	-	-	0.94	U	0.92	U	-	-	1	U
4,6-Dinitro-o-cresol	534-52-1				mg/kg	0.5	U	0.52	U	0.54	U	0.49	U	0.53	U	4.9	U	-	-	0.48	U	0.54	U	-	-	0.52	U	16	U	-	-	0.48	U	0.57	U	0.48	U	0.48	U	2.6	U	-	-	0.51	U	0.5	U	-	-	0.54	U
Pentachlorophenol	87-86-5	0.8	6.7	0.8	mg/kg	0.15	U	0.16	U	0.16	U	0.15	U	0.16	U	1.5	U	-	-	0.15	U	0.17	U	-	-	0.16	U	4.8	U	-	-	0.15	U	0.18	U	0.15	U	0.15	U	0.79	U	-	-	0.16	U	0.15	U	-	-	0.17	U
Phenol	108-95-2	0.33	100	0.33	mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
2-Methylphenol	95-48-7	0.33	100	0.33	mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
3-Methylphenol/4-Methylphenol	108-39-4/106-44-5	0.33	100	0.33	mg/kg	0.27	U	0.29	U	0.3	U	0.27	U	0.3	U	2.7	U	-	-	0.26	U	0.3	U	-	-	0.29	U	8.7	U	-	-	0.27	U	0.32	U	0.27	U	0.27	U	1.4	U	-	-	0.28	U	0.28	U	-	-	0.3	U
2,4,5-Trichlorophenol	95-95-4				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
Benzoic Acid	65-85-0				mg/kg	0.62	U	0.65	U	0.67	U	0.61	U	0.66	U	6.1	U	-	-	0.6	U	0.68	U	-	-	0.65	U	20	U	-	-	0.6	U	0.71	U	0.6	U	0.6	U	3.2	U	-	-	0.64	U	0.62	U	-	-	0.67	U
Benzyl Alcohol	100-51-6				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	1.9	U	-	-	0.18	U	0.21	U	-	-	0.2	U	6.1	U	-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.99	U	-	-	0.2	U	0.19	U	-	-	0.21	U
Carbazole	86-74-8				mg/kg	0.19	U	0.2	U	0.21	U	0.19	U	0.2	U	3.3		-	-	0.18	U	0.14	J	-	-	0.2	U	9.2		-	-	0.19	U	0.22	U	0.19	U	0.18	U	0.67	J	-	-	0.2	U	0.64		-	-	0.21	U
1,4-Dioxane	123-91-1	0.1	13	0.1	mg/kg	0.028	U	0.03	U	0.031	U	0.028	U	0.031	U	0.28	U	-	-	0.028	U	0.031	U	-	-	0.03	U	0.91	U	-	-	0.028	U	0.033	U	0.028	U	0.028	U	0.15	U	-	-	0.03	U	0.029	U	-	-	0.031	U

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Cr

NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricte

NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 N

Table 1
Supplemental RI Soil Metals Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-16-N1 (34-35)		SB-16-N1 (37-38)		SB-16-S1 (50-51)		SB-16-S1 (55-56)		SB-17-E1 (24-25)		SB-17-E1 (30-31)		SB-17-S2 35-37		SB-17-N1 (24-25)		SB-17-N1 (33-34)		SB-17-S1 (23-24)		SB-17-S1 (35-36)		SB-17-N1E1 (23-25)	
SAMPLING DATE						1/11/2023		1/11/2023		1/11/2023		1/11/2023		1/16/2023		1/16/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023	
LAB SAMPLE ID						L2301629-01		L2301629-02		L2301629-03		L2301629-04		L2302487-01		L2302487-02		L2302691-01		L2302692-01		L2302692-02		L2302692-03		L2302692-04		L2302692-05	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
General Chemistry																													
Solids, Total	NONE				%	85.7		79.8		91.4		88.6		85.9		77.7		78.7		83.2		74.7		82.2		85.5		86.5	
Cyanide, Total	57-12-5	40	27	27	mg/kg	1.1	U	1.2	U	1.1	U	1	U	1.1	U	1.2	U	1.2	U	1.1	U	1.2	U	1.2	U	1.1	U	1	U
Chromium, Hexavalent	18540-29-9	19	110	1	mg/kg	0.933	U	1	U	0.875	U	0.903	U	0.931	U	1.03	U	1.02	U	0.962	U	1.07	U	0.973	U	0.936	U	0.925	U
Total Metals																													
Aluminum, Total	7429-90-5				mg/kg	2410		3330		2330		3380		3940		5530		6360		8000		5520		3410		2200		5270	
Antimony, Total	7440-36-0				mg/kg	4.45	U	4.71	U	4.21	U	4.34	U	4.47	U	4.99	U	1.15	J	4.58	U	5.09	U	4.72	U	4.53	U	4.46	U
Arsenic, Total	7440-38-2	16	16	13	mg/kg	2.76		4.24		2.87		3.28		1.17		2.41		2		2.18		1.54		0.917	J	0.544	J	2.45	
Barium, Total	7440-39-3	820	400	350	mg/kg	13.5		22.4		18.5		15.8		13.9		49.6		56.4		27.1		45		9.86		14.1		16.7	
Beryllium, Total	7440-41-7	47	72	7.2	mg/kg	0.262	J	0.249	J	0.171	J	0.265	J	0.273	J	0.541		0.505		0.458		0.321	J	0.184	J	0.147	J	0.355	J
Cadmium, Total	7440-43-9	7.5	4.3	2.5	mg/kg	0.89	U	0.941	U	0.842	U	0.868	U	0.894	U	0.998	U	0.159	J	0.917	U	1.02	U	0.944	U	0.906	U	0.893	U
Calcium, Total	7440-70-2				mg/kg	365		867		739		8710		174		11600		7920		249		13500		215		5350		170	
Chromium, Total	7440-47-3				mg/kg	9.08		8.01		4.93		7.6		7.42		16		15.6		15		14.1		6.62		5.7		10.1	
Cobalt, Total	7440-48-4				mg/kg	2.78		3.8		2.46		3.03		1.92		6.12		7.34		3.96		6.72		2.14		2.3		4.06	
Copper, Total	7440-50-8	1720	270	50	mg/kg	4.23		7.44		6.7		11.9		6.24		14.3		18.2		9.75		16.6		5.49		5.96		7.49	
Iron, Total	7439-89-6				mg/kg	6510		10600		5890		7920		5220		14100		14100		9910		13900		5930		5820		8680	
Lead, Total	7439-92-1	450	400	63	mg/kg	3.15	J	4.07	J	2.23	J	3.82	J	3.67	J	4.92	J	8.11		7.32		5.87		3.95	J	2.56	J	4.04	J
Magnesium, Total	7439-95-4				mg/kg	1070		1660		1420		2950		1150		6970		6060		1770		7390		1090		2590		1960	
Manganese, Total	7439-96-5	2000	2000	1600	mg/kg	53.8		91.6		78.3		218		33.2		236		213		45.7		304		32		111		56.8	
Mercury, Total	7439-97-6	0.73	0.81	0.18	mg/kg	0.073	U	0.08	U	0.07	U	0.072	U	0.073	U	0.081	U	0.082	U	0.077	U	0.086	U	0.076	U	0.075	U	0.072	U
Nickel, Total	7440-02-0	130	310	30	mg/kg	7.61		12.8		10.6		10.1		5.73		19.9		21.5		9.47		19.6		5.02		8.21		9.43	
Potassium, Total	2023695				mg/kg	474		598		447		1040		647		1750		1590		1150		1620		518		516		584	
Selenium, Total	7782-49-2	4	180	3.9	mg/kg	1.78	U	1.88	U	1.68	U	0.334	J	1.79	U	2	U	1.97	U	1.83	U	0.338	J	1.89	U	1.81	U	1.78	U
Silver, Total	7440-22-4	8.3	180	2	mg/kg	0.445	U	0.471	U	0.421	U	0.434	U	0.447	U	0.499	U	0.492	U	0.458	U	0.509	U	0.472	U	0.453	U	0.446	U
Sodium, Total	7440-23-5				mg/kg	71.1	J	91.5	J	101	J	166	J	217		149	J	147	J	592		274		120	J	69.3	J	530	
Thallium, Total	7440-28-0				mg/kg	1.78	U	1.88	U	1.68	U	1.74	U	1.79	U	2	U	1.97	U	1.83	U	2.04	U	1.89	U	1.81	U	1.78	U
Vanadium, Total	7440-62-2				mg/kg	8.48		10.4		7.8		10.5		10.2		20.1		22		20.8		19.6		9.44		7.18		11.1	
Zinc, Total	7440-66-6	2480	10000	109	mg/kg	16.7		21.3		11.9		17.7		16.6		35.2		36.5		27		33.3		13.9		11.1		22.9	

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.

Table 1
Supplemental RI Soil Metals Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-17-N1E1 (33-35)		SB-17-S1E1 (28-30)		SB-17-S1E1 (35-37)		SB-17-S2 (23-25)		SB-17-N2 (24-25)		SB-17-N2 (35-37)		SB-17-S1E2 (32-34)		SB-17-S1E2 (35-37)		SB-17-N3 (23-25)		SB-17-N3 (33-35)		SB-17-N1E2 (23-25)		SB-17-N1E2 (30-31)	
SAMPLING DATE						1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/18/2023		1/18/2023		1/18/2023		1/18/2023		1/18/2023		1/18/2023		1/18/2023		1/18/2023	
LAB SAMPLE ID						L2302692-06		L2302692-07		L2302692-09		L2302692-10		L2302962-01		L2302962-02		L2302962-03		L2302962-04		L2302962-05		L2302962-06		L2302962-07		L2302962-08	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
General Chemistry																													
Solids, Total	NONE				%	80.5		78.2		85.3		86.3		82.6		81.1		79.6		86.5		79.6		79.2		86.9		75	
Cyanide, Total	57-12-5	40	27	27	mg/kg	1.2	U	1.2	U	1.1	U	1.1	U	1.1	U	1.2	U	1.2	U	1.1	U	1.2	U	1.2	U	1.1	U	1.2	U
Chromium, Hexavalent	18540-29-9	19	110	1	mg/kg	0.994	U	1.02	U	0.938	U	0.927	U	0.968	U	0.986	U	1	U	0.925	U	1	U	1.01	U	0.92	U	1.07	U
Total Metals																													
Aluminum, Total	7429-90-5				mg/kg	7300		3440		2330		4280		7730		2070		3840		2190		9610		3470		3610		5300	
Antimony, Total	7440-36-0				mg/kg	4.86	U	4.99	U	4.53	U	4.46	U	0.508	J	4.66	U	0.538	J	4.54	U	4.72	U	4.93	U	4.32	U	0.889	J
Arsenic, Total	7440-38-2	16	16	13	mg/kg	1.41		1.44		0.782	J	2.08		2.52		1.66		4.36		1.07		3.94		2.77		0.964		4.31	
Barium, Total	7440-39-3	820	400	350	mg/kg	53.6		18.4		18.5		25.9		32.2		17.7		40.1		18		24.6		35.5		12.6		42.8	
Beryllium, Total	7440-41-7	47	72	7.2	mg/kg	0.384	J	0.252	J	0.164	J	0.232	J	0.64		0.134	J	0.161	J	0.136	J	0.541		0.173	J	0.163	J	0.224	J
Cadmium, Total	7440-43-9	7.5	4.3	2.5	mg/kg	0.971	U	0.997	U	0.906	U	0.891	U	0.929	U	0.931	U	0.959	U	0.908	U	0.944	U	0.986	U	0.863	U	1.05	U
Calcium, Total	7440-70-2				mg/kg	11000		548		6040		330		258		4570		1420		7330		260		5250		115		7170	
Chromium, Total	7440-47-3				mg/kg	16.6		11.2		5.96		9.35		14.9		5.04		11.7		5.33		17.2		8.2		8.52		16.2	
Cobalt, Total	7440-48-4				mg/kg	7.8		3.8		2.3		2.68		5.47		2.58		5.33		2.49		3.43		3.99		2.38		6.96	
Copper, Total	7440-50-8	1720	270	50	mg/kg	18.2		6.58		5.93		6.96		16		6.35		11		7.65		13.5		10.1		4.58		14.7	
Iron, Total	7439-89-6				mg/kg	17600		6350		6920		7510		14100		7040		11500		5380		8460		9820		5810		14800	
Lead, Total	7439-92-1	450	400	63	mg/kg	7.17		4.22	J	2.41	J	5.47		8.38		2.16	J	3.06	J	2.74	J	7.77		3.58	J	2.89	J	4.16	J
Magnesium, Total	7439-95-4				mg/kg	7750		1640		3390		1400		2490		2770		3080		3480		1800		4060		1180		6500	
Manganese, Total	7439-96-5	2000	2000	1600	mg/kg	345		59		142		39.7		72.4		149		98.8		290		46.5		195		39.4		170	
Mercury, Total	7439-97-6	0.73	0.81	0.18	mg/kg	0.079	U	0.081	U	0.073	U	0.073	U	0.079	U	0.08	U	0.082	U	0.081	U	0.079	U	0.088	U	0.072	U	0.088	U
Nickel, Total	7440-02-0	130	310	30	mg/kg	21.8		10.6		12.8		6.09		15.4		9.69		18.1		16.5		12.5		13.9		7.06		21.4	
Potassium, Total	2023695				mg/kg	2010		512		749		617		1020		402		1080		497		1070		795		412		1760	
Selenium, Total	7782-49-2	4	180	3.9	mg/kg	0.4	J	0.773	J	1.81	U	1.78	U	0.515	J	1.86	U	0.391	J	1.82	U	0.291	J	0.279	J	1.73	U	2.09	U
Silver, Total	7440-22-4	8.3	180	2	mg/kg	0.486	U	0.499	U	0.453	U	0.446	U	0.464	U	0.466	U	0.479	U	0.454	U	0.472	U	0.493	U	0.432	U	0.523	U
Sodium, Total	7440-23-5				mg/kg	377		85.2	J	89	J	336		547		128	J	114	J	86.8	J	825		248		461		150	J
Thallium, Total	7440-28-0				mg/kg	1.94	U	1.99	U	1.81	U	1.78	U	1.86	U	1.86	U	1.92	U	1.82	U	1.89	U	1.97	U	1.73	U	2.09	U
Vanadium, Total	7440-62-2				mg/kg	21.5		14.6		9.27		12.9		20.8		7.42		17.2		6.38		21.8		11.6		8.8		19.1	
Zinc, Total	7440-66-6	2480	10000	109	mg/kg	38.9		25.2		9.66		17.2		38.9		13.1		23		12.8		34.3		20.3		18		33.2	

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Cri
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricte
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 N

Table 1
Supplemental RI Soil Metals Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-DUP		SB-17-N1E3 (22-24)		SB-17-N1E3 (28-30)		SB-17-N4 (25-30)		SB-17-N4 (38-40)		SB-17-N5 (25-27)		SB-17-N5 (33-35)		SB-17-N6 (23-25)		SB-17-N6 (37-39)	
SAMPLING DATE						1/18/2023		1/19/2023		1/19/2023		1/19/2023		1/19/2023		1/19/2023		1/19/2023		1/19/2023		1/20/2023	
LAB SAMPLE ID						L2302962-11		L2303262-01		L2303262-02		L2303262-03		L2303262-04		L2303262-05		L2303262-06		L2303262-07		L2303515-01	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
General Chemistry																							
Solids, Total	NONE				%	79		89.2		74.6		77.8		77.6		79.9		80.7		81.8		67.5	
Cyanide, Total	57-12-5	40	27	27	mg/kg	1.2	U	1	U	1.3	U	1.3	U	1.2	U	1.2	U	1.1	U	1.1	U	1.4	U
Chromium, Hexavalent	18540-29-9	19	110	1	mg/kg	1.01	U	0.897	U	0.348	J	1.03	U	0.271	J	1	U	0.991	U	0.978	U	1.18	U
Total Metals																							
Aluminum, Total	7429-90-5				mg/kg	7790		5900		4990		12000		2140		5220		9560		3590		2490	
Antimony, Total	7440-36-0				mg/kg	0.826	J	4.38	U	5.03	U	5.04	U	5.02	U	4.93	U	4.94	U	4.6	U	0.723	J
Arsenic, Total	7440-38-2	16	16	13	mg/kg	4.91		0.858	J	2.44		3.46		1.09		0.977	J	1.83		0.654	J	1.37	
Barium, Total	7440-39-3	820	400	350	mg/kg	84.3		24.8		53.3		93.7		12.4		36.8		90.4		8.58		24.7	
Beryllium, Total	7440-41-7	47	72	7.2	mg/kg	0.402	J	0.379	J	0.591		1.07		0.23	J	0.59		0.916		0.291	J	0.119	J
Cadmium, Total	7440-43-9	7.5	4.3	2.5	mg/kg	0.974	U	0.875	U	0.116	J	0.277	J	1	U	0.985	U	0.258	J	0.92	U	1.18	U
Calcium, Total	7440-70-2				mg/kg	8180		375		1390		8000		3760		895		13200		167		5000	
Chromium, Total	7440-47-3				mg/kg	16.3		16		14.9		25.8		4.76		12.7		21.8		8.13		7.57	
Cobalt, Total	7440-48-4				mg/kg	8.81		3.12		5.05		11.7		2.25		5.02		10		2.29		3.09	
Copper, Total	7440-50-8	1720	270	50	mg/kg	15.9		9.82		10.5		25.1		5.97		10.4		22.2		4.43		6.55	
Iron, Total	7439-89-6				mg/kg	18700		7000		13900		25800		6690		11700		21300		5880		8170	
Lead, Total	7439-92-1	450	400	63	mg/kg	6.8		7.06		4.17	J	10.8		2.17	J	3.98	J	9.4		3.83	J	2.61	J
Magnesium, Total	7439-95-4				mg/kg	9310		1820		3270		10400		2710		2730		9410		1160		3480	
Manganese, Total	7439-96-5	2000	2000	1600	mg/kg	329		41.6		107		449		117		64.9		462		42.2		141	
Mercury, Total	7439-97-6	0.73	0.81	0.18	mg/kg	0.079	U	0.078	U	0.098	U	0.087	U	0.086	U	0.092	U	0.09	U	0.086	U	0.105	U
Nickel, Total	7440-02-0	130	310	30	mg/kg	42.1		12.9		19		33.3		8.68		17		27.4		6.69		10.8	
Potassium, Total	2023695				mg/kg	1780		923		1680		3280		403		1700		2640		459		543	
Selenium, Total	7782-49-2	4	180	3.9	mg/kg	0.428	J	1.75	U	0.297	J	0.406	J	2.01	U	1.97	U	0.594	J	1.84	U	2.36	U
Silver, Total	7440-22-4	8.3	180	2	mg/kg	0.487	U	0.438	U	0.503	U	0.504	U	0.502	U	0.493	U	0.494	U	0.46	U	0.589	U
Sodium, Total	7440-23-5				mg/kg	398		601		224		682		189	J	142	J	496		281		162	J
Thallium, Total	7440-28-0				mg/kg	1.95	U	1.75	U	2.01	U	2.02	U	2.01	U	1.97	U	1.98	U	1.84	U	2.36	U
Vanadium, Total	7440-62-2				mg/kg	18.7		11.3		19		31.2		7.43		17.3		27.6		7.54		9.22	
Zinc, Total	7440-66-6	2480	10000	109	mg/kg	39.1		33.9		30.1		64.7		12.3		30.1		53.3		15.7		15	

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Cr
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricte
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 N

Table 1
Supplemental RI Soil Metals Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-17-N7 (23-25)		SB-17-N7 (30-32)		SB-17-N2E1 (23-25)		SB-17-N2E1 (30-32)		SB-17-N7E1 (25-27)		SB-17-N7E1 (33-35)		SB-17-N3E1 (21-23)		SB-17-N3E1 (32-34)		SB-17 N6E1 (22-24)		SB-17 N4E1 (23-25)		SB-17 N6E1 (33-35)	
SAMPLING DATE						1/20/2023		1/20/2023		1/20/2023		1/20/2023		1/20/2023		1/20/2023		1/20/2023		1/20/2023		1/23/2023		1/23/2023		1/23/2023	
LAB SAMPLE ID						L2303515-02		L2303515-03		L2303515-04		L2303515-05		L2303515-06		L2303515-07		L2303515-08		L2303515-10		L2303779-01		L2303779-02		L2303779-03	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
General Chemistry																											
Solids, Total	NONE				%	74.7		74		84.1		80		85.2		81.4		72.6		78.6		80.3		84.9		79.2	
Cyanide, Total	57-12-5	40	27	27	mg/kg	1.3	U	1.2	U	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U	1.2	U	1.2	U	1.1	U	1.2	U
Chromium, Hexavalent	18540-29-9	19	110	1	mg/kg	1.07	U	1.08	U	0.951	U	1	U	0.188	J	0.983	U	1.1	U	1.02	U	0.996	U	0.942	U	1.01	U
Total Metals																											
Aluminum, Total	7429-90-5				mg/kg	6720		6630		4250		3590		3460		4890		3730		5520		5430		3620		2430	
Antimony, Total	7440-36-0				mg/kg	0.511	J	1.12	J	0.394	J	0.569	J	0.378	J	0.769	J	0.399	J	0.944	J	4.82	U	4.48	U	5.05	U
Arsenic, Total	7440-38-2	16	16	13	mg/kg	1.12		2.24		1.34		1.36		1.49		1.72		1.04	J	3.16		2.03		1.18		1.34	
Barium, Total	7440-39-3	820	400	350	mg/kg	29.4		53.3		17.1		36.5		16.2		42.1		14.6		54.9		27.7		11.8		13.7	
Beryllium, Total	7440-41-7	47	72	7.2	mg/kg	0.266	J	0.224	J	0.344	J	0.084	J	0.131	J	0.205	J	0.177	J	0.178	J	0.477	J	0.265	J	0.252	J
Cadmium, Total	7440-43-9	7.5	4.3	2.5	mg/kg	1.04	U	1.08	U	0.936	U	0.983	U	0.916	U	0.962	U	1.05	U	0.989	U	0.965	U	0.896	U	1.01	U
Calcium, Total	7440-70-2				mg/kg	264		6050		482		6380		346		3730		369		9800		308		212		6740	
Chromium, Total	7440-47-3				mg/kg	15.3		18.6		12.2		11.2		9.93		12		8.84		15.9		12		7.01		8.13	
Cobalt, Total	7440-48-4				mg/kg	3.68		9.06		2.7		4.67		2.42		5.68		2.47		6.61		3.44		2.59		2.52	
Copper, Total	7440-50-8	1720	270	50	mg/kg	8.9		18.3		10.2		9.52		8.85		14.1		5.97		16.1		9.77		5.62		7.2	
Iron, Total	7439-89-6				mg/kg	8820		18000		5470		10300		6660		13200		5980		14800		8590		6500		6730	
Lead, Total	7439-92-1	450	400	63	mg/kg	5.86		6.23		13.9		3.23	J	2.4	J	4.69	J	7.47		4.92	J	3.94	J	3.34	J	2.96	J
Magnesium, Total	7439-95-4				mg/kg	2070		7260		1410		4610		1470		4600		1260		6670		1820		1230		3600	
Manganese, Total	7439-96-5	2000	2000	1600	mg/kg	62.3		143		41.6		139		64.6		146		42.9		248		78.1		47.1		148	
Mercury, Total	7439-97-6	0.73	0.81	0.18	mg/kg	0.096	U	0.097	U	0.094	U	0.103	U	0.079	U	0.086	U	0.071	J	0.094	U	0.081	U	0.082	U	0.092	U
Nickel, Total	7440-02-0	130	310	30	mg/kg	15.2		27.6		9.56		16.5		10.6		18.2		8.55		21.8		13.7		7.33		10.7	
Potassium, Total	2023695				mg/kg	774		2050		646		1280		836		1250		435		1660		801		473		588	
Selenium, Total	7782-49-2	4	180	3.9	mg/kg	2.08	U	0.892	J	1.87	U	0.265	J	0.317	J	0.535	J	0.483	J	0.707	J	1.93	U	1.79	U	2.02	U
Silver, Total	7440-22-4	8.3	180	2	mg/kg	0.521	U	0.538	U	0.468	U	0.491	U	0.458	U	0.481	U	0.525	U	0.495	U	0.482	U	0.448	U	0.505	U
Sodium, Total	7440-23-5				mg/kg	303		520		373		126	J	205		129	J	633		327		355		396		137	J
Thallium, Total	7440-28-0				mg/kg	2.08	U	2.15	U	1.87	U	1.96	U	1.83	U	1.92	U	2.1	U	1.98	U	1.93	U	1.79	U	2.02	U
Vanadium, Total	7440-62-2				mg/kg	17		22.3		26.8		13.6		11.2		14.6		9.45		18.9		13.7		7.58		8.57	
Zinc, Total	7440-66-6	2480	10000	109	mg/kg	22.8		42.1		26.6		23.4		16.1		28		19.7		32.7		18.7		17		13.2	

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Cr
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricte
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 N

Table 1
Supplemental RI Soil Metals Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-17 N4E1 (33-35)		SB-17 N2E2 (18-20)		SB-17 N2E2 (33-35)		SB-17 N5E1 (23-25)		SB-17 N5E1 (33-35)		SB-DUP 2		SB-17 N5E2 (23-25)		SB-17 N5E2 (33-35)		SB-17 N2E3 (23-25)		SB-17 N2E3 (33-35)		SB-17 N7E2 (25-27)	
SAMPLING DATE						1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023	
LAB SAMPLE ID						L2303779-04		L2303779-05		L2303779-06		L2303779-07		L2303779-08		L2303779-11		L2303942-01		L2303942-02		L2303942-03		L2303942-04		L2303942-05	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
General Chemistry																											
Solids, Total	NONE				%	78.3		76		81.7		73.2		80.1		80.3		86.2		77.7		86.5		81.3		81.6	
Cyanide, Total	57-12-5	40	27	27	mg/kg	1.2	U	1.3	U	1.1	U	1.4	U	1.1	U	1.4	U	1.1	U	1.2	U	1.1	U	1.2	U	1.2	U
Chromium, Hexavalent	18540-29-9	19	110	1	mg/kg	1.02	U	1.05	U	0.979	U	1.09	U	0.999	U	0.996	U	0.928	U	1.03	U	0.925	U	0.984	U	0.98	U
Total Metals																											
Aluminum, Total	7429-90-5				mg/kg	7320		3610		6520		4240		2520		2370		4740		4990		5320		9280		4850	
Antimony, Total	7440-36-0				mg/kg	4.85	U	4.94	U	4.76	U	5.28	U	4.85	U	4.79	U	0.787	J	0.947	J	0.505	J	1.56	J	0.656	J
Arsenic, Total	7440-38-2	16	16	13	mg/kg	3.2		1.63		2.55		1.38		2.92		1.61		2.96		2.96		1.28		3.54		2.31	
Barium, Total	7440-39-3	820	400	350	mg/kg	80.6		10		41.3		18.7		16.6		19.3		34.1		35.8		12.9		75.9		35	
Beryllium, Total	7440-41-7	47	72	7.2	mg/kg	0.647		0.234	J	0.659		0.375	J	0.268	J	0.239	J	0.155	J	0.234	J	0.225	J	0.345	J	0.157	J
Cadmium, Total	7440-43-9	7.5	4.3	2.5	mg/kg	0.144	J	0.988	U	0.184	J	1.06	U	0.971	U	0.959	U	0.913	U	0.998	U	0.871	U	0.106	J	0.922	U
Calcium, Total	7440-70-2				mg/kg	9860		164		14300		786		4680		4640		7620		7230		181		12000		541	
Chromium, Total	7440-47-3				mg/kg	15		7.75		17		12.5		6.86		5.14		11.6		11.5		9.18		22.1		11.4	
Cobalt, Total	7440-48-4				mg/kg	6.49		2.72		7.62		3.04		2.75		2.66		3.52		5.11		3.02		9.92		3.68	
Copper, Total	7440-50-8	1720	270	50	mg/kg	12.9		4.94		17.9		9.09		5.6		5.85		12.2		10.6		6.6		22.8		9.28	
Iron, Total	7439-89-6				mg/kg	16900		5050		16200		9280		7900		8220		7660		11700		6090		19700		8600	
Lead, Total	7439-92-1	450	400	63	mg/kg	7.77		4.17	J	7.34		4.72	J	2.95	J	2.49	J	39.8		4.42	J	4.1	J	7.74		2.33	J
Magnesium, Total	7439-95-4				mg/kg	5900		1270		7790		1610		3250		3330		2180		4770		1340		8530		1990	
Manganese, Total	7439-96-5	2000	2000	1600	mg/kg	436		37.1		371		59.2		128		160		151		227		37.7		437		69.4	
Mercury, Total	7439-97-6	0.73	0.81	0.18	mg/kg	0.085	U	0.092	U	0.081	U	0.105	U	0.087	U	0.085	U	0.05	J	0.083	U	0.072	U	0.078	U	0.079	U
Nickel, Total	7440-02-0	130	310	30	mg/kg	16.4		6.29		20.4		13.6		9.13		9.58		10.2		18.6		7.24		28.7		13.2	
Potassium, Total	2023695				mg/kg	1880		386		1950		769		551		492		616		1150		651		2500		1320	
Selenium, Total	7782-49-2	4	180	3.9	mg/kg	0.31	J	1.98	U	0.38	J	2.11	U	1.94	U	1.92	U	0.316	J	2	U	0.336	J	0.593	J	0.346	J
Silver, Total	7440-22-4	8.3	180	2	mg/kg	0.485	U	0.494	U	0.476	U	0.528	U	0.485	U	0.479	U	0.457	U	0.499	U	0.436	U	0.488	U	0.461	U
Sodium, Total	7440-23-5				mg/kg	346		493		335		229		120	J	76.4	J	1040		128	J	624		456		272	
Thallium, Total	7440-28-0				mg/kg	1.94	U	1.98	U	0.316	J	2.11	U	1.94	U	1.92	U	1.83	U	2	U	1.74	U	1.95	U	1.84	U
Vanadium, Total	7440-62-2				mg/kg	19.8		8.63		23.2		13.6		9.7		8.28		11.9		14.7		11.2		27		14.6	
Zinc, Total	7440-66-6	2480	10000	109	mg/kg	35.7		16.8		41.2		18.1		14.4		13.5		21		26.2		21.6		50.5		23.2	

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Cr
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricte
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 N

Table 1
Supplemental RI Soil Metals Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-17 N7E2 (33-35)		SB-17 N2E4 (23-25)		SB-17 N2E4 (25-27)		SB-17 N7E3 (25-27)		SB-17 N7E3 (30-32)		SB-17-N3E2 20-22		SB-17-N3E2 26-28		SB-17-N4E2 20-22		SB-17-N4E2 30-32		SB-17-N6E2 23-25		SB-DUP3	
SAMPLING DATE						1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023	
LAB SAMPLE ID						L2303942-06		L2303942-07		L2303942-08		L2303942-09		L2303942-11		L2304246-01		L2304246-02		L2304246-03		L2304246-04		L2304246-05		L2304246-06	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
General Chemistry																											
Solids, Total	NONE				%	73.9		78.8		80.4		80		77.6		79.1		79.7		83.3		80.8		84.3		80.3	
Cyanide, Total	57-12-5	40	27	27	mg/kg	1.3	U	0.3	J	0.27	J	1.2	U	1.2	U	1.2	U	1.1	U	1.2	U	1.2	U	1.1	U	1.2	U
Chromium, Hexavalent	18540-29-9	19	110	1	mg/kg	1.08	U	1.02	U	0.995	U	1	U	1.03	U	1.01	U	1	U	0.96	U	0.99	U	0.949	U	0.996	U
Total Metals																											
Aluminum, Total	7429-90-5				mg/kg	7070		11500		5300		6670		11500		9980		3730		4350		7090		3560		5370	
Antimony, Total	7440-36-0				mg/kg	1.48	J	1.07	J	1.16	J	0.935	J	2.07	J	1.48	J	0.622	J	0.53	J	1.35	J	0.482	J	0.974	J
Arsenic, Total	7440-38-2	16	16	13	mg/kg	2.65		1.8		3.11		3.13		3.97		1.76		0.862	J	0.893	J	1.61		0.79	J	2.4	
Barium, Total	7440-39-3	820	400	350	mg/kg	59.5		24.2		32.1		46		98.6		16.7		17.4		14.9		50.9		8.22		73.9	
Beryllium, Total	7440-41-7	47	72	7.2	mg/kg	0.269	J	0.568		0.225	J	0.252	J	0.471	J	0.437	J	0.126	J	0.166	J	0.222	J	0.136	J	0.152	J
Cadmium, Total	7440-43-9	7.5	4.3	2.5	mg/kg	1.02	U	0.971	U	0.971	U	0.962	U	0.106	J	0.121	J	0.957	U	0.927	U	0.156	J	0.915	U	0.114	J
Calcium, Total	7440-70-2				mg/kg	8080		389		1200		677		5580		342		695		218		10800		175		7780	
Chromium, Total	7440-47-3				mg/kg	20.8		20.3		16.7		17.7		27.1		14.8		12		11.3		18.8		7.78		13.9	
Cobalt, Total	7440-48-4				mg/kg	9.06		4.5		6.13		5.49		13.2		6.04		4.08		2.28		8.49		2.06		6.8	
Copper, Total	7440-50-8	1720	270	50	mg/kg	19.3		17.3		15.6		14.5		29.8		17.9		8.63		5.97		20.3		7.41		16.2	
Iron, Total	7439-89-6				mg/kg	17500		10700		13200		14200		24400		16400		8320		6310		17200		6000		13600	
Lead, Total	7439-92-1	450	400	63	mg/kg	6.54		12.1		4.81	J	4.4	J	8.87		12.5		3.08	J	3.95	J	6.93		2.08	J	3.8	J
Magnesium, Total	7439-95-4				mg/kg	7950		2590		2900		2610		9280		3270		1860		1170		7680		1120		6070	
Manganese, Total	7439-96-5	2000	2000	1600	mg/kg	208		57.1		69		74.3		334		118		44.9		46.4		326		43.1		178	
Mercury, Total	7439-97-6	0.73	0.81	0.18	mg/kg	0.085	U	0.082	U	0.08	U	0.08	U	0.081	U	0.068	J	0.1	U	0.082	U	0.089	U	0.085	U	0.083	U
Nickel, Total	7440-02-0	130	310	30	mg/kg	28.2		12.4		22.8		21.1		36.2		14.8		15.5		8.52		25.6		10.2		20.8	
Potassium, Total	2023695				mg/kg	2060		1300		1630		1820		3190		961		919		602		1960		398		1740	
Selenium, Total	7782-49-2	4	180	3.9	mg/kg	0.504	J	0.583	J	0.349	J	0.583	J	1.06	J	1.95	U	1.91	U	1.85	U	1.93	U	1.83	U	1.99	U
Silver, Total	7440-22-4	8.3	180	2	mg/kg	0.511	U	0.485	U	0.485	U	0.481	U	0.485	U	0.312	J	0.477	U	0.458	U	0.358	J	0.452	U	0.308	J
Sodium, Total	7440-23-5				mg/kg	226		1110		247		194		264		1160		299		398		524		257		260	
Thallium, Total	7440-28-0				mg/kg	2.04	U	1.94	U	1.94	U	1.92	U	1.94	U	1.95	U	1.91	U	1.85	U	1.93	U	1.83	U	1.99	U
Vanadium, Total	7440-62-2				mg/kg	25.3		24.2		22.1		22.8		31.4		15.5		14.5		9.42		23.2		10.5		18.7	
Zinc, Total	7440-66-6	2480	10000	109	mg/kg	44.8		40.6		36		32.7		62.5		42.9		23.6		17.1		44.4		12.1		34.6	

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Cr
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricte
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 N

Table 1
Supplemental RI Soil Metals Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-17-N6E2 30-32		SB-17-N4E3 20-22		SB-17-N4E3 30-32		SB-17-N6E3 25-27		SB-17-N6E3 30-32		SB-17-N3E3 (23-25)		SB-17-N3E3 (25-27)		SB-17-N5E3 23-25		SB-17-N5E3 30-32		SB-17-N4E4 21-23		SB-17-N4E4 28-30	
SAMPLING DATE						1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/26/2023		1/26/2023		1/26/2023		1/26/2023		1/26/2023		1/26/2023	
LAB SAMPLE ID						L2304246-09		L2304246-10		L2304246-11		L2304246-12		L2304246-13		L2304515-01		L2304515-02		L2304515-03		L2304515-04		L2304515-05		L2304515-06	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
General Chemistry																											
Solids, Total	NONE				%	79.5		86.7		88		78.4		85		81.2		78.8		88.6		78.8		86.6		87.9	
Cyanide, Total	57-12-5	40	27	27	mg/kg	1.1	U	1	U	1	U	1.2	U	1.2	U	1.2	U	1.2	U	1	U	1.4	U	1	U	1	U
Chromium, Hexavalent	18540-29-9	19	110	1	mg/kg	1.01	U	0.923	U	0.909	U	1.02	U	0.941	U	0.985	U	1.02	U	0.903	U	1.02	U	0.924	U	0.239	J
Total Metals																											
Aluminum, Total	7429-90-5				mg/kg	5460		3430		8850		7340		3220		11200		4870		5150		7230		4310		4270	
Antimony, Total	7440-36-0				mg/kg	1.19	J	0.414	J	1.5	J	1.43	J	0.67	J	4.76	U	4.78	U	4.28	U	4.88	U	4.43	U	4.39	U
Arsenic, Total	7440-38-2	16	16	13	mg/kg	1.94		0.755	J	3.56		3.48		1.3		1.24		2.15		0.607	J	1.47		0.964		0.925	
Barium, Total	7440-39-3	820	400	350	mg/kg	54.7		10.3		67		68.8		32.9		20.6		28.5		13		53.4		11.3		34.3	
Beryllium, Total	7440-41-7	47	72	7.2	mg/kg	0.156	J	0.18	J	0.359	J	0.254	J	0.164	J	0.419	J	0.478	U	0.095	J	0.044	J	0.126	J	0.439	U
Cadmium, Total	7440-43-9	7.5	4.3	2.5	mg/kg	0.113	J	0.875	U	0.128	J	0.127	J	0.922	U	0.953	U	0.957	U	0.855	U	0.977	U	0.887	U	0.878	U
Calcium, Total	7440-70-2				mg/kg	5180		86.4		8820		7570		2560		312		887		239		13100		190		726	
Chromium, Total	7440-47-3				mg/kg	16.3		7.66		17.9		18.1		9.22		17.1		15.8		12.3		19		7.86		11.6	
Cobalt, Total	7440-48-4				mg/kg	8.7		2.48		8.52		9.53		3.9		4.69		4.75		2.66		8.17		2.8		4.16	
Copper, Total	7440-50-8	1720	270	50	mg/kg	15.2		5.75		18.9		21.3		8.76		17.4		14.2		5.8		20.5		8.52		9.42	
Iron, Total	7439-89-6				mg/kg	15100		5060		19300		18500		9110		14600		11000		6960		16100		7020		10200	
Lead, Total	7439-92-1	450	400	63	mg/kg	5.26		3.45	J	7.06		6.15		3.46	J	11.7		4.44	J	6.96		8.92		4.95		3.08	J
Magnesium, Total	7439-95-4				mg/kg	6420		1060		6670		7620		3780		3450		2440		1550		8600		1540		2230	
Manganese, Total	7439-96-5	2000	2000	1600	mg/kg	175		33.9		359		272		312		82.7		57.6		52		349		50.6		56	
Mercury, Total	7439-97-6	0.73	0.81	0.18	mg/kg	0.091	U	0.09	U	0.076	U	0.106	U	0.078	U	0.077	U	0.104	U	0.082	U	0.087	U	0.076	U	0.079	U
Nickel, Total	7440-02-0	130	310	30	mg/kg	24.8		7.47		22.4		25.7		17.5		14		16.6		9.27		26.2		8.39		16.1	
Potassium, Total	2023695				mg/kg	1740		466		2070		2210		822		1150		1480		580		2150		561		1330	
Selenium, Total	7782-49-2	4	180	3.9	mg/kg	1.93	U	1.75	U	1.8	U	2.03	U	1.84	U	0.603	J	0.39	J	0.305	J	0.493	J	1.77	U	0.394	J
Silver, Total	7440-22-4	8.3	180	2	mg/kg	0.354	J	0.434	U	0.469		0.387	J	0.45	U	0.476	U	0.478	U	0.428	U	0.488	U	0.443	U	0.439	U
Sodium, Total	7440-23-5				mg/kg	187	J	383		225		214		115	J	1170		314		354		236		358		191	
Thallium, Total	7440-28-0				mg/kg	1.93	U	1.75	U	1.8	U	2.03	U	1.84	U	1.91	U	1.91	U	1.71	U	1.95	U	1.77	U	1.76	U
Vanadium, Total	7440-62-2				mg/kg	20.5		10.1		19.8		24.1		9.96		23.2		17.8		10		21.2		11.2		15.9	
Zinc, Total	7440-66-6	2480	10000	109	mg/kg	38.8		19.2		43.7		43.9		21.8		41.8		28.3		18.9		43.9		21.7		23.8	

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Cr
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricte
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 N

Table 1
Supplemental RI Soil Metals Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-17-N5E4 25-27		SB-17-N5E4 28-30		SB-17-S2E1 30-32		SB-17-S2E1 35-37		SB-17-S2E2 33-35		SB-17-S2E2 35-37		SB-DUP 4		SB-17-S3 25-27		SB-17-S3 35-37		SB-17-S4 25-27		SB-17-S4 33-35	
SAMPLING DATE						1/26/2023		1/26/2023		1/27/2023		1/27/2023		1/27/2023		1/27/2023		1/27/2023		1/30/2023		1/30/2023		1/30/2023		1/30/2023	
LAB SAMPLE ID						L2304515-07		L2304515-08		L2304757-01		L2304757-02		L2304757-03		L2304757-04		L2304757-05		L2304991-01		L2304991-02		L2304991-03		L2304991-04	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
General Chemistry																											
Solids, Total	NONE				%	78		81.9		79.5		88.5		74.6		88.8		89.4		83.9		83.4		84.8		78.7	
Cyanide, Total	57-12-5	40	27	27	mg/kg	1.2	U	1.1	U	1.2	U	1	U	1.2	U	1	U	1	U	1.2	U	1.2	U	1.1	U	1.2	U
Chromium, Hexavalent	18540-29-9	19	110	1	mg/kg	1.02	U	0.977	U	1.01	U	0.904	U	1.07	U	0.901	U	0.895	U	0.954	U	0.959	U	0.943	U	1.02	U
Total Metals																											
Aluminum, Total	7429-90-5				mg/kg	6540		6090		3760		3170		6240		2450		2250		2580		2230		2420		2450	
Antimony, Total	7440-36-0				mg/kg	4.88	U	4.71	U	0.415	J	4.25	U	0.7	J	4.31	U	4.42	U	0.779	J	0.702	J	0.543	J	0.503	J
Arsenic, Total	7440-38-2	16	16	13	mg/kg	1.3		2.17		1.74		1.62		2.86		1.69		0.8	J	1.25		0.644	J	3.17		1.63	
Barium, Total	7440-39-3	820	400	350	mg/kg	59.8		122		27.6		25.4		83.4		13.8		26.8		12.7		20.4		16.2		21.1	
Beryllium, Total	7440-41-7	47	72	7.2	mg/kg	0.038	J	0.471	U	0.115	J	0.173	J	0.238	J	0.107	J	0.127	J	0.145	J	0.131	J	0.181	J	0.158	J
Cadmium, Total	7440-43-9	7.5	4.3	2.5	mg/kg	0.976	U	0.942	U	0.932	U	0.851	U	1.02	U	0.862	U	0.885	U	0.941	U	0.936	U	0.936	U	0.972	U
Calcium, Total	7440-70-2				mg/kg	937		7590		7820		8070		6660		5520		6570		386		563		478		584	
Chromium, Total	7440-47-3				mg/kg	16		16		10.2		7.63		15.9		6.8		6.38		6.96		5.38		6.64		5.71	
Cobalt, Total	7440-48-4				mg/kg	5.61		8.61		4.73		3.58		7.39		2.81		2.71		2.76		3.14		3.34		2.68	
Copper, Total	7440-50-8	1720	270	50	mg/kg	13.7		17.6		9.78		13		19.5		6.9		8.25		7.05		4.99		4.5		5.21	
Iron, Total	7439-89-6				mg/kg	14700		15200		10300		8060		17100		6140		5780		5510		6470		5000		7940	
Lead, Total	7439-92-1	450	400	63	mg/kg	5.25		6.69		2.75	J	3.51	J	5.23		2.54	J	3.03	J	3.39	J	2.19	J	2.49	J	3.09	J
Magnesium, Total	7439-95-4				mg/kg	2990		7300		4940		3820		6720		2540		2470		1250		2600		1530		1510	
Manganese, Total	7439-96-5	2000	2000	1600	mg/kg	78.8		317		179		183		216		139		214		61		154		55.2		132	
Mercury, Total	7439-97-6	0.73	0.81	0.18	mg/kg	0.083	U	0.09	U	0.088	U	0.075	U	0.092	U	0.081	U	0.079	U	0.085	U	0.079	U	0.079	U	0.082	U
Nickel, Total	7440-02-0	130	310	30	mg/kg	20.5		25		15.6		17.7		22		8.87		8		7.52		16		11.7		9.03	
Potassium, Total	2023695				mg/kg	1740		1920		1210		684		1850		516		479		343		528		399		388	
Selenium, Total	7782-49-2	4	180	3.9	mg/kg	0.294	J	0.456	J	1.86	U	1.7	U	2.04	U	1.72	U	1.77	U	1.88	U	1.87	U	1.87	U	0.265	J
Silver, Total	7440-22-4	8.3	180	2	mg/kg	0.488	U	0.471	U	0.466	U	0.425	U	0.511	U	0.431	U	0.442	U	0.47	U	0.468	U	0.468	U	0.486	U
Sodium, Total	7440-23-5				mg/kg	252		221		128	J	110	J	194	J	74.1	J	91.1	J	54.6	J	76.5	J	67.7	J	59.6	J
Thallium, Total	7440-28-0				mg/kg	1.95	U	1.88	U	1.86	U	1.7	U	2.04	U	1.72	U	1.77	U	1.88	U	1.87	U	1.87	U	1.94	U
Vanadium, Total	7440-62-2				mg/kg	22.4		21.1		14.8		8.9		21.2		9.26		8.05		6.82		7.17		7.22		8.96	
Zinc, Total	7440-66-6	2480	10000	109	mg/kg	34		38.7		23.6		21.3		40.5		13.8		12.8		18.2		13.6		16.8		15.5	

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Cr
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricte
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 N

Table 1
Supplemental RI Soil PCBs, Pesticides and Herbicides Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-16-N1 (34-35)		SB-16-N1 (37-38)		SB-16-S1 (50-51)		SB-16-S1 (55-56)		SB-17-E1 (24-25)		SB-17-E1 (30-31)		SB-17-S2 35-37		SB-17-N1 (24-25)		SB-17-N1 (33-34)		SB-17-S1 (23-24)	
SAMPLING DATE						1/11/2023		1/11/2023		1/11/2023		1/11/2023		1/16/2023		1/16/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023	
LAB SAMPLE ID						L2301629-01		L2301629-02		L2301629-03		L2301629-04		L2302487-01		L2302487-02		L2302691-01		L2302692-01		L2302692-02		L2302692-03	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Chlorinated Herbicides by GC																									
2,4-D	94-75-7				mg/kg	0.194	U	0.208	U	0.182	U	0.187	U	0.189	U	0.21	U	0.208	U	0.197	U	0.22	U	0.202	U
2,4,5-T	93-76-5				mg/kg	0.194	U	0.208	U	0.182	U	0.187	U	0.189	U	0.21	U	0.208	U	0.197	U	0.22	U	0.202	U
2,4,5-TP (Silvex)	93-72-1	3.8	100	3.8	mg/kg	0.194	U	0.208	U	0.182	U	0.187	U	0.189	U	0.21	U	0.208	U	0.197	U	0.22	U	0.202	U
Organochlorine Pesticides by GC																									
Delta-BHC	319-86-8	0.25	100	0.04	mg/kg	0.00178	U	0.00195	U	0.00168	U	0.00178	U	0.00178	U	0.00202	U	0.00199	U	0.00186	U	0.00207	U	0.00183	U
Lindane	58-89-9	0.1	1.3	0.1	mg/kg	0.000743	U	0.000811	U	0.000702	U	0.000742	U	0.000741	U	0.000841	U	0.000831	U	0.000774	U	0.000862	U	0.000762	U
Alpha-BHC	319-84-6	0.02	0.48	0.02	mg/kg	0.000743	U	0.000811	U	0.000702	U	0.000742	U	0.000741	U	0.000841	U	0.000831	U	0.000774	U	0.000862	U	0.000762	U
Beta-BHC	319-85-7	0.09	0.36	0.036	mg/kg	0.00178	U	0.00195	U	0.00168	U	0.00178	U	0.00178	U	0.00202	U	0.00199	U	0.00186	U	0.00207	U	0.00183	U
Heptachlor	76-44-8	0.38	2.1	0.042	mg/kg	0.000892	U	0.000973	U	0.000843	U	0.000891	U	0.000889	U	0.00101	U	0.000997	U	0.000929	U	0.00103	U	0.000915	U
Aldrin	309-00-2	0.19	0.097	0.005	mg/kg	0.00178	U	0.00195	U	0.00168	U	0.00178	U	0.00178	U	0.00202	U	0.00199	U	0.00186	U	0.00207	U	0.00183	U
Heptachlor epoxide	1024-57-3				mg/kg	0.00334	U	0.00365	U	0.00316	U	0.00334	U	0.00333	U	0.00378	U	0.00374	U	0.00348	U	0.00388	U	0.00343	U
Endrin	72-20-8	0.06	11	0.014	mg/kg	0.000743	U	0.000811	U	0.000702	U	0.000742	U	0.000741	U	0.000841	U	0.000831	U	0.000774	U	0.000862	U	0.000762	U
Endrin aldehyde	7421-93-4				mg/kg	0.00223	U	0.00243	U	0.00211	U	0.00223	U	0.00222	U	0.00252	U	0.00249	U	0.00232	U	0.00259	U	0.00229	U
Endrin ketone	53494-70-5				mg/kg	0.00178	U	0.00195	U	0.00168	U	0.00178	U	0.00178	U	0.00202	U	0.00199	U	0.00186	U	0.00207	U	0.00183	U
Dieldrin	60-57-1	0.1	0.2	0.005	mg/kg	0.00111	U	0.00122	U	0.00105	U	0.00111	U	0.00111	U	0.00126	U	0.00125	U	0.00116	U	0.00129	U	0.00114	U
4,4'-DDE	72-55-9	17	8.9	0.0033	mg/kg	0.00178	U	0.00195	U	0.00168	U	0.00178	U	0.00178	U	0.00202	U	0.00199	U	0.00186	U	0.00207	U	0.00183	U
4,4'-DDD	72-54-8	14	13	0.0033	mg/kg	0.00178	U	0.00195	U	0.00168	U	0.00178	U	0.00178	U	0.00202	U	0.00199	U	0.00186	U	0.00207	U	0.00183	U
4,4'-DDT	50-29-3	136	7.9	0.0033	mg/kg	0.00178	U	0.00195	U	0.00168	U	0.00178	U	0.00178	U	0.00202	U	0.00199	U	0.00186	U	0.00207	U	0.00183	U
Endosulfan I	959-98-8	102	24	2.4	mg/kg	0.00178	U	0.00195	U	0.00168	U	0.00178	U	0.00178	U	0.00202	U	0.00199	U	0.00186	U	0.00207	U	0.00183	U
Endosulfan II	33213-65-9	102	24	2.4	mg/kg	0.00178	U	0.00195	U	0.00168	U	0.00178	U	0.00178	U	0.00202	U	0.00199	U	0.00186	U	0.00207	U	0.00183	U
Endosulfan sulfate	1031-07-8	1000	24	2.4	mg/kg	0.000743	U	0.000811	U	0.000702	U	0.000742	U	0.000741	U	0.000841	U	0.000831	U	0.000774	U	0.000862	U	0.000762	U
Methoxychlor	72-43-5				mg/kg	0.00334	U	0.00365	U	0.00316	U	0.00334	U	0.00333	U	0.00378	U	0.00374	U	0.00348	U	0.00388	U	0.00343	U
Toxaphene	8001-35-2				mg/kg	0.0334	U	0.0365	U	0.0316	U	0.0334	U	0.0333	U	0.0378	U	0.0374	U	0.0348	U	0.0388	U	0.0343	U
cis-Chlordane	5103-71-9	2.9	4.2	0.094	mg/kg	0.00223	U	0.00243	U	0.00211	U	0.00223	U	0.00222	U	0.00252	U	0.00249	U	0.00232	U	0.00259	U	0.00229	U
trans-Chlordane	5103-74-2				mg/kg	0.00223	U	0.00243	U	0.00211	U	0.00223	U	0.00222	U	0.00252	U	0.00249	U	0.00232	U	0.00259	U	0.00229	U
Chlordane	57-74-9				mg/kg	0.0149	U	0.0162	U	0.014	U	0.0148	U	0.0148	U	0.0168	U	0.0166	U	0.0155	U	0.0172	U	0.0152	U
Polychlorinated Biphenyls by GC																									
Aroclor 1016	12674-11-2	3.2	1	0.1	mg/kg	0.0376	U	0.0396	U	0.0343	U	0.0375	U	0.0376	U	0.0407	U	0.0408	U	0.04	U	0.0422	U	0.0387	U
Aroclor 1221	11104-28-2	3.2	1	0.1	mg/kg	0.0376	U	0.0396	U	0.0343	U	0.0375	U	0.0376	U	0.0407	U	0.0408	U	0.04	U	0.0422	U	0.0387	U
Aroclor 1232	11141-16-5	3.2	1	0.1	mg/kg	0.0376	U	0.0396	U	0.0343	U	0.0375	U	0.0376	U	0.0407	U	0.0408	U	0.04	U	0.0422	U	0.0387	U
Aroclor 1242	53469-21-9	3.2	1	0.1	mg/kg	0.0376	U	0.0396	U	0.0343	U	0.0375	U	0.0376	U	0.0407	U	0.0408	U	0.04	U	0.0422	U	0.0387	U
Aroclor 1248	12672-29-6	3.2	1	0.1	mg/kg	0.0376	U	0.0396	U	0.0343	U	0.0375	U	0.0376	U	0.0407	U	0.0408	U	0.04	U	0.0422	U	0.0387	U
Aroclor 1254	11097-69-1	3.2	1	0.1	mg/kg	0.0376	U	0.0396	U	0.0343	U	0.0375	U	0.0376	U	0.0407	U	0.0408	U	0.04	U	0.0422	U	0.0387	U
Aroclor 1260	11096-82-5	3.2	1	0.1	mg/kg	0.0376	U	0.0396	U	0.0343	U	0.0375	U	0.0376	U	0.0407	U	0.0408	U	0.04	U	0.0422	U	0.0387	U
Aroclor 1262	37324-23-5	3.2	1	0.1	mg/kg	0.0376	U	0.0396	U	0.0343	U	0.0375	U	0.0376	U	0.0407	U	0.0408	U	0.04	U	0.0422	U	0.0387	U
Aroclor 1268	11100-14-4	3.2	1	0.1	mg/kg	0.0376	U	0.0396	U	0.0343	U	0.0375	U	0.0376	U	0.0407	U	0.0408	U	0.04	U	0.0422	U	0.0387	U
PCBs, Total	1336-36-3	3.2	1	0.1	mg/kg	0.0376	U	0.0396	U	0.0343	U	0.0375	U	0.0376	U	0.0407	U	0.0408	U	0.04	U	0.0422	U	0.0387	U

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.

Table 1
Supplemental RI Soil PCBs, Pesticides and Herbicides Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-17-S1 (35-36)		SB-17-N1E1 (23-25)		SB-17-N1E1 (33-35)		SB-17-S1E1 (28-30)		SB-17-S1E1 (35-37)		SB-17-S2 (23-25)		SB-17-N2 (24-25)		SB-17-N2 (35-37)		SB-17-S1E2 (32-34)		SB-17-S1E2 (35-37)	
SAMPLING DATE						1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/18/2023		1/18/2023		1/18/2023		1/18/2023	
LAB SAMPLE ID						L2302692-04		L2302692-05		L2302692-06		L2302692-07		L2302692-09		L2302692-10		L2302962-01		L2302962-02		L2302962-03		L2302962-04	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Chlorinated Herbicides by GC																									
2,4-D	94-75-7				mg/kg	0.193	U	0.192	U	0.206	U	0.208	U	0.192	U	0.191	U	0.2	U	0.2	U	0.204	U	0.188	U
2,4,5-T	93-76-5				mg/kg	0.193	U	0.192	U	0.206	U	0.208	U	0.192	U	0.191	U	0.2	U	0.2	U	0.204	U	0.188	U
2,4,5-TP (Silvex)	93-72-1	3.8	100	3.8	mg/kg	0.193	U	0.192	U	0.206	U	0.208	U	0.192	U	0.191	U	0.2	U	0.2	U	0.204	U	0.188	U
Organochlorine Pesticides by GC																									
Delta-BHC	319-86-8	0.25	100	0.04	mg/kg	0.0018	U	0.00178	U	0.0019	U	0.00194	U	0.0018	U	0.0018	U	0.00191	U	0.00188	U	0.002	U	0.00177	U
Lindane	58-89-9	0.1	1.3	0.1	mg/kg	0.00075	U	0.00074	U	0.000791	U	0.000808	U	0.000749	U	0.000752	U	0.000798	U	0.000785	U	0.000834	U	0.000739	U
Alpha-BHC	319-84-6	0.02	0.48	0.02	mg/kg	0.00075	U	0.00074	U	0.000791	U	0.000808	U	0.000749	U	0.000752	U	0.000798	U	0.000785	U	0.000834	U	0.000739	U
Beta-BHC	319-85-7	0.09	0.36	0.036	mg/kg	0.0018	U	0.00178	U	0.0019	U	0.00194	U	0.0018	U	0.0018	U	0.00191	U	0.00188	U	0.002	U	0.00177	U
Heptachlor	76-44-8	0.38	2.1	0.042	mg/kg	0.0009	U	0.000888	U	0.000949	U	0.000969	U	0.000899	U	0.000903	U	0.000957	U	0.000942	U	0.001	U	0.000886	U
Aldrin	309-00-2	0.19	0.097	0.005	mg/kg	0.0018	U	0.00178	U	0.0019	U	0.00194	U	0.0018	U	0.0018	U	0.00191	U	0.00188	U	0.002	U	0.00177	U
Heptachlor epoxide	1024-57-3				mg/kg	0.00337	U	0.00333	U	0.00356	U	0.00364	U	0.00337	U	0.00338	U	0.00359	U	0.00353	U	0.00375	U	0.00332	U
Endrin	72-20-8	0.06	11	0.014	mg/kg	0.00075	U	0.00074	U	0.000791	U	0.000808	U	0.000749	U	0.000752	U	0.000798	U	0.000785	U	0.000834	U	0.000739	U
Endrin aldehyde	7421-93-4				mg/kg	0.00225	U	0.00222	U	0.00237	U	0.00242	U	0.00225	U	0.00226	U	0.00239	U	0.00236	U	0.0025	U	0.00222	U
Endrin ketone	53494-70-5				mg/kg	0.0018	U	0.00178	U	0.0019	U	0.00194	U	0.0018	U	0.0018	U	0.00191	U	0.00188	U	0.002	U	0.00177	U
Dieldrin	60-57-1	0.1	0.2	0.005	mg/kg	0.00112	U	0.00111	U	0.00119	U	0.00121	U	0.00112	U	0.00113	U	0.0012	U	0.00118	U	0.00125	U	0.00111	U
4,4'-DDE	72-55-9	17	8.9	0.0033	mg/kg	0.0018	U	0.00178	U	0.0019	U	0.00194	U	0.0018	U	0.0018	U	0.00191	U	0.00188	U	0.002	U	0.00177	U
4,4'-DDD	72-54-8	14	13	0.0033	mg/kg	0.0018	U	0.00178	U	0.0019	U	0.00194	U	0.0018	U	0.0018	U	0.00191	U	0.00188	U	0.002	U	0.00177	U
4,4'-DDT	50-29-3	136	7.9	0.0033	mg/kg	0.0018	U	0.00178	U	0.0019	U	0.00194	U	0.0018	U	0.0018	U	0.00191	U	0.00188	U	0.002	U	0.00177	U
Endosulfan I	959-98-8	102	24	2.4	mg/kg	0.0018	U	0.00178	U	0.0019	U	0.00194	U	0.0018	U	0.0018	U	0.00191	U	0.00188	U	0.002	U	0.00177	U
Endosulfan II	33213-65-9	102	24	2.4	mg/kg	0.0018	U	0.00178	U	0.0019	U	0.00194	U	0.0018	U	0.0018	U	0.00191	U	0.00188	U	0.002	U	0.00177	U
Endosulfan sulfate	1031-07-8	1000	24	2.4	mg/kg	0.00075	U	0.00074	U	0.000791	U	0.000808	U	0.000749	U	0.000752	U	0.000798	U	0.000785	U	0.000834	U	0.000739	U
Methoxychlor	72-43-5				mg/kg	0.00337	U	0.00333	U	0.00356	U	0.00364	U	0.00337	U	0.00338	U	0.00359	U	0.00353	U	0.00375	U	0.00332	U
Toxaphene	8001-35-2				mg/kg	0.0337	U	0.0333	U	0.0356	U	0.0364	U	0.0337	U	0.0338	U	0.0359	U	0.0353	U	0.0375	U	0.0332	U
cis-Chlordane	5103-71-9	2.9	4.2	0.094	mg/kg	0.00225	U	0.00222	U	0.00237	U	0.00242	U	0.00225	U	0.00226	U	0.00239	U	0.00236	U	0.0025	U	0.00222	U
trans-Chlordane	5103-74-2				mg/kg	0.00225	U	0.00222	U	0.00237	U	0.00242	U	0.00225	U	0.00226	U	0.00239	U	0.00236	U	0.0025	U	0.00222	U
Chlordane	57-74-9				mg/kg	0.015	U	0.0148	U	0.0158	U	0.0162	U	0.015	U	0.015	U	0.016	U	0.0157	U	0.0167	U	0.0148	U
Polychlorinated Biphenyls by GC																									
Aroclor 1016	12674-11-2	3.2	1	0.1	mg/kg	0.038	U	0.0365	U	0.0396	U	0.0411	U	0.0389	U	0.0368	U	0.0383	U	0.0388	U	0.041	U	0.0365	U
Aroclor 1221	11104-28-2	3.2	1	0.1	mg/kg	0.038	U	0.0365	U	0.0396	U	0.0411	U	0.0389	U	0.0368	U	0.0383	U	0.0388	U	0.041	U	0.0365	U
Aroclor 1232	11141-16-5	3.2	1	0.1	mg/kg	0.038	U	0.0365	U	0.0396	U	0.0411	U	0.0389	U	0.0368	U	0.0383	U	0.0388	U	0.041	U	0.0365	U
Aroclor 1242	53469-21-9	3.2	1	0.1	mg/kg	0.038	U	0.0365	U	0.0396	U	0.0411	U	0.0389	U	0.0368	U	0.0383	U	0.0388	U	0.041	U	0.0365	U
Aroclor 1248	12672-29-6	3.2	1	0.1	mg/kg	0.038	U	0.0365	U	0.0396	U	0.0411	U	0.0389	U	0.0368	U	0.0383	U	0.0388	U	0.041	U	0.0365	U
Aroclor 1254	11097-69-1	3.2	1	0.1	mg/kg	0.038	U	0.0365	U	0.0396	U	0.0411	U	0.0389	U	0.0368	U	0.0383	U	0.0388	U	0.041	U	0.0365	U
Aroclor 1260	11096-82-5	3.2	1	0.1	mg/kg	0.038	U	0.0365	U	0.0396	U	0.0411	U	0.0389	U	0.0368	U	0.0383	U	0.0388	U	0.041	U	0.0365	U
Aroclor 1262	37324-23-5	3.2	1	0.1	mg/kg	0.038	U	0.0365	U	0.0396	U	0.0411	U	0.0389	U	0.0368	U	0.0383	U	0.0388	U	0.041	U	0.0365	U
Aroclor 1268	11100-14-4	3.2	1	0.1	mg/kg	0.038	U	0.0365	U	0.0396	U	0.0411	U	0.0389	U	0.0368	U	0.0383	U	0.0388	U	0.041	U	0.0365	U
PCBs, Total	1336-36-3	3.2	1	0.1	mg/kg	0.038	U	0.0365	U	0.0396	U	0.0411	U	0.0389	U	0.0368	U	0.0383	U	0.0388	U	0.041	U	0.0365	U

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Crite
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYC

Table 1
Supplemental RI Soil PCBs, Pesticides and Herbicides Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-17-N3 (23-25)		SB-17-N3 (33-35)		SB-17-N1E2 (23-25)		SB-17-N1E2 (30-31)		SB-DUP		SB-17-N1E3 (22-24)		SB-17-N1E3 (28-30)		SB-17-N4 (25-30)		SB-17-N4 (38-40)		SB-17-N5 (25-27)	
SAMPLING DATE						1/18/2023		1/18/2023		1/18/2023		1/18/2023		1/18/2023		1/19/2023		1/19/2023		1/19/2023		1/19/2023		1/19/2023	
LAB SAMPLE ID						L2302962-05		L2302962-06		L2302962-07		L2302962-08		L2302962-11		L2303262-01		L2303262-02		L2303262-03		L2303262-04		L2303262-05	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Chlorinated Herbicides by GC																									
2,4-D	94-75-7				mg/kg	0.205	U	0.205	U	0.19	U	0.219	U	0.21	U	0.183	U	0.219	U	0.214	U	0.211	U	0.206	U
2,4,5-T	93-76-5				mg/kg	0.205	U	0.205	U	0.19	U	0.219	U	0.21	U	0.183	U	0.219	U	0.214	U	0.211	U	0.206	U
2,4,5-TP (Silvex)	93-72-1	3.8	100	3.8	mg/kg	0.205	U	0.205	U	0.19	U	0.219	U	0.21	U	0.183	U	0.219	U	0.214	U	0.211	U	0.206	U
Organochlorine Pesticides by GC																									
Delta-BHC	319-86-8	0.25	100	0.04	mg/kg	0.00193	U	0.00199	U	0.00181	U	0.0021	U	0.00194	U	0.00178	U	0.00212	U	0.00201	U	0.00197	U	0.00199	U
Lindane	58-89-9	0.1	1.3	0.1	mg/kg	0.000803	U	0.00083	U	0.000755	U	0.000874	U	0.000808	U	0.000742	U	0.000884	U	0.000838	U	0.00082	U	0.000828	U
Alpha-BHC	319-84-6	0.02	0.48	0.02	mg/kg	0.000803	U	0.00083	U	0.000755	U	0.000874	U	0.000808	U	0.000742	U	0.000884	U	0.000838	U	0.00082	U	0.000828	U
Beta-BHC	319-85-7	0.09	0.36	0.036	mg/kg	0.00193	U	0.00199	U	0.00181	U	0.0021	U	0.00194	U	0.00178	U	0.00212	U	0.00201	U	0.00197	U	0.00199	U
Heptachlor	76-44-8	0.38	2.1	0.042	mg/kg	0.000964	U	0.000996	U	0.000906	U	0.00105	U	0.00097	U	0.00089	U	0.00106	U	0.001	U	0.000984	U	0.000993	U
Aldrin	309-00-2	0.19	0.097	0.005	mg/kg	0.00193	U	0.00199	U	0.00181	U	0.0021	U	0.00194	U	0.00178	U	0.00212	U	0.00201	U	0.00197	U	0.00199	U
Heptachlor epoxide	1024-57-3				mg/kg	0.00361	U	0.00374	U	0.0034	U	0.00393	U	0.00364	U	0.00334	U	0.00398	U	0.00377	U	0.00369	U	0.00372	U
Endrin	72-20-8	0.06	11	0.014	mg/kg	0.000803	U	0.00083	U	0.000755	U	0.000874	U	0.000808	U	0.000742	U	0.000884	U	0.000838	U	0.00082	U	0.000828	U
Endrin aldehyde	7421-93-4				mg/kg	0.00241	U	0.00249	U	0.00226	U	0.00262	U	0.00242	U	0.00222	U	0.00265	U	0.00251	U	0.00246	U	0.00248	U
Endrin ketone	53494-70-5				mg/kg	0.00193	U	0.00199	U	0.00181	U	0.0021	U	0.00194	U	0.00178	U	0.00212	U	0.00201	U	0.00197	U	0.00199	U
Dieldrin	60-57-1	0.1	0.2	0.005	mg/kg	0.0012	U	0.00124	U	0.00113	U	0.00131	U	0.00121	U	0.00111	U	0.00132	U	0.00126	U	0.00123	U	0.00124	U
4,4'-DDE	72-55-9	17	8.9	0.0033	mg/kg	0.00193	U	0.00199	U	0.00181	U	0.0021	U	0.00194	U	0.00178	U	0.00212	U	0.00201	U	0.00197	U	0.00199	U
4,4'-DDD	72-54-8	14	13	0.0033	mg/kg	0.00193	U	0.00199	U	0.00181	U	0.0021	U	0.00194	U	0.00178	U	0.00212	U	0.00201	U	0.00197	U	0.00199	U
4,4'-DDT	50-29-3	136	7.9	0.0033	mg/kg	0.00193	U	0.00199	U	0.00181	U	0.0021	U	0.00194	U	0.00178	U	0.00212	U	0.00201	U	0.00197	U	0.00199	U
Endosulfan I	959-98-8	102	24	2.4	mg/kg	0.00193	U	0.00199	U	0.00181	U	0.0021	U	0.00194	U	0.00178	U	0.00212	U	0.00201	U	0.00197	U	0.00199	U
Endosulfan II	33213-65-9	102	24	2.4	mg/kg	0.00193	U	0.00199	U	0.00181	U	0.0021	U	0.00194	U	0.00178	U	0.00212	U	0.00201	U	0.00197	U	0.00199	U
Endosulfan sulfate	1031-07-8	1000	24	2.4	mg/kg	0.000803	U	0.00083	U	0.000755	U	0.000874	U	0.000808	U	0.000742	U	0.000884	U	0.000838	U	0.00082	U	0.000828	U
Methoxychlor	72-43-5				mg/kg	0.00361	U	0.00374	U	0.0034	U	0.00393	U	0.00364	U	0.00334	U	0.00398	U	0.00377	U	0.00369	U	0.00372	U
Toxaphene	8001-35-2				mg/kg	0.0361	U	0.0374	U	0.034	U	0.0393	U	0.0364	U	0.0334	U	0.0398	U	0.0377	U	0.0369	U	0.0372	U
cis-Chlordane	5103-71-9	2.9	4.2	0.094	mg/kg	0.00241	U	0.00249	U	0.00226	U	0.00262	U	0.00242	U	0.00222	U	0.00265	U	0.00251	U	0.00246	U	0.00248	U
trans-Chlordane	5103-74-2				mg/kg	0.00241	U	0.00249	U	0.00226	U	0.00262	U	0.00242	U	0.00222	U	0.00265	U	0.00251	U	0.00246	U	0.00248	U
Chlordane	57-74-9				mg/kg	0.0161	U	0.0166	U	0.0151	U	0.0175	U	0.0162	U	0.0148	U	0.0177	U	0.0168	U	0.0164	U	0.0166	U
Polychlorinated Biphenyls by GC																									
Aroclor 1016	12674-11-2	3.2	1	0.1	mg/kg	0.0409	U	0.0405	U	0.0365	U	0.0433	U	0.0414	U	0.0358	U	0.0436	U	0.0412	U	0.0419	U	0.0407	U
Aroclor 1221	11104-28-2	3.2	1	0.1	mg/kg	0.0409	U	0.0405	U	0.0365	U	0.0433	U	0.0414	U	0.0358	U	0.0436	U	0.0412	U	0.0419	U	0.0407	U
Aroclor 1232	11141-16-5	3.2	1	0.1	mg/kg	0.0409	U	0.0405	U	0.0365	U	0.0433	U	0.0414	U	0.0358	U	0.0436	U	0.0412	U	0.0419	U	0.0407	U
Aroclor 1242	53469-21-9	3.2	1	0.1	mg/kg	0.0409	U	0.0405	U	0.0365	U	0.0433	U	0.0414	U	0.0358	U	0.0436	U	0.0412	U	0.0419	U	0.0407	U
Aroclor 1248	12672-29-6	3.2	1	0.1	mg/kg	0.0409	U	0.0405	U	0.0365	U	0.0433	U	0.0414	U	0.0358	U	0.0436	U	0.0412	U	0.0419	U	0.0407	U
Aroclor 1254	11097-69-1	3.2	1	0.1	mg/kg	0.0409	U	0.0405	U	0.0365	U	0.0433	U	0.0414	U	0.0358	U	0.0436	U	0.0412	U	0.0419	U	0.0407	U
Aroclor 1260	11096-82-5	3.2	1	0.1	mg/kg	0.0409	U	0.0405	U	0.0365	U	0.0433	U	0.0414	U	0.0358	U	0.0436	U	0.0412	U	0.0419	U	0.0407	U
Aroclor 1262	37324-23-5	3.2	1	0.1	mg/kg	0.0409	U	0.0405	U	0.0365	U	0.0433	U	0.0414	U	0.0358	U	0.0436	U	0.0412	U	0.0419	U	0.0407	U
Aroclor 1268	11100-14-4	3.2	1	0.1	mg/kg	0.0409	U	0.0405	U	0.0365	U	0.0433	U	0.0414	U	0.0358	U	0.0436	U	0.0412	U	0.0419	U	0.0407	U
PCBs, Total	1336-36-3	3.2	1	0.1	mg/kg	0.0409	U	0.0405	U	0.0365	U	0.0433	U	0.0414	U	0.0358	U	0.0436	U	0.0412	U	0.0419	U	0.0407	U

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Crite
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYC

Table 1
Supplemental RI Soil PCBs, Pesticides and Herbicides Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-17-N5 (33-35)		SB-17-N6 (23-25)		SB-17-N6 (37-39)		SB-17-N7 (23-25)		SB-17-N7 (30-32)		SB-17-N2E1 (23-25)		SB-17-N2E1 (30-32)		SB-17-N7E1 (25-27)		SB-17-N7E1 (33-35)		SB-17-N3E1 (21-23)	
SAMPLING DATE						1/19/2023		1/19/2023		1/20/2023		1/20/2023		1/20/2023		1/20/2023		1/20/2023		1/20/2023		1/20/2023		1/20/2023	
LAB SAMPLE ID						L2303262-06		L2303262-07		L2303515-01		L2303515-02		L2303515-03		L2303515-04		L2303515-05		L2303515-06		L2303515-07		L2303515-08	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Chlorinated Herbicides by GC																									
2,4-D	94-75-7				mg/kg	0.202	U	0.201	U	0.24	U	0.222	U	0.224	U	0.192	U	0.203	U	0.193	U	0.201	U	0.223	U
2,4,5-T	93-76-5				mg/kg	0.202	U	0.201	U	0.24	U	0.222	U	0.224	U	0.192	U	0.203	U	0.193	U	0.201	U	0.223	U
2,4,5-TP (Silvex)	93-72-1	3.8	100	3.8	mg/kg	0.202	U	0.201	U	0.24	U	0.222	U	0.224	U	0.192	U	0.203	U	0.193	U	0.201	U	0.223	U
Organochlorine Pesticides by GC																									
Delta-BHC	319-86-8	0.25	100	0.04	mg/kg	0.00191	U	0.00185	U	0.00232	U	0.00202	U	0.0021	U	0.00186	U	0.00197	U	0.00182	U	0.00187	U	0.00218	U
Lindane	58-89-9	0.1	1.3	0.1	mg/kg	0.000796	U	0.000773	U	0.000966	U	0.000842	U	0.000876	U	0.000774	U	0.00082	U	0.000761	U	0.00078	U	0.00091	U
Alpha-BHC	319-84-6	0.02	0.48	0.02	mg/kg	0.000796	U	0.000773	U	0.000966	U	0.000842	U	0.000876	U	0.000774	U	0.00082	U	0.000761	U	0.00078	U	0.00091	U
Beta-BHC	319-85-7	0.09	0.36	0.036	mg/kg	0.00191	U	0.00185	U	0.00232	U	0.00202	U	0.0021	U	0.00186	U	0.00197	U	0.00182	U	0.00187	U	0.00218	U
Heptachlor	76-44-8	0.38	2.1	0.042	mg/kg	0.000956	U	0.000927	U	0.00116	U	0.00101	U	0.00105	U	0.000928	U	0.000984	U	0.000913	U	0.000935	U	0.00109	U
Aldrin	309-00-2	0.19	0.097	0.005	mg/kg	0.00191	U	0.00185	U	0.00232	U	0.00202	U	0.0021	U	0.00186	U	0.00197	U	0.00182	U	0.00187	U	0.00218	U
Heptachlor epoxide	1024-57-3				mg/kg	0.00358	U	0.00348	U	0.00435	U	0.00379	U	0.00394	U	0.00348	U	0.00369	U	0.00342	U	0.00351	U	0.0041	U
Endrin	72-20-8	0.06	11	0.014	mg/kg	0.000796	U	0.000773	U	0.000966	U	0.000842	U	0.000876	U	0.000774	U	0.00082	U	0.000761	U	0.00078	U	0.00091	U
Endrin aldehyde	7421-93-4				mg/kg	0.00239	U	0.00232	U	0.0029	U	0.00252	U	0.00263	U	0.00232	U	0.00246	U	0.00228	U	0.00234	U	0.00273	U
Endrin ketone	53494-70-5				mg/kg	0.00191	U	0.00185	U	0.00232	U	0.00202	U	0.0021	U	0.00186	U	0.00197	U	0.00182	U	0.00187	U	0.00218	U
Dieldrin	60-57-1	0.1	0.2	0.005	mg/kg	0.00119	U	0.00116	U	0.00145	U	0.00126	U	0.00131	U	0.00116	U	0.00123	U	0.00114	U	0.00117	U	0.00136	U
4,4'-DDE	72-55-9	17	8.9	0.0033	mg/kg	0.00191	U	0.00185	U	0.00232	U	0.00202	U	0.0021	U	0.00186	U	0.00197	U	0.00182	U	0.00187	U	0.00218	U
4,4'-DDD	72-54-8	14	13	0.0033	mg/kg	0.00191	U	0.00185	U	0.00232	U	0.00202	U	0.0021	U	0.00186	U	0.00197	U	0.00182	U	0.00187	U	0.00218	U
4,4'-DDT	50-29-3	136	7.9	0.0033	mg/kg	0.00191	U	0.00185	U	0.00232	U	0.00202	U	0.0021	U	0.00186	U	0.00197	U	0.00182	U	0.00187	U	0.00218	U
Endosulfan I	959-98-8	102	24	2.4	mg/kg	0.00191	U	0.00185	U	0.00232	U	0.00202	U	0.0021	U	0.00186	U	0.00197	U	0.00182	U	0.00187	U	0.00218	U
Endosulfan II	33213-65-9	102	24	2.4	mg/kg	0.00191	U	0.00185	U	0.00232	U	0.00202	U	0.0021	U	0.00186	U	0.00197	U	0.00182	U	0.00187	U	0.00218	U
Endosulfan sulfate	1031-07-8	1000	24	2.4	mg/kg	0.000796	U	0.000773	U	0.000966	U	0.000842	U	0.000876	U	0.000774	U	0.00082	U	0.000761	U	0.00078	U	0.00091	U
Methoxychlor	72-43-5				mg/kg	0.00358	U	0.00348	U	0.00435	U	0.00379	U	0.00394	U	0.00348	U	0.00369	U	0.00342	U	0.00351	U	0.0041	U
Toxaphene	8001-35-2				mg/kg	0.0358	U	0.0348	U	0.0435	U	0.0379	U	0.0394	U	0.0348	U	0.0369	U	0.0342	U	0.0351	U	0.041	U
cis-Chlordane	5103-71-9	2.9	4.2	0.094	mg/kg	0.00239	U	0.00232	U	0.0029	U	0.00252	U	0.00263	U	0.00232	U	0.00246	U	0.00228	U	0.00234	U	0.00273	U
trans-Chlordane	5103-74-2				mg/kg	0.00239	U	0.00232	U	0.0029	U	0.00252	U	0.00263	U	0.00232	U	0.00246	U	0.00228	U	0.00234	U	0.00273	U
Chlordane	57-74-9				mg/kg	0.0159	U	0.0154	U	0.0193	U	0.0168	U	0.0175	U	0.0155	U	0.0164	U	0.0152	U	0.0156	U	0.0182	U
Polychlorinated Biphenyls by GC																									
Aroclor 1016	12674-11-2	3.2	1	0.1	mg/kg	0.0394	U	0.0405	U	0.0478	U	0.0425	U	0.044	U	0.0378	U	0.0399	U	0.0382	U	0.0402	U	0.044	U
Aroclor 1221	11104-28-2	3.2	1	0.1	mg/kg	0.0394	U	0.0405	U	0.0478	U	0.0425	U	0.044	U	0.0378	U	0.0399	U	0.0382	U	0.0402	U	0.044	U
Aroclor 1232	11141-16-5	3.2	1	0.1	mg/kg	0.0394	U	0.0405	U	0.0478	U	0.0425	U	0.044	U	0.0378	U	0.0399	U	0.0382	U	0.0402	U	0.044	U
Aroclor 1242	53469-21-9	3.2	1	0.1	mg/kg	0.0394	U	0.0405	U	0.0478	U	0.0425	U	0.044	U	0.0378	U	0.0399	U	0.0382	U	0.0402	U	0.044	U
Aroclor 1248	12672-29-6	3.2	1	0.1	mg/kg	0.0394	U	0.0405	U	0.0478	U	0.0425	U	0.044	U	0.0378	U	0.0399	U	0.0382	U	0.0402	U	0.044	U
Aroclor 1254	11097-69-1	3.2	1	0.1	mg/kg	0.0394	U	0.0405	U	0.0478	U	0.0425	U	0.044	U	0.0378	U	0.0399	U	0.0382	U	0.0402	U	0.044	U
Aroclor 1260	11096-82-5	3.2	1	0.1	mg/kg	0.0394	U	0.0405	U	0.0478	U	0.0425	U	0.044	U	0.0378	U	0.0399	U	0.0382	U	0.0402	U	0.044	U
Aroclor 1262	37324-23-5	3.2	1	0.1	mg/kg	0.0394	U	0.0405	U	0.0478	U	0.0425	U	0.044	U	0.0378	U	0.0399	U	0.0382	U	0.0402	U	0.044	U
Aroclor 1268	11100-14-4	3.2	1	0.1	mg/kg	0.0394	U	0.0405	U	0.0478	U	0.0425	U	0.044	U	0.0378	U	0.0399	U	0.0382	U	0.0402	U	0.044	U
PCBs, Total	1336-36-3	3.2	1	0.1	mg/kg	0.0394	U	0.0405	U	0.0478	U	0.0425	U	0.044	U	0.0378	U	0.0399	U	0.0382	U	0.0402	U	0.044	U

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Crite
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYC

Table 1
Supplemental RI Soil PCBs, Pesticides and Herbicides Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-17-N3E1 (32-34)		SB-17 N6E1 (22-24)		SB-17 N4E1 (23-25)		SB-17 N6E1 (33-35)		SB-17 N4E1 (33-35)		SB-17 N2E2 (18-20)		SB-17 N2E2 (33-35)		SB-17 N5E1 (23-25)		SB-17 N5E1 (33-35)		SB-DUP 2	
SAMPLING DATE						1/20/2023		1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/23/2023	
LAB SAMPLE ID						L2303515-10		L2303779-01		L2303779-02		L2303779-03		L2303779-04		L2303779-05		L2303779-06		L2303779-07		L2303779-08		L2303779-11	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Chlorinated Herbicides by GC																									
2,4-D	94-75-7				mg/kg	0.205	U	0.204	U	0.193	U	0.206	U	0.21	U	0.216	U	0.201	U	0.223	U	0.204	U	0.204	U
2,4,5-T	93-76-5				mg/kg	0.205	U	0.204	U	0.193	U	0.206	U	0.21	U	0.216	U	0.201	U	0.223	U	0.204	U	0.204	U
2,4,5-TP (Silvex)	93-72-1	3.8	100	3.8	mg/kg	0.205	U	0.204	U	0.193	U	0.206	U	0.21	U	0.216	U	0.201	U	0.223	U	0.204	U	0.204	U
Organochlorine Pesticides by GC																									
Delta-BHC	319-86-8	0.25	100	0.04	mg/kg	0.002	U	0.00194	U	0.00178	U	0.00201	U	0.00196	U	0.00205	U	0.00191	U	0.00217	U	0.00197	U	0.00193	U
Lindane	58-89-9	0.1	1.3	0.1	mg/kg	0.000835	U	0.000806	U	0.000743	U	0.000836	U	0.000816	U	0.000854	U	0.000798	U	0.000906	U	0.000819	U	0.000803	U
Alpha-BHC	319-84-6	0.02	0.48	0.02	mg/kg	0.000835	U	0.000806	U	0.000743	U	0.000836	U	0.000816	U	0.000854	U	0.000798	U	0.000906	U	0.000819	U	0.000803	U
Beta-BHC	319-85-7	0.09	0.36	0.036	mg/kg	0.002	U	0.00194	U	0.00178	U	0.00201	U	0.00196	U	0.00205	U	0.00191	U	0.00217	U	0.00197	U	0.00193	U
Heptachlor	76-44-8	0.38	2.1	0.042	mg/kg	0.001	U	0.000968	U	0.00177		0.001	U	0.000979	U	0.00102	U	0.000957	U	0.00109	U	0.000983	U	0.000964	U
Aldrin	309-00-2	0.19	0.097	0.005	mg/kg	0.002	U	0.00194	U	0.00178	U	0.00201	U	0.00196	U	0.00205	U	0.00191	U	0.00217	U	0.00197	U	0.00193	U
Heptachlor epoxide	1024-57-3				mg/kg	0.00376	U	0.00363	U	0.00334	U	0.00376	U	0.00367	U	0.00384	U	0.00359	U	0.00408	U	0.00369	U	0.00362	U
Endrin	72-20-8	0.06	11	0.014	mg/kg	0.000835	U	0.000806	U	0.000743	U	0.000836	U	0.000816	U	0.000854	U	0.000798	U	0.000906	U	0.000819	U	0.000803	U
Endrin aldehyde	7421-93-4				mg/kg	0.00251	U	0.00242	U	0.00223	U	0.00251	U	0.00245	U	0.00256	U	0.00239	U	0.00272	U	0.00246	U	0.00241	U
Endrin ketone	53494-70-5				mg/kg	0.002	U	0.00194	U	0.00178	U	0.00201	U	0.00196	U	0.00205	U	0.00191	U	0.00217	U	0.00197	U	0.00193	U
Dieldrin	60-57-1	0.1	0.2	0.005	mg/kg	0.00125	U	0.00121	U	0.00111	U	0.00125	U	0.00122	U	0.00128	U	0.0012	U	0.00136	U	0.00123	U	0.0012	U
4,4'-DDE	72-55-9	17	8.9	0.0033	mg/kg	0.002	U	0.00194	U	0.00178	U	0.00201	U	0.00196	U	0.00205	U	0.00191	U	0.00217	U	0.00197	U	0.00193	U
4,4'-DDD	72-54-8	14	13	0.0033	mg/kg	0.002	U	0.00194	U	0.00178	U	0.00201	U	0.00196	U	0.00205	U	0.00191	U	0.00217	U	0.00197	U	0.00193	U
4,4'-DDT	50-29-3	136	7.9	0.0033	mg/kg	0.002	U	0.00194	U	0.00178	U	0.00201	U	0.00196	U	0.00205	U	0.00191	U	0.00217	U	0.00197	U	0.00193	U
Endosulfan I	959-98-8	102	24	2.4	mg/kg	0.002	U	0.00194	U	0.00178	U	0.00201	U	0.00196	U	0.00205	U	0.00191	U	0.00217	U	0.00197	U	0.00193	U
Endosulfan II	33213-65-9	102	24	2.4	mg/kg	0.002	U	0.00194	U	0.00178	U	0.00201	U	0.00196	U	0.00205	U	0.00191	U	0.00217	U	0.00197	U	0.00193	U
Endosulfan sulfate	1031-07-8	1000	24	2.4	mg/kg	0.000835	U	0.000806	U	0.000743	U	0.000836	U	0.000816	U	0.000854	U	0.000798	U	0.000906	U	0.000819	U	0.000803	U
Methoxychlor	72-43-5				mg/kg	0.00376	U	0.00363	U	0.00334	U	0.00376	U	0.00367	U	0.00384	U	0.00359	U	0.00408	U	0.00369	U	0.00362	U
Toxaphene	8001-35-2				mg/kg	0.0376	U	0.0363	U	0.0334	U	0.0376	U	0.0367	U	0.0384	U	0.0359	U	0.0408	U	0.0369	U	0.0362	U
cis-Chlordane	5103-71-9	2.9	4.2	0.094	mg/kg	0.00251	U	0.00242	U	0.00223	U	0.00251	U	0.00245	U	0.00256	U	0.00239	U	0.00272	U	0.00246	U	0.00241	U
trans-Chlordane	5103-74-2				mg/kg	0.00251	U	0.00242	U	0.00223	U	0.00251	U	0.00245	U	0.00256	U	0.00239	U	0.00272	U	0.00246	U	0.00241	U
Chlordane	57-74-9				mg/kg	0.0167	U	0.0161	U	0.0149	U	0.0167	U	0.0163	U	0.0171	U	0.016	U	0.0181	U	0.0164	U	0.0161	U
Polychlorinated Biphenyls by GC																									
Aroclor 1016	12674-11-2	3.2	1	0.1	mg/kg	0.0408	U	0.0412	U	0.0378	U	0.0403	U	0.0415	U	0.043	U	0.0386	U	0.0428	U	0.0394	U	0.0403	U
Aroclor 1221	11104-28-2	3.2	1	0.1	mg/kg	0.0408	U	0.0412	U	0.0378	U	0.0403	U	0.0415	U	0.043	U	0.0386	U	0.0428	U	0.0394	U	0.0403	U
Aroclor 1232	11141-16-5	3.2	1	0.1	mg/kg	0.0408	U	0.0412	U	0.0378	U	0.0403	U	0.0415	U	0.043	U	0.0386	U	0.0428	U	0.0394	U	0.0403	U
Aroclor 1242	53469-21-9	3.2	1	0.1	mg/kg	0.0408	U	0.0412	U	0.0378	U	0.0403	U	0.0415	U	0.043	U	0.0386	U	0.0428	U	0.0394	U	0.0403	U
Aroclor 1248	12672-29-6	3.2	1	0.1	mg/kg	0.0408	U	0.0412	U	0.0378	U	0.0403	U	0.0415	U	0.043	U	0.0386	U	0.0428	U	0.0394	U	0.0403	U
Aroclor 1254	11097-69-1	3.2	1	0.1	mg/kg	0.0408	U	0.0412	U	0.0378	U	0.0403	U	0.0415	U	0.043	U	0.0386	U	0.0428	U	0.0394	U	0.0403	U
Aroclor 1260	11096-82-5	3.2	1	0.1	mg/kg	0.0408	U	0.0412	U	0.0378	U	0.0403	U	0.0415	U	0.043	U	0.0386	U	0.0428	U	0.0394	U	0.0403	U
Aroclor 1262	37324-23-5	3.2	1	0.1	mg/kg	0.0408	U	0.0412	U	0.0378	U	0.0403	U	0.0415	U	0.043	U	0.0386	U	0.0428	U	0.0394	U	0.0403	U
Aroclor 1268	11100-14-4	3.2	1	0.1	mg/kg	0.0408	U	0.0412	U	0.0378	U	0.0403	U	0.0415	U	0.043	U	0.0386	U	0.0428	U	0.0394	U	0.0403	U
PCBs, Total	1336-36-3	3.2	1	0.1	mg/kg	0.0408	U	0.0412	U	0.0378	U	0.0403	U	0.0415	U	0.043	U	0.0386	U	0.0428	U	0.0394	U	0.0403	U

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Crite
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYC

Table 1
Supplemental RI Soil PCBs, Pesticides and Herbicides Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-17 N5E2 (23-25)		SB-17 N5E2 (33-35)		SB-17 N2E3 (23-25)		SB-17 N2E3 (33-35)		SB-17 N7E2 (25-27)		SB-17 N7E2 (33-35)		SB-17 N2E4 (23-25)		SB-17 N2E4 (25-27)		SB-17 N7E3 (25-27)		SB-17 N7E3 (30-32)		SB-17-N3E2 20-22	
SAMPLING DATE						1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/25/2023	
LAB SAMPLE ID						L2303942-01		L2303942-02		L2303942-03		L2303942-04		L2303942-05		L2303942-06		L2303942-07		L2303942-08		L2303942-09		L2303942-11		L2304246-01	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Chlorinated Herbicides by GC																											
2,4-D	94-75-7				mg/kg	0.19	U	0.213	U	0.189	U	0.2	U	0.204	U	0.221	U	0.211	U	0.203	U	0.202	U	0.208	U	0.209	U
2,4,5-T	93-76-5				mg/kg	0.19	U	0.213	U	0.189	U	0.2	U	0.204	U	0.221	U	0.211	U	0.203	U	0.202	U	0.208	U	0.209	U
2,4,5-TP (Silvex)	93-72-1	3.8	100	3.8	mg/kg	0.19	U	0.213	U	0.189	U	0.2	U	0.204	U	0.221	U	0.211	U	0.203	U	0.202	U	0.208	U	0.209	U
Organochlorine Pesticides by GC																											
Delta-BHC	319-86-8	0.25	100	0.04	mg/kg	0.00183	U	0.00197	U	0.0018	U	0.00187	U	0.00195	U	0.00214	U	0.00196	U	0.00191	U	0.00195	U	0.002	U	0.00198	U
Lindane	58-89-9	0.1	1.3	0.1	mg/kg	0.000763	U	0.000822	U	0.000751	U	0.00078	U	0.000812	U	0.000892	U	0.000818	U	0.000796	U	0.000814	U	0.000835	U	0.000826	U
Alpha-BHC	319-84-6	0.02	0.48	0.02	mg/kg	0.000763	U	0.000822	U	0.000751	U	0.00078	U	0.000812	U	0.000892	U	0.000818	U	0.000796	U	0.000814	U	0.000835	U	0.000826	U
Beta-BHC	319-85-7	0.09	0.36	0.036	mg/kg	0.00183	U	0.00197	U	0.0018	U	0.00187	U	0.00195	U	0.00214	U	0.00196	U	0.00191	U	0.00195	U	0.002	U	0.00198	U
Heptachlor	76-44-8	0.38	2.1	0.042	mg/kg	0.000915	U	0.000986	U	0.000901	U	0.000936	U	0.000974	U	0.00107	U	0.000982	U	0.000956	U	0.000977	U	0.001	U	0.000992	U
Aldrin	309-00-2	0.19	0.097	0.005	mg/kg	0.00183	U	0.00197	U	0.0018	U	0.00187	U	0.00195	U	0.00214	U	0.00196	U	0.00191	U	0.00195	U	0.002	U	0.00198	U
Heptachlor epoxide	1024-57-3				mg/kg	0.00343	U	0.0037	U	0.00338	U	0.00351	U	0.00365	U	0.00402	U	0.00368	U	0.00358	U	0.00366	U	0.00376	U	0.00372	U
Endrin	72-20-8	0.06	11	0.014	mg/kg	0.000763	U	0.000822	U	0.000751	U	0.00078	U	0.000812	U	0.000892	U	0.000818	U	0.000796	U	0.000814	U	0.000835	U	0.000826	U
Endrin aldehyde	7421-93-4				mg/kg	0.00229	U	0.00246	U	0.00225	U	0.00234	U	0.00244	U	0.00268	U	0.00245	U	0.00239	U	0.00244	U	0.0025	U	0.00248	U
Endrin ketone	53494-70-5				mg/kg	0.00183	U	0.00197	U	0.0018	U	0.00187	U	0.00195	U	0.00214	U	0.00196	U	0.00191	U	0.00195	U	0.002	U	0.00198	U
Dieldrin	60-57-1	0.1	0.2	0.005	mg/kg	0.00114	U	0.00123	U	0.00113	U	0.00117	U	0.00122	U	0.00134	U	0.00123	U	0.00119	U	0.00122	U	0.00125	U	0.00124	U
4,4'-DDE	72-55-9	17	8.9	0.0033	mg/kg	0.00183	U	0.00197	U	0.0018	U	0.00187	U	0.00195	U	0.00214	U	0.00196	U	0.00191	U	0.00195	U	0.002	U	0.00198	U
4,4'-DDD	72-54-8	14	13	0.0033	mg/kg	0.00183	U	0.00197	U	0.0018	U	0.00187	U	0.00195	U	0.00214	U	0.00196	U	0.00191	U	0.00195	U	0.002	U	0.00198	U
4,4'-DDT	50-29-3	136	7.9	0.0033	mg/kg	0.00183	U	0.00197	U	0.0018	U	0.00187	U	0.00195	U	0.00214	U	0.00196	U	0.00191	U	0.00195	U	0.002	U	0.00198	U
Endosulfan I	959-98-8	102	24	2.4	mg/kg	0.00183	U	0.00197	U	0.0018	U	0.00187	U	0.00195	U	0.00214	U	0.00196	U	0.00191	U	0.00195	U	0.002	U	0.00198	U
Endosulfan II	33213-65-9	102	24	2.4	mg/kg	0.00183	U	0.00197	U	0.0018	U	0.00187	U	0.00195	U	0.00214	U	0.00196	U	0.00191	U	0.00195	U	0.002	U	0.00198	U
Endosulfan sulfate	1031-07-8	1000	24	2.4	mg/kg	0.000763	U	0.000822	U	0.000751	U	0.00078	U	0.000812	U	0.000892	U	0.000818	U	0.000796	U	0.000814	U	0.000835	U	0.000826	U
Methoxychlor	72-43-5				mg/kg	0.00343	U	0.0037	U	0.00338	U	0.00351	U	0.00365	U	0.00402	U	0.00368	U	0.00358	U	0.00366	U	0.00376	U	0.00372	U
Toxaphene	8001-35-2				mg/kg	0.0343	U	0.037	U	0.0338	U	0.0351	U	0.0365	U	0.0402	U	0.0368	U	0.0358	U	0.0366	U	0.0376	U	0.0372	U
cis-Chlordane	5103-71-9	2.9	4.2	0.094	mg/kg	0.00229	U	0.00246	U	0.00225	U	0.00234	U	0.00244	U	0.00268	U	0.00245	U	0.00239	U	0.00244	U	0.0025	U	0.00248	U
trans-Chlordane	5103-74-2				mg/kg	0.00229	U	0.00246	U	0.00225	U	0.00234	U	0.00244	U	0.00268	U	0.00245	U	0.00239	U	0.00244	U	0.0025	U	0.00248	U
Chlordane	57-74-9				mg/kg	0.0152	U	0.0164	U	0.015	U	0.0156	U	0.0162	U	0.0178	U	0.0164	U	0.0159	U	0.0163	U	0.0167	U	0.0165	U
Polychlorinated Biphenyls by GC																											
Aroclor 1016	12674-11-2	3.2	1	0.1	mg/kg	0.0375	U	0.0422	U	0.0371	U	0.0396	U	0.0396	U	0.0434	U	0.0413	U	0.0394	U	0.0405	U	0.0416	U	0.04	U
Aroclor 1221	11104-28-2	3.2	1	0.1	mg/kg	0.0375	U	0.0422	U	0.0371	U	0.0396	U	0.0396	U	0.0434	U	0.0413	U	0.0394	U	0.0405	U	0.0416	U	0.04	U
Aroclor 1232	11141-16-5	3.2	1	0.1	mg/kg	0.0375	U	0.0422	U	0.0371	U	0.0396	U	0.0396	U	0.0434	U	0.0413	U	0.0394	U	0.0405	U	0.0416	U	0.04	U
Aroclor 1242	53469-21-9	3.2	1	0.1	mg/kg	0.0375	U	0.0422	U	0.0371	U	0.0396	U	0.0396	U	0.0434	U	0.0413	U	0.0394	U	0.0405	U	0.0416	U	0.04	U
Aroclor 1248	12672-29-6	3.2	1	0.1	mg/kg	0.0375	U	0.0422	U	0.0371	U	0.0396	U	0.0396	U	0.0434	U	0.0413	U	0.0394	U	0.0405	U	0.0416	U	0.04	U
Aroclor 1254	11097-69-1	3.2	1	0.1	mg/kg	0.0375	U	0.0422	U	0.0371	U	0.0396	U	0.0396	U	0.0434	U	0.0413	U	0.0394	U	0.0405	U	0.0416	U	0.04	U
Aroclor 1260	11096-82-5	3.2	1	0.1	mg/kg	0.0375	U	0.0422	U	0.0371	U	0.0396	U	0.0396	U	0.0434	U	0.0413	U	0.0394	U	0.0405	U	0.0416	U	0.04	U
Aroclor 1262	37324-23-5	3.2	1	0.1	mg/kg	0.0375	U	0.0422	U	0.0371	U	0.0396	U	0.0396	U	0.0434	U	0.0413	U	0.0394	U	0.0405	U	0.0416	U	0.04	U
Aroclor 1268	11100-14-4	3.2	1	0.1	mg/kg	0.0375	U	0.0422	U	0.0371	U	0.0396	U	0.0396	U	0.0434	U	0.0413	U	0.0394	U	0.0405	U	0.0416	U	0.04	U
PCBs, Total	1336-36-3	3.2	1	0.1	mg/kg	0.0375	U	0.0422	U	0.0371	U	0.0396	U	0.0396	U	0.0434	U	0.0413	U	0.0394	U	0.0405	U	0.0416	U	0.04	U

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Crite
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYC

Table 1
Supplemental RI Soil PCBs, Pesticides and Herbicides Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-17-N3E2 26-28		SB-17-N4E2 20-22		SB-17-N4E2 30-32		SB-17-N6E2 23-25		SB-DUP3		SB-17-N6E2 30-32		SB-17-N4E3 20-22		SB-17-N4E3 30-32		SB-17-N6E3 25-27		SB-17-N6E3 30-32	
SAMPLING DATE						1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023	
LAB SAMPLE ID						L2304246-02		L2304246-03		L2304246-04		L2304246-05		L2304246-06		L2304246-09		L2304246-10		L2304246-11		L2304246-12		L2304246-13	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Chlorinated Herbicides by GC																									
2,4-D	94-75-7				mg/kg	0.205	U	0.196	U	0.203	U	0.195	U	0.206	U	0.208	U	0.191	U	0.184	U	0.208	U	0.191	U
2,4,5-T	93-76-5				mg/kg	0.205	U	0.196	U	0.203	U	0.195	U	0.206	U	0.208	U	0.191	U	0.184	U	0.208	U	0.191	U
2,4,5-TP (Silvex)	93-72-1	3.8	100	3.8	mg/kg	0.205	U	0.196	U	0.203	U	0.195	U	0.206	U	0.208	U	0.191	U	0.184	U	0.208	U	0.191	U
Organochlorine Pesticides by GC																									
Delta-BHC	319-86-8	0.25	100	0.04	mg/kg	0.00191	U	0.00181	U	0.00191	U	0.00184	U	0.00195	U	0.00194	U	0.00175	U	0.00174	U	0.00565	U	0.00177	U
Lindane	58-89-9	0.1	1.3	0.1	mg/kg	0.000796	U	0.000753	U	0.000797	U	0.000768	U	0.000814	U	0.000808	U	0.000731	U	0.000723	U	0.00235	U	0.000737	U
Alpha-BHC	319-84-6	0.02	0.48	0.02	mg/kg	0.000796	U	0.000753	U	0.000797	U	0.000768	U	0.000814	U	0.000808	U	0.000731	U	0.000723	U	0.00235	U	0.000737	U
Beta-BHC	319-85-7	0.09	0.36	0.036	mg/kg	0.00191	U	0.00181	U	0.00191	U	0.00184	U	0.00195	U	0.00194	U	0.00175	U	0.00174	U	0.00565	U	0.00177	U
Heptachlor	76-44-8	0.38	2.1	0.042	mg/kg	0.000955	U	0.000903	U	0.000957	U	0.000921	U	0.000977	U	0.000969	U	0.000877	U	0.000868	U	0.00282	U	0.000884	U
Aldrin	309-00-2	0.19	0.097	0.005	mg/kg	0.00191	U	0.00181	U	0.00191	U	0.00184	U	0.00195	U	0.00194	U	0.00175	U	0.00174	U	0.00565	U	0.00177	U
Heptachlor epoxide	1024-57-3				mg/kg	0.00358	U	0.00339	U	0.00359	U	0.00346	U	0.00366	U	0.00364	U	0.00329	U	0.00326	U	0.0106	U	0.00332	U
Endrin	72-20-8	0.06	11	0.014	mg/kg	0.000796	U	0.000753	U	0.000797	U	0.000768	U	0.000814	U	0.000808	U	0.000731	U	0.000723	U	0.00235	U	0.000737	U
Endrin aldehyde	7421-93-4				mg/kg	0.00239	U	0.00226	U	0.00239	U	0.0023	U	0.00244	U	0.00242	U	0.00219	U	0.00217	U	0.00706	U	0.00221	U
Endrin ketone	53494-70-5				mg/kg	0.00191	U	0.00181	U	0.00191	U	0.00184	U	0.00195	U	0.00194	U	0.00175	U	0.00174	U	0.00565	U	0.00177	U
Dieldrin	60-57-1	0.1	0.2	0.005	mg/kg	0.00119	U	0.00113	U	0.0012	U	0.00115	U	0.00122	U	0.00121	U	0.0011	U	0.00108	U	0.00353	U	0.0011	U
4,4'-DDE	72-55-9	17	8.9	0.0033	mg/kg	0.00191	U	0.00181	U	0.00191	U	0.00184	U	0.00195	U	0.00194	U	0.00175	U	0.00174	U	0.00565	U	0.00177	U
4,4'-DDD	72-54-8	14	13	0.0033	mg/kg	0.00191	U	0.00181	U	0.00191	U	0.00184	U	0.00195	U	0.00194	U	0.00175	U	0.00174	U	0.00565	U	0.00177	U
4,4'-DDT	50-29-3	136	7.9	0.0033	mg/kg	0.00191	U	0.00181	U	0.00191	U	0.00184	U	0.00195	U	0.00194	U	0.00175	U	0.00174	U	0.00565	U	0.00177	U
Endosulfan I	959-98-8	102	24	2.4	mg/kg	0.00191	U	0.00181	U	0.00191	U	0.00184	U	0.00195	U	0.00194	U	0.00175	U	0.00174	U	0.00565	U	0.00177	U
Endosulfan II	33213-65-9	102	24	2.4	mg/kg	0.00191	U	0.00181	U	0.00191	U	0.00184	U	0.00195	U	0.00194	U	0.00175	U	0.00174	U	0.00565	U	0.00177	U
Endosulfan sulfate	1031-07-8	1000	24	2.4	mg/kg	0.000796	U	0.000753	U	0.000797	U	0.000768	U	0.000814	U	0.000808	U	0.000731	U	0.000723	U	0.00235	U	0.000737	U
Methoxychlor	72-43-5				mg/kg	0.00358	U	0.00339	U	0.00359	U	0.00346	U	0.00366	U	0.00364	U	0.00329	U	0.00326	U	0.0106	U	0.00332	U
Toxaphene	8001-35-2				mg/kg	0.0358	U	0.0339	U	0.0359	U	0.0346	U	0.0366	U	0.0364	U	0.0329	U	0.0326	U	0.106	U	0.0332	U
cis-Chlordane	5103-71-9	2.9	4.2	0.094	mg/kg	0.00239	U	0.00226	U	0.00239	U	0.0023	U	0.00244	U	0.00242	U	0.00219	U	0.00217	U	0.00706	U	0.00221	U
trans-Chlordane	5103-74-2				mg/kg	0.00239	U	0.00226	U	0.00239	U	0.0023	U	0.00244	U	0.00242	U	0.00219	U	0.00217	U	0.00706	U	0.00221	U
Chlordane	57-74-9				mg/kg	0.0159	U	0.015	U	0.0159	U	0.0154	U	0.0163	U	0.0162	U	0.0146	U	0.0145	U	0.0471	U	0.0147	U
Polychlorinated Biphenyls by GC																									
Aroclor 1016	12674-11-2	3.2	1	0.1	mg/kg	0.0395	U	0.0381	U	0.0406	U	0.0376	U	0.0396	U	0.0412	U	0.0378	U	0.0374	U	0.117	U	0.0372	U
Aroclor 1221	11104-28-2	3.2	1	0.1	mg/kg	0.0395	U	0.0381	U	0.0406	U	0.0376	U	0.0396	U	0.0412	U	0.0378	U	0.0374	U	0.117	U	0.0372	U
Aroclor 1232	11141-16-5	3.2	1	0.1	mg/kg	0.0395	U	0.0381	U	0.0406	U	0.0376	U	0.0396	U	0.0412	U	0.0378	U	0.0374	U	0.117	U	0.0372	U
Aroclor 1242	53469-21-9	3.2	1	0.1	mg/kg	0.0395	U	0.0381	U	0.0406	U	0.0376	U	0.0396	U	0.0412	U	0.0378	U	0.0374	U	0.117	U	0.0372	U
Aroclor 1248	12672-29-6	3.2	1	0.1	mg/kg	0.0395	U	0.0381	U	0.0406	U	0.0376	U	0.0396	U	0.0412	U	0.0378	U	0.0374	U	0.117	U	0.0372	U
Aroclor 1254	11097-69-1	3.2	1	0.1	mg/kg	0.0395	U	0.0381	U	0.0406	U	0.0376	U	0.0396	U	0.0412	U	0.0378	U	0.0374	U	0.117	U	0.0372	U
Aroclor 1260	11096-82-5	3.2	1	0.1	mg/kg	0.0395	U	0.0381	U	0.0406	U	0.0376	U	0.0396	U	0.0412	U	0.0378	U	0.0374	U	0.117	U	0.0372	U
Aroclor 1262	37324-23-5	3.2	1	0.1	mg/kg	0.0395	U	0.0381	U	0.0406	U	0.0376	U	0.0396	U	0.0412	U	0.0378	U	0.0374	U	0.117	U	0.0372	U
Aroclor 1268	11100-14-4	3.2	1	0.1	mg/kg	0.0395	U	0.0381	U	0.0406	U	0.0376	U	0.0396	U	0.0412	U	0.0378	U	0.0374	U	0.117	U	0.0372	U
PCBs, Total	1336-36-3	3.2	1	0.1	mg/kg	0.0395	U	0.0381	U	0.0406	U	0.0376	U	0.0396	U	0.0412	U	0.0378	U	0.0374	U	0.117	U	0.0372	U

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Crite
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYC

Table 1
Supplemental RI Soil PCBs, Pesticides and Herbicides Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-17-N3E3 (23-25)		SB-17-N3E3 (25-27)		SB-17-N5E3 23-25		SB-17-N5E3 30-32		SB-17-N4E4 21-23		SB-17-N4E4 28-30		SB-17-N5E4 25-27		SB-17-N5E4 28-30		SB-17-S2E1 30-32		SB-17-S2E1 35-37	
SAMPLING DATE						1/26/2023		1/26/2023		1/26/2023		1/26/2023		1/26/2023		1/26/2023		1/26/2023		1/26/2023		1/27/2023		1/27/2023	
LAB SAMPLE ID						L2304515-01		L2304515-02		L2304515-03		L2304515-04		L2304515-05		L2304515-06		L2304515-07		L2304515-08		L2304757-01		L2304757-02	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Chlorinated Herbicides by GC																									
2,4-D	94-75-7				mg/kg	0.204	U	0.208	U	0.185	U	0.211	U	0.188	U	0.184	U	0.211	U	0.202	U	0.209	U	0.182	U
2,4,5-T	93-76-5				mg/kg	0.204	U	0.208	U	0.185	U	0.211	U	0.188	U	0.184	U	0.211	U	0.202	U	0.209	U	0.182	U
2,4,5-TP (Silvex)	93-72-1	3.8	100	3.8	mg/kg	0.204	U	0.208	U	0.185	U	0.211	U	0.188	U	0.184	U	0.211	U	0.202	U	0.209	U	0.182	U
Organochlorine Pesticides by GC																									
Delta-BHC	319-86-8	0.25	100	0.04	mg/kg	0.0019	U	0.00195	U	0.00178	U	0.00198	U	0.00524	U	0.0018	U	0.00194	U	0.00186	U	0.00198	U	0.00178	U
Lindane	58-89-9	0.1	1.3	0.1	mg/kg	0.000794	U	0.000811	U	0.000742	U	0.000824	U	0.00218	U	0.000748	U	0.00081	U	0.000777	U	0.000825	U	0.000743	U
Alpha-BHC	319-84-6	0.02	0.48	0.02	mg/kg	0.000794	U	0.000811	U	0.000742	U	0.000824	U	0.00218	U	0.000748	U	0.00081	U	0.000777	U	0.000825	U	0.000743	U
Beta-BHC	319-85-7	0.09	0.36	0.036	mg/kg	0.0019	U	0.00195	U	0.00178	U	0.00198	U	0.00524	U	0.0018	U	0.00194	U	0.00186	U	0.00198	U	0.00178	U
Heptachlor	76-44-8	0.38	2.1	0.042	mg/kg	0.000952	U	0.000974	U	0.00089	U	0.00099	U	0.00262	U	0.000898	U	0.000972	U	0.000933	U	0.00099	U	0.000892	U
Aldrin	309-00-2	0.19	0.097	0.005	mg/kg	0.0019	U	0.00195	U	0.00178	U	0.00198	U	0.00524	U	0.0018	U	0.00194	U	0.00186	U	0.00198	U	0.00178	U
Heptachlor epoxide	1024-57-3				mg/kg	0.00357	U	0.00365	U	0.00334	U	0.00371	U	0.00982	U	0.00337	U	0.00364	U	0.0035	U	0.00371	U	0.00334	U
Endrin	72-20-8	0.06	11	0.014	mg/kg	0.000794	U	0.000811	U	0.000742	U	0.000824	U	0.00218	U	0.000748	U	0.00081	U	0.000777	U	0.000825	U	0.000743	U
Endrin aldehyde	7421-93-4				mg/kg	0.00238	U	0.00243	U	0.00222	U	0.00247	U	0.00655	U	0.00224	U	0.00243	U	0.00233	U	0.00247	U	0.00223	U
Endrin ketone	53494-70-5				mg/kg	0.0019	U	0.00195	U	0.00178	U	0.00198	U	0.00524	U	0.0018	U	0.00194	U	0.00186	U	0.00198	U	0.00178	U
Dieldrin	60-57-1	0.1	0.2	0.005	mg/kg	0.00119	U	0.00122	U	0.00111	U	0.00124	U	0.00327	U	0.00112	U	0.00121	U	0.00116	U	0.00124	U	0.00112	U
4,4'-DDE	72-55-9	17	8.9	0.0033	mg/kg	0.0019	U	0.00195	U	0.00178	U	0.00198	U	0.00524	U	0.0018	U	0.00194	U	0.00186	U	0.00198	U	0.00178	U
4,4'-DDD	72-54-8	14	13	0.0033	mg/kg	0.0019	U	0.00195	U	0.00178	U	0.00198	U	0.00524	U	0.0018	U	0.00194	U	0.00186	U	0.00198	U	0.00178	U
4,4'-DDT	50-29-3	136	7.9	0.0033	mg/kg	0.0019	U	0.00195	U	0.00178	U	0.00198	U	0.00524	U	0.0018	U	0.00194	U	0.00186	U	0.00198	U	0.00178	U
Endosulfan I	959-98-8	102	24	2.4	mg/kg	0.0019	U	0.00195	U	0.00178	U	0.00198	U	0.00524	U	0.0018	U	0.00194	U	0.00186	U	0.00198	U	0.00178	U
Endosulfan II	33213-65-9	102	24	2.4	mg/kg	0.0019	U	0.00195	U	0.00178	U	0.00198	U	0.00524	U	0.0018	U	0.00194	U	0.00186	U	0.00198	U	0.00178	U
Endosulfan sulfate	1031-07-8	1000	24	2.4	mg/kg	0.000794	U	0.000811	U	0.000742	U	0.000824	U	0.00218	U	0.000748	U	0.00081	U	0.000777	U	0.000825	U	0.00285	P
Methoxychlor	72-43-5				mg/kg	0.00357	U	0.00365	U	0.00334	U	0.00371	U	0.00982	U	0.00337	U	0.00364	U	0.0035	U	0.00371	U	0.00334	U
Toxaphene	8001-35-2				mg/kg	0.0357	U	0.0365	U	0.0334	U	0.0371	U	0.0982	U	0.0337	U	0.0364	U	0.035	U	0.0371	U	0.0334	U
cis-Chlordane	5103-71-9	2.9	4.2	0.094	mg/kg	0.00238	U	0.00243	U	0.00222	U	0.00247	U	0.00655	U	0.00224	U	0.00243	U	0.00233	U	0.00247	U	0.00223	U
trans-Chlordane	5103-74-2				mg/kg	0.00238	U	0.00243	U	0.00222	U	0.00247	U	0.00655	U	0.00224	U	0.00243	U	0.00233	U	0.00247	U	0.00223	U
Chlordane	57-74-9				mg/kg	0.0159	U	0.0162	U	0.0148	U	0.0165	U	0.0436	U	0.015	U	0.0162	U	0.0155	U	0.0165	U	0.0149	U
Polychlorinated Biphenyls by GC																									
Aroclor 1016	12674-11-2	3.2	1	0.1	mg/kg	0.0399	U	0.0408	U	0.0356	U	0.0408	U	0.0368	U	0.0361	U	0.0403	U	0.0403	U	0.123	U	0.0354	U
Aroclor 1221	11104-28-2	3.2	1	0.1	mg/kg	0.0399	U	0.0408	U	0.0356	U	0.0408	U	0.0368	U	0.0361	U	0.0403	U	0.0403	U	0.123	U	0.0354	U
Aroclor 1232	11141-16-5	3.2	1	0.1	mg/kg	0.0399	U	0.0408	U	0.0356	U	0.0408	U	0.0368	U	0.0361	U	0.0403	U	0.0403	U	0.123	U	0.0354	U
Aroclor 1242	53469-21-9	3.2	1	0.1	mg/kg	0.0399	U	0.0408	U	0.0356	U	0.0408	U	0.0368	U	0.0361	U	0.0403	U	0.0403	U	0.123	U	0.0354	U
Aroclor 1248	12672-29-6	3.2	1	0.1	mg/kg	0.0399	U	0.0408	U	0.0356	U	0.0408	U	0.0368	U	0.0361	U	0.0403	U	0.0403	U	0.123	U	0.0354	U
Aroclor 1254	11097-69-1	3.2	1	0.1	mg/kg	0.0399	U	0.0408	U	0.0356	U	0.0408	U	0.0368	U	0.0361	U	0.0403	U	0.0403	U	0.123	U	0.0354	U
Aroclor 1260	11096-82-5	3.2	1	0.1	mg/kg	0.0399	U	0.0408	U	0.0356	U	0.0408	U	0.0368	U	0.0361	U	0.0403	U	0.0403	U	0.123	U	0.0354	U
Aroclor 1262	37324-23-5	3.2	1	0.1	mg/kg	0.0399	U	0.0408	U	0.0356	U	0.0408	U	0.0368	U	0.0361	U	0.0403	U	0.0403	U	0.123	U	0.0354	U
Aroclor 1268	11100-14-4	3.2	1	0.1	mg/kg	0.0399	U	0.0408	U	0.0356	U	0.0408	U	0.0368	U	0.0361	U	0.0403	U	0.0403	U	0.123	U	0.0354	U
PCBs, Total	1336-36-3	3.2	1	0.1	mg/kg	0.0399	U	0.0408	U	0.0356	U	0.0408	U	0.0368	U	0.0361	U	0.0403	U	0.0403	U	0.123	U	0.0354	U

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Crite
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYC

Table 1
Supplemental RI Soil PCBs, Pesticides and Herbicides Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-17-S2E2 33-35		SB-17-S2E2 35-37		SB-DUP 4		SB-17-S3 25-27		SB-17-S3 35-37		SB-17-S4 25-27		SB-17-S4 33-35	
SAMPLING DATE						1/27/2023		1/27/2023		1/27/2023		1/30/2023		1/30/2023		1/30/2023		1/30/2023	
LAB SAMPLE ID						L2304757-03		L2304757-04		L2304757-05		L2304991-01		L2304991-02		L2304991-03		L2304991-04	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Chlorinated Herbicides by GC																			
2,4-D	94-75-7				mg/kg	0.218	U	0.183	U	0.182	U	0.194	U	0.197	U	0.194	U	0.21	U
2,4,5-T	93-76-5				mg/kg	0.218	U	0.183	U	0.182	U	0.194	U	0.197	U	0.194	U	0.21	U
2,4,5-TP (Silvex)	93-72-1	3.8	100	3.8	mg/kg	0.218	U	0.183	U	0.182	U	0.194	U	0.197	U	0.194	U	0.21	U
Organochlorine Pesticides by GC																			
Delta-BHC	319-86-8	0.25	100	0.04	mg/kg	0.00207	U	0.00177	U	0.00176	U	0.00187	U	0.00183	U	0.00182	U	0.00201	U
Lindane	58-89-9	0.1	1.3	0.1	mg/kg	0.000862	U	0.000736	U	0.000733	U	0.000778	U	0.000762	U	0.00076	U	0.000838	U
Alpha-BHC	319-84-6	0.02	0.48	0.02	mg/kg	0.000862	U	0.000736	U	0.000733	U	0.000778	U	0.000762	U	0.00076	U	0.000838	U
Beta-BHC	319-85-7	0.09	0.36	0.036	mg/kg	0.00207	U	0.00177	U	0.00176	U	0.00187	U	0.00183	U	0.00182	U	0.00201	U
Heptachlor	76-44-8	0.38	2.1	0.042	mg/kg	0.00103	U	0.000884	U	0.00088	U	0.000934	U	0.000914	U	0.000912	U	0.001	U
Aldrin	309-00-2	0.19	0.097	0.005	mg/kg	0.00207	U	0.00177	U	0.00176	U	0.00187	U	0.00183	U	0.00182	U	0.00201	U
Heptachlor epoxide	1024-57-3				mg/kg	0.00388	U	0.00331	U	0.0033	U	0.0035	U	0.00343	U	0.00342	U	0.00377	U
Endrin	72-20-8	0.06	11	0.014	mg/kg	0.000862	U	0.000736	U	0.000733	U	0.000778	U	0.000762	U	0.00076	U	0.000838	U
Endrin aldehyde	7421-93-4				mg/kg	0.00259	U	0.00221	U	0.0022	U	0.00233	U	0.00228	U	0.00228	U	0.00251	U
Endrin ketone	53494-70-5				mg/kg	0.00207	U	0.00177	U	0.00176	U	0.00187	U	0.00183	U	0.00182	U	0.00201	U
Dieldrin	60-57-1	0.1	0.2	0.005	mg/kg	0.00129	U	0.0011	U	0.0011	U	0.00117	U	0.00114	U	0.00114	U	0.00126	U
4,4'-DDE	72-55-9	17	8.9	0.0033	mg/kg	0.00207	U	0.00177	U	0.00176	U	0.00187	U	0.00183	U	0.00182	U	0.00201	U
4,4'-DDD	72-54-8	14	13	0.0033	mg/kg	0.00207	U	0.00177	U	0.00176	U	0.00187	U	0.00183	U	0.00182	U	0.00201	U
4,4'-DDT	50-29-3	136	7.9	0.0033	mg/kg	0.00207	U	0.00177	U	0.00176	U	0.00187	U	0.00183	U	0.00182	U	0.00201	U
Endosulfan I	959-98-8	102	24	2.4	mg/kg	0.00207	U	0.00177	U	0.00176	U	0.00187	U	0.00183	U	0.00182	U	0.00201	U
Endosulfan II	33213-65-9	102	24	2.4	mg/kg	0.00207	U	0.00177	U	0.00176	U	0.00187	U	0.00183	U	0.00182	U	0.00201	U
Endosulfan sulfate	1031-07-8	1000	24	2.4	mg/kg	0.000862	U	0.000736	U	0.000733	U	0.000778	U	0.000762	U	0.00076	U	0.000838	U
Methoxychlor	72-43-5				mg/kg	0.00388	U	0.00331	U	0.0033	U	0.0035	U	0.00343	U	0.00342	U	0.00377	U
Toxaphene	8001-35-2				mg/kg	0.0388	U	0.0331	U	0.033	U	0.035	U	0.0343	U	0.0342	U	0.0377	U
cis-Chlordane	5103-71-9	2.9	4.2	0.094	mg/kg	0.00259	U	0.00221	U	0.0022	U	0.00233	U	0.00228	U	0.00228	U	0.00251	U
trans-Chlordane	5103-74-2				mg/kg	0.00259	U	0.00221	U	0.0022	U	0.00233	U	0.00228	U	0.00228	U	0.00251	U
Chlordane	57-74-9				mg/kg	0.0172	U	0.0147	U	0.0147	U	0.0156	U	0.0152	U	0.0152	U	0.0168	U
Polychlorinated Biphenyls by GC																			
Aroclor 1016	12674-11-2	3.2	1	0.1	mg/kg	0.0439	U	0.0364	U	0.0355	U	0.0392	U	0.0391	U	0.0379	U	0.0417	U
Aroclor 1221	11104-28-2	3.2	1	0.1	mg/kg	0.0439	U	0.0364	U	0.0355	U	0.0392	U	0.0391	U	0.0379	U	0.0417	U
Aroclor 1232	11141-16-5	3.2	1	0.1	mg/kg	0.0439	U	0.0364	U	0.0355	U	0.0392	U	0.0391	U	0.0379	U	0.0417	U
Aroclor 1242	53469-21-9	3.2	1	0.1	mg/kg	0.0439	U	0.0364	U	0.0355	U	0.0392	U	0.0391	U	0.0379	U	0.0417	U
Aroclor 1248	12672-29-6	3.2	1	0.1	mg/kg	0.0439	U	0.0364	U	0.0355	U	0.0392	U	0.0391	U	0.0379	U	0.0417	U
Aroclor 1254	11097-69-1	3.2	1	0.1	mg/kg	0.0439	U	0.0364	U	0.0355	U	0.0392	U	0.0391	U	0.0379	U	0.0417	U
Aroclor 1260	11096-82-5	3.2	1	0.1	mg/kg	0.0439	U	0.0364	U	0.0355	U	0.0392	U	0.0391	U	0.0379	U	0.0417	U
Aroclor 1262	37324-23-5	3.2	1	0.1	mg/kg	0.0439	U	0.0364	U	0.0355	U	0.0392	U	0.0391	U	0.0379	U	0.0417	U
Aroclor 1268	11100-14-4	3.2	1	0.1	mg/kg	0.0439	U	0.0364	U	0.0355	U	0.0392	U	0.0391	U	0.0379	U	0.0417	U
PCBs, Total	1336-36-3	3.2	1	0.1	mg/kg	0.0439	U	0.0364	U	0.0355	U	0.0392	U	0.0391	U	0.0379	U	0.0417	U

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Crite
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYC

Table 1
Supplemental RI Soil Emergent Contaminants Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-16-N1(34-35)		SB-16-N1(37-38)		SB-16-S1(50-51)		SB-16-S1(55-56)		SB-17-E1 (24-25)		SB-17-E1 (30-31)		SB-17-S2 35-37		SB-17-N1 24-25		SB-17-N1 33-34		SB-17-S1 23-24		SB-17-S1 35-36	
SAMPLING DATE						1/11/2023		1/11/2023		1/11/2023		1/11/2023		1/16/2023		1/16/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023	
LAB SAMPLE ID						L2301705-01		L2301705-02		L2301705-03		L2301705-04		L2302488-01		L2302488-02		L2302694-01		L2302697-01		L2302697-02		L2302697-03		L2302697-04	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Perfluorinated Alkyl Acids by EPA 1633																											
Perfluorobutanoic Acid (PFBA)	375-22-4				ug/kg	0.804	U	0.795	U	0.808	U	0.801	U	0.788	U	0.791	U	0.794	U	0.786	U	0.795	U	0.798	U	0.792	U
Perfluoropentanoic Acid (PFPeA)	2706-90-3				ug/kg	0.402	U	0.398	U	0.404	U	0.4	U	0.394	U	0.396	U	0.397	U	0.393	U	0.398	U	0.399	U	0.396	U
Perfluorobutanesulfonic Acid (PFBS)	375-73-5				ug/kg	0.201	U	0.199	U	0.202	U	0.2	U	0.197	U	0.198	U	0.198	U	0.196	U	0.199	U	0.199	U	0.198	U
Perfluorohexanoic Acid (PFHxA)	307-24-4				ug/kg	0.201	U	0.199	U	0.202	U	0.2	U	0.197	U	0.198	U	0.198	U	0.196	U	0.199	U	0.199	U	0.198	U
Perfluoroheptanoic Acid (PFHpA)	375-85-9				ug/kg	0.201	U	0.199	U	0.202	U	0.2	U	0.197	U	0.198	U	0.198	U	0.196	U	0.199	U	0.199	U	0.198	U
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4				ug/kg	0.201	U	0.199	U	0.202	U	0.2	U	0.197	U	0.198	U	0.198	U	0.196	U	0.199	U	0.199	U	0.198	U
Perfluorooctanoic Acid (PFOA)	335-67-1	1.1	33	0.66	ug/kg	0.201	U	0.199	U	0.202	U	0.2	U	0.197	U	0.198	U	0.198	U	0.196	U	0.199	U	0.199	U	0.198	U
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2				ug/kg	0.804	U	0.795	U	0.808	U	0.801	U	0.788	U	0.791	U	0.794	U	0.786	U	0.795	U	0.798	U	0.792	U
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8				ug/kg	0.201	U	0.199	U	0.202	U	0.2	U	0.197	U	0.198	U	0.198	U	0.196	U	0.199	U	0.199	U	0.198	U
Perfluorononanoic Acid (PFNA)	375-95-1				ug/kg	0.201	U	0.199	U	0.202	U	0.2	U	0.197	U	0.198	U	0.198	U	0.196	U	0.199	U	0.199	U	0.198	U
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	3.7	44	0.88	ug/kg	0.201	U	0.199	U	0.202	U	0.2	U	0.197	U	0.198	U	0.198	U	0.196	U	0.199	U	0.199	U	0.198	U
Perfluorodecanoic Acid (PFDA)	335-76-2				ug/kg	0.201	U	0.199	U	0.202	U	0.2	U	0.197	U	0.198	U	0.198	U	0.196	U	0.199	U	0.199	U	0.198	U
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4				ug/kg	0.804	U	0.795	U	0.808	U	0.801	U	0.788	U	0.791	U	0.794	U	0.786	U	0.795	U	0.798	U	0.792	U
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9				ug/kg	0.201	U	0.199	U	0.202	U	0.2	U	0.197	U	0.198	U	0.198	U	0.196	U	0.199	U	0.199	U	0.198	U
Perfluoroundecanoic Acid (PFUnA)	2058-94-8				ug/kg	0.201	U	0.199	U	0.202	U	0.2	U	0.197	U	0.198	U	0.198	U	0.196	U	0.199	U	0.199	U	0.198	U
Perfluorodecanesulfonic Acid (PFDS)	335-77-3				ug/kg	0.201	U	0.199	U	0.202	U	0.2	U	0.197	U	0.198	U	0.198	U	0.196	U	0.199	U	0.199	U	0.198	U
Perfluorooctanesulfonamide (PFOSA)	754-91-6				ug/kg	0.201	U	0.199	U	0.202	U	0.2	U	0.197	U	0.198	U	0.198	U	0.196	U	0.199	U	0.199	U	0.198	U
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6				ug/kg	0.201	U	0.199	U	0.202	U	0.2	U	0.197	U	0.198	U	0.135	J	0.196	U	0.199	U	0.199	U	0.198	U
Perfluorododecanoic Acid (PFDoA)	307-55-1				ug/kg	0.201	U	0.199	U	0.202	U	0.2	U	0.197	U	0.198	U	0.198	U	0.196	U	0.199	U	0.199	U	0.198	U
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8				ug/kg	0.201	U	0.199	U	0.202	U	0.2	U	0.197	U	0.198	U	0.198	U	0.196	U	0.199	U	0.199	U	0.198	U
Perfluorotetradecanoic Acid (PFTeDA)	376-06-7				ug/kg	0.201	U	0.199	U	0.202	U	0.2	U	0.197	U	0.198	U	0.198	U	0.196	U	0.199	U	0.199	U	0.198	U
PFOA/PFOS, Total	null				ug/kg	0.201	U	0.199	U	0.202	U	0.2	U	0.197	U	0.198	U	0.198	U	0.196	U	0.199	U	0.199	U	0.198	U

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.

Table 1
Supplemental RI Soil Emergent Contaminants Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-17-N1E1 23-25		SB-17-N1E1 33-35		SB-17-S1E1 28-30		SB-17-S1E1 35-37		SB-17-S2 23-25		SB-17-N2 (24-25)		SB-17-N2 (35-37)		SB-17-S1E2 (32-34)		SB-17-S1E2 (35-37)		SB-17-N3 (23-25)	
SAMPLING DATE						1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/18/2023		1/18/2023		1/18/2023		1/18/2023		1/18/2023	
LAB SAMPLE ID						L2302697-05		L2302697-06		L2302697-07		L2302697-08		L2302697-09		L2302958-01		L2302958-02		L2302958-03		L2302958-04		L2302958-05	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Perfluorinated Alkyl Acids by EPA 1633																									
Perfluorobutanoic Acid (PFBA)	375-22-4				ug/kg	0.791	U	0.792	U	0.778	U	0.796	U	0.796	U	0.794	U	0.783	U	0.789	U	0.782	U	0.787	U
Perfluoropentanoic Acid (PFPeA)	2706-90-3				ug/kg	0.396	U	0.396	U	0.389	U	0.398	U	0.398	U	0.397	U	0.392	U	0.395	U	0.391	U	0.394	U
Perfluorobutanesulfonic Acid (PFBS)	375-73-5				ug/kg	0.198	U	0.198	U	0.194	U	0.199	U	0.199	U	0.198	U	0.196	U	0.197	U	0.195	U	0.197	U
Perfluorohexanoic Acid (PFHxA)	307-24-4				ug/kg	0.198	U	0.198	U	0.194	U	0.199	U	0.199	U	0.198	U	0.196	U	0.197	U	0.195	U	0.197	U
Perfluoroheptanoic Acid (PFHpA)	375-85-9				ug/kg	0.198	U	0.198	U	0.194	U	0.199	U	0.199	U	0.198	U	0.196	U	0.197	U	0.195	U	0.197	U
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4				ug/kg	0.198	U	0.198	U	0.194	U	0.199	U	0.199	U	0.198	U	0.196	U	0.197	U	0.195	U	0.197	U
Perfluorooctanoic Acid (PFOA)	335-67-1	1.1	33	0.66	ug/kg	0.198	U	0.198	U	0.194	U	0.199	U	0.199	U	0.198	U	0.196	U	0.197	U	0.195	U	0.197	U
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2				ug/kg	0.791	U	0.792	U	0.778	U	0.796	U	0.796	U	0.794	U	0.783	U	0.789	U	0.782	U	0.787	U
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8				ug/kg	0.198	U	0.198	U	0.194	U	0.199	U	0.199	U	0.198	U	0.196	U	0.197	U	0.195	U	0.197	U
Perfluorononanoic Acid (PFNA)	375-95-1				ug/kg	0.198	U	0.198	U	0.194	U	0.199	U	0.199	U	0.198	U	0.196	U	0.197	U	0.195	U	0.197	U
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	3.7	44	0.88	ug/kg	0.198	U	0.198	U	0.194	U	0.199	U	0.199	U	0.198	U	0.196	U	0.197	U	0.195	U	0.197	U
Perfluorodecanoic Acid (PFDA)	335-76-2				ug/kg	0.198	U	0.198	U	0.194	U	0.199	U	0.199	U	0.198	U	0.196	U	0.197	U	0.195	U	0.197	U
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4				ug/kg	0.791	U	0.792	U	0.778	U	0.796	U	0.796	U	0.794	U	0.783	U	0.789	U	0.782	U	0.787	U
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9				ug/kg	0.198	U	0.198	U	0.194	U	0.199	U	0.199	U	0.198	U	0.196	U	0.197	U	0.195	U	0.197	U
Perfluoroundecanoic Acid (PFUnA)	2058-94-8				ug/kg	0.198	U	0.198	U	0.194	U	0.199	U	0.199	U	0.198	U	0.196	U	0.197	U	0.195	U	0.197	U
Perfluorodecanesulfonic Acid (PFDS)	335-77-3				ug/kg	0.198	U	0.198	U	0.194	U	0.199	U	0.199	U	0.198	U	0.196	U	0.197	U	0.195	U	0.197	U
Perfluorooctanesulfonamide (PFOSA)	754-91-6				ug/kg	0.198	U	0.198	U	0.194	U	0.199	U	0.199	U	0.198	U	0.196	U	0.197	U	0.195	U	0.197	U
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6				ug/kg	0.198	U	0.198	U	0.194	U	0.199	U	0.199	U	0.198	U	0.196	U	0.197	U	0.195	U	0.197	U
Perfluorododecanoic Acid (PFDoA)	307-55-1				ug/kg	0.198	U	0.198	U	0.194	U	0.199	U	0.199	U	0.198	U	0.196	U	0.197	U	0.195	U	0.197	U
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8				ug/kg	0.198	U	0.198	U	0.194	U	0.199	U	0.199	U	0.198	U	0.196	U	0.197	U	0.195	U	0.197	U
Perfluorotetradecanoic Acid (PFTeDA)	376-06-7				ug/kg	0.198	U	0.198	U	0.194	U	0.199	U	0.199	U	0.198	U	0.196	U	0.197	U	0.195	U	0.197	U
PFOA/PFOS, Total	null				ug/kg	0.198	U	0.198	U	0.194	U	0.199	U	0.199	U	0.198	U	0.196	U	0.197	U	0.195	U	0.197	U

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Pa
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 N
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Envirc

Table 1
Supplemental RI Soil Emergent Contaminants Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-17-N3 (33-35)		SB-17-N1E2 (23-25)		SB-17-N1E2 (30-31)		SB-DUP		SB-17-N1E3 (22-24)		SB-17-N1E3 (28-30)		SB-17-N4 (25-30)		SB-17-N4 (38-40)		SB-17-N5 (25-27)		SB-17-N5 (33-35)	
SAMPLING DATE						1/18/2023		1/18/2023		1/18/2023		1/18/2023		1/19/2023		1/19/2023		1/19/2023		1/19/2023		1/19/2023		1/19/2023	
LAB SAMPLE ID						L2302958-06		L2302958-07		L2302958-08		L2302958-10		L2303264-01		L2303264-02		L2303264-03		L2303264-04		L2303264-05		L2303264-06	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Perfluorinated Alkyl Acids by EPA 1633																									
Perfluorobutanoic Acid (PFBA)	375-22-4				ug/kg	0.794	U	0.794	U	0.787	U	0.786	U	0.793	U	0.787	U	0.797	U	0.797	U	0.794	U	0.787	U
Perfluoropentanoic Acid (PFPeA)	2706-90-3				ug/kg	0.397	U	0.397	U	0.393	U	0.393	U	0.397	U	0.393	U	0.398	U	0.398	U	0.397	U	0.393	U
Perfluorobutanesulfonic Acid (PFBS)	375-73-5				ug/kg	0.198	U	0.198	U	0.197	U	0.196	U	0.198	U	0.197	U	0.199	U	0.199	U	0.198	U	0.197	U
Perfluorohexanoic Acid (PFHxA)	307-24-4				ug/kg	0.198	U	0.198	U	0.197	U	0.196	U	0.198	U	0.197	U	0.199	U	0.199	U	0.198	U	0.197	U
Perfluoroheptanoic Acid (PFHpA)	375-85-9				ug/kg	0.198	U	0.198	U	0.197	U	0.196	U	0.198	U	0.197	U	0.199	U	0.199	U	0.198	U	0.197	U
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4				ug/kg	0.198	U	0.198	U	0.197	U	0.196	U	0.198	U	0.197	U	0.199	U	0.199	U	0.198	U	0.197	U
Perfluorooctanoic Acid (PFOA)	335-67-1	1.1	33	0.66	ug/kg	0.198	U	0.198	U	0.197	U	0.196	U	0.198	U	0.197	U	0.199	U	0.199	U	0.198	U	0.197	U
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2				ug/kg	0.794	U	0.794	U	0.787	U	0.786	U	0.793	U	0.787	U	0.797	U	0.797	U	0.794	U	0.787	U
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8				ug/kg	0.198	U	0.198	U	0.197	U	0.196	U	0.198	U	0.197	U	0.199	U	0.199	U	0.198	U	0.197	U
Perfluorononanoic Acid (PFNA)	375-95-1				ug/kg	0.198	U	0.198	U	0.197	U	0.196	U	0.198	U	0.197	U	0.199	U	0.199	U	0.198	U	0.197	U
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	3.7	44	0.88	ug/kg	0.198	U	0.198	U	0.197	U	0.196	U	0.198	U	0.197	U	0.199	U	0.199	U	0.198	U	0.197	U
Perfluorodecanoic Acid (PFDA)	335-76-2				ug/kg	0.198	U	0.198	U	0.197	U	0.196	U	0.198	U	0.197	U	0.199	U	0.199	U	0.198	U	0.197	U
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4				ug/kg	0.794	U	0.794	U	0.787	U	0.786	U	0.793	U	0.787	U	0.797	U	0.797	U	0.794	U	0.787	U
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9				ug/kg	0.198	U	0.198	U	0.197	U	0.196	U	0.198	U	0.197	U	0.199	U	0.199	U	0.198	U	0.197	U
Perfluoroundecanoic Acid (PFUnA)	2058-94-8				ug/kg	0.198	U	0.198	U	0.197	U	0.196	U	0.198	U	0.197	U	0.199	U	0.199	U	0.198	U	0.197	U
Perfluorodecanesulfonic Acid (PFDS)	335-77-3				ug/kg	0.198	U	0.198	U	0.197	U	0.196	U	0.198	U	0.197	U	0.199	U	0.199	U	0.198	U	0.197	U
Perfluorooctanesulfonamide (PFOSA)	754-91-6				ug/kg	0.198	U	0.198	U	0.197	U	0.196	U	0.198	U	0.197	U	0.199	U	0.199	U	0.198	U	0.197	U
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6				ug/kg	0.198	U	0.198	U	0.197	U	0.196	U	0.198	U	0.197	U	0.199	U	0.199	U	0.198	U	0.197	U
Perfluorododecanoic Acid (PFDoA)	307-55-1				ug/kg	0.198	U	0.198	U	0.197	U	0.196	U	0.198	U	0.197	U	0.199	U	0.199	U	0.198	U	0.197	U
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8				ug/kg	0.198	U	0.198	U	0.197	U	0.196	U	0.198	U	0.197	U	0.199	U	0.199	U	0.198	U	0.197	U
Perfluorotetradecanoic Acid (PFTeDA)	376-06-7				ug/kg	0.198	U	0.198	U	0.197	U	0.196	U	0.198	U	0.197	U	0.199	U	0.199	U	0.198	U	0.197	U
PFOA/PFOS, Total	null				ug/kg	0.198	U	0.198	U	0.197	U	0.196	U	0.198	U	0.197	U	0.199	U	0.199	U	0.198	U	0.197	U

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Pa
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 N
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Envirc

Table 1
Supplemental RI Soil Emergent Contaminants Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-17-N6 (23-25)		SB-17-N6 (37-39)		SB-17-N7 (23-25)		SB-17-N7 (30-32)		SB-17-N2E1 (23-25)		SB-17-N2E1 (30-32)		SB-17-N7E1 (25-27)		SB-17-N7E1 (33-35)		SB-17-N3E1 (21-23)		SB-17-N3E1 (32-34)	
SAMPLING DATE						1/19/2023		1/20/2023		1/20/2023		1/20/2023		1/20/2023		1/20/2023		1/20/2023		1/20/2023		1/20/2023		1/20/2023	
LAB SAMPLE ID						L2303264-07		L2303518-01		L2303518-02		L2303518-03		L2303518-04		L2303518-05		L2303518-06		L2303518-07		L2303518-08		L2303518-09	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Perfluorinated Alkyl Acids by EPA 1633																									
Perfluorobutanoic Acid (PFBA)	375-22-4				ug/kg	0.779	U	0.782	U	0.796	U	0.792	U	0.794	U	0.789	U	0.786	U	0.779	U	0.772	U	0.779	U
Perfluoropentanoic Acid (PFPeA)	2706-90-3				ug/kg	0.389	U	0.391	U	0.398	U	0.396	U	0.397	U	0.394	U	0.393	U	0.389	U	0.386	U	0.389	U
Perfluorobutanesulfonic Acid (PFBS)	375-73-5				ug/kg	0.195	U	0.195	U	0.199	U	0.198	U	0.199	U	0.197	U	0.197	U	0.195	U	0.193	U	0.195	U
Perfluorohexanoic Acid (PFHxA)	307-24-4				ug/kg	0.195	U	0.195	U	0.199	U	0.198	U	0.199	U	0.197	U	0.197	U	0.195	U	0.193	U	0.195	U
Perfluoroheptanoic Acid (PFHpA)	375-85-9				ug/kg	0.195	U	0.195	U	0.199	U	0.198	U	0.199	U	0.197	U	0.197	U	0.195	U	0.193	U	0.195	U
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4				ug/kg	0.195	U	0.195	U	0.199	U	0.198	U	0.199	U	0.197	U	0.197	U	0.195	U	0.193	U	0.195	U
Perfluorooctanoic Acid (PFOA)	335-67-1	1.1	33	0.66	ug/kg	0.195	U	0.195	U	0.199	U	0.198	U	0.199	U	0.197	U	0.197	U	0.195	U	0.193	U	0.195	U
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2				ug/kg	0.779	U	0.782	U	0.796	U	0.792	U	0.794	U	0.789	U	0.786	U	0.779	U	0.772	U	0.779	U
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8				ug/kg	0.195	U	0.195	U	0.199	U	0.198	U	0.199	U	0.197	U	0.197	U	0.195	U	0.193	U	0.195	U
Perfluorononanoic Acid (PFNA)	375-95-1				ug/kg	0.195	U	0.195	U	0.199	U	0.198	U	0.199	U	0.197	U	0.197	U	0.195	U	0.193	U	0.195	U
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	3.7	44	0.88	ug/kg	0.195	U	0.195	U	0.199	U	0.198	U	0.199	U	0.197	U	0.197	U	0.195	U	0.193	U	0.195	U
Perfluorodecanoic Acid (PFDA)	335-76-2				ug/kg	0.195	U	0.195	U	0.199	U	0.198	U	0.199	U	0.197	U	0.197	U	0.195	U	0.193	U	0.195	U
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4				ug/kg	0.779	U	0.782	U	0.796	U	0.792	U	0.794	U	0.789	U	0.786	U	0.779	U	0.772	U	0.779	U
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9				ug/kg	0.195	U	0.195	U	0.199	U	0.198	U	0.199	U	0.197	U	0.197	U	0.195	U	0.193	U	0.195	U
Perfluoroundecanoic Acid (PFUnA)	2058-94-8				ug/kg	0.195	U	0.195	U	0.199	U	0.198	U	0.199	U	0.197	U	0.197	U	0.195	U	0.193	U	0.195	U
Perfluorodecanesulfonic Acid (PFDS)	335-77-3				ug/kg	0.195	U	0.195	U	0.199	U	0.198	U	0.199	U	0.197	U	0.197	U	0.195	U	0.193	U	0.195	U
Perfluorooctanesulfonamide (PFOSA)	754-91-6				ug/kg	0.195	U	0.195	U	0.199	U	0.198	U	0.199	U	0.197	U	0.197	U	0.195	U	0.193	U	0.195	U
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6				ug/kg	0.195	U	0.195	U	0.199	U	0.198	U	0.199	U	0.197	U	0.197	U	0.195	U	0.193	U	0.195	U
Perfluorododecanoic Acid (PFDoA)	307-55-1				ug/kg	0.195	U	0.195	U	0.199	U	0.198	U	0.199	U	0.197	U	0.197	U	0.195	U	0.193	U	0.195	U
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8				ug/kg	0.195	U	0.195	U	0.199	U	0.198	U	0.199	U	0.197	U	0.197	U	0.195	U	0.193	U	0.195	U
Perfluorotetradecanoic Acid (PFTeDA)	376-06-7				ug/kg	0.195	U	0.195	U	0.199	U	0.198	U	0.199	U	0.197	U	0.197	U	0.195	U	0.193	U	0.195	U
PFOA/PFOS, Total	null				ug/kg	0.195	U	0.195	U	0.199	U	0.198	U	0.199	U	0.197	U	0.197	U	0.195	U	0.193	U	0.195	U

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Pa
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 N
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Envirc

Table 1
Supplemental RI Soil Emergent Contaminants Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-17-N6E1 22-24		SB-17-N4E1 23-25		SB-17-N6E1 33-35		SB-17-N4E1 33-35		SB-17-N2E2 18-20		SB-17-N2E2 33-35		SB-17-N5E1 23-25		SB-17-N5E1 33-35		SB-DUP 2		SB-17-N5E2 (23-25)	
SAMPLING DATE						1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/23/2023		1/24/2023	
LAB SAMPLE ID						L2303782-01		L2303782-02		L2303782-03		L2303782-04		L2303782-05		L2303782-06		L2303782-07		L2303782-08		L2303782-10		L2303978-01	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Perfluorinated Alkyl Acids by EPA 1633																									
Perfluorobutanoic Acid (PFBA)	375-22-4				ug/kg	0.79	U	0.789	U	0.788	U	0.784	U	0.782	U	0.787	U	0.78	U	0.78	U	0.798	U	0.786	U
Perfluoropentanoic Acid (PFPeA)	2706-90-3				ug/kg	0.395	U	0.394	U	0.394	U	0.392	U	0.391	U	0.393	U	0.39	U	0.39	U	0.399	U	0.393	U
Perfluorobutanesulfonic Acid (PFBS)	375-73-5				ug/kg	0.198	U	0.197	U	0.197	U	0.196	U	0.196	U	0.197	U	0.195	U	0.195	U	0.199	U	0.196	U
Perfluorohexanoic Acid (PFHxA)	307-24-4				ug/kg	0.198	U	0.197	U	0.197	U	0.196	U	0.196	U	0.197	U	0.195	U	0.195	U	0.199	U	0.196	U
Perfluoroheptanoic Acid (PFHpA)	375-85-9				ug/kg	0.198	U	0.197	U	0.197	U	0.196	U	0.196	U	0.197	U	0.195	U	0.195	U	0.199	U	0.196	U
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4				ug/kg	0.198	U	0.197	U	0.197	U	0.196	U	0.196	U	0.197	U	0.195	U	0.195	U	0.199	U	0.196	U
Perfluorooctanoic Acid (PFOA)	335-67-1	1.1	33	0.66	ug/kg	0.198	U	0.197	U	0.197	U	0.196	U	0.196	U	0.197	U	0.195	U	0.195	U	0.199	U	0.196	U
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2				ug/kg	0.79	U	0.789	U	0.788	U	0.784	U	0.782	U	0.787	U	0.78	U	0.78	U	0.798	U	0.786	U
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8				ug/kg	0.198	U	0.197	U	0.197	U	0.196	U	0.196	U	0.197	U	0.195	U	0.195	U	0.199	U	0.196	U
Perfluorononanoic Acid (PFNA)	375-95-1				ug/kg	0.198	U	0.197	U	0.197	U	0.196	U	0.196	U	0.197	U	0.195	U	0.195	U	0.199	U	0.196	U
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	3.7	44	0.88	ug/kg	0.198	U	0.197	U	0.197	U	0.196	U	0.196	U	0.197	U	0.195	U	0.195	U	0.199	U	0.196	U
Perfluorodecanoic Acid (PFDA)	335-76-2				ug/kg	0.198	U	0.197	U	0.197	U	0.196	U	0.196	U	0.197	U	0.195	U	0.195	U	0.199	U	0.196	U
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4				ug/kg	0.79	U	0.789	U	0.788	U	0.784	U	0.782	U	0.787	U	0.78	U	0.78	U	0.798	U	0.786	U
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9				ug/kg	0.198	U	0.197	U	0.197	U	0.196	U	0.196	U	0.197	U	0.195	U	0.195	U	0.199	U	0.196	U
Perfluoroundecanoic Acid (PFUnA)	2058-94-8				ug/kg	0.198	U	0.197	U	0.197	U	0.196	U	0.196	U	0.197	U	0.195	U	0.195	U	0.199	U	0.196	U
Perfluorodecanesulfonic Acid (PFDS)	335-77-3				ug/kg	0.198	U	0.197	U	0.197	U	0.196	U	0.196	U	0.197	U	0.195	U	0.195	U	0.199	U	0.196	U
Perfluorooctanesulfonamide (PFOSA)	754-91-6				ug/kg	0.198	U	0.197	U	0.197	U	0.196	U	0.196	U	0.197	U	0.195	U	0.195	U	0.199	U	0.196	U
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6				ug/kg	0.198	U	0.197	U	0.197	U	0.196	U	0.196	U	0.197	U	0.195	U	0.195	U	0.199	U	0.196	U
Perfluorododecanoic Acid (PFDoA)	307-55-1				ug/kg	0.198	U	0.197	U	0.197	U	0.196	U	0.196	U	0.197	U	0.195	U	0.195	U	0.199	U	0.196	U
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8				ug/kg	0.198	U	0.197	U	0.197	U	0.196	U	0.196	U	0.197	U	0.195	U	0.195	U	0.199	U	0.196	U
Perfluorotetradecanoic Acid (PFTeDA)	376-06-7				ug/kg	0.198	U	0.197	U	0.197	U	0.196	U	0.196	U	0.197	U	0.195	U	0.195	U	0.199	U	0.196	U
PFOA/PFOS, Total	null				ug/kg	0.198	U	0.197	U	0.197	U	0.196	U	0.196	U	0.197	U	0.195	U	0.195	U	0.199	U	0.196	U

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Pa
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 N
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Enviro

Table 1
Supplemental RI Soil Emergent Contaminants Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-17-N5E2 (33-35)		SB-17-N2E3 (23-25)		SB-17-N2E3 (33-35)		SB-17-N7E2 (25-27)		SB-17-N7E2 (33-35)		SB-17-N2E4 (23-25)		SB-17-N2E4 (25-27)		SB-17-N7E3 (25-27)		SB-17-N7E3 (30-32)		SB-17-N3E2 20-22	
SAMPLING DATE						1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/24/2023		1/25/2023	
LAB SAMPLE ID						L2303978-02		L2303978-03		L2303978-04		L2303978-05		L2303978-06		L2303978-07		L2303978-08		L2303978-09		L2303978-10		L2304320-01	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Perfluorinated Alkyl Acids by EPA 1633																									
Perfluorobutanoic Acid (PFBA)	375-22-4				ug/kg	0.788	U	0.793	U	0.795	U	0.796	U	0.78	U	0.796	U	0.787	U	0.796	U	0.788	U	0.783	U
Perfluoropentanoic Acid (PFPeA)	2706-90-3				ug/kg	0.394	U	0.396	U	0.398	U	0.398	U	0.39	U	0.398	U	0.394	U	0.398	U	0.394	U	0.392	U
Perfluorobutanesulfonic Acid (PFBS)	375-73-5				ug/kg	0.197	U	0.198	U	0.199	U	0.199	U	0.195	U	0.199	U	0.197	U	0.199	U	0.197	U	0.196	U
Perfluorohexanoic Acid (PFHxA)	307-24-4				ug/kg	0.197	U	0.198	U	0.199	U	0.199	U	0.195	U	0.199	U	0.197	U	0.199	U	0.197	U	0.196	U
Perfluoroheptanoic Acid (PFHpA)	375-85-9				ug/kg	0.197	U	0.198	U	0.199	U	0.199	U	0.195	U	0.199	U	0.197	U	0.199	U	0.197	U	0.196	U
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4				ug/kg	0.197	U	0.198	U	0.199	U	0.199	U	0.195	U	0.199	U	0.197	U	0.199	U	0.197	U	0.196	U
Perfluorooctanoic Acid (PFOA)	335-67-1	1.1	33	0.66	ug/kg	0.197	U	0.198	U	0.199	U	0.199	U	0.195	U	0.199	U	0.197	U	0.199	U	0.197	U	0.196	U
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2				ug/kg	0.788	U	0.793	U	0.795	U	0.796	U	0.78	U	0.796	U	0.787	U	0.796	U	0.788	U	0.783	U
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8				ug/kg	0.197	U	0.198	U	0.199	U	0.199	U	0.195	U	0.199	U	0.197	U	0.199	U	0.197	U	0.196	U
Perfluorononanoic Acid (PFNA)	375-95-1				ug/kg	0.197	U	0.198	U	0.199	U	0.199	U	0.195	U	0.199	U	0.197	U	0.199	U	0.197	U	0.196	U
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	3.7	44	0.88	ug/kg	0.197	U	0.198	U	0.199	U	0.199	U	0.195	U	0.199	U	0.197	U	0.199	U	0.197	U	0.196	U
Perfluorodecanoic Acid (PFDA)	335-76-2				ug/kg	0.197	U	0.198	U	0.199	U	0.199	U	0.195	U	0.199	U	0.197	U	0.199	U	0.197	U	0.196	U
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4				ug/kg	0.788	U	0.793	U	0.795	U	0.796	U	0.78	U	0.796	U	0.787	U	0.796	U	0.788	U	0.783	U
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9				ug/kg	0.197	U	0.198	U	0.199	U	0.199	U	0.195	U	0.199	U	0.197	U	0.199	U	0.197	U	0.196	U
Perfluoroundecanoic Acid (PFUnA)	2058-94-8				ug/kg	0.197	U	0.198	U	0.199	U	0.199	U	0.195	U	0.199	U	0.197	U	0.199	U	0.197	U	0.196	U
Perfluorodecanesulfonic Acid (PFDS)	335-77-3				ug/kg	0.197	U	0.198	U	0.199	U	0.199	U	0.195	U	0.199	U	0.197	U	0.199	U	0.197	U	0.196	U
Perfluorooctanesulfonamide (PFOSA)	754-91-6				ug/kg	0.197	U	0.198	U	0.199	U	0.199	U	0.195	U	0.199	U	0.197	U	0.199	U	0.197	U	0.196	U
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6				ug/kg	0.197	U	0.198	U	0.199	U	0.199	U	0.195	U	0.199	U	0.197	U	0.199	U	0.197	U	0.196	U
Perfluorododecanoic Acid (PFDoA)	307-55-1				ug/kg	0.197	U	0.198	U	0.199	U	0.199	U	0.195	U	0.199	U	0.197	U	0.199	U	0.197	U	0.196	U
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8				ug/kg	0.197	U	0.198	U	0.199	U	0.199	U	0.195	U	0.199	U	0.197	U	0.199	U	0.197	U	0.196	U
Perfluorotetradecanoic Acid (PFTeDA)	376-06-7				ug/kg	0.197	U	0.198	U	0.199	U	0.199	U	0.195	U	0.199	U	0.197	U	0.199	U	0.197	U	0.196	U
PFOA/PFOS, Total	null				ug/kg	0.197	U	0.198	U	0.199	U	0.199	U	0.195	U	0.199	U	0.197	U	0.199	U	0.197	U	0.196	U

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Pa
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 N
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Envirc

Table 1
Supplemental RI Soil Emergent Contaminants Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-17-N3E2 26-28		SB-17-N4E2 20-22		SB-17-N4E2 30-32		SB-17-N6E2 23-25		SB-17-N6E2 30-32		SB-DUP 3		SB-17-N4E3 20-22		SB-17-N4E3 30-32		SB-17-N6E3 25-27		SB-17-N6E3 30-32	
SAMPLING DATE						1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023		1/25/2023	
LAB SAMPLE ID						L2304320-02		L2304320-03		L2304320-04		L2304320-05		L2304320-06		L2304320-07		L2304320-09		L2304320-10		L2304320-11		L2304320-12	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Perfluorinated Alkyl Acids by EPA 1633																									
Perfluorobutanoic Acid (PFBA)	375-22-4				ug/kg	0.794	U	0.787	U	0.796	U	0.786	U	0.784	U	0.797	U	0.798	U	0.798	U	0.792	U	0.792	U
Perfluoropentanoic Acid (PFPeA)	2706-90-3				ug/kg	0.397	U	0.394	U	0.398	U	0.393	U	0.392	U	0.398	U	0.399	U	0.399	U	0.396	U	0.396	U
Perfluorobutanesulfonic Acid (PFBS)	375-73-5				ug/kg	0.198	U	0.197	U	0.199	U	0.196	U	0.196	U	0.199	U	0.2	U	0.2	U	0.198	U	0.198	U
Perfluorohexanoic Acid (PFHxA)	307-24-4				ug/kg	0.198	U	0.197	U	0.199	U	0.196	U	0.196	U	0.199	U	0.2	U	0.2	U	0.198	U	0.198	U
Perfluoroheptanoic Acid (PFHpA)	375-85-9				ug/kg	0.198	U	0.197	U	0.199	U	0.196	U	0.196	U	0.199	U	0.2	U	0.2	U	0.198	U	0.198	U
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4				ug/kg	0.198	U	0.197	U	0.199	U	0.196	U	0.196	U	0.199	U	0.2	U	0.2	U	0.198	U	0.198	U
Perfluorooctanoic Acid (PFOA)	335-67-1	1.1	33	0.66	ug/kg	0.198	U	0.197	U	0.199	U	0.196	U	0.196	U	0.199	U	0.2	U	0.2	U	0.198	U	0.198	U
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2				ug/kg	0.794	U	0.787	U	0.796	U	0.786	U	0.784	U	0.797	U	0.798	U	0.798	U	0.792	U	0.792	U
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8				ug/kg	0.198	U	0.197	U	0.199	U	0.196	U	0.196	U	0.199	U	0.2	U	0.2	U	0.198	U	0.198	U
Perfluorononanoic Acid (PFNA)	375-95-1				ug/kg	0.198	U	0.197	U	0.199	U	0.196	U	0.196	U	0.199	U	0.2	U	0.2	U	0.198	U	0.198	U
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	3.7	44	0.88	ug/kg	0.198	U	0.197	U	0.199	U	0.196	U	0.196	U	0.199	U	0.2	U	0.2	U	0.198	U	0.198	U
Perfluorodecanoic Acid (PFDA)	335-76-2				ug/kg	0.198	U	0.197	U	0.199	U	0.196	U	0.196	U	0.199	U	0.2	U	0.2	U	0.198	U	0.198	U
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4				ug/kg	0.794	U	0.787	U	0.796	U	0.786	U	0.784	U	0.797	U	0.798	U	0.798	U	0.792	U	0.792	U
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9				ug/kg	0.198	U	0.197	U	0.199	U	0.196	U	0.196	U	0.199	U	0.2	U	0.2	U	0.198	U	0.198	U
Perfluoroundecanoic Acid (PFUnA)	2058-94-8				ug/kg	0.198	U	0.197	U	0.199	U	0.196	U	0.196	U	0.199	U	0.2	U	0.2	U	0.198	U	0.198	U
Perfluorodecanesulfonic Acid (PFDS)	335-77-3				ug/kg	0.198	U	0.197	U	0.199	U	0.196	U	0.196	U	0.199	U	0.2	U	0.2	U	0.198	U	0.198	U
Perfluorooctanesulfonamide (PFOSA)	754-91-6				ug/kg	0.198	U	0.197	U	0.199	U	0.196	U	0.196	U	0.199	U	0.2	U	0.2	U	0.198	U	0.198	U
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6				ug/kg	0.198	U	0.197	U	0.199	U	0.196	U	0.196	U	0.199	U	0.2	U	0.2	U	0.198	U	0.198	U
Perfluorododecanoic Acid (PFDoA)	307-55-1				ug/kg	0.198	U	0.197	U	0.199	U	0.196	U	0.196	U	0.199	U	0.2	U	0.2	U	0.198	U	0.198	U
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8				ug/kg	0.198	U	0.197	U	0.199	U	0.196	U	0.196	U	0.199	U	0.2	U	0.2	U	0.198	U	0.198	U
Perfluorotetradecanoic Acid (PFTeDA)	376-06-7				ug/kg	0.198	U	0.197	U	0.199	U	0.196	U	0.196	U	0.199	U	0.2	U	0.2	U	0.198	U	0.198	U
PFOA/PFOS, Total	null				ug/kg	0.198	U	0.197	U	0.199	U	0.196	U	0.196	U	0.199	U	0.2	U	0.2	U	0.198	U	0.198	U

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Pa
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 N
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Envirc

Table 1
Supplemental RI Soil Emergent Contaminants Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-17-S3 25-27		SB-17-S3 35-37		SB-17-S4 25-27		SB-17-S4 33-35		SB-17-S2E1 30-32		SB-17-S2E1 35-37		SB-17-S2E2 33-35		SB-17-S2E2 35-37		SB-DUP4		SB-17-N3E3 (23-25)	
SAMPLING DATE						1/30/2023		1/30/2023		1/30/2023		1/30/2023		1/27/2023		1/27/2023		1/27/2023		1/27/2023		1/27/2023		1/26/2023	
LAB SAMPLE ID						L2305086-01		L2305086-02		L2305086-03		L2305086-04		L2304761-01		L2304761-02		L2304761-03		L2304761-04		L2304761-05		L2304516-01	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Perfluorinated Alkyl Acids by EPA 1633																									
Perfluorobutanoic Acid (PFBA)	375-22-4				ug/kg	0.789	U	0.795	U	0.794	U	0.796	U	0.75	U	0.744	U	0.775	U	0.771	U	0.764	U	0.781	U
Perfluoropentanoic Acid (PFPeA)	2706-90-3				ug/kg	0.394	U	0.398	U	0.397	U	0.398	U	0.375	U	0.372	U	0.388	U	0.386	U	0.382	U	0.391	U
Perfluorobutanesulfonic Acid (PFBS)	375-73-5				ug/kg	0.197	U	0.199	U	0.198	U	0.199	U	0.188	U	0.186	U	0.194	U	0.193	U	0.191	U	0.195	U
Perfluorohexanoic Acid (PFHxA)	307-24-4				ug/kg	0.197	U	0.199	U	0.198	U	0.199	U	0.188	U	0.186	U	0.194	U	0.193	U	0.191	U	0.195	U
Perfluoroheptanoic Acid (PFHpA)	375-85-9				ug/kg	0.197	U	0.199	U	0.198	U	0.199	U	0.188	U	0.186	U	0.194	U	0.193	U	0.191	U	0.195	U
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4				ug/kg	0.197	U	0.199	U	0.198	U	0.199	U	0.188	U	0.186	U	0.194	U	0.193	U	0.191	U	0.195	U
Perfluorooctanoic Acid (PFOA)	335-67-1	1.1	33	0.66	ug/kg	0.197	U	0.199	U	0.198	U	0.199	U	0.188	U	0.186	U	0.194	U	0.193	U	0.191	U	0.195	U
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2				ug/kg	0.789	U	0.795	U	0.794	U	0.796	U	0.75	U	0.744	U	0.775	U	0.771	U	0.764	U	0.781	U
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8				ug/kg	0.197	U	0.199	U	0.198	U	0.199	U	0.188	U	0.186	U	0.194	U	0.193	U	0.191	U	0.195	U
Perfluorononanoic Acid (PFNA)	375-95-1				ug/kg	0.197	U	0.199	U	0.198	U	0.199	U	0.188	U	0.186	U	0.194	U	0.193	U	0.191	U	0.195	U
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	3.7	44	0.88	ug/kg	0.197	U	0.199	U	0.198	U	0.199	U	0.188	U	0.186	U	0.194	U	0.193	U	0.191	U	0.195	U
Perfluorodecanoic Acid (PFDA)	335-76-2				ug/kg	0.197	U	0.199	U	0.198	U	0.199	U	0.188	U	0.186	U	0.194	U	0.193	U	0.191	U	0.195	U
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4				ug/kg	0.789	U	0.795	U	0.794	U	0.796	U	0.75	U	0.744	U	0.775	U	0.771	U	0.764	U	0.781	U
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9				ug/kg	0.197	U	0.199	U	0.198	U	0.199	U	0.188	U	0.186	U	0.194	U	0.193	U	0.191	U	0.195	U
Perfluoroundecanoic Acid (PFUnA)	2058-94-8				ug/kg	0.197	U	0.199	U	0.198	U	0.199	U	0.188	U	0.186	U	0.194	U	0.193	U	0.191	U	0.195	U
Perfluorodecanesulfonic Acid (PFDS)	335-77-3				ug/kg	0.197	U	0.199	U	0.198	U	0.199	U	0.188	U	0.186	U	0.194	U	0.193	U	0.191	U	0.195	U
Perfluorooctanesulfonamide (PFOSA)	754-91-6				ug/kg	0.197	U	0.199	U	0.198	U	0.199	U	0.188	U	0.186	U	0.194	U	0.193	U	0.191	U	0.195	U
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6				ug/kg	0.197	U	0.199	U	0.198	U	0.199	U	0.188	U	0.186	U	0.194	U	0.193	U	0.191	U	0.195	U
Perfluorododecanoic Acid (PFDoA)	307-55-1				ug/kg	0.197	U	0.199	U	0.198	U	0.199	U	0.188	U	0.186	U	0.194	U	0.193	U	0.191	U	0.195	U
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8				ug/kg	0.197	U	0.199	U	0.198	U	0.199	U	0.188	U	0.186	U	0.194	U	0.193	U	0.191	U	0.195	U
Perfluorotetradecanoic Acid (PFTeDA)	376-06-7				ug/kg	0.197	U	0.199	U	0.198	U	0.199	U	0.188	U	0.186	U	0.194	U	0.193	U	0.191	U	0.195	U
PFOA/PFOS, Total	null				ug/kg	0.197	U	0.199	U	0.198	U	0.199	U	0.188	U	0.186	U	0.194	U	0.193	U	0.191	U	0.195	U

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Pa
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 N
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Enviro

Table 1
Supplemental RI Soil Emergent Contaminants Sample Results Summary
318 Nevins Street, Brooklyn, NY

LOCATION		NY-RESGW	NY-RESRR	NY-UNRES		SB-17-N3E3 (25-27)		SB-17-N5E3 (23-25)		SB-17-N5E5 (30-32)		SB-17-N4E4 (21-23)		SB-17-N4E4 (28-30)		SB-17-N5E4 (25-27)		SB-17-N5E4 (28-30)	
SAMPLING DATE						1/26/2023		1/26/2023		1/26/2023		1/26/2023		1/26/2023		1/26/2023		1/26/2023	
LAB SAMPLE ID						L2304516-02		L2304516-03		L2304516-04		L2304516-05		L2304516-06		L2304516-07		L2304516-08	
SAMPLE TYPE						SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	CasNum				Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Perfluorinated Alkyl Acids by EPA 1633																			
Perfluorobutanoic Acid (PFBA)	375-22-4				ug/kg	0.761	U	0.787	U	0.793	U	0.787	U	0.781	U	0.765	U	0.781	U
Perfluoropentanoic Acid (PFPeA)	2706-90-3				ug/kg	0.38	U	0.393	U	0.396	U	0.394	U	0.39	U	0.382	U	0.39	U
Perfluorobutanesulfonic Acid (PFBS)	375-73-5				ug/kg	0.19	U	0.197	U	0.198	U	0.197	U	0.195	U	0.191	U	0.195	U
Perfluorohexanoic Acid (PFHxA)	307-24-4				ug/kg	0.19	U	0.197	U	0.198	U	0.197	U	0.195	U	0.191	U	0.195	U
Perfluoroheptanoic Acid (PFHpA)	375-85-9				ug/kg	0.19	U	0.197	U	0.198	U	0.197	U	0.195	U	0.191	U	0.195	U
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4				ug/kg	0.19	U	0.197	U	0.198	U	0.197	U	0.195	U	0.191	U	0.195	U
Perfluorooctanoic Acid (PFOA)	335-67-1	1.1	33	0.66	ug/kg	0.19	U	0.197	U	0.198	U	0.197	U	0.195	U	0.191	U	0.195	U
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2				ug/kg	0.761	U	0.787	U	0.793	U	0.787	U	0.781	U	0.765	U	0.781	U
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8				ug/kg	0.19	U	0.197	U	0.198	U	0.197	U	0.195	U	0.191	U	0.195	U
Perfluorononanoic Acid (PFNA)	375-95-1				ug/kg	0.19	U	0.197	U	0.198	U	0.197	U	0.195	U	0.191	U	0.195	U
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	3.7	44	0.88	ug/kg	0.19	U	0.197	U	0.198	U	0.197	U	0.195	U	0.191	U	0.195	U
Perfluorodecanoic Acid (PFDA)	335-76-2				ug/kg	0.19	U	0.197	U	0.198	U	0.197	U	0.195	U	0.191	U	0.195	U
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4				ug/kg	0.761	U	0.787	U	0.793	U	0.787	U	0.781	U	0.765	U	0.781	U
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9				ug/kg	0.19	U	0.197	U	0.198	U	0.197	U	0.195	U	0.191	U	0.195	U
Perfluoroundecanoic Acid (PFUnA)	2058-94-8				ug/kg	0.19	U	0.197	U	0.198	U	0.197	U	0.195	U	0.191	U	0.195	U
Perfluorodecanesulfonic Acid (PFDS)	335-77-3				ug/kg	0.19	U	0.197	U	0.198	U	0.197	U	0.195	U	0.191	U	0.195	U
Perfluorooctanesulfonamide (PFOSA)	754-91-6				ug/kg	0.19	U	0.197	U	0.198	U	0.197	U	0.195	U	0.191	U	0.195	U
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6				ug/kg	0.19	U	0.197	U	0.198	U	0.197	U	0.195	U	0.191	U	0.195	U
Perfluorododecanoic Acid (PFDoA)	307-55-1				ug/kg	0.19	U	0.197	U	0.198	U	0.197	U	0.195	U	0.191	U	0.195	U
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8				ug/kg	0.19	U	0.197	U	0.198	U	0.197	U	0.195	U	0.191	U	0.195	U
Perfluorotetradecanoic Acid (PFTeDA)	376-06-7				ug/kg	0.19	U	0.197	U	0.198	U	0.197	U	0.195	U	0.191	U	0.195	U
PFOA/PFOS, Total	null				ug/kg	0.19	U	0.197	U	0.198	U	0.197	U	0.195	U	0.191	U	0.195	U

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Pa
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 N
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Envirc

Table 2: Ranked Shallow Soil Concentration Ranges
Above Unrestricted Use Soil Cleanup Objectives (SCOs)
318 Nevins Street, Brooklyn, New York

Analytes	UU SCOs	RR SCOs	PGW SCOs	Minimum Concentration	Minimum Concentration Sample Location	Maximum Concentration	Maximum Concentration Sample Location	Range of Detections
Semi Volatile Organic Compounds mg/kg								
Benzo(a)anthracene	1	1	1	1.96	SB-13 (4-6)	9.26	SB-9 (0-2)	1.96 - 9.26
Benzo(a)pyrene	1	1	27	2.1	SB-13 (4-6)	12.7	SB-9 (0-2)	2.1 -12.7
Benzo(b)fluoranthene	1	1	1.7	2.0	SB-15 (4-6)	9.9	SB-9 (0-2)	2.1 -12.7
Benzo(k)fluoranthene	0.8	3.9	1.7	1.55	SB-13 (4-6)	10.9	SB-9 (0-2)	1.55 - 10.9
Chrysene	1	3.9	1	1.9	SB-13 (4-6)	8.66	SB-16 (0-2)	1.9 - 8.66
dibenzo(a,h)anthracene	0.33	0.33	1000	0.364	SB-13 (4-6	1.8	SB-9 (0-2	0.364 - 1.8
Indeno(1,2,3-cd)pyrene	0.5	0.5	8.2	0.583	SB-19 (0-2)	5.31	SB-16 (0-2)	0.583 - 5.31
Pesticides mg/kg								
4,4'DDD	0.0033	13	14	0.00493	SB-16 (0-2)	0.00565	SB-10 (0-2)	0.00493 - 0.00565
4,4'DDE	0.0033	8.9	17	-	-	0.00373	SB-11 (0-2)	0.00373
Metals mg/kg								
Arsenic	13	16	16	15.6	SB-9 (0-2)	33.6	SB-12 (4-6)	15.6 - 33.6
Copper	50	270	1720	88	SB-7 (0-2)	306	SB-12 (4-6)	88 - 306
Lead	63	400	450	76.3	SB-19 (0-2)	550	SB-12 (4-6)	76.3 - 550
Mercury	0.18	0.81	130	0.19	SB-8 (0-2)	1.28	SB-9 (0-2)	0.19 - 1.28
Nickel	30	310	130	30.5	SB-13 (4-6)	43	SB-12 (4-6)	30.5 - 43
Selenium	3.9	180	4	-		4.27	SB-9 (0-2)	4.27
Zinc	109	10000	2480	236	SB-15 (4-6)	638	SB-12 (4-6)	236 - 638
Hexavalent Chromium	1	110	19	-	-	13	SB-20 (0-2)	13
PFAS µg/kg								
PFOS	0.88	44	3.7	2.11	SB-8 (0-2)	3.15	SB-17 (0-2)	2.11 - 3.94

Notes:
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram
UU SCOs - NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
RR SCOs - NYSDEC Part 375Restricted Residential Soil Cleanup Objectives
PGW SCOs - NYSDEC Part 375 Protection of Groundwater Soil Cleanup Objectives

Table 2: Ranked Intermediate Soil Concentration Ranges
Above Unrestricted Use Soil Cleanup Objectives (SCOs)
318 Nevins Street, Brooklyn, New York

Analytes	UU SCOs	RR SCOs	PGW SCOs	Minimum Concentration	Minimum Concentration Sample Location	Maximum Concentration	Maximum Concentration Sample Location	Range of Detections
Volatile Organic Compounds mg/kg								
Ethylbenzne	1	41	1	1.4	SB-16 (45-47)	8.7	SB-17 (37-39)	1.4 - 8.7
Total Xylenes	0.26	100	1.6	1.5	SB-16 (45-47)	8.8	SB-17 (23-25)	1.5 - 8.8
1,2,4-Trimethylbenzne	3.6	52	3.6	-	-	5.2	SB-17 (23-25)	5.2
Methylyene Chloride	0.05	100	0.05	0.53	SB-20 (3-5)	2.7	SB-16 (45-47)	0.53 - 2.7
Acetone	0.05	100	0.05	0.058	SB-13 (10-12)/SB-14 (10-12)	0.078	SB-8 (6-8)	0.058 - 0.078
Semi Volatile Organic Compounds mg/kg								
Acenaphthene	20	100	98	127	SB-16 (35-37)	136	SB-17 (23-25)	127 - 136
Acenaphthylene	100	100	107	-	-	107	SB-16 (35-37)	107
Anthracene	100	100	1000	-	-	109	SB-16 (35-37)	109
Benzo(a)anthracene	1	1	1	1.02	SB-15 (10-12)	62.9	SB-16 (35-37	1.02 - 62.9
Benzo(a)pyrene	1	1	27	1.03	SB-18 (72-74)	59.9	SB-16 (35-37)	1.03 - 59.9
Benzo(b)fluoranthene	1	1	1.7	1.11	TF-4 (6-7)	21.8	SB-16 (35-37)	1.11 - 21.8
Benzo(k)fluoranthene	0.8	3.9	1.7	0.9	SB-18 (72-74)	32.1	SB-16 (35-37)	0.9 - 32.1
Chrysene	1	3.9	1	1.03	SB-15 (10-12)	59.3	SB-16 (35-37)	1.03 - 59.3
Dibenzo(a,h)anthracene	0.33	0.33	1000	0.375	OWS-2 (6)	4.69	SB-16 (35-37)	0.375 - 4.69
Dibenzofuran	7	59	210	-	-	11.2	SB-16 (35-37)	11.2
Fluoranthene	100	100	1000	-	-	116	SB-16 (35-37)	116
Fluorene	30	100	386	71.2	SB-17 (23-25)	120	SB-16 (35-37)	71.2 - 120
Indeno(1,2,3-cd)pyrene	0.5	0.5	8.2	0.626	SB-18 (72-74)	20.5	SB-16 (35-37)	0.626 - 20.5
Naphthalene	12	100	12	446	SB-16 (35-37)	497	SB-17 (23-25)	446 - 497
Phenanthrene	100	100	1000	259	SB-17 (23-25)	337	SB-16 (35-37)	259 - 337
Pyrene	100	100	1000	125.0	SB-17 (23-25)	158	SB-16 (35-37)	125.0 - 158
Metals mg/kg								
Arsenic	13	16	16	14.6	SB-13 (10-12)	155	SB-12 (10-12)	14.6 - 155
Barium	350	400	820	-	-	475	SB-12 (10-12)	475
Beryllium	7.2	72	47	-	-	16.3	SB-12 (10-12)	16.3
Cadmium	2.5	4.3	7.5	-	-	28.7	SB-12 (10-12)	28.7
Copper	50	270	1720	52.5	TF-2 (10-12)	3,510	SB-12 (10-12)	52.5 - 3,510
Lead	63	400	450	91.2	SB-16 (6-7)	2,900	SB-15 (10-12)	91.2 - 2,900
Mercury	0.18	0.81	0.73	0.204	SB-19 (6-8)	4.99	SB-15 (10-12).	0.204 - 4.99
Nickel	30	310	130	30.8	SB-13 (10-12)	172	SB-12 (10-12)	30.8 - 172
Selenium	3.9	180	4	-	-	5.03	SB-9 (6-8);	5.03
Zinc	109	10000	2480	113	TF-2 (10-12)	457	SB-15 (10-12)	113 - 457
PFAS µg/kg								
PFOS	0.88	44	3.7	-	-	1.8	SB-6 (6-8)	1.8

Notes:
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram

UU SCOs - NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
RR SCOs - NYSDEC Part 375Restricted Residential Soil Cleanup Objectives
PGW SCOs - NYSDEC Part 375 Protection of Groundwater Soil Cleanup Objectives

Table 2: Ranked Deep Soil Concentration Ranges
Above Unrestricted Use Soil Cleanup Objectives (SCOs)
318 Nevins Street, Brooklyn, New York

Analytes	UU SCOs	RR SCOs	PGW SCOs	Minimum Concentration	Minimum Concentration Sample Location	Maximum Concentration	Maximum Concentration Sample Location	Range of Detections
Volatile Organic Compounds mg/kg								
Benzene	0.06	4.8	0.06	0.12	SB-17-N7 (23-25)	21	SB-17-N4E4 (21-23)	0.12 - 21
Toluene	0.07	100	0.07	1.8	SB-17-N2E1 (23-25)	130	SB-17-N4E4 (21-23)	1.8 - 130
Ethylbenzne	1	41	1	1.4	SB-17-N5 (25-27)	200	SB-17-N4E4 (21-23)	1.4 - 200
Total Xylenes	0.26	100	1.6	0.28	SB-17-S3 (25-27)	200	SB-17-N4E4 (21-23)	0.28 - 200
N-Propylbenzene	3.9	100	3.9	4.9	SB-17-N1E1 (23-25)	11	SB-17-N5E4 (25-27)	4.9 - 11
1,3,5-Trimethylbenzne	8.4	52	8.4	9.1	SB-17-N5E2	1.632	SB-17-N5E4	9.1 - 1.632
1,2,4-Trimethylbenzne	3.6	52	3.6	5.3	SB-17-N2E3	95	SB-17N4E4/ SB-17N5E4	5.3 - 95
Naphthalene	12	100	12	17	SB-17-S4 (25-27)	2800	SB-17-N4E4 (21-23)	17 - 2800
Methylyene Chloride	0.05	100	0.05	0.066	SB-9	0.73	SB-18	0.066 - 0.73
Acetone	0.05	100	0.05	0.051	SB-15	0.54	SB-12	0.051 - 0.54
Semi Volatile Organic Compounds mg/kg								
Acenaphthene	20	100	98	21	SB-17-S1 (23-25)	1,500	SB-17-S2E1 (30-32)	21 - 1,500
Acenaphthylene	100	100	107	110	SB-17-N7E1 (25-27)	380	SB-17-N7E2 (25-27)	110 - 380
Anthracene	100	100	1000	100	SB-17-N7E1 (25-27)/ SB-17-N2 (24-25)	840	SB-17-S2E1 (30-32)	100 - 840
Benzo(a)anthracene	1	1	1	1.3	SB-17-N6E3 (25-27)	220	SB-17-S2E1 (30-32)	1.3 - 220
Benzo(a)pyrene	1	1	27	1.1	SB-17-N6E3 (25-27)	170	SB-17-S2E1 (30-32),	1.1 - 170
Benzo(b)fluoranthene	1	1	1.7	1.3	SB-17-S1E2 (30-32)	120	SB-17-S2E1 (30-32)	1.3 - 120
Benzo(k)fluoranthene	0.8	3.9	1.7	0.89	SB-17-N5E4 (25-27)	38	SB-17-S2E1 (30-32),	0.89 - 38
Chrysene	1	3.9	1	1.2	SB-17-N6E3 (25-27)	180	SB-17-S2E1 (30-32)	1.2 - 180
Dibenzo(a,h)anthracene	0.33	0.33	1000	0.38	SB-17-S1E1 (28-30)	16	SB-17-S2E1 (30-32)	0.38 - 16
Dibenzofuran	7	59	210	7.5	SB-17-N3 (23-25)/SB-17-N6 (23-25	37	SB-17-S2E1 (30-32)	7.5 - 37
Fluoranthene	100	100	1000	120	SB-17-N2 (24-25)/ SB-17-N7E1 (25-27)/ SB-17-N4E4 (21-23)	940	SB-17-S2E1 (30-32)	120 - 940
Fluorene	30	100	386	31	SB-17-N4E1 (23-25)	940	SB-17-S2E1 (30-32)	31 - 940
Indeno(1,2,3-cd)pyrene	0.5	0.5	8.2	0.66	SB-17-N5 (25-27)	67	SB-17-S2E1 (30-32)	0.66 - 67
Naphthalene	12	100	12	15	SB-17-N2E1 (23-25)	5800	SB-17-S2E1 (30-32)	15 - 5800
Phenanthrene	100	100	1000	100	SB-17-N4E1 (23-25),	3000	SB-17-S2E1 (30-32)	100 - 3000
Pyrene	100	100	1000	110	SB-17-N3 (23-25)/ SB-7-N4E3 (20-22)	1400	SB-17-S2E1 (30-32)	110 - 1400
Metals mg/kg								
Arsenic	13	16	16	14.6	SB-13	155	SB-12	14.6 - 155
Barium	350	400	820	-	-	475	SB-12	475
Beryllium	7.2	72	47	-	-	16.3	SB-12	16.3
Copper	50	270	1720	52.5	TF-2	3,510	SB-12	52.5 -3,510

Table 2: Ranked Deep Soil Concentration Ranges
Above Unrestricted Use Soil Cleanup Objectives (SCOs)
318 Nevins Street, Brooklyn, New York

Analytes	UU SCOs	RR SCOs	PGW SCOs	Minimum Concentration	Minimum Concentration Sample Location	Maximum Concentration	Maximum Concentration Sample Location	Range of Detections
Metals mg/kg								
Lead	63	400	450	91.2	SB-16	2,900	SB-12	91.2 -2,900
Mercury	0.18	0.81	0.73	0.204	SB-19	4.99	SB-15	0.204 -4.99
Nickel	30	310	130	30.8	SB-13	172	SB-12	30.8 -172
Selenium	3.9	180	4	-	-	5.03	SB-9	5.03
Zinc	109	10000	2480	113	TF-2	457	SB-15	113 -457

Notes:
mg/kg - milligrams per kilogram
UU SCOs - NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives
RR SCOs - NYSDEC Part 375Restricted Residential Soil Cleanup Objectives
PGW SCOs - NYSDEC Part 375 Protection of Groundwater Soil Cleanup Objectives

Table 3
2022 RI Groundwater Volatile Organic Compounds Analytical Results Summary
318 Nevins Street, Brooklyn, NY

Sample ID			GW2-100722		DUP1-100722		Trip Blank		GW-1		GW-5		GW-4		Equipment Blank		Trip Blank		GW-7		GW-3		GCMW28		Trip Blank		GW-6		Trip Blank	
York ID		NYSDEC TOGS	22J0400-01		22J0400-02		22J0400-03		22J0469-01		22J0469-02		22J0469-03		22J0469-04		22J0469-05		22J0532-01		22J0532-02		22J0532-03		22J0532-04		22J0585-01		22J0585-02	
Sampling Date		Standards and	10/7/2022 12:30:00 PM		10/7/2022 11:00:00 AM		10/7/2022 2:00:00 PM		10/10/2022 8:30:00 AM		10/10/2022 12:35:00 PM		10/10/2022 10:50:00 AM		10/10/2022 1:20:00 PM		10/10/2022 1:40:00 PM		10/11/2022 9:00:00 AM		10/11/2022 10:15:00 AM		10/11/2022 11:45:00 AM		10/11/2022 2:25:00 PM		10/12/2022 8:00:00 AM		10/12/2022 1:20:00 PM	
Client Matrix		Guidance Values - GA	Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water	
Compound	**CAS Number**		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
VOA, 8260 LOW MASTER		ug/L	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Dilution Factor			10		1		1		1		1		1		1		1		5		1		1		1		1		1	
1,1,1,2-Tetrachloroethane	630-20-6	5	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
1,1,1-Trichloroethane	71-55-6	5	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
1,1,2,2-Tetrachloroethane	79-34-5	5	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	5	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
1,1,2-Trichloroethane	79-00-5	1	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
1,1-Dichloroethane	75-34-3	5	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
1,1-Dichloroethylene	75-35-4	5	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
1,2,3-Trichlorobenzene	87-61-6	5	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
1,2,3-Trichloropropane	96-18-4	0.04	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
1,2,4-Trichlorobenzene	120-82-1	5	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
1,2,4-Trimethylbenzene	95-63-6	5	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	4.150	D	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
1,2-Dibromo-3-chloropropane	96-12-8	0.04	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
1,2-Dibromoethane	106-93-4	0.0006	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
1,2-Dichlorobenzene	95-50-1	3	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
1,2-Dichloroethane	107-06-2	0.6	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
1,2-Dichloropropane	78-87-5	1	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
1,3,5-Trimethylbenzene	108-67-8	5	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1.400	JD	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
1,3-Dichlorobenzene	541-73-1	3	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
1,3-Dichloropropane	142-28-9	5	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
1,4-Dichlorobenzene	106-46-7	3	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
1,4-Dioxane	123-91-1	~	40	U	40	U	40	U	40	U	40	U	40	U	40	U	40	U	200	U	40	U	40	U	40	U	40	U	40	U
2-Butanone	78-93-3	50	0.200	U	0.200	U	0.200	U	0.440	J	1.520	J	3.070		0.200	U	1.620	J	1	U	0.200	U	0.200	U	1.740		0.740		0.200	U
2-Hexanone	591-78-6	50	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.350	J	1	U	0.200	U	0.200	U	0.500		0.200	U	0.200	U
4-Methyl-2-pentanone	108-10-1	~	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Acetone	67-64-1	50	1	U	1	U	1.030	J	1.130	J	2.100		4.410		1	U	3.390		5	U	2.020		1.360	J	2.440		1.460	J	1	U
Acrolein	107-02-8	~	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Acrylonitrile	107-13-1	~	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Benzene	71-43-2	1	0.200	U	0.200	U	0.200	U	0.800		0.200	U	0.200	U	0.200	U	0.200	U	**2.450**	JD	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Bromochloromethane	74-97-5	5	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Bromodichloromethane	75-27-4	50	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Bromoform	75-25-2	50	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Bromomethane	74-83-9	5	0.200	U	3.780		0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Carbon disulfide	75-15-0	~	0.200	J	0.280	J	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Carbon tetrachloride	56-23-5	5	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Chlorobenzene	108-90-7	5	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Chloroethane	75-00-3	5	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Chloroform	67-66-3	7	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Chloromethane	74-87-3	5	0.200	U	0.700		0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
cis-1,2-Dichloroethylene	156-59-2	5	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	**12.600**		0.200	U	0.200	U	0.200	U
cis-1,3-Dichloropropylene	10061-01-5	0.4	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Cyclohexane	110-82-7	~	0.200	U	0.200	U	0.200	U	2.180		0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Dibromochloromethane	124-48-1	50	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Dibromomethane	74-95-3	~	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Dichlorodifluoromethane	75-71-8	5	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Ethyl Benzene	100-41-4	5	0.200	U	0.200	U	0.200	U	0.400	J	0.200	U	0.200	U	0.200	U	0.200	U	1.100	JD	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Hexachlorobutadiene	87-68-3	0.5	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Isopropylbenzene	98-82-8	5	0.200	U	0.200	U	0.200	U	2.290		0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Methyl acetate	79-20-9	~	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Methyl tert-butyl ether (MTBE)	1634-04-4	10	**11.600**		0.200	U	0.200	U	0.200	U	0.780		0.210	J	0.200	U	0.200	U	**35.600**		0.200	U	0.350	J	0.200	U	0.200	U	0.200	U
Methylcyclohexane	108-87-2	~	0.200	U	0.200	U	0.200	U	3.900		0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Methylene chloride	75-09-2	5	1	U	2.210		1	U	1	U	1	U	1	U	1.300	J	1	U	5	U	1.090	J	1	U	1	U	1	U	1	U
Naphthalene	91-20-3	10	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	5	U	1	U	1	U	1	U	1	U	1	U
n-Butylbenzene	104-51-8	5	0.200	U	0.200	U	0.200	U	0.290	J	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
n-Propylbenzene	103-65-1	5	0.200	U	0.200	U	0.200	U	1.100		0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
o-Xylene	95-47-6	5	0.200	U	0.200	U	0.200	U	0.300	J	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
p- & m- Xylenes	179601-23-1	~	0.500	U	0.500	U	0.500	U	0.740	J	0.500	U	0.500	U	0.500	U	0.500	U	2.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
p-Diethylbenzene	105-05-5	~	0.200	U	0.200	U	0.200	U	0.340	J	0.200	U	0.200	U	0.200	U	0.200	U	2.450	JD	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
p-Ethyltoluene	622-96-8	~	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
p-Isopropyltoluene	99-87-6	5	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
sec-Butylbenzene	135-98-8	5	0.200	U	0.200	U	0.200	U	1.260		0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Styrene	100-42-5	5	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
tert-Butyl alcohol (TBA)	75-65-0	~	1,370	D	0.500	U	0.500	U	3.900		4.960		3.820		0.500	U	1.400		105	D	0.500	U	0.500	U	1.580		0.500	U	0.500	U
tert-Butylbenzene	98-06-6	5	0.200	U	0.200	U	0.200	U	2		0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Tetrachloroethylene	127-18-4	5	0.200	U	0.200	U	0.200	U	0.640		0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.710		0.200	U	0.200	U	0.200	U
Toluene	108-88-3	5	0.200	U	0.200	U	0.200	U	0.280	J	0.200	U	0.200	U	0.200	U	0.200	U	4.850	D	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
trans-1,2-Dichloroethylene	156-60-5	5	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.280	J	0.200	U	0.200	U	0.200	U
trans-1,3-Dichloropropylene	10061-02-6	0.4	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Trichloroethylene	79-01-6	5	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	2.040		0.200	U	0.200	U	0.200	U
Trichlorofluoromethane	75-69-4	5	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Vinyl Chloride	75-01-4	2	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	1	U	0.200	U	0.710		0.200	U	0.200	U	0.200	U
Xylenes, Total	1330-20-7	5	0.600	U	0.600	U	0.600	U	1.040	J	0.600	U	0.600	U	0.600	U	0.600	U	3	U	0.600	U	0.600	U	0.600	U	0.600	U	0.600	U
Volatile Organics, Tentatively Identified Cmpds.			ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Dilution Factor			1		1		1		1		1		1		1		1		5		1		1		1		1		1	
DICHLOROFLUOROETHANE isomer...	NA	~	NT		NT		NT		2.500	J	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
diethylBenzene isomer rt.11... (01)	NA	~	NT		NT		NT		7.900	J	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
diethylBenzene isomer rt.11... (02)	NA	~	NT		NT		NT		7.500	J	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Dihydrodimethylindene isome...	NA	~	NT		NT		NT		2.400	J	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
dimethylCyclohexane isomer ... (01)	NA	~	NT		NT		NT		3.900	J	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
dimethylCyclohexane isomer ... (02)	NA	~	NT		NT		NT		5.400	J	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
isopropyltoluene isomer rt....	NA	~	NT		NT		NT		3.800	J	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Methylbutenylbenzene isomer... (01)	NA	~	NT		NT		NT		3.900	J	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Methylbutenylbenzene isomer... (02)	NA	~	NT		NT		NT		2.400	J	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Methylbutenylbenzene isomer... (03)	NA	~	NT		NT		NT		2.700	J	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Methylcyclopentane isomer r...	NA	~	NT		NT		NT		2.800	J	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Nonane isomer rt.9.611	NA	~	NT		NT		NT		2.800	J	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Tentatively Identified Compounds		~	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U

NOTES:
Any Regulatory Exceedences are color coded by Regulation

Q is the Qualifier Column with definitions as follows:
D=result is from an analysis that required a dilution
J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
U=analyte not detected at or above the level indicated
B=analyte found in the analysis batch blank
E=result is estimated and cannot be accurately reported due to levels encountered or interferences
P=this flag is used for pesticide and PCB (Aroclor) target compounds when there is a % difference for detected concentrations that exceed method dictated limits between the two GC columns used for analysis
NT=this indicates the analyte was not a target for this sample
~=this indicates that no regulatory limit has been established for this analyte

Table 3
2022 RI Groundwater Semi-Volatile Organic Compounds Analytical Results Summary
318 Nevins Street, Brooklyn, NY

Sample ID			GW2-100722		DUP1-100722		Trip Blank		GW-1		GW-5		GW-4		Equipment Blank		Trip Blank		GW-7		GW-3		GCMW28		Trip Blank		GW-6		Trip Blank	
York ID		NYSDEC TOGS	22J0400-01		22J0400-02		22J0400-03		22J0469-01		22J0469-02		22J0469-03		22J0469-04		22J0469-05		22J0532-01		22J0532-02		22J0532-03		22J0532-04		22J0585-01		22J0585-02	
Sampling Date		Standards and	10/7/2022 12:30:00 PM		10/7/2022 11:00:00 AM		10/7/2022 2:00:00 PM		10/10/2022 8:30:00 AM		10/10/2022 12:35:00 PM		10/10/2022 10:50:00 AM		10/10/2022 1:20:00 PM		10/10/2022 1:40:00 PM		10/11/2022 9:00:00 AM		10/11/2022 10:15:00 AM		10/11/2022 11:45:00 AM		10/11/2022 2:25:00 PM		10/12/2022 8:00:00 AM		10/12/2022 1:20:00 PM	
Client Matrix		Guidance Values - GA	Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water	
Compound	**CAS Number**		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Semi-Volatiles, 1,4-Dioxane 8270 SIM-Aqueous			ug/L		ug/L				ug/L		ug/L		ug/L		ug/L				ug/L		ug/L		ug/L				ug/L			
Dilution Factor			1		1				1		1		1		1				1		1		1				1			
1,4-Dioxane	123-91-1	~	0.448		0.448		NT		0.528		0.300	U	0.300	U	0.300	U	NT		0.300	U	0.704		0.448		NT		0.300	U	NT	
Semi-Volatiles, Tentatively Identified Cmpds.			ug/L		ug/L				ug/L		ug/L		ug/L		ug/L				ug/L		ug/L		ug/L				ug/L			
Dilution Factor			1		1				1		1		1		1				1		1		1				1			
Tentatively Identified Compounds		~	NT		0	U	NT		NT		0	U	0	U	0	U	NT		0	U	0	U	0	U	NT		0	U	NT	
Unknown Hydrocarbon RT 5.0	NA	~	15.700	J	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown RT 6.6	NA	~	NT		NT		NT		23.200	J	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
Unknown RT 7.9	NA	~	NT		NT		NT		24.500	J	NT		NT		NT		NT		NT		NT		NT		NT		NT		NT	
SVOA, 8270 LOW MASTER		ug/L	ug/L		ug/L				ug/L		ug/L		ug/L		ug/L				ug/L		ug/L		ug/L				ug/L			
Dilution Factor			1		1				1		1		1		1				1		1		1				1			
1,1-Biphenyl	92-52-4	~	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
1,2,4,5-Tetrachlorobenzene	95-94-3	~	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
1,2,4-Trichlorobenzene	120-82-1	5	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
1,2-Dichlorobenzene	95-50-1	3	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
1,2-Diphenylhydrazine (as Azobenzene)	122-66-7	~	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
1,3-Dichlorobenzene	541-73-1	3	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
1,4-Dichlorobenzene	106-46-7	3	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
2,3,4,6-Tetrachlorophenol	58-90-2	~	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
2,4,5-Trichlorophenol	95-95-4	1	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
2,4,6-Trichlorophenol	88-06-2	1	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
2,4-Dichlorophenol	120-83-2	5	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
2,4-Dimethylphenol	105-67-9	50	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
2,4-Dinitrophenol	51-28-5	10	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
2,4-Dinitrotoluene	121-14-2	5	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
2,6-Dinitrotoluene	606-20-2	5	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
2-Chloronaphthalene	91-58-7	10	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
2-Chlorophenol	95-57-8	1	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
2-Methylnaphthalene	91-57-6	~	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
2-Methylphenol	95-48-7	1	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
2-Nitroaniline	88-74-4	5	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
2-Nitrophenol	88-75-5	1	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
3- & 4-Methylphenols	65794-96-9	1	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
3,3-Dichlorobenzidine	91-94-1	5	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
3-Nitroaniline	99-09-2	5	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
4,6-Dinitro-2-methylphenol	534-52-1	~	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
4-Bromophenyl phenyl ether	101-55-3	~	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
4-Chloro-3-methylphenol	59-50-7	1	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
4-Chloroaniline	106-47-8	5	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
4-Chlorophenyl phenyl ether	7005-72-3	~	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
4-Nitroaniline	100-01-6	5	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
4-Nitrophenol	100-02-7	1	5	U	5.130	U	NT		5.560	U	5.710	U	5.130	U	5.260	U	NT		5.560	U	5.560	U	5.560	U	NT		5.130	U	NT	
Acetophenone	98-86-2	~	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
Alpha Terpineol	98-55-5	~	5	U	5.130	U	NT		5.560	U	5.710	U	5.130	U	5.260	U	NT		5.560	U	5.560	U	5.560	U	NT		5.130	U	NT	
Aniline	62-53-3	5	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
Benzaldehyde	100-52-7	~	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
Benzidine	92-87-5	~	5	U	5.130	U	NT		5.560	U	5.710	U	5.130	U	5.260	U	NT		5.560	U	5.560	U	5.560	U	NT		5.130	U	NT	
Benzoic acid	65-85-0	~	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
Benzyl alcohol	100-51-6	~	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
Benzyl butyl phthalate	85-68-7	50	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
Bis(2-chloroethoxy)methane	111-91-1	5	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
Bis(2-chloroethyl)ether	111-44-4	1	1	U	1.030	U	NT		1.110	U	1.140	U	1.030	U	1.050	U	NT		1.110	U	1.110	U	1.110	U	NT		1.030	U	NT	
Bis(2-chloroisopropyl)ether	108-60-1	5	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
Caprolactam	105-60-2	~	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
Carbazole	86-74-8	~	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
Dibenzofuran	132-64-9	~	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
Diethyl phthalate	84-66-2	50	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
Dimethyl phthalate	131-11-3	50	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
Di-n-butyl phthalate	84-74-2	50	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
Di-n-octyl phthalate	117-84-0	50	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
Hexachlorocyclopentadiene	77-47-4	5	5	U	5.130	U	NT		5.560	U	5.710	U	5.130	U	5.260	U	NT		5.560	U	5.560	U	5.560	U	NT		5.130	U	NT	
Isophorone	78-59-1	50	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
N-nitroso-di-n-propylamine	621-64-7	~	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
N-Nitrosodiphenylamine	86-30-6	50	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
Phenol	108-95-2	1	2.500	U	2.560	U	NT		2.780	U	2.860	U	2.560	U	2.630	U	NT		2.780	U	2.780	U	2.780	U	NT		2.560	U	NT	
SVOA, 8270 SIM MASTER		ug/L	ug/L		ug/L				ug/L		ug/L		ug/L		ug/L				ug/L		ug/L		ug/L				ug/L			
Dilution Factor			1		1				1		1		1		1				1		1		1				1			
Acenaphthene	83-32-9	20	0.0500	U	0.0513	U	NT		0.0556	U	0.0571	U	0.0718		0.0526	U	NT		0.178		0.189		0.0556	U	NT		0.0513	U	NT	
Acenaphthylene	208-96-8	~	0.0500	U	0.0513	U	NT		0.0556		0.0571	U	0.0513	U	0.0526	U	NT		0.189		0.0556	U	0.0556	U	NT		0.0513	U	NT	
Anthracene	120-12-7	50	0.0500	U	0.0513	U	NT		0.0778		0.0571	U	0.0513	U	0.0526	U	NT		0.256		0.256		0.0556	U	NT		0.0513	U	NT	
Atrazine	1912-24-9	~	0.500	U	0.513	U	NT		0.556	U	0.571	U	0.513	U	0.526	U	NT		0.556	U	0.556	U	0.556	U	NT		0.513	U	NT	
Benzo(a)anthracene	56-55-3	0.002	0.0500	U	0.0513	U	NT		0.0556	U	0.0571	U	0.0513	U	0.0526	U	NT		**0.789**		**0.256**		**0.178**		NT		0.0513	U	NT	
Benzo(a)pyrene	50-32-8	0.002	0.0500	U	0.0513	U	NT		0.0556	U	0.0571	U	0.0513	U	0.0526	U	NT		**1.090**		**0.322**		**0.289**		NT		0.0513	U	NT	
Benzo(b)fluoranthene	205-99-2	0.002	0.0500	U	0.0513	U	NT		0.0556	U	0.0571	U	0.0513	U	0.0526	U	NT		**0.756**		**0.211**		**0.200**		NT		0.0513	U	NT	
Benzo(g,h,i)perylene	191-24-2	~	0.0500	U	0.0513	U	NT		0.0556	U	0.0571	U	0.0513	U	0.0526	U	NT		0.322		0.111		0.111		NT		0.0513	U	NT	
Benzo(k)fluoranthene	207-08-9	0.002	0.0500	U	0.0513	U	NT		0.0556	U	0.0571	U	0.0513	U	0.0526	U	NT		**0.833**		**0.256**		**0.211**		NT		0.0513	U	NT	
Bis(2-ethylhexyl)phthalate	117-81-7	5	0.500	U	0.903		NT		1.810	B	1.270	B	0.944	B	0.663	B	NT		1.120		0.789		1.180		NT		0.513	U	NT	
Chrysene	218-01-9	0.002	0.0500	U	0.0513	U	NT		0.0556	U	0.0571	U	0.0513	U	0.0526	U	NT		**0.789**		**0.256**		**0.178**		NT		0.0513	U	NT	
Dibenzo(a,h)anthracene	53-70-3	~	0.0500	U	0.0513	U	NT		0.0556	U	0.0571	U	0.0513	U	0.0526	U	NT		0.167		0.0667		0.0556		NT		0.0513	U	NT	
Fluoranthene	206-44-0	50	0.0500	U	0.0513	U	NT		0.144		0.0571	U	0.0513	U	0.0526	U	NT		1.740		0.811		0.300		NT		0.0513	U	NT	
Fluorene	86-73-7	50	0.0500	U	0.0513	U	NT		0.0556	U	0.251		0.0513	U	0.211		NT		0.144		0.167		0.244		NT		0.0513	U	NT	
Hexachlorobenzene	118-74-1	0.04	0.0200	U	0.0205	U	NT		0.0222	U	0.0229	U	0.0205	U	0.0211	U	NT		0.0222	U	0.0222	U	0.0222	U	NT		0.0205	U	NT	
Hexachlorobutadiene	87-68-3	0.5	0.500	U	0.513	U	NT		0.556	U	0.571	U	0.513	U	0.526	U	NT		0.556	U	0.556	U	0.556	U	NT		0.513	U	NT	
Hexachloroethane	67-72-1	5	0.500	U	0.513	U	NT		0.556	U	0.571	U	0.513	U	0.526	U	NT		0.556	U	0.556	U	0.556	U	NT		0.513	U	NT	
Indeno(1,2,3-cd)pyrene	193-39-5	0.002	0.0500	U	0.0513	U	NT		0.0556	U	0.0571	U	0.0513	U	0.0526	U	NT		**0.333**		**0.111**		**0.111**		NT		0.0513	U	NT	
Naphthalene	91-20-3	10	0.0500	U	0.0513	U	NT		0.156		0.0571	U	0.103		0.0526	U	NT		0.211		0.0889		0.0556	U	NT		0.0513	U	NT	
Nitrobenzene	98-95-3	0.4	0.250	U	0.256	U	NT		0.278	U	0.286	U	0.256	U	0.263	U	NT		0.278	U	0.278	U	0.278	U	NT		0.256	U	NT	
N-Nitrosodimethylamine	62-75-9	~	0.500	U	0.513	U	NT		0.556	U	0.571	U	0.513	U	0.526	U	NT		0.556	U	0.556	U	0.556	U	NT		0.513	U	NT	
Pentachlorophenol	87-86-5	1	0.250	U	0.256	U	NT		0.278	U	0.286	U	0.256	U	0.263	U	NT		0.278	U	0.278	U	0.278	U	NT		0.256	U	NT	
Phenanthrene	85-01-8	50	0.0500	U	0.0513	U	NT		0.0556	U	0.0571	U	0.0513	U	0.0526	U	NT		0.800		0.633		0.0667		NT		0.0513	U	NT	
Pyrene	129-00-0	50	0.0500	U	0.0513	U	NT		0.111		0.0571	U	0.0513	U	0.0526	U	NT		1.300		0.611		0.267		NT		0.0513	U	NT	

NOTES:
Any Regulatory Exceedences are color coded by Regulation

Q is the Qualifier Column with definitions as follows:
D=result is from an analysis that required a dilution
J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
U=analyte not detected at or above the level indicated
B=analyte found in the analysis batch blank
E=result is estimated and cannot be accurately reported due to levels encountered or interferences
P=this flag is used for pesticide and PCB (Aroclor) target compounds when there is a % difference for detected concentrations that exceed method dictated limits between the two GC columns used for analysis
NT=this indicates the analyte was not a target for this sample
~=this indicates that no regulatory limit has been established for this analyte

Table 3
2022 RI Groundwater Metals Analytical Results Summary
318 Nevins Street, Brooklyn, NY

Sample ID		NYSDEC TOGS Standards and Guidance Values - GA	GW2-100722		DUP1-100722		Trip Blank		GW-1		GW-5		GW-4		Equipment Blank		Trip Blank		GW-7		GW-3		GCMW28		Trip Blank		GW-6		Trip Blank	
York ID			22J0400-01		22J0400-02		22J0400-03		22J0469-01		22J0469-02		22J0469-03		22J0469-04		22J0469-05		22J0532-01		22J0532-02		22J0532-03		22J0532-04		22J0585-01		22J0585-02	
Sampling Date			10/7/2022 12:30:00 PM		10/7/2022 11:00:00 AM		10/7/2022 2:00:00 PM		10/10/2022 8:30:00 AM		10/10/2022 12:35:00 PM		10/10/2022 10:50:00 AM		10/10/2022 1:20:00 PM		10/10/2022 1:40:00 PM		10/11/2022 9:00:00 AM		10/11/2022 10:15:00 AM		10/11/2022 11:45:00 AM		10/11/2022 2:25:00 PM		10/12/2022 8:00:00 AM		10/12/2022 1:20:00 PM	
Client Matrix			Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water	
Compound	**CAS Number**		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Metals, Target Analyte, ICP		ug/L	ug/L		ug/L				ug/L		ug/L		ug/L		ug/L				ug/L		ug/L		ug/L				ug/L			
Dilution Factor			1		1				1		1		1		1				1		1		1				1			
Aluminum	7429-90-5	~	259	B	416	B	NT		200		421		188		70.200		NT		2,030		208		89.500		NT		173		NT	
Barium	7440-39-3	1000	215		214		NT		163		176		172		27.800	U	NT		246		412		75		NT		112		NT	
Calcium	7440-70-2	~	284,000		277,000		NT		317,000		644,000		473,000		55.600	U	NT		241,000		207,000		65,800		NT		181,000		NT	
Chromium	7440-47-3	50	5.560	U	5.560	U	NT		5.560	U	11.300		16.300		5.560	U	NT		12.200		5.560	U	5.560	U	NT		23.300		NT	
Cobalt	7440-48-4	~	4.440	U	4.440	U	NT		4.440	U	10.400		4.440	U	4.440	U	NT		4.440	U	4.440	U	4.440	U	NT		4.440	U	NT	
Copper	7440-50-8	200	22.200	U	22.200	U	NT		22.200	U	31.400		22.200		22.200	U	NT		**445**		22.200	U	22.200	U	NT		22.200	U	NT	
Iron	7439-89-6	~	1,960		1,920		NT		12,500		30,900		9,710		278	U	NT		5,570		18,200		5,300		NT		8,960		NT	
Lead	7439-92-1	25	8.100		9.030		NT		5.560	U	6.790		5.560	U	5.560	U	NT		**169**		16.300		5.560	U	NT		5.560	U	NT	
Magnesium	7439-95-4	35000	**54,900**		**53,200**		NT		**41,800**		**160,000**		**151,000**		55.600	U	NT		**56,800**		29,500		17,800		NT		24,200		NT	
Manganese	7439-96-5	300	**1,540**		**1,450**		NT		**466**		**2,190**		**1,500**		5.560	U	NT		**1,090**		**1,270**		**1,080**		NT		**988**		NT	
Nickel	7440-02-0	100	11.100	U	11.100	U	NT		11.100	U	35.200		11.400		11.100	U	NT		11.100	U	11.100	U	11.100	U	NT		11.100	U	NT	
Potassium	7440-09-7	~	52,100		53,100		NT		40,300		70,200		58,700		75.500	U	NT		54,000		37,700		17,000		NT		33,100		NT	
Silver	7440-22-4	50	5.560	U	5.560	U	NT		5.560	U	6.480		5.930		5.560	U	NT		5.560	U	5.560	U	5.560	U	NT		5.560	U	NT	
Sodium	7440-23-5	20000	**795,000**		**771,000**		NT		**329,000**		**475,000**		**348,000**		556	U	NT		**576,000**		**312,000**		**133,000**		NT		**283,000**		NT	
Vanadium	7440-62-2	~	11.100	U	11.100	U	NT		11.100	U	11.100	U	11.100	U	11.100	U	NT		11.100	U	11.100	U	11.100	U	NT		11.100	U	NT	
Zinc	7440-66-6	2000	35.400		27.800	U	NT		27.800	U	394		133		27.800	U	NT		164		41		112		NT		31.100		NT	
Metals, Target Analyte, ICP Dissolved		ug/L	ug/L		ug/L				ug/L		ug/L		ug/L		ug/L				ug/L		ug/L		ug/L				ug/L			
Dilution Factor			1		1				1		1		1		1				1		1		1				1			
Aluminum	7429-90-5	~	55.600	U	84.600	B	NT		200	B	421	B	188	B	70.200	B	NT		293	B	129	B	104	B	NT		93.500	B	NT	
Barium	7440-39-3	1000	173		218		NT		163		176		172		27.800	U	NT		243		285		63.800		NT		47.200		NT	
Calcium	7440-70-2	~	271,000	B	287,000	B	NT		317,000		644,000		473,000		55.600	U	NT		260,000		195,000		59,700		NT		160,000		NT	
Chromium	7440-47-3	50	5.560	U	5.560	U	NT		5.560	U	11.300		16.300		5.560	U	NT		5.660		5.560	U	5.560	U	NT		5.560	U	NT	
Cobalt	7440-48-4	~	4.440	U	4.440	U	NT		4.440	U	10.400		4.440	U	4.440	U	NT		4.440	U	4.440	U	4.440	U	NT		4.440	U	NT	
Copper	7440-50-8	200	22.200	U	22.200	U	NT		22.200	U	31.400		22.200		22.200	U	NT		22.200	U	22.200	U	22.200	U	NT		22.200	U	NT	
Iron	7439-89-6	~	278	U	1,930		NT		12,500		30,900		9,710		278	U	NT		278	U	278	U	278	U	NT		278	U	NT	
Lead	7439-92-1	25	5.560	U	5.560	U	NT		5.560	U	6.790		5.560	U	5.560	U	NT		5.560	U	5.560	U	5.560	U	NT		5.560	U	NT	
Magnesium	7439-95-4	35000	**52,800**		**57,100**		NT		**41,800**		**160,000**		**151,000**		55.600	U	NT		**64,700**		**29,400**		16,400		NT		22,700		NT	
Manganese	7439-96-5	300	**1,450**		**1,560**		NT		**466**		**2,190**		**1,500**		5.560	U	NT		**1,050**		**1,190**		**967**		NT		**902**		NT	
Nickel	7440-02-0	100	11.100	U	11.100	U	NT		11.100	U	35.200		11.400		11.100	U	NT		11.100	U	11.100	U	11.100	U	NT		11.100	U	NT	
Potassium	7440-09-7	~	50,500		52,600		NT		40,300		70,200		58,700		75.500	U	NT		55,200		36,100		17,200		NT		34,700		NT	
Silver	7440-22-4	50	5.560	U	5.560	U	NT		5.560	U	6.480		5.930		5.560	U	NT		5.560	U	5.560	U	5.560	U	NT		5.560	U	NT	
Sodium	7440-23-5	20000	**753,000**		**793,000**		NT		**329,000**		**475,000**		**348,000**		556	U	NT		**554,000**		**290,000**		**126,000**		NT		**278,000**		NT	
Vanadium	7440-62-2	~	11.100	U	11.100	U	NT		11.100	U	11.100	U	11.100	U	11.100	U	NT		11.100	U	11.100	U	11.100	U	NT		11.100	U	NT	
Zinc	7440-66-6	2000	27.800	U	33.700		NT		27.800	U	394		133		27.800	U	NT		27.800	U	27.800	U	51.200		NT		27.800	U	NT	
Metals, Target Analyte, ICPMS		ug/L	ug/L		ug/L				ug/L		ug/L		ug/L		ug/L				ug/L		ug/L		ug/L				ug/L			
Dilution Factor			1		1				1		1		1		1				1		1		1				1			
Antimony	7440-36-0	3	1.110	U	1.110	U	NT		1.110	U	**4.710**		1.190		1.110	U	NT		1.110	U	1.110	U	1.110	U	NT		1.110	U	NT	
Arsenic	7440-38-2	25	1.930		2.020		NT		18		5.220		16		1.110	U	NT		11.300		**321**		4.530		NT		3.240		NT	
Beryllium	7440-41-7	3	0.333	U	0.333	U	NT		0.333	U	0.333	U	0.333	U	0.333	U	NT		0.333	U	0.333	U	0.333	U	NT		0.333	U	NT	
Cadmium	7440-43-9	5	0.556	U	0.556	U	NT		0.556	U	0.556	U	0.556	U	0.556	U	NT		0.556	U	0.556	U	0.556	U	NT		0.556	U	NT	
Selenium	7782-49-2	10	**30**		**28.300**		NT		5.780		**25.200**		7.340		1.110	U	NT		**20.400**		5.420		3.040		NT		3.320		NT	
Thallium	7440-28-0	~	1.110	U	1.110	U	NT		1.110	U	1.110	U	1.110	U	1.110	U	NT		1.110	U	1.110	U	1.110	U	NT		1.110	U	NT	
Metals, Target Analyte, ICPMS Dissolved		ug/L	ug/L		ug/L				ug/L		ug/L		ug/L		ug/L				ug/L		ug/L		ug/L				ug/L			
Dilution Factor			1		1				1		1		1		1				1		1		1				1			
Antimony	7440-36-0	3	1.110	U	1.110	U	NT		1.110	U	**4.210**		1.110	U	1.110	U	NT		1.110	U	1.110	U	1.110	U	NT		1.110	U	NT	
Arsenic	7440-38-2	25	1.600		1.970		NT		3.120		1.630		3.300		1.110	U	NT		7.380		**106**		1.270		NT		2.510		NT	
Beryllium	7440-41-7	3	0.333	U	0.333	U	NT		0.333	U	0.333	U	0.333	U	0.333	U	NT		0.333	U	0.333	U	0.333	U	NT		0.333	U	NT	
Cadmium	7440-43-9	5	0.556	U	0.556	U	NT		0.556	U	0.556	U	0.556	U	0.556	U	NT		0.556	U	0.556	U	0.556	U	NT		0.556	U	NT	
Selenium	7782-49-2	10	**38.400**	B	**21.200**	B	NT		6.930	B	**20.500**	B	8.190	B	1.110	U	NT		**14.500**	B	6.080	B	2.360	B	NT		2.940	B	NT	
Thallium	7440-28-0	~	1.110	U	1.110	U	NT		1.110	U	1.110	U	1.110	U	1.110	U	NT		1.110	U	1.110	U	1.110	U	NT		1.110	U	NT	
Mercury by 7470/7471		ug/L	ug/L		ug/L				ug/L		ug/L		ug/L		ug/L				ug/L		ug/L		ug/L				ug/L			
Dilution Factor			1		1				1		1		1		1				1		1		1				1			
Mercury	7439-97-6	0.7	0.200	U	0.200	U	NT		0.200	U	0.200	U	0.200	U	0.200	U	NT		0.300		0.200	U	0.200	U	NT		0.200	U	NT	
Mercury, Dissolved		ug/L	ug/L		ug/L				ug/L		ug/L		ug/L		ug/L				ug/L		ug/L		ug/L				ug/L			
Dilution Factor			1		1				1		1		1		1				1		1		1				1			
Mercury	7439-97-6	0.7	0.200	U	0.200	U	NT		0.200	U	0.200	U	0.200	U	0.200	U	NT		0.200	U	0.200	U	0.200	U	NT		0.200	U	NT	
Chromium, Hexavalent		ug/L	ug/L		ug/L				ug/L		ug/L		ug/L		ug/L				ug/L		ug/L		ug/L				ug/L			
Dilution Factor			1		1				1		1		1		1				1		1		1				1			
Chromium, Hexavalent	18540-29-9	50	10	U	10	U	NT		10	U	10	U	10	U	10	U	NT		10	U	10	U	10	U	NT		10	U	NT	
Chromium, Hexavalent-Dissolved		ug/L	ug/L		ug/L				ug/L		ug/L		ug/L		ug/L				ug/L		ug/L		ug/L				ug/L			
Dilution Factor			1		1				1		1		1		1				1		1		1				1			
Chromium, Hexavalent	18540-29-9	50	10	U	10	U	NT		10	U	10	U	10	U	10	U	NT		10	U	10	U	10	U	NT		10	U	NT	
Cyanide, Total		ug/L	ug/L		ug/L				ug/L		ug/L		ug/L		ug/L				ug/L		ug/L		ug/L				ug/L			
Dilution Factor			1		1				1		1		1		1				1		1		1				1			
Cyanide, total	57-12-5	200	30		35		NT		54		25		11		10	U	NT		36		48		10	U	NT		10	U	NT	
Cyanide, Total, Dissolved		ug/L	ug/L		ug/L				ug/L		ug/L		ug/L		ug/L				ug/L		ug/L		ug/L				ug/L			
Dilution Factor			1		1				1		1		1		1				1		1		1				1			
Cyanide, total	57-12-5	200	31		38		NT		53		22		16		10	U	NT		24		50		10	U	NT		10	U	NT	

NOTES:
Any Regulatory Exceedences are color coded by Regulation

Q is the Qualifier Column with definitions as follows:
D=result is from an analysis that required a dilution
J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
U=analyte not detected at or above the level indicated
B=analyte found in the analysis batch blank
E=result is estimated and cannot be accurately reported due to levels encountered or interferences
P=this flag is used for pesticide and PCB (Aroclor) target compounds when there is a % difference for detected concentrations that exceed method dictated limits between the two GC columns used for analysis
NT=this indicates the analyte was not a target for this sample
~=this indicates that no regulatory limit has been established for this analyte

Table 3
2022 RI Groundwater PCBs and Pesticides Analytical Results Summary
318 Nevins Street, Brooklyn, NY

Sample ID			GW2-100722		DUP1-100722		Trip Blank		GW-1		GW-5		GW-4		Equipment Blank		Trip Blank		GW-7		GW-3		GCMW28		Trip Blank		GW-6		Trip Blank	
York ID		NYSDEC TOGS	22J0400-01		22J0400-02		22J0400-03		22J0469-01		22J0469-02		22J0469-03		22J0469-04		22J0469-05		22J0532-01		22J0532-02		22J0532-03		22J0532-04		22J0585-01		22J0585-02	
Sampling Date		Standards and	10/7/2022 12:30:00 PM		10/7/2022 11:00:00 AM		10/7/2022 2:00:00 PM		10/10/2022 8:30:00 AM		10/10/2022 12:35:00 PM		10/10/2022 10:50:00 AM		10/10/2022 1:20:00 PM		10/10/2022 1:40:00 PM		10/11/2022 9:00:00 AM		10/11/2022 10:15:00 AM		10/11/2022 11:45:00 AM		10/11/2022 2:25:00 PM		10/12/2022 8:00:00 AM		10/12/2022 1:20:00 PM	
Client Matrix		Guidance Values - GA	Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water	
Compound	CAS Number		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
PEST, 8081 MASTER		ug/L	ug/L		ug/L				ug/L		ug/L		ug/L		ug/L				ug/L		ug/L		ug/L				ug/L			
Dilution Factor			1		1				1		1		1		1				1		1		1				1			
4,4'-DDD	72-54-8	0.3	0.00444	U	0.00410	U	NT		0.00410	U	0.00421	U	0.00400	U	0.00421	U	NT		0.00400	U	0.00552	U	0.00485	U	NT		0.00400	U	NT	
4,4'-DDE	72-55-9	0.2	0.00444	U	0.00410	U	NT		0.00410	U	0.00421	U	0.00400	U	0.00421	U	NT		0.00400	U	0.00552	U	0.00485	U	NT		0.00400	U	NT	
4,4'-DDT	50-29-3	0.2	0.00444	U	0.00410	U	NT		0.00410	U	0.00421	U	0.00400	U	0.00421	U	NT		0.00400	U	0.00552	U	0.00485	U	NT		0.00400	U	NT	
Aldrin	309-00-2	~	0.00444	U	0.00410	U	NT		0.00410	U	0.00421	U	0.00400	U	0.00421	U	NT		0.00400	U	0.00552	U	0.00485	U	NT		0.00400	U	NT	
alpha-BHC	319-84-6	0.01	0.00444	U	0.00410	U	NT		0.00410	U	0.00421	U	0.00400	U	0.00421	U	NT		0.00400	U	0.00552	U	0.00485	U	NT		0.00400	U	NT	
alpha-Chlordane	5103-71-9	~	0.00444	U	0.00410	U	NT		0.00410	U	0.00421	U	0.00400	U	0.00421	U	NT		0.00400	U	0.00552	U	0.00485	U	NT		0.00400	U	NT	
beta-BHC	319-85-7	0.04	0.00444	U	0.00410	U	NT		0.00410	U	0.00421	U	0.00400	U	0.00421	U	NT		0.00400	U	0.00552	U	0.00485	U	NT		0.00400	U	NT	
Chlordane, total (alpha, gamma)	57-74-9	0.05	0.0111	U	0.0103	U	NT		0.0103	U	0.0105	U	0.0100	U	0.0105	U	NT		0.0100	U	0.0138	U	0.0121	U	NT		0.0100	U	NT	
delta-BHC	319-86-8	0.04	0.00444	U	0.00410	U	NT		0.00410	U	0.00421	U	0.00400	U	0.00421	U	NT		0.00400	U	0.00552	U	0.00485	U	NT		0.00400	U	NT	
Dieldrin	60-57-1	0.004	0.00222	U	0.00205	U	NT		0.00205	U	0.00211	U	0.00200	U	0.00211	U	NT		0.00200	U	0.00276	U	0.00242	U	NT		0.00200	U	NT	
Endosulfan I	959-98-8	~	0.00444	U	0.00410	U	NT		0.00410	U	0.00421	U	0.00400	U	0.00421	U	NT		0.00400	U	0.00552	U	0.00485	U	NT		0.00400	U	NT	
Endosulfan II	33213-65-9	~	0.00444	U	0.00410	U	NT		0.00410	U	0.00421	U	0.00400	U	0.00421	U	NT		0.00400	U	0.00552	U	0.00485	U	NT		0.00400	U	NT	
Endosulfan sulfate	1031-07-8	~	0.00444	U	0.00410	U	NT		0.00410	U	0.00421	U	0.00400	U	0.00421	U	NT		0.00400	U	0.00552	U	0.00485	U	NT		0.00400	U	NT	
Endrin	72-20-8	~	0.00444	U	0.00410	U	NT		0.00410	U	0.00421	U	0.00400	U	0.00421	U	NT		0.00400	U	0.00552	U	0.00485	U	NT		0.00400	U	NT	
Endrin aldehyde	7421-93-4	5	0.0111	U	0.0103	U	NT		0.0103	U	0.0105	U	0.0100	U	0.0105	U	NT		0.0100	U	0.0138	U	0.0121	U	NT		0.0100	U	NT	
Endrin ketone	53494-70-5	5	0.0111	U	0.0103	U	NT		0.0103	U	0.0105	U	0.0100	U	0.0105	U	NT		0.0100	U	0.0138	U	0.0121	U	NT		0.0100	U	NT	
gamma-BHC (Lindane)	58-89-9	0.05	0.00444	U	0.00410	U	NT		0.00410	U	0.00421	U	0.00400	U	0.00421	U	NT		0.00400	U	0.00552	U	0.00485	U	NT		0.00400	U	NT	
gamma-Chlordane	5566-34-7	~	0.0111	U	0.0103	U	NT		0.0103	U	0.0105	U	0.0100	U	0.0105	U	NT		0.0100	U	0.0138	U	0.0121	U	NT		0.0100	U	NT	
Heptachlor	76-44-8	0.04	0.00444	U	0.00410	U	NT		0.00410	U	0.00421	U	0.00400	U	0.00421	U	NT		0.00400	U	0.00552	U	0.00485	U	NT		0.00400	U	NT	
Heptachlor epoxide	1024-57-3	0.03	0.00444	U	0.00410	U	NT		0.00410	U	0.00421	U	0.00400	U	0.00421	U	NT		0.00400	U	0.00552	U	0.00485	U	NT		0.00400	U	NT	
Methoxychlor	72-43-5	35	0.00444	U	0.00410	U	NT		0.00410	U	0.00421	U	0.00400	U	0.00421	U	NT		0.00400	U	0.00552	U	0.00485	U	NT		0.00400	U	NT	
Toxaphene	8001-35-2	0.06	0.111	U	0.103	U	NT		0.103	U	0.105	U	0.100	U	0.105	U	NT		0.100	U	0.138	U	0.121	U	NT		0.100	U	NT	
PCB, 8082 MASTER		ug/L	ug/L		ug/L				ug/L		ug/L		ug/L		ug/L				ug/L		ug/L		ug/L				ug/L			
Dilution Factor			1		1				1		1		1		1				1		1		1				1			
Aroclor 1016	12674-11-2	~	0.0556	U	0.0513	U	NT		0.0513	U	0.0526	U	0.0500	U	0.0526	U	NT		0.0500	U	0.0690	U	0.0606	U	NT		0.0500	U	NT	
Aroclor 1221	11104-28-2	~	0.0556	U	0.0513	U	NT		0.0513	U	0.0526	U	0.0500	U	0.0526	U	NT		0.0500	U	0.0690	U	0.0606	U	NT		0.0500	U	NT	
Aroclor 1232	11141-16-5	~	0.0556	U	0.0513	U	NT		0.0513	U	0.0526	U	0.0500	U	0.0526	U	NT		0.0500	U	0.0690	U	0.0606	U	NT		0.0500	U	NT	
Aroclor 1242	53469-21-9	~	0.0556	U	0.0513	U	NT		0.0513	U	0.0526	U	0.0500	U	0.0526	U	NT		0.0500	U	0.0690	U	0.0606	U	NT		0.0500	U	NT	
Aroclor 1248	12672-29-6	~	0.0556	U	0.0513	U	NT		0.0513	U	0.0526	U	0.0500	U	0.0526	U	NT		0.0500	U	0.0690	U	0.0606	U	NT		0.0500	U	NT	
Aroclor 1254	11097-69-1	~	0.0556	U	0.0513	U	NT		0.0513	U	0.0526	U	0.0500	U	0.0526	U	NT		0.0500	U	0.0690	U	0.0606	U	NT		0.0500	U	NT	
Aroclor 1260	11096-82-5	~	0.0556	U	0.0513	U	NT		0.0513	U	0.0526	U	0.0500	U	0.0526	U	NT		0.0500	U	0.0690	U	0.0606	U	NT		0.0500	U	NT	
Total PCBs	1336-36-3	0.09	0.0556	U	0.0513	U	NT		0.0513	U	0.0526	U	0.0500	U	0.0526	U	NT		0.0500	U	0.0690	U	0.0606	U	NT		0.0500	U	NT	

NOTES:
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U=analyte not detected at or above the level indicated
B=analyte found in the analysis batch blank
E=result is estimated and cannot be accurately reported due to levels encountered or interferences
P=this flag is used for pesticide and PCB (Aroclor) target compounds when there is a % difference for detected concentrations that exceed method dictated limits between the two GC columns used for analysis
NT=this indicates the analyte was not a target for this sample
~=this indicates that no regulatory limit has been established for this analyte

Table 3
32022 RI Groundwater Emergent Contaminants Analytical Results Summary
318 Nevins Street, Brooklyn, NY

Sample ID		NYSDEC TOGS Standards and Guidance Values - GA	GW2-100722		DUP1-100722		Trip Blank		GW-1		GW-5		GW-4		Equipment Blank		Trip Blank		GW-7		GW-3		GCMW28		Trip Blank		GW-6		Trip Blank	
York ID			22J0400-01		22J0400-02		22J0400-03		22J0469-01		22J0469-02		22J0469-03		22J0469-04		22J0469-05		22J0532-01		22J0532-02		22J0532-03		22J0532-04		22J0585-01		22J0585-02	
Sampling Date			10/7/2022 12:30:00 PM		10/7/2022 11:00:00 AM		10/7/2022 2:00:00 PM		10/10/2022 8:30:00 AM		10/10/2022 12:35:00 PM		10/10/2022 10:50:00 AM		10/10/2022 1:20:00 PM		10/10/2022 1:40:00 PM		10/11/2022 9:00:00 AM		10/11/2022 10:15:00 AM		10/11/2022 11:45:00 AM		10/11/2022 2:25:00 PM		10/12/2022 8:00:00 AM		10/12/2022 1:20:00 PM	
Client Matrix			Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water		Water	
Compound	**CAS Number**		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
PFAS, NYSDEC Target List		ng/L	ng/L		ng/L				ng/L		ng/L		ng/L		ng/L				ng/L		ng/L		ng/L				ng/L			
Dilution Factor			5		5				25		1		1		1				5		5		5				5			
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FT	39108-34-4	100	9.260	U	9.260	U	NT		1.760	U	1.790	U	1.850	U	2	U	NT		1.790	U	1.850	U	1.850	U	NT		9.620	U	NT	
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FT	27619-97-2	100	23.100	U	23.100	U	NT		22	U	4.460	U	4.630	U	5	U	NT		22.300	U	11		186	D	NT		24	U	NT	
N-EtFOSAA	2991-50-6	100	9.260	U	9.260	U	NT		1.760	U	1.790	U	4.680		2	U	NT		1.790	U	1.850	U	1.850	U	NT		9.620	U	NT	
N-MeFOSAA	2355-31-9	100	9.260	U	9.260	U	NT		1.760	U	1.790	U	1.850	U	2	U	NT		1.790	U	1.850	U	1.850	U	NT		9.620	U	NT	
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	100	9.260	U	9.260	U	NT		1.760	U	1.790	U	1.850	U	2	U	NT		1.790	U	1.850	U	1.850	U	NT		9.620	U	NT	
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	100	9.260	U	9.260	U	NT		13		1.790	U	1.850	U	2	U	NT		1.790	U	5.100		1.850	U	NT		9.620	U	NT	
Perfluoro-1-octanesulfonamide (FOSA)	754-91-6	100	9.260	U	9.260	U	NT		1.760	U	1.790	U	1.850	U	2	U	NT		1.790	U	1.850	U	1.850	U	NT		9.620	U	NT	
Perfluorobutanesulfonic acid (PFBS)	375-73-5	100	9.260	U	9.260	U	NT		22.300		5.030		8.010		2	U	NT		9		16.100		3.230		NT		10.400	D	NT	
Perfluorodecanoic acid (PFDA)	335-76-2	100	9.260	U	9.260	U	NT		1.760	U	1.790	U	1.850	U	2	U	NT		1.790	U	1.850	U	1.850	U	NT		9.620	U	NT	
Perfluorododecanoic acid (PFDoA)	307-55-1	100	9.260	U	9.260	U	NT		1.760	U	1.790	U	1.850	U	2	U	NT		1.790	U	1.850	U	1.850	U	NT		9.620	U	NT	
Perfluoroheptanoic acid (PFHpA)	375-85-9	100	11.100	D	13.400	D	NT		72.100		12.600		14.300		2	U	NT		16		12.200		9.460		NT		12.300	D	NT	
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	100	32.300	D	39	D	NT		**2,230**	D	9.560		35.100		2	U	NT		17.800		**272**	D	3.120		NT		9.620	U	NT	
Perfluorohexanoic acid (PFHxA)	307-24-4	100	18.400	D	18.900	D	NT		**131**		28.600		30.500		2	U	NT		16.500		36		19		NT		24.600	D	NT	
Perfluoro-n-butanoic acid (PFBA)	375-22-4	100	9.620	D	13.100	D	NT		32.800		23.900		14.700		2	U	NT		17.600		19.600		10.600		NT		18.200	D	NT	
Perfluorononanoic acid (PFNA)	375-95-1	100	9.260	U	9.260	U	NT		5.150		1.790	U	1.850	U	2	U	NT		1.790	U	5.540		1.850	U	NT		9.620	U	NT	
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	10	**31.500**	D	**10.500**	D	NT		**121**	D	1.960		6.080		2	U	NT		**28.500**		**178**	D	8.740		NT		**13.300**	D	NT	
Perfluorooctanoic acid (PFOA)	335-67-1	10	**70**	D	**70.300**	D	NT		**362**	D	**50.900**		**45.900**		2	U	NT		**52.800**		**84.800**		**26.500**		NT		**63.500**	D	NT	
Perfluoropentanoic acid (PFPeA)	2706-90-3	100	10.500	D	10.800	D	NT		5.080		26		25.200		2	U	NT		1.790	U	1.850	U	1.850	U	NT		11.400	D	NT	
Perfluorotetradecanoic acid (PFTA)	376-06-7	100	9.260	U	9.260	U	NT		1.760	U	1.790	U	1.850	U	2	U	NT		1.790	U	1.850	U	1.850	U	NT		9.620	U	NT	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	100	9.260	U	9.260	U	NT		1.760	U	1.790	U	1.850	U	2	U	NT		1.790	U	1.850	U	1.850	U	NT		9.620	U	NT	
Perfluoroundecanoic acid (PFUnA)	2058-94-8	100	9.260	U	9.260	U	NT		1.760	U	1.790	U	1.850	U	2	U	NT		1.790	U	1.850	U	1.850	U	NT		9.620	U	NT	

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Table 4: Ranked Groundwater Concentration Ranges
Above Ambient Water Quality Standards (AWQS)
318 Union Street, Brooklyn, New York

Analytes	AWQS µg/L	Minimum Concentration µg/L	Minimum Concentration Sample Location	Maximum Concentration µg/L	Maximum Concentration Sample Location	Range of Detections µg/L
Volatile Organic Compounds µg/L						
Benzene	1	-	-	2.45	GW-7	2.45
MTBE	10	-	-	11.6	GW-2	11.6
cis-1,2-Dichloroethylene	5	-	-	12.6	GCMW28	12.6
Semi Volatile Organic Compounds µg/L						
Benzo(a)anthracene	0.002	0.178	GCMW28	0.789	GW-7	0.178 - 0.789
Benzo(a)pyrene	0	0.289	GCMW28	1.09	GW-7	0.289 - 1.09
Benzo(b)fluoranthene	0.002	0.2	GCMW28	0.756	GW-7	0.2 - 0.756
Benzo(k)fluoranthene	0.002	0.21	GCMW28	0.833	GW-7	0.21 - 0.833
Chrysene	0.002	0.178	GCMW28	0.789	GW-7	0.178 - 0.789
Indeno(1,2,3-cd)pyrene	0.002	0.111	GCMW28	0.333	GW-7	0.111 - 0.333
Total Metals µg/L						
Antimony	3	-	-	4.71	GW-5	4.71
Arsenic	25	-	-	321	GW-3	321
Copper	200	-	-	445	GW-7	445
Lead	25	-	-	169	GW-7	169
Magnesium	35,000	41,800	GW-1	160,000	GW-5	41,800 - 160,000
Manganese	300	466	GW-1	2,190	GW-5	466 - 2,190
Selenium	10	20.4	GW-7	30	GW-1	20.4 - 30
Sodium	20,000	133,000	GCMW28	576,000	GW-7	133,000 - 576,000
Dissolved Metals µg/L						
Antimony	-	-	-	4.21	GW-5	4.21
Arsenic	-	-	-	106	GW-3	106
Magnesium	35,000	41,800	GW-1	160,000	GW-5	41,800 - 160,000
Manganese	300	466	GW-1	2,190	GW-5	466 - 2,190
Selenium	10	14.5	GW-7	38.4	GW-2	14.5 - 38.4
Sodium	20,000	126,000	GCMW28	554,000	GW-7	126,000 - 554,000

Table 4: Ranked Groundwater Concentration Ranges
Above Ambient Water Quality Standards (AWQS)
318 Union Street, Brooklyn, New York

Analytes	AWQS µg/L	Minimum Concentration µg/L	Minimum Concentration Sample Location	Maximum Concentration µg/L	Maximum Concentration Sample Location	Range of Detections µg/L
PFAS ng/L						
PFOS	10	13.3	GW-6	178	GW-3	13.3 - 178
PFOA	10	26.5	GCMW28	362	GW-1	26.5 - 362

Notes:
µg/L - micrograms per liter
ng/l - nanogram per liter

Table 5
2022 RI Soil Vapor Analytical Results Summary
318 Nevins Street, Brooklyn, NY

Sample ID		NYSDOH Matrices Soil Vapor	SV-DUP		SV-4		SV-7		SV-8		SV-5		SV-6	
York ID			22J0380-01		22J0380-02		22J0380-03		22J0380-04		22J0380-05		22J0380-06	
Sampling Date			/6/2022 2:09:00 I		/6/2022 1:05:00 I		/6/2022 3:21:00 I		/6/2022 3:22:00 I		/6/2022 3:24:00 I		/6/2022 3:25:00	
Client Matrix			Soil Vapor		Soil Vapor		Soil Vapor		Soil Vapor		Soil Vapor		Soil Vapor	
Compound	CAS Number		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Volatile Organics, EPA TO15 Full List		ug/m3	ug/m3		ug/m3		ug/m3		ug/m3		ug/m3		ug/m3	
Dilution Factor			81.88		39.78		139.44		80.28		79		6.949	
1,1,1,2-Tetrachloroethane	630-20-6	~	13.724	U	13.724	U	4.804	U	6.862	U	6.794	U	4.735	U
1,1,1-Trichloroethane	71-55-6	100.0	10.908	U	10.908	U	3.818	U	**5.454**	D	5.400	U	**17.999**	D
1,1,2,2-Tetrachloroethane	79-34-5	~	13.724	U	13.724	U	4.804	U	6.862	U	6.794	U	4.735	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	~	15.321	U	15.321	U	5.362	U	7.661	U	7.584	U	5.286	U
1,1,2-Trichloroethane	79-00-5	~	10.908	U	10.908	U	3.818	U	5.454	U	5.400	U	3.763	U
1,1-Dichloroethane	75-34-3	~	8.092	U	8.092	U	2.832	U	4.046	U	4.005	U	2.792	U
1,1-Dichloroethylene	75-35-4	6.0	2.021	U	1.982	U	0.674	U	0.991	U	0.991	U	0.674	U
1,2,4-Trichlorobenzene	120-82-1	~	14.836	U	14.836	U	5.193	U	7.418	U	7.344	U	5.119	U
1,2,4-Trimethylbenzene	95-63-6	~	**17.198**	D	**9.827**	D	**34.396**	D	**17.689**	D	**23.095**	D	3.390	U
1,2-Dibromoethane	106-93-4	~	15.361	U	15.361	U	5.376	U	7.680	U	7.603	U	5.299	U
1,2-Dichlorobenzene	95-50-1	~	12.020	U	12.020	U	4.207	U	6.010	U	5.950	U	4.147	U
1,2-Dichloroethane	107-06-2	~	8.091	U	8.091	U	2.832	U	4.045	U	4.005	U	2.791	U
1,2-Dichloropropane	78-87-5	~	9.238	U	9.238	U	3.233	U	4.619	U	4.573	U	3.187	U
1,2-Dichlorotetrafluoroethane	76-14-2	~	13.975	U	13.975	U	4.891	U	6.988	U	6.918	U	4.822	U
1,3,5-Trimethylbenzene	108-67-8	~	**9.828**	J	9.828	U	**9.828**	D	**5.406**	D	**6.880**	D	3.391	U
1,3-Butadiene	106-99-0	~	13.489	U	13.268	U	**4.644**	J	6.634	U	6.634	U	4.644	U
1,3-Dichlorobenzene	541-73-1	~	12.020	U	12.020	U	4.207	U	6.010	U	5.950	U	4.147	U
1,3-Dichloropropane	142-28-9	~	9.239	U	9.239	U	3.234	U	4.619	U	4.573	U	3.187	U
1,4-Dichlorobenzene	106-46-7	~	12.020	U	12.020	U	4.207	U	6.010	U	5.950	U	4.147	U
1,4-Dioxane	123-91-1	~	14.767	U	14.407	U	5.043	U	7.204	U	7.204	U	5.043	U
2-Butanone	78-93-3	~	**854.943**	D	**471.693**	D	**442.212**	D	**854.943**	D	**854.943**	D	**17.394**	D
2-Hexanone	591-78-6	~	69.612	D	40.948	D	102.371	D	73.707	D	85.992	D	5.733	U
3-Chloropropene	107-05-1	~	31.288	U	30.975	U	10.951	U	15.644	U	15.331	U	10.951	U
4-Methyl-2-pentanone	108-10-1	~	10.237	D	12.285	D	36.444	D	8.599	D	21.293	D	2.825	U
Acetone	67-64-1	~	**4,748.978**	D	**4,511.529**	D	**6,886.018**	D	**7,360.916**	D	**6,886.018**	D	**54.613**	D
Acrylonitrile	107-13-1	~	4.339	U	4.339	U	1.518	U	2.169	U	2.148	U	1.497	U
Benzene	71-43-2	~	**11.815**	D	12.774	D	**24.589**	D	**13.412**	D	**26.186**	D	2.203	U
Benzyl chloride	100-44-7	~	10.350	U	10.350	U	3.622	U	5.175	U	5.123	U	3.571	U
Bromodichloromethane	75-27-4	~	13.393	U	13.393	U	4.688	U	6.697	U	6.630	U	4.621	U
Bromoform	75-25-2	~	20.665	U	20.665	U	7.233	U	10.332	U	10.229	U	7.129	U
Bromomethane	74-83-9	~	7.763	U	7.763	U	2.717	U	3.881	U	3.843	U	2.678	U
Carbon disulfide	75-15-0	~	**9.650**	D	6.226	U	**31.128**	D	3.113	U	**26.770**	D	2.148	U
Carbon tetrachloride	56-23-5	6.0	3.207	U	3.144	U	1.069	U	1.572	U	1.572	U	1.069	U
Chlorobenzene	108-90-7	~	9.204	U	9.204	U	3.221	U	4.602	U	4.556	U	3.175	U
Chloroethane	75-00-3	~	5.275	U	5.275	U	1.846	U	2.637	U	2.611	U	1.820	U
Chloroform	67-66-3	~	9.761	U	9.761	U	**4.783**	D	**24.403**	D	**17.570**	D	3.368	U
Chloromethane	74-87-3	~	4.128	U	4.128	U	**3.509**	D	**3.509**	D	**2.683**	D	**1.858**	D
cis-1,2-Dichloroethylene	156-59-2	6.0	**5.548**	D	**3.171**	D	0.674	U	0.991	U	0.991	U	0.674	U
cis-1,3-Dichloropropylene	10061-01-5	~	9.074	U	9.074	U	3.176	U	4.537	U	4.491	U	3.130	U
Cyclohexane	110-82-7	~	**17.548**	D	**13.075**	D	**29.590**	D	**4.129**	D	**15.827**	D	2.374	U
Dibromochloromethane	124-48-1	~	17.030	U	17.030	U	5.961	U	8.515	U	8.430	U	5.875	U
Dichlorodifluoromethane	75-71-8	~	9.886	U	9.886	U	93.920	D	4.943	U	**108.750**	D	3.411	U
Ethyl acetate	141-78-6	~	14.767	U	14.407	U	5.043	U	7.204	U	7.204	U	5.043	U
Ethyl Benzene	100-41-4	~	**42.537**	D	**33.856**	D	**56.427**	D	**47.746**	D	**60.768**	D	2.995	U
Hexachlorobutadiene	87-68-3	~	21.321	U	21.321	U	7.462	U	10.661	U	10.554	U	7.356	U
Isopropanol	67-63-0	~	**44.227**	BD	**41.770**	BD	**58.970**	BD	**115.482**	BD	**191.652**	BD	**15.480**	BD
Methyl Methacrylate	80-62-6	~	8.185	U	8.185	U	2.865	U	4.092	U	4.051	U	2.824	U
Methyl tert-butyl ether (MTBE)	1634-04-4	~	7.208	U	7.208	U	2.523	U	3.604	U	3.568	U	2.487	U
Methylene chloride	75-09-2	100.0	**14.236**	J	**15.278**	D	**19.444**	D	**15.625**	D	**21.180**	D	4.861	J
n-Heptane	142-82-5	~	**34.414**	D	**29.498**	D	**61.453**	D	**31.136**	D	**57.357**	D	2.827	U
n-Hexane	110-54-3	~	**34.528**	D	**26.072**	D	**63.419**	D	**19.026**	D	**52.850**	D	2.431	U
o-Xylene	95-47-6	~	**43.401**	D	**32.117**	D	**65.102**	D	**47.742**	D	**60.762**	D	2.995	U
p- & m- Xylenes	179601-23-1	~	**160.585**	D	**112.844**	D	**221.348**	D	**177.946**	D	**208.327**	D	6.076	U
p-Ethyltoluene	622-96-8	~	**24.079**	D	**14.742**	D	**39.805**	D	**26.045**	D	**31.451**	D	3.391	U
Propylene	115-07-1	~	**412.886**	D	**258.054**	D	**137.629**	D	**103.222**	D	**118.705**	D	**8.430**	D
Styrene	100-42-5	~	8.516	U	8.516	U	2.981	U	4.258	U	4.215	U	2.938	U
Tetrachloroethylene	127-18-4	100.0	**318.643**	D	**257.626**	D	**583.049**	D	**813.557**	D	**549.151**	D	4.678	J
Tetrahydrofuran	109-99-9	~	12.087	U	11.792	U	17.983	D	5.896	U	**16.214**	D	4.127	U
Toluene	108-88-3	~	**210.950**	D	**335.260**	D	**602.715**	D	**489.706**	D	**305.124**	D	2.599	J
trans-1,2-Dichloroethylene	156-60-5	~	7.926	U	7.926	U	2.774	U	3.963	U	3.924	U	2.735	U
trans-1,3-Dichloropropylene	10061-02-6	~	9.074	U	9.074	U	3.176	U	4.537	U	4.491	U	3.130	U
Trichloroethylene	79-01-6	6.0	**16.652**	D	**8.595**	D	**2.632**	D	**1,396.623**	D	**30.618**	D	**11.280**	D
Trichlorofluoromethane (Freon 11)	75-69-4	~	11.233	U	11.233	U	10.671	D	5.617	U	207.811	D	3.875	U
Vinyl acetate	108-05-4	~	7.039	U	7.039	U	2.464	U	3.520	U	3.484	U	2.429	U
Vinyl bromide	593-60-2	~	8.745	U	8.745	U	3.061	U	4.372	U	4.329	U	3.017	U
Vinyl Chloride	75-01-4	6.0	2.555	U	2.530	U	0.894	U	1.278	U	1.252	U	0.894	U

NOTES:
Any Regulatory Exceedences are color coded by Regulation

Q is the Qualifier Column with definitions as follows:
D=result is from an analysis that required a dilution
J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
U=analyte not detected at or above the level indicated
B=analyte found in the analysis batch blank
E=result is estimated and cannot be accurately reported due to levels encountered or interferences
P=this flag is used for pesticide and PCB (Aroclor) target compounds when there is a % difference for detected concentrations that exceed method dictated limits between the two GC columns used for anal
NT=this indicates the analyte was not a target for this sample
~=this indicates that no regulatory limit has been established for this analyte

DISCLAIMER:
York Analytical Laboratories, Inc. is providing this information as a convenience to you. York makes no representations or warranties that these data are accurate, complete or represent the latest regulatory authority limits or analytes. York is not responsible for any errors or omissions in these specific regulations. Your use of these data constitute your understanding of these limitations and you agree to hold York harmless from any and all action that may arise from use of said information. As regulations change often, we encourage the user to review the regulatory limits and lists of interest to confirm these data.

Table 6: Ranked Soil Vapor Concentration Ranges
Above NYSDOH Matricies Soil Vapor
318 Union Street, Brooklyn, New York

Analytes	NYSDOH Matricies Soil Vapor	Minimum Concentration ug/m3	Minimum Concentration Sample Location	Maximum Concentration ug/m3	Maximum Concentration Sample Location	Range of Detections µg/L
Volatile Organic Compounds µg/L						
Tetrachloroethylene	100	257.63	SV-4	813.56	SV-8	257.63 - 813.56
Trichloroethylene	6	8.6	SV-4	1,396.62	SV-8	8.6 - 1,396.62

Notes:
ug/m3- micrograms per cubic meter

APPENDICES

318 Nevins Street, Brooklyn, NY

Remedial Action Work Plan
NYSDEC BCP #C224350

Impact Environmental Engineering and Geology PLLC
170 KEYLAND COURT, BOHEMIA, NEW YORK 11716
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Appendix A

DNAPL Mobility Assessment Work Plan

Remedial Action Work Plan
318 Nevins Street, Brooklyn, NY
NYSDEC BCP #C224350

Impact Environmental Engineering and Geology PLLC
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www.impactenvironmental.com

March 6, 2023

Mr. Aaron Fischer
New York State Department of Environmental Conservation
Division of Environmental Remediation, Remedial Bureau B
625 Broadway, 11th Floor
Albany, NY 12233-7020

RE: NAPL/GCM Mobility Assessment Work Plan
318 Nevins Street, Brooklyn, New York
BCP #C224350

Dear Mr. Fischer:

Impact Environmental Engineering and Geology, PLLC (IEEC) completed the required soil borings for delineation of non-aqueous phase liquid (NAPL)/gross contaminated material (GCM) between January 10th and January 30th, 2022, in accordance with the New York State Department of Environmental Conservation (NYSDEC) approved Supplemental Remedial Investigation Work Plan (SRIWP), dated December 22, 2022 for 318 Nevins Street, Brooklyn, NY (the Site). The completed component of the SRIWP was comprised of the installation of 63 delineation borings at 20-foot intervals to the south, east, and north of previous soil boring locations SB-16 and SB-17, in which NAPL/GCM, consistent with manufactured gas plant (MGP) coal tar, was identified during the initial Remedial Investigation.

Each of the 63 borings were advanced to a terminal depth that varied between 30 to 60-feet below grade surface (bgs). See **Plate 1 – Boring/Well Location Map**. See **Table 1** for a list of delineation soil borings that were installed on the northwestern to southwestern portion of the Site, along with the identified depth intervals and thicknesses of identified NAPL/GCM. IEEG will utilize the soil boring logs (see **Appendix A**) and **Table 1** to determine the screened intervals at which the proposed NAPL/GCM Mobilization Assessment Monitoring Wells will be installed.

Between December 28, 2022, and January 10, 2023, NAPL Mobility Assessment Wells (designated as GW-16a, GW-16b, GW-16c, and GW-16d, and GW-17a, GW-17b, and GW-17c) were installed proximal and downgradient from soil borings SB-16 and SB-17, which were advanced during the 2022 Remedial Investigation. See the table below for Well ID #s, groundwater depths, terminal depths of each well, screen intervals, sump depths (if required), NAPL/GCM depth intervals, and associated soil boring ID #s:

Well ID#	GW Depth (ft)	Depth to Bottom of Well (ft)	Screen Interval (ft)	Sump Depth Interval	NAPL/GCM Depth Interval (ft)	Associated Soil Boring ID#
GW-16a	6-7'	15'	5-15'	NA	35-40'	SB-16
GW-16b	6-7'	45'	35-40'	40-45'		
GW-16c	6-7'	55'	45-50'	50-55'		
GW-16d	6-7'	65'	50-60'	60-65'		
GW-17a	6-7'	15'	5-15'	NA	20-30'	SB-17
GW-17b	6-7'	35'	20-30'	30-35'		
GW-17c	6-7'	45'	30-40'	40-45'		

Monitoring wells GW-16a/b/c/d and GW-17a/b/c were augured and constructed of 2" PVC and are screened over the above-described intervals. Wells have a minimum annular space of two inches around the entire monitoring well circumference, have a sand pack a minimum of 2-ft above the top of the monitoring well screen, and have a minimum 2-foot-thick bentonite seal. All wells were completed with locking "J" plugs and cast-iron road boxes.

Monitoring Well Installation

To further delineate groundwater contamination associated with NAPL/GCM, additional monitoring wells will be installed at soil boring locations directly downgradient of where NAPL/GCM was observed. Based on IEEGs review of soil boring logs, NAPL/GCM cross section drawings (see **Plates 2a** and **2b**), and associated NAPL/GCM thicknesses, five (5) sets of monitoring wells are being proposed (see **Plate 1**). In each of the five (5) locations, three (3) separate monitoring wells will be installed.

- The first well (Well "A") will be screened 5-feet above and 5-feet below the groundwater interface, which has been identified at between 6-7-feet bgs.
- A second monitoring well (Well "B") will be installed and screened from the shallowest observation of NAPL/GCM, to the deepest observation of NAPL/GCM based on a review of proximal soil boring logs. This well will also have a 5-foot sump below the base of the screen that will be capped.
- A third well (Well "C") will be screened for 10-feet starting at 10-feet below the deepest observation of NAPL/GCM.

Monitoring wells will be installed in accordance with the NYSDEC *Guidelines on Installation of Overburden Wells (Monitoring Wells) for Environmental Investigations* (**Appendix B**).

Below is a list of the proposed NAPL Mobility Assessment Wells (NMAWs), and their screened depth intervals associated with the presence of NAPL/GCM in proximal soil borings (see also the table following this summary):

Well ID#	GW Depth (ft)	Depth to Bottom of Well (ft)	Screen Interval (ft)	Sump Depth Interval	NAPL/GCM Depth Interval (ft)	Associated Soil Boring ID#
NMAW-1A	6-7'	12'	2-12'	NA	23-33'	**SB-17-N3**
NMAW-1B	6-7'	38'	23-33'	33-38'		
NMAW-1C	6-7'	53'	43-53'	NA		
NMAW-2A	6-7'	12'	2-12'	NA	23-30'	**SB-17-N7**
NMAW-2B	6-7'	35'	23-30'	30-35'		
NMAW-2C	6-7'	50'	40-50'	NA		
NMAW-3A	6-7'	12'	2-12'	NA	25-35'	**SB-17-N7E2**
NMAW-3B	6-7'	35'	25-30'	30-35'		
NMAW-3C	6-7'	55'	45-55'	NA		
NMAW-4A	6-7'	12'	2-12'	NA	22-30'	**SB-17-N5E1**
NMAW-4B	6-7'	35'	23-30'	30-35'		
NMAW-4C	6-7'	50'	40-50'	NA		
NMAW-5A	6-7'	12'	2-12'	NA	18.5-31.5'	**SB-17-N2E2**
NMAW-5B	6-7'	36.5'	18.5-31.5'	31.5-36.5'		
NMAW-5C	6-7'	51.5'	41.5-51.5	NA		

Along with the seven (7) previously installed wells (GW-16a/b/c/d and GW-17a/b/c), a total of 22 wells will be installed and monitored.

NAPL/GCM Mobility Assessment Work Plan

To assess NAPL mobility, 2" PVC wells will be installed, and will be screened over the above-described intervals. Wells will have a minimum annular space of two inches around the entire monitoring well circumference, have a sand pack a minimum of 2-ft above the top of the monitoring well screen, and have a bentonite seal a minimum of 2-ft thick. For "B" wells, a minimum of a five (5) foot sump will be installed below the screened interval and capped. Monitoring well locations will be surveyed by a licensed surveyor and tied into the NAVD88 datum. Monitoring well construction data, groundwater elevation, and surveyed locations in NAVD88 will be submitted electronically to the NYSDEC EQuIS database. Wells will be monitored no sooner than 7 days post development for NAPL. Any observations of sheen, blebs, free-phase product, staining or coating of the sampling equipment, odor, etc. that are made during the sampling of groundwater will be included in a log. If NAPL/GCM is observed in these wells at the time of sampling, NAPL thickness will be documented in sampling logs and NAPL will be removed prior to groundwater sample collection. Groundwater samples will be collected and analyzed for the full suite TCL/TAL. Groundwater sampling and analysis for dissolved parameters will be performed in accordance with the Supplemental RI Work Plan approved by the NYSDEC on December 22, 2022.

The mobility and recoverability of NAPL/GCM will assessed by performing a NAPL drawdown/recharge test. The test will be performed over two events (each event consists of two days) at each well which indicates evidence of NAPL (of the 22 installed GW/NMAWs). IEEG will wait approximately 7-days from the date of installation to perform the test. The procedure for the test will be as follows:

1. The depth to water (DTW), depth to product (DTP), and depth to bottom (DTB) will be measured and logged within each well containing NAPL using an oil/water interface probe. This will be identified as "Pre-Bailing Measurements".
2. A dedicated decontaminated 1.75-inch diameter, 3-foot-long weighted polyethylene bailer will be lowered to the base of the well sump.
3. The bailer will then be removed to extract NAPL from the well and the contents emptied into a 55-gal drum for proper storage and subsequent disposal.
4. NAPL will be extracted from each well until there is minimal volume remaining in the bailer.
5. Once NAPL is substantially removed from the well, DTW and DTP gauging measurements will be collected and recorded following NAPL removal. This will be recorded as the start time of the test and identified as "Pre-Bailing Measurements".
6. DTW and DTP gauging measurements will then be collected in 30-minute intervals for 2 hours and then in 1-hour intervals for 2 additional hours on the following day (6 total gauging events).
7. The wells will be allowed to equilibrate for 2-days and then steps 1-6 will be performed to complete the two drawdown/recharge test events.

Reporting

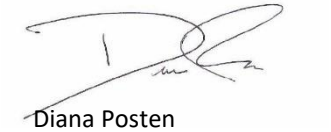
The results of the drawdown/recharge tests will be submitted to the NYSDEC as a supplement to the Remedial Action Work Plan (RAWP) as part of the Remedial Design. The results of the drawdown/recharge test will be used to calculate the rate of recharge of NAPL/GCM in each of the wells (in feet per day and gallons per hour of recovery), and its mobility at the Site. The information gathered during the assessment will be considered when determining the method of recovery to be implemented, if so required by the NYSDEC, during future Remedial Actions.

All work and sampling will be completed according to the approved *Remedial Investigation Work Plan*, *Quality Assurance Project Plan* and the *Standard Operating Procedure (SOP) for Decontamination of Field Equipment and Vehicles that Enter/Exit the Site. (***Appendix C***)*.

Please contact me at 631-298-6600 if you have any questions or comments regarding this matter.

Sincerely,

IMPACT ENVIRONMENAL ENGINEERING AND GEOLOGY, PLLC



Diana Posten
Project Manager

Enclosure

H. Dudek, C. Maycock, J. Andaloro – NYSDEC
M. Bogin, Sive Paget Riesel
P. Caporaso, Tavros Holdings LLC

Attachments:

Plate 1 – Boring/Well Location Map
Plate 2a – A-A' NAPL/GCM Cross Section
Plate 2b – B-B' NAPL/GCM Cross Section
Table 1 – Delineation Soil Boring Identification
Appendix A – Soil Boring Logs
Appendix B - NYSDEC Guidelines on Installation of Overburden Wells (Monitoring Wells) for Environmental Investigations
Appendix C - Standard Operating Procedure (SOP) for Decontamination of Field Equipment and Vehicles that Enter/Exit the Site.

PLATES

318 NEVINS STREET, BROOKLYN, NY
BCP #C224350

IMPACT ENVIRONMENTAL
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Bohemia, New York 11716
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FAX: (631) 269-1599

NOTES:

Proposed Cluster Well Locations

LEGEND

- BORING IDENTIFIED EVIDENCE OF MGP COAL TAR
- NO MGP COAL TAR IDENTIFIED IN BORING
- PROPERTY LINE

BORING/WELL LOCATION MAP

318 Nevins Street
Brooklyn, New York

Plate No: 01

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	DP
DATE:	2/2/2023
SCALE:	1" = 50'

REVISIONS

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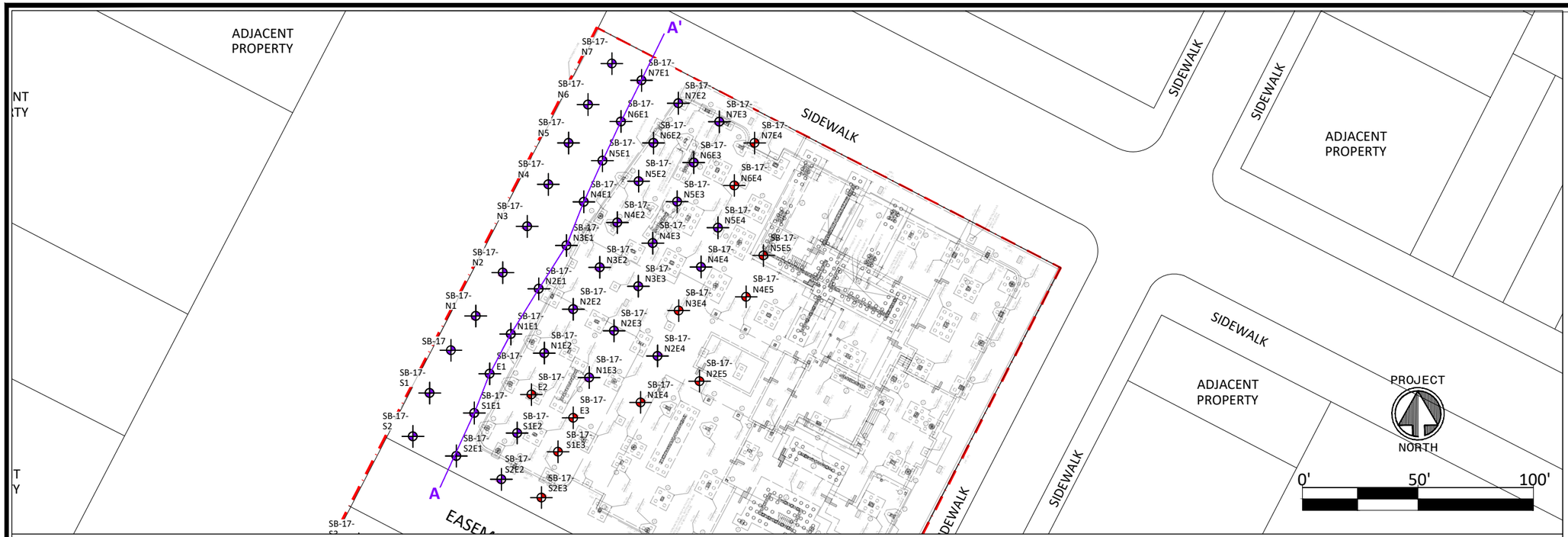
NMAW-1
NMAW-2
NMAW-3
NMAW-4
NMAW-5
GW-17

SB-17-N7, SB-17-N7E1, SB-17-N7E2, SB-17-N7E3, SB-17-N7E4
SB-17-N6, SB-17-N6E1, SB-17-N6E2, SB-17-N6E3, SB-17-N6E4
SB-17-N5, SB-17-N5E1, SB-17-N5E2, SB-17-N5E3, SB-17-N5E4, SB-17-N5E5
SB-17-N4, SB-17-N4E1, SB-17-N4E2, SB-17-N4E3, SB-17-N4E4, SB-17-N4E5
SB-17-N3, SB-17-N3E1, SB-17-N3E2, SB-17-N3E3, SB-17-N3E4
SB-17-N2, SB-17-N2E1, SB-17-N2E2, SB-17-N2E3, SB-17-N2E4, SB-17-N2E5
SB-17-N1, SB-17-N1E1, SB-17-N1E2, SB-17-N1E3, SB-17-N1E4
SB-17
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SB-17-S2, SB-17-S2E1, SB-17-S2E2, SB-17-S2E3
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SB-17-S5
SB-16-N2E1

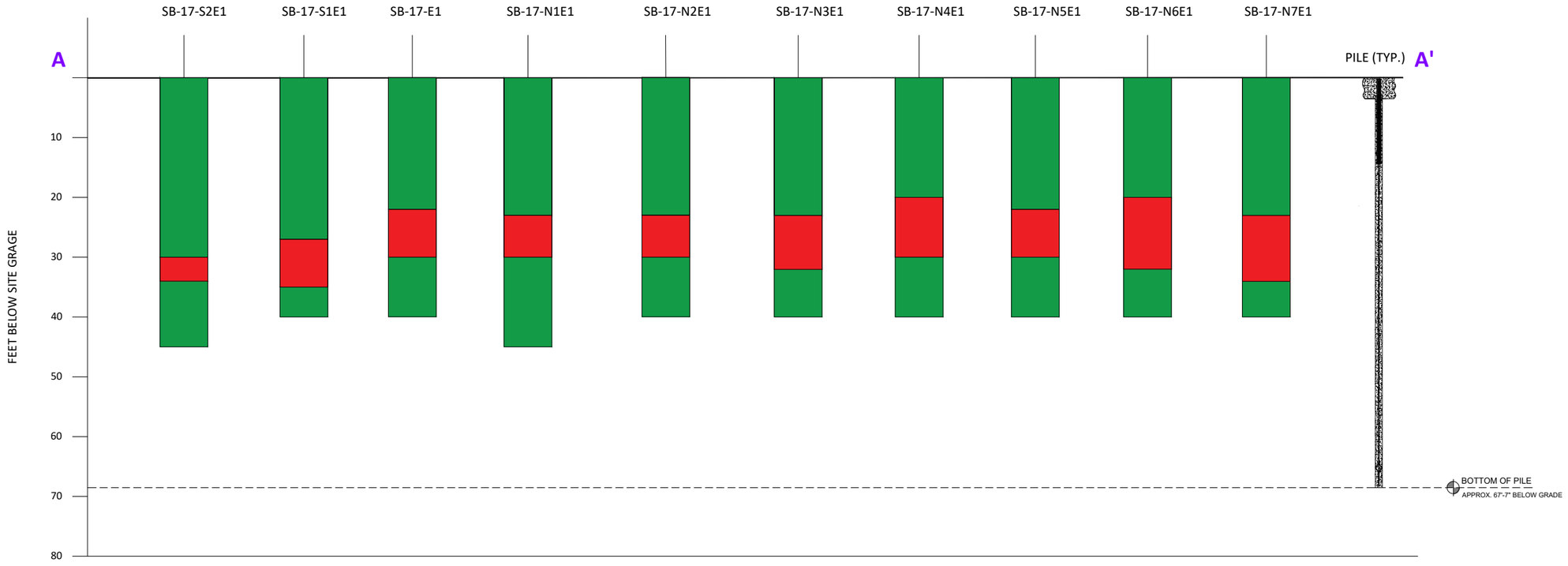
SIDEWALK
SIDEWALK
SIDEWALK
SIDEWALK
EASEMENT
ADJACENT PROPERTY
IS STREET

PROJECT NORTH

0' 50' 100'



SCALE: 1" = 20'



NOTES:

LEGEND

- BORING IDENTIFIED EVIDENCE OF MGP COAL TAR
- NO MGP COAL TAR IDENTIFIED IN BORING
- PROPERTY LINE
- NO OBSERVED IMPACTS
- COAL TAR SATURATED

NAPL/GCM A-A' Cross Section

318 Nevins Street
Brooklyn, New York

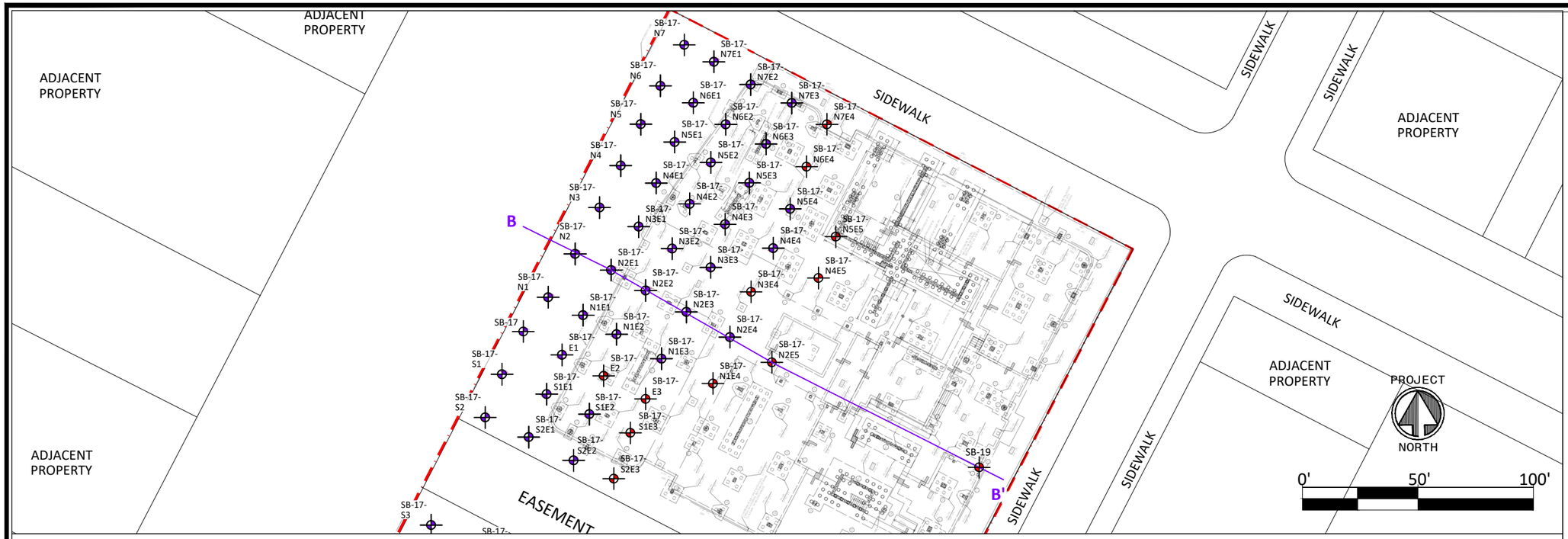
Plate No: 2a

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	KK/CC
DATE:	2/16/2023
SCALE:	AS SHOWN

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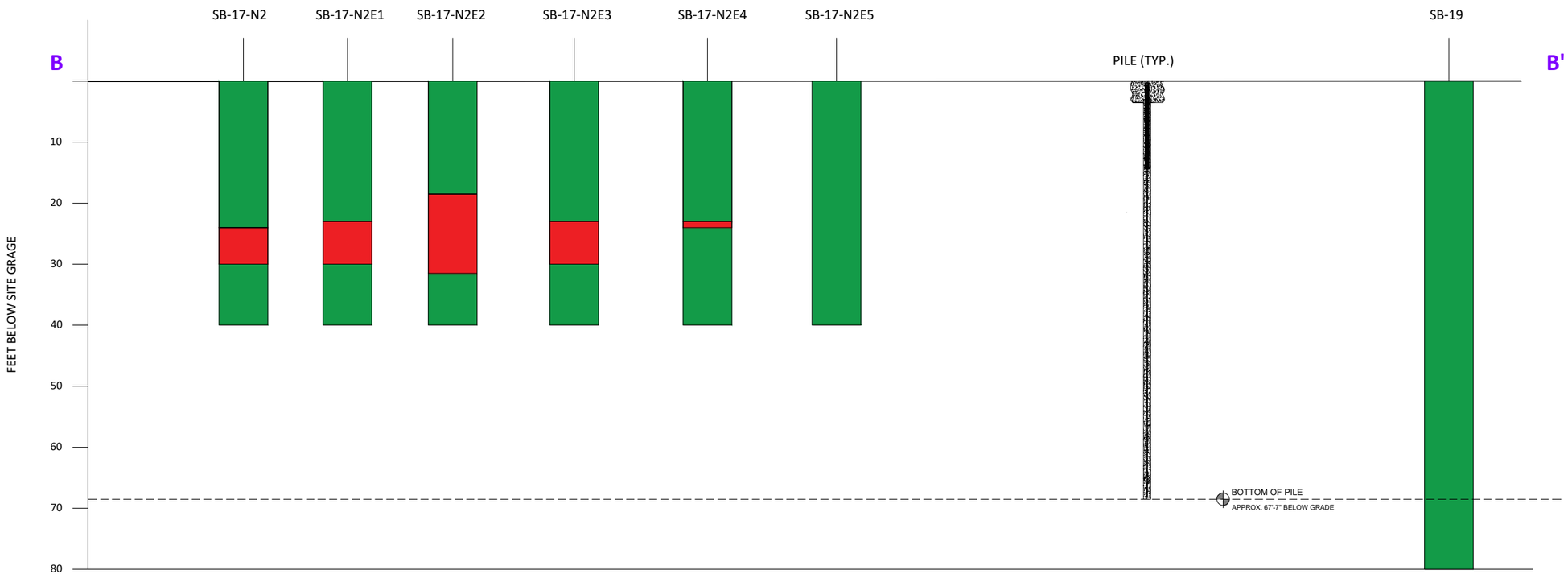


NOTES:

LEGEND

- BORING IDENTIFIED EVIDENCE OF MGP COAL TAR
- NO MGP COAL TAR IDENTIFIED IN BORING
- PROPERTY LINE
- NO OBSERVED IMPACTS
- COAL TAR SATURATED

SCALE: 1" = 20'



NAPL/GCM B-B' Cross Section

318 Nevins Street
Brooklyn, New York

Plate No: 2b

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	KK/CC
DATE:	2/16/2023
SCALE:	AS SHOWN

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TABLES

318 NEVINS STREET, BROOKLYN, NY
BCP #C224350

IMPACT ENVIRONMENTAL
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Table 1 - NAPL/GCM Depths
318 Nevins Street, Brooklyn, NY

Boring #	NAPL/GCM Depth Interval (ft)	Groundwater Depth (ft)	NAPL/GCM Thickenss (ft)	Notes
SB-17-S1	23-35	7	12	NA
SB-17-N1	24-30	7	6	NA
SB-17-S1E1	27-35	7	8	NA
SB-17-N1E1	23-30	7	7	NA
SB-17-N1	NA	7	0	NA
SB-17-S2	24-35	7	11	NA
SB-17-N2	24-30	7	6	NA
SB-17-S1E2	30-35	7	5	NA
SB-17-N1E2	23-30	7	7	NA
SB-17-N3	23-33	7	10	NA
SB-17-N1E3	23-28	7	5	NA
SB-17-N1E4	NA	7	0	NA
SB-17-N4	27-27.5	7	0.5	Limited Recovery
SB-17-N5	23-33	7	10	NA
SB-17-N2E1	23-30	7	7	NA
SB-17-N3E1	23-32	7	9	NA
SB-17-N7	23-30	7	7	NA
SB-17-N6	20.5-35	7	14.5	Limited Recovery in 25-30 core
SB-17-N2E2	18.5-31.5	7	13	NA
SB-17-N4E1	20-30	7	10	NA
SB-17-N5E1	22.5-30	7	7.5	NA
SB-17-N5E2	22-30	7	8	NA
SB-17-N2E3	23-30	7	7	NA
SB-17-N7E2	25-30	7	5	NA
SB-17-N2E4	23-24	7	1	NA
SB-17-N2E5	NA	7	0	NA
SB-17-N7E3	25-35	7	5	NA
SB-17-N4E2	20-25	7	5	NA
SB-17-N4E3	20-25	7	5	NA
SB-17-N7E4	NA	7	0	NA
SB-17-N6E2	22.5-20	7	7.5	NA
SB-17-N4E4	22-25	7	3	NA
SB-17-N4E5	NA	7	0	NA
SB-17-N5E4	25-27	7	2	NA
SB-17-N5E3	NA	7	0	NA
SB-17-N3E3	23-24	7	1	NA
SB-17-N3E4	NA	7	0	NA
SB-17-N6E4	NA	7	0	NA
SB-17-S2E1	30-34	7	4	NA
SB-17-S2E2	34-35	7	1	NA
SB-17-S1E3	NA	7	0	NA
SB-17-S2E3	NA	7	0	NA
SB-17-N5E5	NA	7	0	NA
SB-17-E3	NA	7	0	NA
SB-17-S3	25-30	7	5	NA
SB-17-S3E1	NA	7	0	NA
SB-17-S4	25-30	7	5	NA
SB-17-S4E1	NA	7	0	NA
SB-17-S5	NA	7	0	NA
SB-17-E1	22-30	7	8	NA

APPENDICES

318 NEVINS STREET, BROOKLYN, NY
BCP #C224350

IMPACT ENVIRONMENTAL
170 Keyland Court
Bohemia, New York 11716
TEL: (631) 268-8800
FAX: (631) 269-1599

Appendix A

Soil Boring Logs

IMPACT ENVIRONMENTAL
170 Keyland Court
Bohemia, New York 11716
TEL: (631) 268-8800
FAX: (631) 269-1599

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-E1**
	Weather: Clear, 37, overcast	
	Geologist: AK	Total Depth: 60'
Start Date: 1/10/23	Drilling Company: PG	GW: 6-7'
Start Time: 8:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/10/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	40"	Fill/ML	Brown fine silty sand with gravel and brick fragments/crushed	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	45.0		5-10'	Moist	60"	Fill/ML	5-8 Dark gray silt with an interval of wood pieces with a "Pine/Sweet" odor at 5.5, trace wood pieces at 7' 8-10 gray silt with clay, trace gravel, little sand	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60"	CL	10-12.5 gray clay with some silt, peat (roots) interval @ 12' 12.5-15 Gray clay	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60"	CL	Gray clay, peat (roots) 3" @20'	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-E1**
	Weather: Clear, 37, overcast	
	Geologist: AK	Total Depth: 60'
Start Date: 1/10/23	Drilling Company: PG	GW: 6-7'
Start Time: 8:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/10/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20	0.0		20-25'	Wet	60"	CL/ML	20-21 Peat (roots) 21-23 gray clay 23-25 Blue gray silty clay, compact	
21	0.0							
22	0.0							
23	0.0							
24	0.0							
25	0.0		25-30"	Wet	60"	ML	Fine gray sand and silt	
26	0.0							
27	0.0							
28	0.0							
29	0.0							
30	0.0		30-35'	Wet	60"	SP	Brown fine sand	
31	0.0							
32	0.0							
33	0.0							
34	0.0							
35	0.0		35-40'	Wet	60"	SP	Brown-dark brown fine sand with trace pebbles	
36	0.0							
37	0.0							
38	0.0							
39	0.0							
40								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-E1**
	Weather: Clear, 37, overcast	
	Geologist: AK	Total Depth: 60'
Start Date: 1/10/23	Drilling Company: PG	GW: 6-7'
Start Time: 8:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/10/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
40								
41	0.0							
42	0.0							
43	0.0		40-45'	Wet	60"	SP	Medium brown sand	
44	0.0							
45	0.0							
46	0.0							
47	0.0							
48	0.0		45-50'	Wet	60"	SP	Medium- Coarse brown sand	
49	0.0							
50	0.0							
51	0.0							
52	0.0							
53	0.0		50-55'	Wet	60"	SP	Coarse brown sand	
54	0.0							
55	0.0							
56	0.0							
57	0.0							
58	0.0		55-60'	Wet	60"	SP	Medium brown sand	
59	0.0							
60	0.0							
							End of boring at 60 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-S1**
	Weather: Clear, 36, overcast	
	Geologist: AK	Total Depth: 60'
Start Date: 1/11/23	Drilling Company: PG	GW: 6-7'
Start Time: 8:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/11/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 13:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Moist	30"	Fill/ML	Brown silty sand with large gravel	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	30"	Fill/ML	Brown silty clay with abundant gravel	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	45"	Fill (Wood)	**Almost entierly wood, <95% Trace treated wood/creosote odors	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	50"	Fill/CL	15-18 wood and gravel in silt matrix 18-20 gray clay	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-S1**
	Weather: Clear, 36, overcast	
	Geologist: AK	Total Depth: 60'
Start Date: 1/11/23	Drilling Company: PG	GW: 6-7'
Start Time: 8:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/11/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 13:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	130.0							
	45.0						20-21 peat, roots, sulfur odor throughout, wood fragment at 21'	
22	32.0		20-25'	Wet	60"	CL	21-25 Gray clay with trace silt	
23	28.0							
24	9.0							
25	0.0							
26	0.0							
27	0.0		25-30"	Wet	60"	SP	Fine gray sand	
28	0.0							
29	0.0							
30	0.0							
31	0.0							
32	0.0		30-35'	Wet	60"	SP	Fine gray sand	
33	0.0							
34	0.0							
35	0.0							
36	0.0						35-36 gray silt and fine sand with some clay	
37	0.0		35-40'	Wet	60"	SP	36-39.5 medium-coarse brown sand	
38	0.0						39.5-40 Brown silt and clay	
39	0.0							
40								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-S1**
	Weather: Clear, 36, overcast	
	Geologist: AK	Total Depth: 60'
Start Date: 1/11/23	Drilling Company: PG	GW: 6-7'
Start Time: 8:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/11/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 13:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
40								
41	0.0							
42	0.0							
43	0.0		40-45'	Wet	60"	SP	coarse brown sand	
44	0.0							
45	0.0							
46	0.0							
47	0.0							
48	0.0		45-50'	Wet	60"	SP	coarse brown sand, trace sheen 49-50	
49	0.0							
50								
51	11.2	SB-16-N1 (50-51) 11:15						
52	7.9						blebs coated on liner and sheen in non-recovery portion,	
53	6.4		50-55'	Wet	50"	SP	Coarse brown sand, sheen only	
54	9.8							
55	15.9							
56	0.0	SB-16-N1 (55-56) 12:30						
57	0.0							
58	0.0		55-60'	Wet	60"	SP	brown coarse sand	
59	0.0							
60	0.0							
							End of boring at 60 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800
F. (631) 269-1599

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	**SB-16-N1**
	Site Address: 318 Nevins Street	
	Weather: Clear, 36, overcast	
	Geologist: AK	Total Depth: 60'
Start Date: 1/11/23	Drilling Company: PG	GW: 6-7'
Start Time: 8:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/11/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 13:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	35"	Fill/ML	Dark brown silty sand with brick fragments and gravel	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	35"	Fill ML/CL	Dark brown silt with some clay, brick fragments and gravel *Interval of wood with strong odor, 1" @7'*	
6	15.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	45"	Fill/ML	Dark brown silt and clay with abundant gravel (10-12)	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	40"	Fill/ML	Gray silty clay with some gravel	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800
F. (631) 269-1599

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	**SB-16-N1**
	Site Address: 318 Nevins Street	
	Weather: Clear, 36, overcast	
	Geologist: AK	Total Depth: 60'
Start Date: 1/11/23	Drilling Company: PG	GW: 6-7'
Start Time: 8:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/11/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 13:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20	0.0		20-25'	Wet	60"	CL/SP	20-21: roots, peat interval 21-24 Gray-blue clay 24-25 fine gray sand	
21	0.0							
22	0.0							
23	0.0							
24	0.0							
25	0.0		25-30"	Wet	60"	SP	fine gray sand	
26	0.0							
27	0.0							
28	0.0							
29	0.0							
30	6.0		30-35'	Wet	60"	SP	fine gray sand with sheen, coal tar coated liner, 34-35 heavily coated grains GCM in fine gray sand	
31	7.9							
32	13.8							
33	47.3	SB-16-N1 (34-35) 9:40						
34	115.2							
35	9.6		35-40'	Wet	60"	SP	35-37 brown fine sand with trace silt, trace sheen 37-40 tan to brown fine sand	
36	8.2							
37	6.7	SB-16-N1 (37-38) 10:30						
38	4.9							
39	1.4							
40								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800
F. (631) 269-1599

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-N1**
	Weather: Clear, 36, overcast	
	Geologist: AK	Total Depth: 60'
Start Date: 1/11/23	Drilling Company: PG	GW: 6-7'
Start Time: 8:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/11/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 13:00	Sampler Type/Len: Dual tube	N/A

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
40	0.0		40-45'	Wet	60"	SP	brown medium sand	
41	0.0							
42	0.0							
43	0.0							
44	0.0							
45	-		45-50'	N/A	N/A	N/A	No recovery	
46	-							
47	-							
48	-							
49	-							
50	0.0		50-55'	Wet	60"	SP	Coarse brown sand	
51	0.0							
52	0.0							
53	0.0							
54	0.0							
55	0.0		55-60'	Wet	60"	SP	Coarse brown sand	
56	0.0							
57	0.0							
58	0.0							
59	0.0							
60							End of boring at 60 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-N1**
	Weather: Clear, 36, rain	
	Geologist: AK	Total Depth: 45'
Start Date: 1/11/23	Drilling Company: PG	GW: 6-7'
Start Time: 13:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/12/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 11:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	40"	Fill/ML	0-2 brown silty sand 2-5 treated wood, "varnish" odor	
	0.0							
2	400.0							
3	400.0							
4	400.0							
5	0.0		5-10'	Wet	50"	Fill ML/CL	brown/gray silty clay with trace sand, brick fragments 9-10 gravel and wood	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	50"	Fill/ML	trace brick fragments, dark gray silty clay	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-N1**
	Weather: Clear, 36, rain	
	Geologist: AK	Total Depth: 45'
Start Date: 1/11/23	Drilling Company: PG	GW: 6-7'
Start Time: 13:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/12/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 11:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
15	0.0		15-20'	Wet	45"	Fill/ML	gray silt with trace clay, large gravel, trace brick fragments	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	50"	CL/SP	4" peat roots gray blue clay with trace silty and fine sand 24-25 fine gray sand	
21	0.0							
22	0.0							
23	0.0							
24	0.0							
25	0.0		25-30"	Wet	45"	SP	fine gray sand	
26	0.0							
27	0.0							
28	0.0							
29	0.0							
30	0.0		30-35'	Wet	40"	SP	fine gray sand	
31	0.0							
32	0.0							
33	0.0							
34	0.0							
35								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-N1**
	Weather: Clear, 36, rain	
	Geologist: AK	Total Depth: 45'
Start Date: 1/11/23	Drilling Company: PG	GW: 6-7'
Start Time: 13:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/12/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 11:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
35								
	0.0							
36								
	0.0							
37								
	0.0		35-40'	Wet	60"	SP	brown/tan fine sand	
38								
	0.0							
39								
	0.0							
40								
	0.0							
41								
	0.0							
42								
	0.0		40-45'	Wet	50"	SP	brown/tan fine sand	
43								
	0.0							
44								
	0.0							
45								
							End of boring at 45 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800
F. (631) 269-1599

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-N1E1**
	Weather: Clear, 36, rain	
	Geologist: AK	Total Depth: 40'
Start Date: 1/12/23	Drilling Company: PG	GW: 6-7'
Start Time: 10:15	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/12/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 13:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	35"	Fill/ML	brown silt with trace sand, brick fragments/crushed, abundant gravel	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	50"	Fill/ ML	5-7 brown silty sand with gravel 7-8 wood interval, sulfur odor 8-10 gray silt with some clay and gravel	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60"	Fill/ML	10-13 gray silty sand with gravel 13-15 gray clay with roots, organic/sulfur odor (14-15)	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800
F. (631) 269-1599

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-N1E1**
	Weather: Clear, 36, rain	
	Geologist: AK	Total Depth: 40'
Start Date: 1/12/23	Drilling Company: PG	GW: 6-7'
Start Time: 10:15	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/12/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 13:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
15	0.0		15-20'	Wet	60"	Fill/ML	15-16 gray silt with some clay 16-20 gray clay peat, roots 1" at 20'	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	60"	CL/SP	20-21 4" peat, roots and gray clay 21-24 gray blue clay with trace fine sand 24-25 fine gray sand	
21	0.0							
22	0.0							
23	0.0							
24	0.0							
25	0.0		25-30"	Wet	60"	SP	gray fine sand with some silt	
26	0.0							
27	0.0							
28	0.0							
29	0.0							
30	0.0		30-35'	Wet	60"	SP	fine brown sand	
31	0.0							
32	0.0							
33	0.0							
34	0.0							
35	0.0							
36	0.0							

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800
F. (631) 269-1599

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-N1E1**
	Weather: Clear, 36, rain	
	Geologist: AK	Total Depth: 40'
Start Date: 1/12/23	Drilling Company: PG	GW: 6-7'
Start Time: 10:15	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/12/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 13:00	Sampler Type/Len: Dual tube	N/A

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
37	0.0		35-40'	Wet	60"	SP	fine brown sand	
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800
F. (631) 269-1599

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-S1E1**
	Weather: Clear, 36, rain	
	Geologist: AK	Total Depth: 60'
Start Date: 1/13/23	Drilling Company: PG	GW: 6-7'
Start Time: 11:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/12/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:30	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60"	Fill/ML	brown silty sand with crushed brick, gravel and concrete	
	0.0							
2	0.0							
	0.0							
3	0.0							
4								
5	0.0		5-10'	Wet	60"	Fill ML/CL	brown-dark brown silty sand, wood 1", gravel and brick 8-10 dark brown-black clay trace organic odor	
	0.0							
6	0.0							
	0.0							
7	0.0							
	0.0							
8	0.0							
	0.0							
9	0.0		10-15'	Wet	60"	Fill/ML	10-11 gravel and silty clay 11-12 peat, roots organic odor 12-15 gray clay with roots	
10	0.0							
	0.0							
11	0.0							
	0.0							
12	0.0							
	0.0							
13	0.0							
	0.0							
14	-		15-20'	N/A	N/A	N/A	No recovery	
	-							
15	-							
	-							
16	-							
	-							
17	-							
	-							
18	-							
	-							
19	-							
	-							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800
F. (631) 269-1599

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-S1E1**
	Weather: Clear, 36, rain	
	Geologist: AK	Total Depth: 60'
Start Date: 1/13/23	Drilling Company: PG	GW: 6-7'
Start Time: 11:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/12/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:30	Sampler Type/Len: Dual tube	N/A

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20	0.0		20-25'	Wet	60"	CL/SP	20-21 roots, peat, organic odor, dark brown 21-22 gray blue clay and silt 22-25 gray blue fine sand	
21	0.0							
22	0.0							
23	0.0							
24	0.0							
25	0.0		25-30"	Wet	50"	SP	gray clay with silt and fine sand	
26	0.0							
27	0.0							
28	0.0							
29	0.0							
30	0.0		30-35'	Wet	50"	SP	brown fine sand	
31	0.0							
32	0.0							
33	0.0							
34	0.0							
35	0.0		35-40'	Wet	60"	SP	dark brown fine to medium sand	
36	0.0							
37	0.0							
38	0.0							
39	0.0							
40								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800
F. (631) 269-1599

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-S1E1**
	Weather: Clear, 36, rain	
	Geologist: AK	Total Depth: 60'
Start Date: 1/13/23	Drilling Company: PG	GW: 6-7'
Start Time: 11:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/12/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:30	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
40								
41	0.0							
42	0.0							
43	0.0		40-45'	Wet	60"	SP	brown fine to medium sand	
44	0.0							
45	0.0							
46	0.0							
47	0.0							
48	0.0		45-50'	Wet	20"	SP/GP	coarse brown/pink sand	
49	0.0							
50	0.0							
51	0.0							
52	0.0							
53	0.0		50-55'	Wet	60"	SP	coarse brown/pink sand	
54	0.0							
55	0.0							
56	0.0							
57	0.0							
58	0.0		55-60'	Wet	60"	SP	fine brown sand	
59	0.0							
60	0.0							
							End of boring at 60 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-S2**
	Weather: Clear, 36, rain	
	Geologist: AK	Total Depth: 60'
Start Date: 1/11/23	Drilling Company: PG	GW: 6-7'
Start Time: 13:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/12/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 11:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Moist	50"	Fill/ML	brown-dark brown silty sand with glass, gravel, asphault pieces	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	45"	Fill ML/CL	5-7 brown-dark brown silty sand 7-9 gray clay with large gravel 9-10 gray silty sand and crushed rock	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	45"	Fill/ML	brown fine silty sand and clay with large gravel	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	30"	Fill/ML	gray silt with clay, wood pieces	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-S2**
	Weather: Clear, 36, rain	
	Geologist: AK	Total Depth: 60'
Start Date: 1/11/23	Drilling Company: PG	GW: 6-7'
Start Time: 13:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/12/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 11:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20	0.0		20-25'	Wet	12"	CL/SP	4" peat, roots @20' gray blue clay with trace silt and fine sand	
21	0.0							
22	0.0							
23	0.0							
24	0.0							
25	0.0		25-30"	Wet	50"	SP	25-27 fine gray sand with trace-little silt 27-30 fine gray sand	
26	0.0							
27	0.0							
28	0.0							
29	0.0							
30	0.0		30-35'	Wet	45"	SP	fine gray sand	
31	0.0							
32	0.0							
33	0.0							
34	0.0							
35	0.0		35-40'	Wet	60"	SP	35-38 medium to coarse brown sand 38-40 tan sand with some silt	
36	0.0							
37	0.0							
38	0.0							
39	0.0							
40								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-S2**
	Weather: Clear, 36, rain	
	Geologist: AK	Total Depth: 60'
Start Date: 1/11/23	Drilling Company: PG	GW: 6-7'
Start Time: 13:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/12/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 11:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
40								
41	0.0							
42	0.0							
43	0.0		40-45'	Wet	50"	SP	medium brown sand	
44	0.0							
45	0.0							
46	0.0							
47	0.0							
48	0.0		45-50'	Wet	60"	SP	medium brown sand	
49	0.0							
50	0.0							
51	0.0							
52	0.0							
53	0.0		50-55'	Wet	60"	SP	medium-coarse brown sand	
54	0.0							
55	0.0							
56	0.0							
57	0.0							
58	0.0		55-60'	Wet	60"	SP	coarse brown sand	
59	0.0							
60							End of boring at 60 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-N2E1**
	Weather: Clear, 55, overcast	
	Geologist: AK	Total Depth: 40'
Start Date: 1/13/23	Drilling Company: PG	GW: 6-7'
Start Time: 7:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/13/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 10:30	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry/ Moist	45"	Fill/ML	compact brown silty sand with gravel and crushed concrete	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	60"	Fill/ ML/CL	dark gray silt with trace-little clay, wood pieces, organic odor (trace) 8-10 dark gray clay with silt and trace fine sand, 1" peat, roots at 9'	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60"	ML/CL	10-12 dark gray clay/silt/fine sand 2" roots @13' 12-15 dark gray clay with peat/roots from 14-15	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	10"	ML	gray clay and silt with small abundant gravel, limited recovery	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-N2E1**
	Weather: Clear, 55, overcast	
	Geologist: AK	Total Depth: 40'
Start Date: 1/13/23	Drilling Company: PG	GW: 6-7'
Start Time: 7:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/13/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 10:30	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0						20-21 peat roots, gray clay	
23	0.0		20-25'	Wet	50"	ML/SP	21-22 gray clay	
24	0.0						22-24 gray silt with fine sand and trace clay	
25	0.0						24-25 fine gray sand	
26	0.0							
27	0.0							
28	0.0		25-30"	Wet	60"	SP	fine gray sand with some silt	
29	0.0							
30	0.0							
31	0.0							
32	0.0							
33	0.0		30-35'	Wet	50"	SP	fine medium brown sand	
34	0.0							
35	0.0							
36	0.0							
37	0.0							
38	0.0		35-40'	Wet	55"	SP	medium-coarse brown sand	
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-S2E1**
	Weather: 30, overcast	
	Geologist: AK	Total Depth: 60'
Start Date: 1/16/23	Drilling Company: PG	GW: 6-7'
Start Time: 7:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/16/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 12:30	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Moist	40"	Fill/ML	brown compact silt, trace sand, gravel, crushed brick,wood interval 1" @ 3' limited treated wood odors	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	50"	Fill/ML	dark brown silt with gravel 9-10 dark brown silt with clay	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	50"	ML/CL	10-11 dark gray silty with clay 11-15 dark gray clay, roots 14-15	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60"	CL	Dark gray clay, trace shell pieces, roots, peat 19-20	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-S2E1**
	Weather: 30, overcast	
	Geologist: AK	Total Depth: 60'
Start Date: 1/16/23	Drilling Company: PG	GW: 6-7'
Start Time: 7:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/16/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 12:30	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	0.0		20-25'	Wet	60"	CL	gray-blue clay with silt	
24	0.0							
25	0.0							
26	0.0							
27	0.0							
28	0.0		25-30"	Wet	60"	SP/CL	gray-blue fine sand with some clay	
29	0.0							
30	0.0							
31	0.0							
32	0.0							
33	0.0		30-35'	Wet	60"	SP	gray fine sand	
34	0.0							
35	0.0							
36	0.0							
37	0.0							
38	0.0		35-40'	Wet	60"	SP	fine to medium brown sand	
39	0.0							
40								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-S2E1**
	Weather: 30, overcast	
	Geologist: AK	Total Depth: 60'
Start Date: 1/16/23	Drilling Company: PG	GW: 6-7'
Start Time: 7:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/16/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 12:30	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
40								
41	0.0							
42	0.0							
43	0.0		40-45'	Wet	60"	SP	fine-medium brown sand	
44	0.0							
45	0.0							
46	0.0							
47	0.0							
48	0.0		45-50'	Wet	60"	GP	coarse gravel/ sand, brown/pink	
49	0.0							
50	0.0							
51	0.0							
52	0.0							
53	0.0		50-55'	Wet	40"	GP/SP	med-coarse gravelly sand, brown/pink	
54	0.0							
55	0.0							
56	0.0							
57	0.0							
58	0.0		55-60'	Wet	60"	GP/SP	Coarse gravelly sand, brown/pink	
59	0.0							
60								
							End of boring at 60 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S1**
	Weather: 34, sunny, NNW 8	
	Geologist: AK	Total Depth: 40'
Start Date: 1/16/23	Drilling Company: PG	GW: 6-7'
Start Time: 11:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/16/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:30	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	40"	Fill/ML	asphalt, gravel, brown-dark brown silty sand	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	40"	Fill/ML	5-6 dark brown silt 6-7 100% crushed brick 7-10 gray silt with clay, gravel	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	40"	Fill/ML	dark gray silt with some clay, loose, large gravel 1" wood at 14' trace treated odor	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	55"	Fill/CL	15-16 wood interval 16-18 loose gravel and gray silt 18-20 dark gray clay, trace roots at 20'	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	**SB-17-S1**
	Site Address: 318 Nevins Street	
	Weather: 34, sunny, NNW 8	
	Geologist: AK	Total Depth: 40'
Start Date: 1/16/23	Drilling Company: PG	GW: 6-7'
Start Time: 11:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/16/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:30	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	130.0		20-25'	Wet	60"	CL SP	20-23 gray clay 23-25 fine gray sand with light-moderate coating of Coal Tar	
22	127.0							
23	124.0							
24	87.0	SB17S1 (23-24)						
25	200.0							
26	**too wet		25-30"	Wet	60"	SP	fine gray sand, moderately coated in coal tar heavily coated 29-30	
27	203.0							
28	162.0							
29	148.0							
30	185.0							
31	268.0		30-35'	Wet	60"	ML	fine gray sand and silt, heavily coated in coal tar	
32	394.0							
33	450.0							
34	175.0							
35	320.0							
36	0.0	SB17S1 (35-36)	35-40'	Wet	50"	CL SP	35-39 **compact** brown clay 39-40 fine-medium brown sand	
37	0.0							
38	0.0							
39	0.0							
40	0.0							
							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-S2E1**
	Weather: 30, overcast	
	Geologist: AK	Total Depth: 60'
Start Date: 1/16/23	Drilling Company: PG	GW: 6-7'
Start Time: 7:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/16/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 12:30	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	6	Fill	limited recovery, asphalt and crushed brick	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	50	Fill/ML	dark brown silty sand with asphalt and gravel 9-10 brown silty sand trace clay	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	50	CL	brown clay trace roots 14-15 brown-darlk gray clay, trace roots	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	50	CL	gray blue clay 19-20 roots, peat	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-S2E1**
	Weather: 30, overcast	
	Geologist: AK	Total Depth: 60'
Start Date: 1/16/23	Drilling Company: PG	GW: 6-7'
Start Time: 7:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/16/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 12:30	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	1.4					CL	gray blue clay	
23	67.0		20-25'	Wet	60		light-mod coated, odors	
24	388.0	SB17E1 (24-25)				SP/ML	gray/blue clay and fine sand	
25	97.0							
26	330.0							
27	385.0						mod-heavily coated, gray fine sand and silt, odor throughout	
28	297.0		25-30"	Wet	60	SP/ML		
29	63.0						29-30 sheen	
30	120.0							
31	2.0	SB17E1 (30-31)						
32	1.5					ML	brown trace fine sand, silt and clay	
33	0.0		30-35'	Wet	60	CL	33-35 brown clay	
34	0.0							
35	0.0							
36	0.0							
37	0.0							
38	0.0		35-40'	Wet	60	SP	brown fine to medium sand	
39	0.0							
40	0.0							
							End of boring at 60 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N1**
	Weather: 34, sunny, NNW 8	
	Geologist: AK	Total Depth: 45'
Start Date: 1/16/23	Drilling Company: PG	GW: 6-7'
Start Time: 11:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/16/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 15:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	35	Fill/ML	Asphalt, gravel, crushed brick, brown silty sand	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	35	Fill/ML	Brown silty sand with abundand gravel, some crushed brick	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	35	Fill/ML	dark gray loose silt, trace clay, with large gravel	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	35	Fill/CL	15-16 gravel/ gray silt 3" wood in gray clay 16-20 gray clay roots at 20'	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N1**
	Weather: 34, sunny, NNW 8	
	Geologist: AK	Total Depth: 45'
Start Date: 1/16/23	Drilling Company: PG	GW: 6-7'
Start Time: 11:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/16/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 15:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	0.0		20-25'	Wet	40	CL	20-24 gray clay	
24	0.0					SP	24-25 fine gray sand, moderate coating of coal tar	
25	251.0	SB17N1 (24-25)						
26	162.0							
27	154.0							
28	211.0		25-30"	Wet	45	ML	fine gray sand some silt, trace clay moderately-heavily coated grains in coal tar, liner is coated	
29	121.0							
30	387.0							
31	27.8							
32	19.1						30-32 fine gray/brown sand	
33	12.8		30-35'	Wet	60	SP		
34	17.5	SB17N1 (33-34)					32-35 light brown clay	
35	20.7					CL	trace odors throughout	

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N1**
	Weather: 34, sunny, NNW 8	
	Geologist: AK	Total Depth: 45'
Start Date: 1/16/23	Drilling Company: PG	GW: 6-7'
Start Time: 11:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/16/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 15:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
35	21.3		35-40'	Wet	60	ML	light brown silt/ clay trace odors throughout	
36	15.3							
37	35.1							
38	28.7							
39	30.8							
40	0.1		40-45'	Wet	60	SP	brown fine-medium sand	
41	0.0							
42	0.0							
43	0.0							
44	0.0							
45							End of boring at 45 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S1E1**
	Weather: 34, sunny, NNW 8	
	Geologist: AK	Total Depth: 40'
Start Date: 1/17/23	Drilling Company: PG	GW: 6-7'
Start Time: 8:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/17/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 11:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	15	Fill/ML	crushed brick and some brown silt 2-5 crushed concrete 100%	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	60	Fill/ML	dark gray silt with gravel 2" wood at 6' crushed brick 9.5-10 gray clay with roots	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	CL	gray clay with roots	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	gray clay 19-20 roots, peat	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S1E1**
	Weather: 34, sunny, NNW 8	
	Geologist: AK	Total Depth: 40'
Start Date: 1/17/23	Drilling Company: PG	GW: 6-7'
Start Time: 8:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/17/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 11:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0						20-22.5 gray clay	
23	0.0		20-25'	Wet	60	CL	22.5-24 gray blue clay	
24	0.0					SP	24-25 fine gray sand	
25	0.0							
26	**too wet							
27	1.5							
28	0.5		25-30"	Wet	50	SP/ML	fine gray sand, trace blebs, sheen	
29	1.9	SB17-S1E1 (28-30)						
30	0.9							
31	240.0							
32	134.0							
33	85.0		30-35'	Wet	60	ML	moderately coated in coal tar, matrix is a grey silt with trace fine sand	
34	45.0							
35	16.0							
36	0.0	SB17-S1E1 (35-37)						
37	0.0							
38	0.0		35-40'	Wet	60	SP	medium brown/pink sand	
39	0.0							
40	0.0							
							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N1E1**
	Weather: 34, sunny, NNW 8	
	Geologist: AK	Total Depth: 40'
Start Date: 1/17/23	Drilling Company: PG	GW: 6-7'
Start Time: 8:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/17/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 11:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	50	Fill	Crushed brick, concrete, dark brown silty sand	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	55	Fill/ML	5-6 crushed brick 3" treated wood, odors limited 6-10 compact dark gray silty sand with gravel	
6	34.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	CL	brown/gray clay with roots throughout	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	gray clay with roots	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977 Site/Project Name: 318 Nevins Street Site Address: 318 Nevins Street Weather: 34, sunny, NNW 8	**Boring ID:** **SB-17-N1E1**
	Geologist: AK	Total Depth: 40'
Start Date: 1/17/23	Drilling Company: PG	GW: 6-7'
Start Time: 8:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/17/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 11:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0						20-21 gray blue clay	
23	0.0		20-25'	Wet	60	ML/SP	21-25 gray blue clay with silt and fine sand	
24	405.0	SB17-N1E1 (23-25)					light-moderately coated in coal tar starting at 23'	
25	287.0							
26	207.0							
27	184.0							
28	275.0		25-30"	Wet	50	ML	moderately coated in coal tar, whole liner, sheen	
29	**too wet						gray fine sand and silt	
30	**too wet							
31	45.0							
32	52.0					ML	30-32 sheen and very trace blebs	
33	1.5		30-35'	Wet	60	CL	32-35 fine brown sand, transistions to brown clay	
34	0.0	SB17-N1E1 (33-35)						
35	0.0							
36	5.3							
37	11.2					CL	35-36 brown clay	
38	15.0		35-40'	Wet	50	SP	36-40 fine to medium brown sand, limited odors	
39	10.0							
40	8.6							

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N1E1**
	Weather: 34, sunny, NNW 8	
	Geologist: AK	Total Depth: 40'
Start Date: 1/17/23	Drilling Company: PG	GW: 6-7'
Start Time: 8:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/17/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 11:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
40								
41	0.0							
42	0.0							
43	0.0		40-45'	Wet	55	CL/SP	brown clay and fine sand	
44	0.0							
45	0.0							
							End of boring at 45 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N1**
	Weather: 34, sunny, NNW 8	
	Geologist: AK	Total Depth: 45'
Start Date: 1/17/23	Drilling Company: PG	GW: 6-7'
Start Time: 11:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/17/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 15:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	40	Fill/ML	brown silty sand, crushed brick, concrete	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	55	Fill/ML	5-6 crushed concrete and brick 6-7 gravel and dark gray silty sand 7-8 wood 7.5 -10 compact dark gray silt/sand trace clay	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	Fill/ML CL	10-11 crushed brick and wood in ML 11-14 compact silt/sand 14-15 dark gray clay with roots	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	0	N/A	No Recovery	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N1**
	Weather: 34, sunny, NNW 8	
	Geologist: AK	Total Depth: 45'
Start Date: 1/17/23	Drilling Company: PG	GW: 6-7'
Start Time: 11:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/17/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 15:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0						20-21 roots and	
23	0.0		20-25'	Wet	40	CL	21-24 dark gray/blue clay	
24	53.0					SP	24-25 fine gray/blue sand	
25	25.0							
26	160.0							
27	270.0							
28	385.0		25-30"	Wet	50	SP	fine gray/blue sand, trace silt	
29	420.0							
30	340.0							
31	562.0							
32	489.0							
33	236.0		30-35'	Wet	60	SP/ML	brown-dark brown fine sand and silt	
34	320.0							
35	401.0							
36	15.0							
37	7.8							
38	3.2		35-40'	Wet	50	SP	fine brown sand	
39	0.5							
40	1.0							
							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S2**
	Weather: 34, sunny, NNW 8	
	Geologist: AK	Total Depth: 45'
Start Date: 1/17/23	Drilling Company: PG	GW: 6-7'
Start Time: 11:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/17/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 15:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
	0.0		0-5	Dry	35	Fill/ML	crushed brick, some gravel, brown dark brown silty sand, asphalt pieces	
1	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	30	Fill/ML	crushed brick, gravel, brown silty sand, asphalt pieces	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	35	Fill/CL	loose dark brown clay with large gravel	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	35	CL	loose dark brown clay 19-20 wood	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S2**
	Weather: 34, sunny, NNW 8	
	Geologist: AK	Total Depth: 45'
Start Date: 1/17/23	Drilling Company: PG	GW: 6-7'
Start Time: 11:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/17/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 15:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	0.0		20-25'	Wet	50	CL ML	20-23 mod compact gray blue clay 23-25 gray blue silt/clay 24-25 lightly coated in coal tar, last 2" fine gray blue sand	
24	53.0	17S2 (23-25)						
25	25.0							
26	160.0							
27	270.0							
28	385.0		25-30"	Wet	60	ML	matrix is gray blue silty sand (f.) heavily coated/saturated in coal tar, throughout	
29	420.0							
30	340.0							
31	562.0							
32	489.0							
33	236.0		30-35'	Wet	60	ML	fully saturated in Coal tar matrix is gray fine sand/silt	
34	320.0							
35	401.0							

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	**SB-17-S2**
	Site Address: 318 Nevins Street	
	Weather: 34, sunny, NNW 8	
	Geologist: AK	Total Depth: 45'
Start Date: 1/17/23	Drilling Company: PG	GW: 6-7'
Start Time: 11:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/17/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 15:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
35								
36	15.0	17S2 (35-37)	35-40'	Wet	50	CL	35-39 brown clay	
37	7.8							
38	3.2					SP	39-40 fine medium brown sand	
39	0.5							
40	1.0							
41	0.0		40-45'	Wet	60	SP	medium coarse brown/pink sand	
42	0.0							
43	0.0							
44	0.0							
45	0.0							
							End of boring at 45 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N2**
	Weather: 34, sunny, NNW 8	
	Geologist: AK	Total Depth: 45'
Start Date: 1/17/23	Drilling Company: PG	GW: 6-7'
Start Time: 13:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/18/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 9:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry Moist	40	Fill/ML	crushed brick and gravel, dark brown silt with some fine sand	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	40	Fill/ML CL	crushed brick with brown silt brown silt and clay 1" wood at 10'	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	50	Fill/CL	loose dark brown clay/silt 95% wood 11-15	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	loose gray clay with some silt 19-20 roots, peat, organic sulfur odor	
16	0.0							
17	0.0							
18	65.0							
19	86.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N2**
	Weather: 34, sunny, NNW 8	
	Geologist: AK	Total Depth: 45'
Start Date: 1/17/23	Drilling Company: PG	GW: 6-7'
Start Time: 13:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/18/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 9:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0						20-21 gray clay/silt, loose	
23	14.0		20-25'	Wet	50	CL	21-24 gray-blue clay	
24	33.0	SB17N2 (24-25)				SP	24-25 gray-blue fine sand, moderately coated in coal tar	
25	260.0							
26	545.0							
27	312.0						matrix fine sand,	
28	253.0		25-30"	Wet	60	SP	moderate coal tar coated, lenses	
29	184.0							
30	93.0							
31	-							
32	-							
33	-		30-35'	Wet	0	N/A	Little to no recovery, liner has some watery silt/clay in it with sheen	
34	-							
35	-							
36	0.0	SB17N2 (35-37)						
37	0.0						brown fine sand	
38	0.0		35-40'	Wet	60	SP	38-40 brown clay	
39	0.0							
40	0.0							
							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S1E2**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/18/23	Drilling Company: PG	GW: 6-7'
Start Time: 10:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/18/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 12:30	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	40	Fill	concrete and crushed brick <90% 4-5 wood	
2	0.0							
3	0.0							
4	0.0							
5	0.0							
6	0.0		5-10'	Wet	45	Fill/ML	crushed brick/gravel dark brown silty sand	
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	50	Fill CL	10-12abundant gravel in a gray silt 12-12.5 roots,peat 12.5-13 dark brown clay 13-15 gray clay with roots	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	gray clay with roots	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S1E2**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/18/23	Drilling Company: PG	GW: 6-7'
Start Time: 10:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/18/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 12:30	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0						20-21 roots, gray clay	
23	0.0		20-25'	Wet	60	CL	21-24 mod compact gray/blue clay	
24	0.0						last 2" gray/blue fine sand	
25	0.0							
26	0.0							
27	0.0					CL	mod compact gray/blue clay with silt	
28	0.0		25-30"	Wet	60			
29	0.0					SP	29-30 brown fine sand	
30	1.5							
31	12.8							
32	15.2	SB17 S1E2 (32-34)	30-35'	Wet	60	SP	fine brown sand	
33	25.0						30-34 blebs, sheen, with lense above clay at 33.5	
34	13.6							
35	0.0	SB17 S1E2 (35-37)						
36	0.0							
37	0.0		35-40'	Wet	60	SP	medium brown/pink sand	
38	0.0							
39	0.0							
40								
							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N1E2**
	Weather: 34, sunny, NNW 8	
	Geologist: AK	Total Depth: 45'
Start Date: 1/18/23	Drilling Company: PG	GW: 6-7'
Start Time: 9:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/18/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 12:30	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	Fill/ML	brown silty sand, gravel, asphalt, crushed brick	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	60	Fill/ML	5-6 crushed concrete brown silty sand 2" wood at 7.5' 8-10 brown silty sand little clay, gravel	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	Fill/ML	dark brown silt with gravel	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	gray clay 19-20 roots, peat	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N1E2**
	Weather: 34, sunny, NNW 8	
	Geologist: AK	Total Depth: 45'
Start Date: 1/18/23	Drilling Company: PG	GW: 6-7'
Start Time: 9:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/18/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 12:30	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	0.0		20-25'	Wet	60	CL	20-23 gray clay, roots at 20'	
24	294.0	SB17 N1E2 (23-25)				SP	23-25 gray-blue fine sand, light-mod coated in Coal Tar, lenses	
25	320.0							
26	297.0							
27	311.0						light coated coal tar, blebs, liner coated/stained	
28	218.0		25-30"	Wet	60	SP	25-29 gray fine sand	
29	28.2						29-30gray/blue fine sand	
30	25.0							
31	too wet	SB17 N1E2 (30-31)						
32	0.0					SP	30-31 fine sand	
33	0.0		30-35'	Wet	60	CL	31-35 brown clay, some silt	
34	0.0							
35	0.0							
36	0.0							
37	0.0					SP	brown fine sand	
38	0.0		35-40'	Wet	60	CL	39-40 brown clay	
39	0.0							
40								
							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N3**
	Weather:	
	Geologist: AK	Total Depth: 45'
Start Date: 1/18/23	Drilling Company: PG	GW: 6-7'
Start Time: 12:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/18/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	40	Fill/ML	dark brown silty sand with crushed brick, concrete, gravel	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	45	Fill/ML	dark brown silty sand with gravel 9-10 wood	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	24	Fill	large gravel pieces <80%, in gray silt	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	45	CL PT	15-16 loose silt 16-17 gray clay 17-20 roots, sulfur odor	
16	43.0							
17	68.0							
18	57.0							
19	65.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N3**
	Weather:	
	Geologist: AK	Total Depth: 45'
Start Date: 1/18/23	Drilling Company: PG	GW: 6-7'
Start Time: 12:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/18/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	185.0		20-25'	Wet	40	CL	20-23 gray blue clay	
24	240.0	SB17N3 (23-25)				SP	23-25 lt-mod coated in coal tar, gray/blue fine sand	
25	361.0							
26	381.0							
27	432.0							
28	560.0		25-30"	Wet	60	SP	heavily coated/saturated coal tar	
29	479.0						fine sand, stained	
30	521.0							
31	87.0							
32	91.0					SP	brown fine sand, heavy sheen, light-mod coated	
33	102.0		30-35'	Wet	60	CL	33-35 mod compact brown clay	
34	4.3	SB17N3 (33-35)						
35	2.8							
36	0.0						35-36 brown fine to medium sand	
37	0.0					SP		
38	0.0		35-40'	Wet	60	CL	36-38 brown clay	
39	0.0					SP	38-40 brown fine to medium sand	
40	0.0							
							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N1E3**
	Weather:	
	Geologist: AK	Total Depth: 45'
Start Date: 1/18/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/19/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	50	Fill	concrete, crushed brick, trace wood @ 4' little silty sand, brown	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	60	Fill/ML	gray silt with little sand, abundant gravel 9-10 dark gray clay	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	Fill/ML CL	10-12 gray loose silt/sand with gravel 12-15 gray clay with roots throughout	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	Fill/ML CL PT	15-16 loose gray silt, abundant gravel 16-20 gray clay with roots 19-20 all roots, organic odor	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N1E3**
	Weather:	
	Geologist: AK	Total Depth: 45'
Start Date: 1/18/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/19/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20	0.0		20-25'	Wet	60	CL SP	20-20.5 roots 20.5-22 gray clay 22-25 compact fine sand with silt coal tar lense at 23-24, odors	
21	0.0							
22	85.0	SB17 N1E3 (22-24)						
23	57.0							
24	21.0							
25	15.0		25-30"	Wet	60	SP	brown fine sand, sheen 25-27	
26	4.0							
27	3.8							
28	5.0	SB17 N1E3 (28-30)						
29	0.0							
30	0.0		30-35'	Wet	60	SP CL	30-33 brown fine sand 33-35 brown clay	
31	0.0							
32	0.0							
33	0.0							
34	0.0							
35	0.0		35-40'	Wet	60	SP CL SP	35-36 f-m brown sand 36-38 brown clay 38-40 f-m brown sand	
36	0.0							
37	0.0							
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N1E4**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/19/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/19/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	Fill	0-1 concrete brown-dk brown silty sand with crushed brick and asphalt, gravel	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	60	Fill/ML /CL	Brown silty sand, 7-8 concrete ,gravel brown silt/clay	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	30	Fill/ML	gravel, loose gray silt some clay	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	15-16 loose gray silt/clay 16-20 gray clay with roots	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N1E4**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/19/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/19/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0						20-21 roots, peat	
22	0.0						21-22 brown clay	
23	0.0		20-25'	Wet	60	SP	22-23 gray blue clay	
24	0.0						23-25 gray blue fine sand	
25	0.0							
26	0.0						25-27 fine sand, and silt, loose	
27	0.0					ML		
28	0.0		25-30"	Wet	60		27-28 dark brown silt and tr fine sand	
29	0.0					CL		
30	0.0						28-30 brown clay and silt	
31	0.0							
32	0.0		30-35'	Wet	60	CL	brown silty clay	
33	0.0							
34	0.0							
35	0.0							
36	0.0							
37	0.0		35-40'	Wet	60	SP	35-38 med-coarse brown sand	
38	0.0					CL	38-40 brown clay	
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N4**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/19/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/19/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	Fill/ML	brown silty sand, asphalt, gravel, trace crushed brick	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	45	Fill/ML	concrete, little gravel, gray silt, some-little clay	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	45	Fill/CL	gray clay w/ roots 4" wood at 14'	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	55	CL	15-18 loose gray clay/silt 18-20 gray clay w/ roots	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N4**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/19/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/19/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20	-		20-25'	Wet	4"	CL	limited recovery lt gray clay	
21	-							
22	0.0							
23	-							
24	-							
25	-	SB17 N4 25-30	25-30"	Wet	4"	SP	limited recovery fine sand, mod coated in CT	
26	-							
27	180.0							
28	-							
29	-							
30	0.0		30-35'	Wet	60	SP	brown clay	
31	0.0							
32	0.0							
33	0.0							
34	0.0							
35								

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	**SB-17-N4**
	Site Address: 318 Nevins Street	
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/19/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/19/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
35								
	35.2							
36								
	40.1							
37								
	23.8		35-40'	Wet	60	SP	fine-medium brown sand, trace sheen	
38								
	15.7	SB17 N4 38-40						
39								
	10.2							
40								
	3.8							
41								
	4.3							
42								
	1.5		40-45'	Wet	60	SP	brown medium sand	
43								
	0.7							
44								
	0.0							
45								
							End of boring at 45 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N5**
	Weather:	
	Geologist: AK	Total Depth: 45'
Start Date: 1/19/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/19/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	55	Fill/ML	dark brown silty sand, crushed brick, gravel	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	30	Fill/ML	dark brown silty sand/ gravel 7-10 concrete	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	45	Fill/ML CL	brown fine sand and silt, gravel gravel and brown silty clay	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	50	CL	gray clay, 2" wood at 16.5 19-20 roots, peat	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977 Site/Project Name: 318 Nevins Street Site Address: 318 Nevins Street Weather:	**Boring ID:** **SB-17-N5**
	Geologist: AK	Total Depth: 45'
Start Date: 1/19/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/19/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20	-		20-25'	Wet	3"	ML	little to no recovery sheen odor, light coated in CT, brown silt/fine sand	
21	-							
22	150.0							
23	-	)						
24	-							
25	452.0	SB17 N5 (25-27)	25-30"	Wet	60	ML/CL	brown silty clay, sheen, odor, mod CT coated	
26	540.0							
27	387.0							
28	365.0							
29	243.0							
30	50.0		30-35'	Wet	60	ML/CL	brown clay/silt, trace sheen	
31	48.7							
32	15.4							
33	10.3	SB17 N5 (33-35)						
34	11.1							
35	0.0		35-40'	Wet	60	CL SP	35-37 brown clay 37-40 brown medium sand	
36	0.0							
37	0.0							
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N2E1**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/19/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/20/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Moist	50	Fill ML	asphalt, gravel, crushed brick (2-4) dark gray silt with gravel	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	50	CL	5-6 wood gray silt, crushed brick 7-8 wood dark gray clay/silt with trace gravel	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	CL	loose gray clay/silt gray clay with roots	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	gray clay 19-20 peat, roots	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N2E1**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/19/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/20/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0					CL	20-22 loose dark brown clay with silt	
23	60.0		20-25'	Wet	60	ML	22-23 gray blue silt/clay	
24	85.0	SB17 N2E1 (23-25)				SP	23-25 fine gray blue sand/silt, light-mod coated with Coal tar	
25	70.0							
26	84.0							
27	52.0							
28	38.0		25-30'	N/A	60	SP	fine gray/blue sand trace silt, sheen, mod coated in Coal tar	
29	47.0							
30	25.0							
31	0.0	SB17 N2E1 (30-32)						
32	0.0					ML/SP	30-32 brown fine sand/ some silt, trace clay, loose	
33	0.0		30-35'	Wet	60			
34	0.0					CL	32-35 brown clay	
35	0.0							
36	0.0							
37	0.0							
38	0.0		35-40'	Wet	60	SP	brown fine-medium sand	
39	0.0							
40								
							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N3E1**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/20/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/20/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	50	Fill	gravel and crushed brick, 20% silty sand 4-5 concrete/ gravel	
2	0.0							
3	0.0							
4	0.0							
5	0.0							
6	0.0		5-10'	Wet	60	Fill/ML	5-6 concrete/ brick 6-7 gray silt/ gravel 7-10 gray silt/clay/gravel	
7	0.0							
8	0.0							
9	0.0							
10	0.0							
11	0.0		10-15'	Wet	60	Fill CL	10-12 loose gravel and gray silt 12-15 dark gray clay with mostly roots, organic odors	
12	54.0							
13	32.0							
14	15.1							
15	168.0		15-20'	Wet	60	CL/PT	gray-dark gray clay, organic odor, with roots throughout	
16	324.0							
17	75.0							
18	77.0							
19	63.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N3E1**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/20/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/20/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	22.3							
22	17.8	SB17 N3E1 (21-23)	20-25'	Wet	60	SP	20-22 gray clay	
23	395.0						22-25 gray/blue fine sand and silt light-mod coated in Coal tar	
24	203.0							
25	187.9							
26	587.0		25-30'	N/A	60	SP	gray/blue fine sand trace silt heavily coated in coal tar	
27	421.0							
28	232.0							
29	390.0							
30	320.0							
31	32.0		30-35'	Wet	60	SP	30-32 brown fine sand and silt, trace sheen	
32	25.0							
33	0.0	SB17 N3E1 (32-34)				CL	32-35 brown clay	
34	0.0							
35	0.0							
36	0.0		35-40'	Wet	60	SP	fine-med brown sand	
37	0.0							
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N2E1**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/20/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/20/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Moist	60	Fill/ML	light brown silty sand, compact with crushed brick, gravel	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	50	Fill/ML	5-5.5 brown silty sand 5.5-7 concrete 7-9 brown silty sand 9-10 brown f-m sand	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	50	SP	brown medium sand, trace gravel trace silt	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	55	SP	15-17 brown medium sand 17-20 dark brown clay, with roots(19-20)	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N2E1**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/20/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/20/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	3.2		20-25'	Wet	40	CL	20-21 dark brown clay some silt	
24	1.5					SP	21-25 gray/blue fine sand	
25	2.0							
26	320.0	SB17 N7E1 (25-27)						
27	281.0							
28	267.0		25-30'	N/A	60	SP	gray fine sand trace silt, heavily coated in Coal tar	
29	452.0							
30	165.0							
31	107.0							
32	85.0						30-33 light coated in coal tar, gray fine sand/silt	
33	63.0		30-35'	Wet	60	SP/ML	33-34 brown clay	
34	0.0	SB17 N7E1 (33-35)					34-35 brown fine-med sand	
35	0.0							
36	0.0							
37	0.0						35-36 brown clay	
38	0.0		35-40'	Wet	60	SP	36-40 brown fine sand	
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N7**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/20/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/20/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Moist	40	Fill/ML	0-2 gravel/asphalt 2-4 brown silt with fine sand 4-5 brick and concrete	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	40	Fill/ML	5-7 dark brown silty sand with abundant gravel 7-10 dark brown silt/sand with increasing clay content	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	Fill CL	10-12 gravel, trace dark gray silt/sand 12-15 dark gray clay with trace roots 2" wood at 15'	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	dark gray clay 19-20 roots	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N7**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/20/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/20/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	28.0		20-25'	Wet	35	SP	brown fine sand, trace sheen, trace coating 23-25	
24	32.0	SB17 N7 (23-25)						
25	45.0							
26	203.0							
27	240.0							
28	387.0		25-30'	N/A	60	SP	gray fine sand saturated in Coal tar	
29	262.0							
30	126.0							
31	0.0	SB17 N7 (30-32)						
32	0.0					ML	30-34 brown silt/clay	
33	0.0		30-35'	Wet	60	CL	34-35 brown clay	
34	0.0							
35	0.0							
36	0.0							
37	0.0					CL	35-37 brown clay	
38	0.0		35-40'	Wet	60	SP	37-40 brown medium sand	
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N6**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/19/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/19/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Moist	55	Fill	brown silty sand and gravel, 6" concrete, 3" crushed brick	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	45	Fill/ML	brown silty sand and gravel 9-10 brown silt trace clay	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	45	CL	gray clay	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15			15-20'	Wet	50	CL	gray clay with roots (18-20)	
16								
17								
18								
19								
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N6**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/19/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/19/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	150.0							
22	224.0							
23	382.0		20-25'	Wet	40	SP	gray/blue silt and fine sand light to mod coated	
24	245.0	SB17 N6 (23-35)						
25	250.0							
26	-							
27	-							
28	-		25-30"	N/A	0	N/A	No recovery	
29	-							
30	-							
31	471.0							
32	532.0							
33	373.0		30-35'	Wet	60	SP	brown fine sand, heavily coated in CT	
34	405.0							
35	420.0							

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N6**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/19/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/19/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
35	32.0		35-40'	Wet	60	SP	brown f-m sand, sheen 35-38	
36	15.1							
37	10.0	SB17 N6 (37-39)						
38	0.0							
39	0.0							
40	0.0		35-40'	Wet	60	SP	40-41 med brown sand	
41	0.0							
42	0.0					CL	41-43 brown clay	
43	0.0					SP	43-45 med brown sand	
44	0.0							
45							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N2E2**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/23/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/23/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Moist	50	Fill/ML	crushed brick, asphalt, gravel, dark brown silty sand	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	45	Fill/ML	Dark brown-gray silty sand, trace gravel, trace clay	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	Fill/ML CL	10-12 gray silty sand and gravel 12-15 gray clay and roots, organic odors	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	35	SP	gray/blue fine sand and silt 19-20 heavily coated in CT	
16	0.0							
17	47.0							
18	175.0	SB17 N2E2 18-20						
19	289.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N2E2**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/23/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/23/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	321.0							
22	248.0							
23	462.0		20-25'	Wet	35	SP	gray/blue fine sand and silt heavily coated in CT	
24	429.0							
25	310.0							
26	205.0							
27	197.0							
28	221.0		25-30'	N/A	60	SP/ML	gray/brown fine sand and silt, moderately coated in CT, sheen at 30'	
29	165.0							
30	131.0							
31	0.0							
32	0.0							
33	0.0		30-35'	Wet	60	CL	Brown clay, trace sheen 30-31	
34	0.0	SB17 N2E2 33-35						
35	0.0							
36	0.0							
37	0.0					CL	35-37 brown clay	
38	0.0		35-40'	Wet	60	SP	37-40 medium brown sand	
39	0.0							
40	0.0							
							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N2E2**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/23/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/23/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	Fill	gravel, brick, concrete, light brown silty sand	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	50	Fill/ML	loose gray silty sand with gravel	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	Fill/ML	10-12.5 gray silty sand with gravel	
11	0.0							
12	0.0							
13	0.0					CL	12.5-15 gray clay with trace roots	
14	0.0							
15	-		15-20'	Wet	0	N/A	no recovery	
16	-							
17	-							
18	-							
19	-							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N2E2**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/23/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/23/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	284.0							
22	392.0							
23	341.0	SB17 N6E1 22-24	20-25'	Wet	40	SP	gray/blue fine sand, trace silt mod coated in CT	
24	248.0							
25	261.0							
26	378.0		25-30'	N/A	60	SP	Saturated in CT, fine brown sand	
27	452.0							
28	279.0							
29	240.0							
30	231.0							
31	78.0		30-35'	Wet	60	SP	30-31 fine brown sand moderate coated CT	
32	20.0					CL	31-33 brown clay	
33	0.0							
34	0.0	SB17 N6E1 33-35				SP	33-35 brown medium sand	
35	0.0							
36	0.0		35-40'	Wet	60	SP	35-37 brown clay 37-40 brown medium sand	
37	0.0							
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N4E1**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/23/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/23/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Moist	50	Fill/ML	asphalt and crushed brick with gravel, some dark brown silty sand	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	40	Fill/ML	mostly gravel and wood (8-9) brown silty sand	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	Fill/ML	10-12 gray sikty sand with gravel 12-15 gray clay with roots	
11	0.0							
12	0.0							
13	0.0							
14	40.0							
15	400.0		15-20'	Wet	60	CL	gray clay with roots, organic odor	
16	230.0							
17	220.0							
18	301.0							
19	245.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N4E1**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/23/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/23/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	380.0							
22	295.0							
23	287.0		20-25'	Wet	60	SP	gray/blue fine sand, mod-heavy coated in CT	
24	341.0	SB17 N4E1 (23-25)						
25	364.0							
26	281.0							
27	307.0							
28	195.0		25-30'	N/A	60	SP	fine brown sand, heavily coated/saturated in CT esp 25-27, sheen	
29	85.0							
30	113.0							
31	0.0							
32	0.0							
33	0.0		30-35'	Wet	60	SP	fine brown sand, very trace sheen 30-31	
34	0.0	SB17 N4E1 (33-35)						
35	0.0							
36	0.0							
37	0.0							
38	0.0		35-40'	Wet	60	SP	coarse brown sand	
39	0.0							
40								
							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N5E1**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/23/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/23/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Moist	50	Fill/ML	gravel fill with brown silty sand, trace brick	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	45	Fill/ML	brown fine sand and silt, gravel, trace brick	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	Fill/ML	10-12 coarse gravel 12-15 gray silty Sand and gravel	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	12	Fill/ML	coarse gravel and gray silty sand, limited recovery	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N5E1**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/23/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/23/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	-							
22	-							
23	289.0		20-25'	Wet	10	SP	brown fine sand, moderately coated in CT	
24	312.0	SB17 N5E1 23-25						
25	321.0							
26	425.0		25-30'	N/A	60	SP	brown fine sand heavily coated/saturated in CT	
27	394.0							
28	405.0							
29	287.0							
30	264.0							
31	-		30-35'	Wet	15	N/A	limited recovery, brown clay and fine sand	
32	-							
33	0.0							
34	0.0	SB17 N5E1 33-35						
35	0.0							
36	0.0		35-40'	Wet	60	SP	brown fine-medium sand	
37	0.0							
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N5E2**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/23/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/23/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Moist	50	Fill	"Clean fill tan sand" trace brick, gravel, trace silty sand **Note: appears to have been previously disturbed/ backfilled, in area of former tank grave**	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	45	Fill	"Clean fill tan sand" and gravel	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	50	Fill ML	10-12 pea gravel 12-15 gray silty sand with trace gravel roots 14.5-15	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL ML	gray/brown clayey silt with fine sand, roots 16-18 gray/blue fine silty sand, trace wood	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N5E2**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/23/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/23/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	-							
22	-							
23	357.0		20-25'	Wet	25	SP	gray/blue fine sand trace silt mod/heavy coated in CT	
24	249.0	SB17 N5E2 23-25						
25	312.0							
26	340.0							
27	235.0		25-30'	N/A	50	SP	gray/blue fine sand trace silt mod/heavy coated in CT	
28	209.0							
29	198.0							
30	220.0							
31	0.0							
32	0.0					CL	30-34 brown clay, trace sheen 30-32	
33	0.0		30-35'	Wet	60	SP	34-35 medium brown sand	
34	0.0	SB17 N5E2 33-35						
35	0.0							
36	0.0							
37	0.0					SP	35-36 medium brown sand	
38	0.0		35-40'	Wet	60	CL	36-40 brown clay	
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N2E3**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/23/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/23/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Moist	50	Fill	gravel, crushed comcrete, dark gray silty sand, trace crushed brick	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	45	Fill/ML	dark gray silty sand and gravel 7-8 gray clay and silt 8-10 gray silty sand little gravel	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	CL	gray clay with roots	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	gray clay with roots	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N2E3**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/23/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/23/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	49.0							
23	230.0		20-25'	Wet	60	SP	fine gray/blue sand with silt mod coated in CT	
24	290.0	SB17 N2E3 23-25						
25	189.0							
26	345.0							
27	291.0							
28	350.0		25-30'	N/A	45	SP	fine gray/blue sand with silt mod-heavy coated in CT	
29	400.0							
30	245.0							
31	0.0							
32	0.0					CL	Brown Clay, trace sheen 30-32	
33	0.0		30-35'	Wet	50	SP	brown medium sand	
34	0.0	SB17 N2E3 33-35				CL	brown clay	
35	0.0							
36	0.0							
37	0.0					CL	brown clay	
38	0.0		35-40'	Wet	60	SP	brown medium sand	
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N7E2**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/24/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/24/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	40	Fill/ML	brown silty sand, gravel, brick 4-5 tan fine sand "clean fill" and trace asphalt	
2	0.0							
3	0.0							
4	0.0							
5	0.0							
6	0.0		5-10'	Moist	40	Fill/SP	tan fine sand "clean fill"	
7	0.0							
8	0.0							
9	0.0							
10	0.0							
11	45.0		10-15'	Wet	60	SP ML	10-11 tan/brown sand 11-13 white/gray sand with abundant gravel, Petro odors 13-15 brown silty sand trace clay	
12	1200.0							
13	27.0							
14	15.0							
15	0.0		15-20'	Wet	60	SP CL	15-17 brown fine to medium sand 17-20 dark gray clay with roots	
16	0.0							
17	2.5							
18	20.0							
19	37.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N7E2**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/24/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/24/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	0.0		20-25'	Wet	20	CL	20-22.5 gray clay 22.5-25 gray blue clay trace silt	
24	0.0							
25	0.0							
26	346.0	SB17 N7E2 25-27						
27	458.0							
28	391.0		25-30'	N/A	60	SP	fine sand, some silt heavily coated 25-27 to saturated in Coal Tar 27-30	
29	505.0							
30	420.0							
31	48.0						30-32 brown silt/clay, sheen	
32	15.0					CL	32-34 brown/dark gray silty clay	
33	0.0		30-35'	Wet	60	SP	34-34.5 brown clay	
34	0.0	SB17 N7E2 33-35					34.5-35 medium brown sand	
35	0.0							
36	0.0							
37	0.0		35-40'	Wet	60	SP	fine brown sand	
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N2E4**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/24/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/24/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	Fill/ML	0-1 concrete brown silty sand, gravel, asphalt 4-5 dark brown silt, some clay	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	45	Fill/ML	dark brown silt and clay, with some gravel	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	Fill/CL	10-11 loose gray clay with gravel 11-15 gray clay with roots	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	gray clay with roots	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N2E4**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/24/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/24/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0		20-25'	Wet	55	CL SP	20-21 gray/blue clay 21-25 gray/blue fine sand and silt single lense of Coal tar at 23'	
22	0.0							
23	0.0							
24	15.0	SB17 N2E4 23-25						
25	25.0							
26	0.0	SB17 N2E4 25-27	25-30'	N/A	60	CL	25-27 gray/brown silt and clay 27-30 grades into brown clay	
27	0.0							
28	0.0							
29	0.0							
30	0.0		30-35'	Wet	60	CL	brown clay	
31	0.0							
32	0.0							
33	0.0							
34	0.0							
35	0.0		35-40'	Wet	60	SP	medium brown sand	
36	0.0							
37	0.0							
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N2E5**
	Weather:	
	Geologist: AK	Total Depth: 35'
Start Date: 1/24/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/24/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	50	Fill/ML	0-1 crushed concrete brown silty sand and gravel	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Moist	60	Fill/ML	5-7 brown silty sand and gravel 7-8 gray silt trace clay 8-10 compact dark brown silty sand	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	ML	10-12 loose silty sand, some gravel 12-13 dark gray clay 13-15 brown fine to medium sand roots at 15'	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	gray clay with roots	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977 Site/Project Name: 318 Nevins Street Site Address: 318 Nevins Street Weather:	**Boring ID:** **SB-17-N2E5**
	Geologist: AK	Total Depth: 35'
Start Date: 1/24/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/24/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	0.0		20-25'	Wet	60	CL	20-22 gray/brown clay with roots	
24	0.0					SP	22-25 gray fine sand	
25	0.0							
26	0.0							
27	0.0							
28	0.0		25-30'	N/A	60	ML	25-28 gray fine silty sand	
29	0.0						28-30 brown silt little clay	
30	0.0							
31	0.0							
32	0.0							
33	0.0		30-35'	Wet	60	CL	brown clay	
34	0.0							
35							End of boring at 35 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N7E3**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/24/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/24/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	30	Fill/ML	crushed brick, brown silty sand, gravel, asphalt	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	60	Fill/ML ML/CL	5-7 dark brown silty sand, gravel 7-10 gray clay/ silty sand, gravel	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	ML	10-13 gray loose silt with gravel 13-15 gray-brown silty clay	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	dark gray/brown clay with roots throughout	
16	1.5							
17	3.8							
18	18.0							
19	5.2							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N7E3**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/24/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/24/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	0.0		20-25'	Wet	60	ML	20-23 gray silt	
24	0.0					SP	23-25 gray fine sand	
25	0.0							
26	281.0	SB17 N7E3 25-27						
27	329.0							
28	223.0		25-30'	N/A	60	SP	25-27 fine sand/silt moderately coated in Coal tar	
29	345.0						27-30 heavily coated	
30	380.0							
31	0.0	SB17 N7E3 30-32						
32	0.0							
33	0.0		30-35'	Wet	60	ML	30-33 gray silt	
34	0.0					CL	33-35 brown clay	
35	0.0							
36	0.0							
37	0.0							
38	0.0		35-40'	Wet	60	SP	Brown medium sand	
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N4E2**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/24/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/24/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	35	Fill/ML	concrete and gravel, some brown silty sand	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Moist	25	Fill/ML	crushed concrete, gravel, wood	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Moist	60	Fill/ML	gray silt, with abundant gravel and wood pieces	
11	0.0							
12	0.0					CL	gray clay, gravel, trace roots	
13	0.0							
14	0.0							
15	0.0		15-20'	Moist	60	CL	gray clay with roots	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N4E2**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/24/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/24/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	31.0	SB17 N4E2 20-22	20-25'	Wet	60	CL	20-21 gray blue clay	
22	80.0							
23	192.0					ML/SP	gray/blue silty sand, blebs and moderately coated 21-25	
24	230.0							
25	210.0							
26	25.0		25-30'	Wet	60	ML	brown fine sand and silt with strong sheen	
27	37.0							
28	17.0							
29	41.0							
30	19.0							
31	0.0	SB17 N4E2 30-32	30-35'	Wet	60	CL/ML	brown silty clay	
32	0.0							
33	0.0							
34	0.0							
35	0.0							
36	0.0		35-40'	Wet	60	SP	medium brown sand	
37	0.0							
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N4E3**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/24/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/24/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	50	Fill/SP	tan fine sand, beachy, "clean fill"	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	35	Fill/ML	5-6 tan fine sand "clean fill" 6-9 gravel/pea gravel only 9-10 dark gray silt with some clay and gravel	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	50	ML CL	10-11 gravel (overburden) 11-14 dark gray silt with some clay and gravel 14-15 dark brown clay with roots	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	50	CL	15-16 gravel (overburden) 16-20 dark brown then gray clay with roots, organic odor	
16	27.0							
17	43.0							
18	15.2							
19	14.7							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N4E3**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/24/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/24/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	249.0	SB17 N4E3 20-22	20-25'	Wet	60	SP/ML	gray/blue fine sand and silt, heavily coated at 21-22, lenses at 23' and 24'	
	497.0							
22	329.0							
23	268.0							
24	322.0							
25	263.0		25-30'	Wet	60	ML	Brown fine silt with fine sand, heavy sheen	
26	195.0							
27	102.0							
28	131.0							
29	127.0							
30	0.0	SB17 N4E3 30-32	30-35'	Wet	60	CL	30-33 brown clay 33-35 brown silty clay	
31	0.0							
32	0.0							
33	0.0							
34	0.0							
35	0.0		35-40'	Wet	60	SP	Brown medium sand	
36	0.0							
37	0.0							
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N4E3**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/25/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/25/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	50	Fill/ML	0-1&3-4 concrete brown silty sand with crushed brick	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Moist	30	Fill/ML	5-6 concrete dark gray silty sand with abundant gravel, some wood gray silty clay 9-10	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Moist	40	ML CL	loose gray silty clay with gravel gray peaty clay with roots(13-15), organic odors	
11	0.0							
12	68.0							
13	59.0							
14	47.0							
15	32.0		15-20'	Moist	60	CL	gray clay with roots, organic odor all roots19-20	
16	84.0							
17	73.0							
18	200.0							
19	105.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N4E3**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/25/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/25/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	112.0	SB17 N3E2 20-22	20-25'	Wet	60	CL SP/ML	20-21 gray clay 21-25 gray/blue fine sand and silt saturated in coal tar	
22	387.0							
23	493.0							
24	321.0							
25	284.0							
26	12.8		25-30'	Wet	60	ML	dark brown silt and fine sand, sheen 25-27	
27	1.5	SB17 N3E2 26-28						
28	0.0							
29	0.0							
30	0.0							
31	0.0		30-35'	Wet	60	ML CL	brown silt and little fine sand 32-35 brown clay	
32	0.0							
33	0.0							
34	0.0							
35	0.0		35-40'	Wet	60	SP	medium brown sand	
36	0.0							
37	0.0							
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N7E4**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/25/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/25/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	30	Fill	mostly crushed brick, brown silty sand, asphalt, gravel	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Moist	45	Fill	5-6 concrete, gravel brown silty sand, pieces of glass, gravel 9-10 little clay, gravel	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	50	Fill/CL ML	10-12 gray clay, little gravel, little silt, roots 12-15 gray brown silty clay	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	dark gray clay with roots compact 'till 19	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N7E4**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/25/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/25/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	0.0		20-25'	Wet	15	CL	gray/blue silty clay	
24	0.0							
25	0.0							
26	0.0							
27	0.0					ML	25-27 brown to dark brown fine sand and silt	
28	0.0		25-30'	Wet	60	CL	27-29 brown clay	
29	0.0					SP	29-30 brown fine sand	
30	0.0							
31	0.0							
32	0.0		30-35'	Wet	60	SP	brown medium sand	
33	0.0							
34	0.0							
35							End of boring at 35 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N6E2**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/25/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/25/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
	0.0		0-5	Dry	60	Fill/SP	tan fine sand "clean fill," and gravel	
1	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Moist	20	Fill/SP	tan fine sand "clean fill," and gravel	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Moist	20	Fill/ML	gravel, dark gray silt	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Moist	60	CL	Brown to gray clay	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N6E2**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/25/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/25/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
	0.0					CL	20- 22 gray/blue clay with silt	
22								
	45.0		20-25'	Wet	60	ML	22-23 gray/blue silty sand	
23								
	180.0	SB17 N6E2 23-25				SP	23-25 gray blue fine sand, mod coated in coal tar	
24								
	192.0							
25								
	230.0							
26								
	311.0							
27								
	320.0		25-30'	Wet	60	ML	brown silt, mod-heavily coated in coal tar, strong sheen	
28								
	195.0							
29								
	208.0							
30								
	0.0	SB17 N6E2 30-32						
31								
	0.0					CL		
32								
	0.0		30-35'	Wet	60	SP	30-33 brown clay 33-35 brown fine to medium sand	
33								
	0.0							
34								
	0.0							
35								
	0.0							
36								
	0.0							
37								
	0.0		35-40'	Wet	60	SP	Brown fine to medium sand	
38								
	0.0							
39								
	0.0							
40								
							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N6E2**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/25/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/25/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	FIll	concrete 0-2 asphalt, gravel, trace silt	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Moist	20	Fill/ML	gravel, wood, gray silty sand	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Moist	20	ML CL	brown silt gray clay with roots 14.5-15	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	N/A	0	N/A	no recovery	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N6E2**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/25/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/25/23	Drill Rig: 7822 DT	GPS Coordinates: N/A
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	0.0		20-25'	Wet	60	SP	gray/blue fine sand	
24	0.0							
25	0.0							
26	256.0	SB17 N6E3 25-27						
27	239.0					ML	brown silt some clay mod-heavily coated in coal tar	
28	195.0		25-30'	Wet	60	CL	brown clay	
29	43.0							
30	27.0							
31	0.0	SB17 N6E3 30-32						
32	0.0							
33	0.0		30-35'	Wet	60	CL/ML	Brown clay and silt	
34	0.0							
35	0.0							
36	0.0							
37	0.0							
38	0.0		35-40'	Wet	60	SP	medium brown sand	
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800
F. (631) 269-1599

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N4E4**
	Weather:	
	Geologist: AK	Total Depth: 35'
Start Date: 1/26/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/26/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	45	Fill	concrete 0-1 and 2-3, brown silty sand, gravel	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Moist	40	Fill/ML	dark gray silt with gravel, asphalt	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	N/A	0	N/A	No recovery	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Moist	60	CL	gray clay with roots	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800
F. (631) 269-1599

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N4E4**
	Weather:	
	Geologist: AK	Total Depth: 35'
Start Date: 1/26/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/26/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20	49.0		20-25'	Wet	60	ML	4" gravel (overburden) 20-21 gray silty clay 21-25 gray blue silt, moderately coated at 22'	
21	138.0	SB17 N4E4 21-23						
22	250.0							
23	220.0							
24	48.0							
25	25.0		25-30'	Wet	60	ML	25-28 brown silt with sheen brown clay 28-30	
26	17.0							
27	0.0							
28	0.0	SB17 N4E4 28-30						
29	0.0							
30	0.0		30-35'	Wet	60	CL SP	30-33 brown clay 33-35 brown medium sand	
31	0.0							
32	0.0							
33	0.0							
34	0.0							
35							End of boring at 35 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N4E5**
	Weather:	
	Geologist: AK	Total Depth: 35'
Start Date: 1/26/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/26/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
	0.0		0-5	Dry	40	Fill/ML	0-1 concrete 1-3brown fine sand 3-5dark brown silty sand, compact	
1	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Moist	50	Fill/ML	dark gray silty clay with gravel	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Moist	60	CL	gray clay trace gravel	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Moist	60	CL	gray clay with roots 19-20 all roots	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N4E5**
	Weather:	
	Geologist: AK	Total Depth: 35'
Start Date: 1/26/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/26/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	0.0		20-25'	Wet	25	ML	Gray/blue silt and clay	
24	0.0							
25	0.0							
26	0.0							
27	0.0							
28	0.0		25-30'	Wet	60	ML	gray/blue silt brown silt trace clay	
29	0.0							
30								
							End of boring at 30 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800
F. (631) 269-1599

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N5E4**
	Weather:	
	Geologist: AK	Total Depth: 35'
Start Date: 1/26/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/26/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	50	Fill	0-3 concrete, crushed brick, brown silty sand	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Moist Wet	50	Fill/ML	gray silt with gravel, wood @6', faint piney odor	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	30	Fill/ML ML/CL	10-12 gray silt with gravel 12-15 gray silty clay	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Moist	60	CL	gray clay with roots 19-20 abundant roots	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800
F. (631) 269-1599

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N5E4**
	Weather:	
	Geologist: AK	Total Depth: 35'
Start Date: 1/26/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/26/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	0.0		20-25'	Wet	60	CL/SP	20-21 gray/blue fine sand and clay	
24	0.0					SP	21-25 gray/blue fine sand	
25	0.0							
26	36.0	SB17 N5E4 25-27						
27	21.0							
28	1.5		25-30'	Wet	60	ML	brown silt, light-mod coated in CT and Sheen	
29	0.0	SB17 N5E4 28-30					brown silty clay	
30	0.0							
31	0.0							
32	0.0		30-35'	Wet	60	SP	fine-medium brown sand	
33	0.0							
34	0.0							
35								
							End of boring at 35 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800
F. (631) 269-1599

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N5E3**
	Weather:	
	Geologist: AK	Total Depth: 35'
Start Date: 1/26/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/26/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	40	Fill/ML	gravel 90% trace tan fine sand	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	35	Fill/ML	gravel, dk brown silt with gravel, trace wood	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	45	ML CL	loose gravel and gray silt gray silty clay and gravel	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	dark brown/gray clay with roots	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800
F. (631) 269-1599

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N5E3**
	Weather:	
	Geologist: AK	Total Depth: 35'
Start Date: 1/26/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/26/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	0.0		20-25'	Wet	30	ML/SP	gray/blue silt and fine sand	
24	45.0	SB17 N5E3 23-25					sheen 24-25	
25	38.0							
26	-							
27	-							
28	-		25-30'	N/A	0	N/A	No recovery	
29	-							
30	-							
31	0.0	SB17 N5E3 30-32						
32	0.0							
33	0.0		30-35'	Wet	50	CL	brown clay	
34	0.0						medum brown sand	
35	0.0							
							End of boring at 35 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800
F. (631) 269-1599

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N3E3**
	Weather:	
	Geologist: AK	Total Depth: 35'
Start Date: 1/26/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/26/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	Fill	brown silty sand, trade brick, abundant gravel 3-4 concrete	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	60	Fill/ML	Dark gray silt, little clay, abundant gravel, trace wood at 8'	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	Fill/ML CL	gray loose silt and gravel gray clay with trace roots, compact	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	gray clay with roots, compact	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800
F. (631) 269-1599

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N3E3**
	Weather:	
	Geologist: AK	Total Depth: 35'
Start Date: 1/26/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/26/23	Drill Rig: 7822 DT	GPS Coordinates: X,Y
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20	0.0		20-25'	Wet	60	CL SP	gray clay 20-21 21-23 gray blue clay 23-25 gray blue clay and fine sand, liner lightly coated in coal tar	
21	0.0							
22	32.0							
23	75.0	SB17 N3E3 23-25						
24	84.0							
25	0.0	SB17 N3E3 25-27	25-30'	Wet	60	ML	25-27 gray blue silt and clay 27-30 brown silt and fine sand	
26	0.0							
27	0.0							
28	0.0							
29	0.0							
30	0.0		30-35'	Wet	60	ML CL	30-31 brown silt and fine sand 31-35 brown clay	
31	0.0							
32	0.0							
33	0.0							
34	0.0							
35							End of boring at 35 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800
F. (631) 269-1599

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N3E4**
	Weather:	
	Geologist: AK	Total Depth: 30'
Start Date: 1/26/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/26/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	Fill/ML	brown silty sand, gravel, trace brick, concrete	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	60	Fill/ML	brown silty sand, gravel	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	ML	gray silty sand	
11	0.0							
12	0.0					CL	gray clay	
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	gray clay and roots	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800
F. (631) 269-1599

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N3E4**
	Weather:	
	Geologist: AK	Total Depth: 30'
Start Date: 1/26/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/26/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	0.0		20-25'	Wet	60	ML/SP	gray/blue fine sand and silt	
24	0.0							
25	0.0							
26	0.0							
27	0.0							
28	0.0		25-30'	Wet	60	SP	brown fine sand brown clay	
29	0.0							
30								
							End of boring at 30 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800
F. (631) 269-1599

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N6E4**
	Weather:	
	Geologist: AK	Total Depth: 35'
Start Date: 1/26/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/26/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	Fill	0-2 gravel and concrete brown to tan fine sand "clean fill"	
2	0.0							
3	0.0							
4	0.0							
5	0.0							
6	0.0		5-10'	Wet	60	Fill/ML	brown silt with abundant gravel, shells @8', asphalt 9-10 compact silt/clay	
7	0.0							
8	0.0							
9	0.0							
10	0.0							
11	0.0		10-15'	Wet	60	CL	10-12 gray/brown clay 12-14 loose brown silty clay 14-15 brown clay	
12	0.0							
13	0.0							
14	0.0							
15	0.0							
16	0.0		15-20'	Wet	60	CL	gray/brown clay with roots	
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800
F. (631) 269-1599

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N6E4**
	Weather:	
	Geologist: AK	Total Depth: 35'
Start Date: 1/26/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/26/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	0.0		20-25'	Wet	60	SP/ML	gray/blue fine sand and little silt	
24	0.0							
25	0.0							
26	0.0							
27	0.0							
28	0.0		25-30'	Wet	60	ML CL	brown silt brown clay	
29	0.0							
30	0.0							
31	0.0							
32	0.0							
33	0.0		30-35'	Wet	60	CL SP	brown clay brown fine sand	
34	0.0							
35							End of boring at 35 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S2E1**
	Weather:	
	Geologist: AK	Total Depth: 35'
Start Date: 1/27/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/27/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	25	Fill/ML	brown silty sand and gravel, trace wood at 3'+L34	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	35	Fill/ML	brown compact silty sand, trace gravel	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	0	N/A	No recovery	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	45	CL	gray clay with trace roots last 1" roots only	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S2E1**
	Weather:	
	Geologist: AK	Total Depth: 35'
Start Date: 1/27/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/27/23	Drill Rig: 7822 DT	GPS Coordinates: X,Y
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	0.0		20-25'	Wet	30	CL	20-22.5 gray clay	
24	0.0					SP/ML	22.5 -25 gray/blue fine sand, trace silt	
25	0.0							
26	0.0							
27	0.0							
28	0.0		25-30'	Wet	60		25-27 brown silt, trace fine sand	
29	0.0						27-30 brown fine sand	
30	204.0	SB17 S2E1 30-32						
31	187.0							
32	211.0		30-35'	Wet	30		30-34 brown silt, heavily coated in coal tar	
33	145.0						34-35 brown silty clay	
34	32.0							
35	0.0	SB17 S2E1 35-37						
36	0.0							
37	0.0		35-40'	Wet	60		Brown medium sand	
38	0.0							
39	0.0							
40	0.0							
41	0.0							

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S2E1**
	Weather:	
	Geologist: AK	Total Depth: 35'
Start Date: 1/27/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/27/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
42	0.0		35-40'	Wet	60		Brown medium sand	
43	0.0							
44	0.0							
45							End of boring at 35 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S2E2**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/27/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/27/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	50	Fill	95% crushed brick 4-5 concrete	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	25	Fill/ML	5-7 gravel gray/ brown silt, trace clay	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60		10-11 loose gray silt and gravel 11-15 gray clay with roots	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60		gray clay trace roots	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S2E2**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/27/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/27/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	0.0		20-25'	Wet	N/A	N/A	No recovery	
24	0.0							
25	0.0							
26	0.0							
27	0.0						25-27 gray silt trace fine sand	
28	0.0		25-30'	Wet			27-30 brown silt	
29	0.0							
30	0.0							
31	0.0							
32	0.0							
33	0.0		30-35'	Wet			brown silt	
34	32.0	SB17 S2E2					34-35 light-mod coated in coal tar	
35	67.0	33-35						
36	0.0	SB17 S2E2						
37	0.0	35-37						
38	0.0		35-40'	Wet			brown fine-medium sand	
39	0.0							
40	0.0							
							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S1E3**
	Weather:	
	Geologist: AK	Total Depth: 35'
Start Date: 1/27/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/27/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
	0.0							
1	0.0							
2	0.0		0-5	Dry	60	Fill	0-2 brown silty sand and gravel 2-5 concrete	
3	0.0							
4	0.0							
5	0.0							
6	0.0							
7	0.0		5-10'	Wet	40	Fill/ML	5-6 concrete and gravel brown silt, compact, trace gravel	
8	0.0							
9	0.0							
10	0.0							
11	0.0							
12	0.0		10-15'	Wet	6	ML	limited recovery, gravel trace silt	
13	0.0							
14	0.0							
15	0.0							
16	0.0							
17	0.0		15-20'	Wet	60	CL	gray clay roots 19-20	
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S1E3**
	Weather:	
	Geologist: AK	Total Depth: 35'
Start Date: 1/27/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/27/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	0.0		20-25'	Wet	60	CL	gray clay 20-22 gray/blue clay 22-25	
24	0.0							
25	0.0							
26	0.0							
27	0.0							
28	0.0		25-30'	Wet	2"	ML	little/no recovery, brown silt	
29	0.0							
30	0.0							
31	0.0							
32	0.0							
33	0.0		30-35'	Wet	60	ML	Brown silt	
34	0.0							
35								
							End of boring at 35 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S2E3**
	Weather:	
	Geologist: AK	Total Depth: 35'
Start Date: 1/27/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/27/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	50	Fill	0-1 concrete 1-3 crushed brick 3-5 concrete	
2	0.0							
3	0.0							
4	0.0							
5	0.0							
6	0.0		5-10'	Wet	45	Fill/ML	5-6 concrete 6-7 gravel brown silt, trace-little sand with gravel	
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	Fill/ML CL	10-12 gravel and brown silty sand 12-13 compact gravel, brown silty sand 13-15 gray clay with trace roots	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	gray clay with trace roots	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S2E3**
	Weather:	
	Geologist: AK	Total Depth: 35'
Start Date: 1/27/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/27/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	0.0		20-25'	Wet	60	CL	20-21 gray clay	
24	0.0					ML	21-25 gray/blue compact silt	
25	0.0							
26	0.0							
27	0.0							
28	0.0		25-30'	Wet	60	ML	brown silt	
29	0.0						4" brown/tan clay at 30'	
30	0.0							
31	0.0					ML	brown silt	
32	0.0							
33	0.0		30-35'	Wet	60	CL	brown clay	
34	0.0					ML	brown silt	
35								
							End of boring at 35 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N5E5**
	Weather:	
	Geologist: AK	Total Depth: 30'
Start Date: 1/26/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/27/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	Fill/ML	0-1 concrete brown silty sand and crushed brick, gravel	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	60	Fill/ML	5-6 crushed brick and brown silty sand, gravel 6-8 gray/brown silt and gravel 8-10 brown silt trace clay	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	ML CL SP	10-12 brown silt, fine sand and trace clay 12-14.5 brown clay 14.5-15 brown fine sand	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	ML/CL	brown silt and clay	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N5E5**
	Weather:	
	Geologist: AK	Total Depth: 30'
Start Date: 1/26/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/27/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	0.0		20-25'	Wet	60	CL SP	20-22.5 brown clay with roots 22.5-25 brown/gray fine sand	
24	0.0							
25	0.0							
26	0.0							
27	0.0							
28	0.0		25-30'	Wet	60	ML CL	25-28 brown silt 28-30 brown clay	
29	0.0							
30	0.0							
							End of boring at 30 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-E3**
	Weather:	
	Geologist: AK	Total Depth: 35'
Start Date: 1/27/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/27/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	Fill	crushed brick, concrete, trace wood, abundant gravel	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	50	Fill/ML	5-5.5 concrete abundant gravel, dark brown silty sand	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	Fill CL	10-12.5 100% gravel 12.5-15 gray clay with roots 14-15	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	55	ML CL	4"gravel overburden 15-16 loose gray silt 16-19 gray clay with roots all roots 19-20	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-E3**
	Weather:	
	Geologist: AK	Total Depth: 35'
Start Date: 1/27/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/27/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	0.0		20-25'	Wet	30	ML	brown/gray silt some clay	
24	0.0							
25	0.0							
26	0.0							
27	0.0					CL	25-26 gray blue clay trace silt	
28	0.0		25-30'	Wet	60	ML	26-30 brown silt	
29	0.0							
30	0.0							
31	0.0							
32	0.0		30-35'	Wet	60	CL	brown clay	
33	0.0							
34	0.0							
35							End of boring at 35 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S3**
	Weather:	
	Geologist: AK	Total Depth: 45'
Start Date: 1/30/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/30/23	Drill Rig: 7822 DT	GPS Coordinates: X,Y
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	40	Fill/ML	asphalt, wood, crushed brick, brown silty sand	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	40	Fill/ML	gravel, brick, wood brown silt wood 9-10	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	CL	loose gray clay	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	40	Fill/ML	gray silt with abundant gravel	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S3**
	Weather:	
	Geologist: AK	Total Depth: 45'
Start Date: 1/30/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/30/23	Drill Rig: 7822 DT	GPS Coordinates: X,Y
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	0.0		20-25'	Wet	12	CL	gray/blue silty clay	
24	0.0							
25	0.0							
26	381.0	SB17 S3 25-27						
27	297.0							
28	405.0		25-30'	Wet	55	SP	moderate to heavily coated, brown/gray fine sand	
29	285.0							
30	310.0							
31	52.0							
32	45.0					ML	brown silt	
33	15.0		30-35'	Wet	60		trace sheen	
34	0.0					SP	brown fine sand	
35	0.0							
36	15.1	SB17 S3 35-37						
37	6,8							
38	0.0		35-40'	Wet	60	SP	35-35.5 trace sheen, brown fine sand	
39	0.0							
40	0.0							
41	0.0							

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S3**
	Weather:	
	Geologist: AK	Total Depth: 45'
Start Date: 1/30/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/30/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
42	0.0		35-40'	Wet	60	SP	fine to medium brown sand	
43	0.0							
44	0.0							
45							End of boring at 45 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977 Site/Project Name: 318 Nevins Street Site Address: 318 Nevins Street Weather: Geologist: AK	**Boring ID:** **SB-17-S3E1** Total Depth: 40'
Start Date: 1/30/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/30/23	Drill Rig: 7822 DT	GPS Coordinates: X,Y
Completion Time: 14:00	Sampler Type/Len: Dual tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	50	Fill/ML	asphalt, gravel, concrete, brick wood 3-4 compact dark brown silt with gravel	
2	0.0							
3	0.0							
4	0.0							
5	0.0							
6	0.0		5-10'	Wet	50	Fill/ ML/ CL	gray silt, gravel, wood at 6' compact gray silt with clay gray clay 9-10	
7	0.0							
8	0.0							
9	0.0							
10	0.0							
11	0.0		10-15'	Wet	60	Fill/ML CL	gravel and gray silt 10-11 gray clay with roots	
12	0.0							
13	0.0							
14	0.0							
15	0.0							
16	0.0		15-20'	Wet	55	CL	gray clay, trace roots	
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S3E1**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/30/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/30/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20	0.0		20-25'	Wet	50	CL	gray/blue clay	
21	0.0							
22	0.0							
23	0.0							
24	0.0							
25	0.0		25-30'	Wet	60	SP	brown silt and fine sand	
26	0.0							
27	0.0							
28	0.0							
29	0.0							
30	0.0		30-35'	Wet	60	SP	brown fine sand	
31	0.0							
32	0.0							
33	0.0							
34	0.0							
35	0.0		35-40'	Wet	60	SP	fine to coarse brown sand	
36	0.0							
37	0.0							
38	0.0							
39	0.0							
							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S4**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/30/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/30/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	45	Fill/ML	brown silty sand, gravel, concrete, brick	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	50	Fill/ML	gray silt, trace brick gray clay and trace gravel	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	CL/Fill	loose gray clay with gravel	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	-		15-20'	N/A	0	N/A	No recovery	
16	-							
17	-							
18	-							
19	-							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S4**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/30/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/30/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	-							
22	-							
23	-		20-25'	N/A	0	N/A	No recovery	
24	-							
25	-							
26	0.0	SB17 S4 25-27						
27	0.0							
28	0.0		25-30'	Wet	60	SP	gray fine sand trace silt with light coating coal tar	
29	0.0							
30	0.0							
31	17.3							
32	15.5							
33	9.0		30-35'	Wet	60	SP	fine brown sand	
34	0.0	SB17 S4 33-35						
35	0.0							
36	0.0							
37	0.0		35-40'	Wet	60	SP	brown medium sand	
38	0.0							
39	0.0							
40								
							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S4E1**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/30/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/30/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	40	Fill/ML	asphalt, gravel, brick, brown silty sand, small intervals of wood at 2' and 4'	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	45	Fill/ML CL	brown/gray silty sand with gravel 8-10 dark gray clay	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	CL	abundant gravel, loose gray clay 10-12 compact gray clay with roots 12-15	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	gray clay with roots	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S4E1**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/30/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/30/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	0.0		20-25'	Wet	50	CL ML	gray clay20-22 roots 22-23 gray blue compact silt 23-25	
24	0.0							
25	0.0							
26	0.0							
27	0.0							
28	0.0		25-30'	Wet	60	SP	fine brown sand	
29	0.0							
30	0.0							
31	0.0							
32	0.0							
33	0.0		30-35'	Wet	60	SP	brown medium sand	
34	0.0							
35	0.0							
36	0.0							
37	0.0							
38	0.0		35-40'	Wet	60	SP	brown medium sand	
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S5**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/27/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/27/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	40	Fill/ML	crushed brick 0-1 wood, treated wood odors 2-3 brown/gray silty sand with gravel	
2	97.0							
3	400.0							
4	0.0							
5	0.0							
6	0.0		5-10'	Wet	40	Fill/ML	gravel and brown/gray silty sand wood 7-8	
7	0.0							
8	89.0							
9	35.0							
10	0.0							
11	0.0		10-15'	Wet Moist Wet	50	Fill/ML CL Fill/ML	gray silt and gravel, loose gray clay, moist wood in clay and gravel, wet	
12	0.0							
13	0.0							
14	0.0							
15	0.0							
16	0.0		15-20'	Wet	40	Fill/CL	loose gray clay and gravel	
17	0.0							
18	0.0							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S5**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/27/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/27/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
20								
21	0.0							
22	0.0							
23	0.0		20-25'	Wet	25	ML/SP	gray/blue silt and fine sand	
24	0.0							
25	0.0							
26	0.0							
27	0.0							
28	0.0		25-30'	Wet	40	ML/SP	Gray/Blue silt and fine sand	
29	0.0							
30	0.0							
31	0.0							
32	0.0							
33	0.0		30-35'	Wet	50	SP	brown fine sand	
34	0.0							
35	0.0							
36	0.0							
37	0.0							
38	0.0		35-40'	Wet	60	SP	brown fine sand	
39	0.0							
40								
							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

Appendix B

NYSDEC Guidelines on Installation of
Overburden Wells (Monitoring Wells) for
Environmental Investigations

IMPACT ENVIRONMENTAL
170 Keyland Court
Bohemia, New York 11716
TEL: (631) 268-8800
FAX: (631) 269-1599

GUIDELINES ON INSTALLATION OF OVERBURDEN WELLS (MONITORING WELLS) FOR ENVIRONMENTAL INVESTIGATIONS

Contents

GUIDELINES ON INSTALLATION OF OVERBURDEN WELLS (MONITORING WELLS) FOR ENVIRONMENTAL INVESTIGATIONS 1
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Introduction:

The New York State Department of Environmental Conservation Division of Environmental Remediation (the Department) utilizes the US EPA *Design and Installation of Monitoring Wells Guidance* and ASTM D5092, *Standard Practice for Design and Installation of Groundwater Monitoring Wells*, as standards for the design and installation of overburden monitoring wells (monitoring wells) for remedial investigations. Using these documents as a basis, the Department has developed the following which serves to standardize the design and construction of monitoring wells so that the environmental data and samples that are collected accurately represent the actual site conditions and can be relied upon when evaluating nature and extent of groundwater contamination and remedial alternatives.

This document does not address other types of wells or shallow groundwater conditions and may not be appropriate for various site-specific conditions or applications. For these other types of groundwater monitoring wells, the Department Project Manager (PM) will require a detailed site-specific plan be submitted in writing for review.

Purpose and Scope:

The purpose of this document is to provide standard construction requirements for the design and installation of groundwater monitoring wells installed during investigations performed pursuant subject to 6-NYCRR Part 375 and conducted under Department's Spills Program. This document is based on, and in general conformance with, US EPA Design and Installation of Monitoring Wells Guidance and ASTM D5092, Standard Practice for Design and Installation of Groundwater Monitoring Wells. The Department's standardization of monitoring well design and construction installation will:

1) Improve environmental work plan consistency throughout the regulated community;
2) Standardize and streamline the remedial investigation work plan process;
3) Limit the threat of contamination migration and surficial infiltration;
4) Improve the accuracy and precision of groundwater quality sample results; and
5) Provide a fixed monitoring points to ensure groundwater elevations can be accurately gauged with a high degree of reliability.

This document does not address the collection of borehole logging data, soil classification, screen interval placement, soil sampling procedures, drilling health and safety, decontamination, nor monitoring well decommissioning. NYSDEC's DER-10 Guidance and Commissioner's Policy 43 provide information relative to these activities.

Applicability:

Monitoring wells are utilized to access and observe groundwater conditions in the saturated water-bearing zone in unconsolidated material beneath the ground surface, in a specific location, at a known elevation, and over extended periods of time. Data collected from monitoring wells routinely includes the elevation of the water table, water quality parameter measurements, and representative groundwater samples for contaminant analysis. Monitoring wells are often accessed repeatedly throughout the course of an environmental project to obtain data to develop statistical trends and monitor the groundwater.

The following is a partial list of applications for the installation of groundwater monitoring wells in which this document applies:

- Site characterization;
- Remedial investigations;
- Determining the groundwater elevations;
- Determining the presence of non-aqueous phase liquid (NAPL);
- Long-term groundwater elevations and quality monitoring;
- Groundwater protection decision making; and
- Post-remedial Site Management groundwater monitoring.

This document does not apply to the following uses:

- Temporary wells;
- Pre-packed sand pack wells;
- Bedrock investigations;
- Groundwater less than five feet below the ground surface;
- Groundwater sample collection where the static head is above the well screen;

- Multi-cased wells;
- Dense non-aqueous phase liquid (DNAPL) gauging;
- NAPL or groundwater recovery;
- Multi-cased wells;
- Pump tests, bail-down tests, groundwater extraction, or construction dewatering;
- Chemical or biological injections points; and

For the above listed uses, designs shall be in conformance with industry standards and with consultation with the Department Project Manager (PM).

Drilling Considerations:

Several drilling methods are routinely employed in the installation of groundwater monitoring wells for various site conditions; therefore, the method of drilling the borehole will be proposed by the qualified environmental professional and approved by the Department's site PM. A qualified environmental professional, as recognized in New York State Department of Environmental Conservation (NYSDEC) DER-10, can be a: 1) Professional Engineer (PE) 2) Professional Geologist, or 3) recognized Qualified Environmental Professional (QEP) as defined in NYCRR-375-1.2(ak).

The chosen drilling method must produce a borehole sufficient in diameter to allow for the construction of the permanent groundwater monitoring well including a minimum annular space of two inches around the entire monitoring well circumference. For example, installation of a 2-inch monitoring well would require a minimum 6 3/8-inch borehole. The borehole diameter may be increased by the qualified environmental professional based on predicted, observed, or known subsurface soil characteristics (e.g., fine-grained soil) and need for a larger sand pack without approval by the Department.

Vertical over-drilling the borehole will be required to allow for the installation of an approximately six-inch thick sand pack that extends beneath the bottom of the monitoring well screen.

Monitoring well installation procedures may require changes during field activities due to unforeseen subsurface conditions. Deviations from the approved work plan must be discussed with the Department's PM/field representative prior to implementation and must be documented in monitoring well construction logs, boring logs, daily field logs, and in the final report.

Figures 1 and 2 depict typical construction details for flush mounted and stick-up type monitoring wells.

Screen and Casing Pipe:

The inside diameter of the monitoring well screen and riser pipe must be either two-inches or four-inches in diameter and installed straight and plumb to allow for the insertion of equipment for gauging, monitoring, and sampling. It may be necessary to install well centralizers on the screen and riser pipe to ensure a uniform filter pack. A permanent mark will be placed on the north side of the casing as a reference point for horizontal and vertical control and for groundwater measurements. Monitoring well construction materials must be comprised of either schedule 40 PVC, schedule 80 PVC, or stainless steel. Materials must be free of contaminants prior to installation. All joints are to be secured by flush-jointed threads. All caps and end plugs must be secured by either flush or jointed threads. If there is no information regarding the formation in which the well is to be installed, the monitoring well screen slot size shall be factory manufactured and 0.010-inches, unless approved by the Department PM.

Occasionally, during the extraction of the drilling equipment from the borehole, the monitoring well casing may be unintentionally drawn up within the borehole. If this occurs, the groundwater monitoring well should not be forced or driven back into the borehole. Instead, if conditions warrant, the qualified environmental professional may elect to shorten the length of the riser, or the borehole can be re-drilled and the well reset. If the original borehole needs to be abandoned, the abandonment will be in accordance with NYSDEC Commissioners Policy (CP) -43 *Groundwater Monitoring Well Decommissioning Policy,* and a replacement borehole drilled in a different location with approval from the Department's PM.

For monitoring wells designed to intersect the groundwater interface, the top of the monitoring well screen should be installed approximately two to three feet above the observed water table to account for seasonal fluctuations of the water table elevation. The maximum screen length shall be 15 feet and should not penetrate a lower aquitard. The qualified environmental professional will determine the lengths of monitoring well screen and riser along with the placement of the sand filter pack and bentonite seal in the field based on the observed groundwater elevation.

Sand Filter Pack:

A sand filter pack (aka filter pack) will be placed in the annular space around the monitoring well screen to perform as a filter between the formation material and the monitoring well screen. The sand filter pack must be compatible with the screen size; therefore, in the context of this document, the filter pack material must be:

- inert silica sand that is compatible with the formation material;
- has been manufactured as a filter sand; and
- has been certified as chemically clean by the manufacturer.

Prior to installing the monitoring well screen, an approximately six-inch thick bedding layer of sand must be installed in the bottom of the borehole. The annular space will allow for the uniform deposition of monitoring well materials around the screen and riser and for the passage of tremie pipes and monitoring well materials. The sand filter pack must fill the entire annular space over the entire length of the monitoring well screen and extend a minimum of 2-ft above the top of the monitoring well screen. The sand filter pack shall not extend higher than 5-ft below ground surface (bgs) to allow space for placement of the bentonite seal and protective casing.

A larger borehole with a wider sand pack should be considered if high levels of turbidity are expected that may result in the collection of groundwater samples that are not representative of dissolved conditions (i.e., inaccurately elevated metals and semi-volatile concentrations). The Department will allow the qualified environmental professional to advance a larger borehole without review or comment.

At sites where known or suspected contaminants are not compatible with PVC, or where NAPL may not pass through 0.010-inch slotted screen, the qualified environmental professional must consult the Department PM regarding the construction details of the monitoring well and provide proposed alternatives in a work plan for review and approval.

It may be advantageous to place a 6-inch layer of fine-grained sand above the filter pack prior to installing the bentonite seal. This layer improves the seal and prevents the bentonite from migrating into the filter pack well screen zone.

Bentonite Seal:

A bentonite seal will be placed immediately above the sand filter pack. The bentonite seal must be composed of commercially available pellets, granules, or chips and must be a minimum of 2-ft measured immediately after placement, without allowance for swelling. Following placement of the bentonite pellets or chips, water from a public water supply source or a potable private water supply, which has been verified to meet public water supplier standards/maximum contaminant levels for Per- and polyfluoroalkyl substances (PFAS), shall be poured into the annular space to hydrate the bentonite. The bentonite seal shall not be placed higher than 2-ft bgs to allow space for placement of the protective casing with cement or cement-bentonite grout. A minimum of eight hours or the manufacturer's recommended hydration time, whichever is longer, should be allotted for the hydration of the bentonite after placement in the borehole and before the remaining annular space is sealed.

Remaining Annular Space Above the Bentonite Seal:

The annular space above the bentonite seal must be sealed from surface infiltration with a cement-bentonite mixture. On certain occasions when there is 10 or more linear feet of remaining annular space to be sealed, or when the qualified environmental professional determines it is appropriate, a tremie pipe shall be used to install the cement-bentonite mixture. In these instances, installation shall start with the tremie pipe initially located within 1-ft above the top of the bentonite seal. To ensure proper gelling and low permeability, the bentonite grout must have a minimum density of 10 lbs./gallon of water. Water must be from a public water supply source or a potable private water supply, which has been verified to meet public water supplier standards/maximum contaminant levels for Per- and polyfluoroalkyl substances (PFAS). The tremie pipe shall be placed in the annulus between the drilling equipment or temporary steel casing and the riser pipe. Drill casing shall be removed from the borehole as the annular seal is installed to ensure the borehole remains stable. The grout shall be pumped through the tremie pipe to the bottom of the open annulus until a continuous, undiluted column of grout is formed from the bentonite seal to the frost line below the ground surface.

Alternatively, soil cuttings collected during the borehole advancement may be reused to fill the annular space from the top of the bentonite seal to the surface seal provided that the cuttings both: 1) exhibit no detectable photoionization detector (PID) measurements, and 2) are free of grossly contaminated material per NYCRR-375-1.2(u).

Concrete Surface Seal (Pad) and Outer Protective Casing:

At the time the surface seal is installed, a protective steel casing that is at least two-inches larger than the diameter of the monitoring well riser casing shall be installed. The protective casing must also be installed with adequate vertical space to allow for a locking well plug. A concrete surface seal (concrete pad) must then be installed around each monitoring well. Concrete shall be placed in the borehole (on top of the grout) to form a contiguous unit. The design must take into consideration pedestrian and/or vehicular traffic and must be sufficient to last the entire life cycle of the project. For two-inch or four-inch diameter monitoring wells, the Department will require a monitoring well pad that shall be 2-ft X 2-ft X 6-inches. The finished pad will be slightly sloped away from the protective steel casing to reduce the potential for surface water infiltration. In addition, the concrete must meet or exceed the minimum compressive strength required of the surrounding sidewalk flags as per local codes and permits.

The protective steel casing can be either flush mounted or a stick-up design. Flush mounted protective casings will have lids that are bolted in place while stick-up casings will have locking lids. Bollards will be

emplaced to protect against damage, as needed. If the protective casing is flush mounted, a layer of sand should be installed across the bottom of the casing to allow water to drain from around the riser pipe. For stick-up design casings, a small hole should be drilled in the side of the pipe to enable accumulated water to drain. The diameter of the hole should be small enough to discourage wasps from entering.

The materials used in the construction of the seal will be of sufficient quality that the longevity of the concrete and outer protective casing will surpass the likely duration of the project. In instances where these items fail, the Department will require repair or replacement of the monitoring well pad and outer seal for public safety and monitoring well integrity.

Locking Well Plug:

All groundwater monitoring wells shall have chemical resistant gripper plugs that effectively seal the monitoring well by creating a watertight seal. Each well plug shall be outfitted with a lock that prohibits unauthorized access to the monitoring well. The lock shall be in kept good working condition.

Well Development:

Monitoring wells will be developed after the grout seal has sufficiently cured to remove water which may have been introduced during the drilling process and to ensure the collection of representative groundwater samples and water level measurements. Groundwater monitoring wells must be developed in accordance with ASTM D5521. Groundwater monitoring wells shall be developed until the monitoring well has reached equilibrium and turbidity of the purge water is measured to 50 nephelometric turbidity units (NTUs) or less.

(FIGURES ATTACHED)

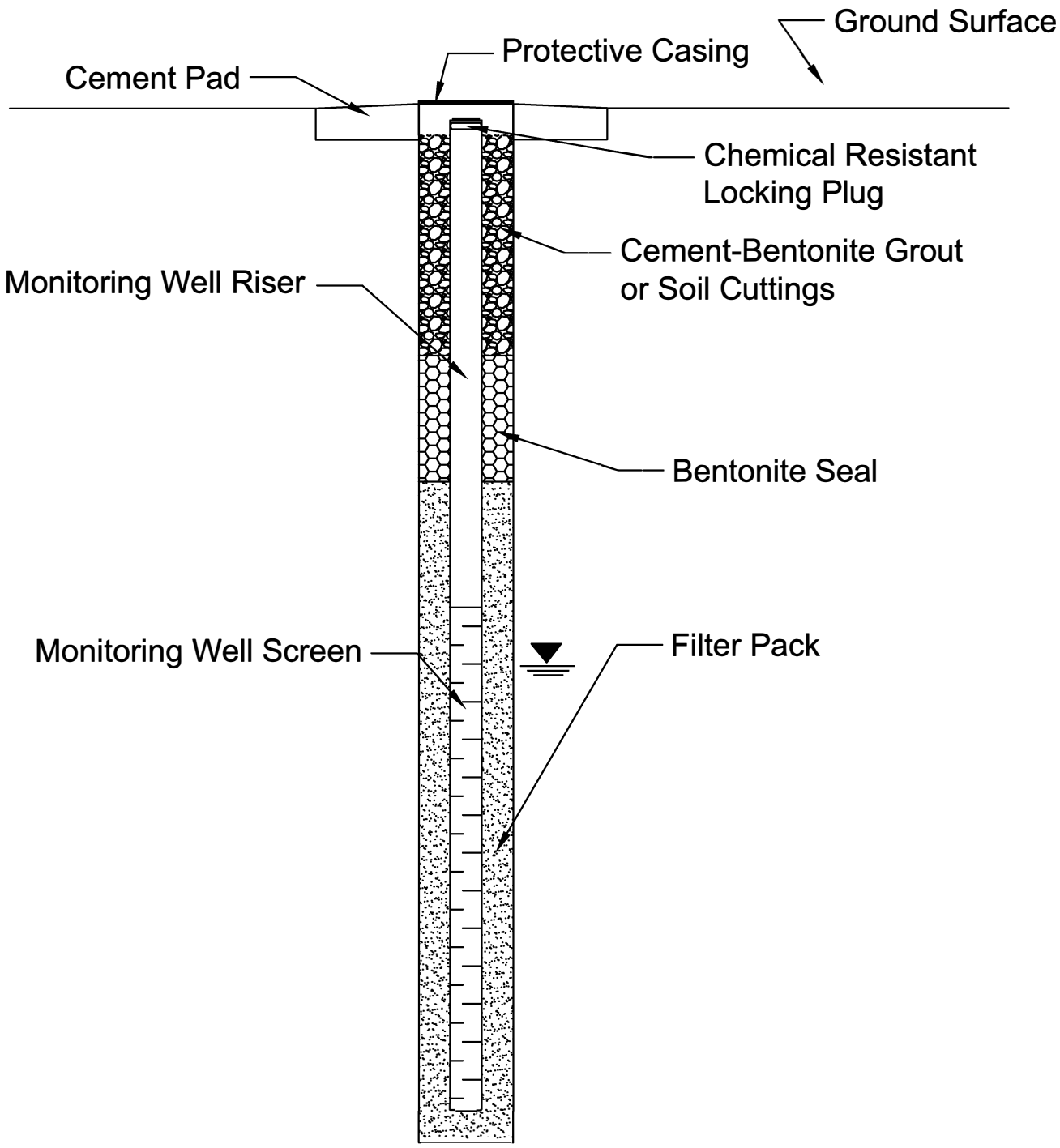


Figure 1: Flush Mounted Monitoring Well

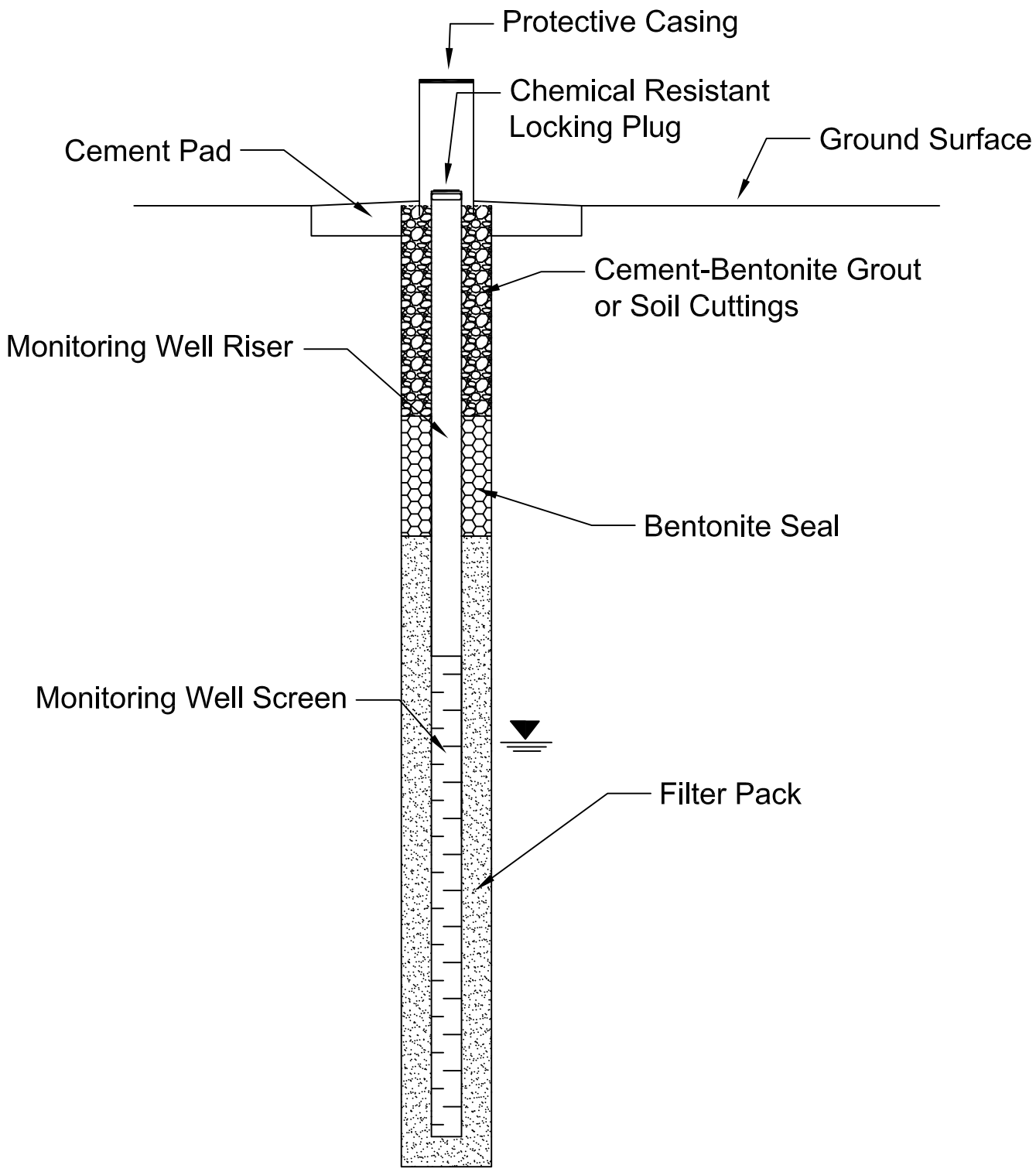


Figure 2: Stick-up Monitoring Well

Appendix C

Standard Operating Procedure (SOP) for
Decontamination of Field Equipment and
Vehicles that Enter/Exit the Site.

IMPACT ENVIRONMENTAL
170 Keyland Court
Bohemia, New York 11716
TEL: (631) 268-8800
FAX: (631) 269-1599

EQUIPMENT DECONTAMINATION AND VEHICLE ENTRANCE/EXIT STANDARD OPERATING PROCEDURE

1.0 Purpose

The purpose of this standard operating procedure (SOP) is to provide the step-by-step procedures for field decontamination of environmental sampling equipment and personal protective equipment (PPE). Decontamination of equipment and PPE is designed to ensure that sample cross-contamination, human-health exposure, and contamination transport are minimized.

2.0 Scope

This procedure applies to all IEEG personnel and subcontractors engaged in collecting environmental samples or operating in environments in which hazardous or contaminating substances are expected to be present.

3.0 Procedure

Decontaminate all non-disposable sampling equipment used at the site both before activities begin and after each sample is collected. Decontaminate all drilling and excavation equipment both before activities begin and between each investigation location. Take care that materials and solutions used for decontamination procedures are themselves not hazardous or could potentially contaminate samples (that is, are acids and solvents).

3.1 Decontamination Area

A localized decontamination area for drill rigs and other sampling equipment will be identified on-Site. The decontamination area will be selected so that decontamination fluids and soil wastes can be managed in a controlled area with minimal risk to the surrounding environment. The decontamination area will be large enough to allow temporary storage of cleaned equipment and materials before use, as well as to stage drums of decontamination investigation-derived waste (IDW). Due to the nature of work to be performed and type of equipment required, the decontamination area will be lined with a heavy-gauge polyethylene sheeting (4-mil minimum) and include a collection system designed to capture potential decontamination IDW. Decontamination areas will be laid out in such a way as to prevent overspray while performing equipment and personnel decontamination.

Smaller decontamination tasks, such as surface water and sediment equipment decontamination, may take place at the sampling locations. In this case, all required decontamination supplies, and equipment must be mobilized to the site and smaller decontamination areas for personnel and portable equipment will be provided as necessary. These locations will include basins or tubs to capture decontamination IDW, which will be transferred to larger containers (drums) as necessary.

3.2 Decontamination Equipment

The following is a list of equipment and materials that may be needed to perform decontamination:

- Plastic sheeting/membrane to serve as secondary containment for liquids
- Drill rig mud-pad

- Brushes and flat-bladed scrapers
- Garden-type water sprayers (without oil-lubricated, moving parts)
- High-pressure washer
- Portable steam cleaner
- Sump or collection system for contaminated liquid
- Wash basins and buckets
- Spray and rinse bottles
- Potable water, deionized water, and laboratory-grade detergent (Liquinox, Alconox, or similar)
- Plastic waste bags
- Leak-tight liquid waste containers (55-gallon drums or similar)

3.3 Decontamination Procedures

3.3.2 General Sampling Equipment

Conduct consistent decontamination of sampling equipment to ensure the quality of the samples collected. Decontaminate all equipment that comes into contact with potentially contaminated samples. Disposable equipment intended for one-time use that is factory wrapped generally does not need to be decontaminated before use, unless evidence of contamination is present. Disposable equipment, such as disposable bailers, spoons, TerraCore® or Encore® VOC samplers, is preferred over reusable equipment; use wherever appropriate. Decontaminate sampling equipment, including split-barrel samplers, hand- augers, reusable bailers, spoons, trowels, shovels, and pumps used to collect samples for chemical analyses before each use and before sampling at a new sampling location.

Take the following steps to decontaminate non-dedicated sampling equipment:

- Decontamination personnel will wear the appropriate PPE.
- The sequence of actual decontamination will be as follows:
    1. Remove as much gross contamination (such as pieces of soil) as possible off equipment at the sampling site.
    2. Wash water-resistant equipment thoroughly and vigorously with potable water containing non-phosphate laboratory-grade detergent such as Liquinox, Alconox, or equivalent, and using a bristle brush or similar utensil to remove any remaining residual contamination.
    3. Rinse equipment thoroughly with potable water (1st rinse).
    4. Rinse equipment thoroughly with portable water (2nd rinse).
    5. Air dry at a location where dust or other fugitive contaminants may not contact the sample equipment. Alternatively, wet equipment maybe dried with a clean, disposable paper towel to assist the drying process. All equipment should be dry before reuse.

- If the equipment is not used soon after decontamination, it should be covered or wrapped in new, oil-free aluminum foil or new, unused plastic bags to protect the decontaminated equipment from fugitive contaminates before reuse.
- Store decontaminated equipment at a secure, unexposed location out of the weather and any potential contaminant exposure.
- Wash water or rinsate solutions will be containerized and poured into a 55-gallon drum.

3.3.3 Groundwater Sampling Equipment

Proper decontamination between wells is essential to avoid introducing contaminants from the sampling equipment. For sampling with a submersible, bladder, or similar pump in which mechanisms of the pump come in direct contact with contaminated water, or sampling with a reusable stainless steel bailer, decontaminate the pump or bailer. The following steps will be used for pumps and bailers contaminated with dissolved phase contamination only:

- Wash the exterior of the pump or bailer and any associated cable thoroughly and vigorously with potable water containing non-phosphate laboratory-grade detergent such as Liquinox, Alconox, or equivalent, and using a dedicated wash bristle brush or similar brush.
- Place the pump into a potable water wash basin/reservoir containing non-phosphate laboratory-grade detergent making sure that the pump intake is fully submerged and the pump outlet is allowed to flow directly back into the wash reservoir. Set the pump to a very low flow rate and turn the pump on, allowing the wash water to recirculate through the pump mechanism for a minimum of 5 minutes. Disregard this step for reusable bailers.
- Initially, rinse the pump or bailer by repeating Steps 1 and 2 using potable water, a dedicated rinse bristle brush, and a rinse basin/reservoir containing only potable water (1st rinse).
- Final rinse the pump or bailer by duplicating Step 3 using potable water (2nd rinse).
- Dry off any excess water with a clean, disposable paper towel and allow to air dry at a location where dust or other fugitive contaminants may not contact the sample pump or bailer.
- Wash water collected within the rinse reservoir will be containerized and poured into a 55-gallon drum.

3.3.4 Measurement Devices and Monitoring Equipment

For water quality instruments, oil-water interface indicators, water level indicators, continuous water level dataloggers, and other field instruments that have the potential to come into contact with site media, at a minimum, wash with dilute laboratory-grade detergent (Liquinox or similar) and double rinse with potable and distilled/deionized water before and after each use using a similar procedure as discussed in Section 3.3.2.

3.3.5 Drilling and Subsurface Soil Sampling Equipment

Drilling equipment and associated materials will be decontaminated by the drilling contractor within the decontamination area prior to any drilling operations and between borings. Decontaminate tools used for soil sampling (for example, split spoon samplers) before and between collecting any analytical samples, as outlined in

Section 3.3.2. Thoroughly clean external and internal surfaces of drilling equipment (that is, drill bits, auger, drilling stem, and hand tools) before beginning any drilling operations and between borings using the following basic sequence:

- Remove as much gross contamination as possible off equipment at the sampling site.
- Wash equipment thoroughly and vigorously with high-temperature potable water using a high-pressure washer and/or steam cleaner. A bristle brush is also suggested to remove any persistent gross contamination.
- Rinse equipment twice thoroughly with potable water (1st and 2nd rinse).
- Air dry at a location where dust or other fugitive contaminants may not contact the sample equipment. All equipment should be dry before reuse.
- Store decontaminated equipment at a location away from any potential exposure from fugitive contamination.
- Wash water or rinsate solutions will be collected and poured into a 55-gallon drum.

4.0 Stabilized Construction Entrance(s)

Steps will be taken to ensure that vehicles departing the site will not track soil, fill or debris off-Site. Such actions may include use of temporary asphalt, concrete or stone pads or other aggregate-based egress paths between the Site and the property exit. The aggregate-based pad will be pitched back toward the Site for containment and prevention of water leaving the Site. Measures will be taken to ensure that adjacent roadways will be kept clean of project related soils, fill and debris. An outbound-vehicle inspection station will be set up close to the Site exit. Before exiting the Site, vehicles will be required to stop at the inspection station and will be examined for evidence of contaminated soil on the undercarriage, body, and wheels. Soil and debris will be removed. Brooms, shovels and clean water will be utilized for the removal of soil from vehicles and equipment, as necessary.

5.0 Investigation-Derived Wastes

Wash water or rinsate solutions will be accumulated in 55-gallon drums and subsequently transported to a waste storage area designated by the client prior to being properly disposed of off-site.

Appendix B

Metes and Bounds Legal Description

Remedial Action Work Plan
318 Nevins Street, Brooklyn, NY
NYSDEC BCP #C224350

Impact Environmental Engineering and Geology PLLC
170 KEYLAND COURT, BOHEMIA, NEW YORK 11716
TEL (631) 269-8800 ▪ FAX (631) 269-1599

SCHEDULE A – LEGAL DESCRIPTION
(Amended 12/27/2021)

ALL that certain plot, piece or parcel of land situate, lying and being in the Borough of Brooklyn, County of Kings, City and State of New York, bounded and described as follows:

BEGINNING at the comer formed by the intersection of the northwesterly side of Nevins Street with the northeasterly side of Carroll Street;

RUNNING THENCE northeasterly along the northwesterly side of Nevins Street 450 feet to the southwesterly side of Union Street;

THENCE northwesterly along the southwesterly side of Union Street 225 feet more or less to the southeasterly side of Gowanus Canal;

THENCE southwesterly along the southeasterly side of Gowanus Canal 429 feet 10 and 3/4 inches to an angle;

THENCE southerly along the easterly side of said Canal 21 feet 10 inches to the northeasterly side of Carroll Street;

THENCE southeasterly along the northeasterly side of Carroll Street 216 feet 4 and 3/4 inches to the point or place of BEGINNING.

Appendix C

Site Building Plans

Remedial Action Work Plan
318 Nevins Street, Brooklyn, NY
NYSDEC BCP #C224350

Impact Environmental Engineering and Geology PLLC
170 KEYLAND COURT, BOHEMIA, NEW YORK 11716
TEL (631) 269-8800 ▪ FAX (631) 269-1599

GENERAL NOTES

1. ALL ELEVATIONS INDICATED IN THESE DRAWINGS ARE REFERENCED TO THE PROJECT DATUM +0'-0" WHICH CORRESPONDS TO +14.00' NAVD88 ELEVATION.

2. WORK NOT INDICATED ON A PART OF THE DRAWINGS BUT REASONABLY IMPLIED TO BE SIMILAR TO THAT SHOWN AT CORRESPONDING PLACES SHALL BE REPEATED.

3. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THE STRUCTURAL DRAWINGS WITH THE ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS. IN CASE OF CONFLICT BETWEEN THE STRUCTURAL DRAWINGS AND DRAWINGS RELATED TO OTHER TRADES, THE CONTRACTOR SHALL MAKE ALLOWANCE IN HIS BID FOR THE MORE STRINGENT REQUIREMENTS. CONFLICTS BETWEEN THE STRUCTURAL DRAWINGS AND THE DRAWINGS OF OTHER TRADES SHALL NOT BE REASON FOR ANY EXTRA COST OR DELAY IN THE EXECUTION OF THE WORK.

4. IN ANY CASE OF CONFLICT BETWEEN THE NOTES, DETAILS AND SPECIFICATIONS, THE MOST RIGID REQUIREMENTS SHALL GOVERN.

5. CONTRACTOR SHALL MAKE NO DEVIATION FROM DESIGN DRAWINGS WITHOUT WRITTEN APPROVAL OF THE ARCHITECT AND/OR STRUCTURAL ENGINEER.

6. ALL DIMENSIONS INDICATED ON THE DRAWINGS ARE BASED UPON THE AVAILABLE INFORMATION AND SHALL NOT BE USED FOR ORDERING AND/OR FABRICATING MATERIALS. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING DIMENSIONS PRIOR TO ORDERING AND/OR FABRICATING MATERIALS.

7. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS BY MEASUREMENTS AT THE JOB SITE AND SHALL TAKE ANY AND ALL OTHER MEASUREMENTS NECESSARY TO VERIFY THE DRAWINGS AND TO PERFORM HIS WORK PROPERLY.

8. THE CONTRACTOR SHALL EXPOSE THE EXISTING CONSTRUCTION, VERIFY AND CHECK FIELD DIMENSIONS OF ALL EXISTING MEMBERS PRIOR TO THE PREPARATION OF SHOP DRAWINGS. IN THE EVENT THAT EXISTING CONDITIONS OR DETAILS OF CONSTRUCTION VARY FROM THOSE SHOWN ON THE STRUCTURAL DRAWINGS AND DETAILS, THE CONTRACTOR MUST MAKE NECESSARY SKETCHES SHOWING THE EXISTING CONDITIONS AND, SUBMIT THE SAME TO THE ARCHITECT AND ENGINEER FOR REVIEW AND RESOLUTION.

9. CONTRACTOR SHALL ALLOW FOR THE COST OF OPENING AND EXPOSING EXISTING STRUCTURAL FRAMING TO VERIFY AND MEASURE THE EXISTING CONDITIONS AND MEMBERS.

10. MATERIALS AND EQUIPMENT SHALL BE STORED AND TRANSPORTED IN A MANNER COMPATIBLE WITH THE ALLOWABLE FLOOR LOADINGS.

11. FOR WATERPROOFING DETAILS AND LOCATIONS, SEE ARCHITECTURAL DRAWINGS.

12. FOR LOCATION OF FLOOR DRAINS, CURBS, CONCRETE PADS AND FLOOR DEPRESSIONS, ETC. SEE ARCHITECTURAL AND MECHANICAL DRAWINGS.

13. ALL CONSTRUCTION SHALL BE PERFORMED IN CONFORMANCE WITH THE REQUIREMENTS OF THE BUILDING CODE OF THE CITY OF NEW YORK, LATEST EDITION AND REVISIONS.

14. CONTRACTOR ALONE SHALL BE RESPONSIBLE FOR THE SAFETY OF THE EXISTING STRUCTURES DURING THE ENTIRE CONSTRUCTION OF ADDITIONS TO AND/OR ALTERATIONS OF THE EXISTING STRUCTURE AND SHALL TAKE ADEQUATE PRECAUTION TO PREVENT DAMAGE TO THE EXISTING STRUCTURAL AND ARCHITECTURAL ELEMENTS. IF ANY DAMAGE TO SAME ELEMENTS OCCURS, IT SHALL BE RECTIFIED TO THE ENTIRE SATISFACTION OF OWNER AT NO EXTRA COST TO THE OWNER.

15. THE CONTRACTOR SHALL PERFORM ALL WORK (INCLUDING DEMOLITION & ERECTION) WITH DUE REGARD TO LIFE AND PROPERTY IN THE VICINITY OF THE WORK AREA. CONTRACTOR ALONE SHALL BE RESPONSIBLE FOR PROTECTION OF SAME FROM ANY HARM OR DAMAGE DURING THE ENTIRE CONSTRUCTION AND/OR ALTERATION. ANY HARM OR DAMAGE SHALL BE RECTIFIED TO THE ENTIRE SATISFACTION OF OWNER AT NO ADDITIONAL COST TO OWNER.

16. CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ALL CONSTRUCTION DEBRIS IN THE VICINITY OF WORK.

17. CONTRACTOR MUST PROVIDE ADEQUATE SHORING AND/OR TEMPORARY SUPPORT WHEREVER REQUIRED TO THE EXISTING AND NEW STRUCTURES DURING THE ENTIRE CONSTRUCTION PERIOD.

18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF THE INTERIOR OF THE BUILDING AND ALL CONTENTS FROM WEATHER OR ANY OTHER ELEMENTS THAT COULD CAUSE DAMAGE.

19. THE CONTRACTOR SHALL BE COMPLETELY RESPONSIBLE FOR THE SAFETY OF ADJACENT STRUCTURES.

20. ALL WORK SHALL HAVE SPECIAL INSPECTION CONFORMING TO BUILDING CODE OF THE CITY OF NEW YORK, 2014 REQUIREMENTS. SPECIAL INSPECTION SHALL BE BY AN INDEPENDENT TESTING AGENCY HIRED BY THE OWNER AND APPROVED BY NYC DOB AND THE EOR.

21. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING THE COMPLETE LAYOUT AND DETAILS OF ALL STRUCTURAL WORK TO BE PERFORMED. THE CONTRACTOR MAY NOT PERFORM WORK UNTIL THE SHOP DRAWINGS HAVE BEEN APPROVED.

22. THE CONTRACTOR SHALL SUBMIT THE WELDING PROCEDURE TO EXISTING STEEL FOR ENGINEERS APPROVAL.

23. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE LANDLORDS RULES AND REGULATIONS.

24. ALL CONTRACTORS ARE REQUIRED TO EXAMINE THE DRAWINGS AND SPECIFICATIONS CAREFULLY, VISIT THE JOB SITE AND FULLY INFORM THEMSELVES TO ALL EXISTING CONDITIONS AND LIMITATIONS PRIOR TO SUBMITTING THEIR PROPOSAL. FAILURE TO VISIT THE SITE AND NOT BEING FAMILIAR WITH THE EXISTING CONDITIONS AND LIMITATIONS WILL IN NO WAY RELIEVE THE SUCCESSFUL BIDDER FROM FURNISHING ANY MATERIALS OR PERFORMING ANY WORK. THAT MAY BE REQUIRED TO COMPLETE WORK IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS WITHOUT ADDITIONAL COST TO THE OWNER.

25. STRUCTURAL SUBMITTALS REQUIRED:

A. THE FOLLOWING ITEMS REQUIRE SUBMITTAL OF SHOP AND ERECTION DRAWINGS, FOR REVIEW:
   i) REINFORCING STEEL FOR CAST-IN-PLACE CONCRETE
   ii) CAST-IN-PLACE CONSTRUCTION JOINT LOCATIONS
   iii) COMPOSITE DRAWING OF ALL SLAB PENETRATIONS

B. THE FOLLOWING ITEMS REQUIRE SUBMITTAL OF SHOP AND ERECTION DRAWINGS AND STRUCTURAL CALCULATIONS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF THIS PROJECT:
   i) PRECAST CONCRETE - PLANK, WALL PANELS, ETC.
   ii) FACADE SYSTEMS
   iii) CONCRETE DESIGN MIXES
   iv) SHORING AND RESHORING
   v) EXCAVATION SUPPORT, SHEETING, OR BENCHING WHERE SOILS REQUIRE SUCH BY VIRTUE OF OSHA REQUIREMENTS (ALL EXCAVATIONS GREATER THAN 5' REQUIRE SPECIFIC TRENCHING CONSIDERATIONS) OR SOIL CONDITIONS

NON STRUCTURAL ITEMS

1. COORDINATE THE EXTENT AND LOCATION OF CURBS, MECHANICAL PADS AND MASONRY DOWELS WITH THE ARCHITECTURAL AND MECHNICAL DRAWINGS. TYPICAL DETAILS ARE SHOWN ON THE STRUCTURAL DRAWINGS. REINFORCE NON-STRUCTURAL FILL WITH 6x6 - W1.4xW1.4 WWF LOCATED 1" FROM TOP.

CODES

1. 2014 NEW YORK CITY BUILDING CODE (2014 NYCBC). INCLUDING (BUT NOT LIMITED TO) THE FOLLOWING REFERENCED STANDARDS. SEE CHAPTER 35 OF THE 2014 NYCBC FOR FULL LIST OF REFERENCED STANDARDS.

1.1. ACI 318-11 - AMERICAN CONCRETE INSTITUTE "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE".

1.2. ACI 530-08 - AMERICAN CONCRETE INSTITUTE "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES."

1.3. ASCE 7-05 - AMERICAN SOCIETY OF CIVIL ENGINEERS "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES."

1.4. ASCE 7-10 - AMERICAN SOCIETY OF CIVIL ENGINEERS "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES."

STRUCTURAL STABILITY

1. THE ENTIRE STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH THE STRUCTURAL STABILITY PROVISIONS OF THE 2014 NYC BC SECTION 1615 "STRUCTURAL INTEGRITY - PRESCRIPTIVE REQUIREMENTS".

2. THE PROVISIONS OF THE 2014 NYC BC SECTION 1616 "STRUCTURAL INTEGRITY - KEY ELEMENT ANALYSIS" ARE NOT REQUIRED FOR THIS STRUCTURE AS PER SECTION 1616.1.

FLOOD RESISTANT CONSTRUCTION NOTES

1. THE ENTIRE STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH ASCE 24, INCLUDING THE PILE FOUNDATION AND BUILDING STRUCTURE ATTACHED THERETO IS DESIGNED TO BE ANCHORED TO RESIST FLOTATION, COLLAPSE AND LATERAL MOVEMENT DUE TO THE EFFECTS OF WIND, AND FLOOD LOADS ACTING SIMULTANEOUSLY ON ALL BUILDING COMPONENTS, AND OTHER LOAD REQUIREMENTS OF CHAPTER 16 OF THE NEW YORK CITY BUILDING CODE
2. THE FOLLOWING FLOOD HAZARD MAP AND SUPPORTING DATA ARE IN EFFECT IN ACCORDANCE WITH SECTION G102.2 OF THE 2014 NYC BC:
   2.1. FEMA FIS 360497
   2.2. FEMA FIRMs 360497
3. THE FOLLOWING PRELIMINARY FLOOD INSURANCE STUDY AND RATE MAPS ARE IN EFFECT IN ACCORDANCE WITH SECTION G102.2.1 OF THE 2014 NYC BC:
   3.1. FEMA PFIS 360497
   3.2. FEMA PFIRMs 360497

4. THE BUILDING IS LOCATED IN A COASTAL A-ZONE.
   4.1. BASE FLOOD ELEVATION (BFE) = 10.00' (NAVD 88)
   4.2. DESIGN FLOOD ELEVATION (DFE) = 11.00' (NAVD 88)

STRUCTURAL TESTS, SPECIAL AND PROGRESS INSPECTIONS

1. THE OWNER SHALL ENGAGE AN INDEPENDENT NYC BUILDING DEPARTMENT APPROVED SPECIAL INSPECTION AGENCY TO PERFORM SPECIAL INSPECTIONS AND TESTING AND PROGRESS INSPECTIONS FOR, BUT NOT LIMITED TO, THE STRUCTURAL ITEMS INDICATED IN THE CHARTS BELOW AS REQUIRED BY THE 2014 NYC BC.

SPECIAL INSPECTIONS

SPECIAL INSPECTION ITEMS	CODE/SECTION	FOUNDATION SCOPE	STRUCTURAL SCOPE	CLASS INSPECTION
STRUCTURAL STEEL - WELDING	BC 1704.3.1			CLASS 1 (MAJOR BUILDING)
STRUCTURAL STEEL - DETAILS	BC 1704.3.2			
STRUCTURAL STEEL - HIGH STRENGTH BOLTING	BC 1704.3.3			
STRUCTURAL COLD FORMED STEEL	BC 1704.3.4			
CONCRETE - CAST-IN-PLACE	BC 1704.4	X	X	
CONCRETE - PRECAST	BC 1704.4			
CONCRETE - PRESTRESSED	BC 1704.4			
MASONRY	BC 1704.5			
WOOD - INSTALLATION OF HIGH-LOAD DIAPHRAGMS	BC 1704.6.1			
WOOD - INSTALLATION OF METAL-PLATE-CONNECTED TRUSSES	BC 1704.6.2			
WOOD - INSTALLATION OF PREFABRICATED I-JOIST	BC 1704.6.3			
SUBGRADE INSPECTION	BC 1704.7.1	X		
SUBSURFACE CONDITIONS - FILL PLACEMENT & IN-PLACE DENSITY	BC 1704.7.2, BC 1704.7.3	X		
SUBSURFACE INVESTIGATIONS (BORINGS/TEST PITS)	BC 1704.7.4	X		
DEEP FOUNDATION ELEMENTS	BC 1704.8	X		
HELICAL PILES	BC 1704.8.5			
ALTERNATIVE MATERIALS	BC 1704.14			
STRUCTURAL STABILITY - EXISTING BUILDINGS	BC 1704.20.1			
EXCAVATIONS - SHEETING, SHORING, AND BRACING	BC 1704.20.2	X		
UNDERPINNING	BC 1704.20.3, BC 1814			
MECHANICAL DEMOLITION	BC 1704.20.4			
POST INSTALLED ANCHORS	BC 1704.32			
CONCRETE DESIGN MIX	BC 1905.3, BC 1913.5	X	X	
CONCRETE SAMPLING AND TESTING	BC 1905.6, BC 1913.10	X	X	

PROGRESS INSPECTIONS

PROGRESS INSPECTION CATEGORIES	CODE/SECTION	FOUNDATION SCOPE	STRUCTURAL SCOPE	CLASS INSPECTION
FOOTING AND FOUNDATION	BC 110.3.1	X		CLASS 1 (MAJOR BUILDING)
LOWEST FLOOR ELEVATION	BC 110.3.2	X		
STRUCTURAL WOOD FRAME	BC 110.3.3			
FINAL	28-116.2.4.2, BC 110.5, DIRECTIVE 14 OF 1975 AND 1 RCNY 101-10		X	



OWNER:
CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER
architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

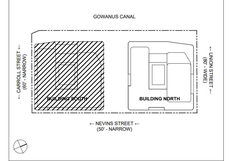
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



DOB NOW JOB # B00611166-P1

No	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

498 UNION ST.

BROOKLYN, NY 11217

DRAWING TITLE:

GENERAL NOTES I

SEAL & SIGNATURE:



DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	FO-001.00
PAGE No.:	1 OF 53

I:\PROJECTS\2021\TJ21395.01 - 300 NEVINS STREET, BROOKLYN, NY 11215\DWG\SIS\TRUCTWORK\NG\CAD\TJ21395.01 S-001S.DWG

SCOPE OF WORK:

1. INCLUDES THE CONSTRUCTION OF A NEW 22 STORY BUILDING. STRUCTURE WILL CONSIST OF CAST IN PLACE CONCRETE SLABS AND COLUMNS. LATERAL SYSTEM WILL CONSIST OF CONCRETE SLAB DIAPHRAGMS WITH ORDINARY REINFORCED CAST IN PLACE CONCRETE SHEAR WALLS.

DESIGN SCOPE OF WORK (STRUCTURAL)

ITEM	TITAN ENGINEERS PC
STRUCTURAL DESIGN (SUPERSTRUCTURE) INCLUDING COLUMNS, SHEAR WALLS, AND SLABS 2ND FLOOR THRU ROOF (AND FIRST FLOOR FRAMED SLAB)	YES
DEMOLITION MEANS OF OPERATION (DMO)	NO
PRECONSTRUCTION SURVEYS	NO
CONSTRUCTION MONITORING PLANS	NO
CONSTRUCTION MONITORING	NO
SITE SAFETY PLAN	NO

DESIGN SCOPE (FOUNDATION/SOE)

ITEM	TITAN ENGINEERS PC
STRUCTURAL DESIGN (FOUNDATION) INCLUDING COLUMNS, SHEAR WALLS, AND SLABS UP TO 1ST FLOOR	YES
SUPPORT OF EXCAVATION (SOE)	NO

GENERAL DOB FILING REQUIREMENTS:

DOB NOW STRUCTURAL "ALL RELATED APPLICATION" NUMBER: NB#:B00611166-I1

RELATED APPLICATIONS INCLUDE (BUT MAY NOT BE LIMITED TO) GENERAL CONSTRUCTION, ARCHITECTURAL, AND EQUIPMENT DRAWINGS.

1. FOUNDATION (FO), #:B00611166-S1
2. STRUCTURAL (ST), #:B00611166-S2
3. MECHANICAL (MS), #:B00611166-S3
4. PLUMBING (PL), #:B00611166-S4
5. EXCAVATION (SOE), #:B00611166-S5
6. FOUNDATION (FO) LIMITED WORK, #B00611166-S6

DESIGN LOADS:

1. THE FOLLOWING DESIGN LOADS COMPLY WITH THE PROVISIONS OF THE 2014 NYC BC AS PER SECTIONS BC 107.7 AND BC 1604.

LATERAL LOAD DESIGN SCHEDULE
2014 NYC BC

WIND LOAD
ASCE 7-05 PER 2014 NYC BC

ITEM	SYMBOL	VALUE
BASIC WIND SPEED (3 SEC. GUST)	V	98
WIND LOAD IMPORTANCE FACTOR	I_w	1.0
WIND LOAD EXPOSURE CATEGORY	-	C
INTERNAL PRESSURE COEFFICIENT	GCpi	±0.18
WIND BASE SHEAR	V_x	1087 KIPS
	V_y	770 KIPS
COMPONENTS AND CLADDING WIND LOADS		SEE COMPONENTS AND CLADDING WIND LOAD TABLES

SEISMIC LOAD
ASCE 7-10 PER 2014 NYC BC

ITEM	SYMBOL	VALUE
IMPORTANCE FACTOR	I_E	1.0
STRUCTURAL OCCUPANCY/RISK CATEGORY	SORC	II
SHORT PERIOD SPECTRAL ACCELERATION	S_S	0.281g
1 SECOND PERIOD SPECTRAL ACCELERATION	S_1	0.073g
MAPPED LONG-PERIOD TRANSITION PERIOD	T_L	6 SECONDS
SITE CLASSIFICATION	S	D
SITE COEFFICIENT (SHORT PERIOD)	Fa	1.57
SITE COEFFICIENT (1 SEC PERIOD)	Fv	2.40
SPECTRAL RESP COEFFICIENT (SHORT PERIOD)	Sds	0.295
SPECTRAL RESP COEFFICIENT (1 SEC PERIOD)	Sd1	0.117
SEISMIC DESIGN CATEGORY	-	B
SEISMIC RESPONSE COEFFICIENT	Csx	0.013
	Csy	0.013
BASIC SEISMIC-RESISTING SYSTEM		ORDINARY REINFORCED CONCRETE SHEAR WALLS
RESPONSE MODIFICATION FACTOR	R	5
DEFLECTION AMPLIFICATION FACTOR	C_d	4.5
SEISMIC BASE SHEAR	V_x	699 KIPS
	V_y	706 KIPS
ANALYSIS PROCEDURE		EQUIVALENT LATERAL FORCE PROCEDURE

DESIGN LOAD SCHEDULE
PER 2014 NYC BC
(ALL LOADS SHOWN ARE IN POUNDS PER SQ. FT.)

FLOOR	PARTITION	CEILING & MECH.	FLOOR FINISH	LIVE[3]	TOTAL IMPOSED	LIVE LOAD REDUCTION?
Apartments & Corridors Serving Them	12	-	5	40	57	NO
Lobby/Commercial	-	5[1]	20	100	125	NO
Roof/Public Roof[2]	-	5	25	100	130	NO
Stairs & Egress	-	-	-	100	100	NO
Parking	-	-	-	40	40	NO
Residential Balconies	-	-	5	60	65	NO

[1] LOAD APPLIED TO THE FLOOR SLAB ABOVE THIS LEVEL

[2] HEAVIER LOADS FOR LANDSCAPED, SWIMMING POOL AREAS, MECHANICAL EQUIPMENT ETC. WHERE APPLICABLE SEE PLAN.

[3] LIVE LOAD REDUCTION IS BASED ON NYCBC 2014

[4] LIVE LOAD PER STACKER MANUFACTURER'S RECOMMENDATION

SNOW DESIGN LOAD SCHEDULE
2014 NYC BC AND ASCE 7-05

ITEM	SYMBOL	VALUE
GROUND SNOW LOAD	P_g	25
SNOW EXPOSURE FACTOR	C_e	1.0
SNOW LOAD IMPORTANCE FACTOR	I_s	1.0
THERMAL FACTOR	C_t	1.0
RAIN ON SNOW SURCHARGE		-
FLAT-ROOF SNOW LOAD	P_f	20 PSF (MIN.)

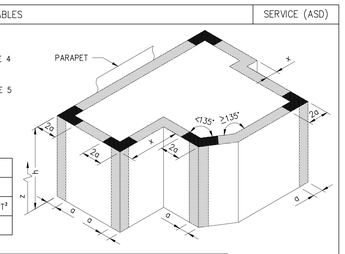
COMPONENT AND CLADDING WIND LOAD TABLES — SERVICE (ASD)

HEIGHT ABOVE GROUND, z	POSITIVE WALL LOADS (PSF) ZONE 4 & 5		
	AREA ≤ 20 FT²	AREA = 100 FT²	AREA ≥ 500 FT²
UP TO 100	+29.3	+25.3	+21.4
101 TO 200	+33.1	+28.5	+23.9
201 TO 300	+35.5	+30.5	+25.5

INTERIOR ZONES
ROOFS-ZONE 1/WALLS-ZONE 4

END ZONES
ROOFS-ZONE 2/WALLS-ZONE 5

CORNER ZONES
ROOFS-ZONE 3



NEGATIVE WALL LOADS (PSF)					
ZONE 4			ZONE 5		
AREA ≤ 20 FT²	AREA = 100 FT²	AREA ≥ 500 FT²	AREA ≤ 20 FT²	AREA = 100 FT²	AREA ≥ 500 FT²
-33.1	-30.0	-26.9	-60.6	-48.4	-36.1

ROOF LOADS (PSF)								
ZONE 1			ZONE 2			ZONE 3		
AREA ≤ 10 FT²	AREA = 100 FT²	AREA ≥ 500 FT²	AREA ≤ 10 FT²	AREA = 100 FT²	AREA ≥ 500 FT²	AREA ≤ 10 FT²	AREA = 100 FT²	AREA ≥ 500 FT²
-48.4	-39.5	-33.1	-75.9	-63.4	-54.5	-103.4	-87.2	-75.9

PARAPET LOADS (PSF)			
T.O. PARAPET HEIGHT ABOVE GROUND, z	AREA ≤ 10 FT²	AREA = 100 FT²	AREA ≥ 500 FT²
UP TO 100	±84.6	±69.8	±58.2
101 TO 200	±97.9	±80.8	±67.3
201 TO 300	±106.7	±88.0	±73.3

NOTES:

1) WIND PRESSURES SHALL BE INTERPOLATED ACCORDINGLY TO DESIRED EFFECTIVE AREA
2) 'a' INDICATES 10% OF LEAST HORIZONTAL DIMENSION, BUT NOT LESS THAN 3FT.
3) 'x' INDICATES PLAN OFFSET DISTANCE
4) 'h' INDICATES MEAN ROOF HEIGHT, IN FEET.
5) WHERE ROOF PARAPETS ARE PROVIDED THAT ARE ≥ 3'-0", ZONE 3 PRESSURES SHALL BE REDUCED TO ZONE 2 PRESSURES.
6) + AND - INDICATE PRESSURE ACTING TOWARD AND AWAY FROM THE SURFACE, RESPECTIVELY.
5) ± INDICATES PRESSURE THAT CAN ACT EITHER TOWARD OR AWAY FROM SURFACE.
6) IF x ≤ a, THEN ZONE 3 AND ZONE 5 NEED NOT BE APPLIED AT THAT CORNER.
7) IF THE INTERIOR ANGLE IS ≥ 135°, THEN ZONE 3 AND ZONE 5 NEED NOT BE APPLIED AT THAT CORNER.

DRAWING LIST

● ISSUED - NEW SHEET
◒ ISSUED - REVISION MADE
○ ISSUED - NO REVISION MADE
⊗ SHEET REMOVED

80% CONSTRUCTION DRAWINGS 12/21/22	FOUNDATION 100% CD 11/18/22	FOUNDATION FILING SET 08/19/22	100% DD 07/15/22	50% DD 06/24/22	SCHEMATIC DRAWINGS 03/18/22	ISSUED FOR FILING 10/08/21	ISSUE DATE	SHT	DWG NO	DRAWING TITLE
○	○	○	○	●				1	FO-001	GENERAL NOTES I
○	○	○	○	●				2	FO-002	GENERAL NOTES II
○	○	○	○	●				3	FO-003	GENERAL NOTES III
○	○	○	○	●				4	FO-010	SITE PLAN
					⊗	●			FO-101	FOUNDATION / FIRST FLOOR FRAMING PLAN
					⊗	●			FO-200	PILE CAP DETAILS
◒	◒	◒	◒	◒	◒	●		5	FO-100B	FOUNDATION PLAN
○	◒	○	○	○	○	●		6	FO-300	TYPICAL FOUNDATION DETAILS I
○	◒	◒	○	○	○	●		7	FO-301	TYPICAL FOUNDATION DETAILS II
○	◒	◒	○	○	○	●		8	FO-302	TYPICAL FOUNDATION DETAILS III
○	◒	◒	◒	●				9	FO-310	PILE CAP DETAILS
○	◒	◒				●		10	FO-400	FOUNDATION SECTIONS
○					◒	●		11	S-001	GENERAL NOTES I
○					◒	●		12	S-002	GENERAL NOTES II
○						●		13	S-003	GENERAL NOTES III
○				●				14	S-010	SITE PLAN
◒			◒	◒	●			15	S-101B	1ST FLOOR FRAMING PLAN
◒				●				16	S-101BM	MEZZANINE FRAMING PLAN
◒			◒	◒	●			17	S-102B	2ND FLOOR FRAMING PLAN
◒			◒	◒	●			18	S-103B	3RD FLOOR FRAMING PLAN
◒			◒	◒	●			19	S-104B	4TH FLOOR FRAMING PLAN
◒			◒	◒	●			20	S-105B	5TH FLOOR FRAMING PLAN
◒			◒	◒	●			21	S-106B	6TH FLOOR FRAMING PLAN
◒			◒	◒	●			22	S-107B	7TH FLOOR FRAMING PLAN
◒			◒	◒	●			23	S-108B	8TH FLOOR FRAMING PLAN
◒			◒	◒	●			24	S-109B	9TH FLOOR FRAMING PLAN
◒			◒	◒	●			25	S-110B	10TH FLOOR FRAMING PLAN
●								26	S-111B	11TH TO 17TH FLOOR FRAMING PLAN
◒			◒	◒	●			27	S-118B	18TH FLOOR FRAMING PLAN
◒			◒	◒	●			28	S-119B	19TH TO 20TH FLOOR FRAMING PLAN
◒			◒	●				29	S-121B	21ST FLOOR FRAMING PLAN
◒			◒	●				30	S-122B	22ND FLOOR FRAMING PLAN
◒			◒	◒	●			31	S-123B	ROOF FRAMING PLAN
◒			◒	◒	●			32	S-124B	BULKHEAD ROOF FRAMING PLAN
◒	◒	○	◒		◒	●		33	S-200	COLUMN SCHEDULE I
◒	◒	○	◒		●			34	S-201	COLUMN SCHEDULE II
◒	◒	○	◒		●			35	S-202	COLUMN SCHEDULE III
◒	◒	○	●					36	S-203	COLUMN SCHEDULE IV
◒	◒		◒		◒	●		37	S-210	SHEAR WALL SCHEDULE I
◒	◒		◒		◒	●		38	S-211	SHEAR WALL SCHEDULE II
◒	◒		●					39	S-212	SHEAR WALL SCHEDULE III
◒	◒		●					40	S-213	SHEAR WALL SCHEDULE IV
◒	◒		●					41	S-214	SHEAR WALL SCHEDULE V
○	○		○	◒	●			42	S-220	SHEAR WALL DETAILS
◒			○	◒	●			43	S-350	TYPICAL DETAILS I
○			○	◒	●			44	S-351	TYPICAL DETAILS II
○			○	◒	●			45	S-352	TYPICAL DETAILS III
○			○	◒	●			46	S-353	TYPICAL DETAILS IV
○			○	◒	●			47	S-354	TYPICAL DETAILS V
○			○	◒	●			48	S-355	TYPICAL DETAILS VI
○			○	◒	●			49	S-356	TYPICAL DETAILS VII
○			○	◒	●			50	S-357	TYPICAL DETAILS VIII
○			○	◒	●			51	S-358	TYPICAL DETAILS IX
○			○	◒	●			52	S-359	TYPICAL DETAILS X
●								53	S-450	STRUCTURAL SECTIONS I



OWNER:
CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

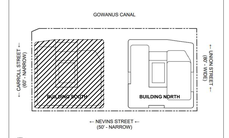
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



DOB NOW JOB # B00611166-P1

No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:
498 UNION ST.
BROOKLYN, NY 11217

DRAWING TITLE:
GENERAL NOTES II

SEAL & SIGNATURE:



DATE (YYYY.MM.DD):	2022.03.18
PROJECT No.:	T.I21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	FO-002.00
PAGE No.:	2 OF 53

I:\PROJECTS\2021\T.I21395.01 - 300 NEVINS STREET, BROOKLYN, NY 11215\DWGS\STRUCTUWORKING\CAD\T.I21395.01 S-GN'S.DWG

FOUNDATION

1. FOUNDATION DESIGN IS BASED ON THE GEOTECHNICAL INVESTIGATION REPORT BY GEOTECHNICAL ENGINEERING SERVICES, P.C., DATED 04.29.2022.

2. PILES- ALL PILE CAPACITIES TO BE VERIFIED BY PILE DRIVING CONTRACTOR FOLLOWING THE PILE TESTING PROGRAM AS REQUIRED BY NYC BC SECTION 1808.3, 1818.4, GEOTECHNICAL REPORT AND PILE SPECIFICATIONS.

   A. DRILLED PILES SHALL HAVE THE FOLLOWING CAPACITY:

   i) PILE TYPE A:xx" DIAMETER CASED PILES
      a) 75 TONS IN COMPRESSION
      b) 40 TONS IN TENSION.
      c) 1 TONS IN LATERAL

   ii) PILE TYPE B:xx" DIAMETER CASED PILES
      a) 150 TONS IN COMPRESSION
      b) 50 TONS IN TENSION.
      c) 1 TONS IN LATERAL

   B. ALL PILES SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2014 NYC BUILDING CODE AND PROJECT SPECIFICATIONS.

   C. ALL DRIVEN PILES SHALL BE INSTALLED PER THE DRIVING CRITERIA ESTABLISHED FOR THE PROJECT IN ACCORDANCE WITH THE PILE LOAD TESTS.

   D. STRUCTURAL PILES SHALL BE INSTALLED IN THE PRESENCE OF A PROFESSIONAL ENGINEER, LICENSED IN THE STATE OF NEW YORK, AND LICENSED AS A SPECIAL INSPECTION AGENCY BY NYC IN ACCORDANCE WITH SECTION 1704.8 OF THE NYC BUILDING CODE.

   E. MAXIMUM ALLOWABLE DEVIATION FOR PILES SHALL BE THREE (3) INCHES IN EITHER DIRECTION, EXPECT EIGHT INCHES ALONG GRADE BEAM AXIS FOR PILES CAPPED BY GRADE BEAMS.

   F. THE CONTRACTOR SHALL PROVIDE A SURVEY OF "AS-BUILT" PILE LOCATIONS INDICATING NORTH-SOUTH AND EAST-WEST OUT OF TOLERANCE DIMENSIONS FROM THE THEORETICAL PILE CENTERLINE. PILES WHICH ARE OUT OF TOLERANCE OR DO NOT ACHIEVE THE REQUIRED STRENGTH WILL BE SUBJECT TO REDESIGN. THE ENGINEERING COST OF THE REDESIGN, THE ADDITIONAL COST FOR THE PILES AND ADDITIONAL PILE CAP COSTS SHALL BE BORNE BY THE CONTRACTOR.

   G. THE CONTRACTOR SHALL PROVIDE THE "AS-BUILT" PILE LOCATION PLAN(S), INCLUDING A PLAN SHOWING THE NUMBERING OF ALL PILES, AND PILE LOGS TO BE FILED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE BUILDING DEPARTMENT. NO PILE CAPS ARE TO BE PLACED BEFORE RECEIVING BUILDING DEPARTMENT APPROVAL FOR THE ABOVE.

3. GEOTECHNICAL REPORT ESTIMATES THE GROUND WATER TABLE (GWT) TO BE BETWEEN 5'-6" TO 7'-6" BELOW THE GRADE.

4. NO BACKFILL SHALL BE PLACED AGAINST FOUNDATION WALLS UNLESS SUPPORTING SLABS ARE IN PLACE AND SET OR THE WALLS ARE ADEQUATELY BRACED.

5. DEWATERING OF THE SITE IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL TAKE PRECAUTIONS TO AVOID UNDERMINING EXISTING FOUNDATIONS. METHOD OF DEWATERING AND RELATED CALCULATIONS IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND MUST COMPLY WITH THE SOILS AND GROUNDWATER MANAGEMENT SPECIFICATIONS FOR THIS PROJECT.

6. PROVIDE DOWELS IN FOUNDATIONS FOR ALL WALLS, COLUMNS AND SHEAR WALLS OF SAME NUMBER AND SIZE AS THE VERTICAL REINFORCEMENT ABOVE.

7. PROVIDE WATERSTOP AT ALL VERTICAL CONSTRUCTION JOINTS IN WALLS BELOW GRADE.

8. CONTRACTOR TO INSTALL ALL PIPE SLEEVES, BOXED OPENINGS, ANCHOR BOLTS, INSERTS ETC. AS REQUIRED FOR THE VARIOUS TRADES. WALL POCKETS AND EMBED PLATES, TO RECEIVE BEAMS AND SLABS, SHALL BE PROVIDED AS REQUIRED FOR THE SUPERSTRUCTURE. SHOP DRAWINGS SHOWING THE POSITION OF THE OPENINGS SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO PLACEMENT OF CONCRETE.

9. SLAB ON GROUND SHALL BE PLACED ON SELECT FILL COMPACTED TO 95 PERCENT MODIFIED PROCTOR MAXIMUM DRY DENSITY (ASTM D1557). PROVIDE VAPOR BARRIER AND MIN. 6-INCH THICK GRAVEL BED UNDER THE SLAB.

10. CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE SUBSURFACE AND EXISTING CONDITIONS BEFORE COMMENCING THE WORK.

11. CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATE PROTECTION OF ALL EXCAVATION SLOPES. WHERE NECESSARY, SHEETING, SHORING AND UNDERPINNING OF EXCAVATION SHALL BE PROVIDED WITH ALL REQUIRED TIE BACKS AND BRACING.

12. METHODS EMPLOYED IN ALL SHEETING, SHORING AND UNDERPINNING SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER RETAINED BY THE CONTRACTOR AND LICENSED IN THE STATE OF NEW YORK.

13. TEMPORARY BRACING SHALL BE PROVIDED FOR ALL BUTTRESSES. WHERE BUTTRESSES DO NOT EXIST OR SPACING BETWEEN BUTTRESSES EXCEEDS 25 FEET, AND WHERE THE DIFFERENCE IN LEVEL BETWEEN INSIDE AND OUTSIDE GRADE IS MORE THAN 4'-0", INTERMEDIATE BRACING SHALL BE PROVIDED. WHERE RAMPS OCCUR, THE GRADE ELEVATION OUTSIDE OF RAMP WALLS SHALL BE USED IN FIGURING THE DIFFERENCE IN LEVEL. CORNER BUTTRESSES NEED NOT BE BRACED. NO BACKFILLING IS TO BE DONE BEFORE ALL SLABS WHICH PROVIDE BRACING FOR WALLS ARE IN PLACE, UNLESS APPROVED BY THE ENGINEER. PROVIDE TEMPORARY BRACING FOR ALL PIERS AND SUMP PITS.

14. ALL FOUNDATION ELEMENTS ARE TO BE CENTERED ON COLUMN ABOVE, U.O.N.

15. ALL FILL SHALL BE PLACED IN EIGHT INCH LOOSE LIFTS (MAXIMUM) COMPACTED WITH VIBRATORY ROLLERS. FILL MATERIAL SHALL BE TESTED BY MODIFIED PROCTOR DENSITY METHOD (ASTM D1557) AND MUST QUALIFY AS SELECT, WITH LESS THAN 10% PASSING THROUGH THE NO. 200 SEIVE. SOIL SHALL BE PLACED WITH MOISTURE CONTENT AND ENERGY TO PROVIDE 92% OF MAXIMUM DRY DENSITY BELOW SLABS ON GRADE AND 95% BELOW FOOTINGS. IN PLACE DENSITY TESTS SHALL BE TAKEN FOR EACH 10,000 S.F. IN EACH LIFT. FOR ACCEPTANCE OF SOIL, THE AVERAGE OF DENSITY TESTS MUST EXCEED THE SPECIFIED COMPACTION. NO TESTS SHALL BE PERMITTED TO FALL BELOW 88% COMPACTION BELOW SLABS ON GRADE OR 90% COMPACTION BELOW FOOTINGS.

16. FOUNDATION ELEVATIONS SHOWN ON THE DRAWINGS HAVE BEEN ESTIMATED USING THE GEOTECHNICAL REPORT. ACTUAL ELEVATIONS OF FOUNDATION ELEMENT BOTTOMS WILL BE DETERMINED BY FIELD CONDITIONS, WHICH SHALL BE CONFIRMED BY THE LICENSED ENGINEER PERFORMING THE SUBGRADE SPECIAL INSPECTION.

REINFORCED CONCRETE

1. PROVIDE THE FOLLOWING MINIMUM 28 DAY CONCRETE COMPRESSIVE STRENGTHS, U.O.N. ON DRAWINGS:

I.	PILE CAPS	10,000 PSI
II.	FOUNDATION WALLS, BUTTRESS, GRADE BEAMS	5,000 PSI
III.	SLAB AND BEAMS	SEE PLANS
IV	COLUMN AND SHEAR WALLS	6,000-8,000 PSI

2. ALL CONCRETE AGGREGATE SHALL INCLUDE SERVICE RECORD DATA INDICATING ABSENCE OF DELETERIOUS EXPANSION OF CONCRETE DUE TO ALKALI AGGREGATE REACTIVITY.

3. ALL EXPOSED CONCRETE SHALL HAVE AN AIR ENTRAINING AGENT WITH AN AIR CONTENT OF 6% ±1.5%.

4. ALL REINFORCING STEEL SHALL CONFORM TO:

I.	DEFORMED BARS #10 OR SMALLER	ASTM A615, GRADE 60
II.	DEFORMED BARS #11 OR LARGER	ASTM A615, GRADE 75
III.	WELDED WIRE FABRIC (PLAIN & DEFORMED)	ASTM A1064

5. REINFORCING STEEL SHALL HAVE A MIN. CLEAR COVER AS FOLLOWS:

II.	CONCRETE POURED AGAINST EARTH	3"
II.	CONCRETE EXPOSED TO EARTH OR WEATHER:	
	#5 OR SMALLER	1½"
	#6 OR LARGER	2"
III.	CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH EARTH:	
	COLUMNS, BEAMS	1½"
	SLABS, WALLS AND JOISTS:	
	#14 OR #18 BARS	1½"
	#11 OR SMALLER	¾"

   INDICATE ALL CONCRETE COVER ON THE SHOP DRAWINGS SUBMITTED FOR REVIEW.

6. STRUCTURAL CONCRETE AND CONCRETING PRACTICES SHALL CONFORM WITH ACI-318, "AMERICAN CONCRETE INSTITUTE, BUILDING CODE FOR REINFORCED CONCRETE." DETAILS SHALL BE IN ACCORDANCE WITH ACI-315-99, "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" UNLESS OTHERWISE NOTED ON THE DRAWINGS. CONCRETE TESTS FOR THE PRELIMINARY DESIGN MIX PREPARED BY AN APPROVED LABORATORY MUST BE SUBMITTED TO THE ENGINEER. NO CONCRETE TO BE PLACED BEFORE THIS IS APPROVED BY THE ENGINEER.

7. ALL REINFORCEMENT SHALL BE SECURELY HELD IN PLACE WHILE PLACING CONCRETE. IF REQUIRED, ADDITIONAL BARS OR STIRRUPS SHALL BE PROVIDED BY THE CONTRACTOR TO FURNISH SUPPORT FOR ALL BARS. THE ENGINEER OR HIS FIELD QUALIFIED REPRESENTATIVE MUST CHECK AND APPROVE ALL STEEL REINFORCEMENT PRIOR TO CONCRETE PLACEMENT.

8. NO CONCRETE TEST WILL BE ACCEPTED IF CONCRETE IS TAMPERED WITH IN ANY WAY AFTER SAID TEST IS PERFORMED. REPEAT TEST IF WATER IS ADDED AFTER INITIAL SAMPLING.

9. THE CONTRACTOR SHALL PROVIDE REINFORCING STEEL ERECTOR WITH A SET OF STRUCTURAL PLANS FOR FIELD USE.

10. ALL ADJOINING SURFACES NOT CAST MONOLITHICALLY SHALL BE ROUGHENED TO ¼ INCH AMPLITUDE FOR THE ENTIRE INTERSECTING SURFACE ACCORDING TO ACI RECOMMENDATIONS.

11. CONTRACTOR SHALL USE RIGID TEMPLATES TO INSTALL ANCHOR BOLTS.

12. CONCRETE FOR NON-STRUCTURAL FILL SHALL BE REINFORCED WITH 6X6-W1.4XW1.4 W.W.F.

13. TEMPORARY SHORING AND RESHORING SHALL REMAIN IN PLACE AT LEAST 28 DAYS AFTER PLACEMENT OF CONCRETE.

14. ALL WELDED WIRE FABRIC REINFORCEMENT SHALL CONFORM TO ASTM A-185, GRADE 65.

15. PROVIDE CHAIRS FOR WELDED WIRE FABRIC TO INSURE PROPER POSITION DURING CONCRETE PLACEMENT.

16. PROVIDE LAP SPLICES FOR REINFORCING BARS AS SHOWN ON THE DRAWINGS. WHERE NOT SPECIFICALLY INDICATED, USE TENSION LAP SPLICE LENGTHS WITH APPLICABLE MODIFICATION FACTORS. LOCATE SPLICES AS PER RECOMMENDATIONS OF ACI 135 AND INDICATE ON SHOP DRAWINGS SUBMITTED FOR REVIEW.

17. PROVIDE CONSTRUCTION JOINTS IN ACCORDANCE WITH ACI 318. INDICATE JOINT LOCATIONS AND POUR SEQUENCE ON THE SHOP DRAWINGS.

18. NO HORIZONTAL JOINT WILL BE PERMITTED IN THE BEAMS, WALLS AND SLABS U.O.N. ON THE DRAWINGS AT THE SPECIFIC LOCATION. VERTICAL CONSTRUCTION JOINTS WILL BE LOCATED AT LEAST FOUR FEET AWAY FROM ANY COLUMN LINE OR WALL OPENING IN FOUNDATION WALLS.

19. INSTALL ALL SLEEVES, INSERTS, FLOOR DRAINS, ETC. PROVIDED BY THE SUBCONTRACTOR BEFORE PLACING CONCRETE.

20. PROVIDE AT LEAST 1" (U.O.N.) SEPARATION USING HIGH DENSITY STYROFOAM WHEN PLACING CONCRETE AGAINST AN ADJACENT EXISTING STRUCTURE.

21. DO NOT INSTALL ANY CONCRETE FLOOR SYSTEM UNTIL AT LEAST TWO HOURS HAVE PASSED AFTER THE SUPPORTING COLUMNS AND WALLS ARE PLACED.

22. MEANS AND METHODS FOR SHORING CONCRETE ELEMENTS INCLUDING THE USE OF ADJACENT EXISTING STRUCTURES TO SUPPORT LATERAL LOADS IMPOSED BY CONCRETE ELEMENTS ARE TO BE DESIGNED BY THE CONTRACTORS ENGINEER LICENSED IN THE STATE OF NEW YORK.

23. CANTILEVERED CORNERS ARE TO REMAIN SHORED BY MEANS OF "STAY-IN-PLACE" PRE-SHORE CUTOUTS OR A SIMILAR METHOD. CONTRACTOR SHALL SUBMIT SHORING PLANS, SIGNED AND SEALED BY THEIR LICENSED PROFESSIONAL ENGINEER FOR REVIEW.

24. ADDITIONAL SHORING MAY BE REQUIRED AT HOIST PLATFORMS, BRIDGING, ETC. CONTRACTOR TO SUBMIT PLANS, DETAILS AND CALCULATIONS FOR SUCH LOCATIONS, SIGNED & SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW YORK.

25. PIPES OR CONDUITS PLACED WITHIN THE SLAB SHALL NOT HAVE A DIAMETER GREATER THAN ⅓ SLAB THICKNESS OR 2 INCHES. THEIR SPACING SHALL NOT BE CLOSER THAN 3X DIAMETER OF CONDUIT AND NO CONDUIT SHALL BE PLACED WITHIN 12 INCHES OF A COLUMN FACE. ALUMINUM CONDUITS ARE NOT ALLOWED.

26. SIZE OF JUNCTION BOXES PLACED WITHIN THE CONCRETE SHALL BE LIMITED TO 4½"X 4½" X 3½" DEEP AND SEPARATED BY NOT LESS THAN 8 INCHES.

27. SLABS ON GRADE SHALL BE PLACED BY THE LONG STRIP CAST METHOD. REFER TO ACI 302 AND 360 FOR RECOMMENDED METHODS OF PLACEMENT. PROVIDE CONTROL JOINTS AT MAXIMUM 20 FEET SPACING ON EACH DIRECTION. CONTROL JOINTS SHALL BE FORMED BY SAW CUTTING. JOINTS SHALL BE AT LEAST ¼"OF THE SLAB THICKNESS AND ¼" MAXIMUM WIDTH AND SHALL BE FILLED WITH CONTROL JOINT SEALANT OR FILLER AND SHALL HAVE DISCONTINUOUS REINFORCEMENT THROUGH THE JOINT. SAW CUTTING SHALL BE PERFORMED NO LATER THAN 3 HOURS AFTER THE FINAL TROWELING. ALL SAW CUTS MUST BE ALIGNED AND CONTINUOUS.

MASONRY NOTES

1. CONCRETE AND/OR CLAY MASONRY WORK SHALL CONFORM TO NEW YORK CITY CODE PROVISIONS FOR MASONRY AND ACI 530/530.1.

2. USE ASTM A-615 GRADE 60 FOR ALL REINFORCING STEEL. ALL LAP SPLICE LENGTHS SHALL FOLLOW LAP SPLICE TABLE BELOW. REINFORCEMENT MUST BE CONTINUOUS AROUND WALL CORNERS AND AT INTERSECTIONS.

BAR SIZE, db	LAP SPLICE LENGTH
#3	27"
#4	36"
#5	45"
#6	54"
#7	63"

3. ALL REINFORCING STEEL SHALL HAVE A MIN. CLEAR COVER AS FOLLOWS:

   I. MASONRY EXPOSED TO EARTH OR WEATHER:
      #5 OR SMALLER 1½"
      #6 OR LARGER 2"

   II. MASONRY NOT EXPOSED TO WEATHER OR IN CONTACT WITH EARTH:
      WALLS AND BEAMS 1½"

4. THE MINIMUM SPECIFIED COMPRESSIVE STRENGTH OF MASONRY WALL/COLUMN SHALL BE:

   f'm = 2,000 PSI FOR CONCRETE MASONRY UNITS
   f'm = 1,500 PSI FOR CLAY MASONRY UNITS

   A. CONCRETE MASONRY UNITS SHALL BE NORMAL WEIGHT CONFORMING TO MINIMUM REQUIREMENTS OF ASTM C90 SAMPLED AND TESTING IN ACCORDANCE TO ASTM C140 PLACED IN RUNNING BOND. CLAY MASONRY UNITS SHALL BE GRADE SW CONFORMING TO MINIMUM REQUIREMENTS OF ASTM C62 SAMPLED AND TESTING IN ACCORDANCE TO ASTM C67 PLACED IN RUNNING BOND.

   B. MASONRY STRENGTH SHALL CONFORM TO THE FOLLOWING:

NET AREA COMPRESSIVE STRENGTH OF MASONRY WALL/COLUMN, f'm	NET AREA COMPRESSIVE STRENGTH OF:	
	CONCRETE MASONRY UNIT	CLAY MASONRY UNIT
1,500 PSI	-	3,350 PSI
2,000 PSI	2,800 PSI	4,950 PSI
2,500 PSI	3,750 PSI	6,600 PSI
3,000 PSI	4,800 PSI	8,250 PSI

   C. MORTAR SHALL BE TYPE M OR S CONFORMING TO ASTM C270. THE THICKNESS OF BED JOINTS FOR BOTH TYPES OF MASONRY SHALL NOT EXCEED ⅜".

   D. GROUT SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH EQUAL TO THE COMPRESSIVE STRENGTH OF MASONRY, f'm, BUT NOT LESS THAN 2,000 PSI CONFORMING TO ASTM C476 AND TESTING IN ACCORDANCE TO ASTM C1019. GROUT SHALL BE USED AS FILLING FOR VERTICAL CAVITIES, BOND BEAMS, LINTELS AND HOLLOW MASONRY UNITS DESIGNATED AS SOLID GROUTED IN THE DESIGN DRAWINGS. GROUT SHALL HAVE A MINIMUM SLUMP OF 8 INCHES. ALL CELLS WITH REINFORCEMENT SHALL BE GROUTED SOLID. THE LOW-LIFT METHOD SHALL BE USED FOR THE GROUTING OF THE CONCRETE MASONRY UNITS. MORTAR IS NOT PERMITTED TO BE USED AS A SUBSTITUTE FOR GROUT.

5. U.O.N. HORIZONTAL REINFORCEMENT SHALL BE MIN. OF 9 GAUGE DUR-O-WAL TRUSS OR LADUR TYPE OR APPROVED EQUAL WITH 2 #3 LONGTUDINAL BARS AT EVERY OTHER COURSE.

6. REFER TO ARCHITECTURAL DRAWINGS FOR SIZE AND LOCATIONS OF MASONRY WALLS AND FOR DETAILS OF EXPANSION JOINTS AND CONTROL JOINTS.

7. PROVIDE ADDITIONAL BARS ON BOTH SIDE OF CONTROL JOINTS, WINDOW JAMBS, DOOR JAMBS, END OF WALLS, AND CORNERS. SEE TYPICAL DETAILS.

8. ALL MASONRY WALLS SHALL BE ANCHORED AT TOP AND BOTTOM. TOP OF WALL SHALL BE ANCHORED WITH CAPACITY OF MINIMUM 200 LB/FT ALONG THE WALL, AS PER TYPICAL DETAILS.

9. COLD WEATHER CONSTRUCTION:

   I. COLD WEATHER CONSTRUCTION PROVISIONS OF TMS 602/ACI 530.1 ARTICLE 1.8C SHALL BE IMPLEMENTED WHEN EITHER THE AMBIENT TEMPERATURE FALLS BELOW 40°F OR THE TEMPERATURE OF THE MASONRY UNITS FALLS BELOW 40°F.

   II. SALT OR OTHER CHEMICALS FOR THE PURPOSE OF LOWERING THE FREEZING TEMPERATURE OF THE WATER SHALL NOT BE PERMITTED.

   III. CONTRACTOR TO PROVIDE COLD WEATHER CONSTRUCTION PROCEDURE TO THE ENGINEER FOR APPROVAL. NO WORK SHALL COMMENCE UNTIL PROCEDURE IS APPROVED.

10. HOT WEATHER CONSTRUCTION:

   I. HOT WEATHER CONSTRUCTION PROVISIONS OF TMS 602/ACI 530.1 ARTICLE 1.8D SHALL BE IMPLEMENTED WHEN THE TEMPERATURE EXCEEDS 100°F OR 90°F WITH A WIND-VELOCITY GREATER THAN 8 MPH.

   II. CONTRACTOR TO PROVIDE HOT WEATHER CONSTRUCTION PROCEDURE TO THE ENGINEER FOR APPROVAL. NO WORK SHALL COMMENCE UNTIL PROCEDURE IS APPROVED.

COLD WEATHER CONSTRUCTION:

1. COLD WEATHER CONSTRUCTION REQUIREMENTS SHALL FOLLOW SECTION 1905.12 OF THE 2014 NYC BUILDING CODE WHEN THE AMBIENT AIR TEMPERATURE HAS FALLEN TO, OR IS EXPECTED TO FALL BELOW 40°F.

2. DETAILED PROCEDURES FOR THE PRODUCTION, TRANSPORTATION, PLACEMENT, PROTECTION, CURING AND TEMPERATURE MONITORING OF CONCRETE SHALL BE SUBMITTED FOR THE ENGINEERS APPROVAL. GUIDELINES FOR COLD WEATHER CONSTRUCTION SHALL FOLLOW ACI-306R "GUIDE TO COLD WEATHER CONCRETING". NO COLD WEATHER CONSTRUCTION SHALL COMMENCE UNTIL PROCEDURES HAVE BEEN APPROVED BY THE ENGINEER.

   2.1. ADEQUATE EQUIPMENT SHALL BE USED TO PROTECT AND INSULATE THE CONCRETE FROM COLD WEATHER TEMPERATURES.

   2.2. CONCRETE MATERIALS, AND REINFORCEMENT, FORMS, FILLERS AND GROUND WITH WHICH CONCRETE WILL BE IN CONTACT WITH SHALL BE FREE FROM FROST. TEMPERATURES OF ALL SURFACES IN CONTACT WITH FRESH CONCRETE SHALL BE KEPT ABOVE FREEZING.

   2.3. FROZEN MATERIALS OR MATERIALS CONTAINING ICE SHALL NOT BE USED.

HOT WEATHER CONSTRUCTION:

1. HOT WEATHER CONSTRUCTION REQUIREMENTS SHALL FOLLOW SECTION 1905.13 OF THE 2014 NYC BUILDING CODE WHEN THE AMBIENT AIR TEMPERATURE IS ABOVE 80°F.

2. DETAILED PROCEDURES FOR THE PRODUCTION, TRANSPORTATION, PLACEMENT, PROTECTION, CURING AND TEMPERATURE MONITORING OF CONCRETE SHALL BE SUBMITTED FOR THE ENGINEERS APPROVAL. GUIDELINES FOR HOT WEATHER CONSTRUCTION SHALL FOLLOW ACI-305R "GUIDE TO HOT WEATHER CONCRETING". NO HOT WEATHER CONSTRUCTION SHALL COMMENCE UNTIL PROCEDURES HAVE BEEN APPROVED BY THE ENGINEER.

ABBREVIATIONS

AB	ANCHOR BOLT
AESS	ARCHITECTURALLY EXPOSED STRUCTURAL STEEL
CJ	CONTROL JOINT
EDB	ELEVATOR DIVIDER BEAM
EJ	EXPANSION JOINT
EE	EACH END
EF	EACH FACE
EW	EACH WAY
EOS	EDGE OF SLAB
HSS	HOLLOW STRUCTURAL STEEL
IF	INSIDE FACE
LW	LONG WAY
NFP	NO FIREPROOFING
NTS	NOT TO SCALE
OC	ON CENTER
SIM	SIMILAR
SOG	SLAB ON GRADE
STL	STEEL
T&B	TOP AND BOTTOM
TOC	TOP OF CONCRETE
TOS	TOP OF SLAB
TOSTL	TOP OF STEEL
TOW	TOP OF WALL
UON	UNLESS OTHERWISE NOTED
VIF	VERIFY IN FIELD
WP	WORKING POINT
WWF	WELDED WIRE FABRIC



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CIVIL ENGINEER:
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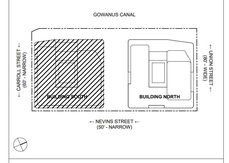
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KEY PLAN



DOB NOW JOB # B00611166-P1

No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

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BROOKLYN, NY 11217

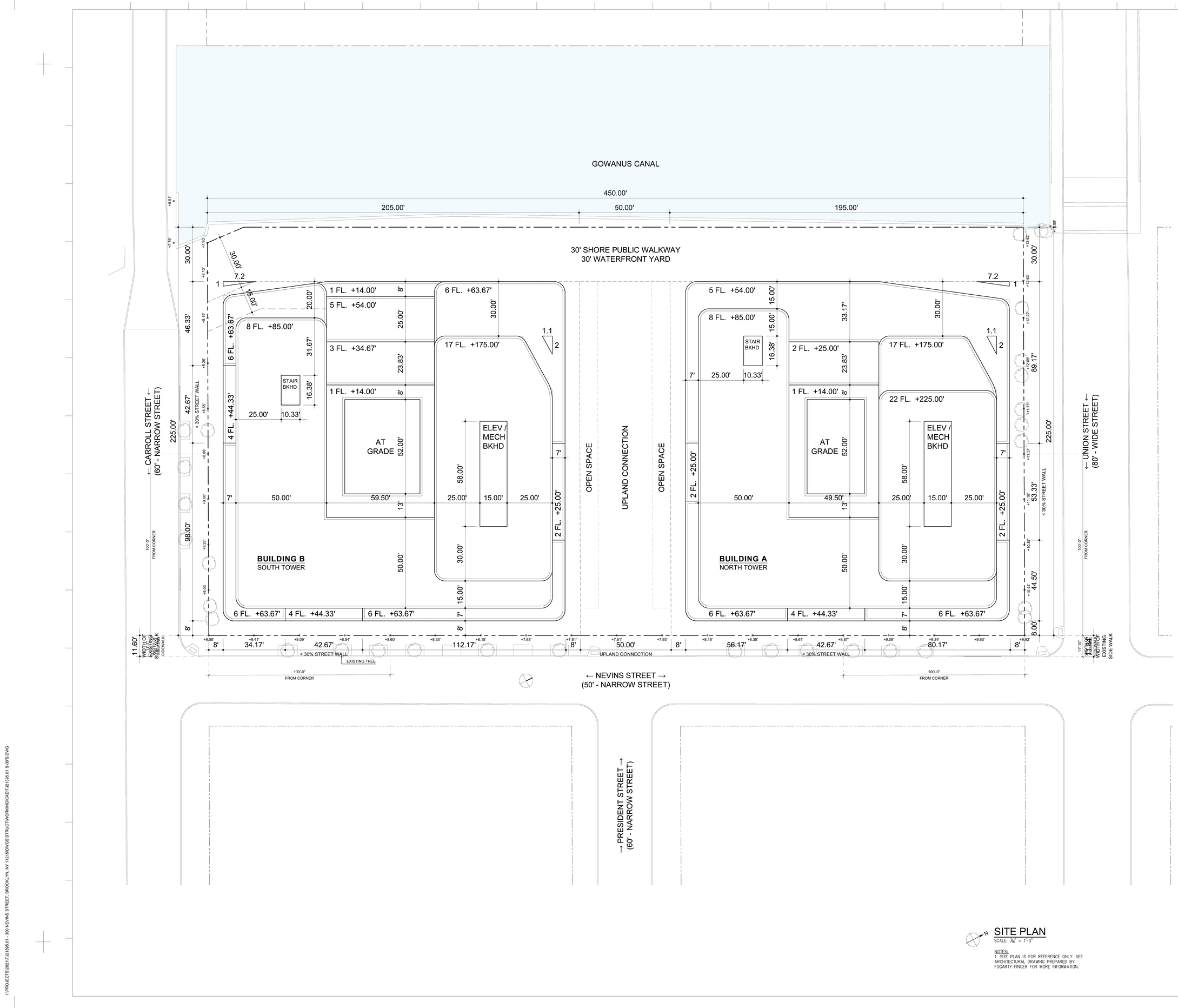
DRAWING TITLE:
GENERAL NOTES III

SEAL & SIGNATURE:



DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	FO-003.00
PAGE No.:	3 OF 53

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SITE PLAN

SCALE: 1/16" = 1'-0"

NOTES:
1. SITE PLAN IS FOR REFERENCE ONLY. SEE ARCHITECTURAL DRAWING PREPARED BY FOGARTY FINGER FOR MORE INFORMATION.



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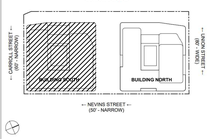
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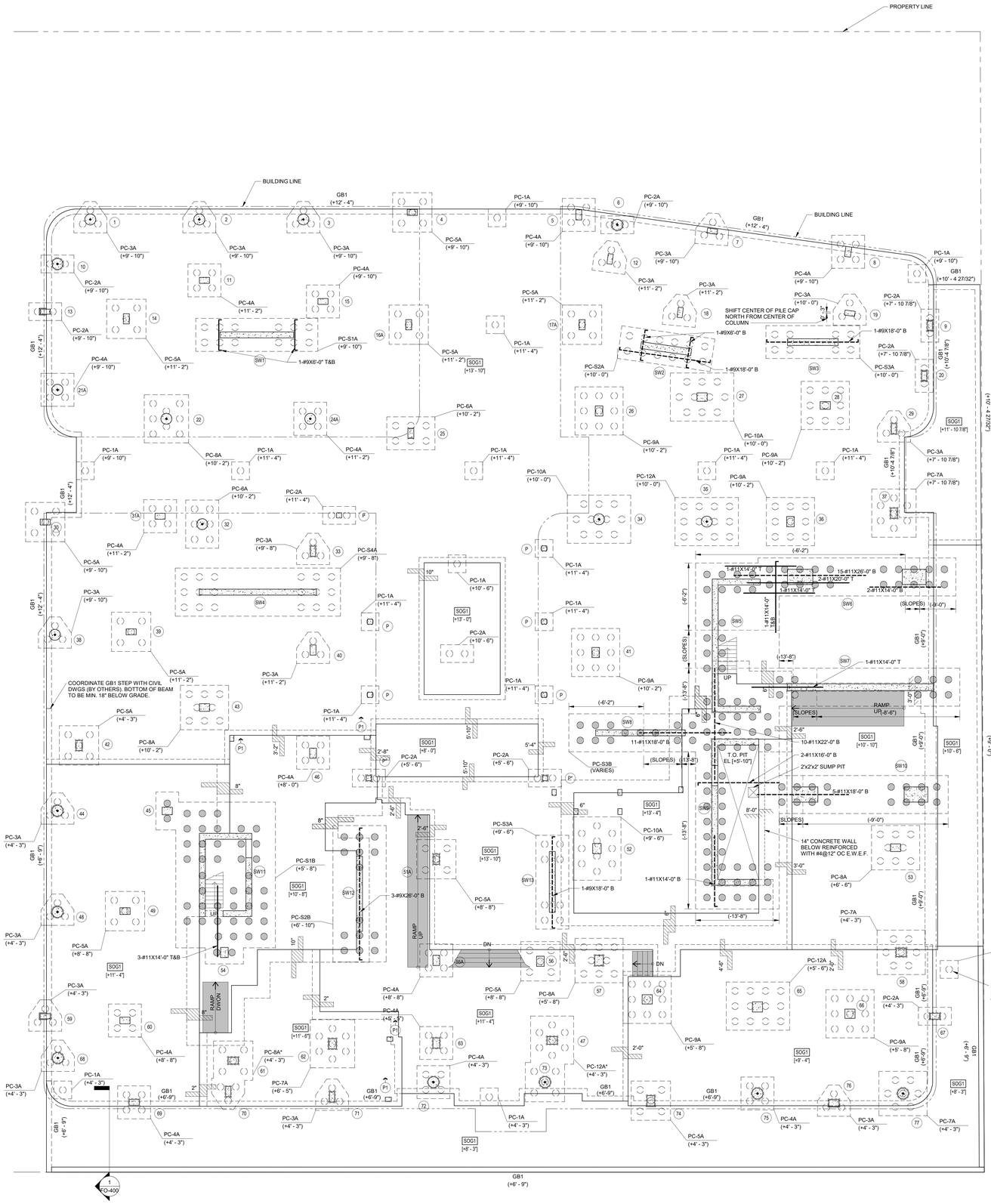
SITE PLAN

SEAL & SIGNATURE:

STATE OF NEW YORK — JOSEPH ADYBIRNA — 039801 — LICENSED PROFESSIONAL ENGINEER

DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	T.21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	FO-010.00
PAGE No.:	4 OF 53

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FOUNDATION PLAN
1/8" = 1'-0"



FOUNDATION NOTES:

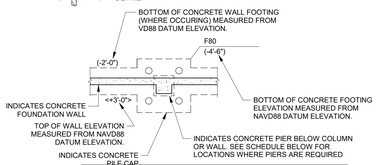
1. [XX'-XX"] INDICATES TOP OF SLAB ELEVATION RELATIVE TO NAVD88 DATUM.
   [+/-XX'-XX"] INDICATES ELEVATION RELATIVE TO TOP OF SLAB ELEVATION.
   SEE ARCH/CIVIL DRAWINGS FOR NAVD 88 ELEVATION RELATIVE TO PROJECT DATUM 0'-0".
2. SOGX INDICATES SLAB TYPE. SEE SLAB SCHEDULE ON THIS SHEET.
3. SEE THE FOLLOWING DRAWINGS FOR THE ITEMS NOTED:

GENERAL NOTES	FO-001's
COLUMN/SHEAR WALL SCHEDULES & DETAILS	S-200's
TYPICAL FOUNDATION DETAILS	FO-200's AND FO-300's
FOUNDATION SECTIONS	FO-400's
FOUNDATION GEOMETRY PLANS	FO-500's

4. COORDINATE ALL SLAB OPENINGS WITH MECHANICAL SHOP DRAWINGS. PROVIDE REINFORCEMENT AT ALL OPENINGS AND SLAB EDGES AS PER THE TYPICAL DETAILS AND PLANS.
5. SEE ARCHITECTURAL EDGE OF SLAB DRAWINGS FOR ALL DIMENSIONS AND COORDINATES, U.O.N.
6. TOP OF PILE CAP SHALL BE TOP OF SLAB, U.O.N. BOTTOM OF PILE CAP ELEVATION IS AS SHOWN, OR 4' BELOW GRADE AT SLAB PERIMETER, WHICHEVER IS LOWER.
7. SEE GROUND FLOOR FRAMING PLAN FOR GROUND FLOOR SLAB REINFORCMENT AND BALANCE OF INFORMATION

LEGEND:

- ADDITIONAL TOP STEEL
- ADDITIONAL BOTTOM STEEL
- ADDITIONAL CONTINUOUS TOP STEEL
- (#) INDICATES COLUMN NUMBER
- EDB INDICATES HSS6x4x3/8" ELEVATOR DIVIDER BEAM
- (P) INDICATES 14"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- (P1) INDICATES 8"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- INDICATES COLUMN BELOW / ABOVE
- INDICATES (0,0) COORDINATE LOCATION (CORNER OF PROPERTY LINE)
- INDICATES SLAB STRESS LINE
- INDICATES STEP IN FRAMED SLAB WITH DASHED BOTTOM OF SLAB EXTENTS. SEE S-300'S SERIES FOR TYPICAL STEP IN FRAMED SLAB DETAIL.



MINIMUM PILE REQUIREMENTS (DESIGN BY OTHERS)

PILE TYPE	MINIMUM DIAMETER	MINIMUM COMPRESSION CAPACITY	MINIMUM TENSILE CAPACITY	MINIMUM LATERAL CAPACITY
TYPE A	7 5/8"	75 TONS	40 TONS	1 TONS
TYPE B	12 5/8"	150 TONS	50 TONS	1 TONS

FRAMED SLAB ON GRADE SCHEDULE

SLAB MARK	SLAB THICKNESS	CONCRETE WEIGHT (PCF)	CONCRETE STRENGTH	TYPICAL SLAB REINFORCEMENT	NOTES:
SOG1	10"	150-NWT	6,000 PSI	#5@12" O.C. EACH WAY, T & B	SEE PLAN FOR ADDITIONAL REINFORCEMENT. SLAB ON GRADE OVER STEGO 20 MIL VAPOR BARRIER AND 6" GRAVEL FILL. PROVIDE 2" CLEAR COVER TO BOTTOM BARS

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION

GRADE BEAM SCHEDULE

MARK	SIZE - WxD		REINFORCEMENT						NOTES:
			BOTTOM		TOP		SIDE***	STIRRUP	
	WIDTH	DEPTH	CONT.	ADD'L	CONT.	ADD'L	SIZE & SPACING	SIZE & SPACING / # OF LEGS	
GB1	12	18*	2-#8	-	2-#8	-		#4@12" O.C. / 2	-

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION.
WHERE GRADE BEAM MEETS FOUNDATION, PROVIDE #4@12" O.C. VERTICAL DOWELS TYING BEAM INTO PILE CAP
*BEAM DEPTH IS AS SHOWN ON SCHEDULE, INDICATED AS ELEV. ON PLAN, OR 18" BELOW GRADE, WHICHEVER IS GREATER.
*** PROVIDE #4@12" SIDE BARS FOR ALL BEAMS WITH DEPTH GREATER THAN 36", U.O.N.

CONCRETE PIER SCHEDULE

COL. #/ WALL #	SIZE		REINFORCEMENT
	WIDTH	LENGTH	
6, 9, 10, 13, 20, 29, 33, 37, 42, 44, 47, 48, 51A, 53, 57, 58, 59, 61, 62, 63, 67-77, P*	SEE NOTE 1		
SW5, SW7, SW9	SEE NOTE 1	CONTINUOUS	SEE NOTE 2

NOTES: 1. SEE TYPICAL PILE CAP AND FRAMED SLAB WITH PIER DETAIL ON FO-300'S.
2. PIER REINFORCEMENT TO MATCH SHEAR WALL REINFORCEMENT.

COLUMN PILE CAP SCHEDULE (75 TONS PILE, TYPE A)

PILE CAP MARK	THICKNESS (IN)	REINFORCEMENT				NOTES:
		BOTTOM		TOP		
		LONG WAY	SHORT WAY	LONG WAY	SHORT WAY	
PC-1A	30	7-#6	7-#6	-	-	HOOK REINF.
PC-2A	30	7-#6	10-#6	-	-	HOOK REINF.
PC-3A	32	5-#7 THREE - WAY		-	-	HOOK REINF.
PC-4A	32	8-#8	8-#8	-	-	HOOK REINF.
PC-5A	32	10-#8	10-#8	-	-	HOOK REINF.
PC-6A	44	10-#8	11-#8	-	-	HOOK REINF.
PC-7A	44	11-#8	12-#8	11-#8	12-#8	HOOK REINF.
PC-8A	44	13-#8	14-#8	-	-	HOOK REINF.
PC-8A*	32	#8@9" OC	#8@9" OC	-	-	HOOK REINF.
PC-9A	44	16-#8	16-#8	-	-	HOOK REINF.
PC-10A	46	18-#9	20-#9	-	-	HOOK REINF.
PC-11A	46	20-#9	22-#9	-	-	HOOK REINF.
PC-12A	46	22-#9	24-#9	-	-	HOOK REINF.
PC-12A*	44	#8@9" OC	#8@9" OC	-	-	HOOK REINF.

NOTE: PILE CAP CONCRETE STRENGTH SHALL BE fc = 10,000 PSI.
SEE PILE CAP LAYOUT AND DETAILS ON FO-300 SERIES FOR ADDITIONAL INFORMATION.
SEE PLAN FOR ADDITIONAL REBAR REQ'D AT PILE CAP.

SHEAR WALL PILE CAP SCHEDULE (75 TONS PILE, TYPE A)

PILE CAP MARK	THICKNESS (IN)	REINFORCEMENT				NOTES:
		BOTTOM		TOP		
		LONG WAY	SHORT WAY	LONG WAY	SHORT WAY	
PC-S1A	48	#9@6" OC	#9@6" OC	#9@12" OC	#9@12" OC	HOOK REINF.
PC-S2A	46	##@12" OC	#9@12" OC	#7@12" OC	#7@12" OC	HOOK REINF.
PC-S3A	46	##@12" OC	#9@12" OC	#9@12" OC	#9@12" OC	HOOK REINF.
PC-S4A	50	#9@6" OC	#9@6" OC	#7@12" OC	#7@12" OC	HOOK REINF.

NOTE: PILE CAP CONCRETE STRENGTH SHALL BE fc = 10,000 PSI.
SEE PILE CAP LAYOUT AND DETAILS ON FO-300 SERIES FOR ADDITIONAL INFORMATION.
SEE PLAN FOR ADDITIONAL REBAR REQ'D AT PILE CAP

SHEAR WALL PILE CAP SCHEDULE (150 TONS PILE, TYPE B)

	THICKNESS (IN)	REINFORCEMENT				NOTES:
		BOTTOM		TOP		
		LONG WAY	SHORT WAY	LONG WAY	SHORT WAY	
PC-S1B	60	#11@6" OC	#11@6" OC	#11@6" OC	#11@6" OC	HOOK REINF.
PC-S2B	46	#9@12" OC	#9@12" OC	#7@12" OC	#7@12" OC	HOOK REINF.
PC-S3B	66	#11@6" OC	#11@6" OC	#11@6" OC	#11@6" OC	HOOK REINF.

NOTE: PILE CAP CONCRETE STRENGTH SHALL BE fc = 10,000 PSI.
SEE PILE CAP LAYOUT AND DETAILS ON FO-300 SERIES FOR ADDITIONAL INFORMATION.
SEE PLAN FOR ADDITIONAL REBAR REQ'D AT PILE CAP



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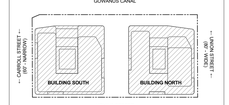
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 Ninth Avenue, Suite 902
New York, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

498 UNION ST.

BROOKLYN, NY 11217

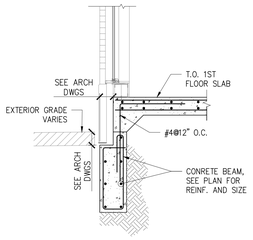
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FOUNDATION PLAN

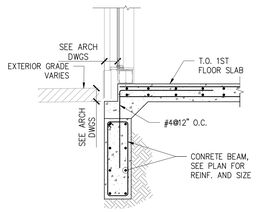
SEAL & SIGNATURE:

STATE OF NEW YORK · JOSEPH AUYEUNG · 088452 · LICENSED PROFESSIONAL ENGINEER

DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	FO-100B.00
PAGE No.:	5 OF 53



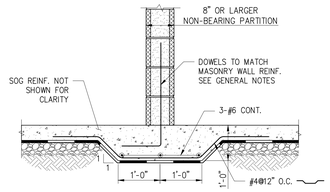
AT EXTERIOR GRADE ELEVATION MORE THAN 12" BELOW GROUND FLOOR ELEVATION



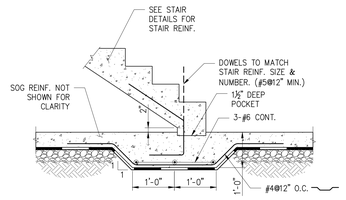
AT EXTERIOR GRADE ELEVATION LESS THAN 12" BELOW GROUND FLOOR ELEVATION

EDGE OF SLAB DETAILS AT FACADE WALLS

SCALE: N.T.S.



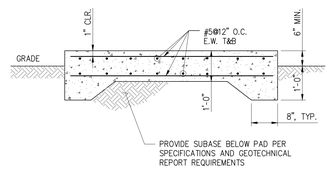
AT PARTITIONS



AT STAIR STRINGER

TYPICAL DETAIL AT PARTITIONS OR STAIRS ON SLAB ON GRADE

SCALE: N.T.S.

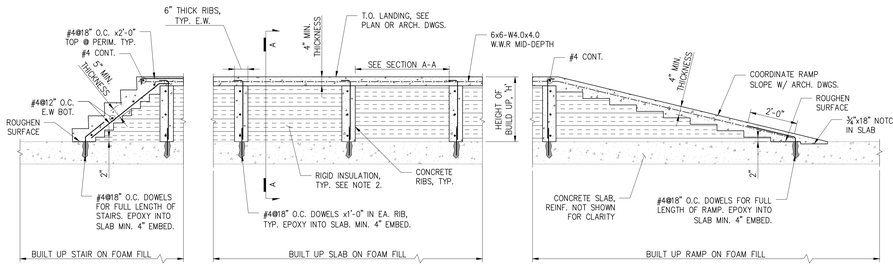


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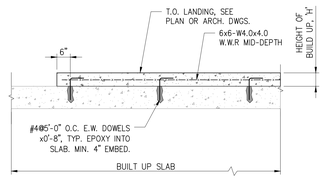
1. COORDINATE EQUIPMENT ANCHORAGE WITH EQUIPMENT MANUFACTURER.

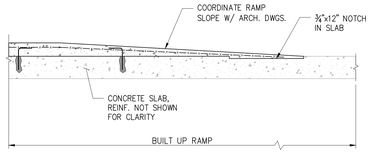
TYPICAL CONCRETE PAD FOR EXTERIOR EQUIPMENT

SCALE: N.T.S.



FOR 'H' > 4"

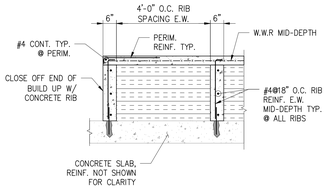




FOR 'H ≤ 4"

TYPICAL BUILT UP SLAB DETAIL

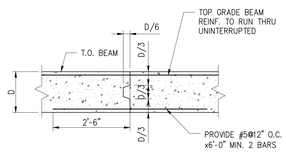
SCALE: N.T.S.



SECTION A-A

NOTES:

1. CAST IN PLACE SLAB DOWELS MAY BE USED IN LIEU OF POST INSTALLED DOWELS, AT CONTRACTORS OPTION.
2. STRUCTURAL POLYSTYRENE SHALL BE OWENS CORNING FOAMULAR 400 HIGH DENSITY EXTRUDED POLYSTYRENE INSULATION OR APPROVED EQUAL:
   MIN. REQUIRED COMPRESSIVE STRENGTH = 40 PSI (PER ASTM D1621),
   MIN. REQUIRED COMPRESSIVE MODULUS = 1,400 PSI (PER ASTM D1621),
   MIN. REQUIRED INSULATION FOUNDATION MODULUS "K" = 300 PCI.
3. SEE ARCH. DWGS. FOR STAIR/RAMP DIMENSIONS, DETAILS AND ADDITIONAL INFO.
4. ALL INTERIOR CONCRETE SHALL BE 4,000 PSI. ALL EXTERIOR OR EXPOSED TO WEATHER CONCRETE SHALL BE 5,000 PSI.



GRADE BEAM

CONSTRUCTION JOINT DETAILS AT FOUNDATIONS

SCALE: N.T.S.



OWNER:

CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:

FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:

TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:

ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:

SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:

JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:

BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:

BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:

PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:

JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

LANDSCAPE:

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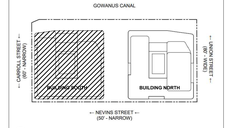
ZONING SPECIALIST:

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CODE CONSULTANT/ EXPEDITOR:

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299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



DOB NOW JOB # B00611166-P1

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PROJECT:

498 UNION ST.
BROOKLYN, NY 11217

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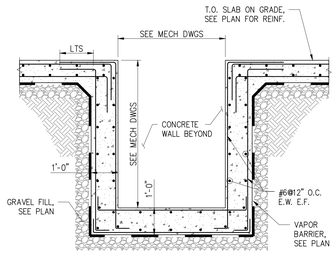
TYPICAL FOUNDATION DETAILS I

SEAL & SIGNATURE:



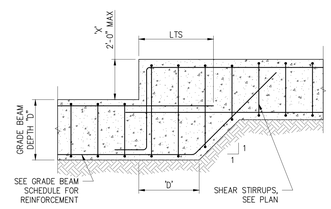
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PROJECT No.:	T-21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	FO-300.00
PAGE No.:	6 OF 53

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TYPICAL EJECTOR PIT FOUNDATION DETAILS

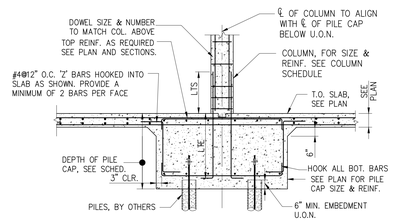
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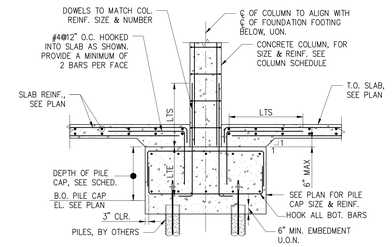
NOTE: MINIMUM DISTANCE BETWEEN STEPS TO BE 2X.

TYPICAL STEP IN GRADE BEAM DETAIL

SCALE: N.T.S.



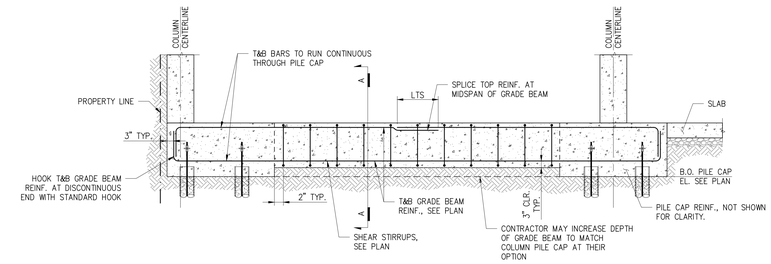
WHERE TOP OF SLAB IS EQUAL TO TOP OF PILE CAP



WHERE BOTTOM OF SLAB ≤ 6" FROM TOP OF PILE CAP

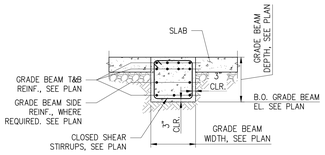
TYPICAL PILE CAP AND FRAMED SLAB DETAILS

SCALE: N.T.S.



TYPICAL GRADE BEAM AND PILE CAP DETAIL

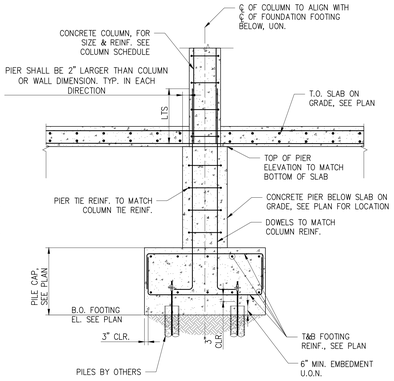
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SECTION A-A

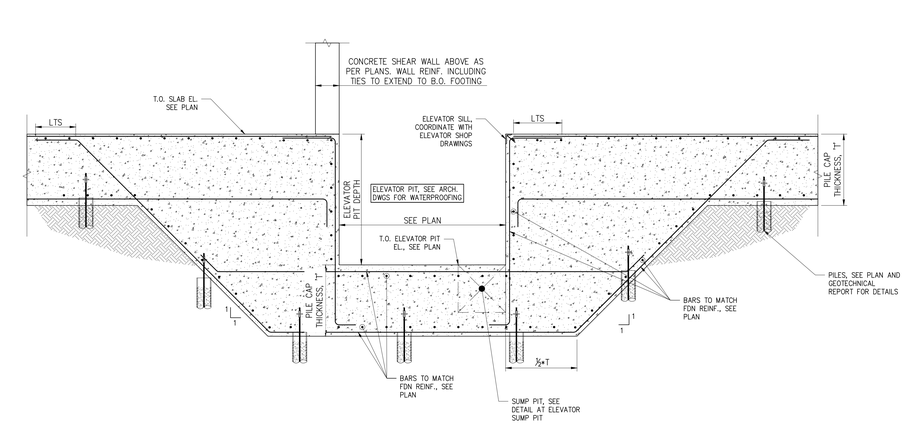
NOTES:

1. WHERE BARS ARE PLACED IN (2) LAYERS THE MINIMUM CLEAR DISTANCE BETWEEN LAYERS SHALL BE 2".



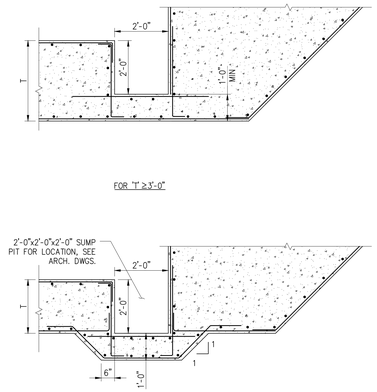
TYPICAL PILE CAP AND FRAMED SLAB WITH PIER

SCALE: N.T.S.



TYPICAL ELEVATOR PIT FOUNDATION DETAIL

SCALE: N.T.S.



DETAIL AT ELEVATOR SUMP PIT

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OWNER:
CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

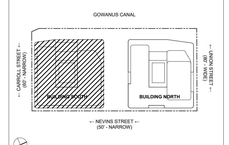
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



DOB NOW JOB # B00611166-P1

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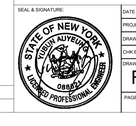
498 UNION ST.

BROOKLYN, NY 11217

DRAWING TITLE:

TYPICAL FOUNDATION DETAILS II

SEAL & SIGNATURE:



DATE (YYYY/MM/DD)	2022.03.18
PROJECT No:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	FO-301.01
PAGE No:	7 OF 53

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OWNER:

CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:

FOGARTY FINGER
architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:

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1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:

ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:

SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:

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5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:

BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:

BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:

PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:

JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

LANDSCAPE:

GRAIN COLLECTIVE
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GEOTECH:

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6 BAYBERRY ROAD
ELMSFORD, NY 10523

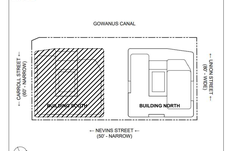
ZONING SPECIALIST:

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630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:

WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
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KEY PLAN



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PROJECT:

498 UNION ST.
BROOKLYN, NY 11217

DRAWING TITLE:

TYPICAL FOUNDATION DETAILS III

SEAL & SIGNATURE:



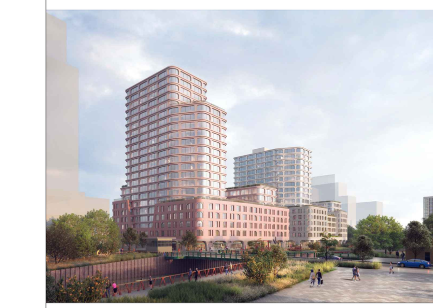
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PROJECT No.:	TJ21395.01
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CHK BY:	AM
DRAWING No.:	FO-302.01
PAGE No.:	8 OF 53

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FOUNDATION CAP PILE DETAILS

SCALE: ¼" =1'-0"



OWNER:

CHARNEY COMPANIES
5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
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t 212 966 7450 f 212 966 7444

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UNION, NJ 07083

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FACADE:

SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:

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5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:

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121 W. 27th Street,
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INTERIOR LIGHTING:

BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:

PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:

JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

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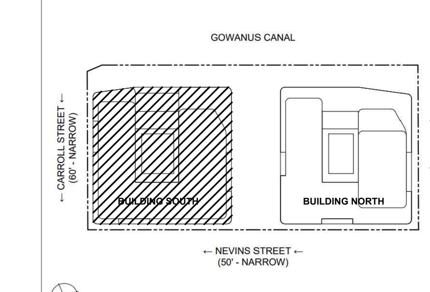
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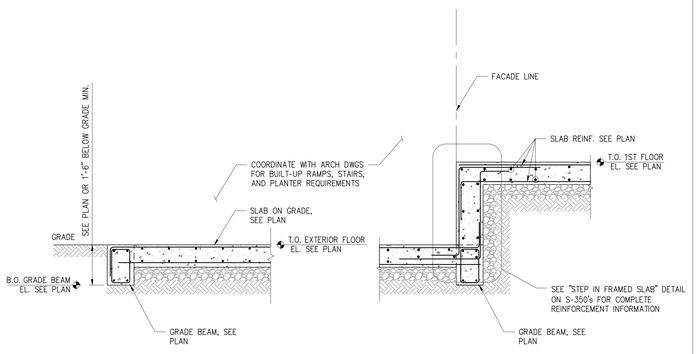
PILE CAP DETAILS

SEAL & SIGNATURE:



DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	FO-310.00
PAGE No.:	9 OF 53

I:\PROJECTS\2021\TJ21395.01 - 300 NEVINS STREET, BROOKLYN, NY 11215\DWGS\STRUCT\WORKING\CAD\TJ21395.01 FO-300'S.DWG



SECTION 1

SCALE: ½" = 1'-0"



OWNER:

CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:

FOGARTY FINGER
architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:

TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:

ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:

SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:

JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:

BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:

BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:

PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:

JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

LANDSCAPE:

GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:

GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

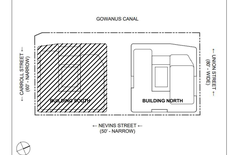
ZONING SPECIALIST:

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630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:

WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN:



DOB NOW JOB # B00611166-P1

No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

498 UNION ST.
BROOKLYN, NY 11217

DRAWING TITLE:

FOUNDATION SECTIONS

SEAL & SIGNATURE:



DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
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DRAWING No.:

FO-400.01

PAGE No.: 10 OF 53

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GENERAL NOTES

1. ALL ELEVATIONS INDICATED IN THESE DRAWINGS ARE REFERENCED TO THE PROJECT DATUM +0'-0" WHICH CORRESPONDS TO +14.00' NAVD88 ELEVATION.

2. WORK NOT INDICATED ON A PART OF THE DRAWINGS BUT REASONABLY IMPLIED TO BE SIMILAR TO THAT SHOWN AT CORRESPONDING PLACES SHALL BE REPEATED.

3. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THE STRUCTURAL DRAWINGS WITH THE ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS. IN CASE OF CONFLICT BETWEEN THE STRUCTURAL DRAWINGS AND DRAWINGS RELATED TO OTHER TRADES, THE CONTRACTOR SHALL MAKE ALLOWANCE IN HIS BID FOR THE MORE STRINGENT REQUIREMENTS. CONFLICTS BETWEEN THE STRUCTURAL DRAWINGS AND THE DRAWINGS OF OTHER TRADES SHALL NOT BE REASON FOR ANY EXTRA COST OR DELAY IN THE EXECUTION OF THE WORK.

4. IN ANY CASE OF CONFLICT BETWEEN THE NOTES, DETAILS AND SPECIFICATIONS, THE MOST RIGID REQUIREMENTS SHALL GOVERN.

5. CONTRACTOR SHALL MAKE NO DEVIATION FROM DESIGN DRAWINGS WITHOUT WRITTEN APPROVAL OF THE ARCHITECT AND/OR STRUCTURAL ENGINEER.

6. ALL DIMENSIONS INDICATED ON THE DRAWINGS ARE BASED UPON THE AVAILABLE INFORMATION AND SHALL NOT BE USED FOR ORDERING AND/OR FABRICATING MATERIALS. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING DIMENSIONS PRIOR TO ORDERING AND/OR FABRICATING MATERIALS.

7. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS BY MEASUREMENTS AT THE JOB SITE AND SHALL TAKE ANY AND ALL OTHER MEASUREMENTS NECESSARY TO VERIFY THE DRAWINGS AND TO PERFORM HIS WORK PROPERLY.

8. THE CONTRACTOR SHALL EXPOSE THE EXISTING CONSTRUCTION, VERIFY AND CHECK FIELD DIMENSIONS OF ALL EXISTING MEMBERS PRIOR TO THE PREPARATION OF SHOP DRAWINGS. IN THE EVENT THAT EXISTING CONDITIONS OR DETAILS OF CONSTRUCTION VARY FROM THOSE SHOWN ON THE STRUCTURAL DRAWINGS AND DETAILS, THE CONTRACTOR MUST MAKE NECESSARY SKETCHES SHOWING THE EXISTING CONDITIONS AND, SUBMIT THE SAME TO THE ARCHITECT AND ENGINEER FOR REVIEW AND RESOLUTION.

9. CONTRACTOR SHALL ALLOW FOR THE COST OF OPENING AND EXPOSING EXISTING STRUCTURAL FRAMING TO VERIFY AND MEASURE THE EXISTING CONDITIONS AND MEMBERS.

10. MATERIALS AND EQUIPMENT SHALL BE STORED AND TRANSPORTED IN A MANNER COMPATIBLE WITH THE ALLOWABLE FLOOR LOADINGS.

11. FOR WATERPROOFING DETAILS AND LOCATIONS, SEE ARCHITECTURAL DRAWINGS.

12. FOR LOCATION OF FLOOR DRAINS, CURBS, CONCRETE PADS AND FLOOR DEPRESSIONS, ETC. SEE ARCHITECTURAL AND MECHANICAL DRAWINGS.

13. ALL CONSTRUCTION SHALL BE PERFORMED IN CONFORMANCE WITH THE REQUIREMENTS OF THE BUILDING CODE OF THE CITY OF NEW YORK, LATEST EDITION AND REVISIONS.

14. CONTRACTOR ALONE SHALL BE RESPONSIBLE FOR THE SAFETY OF THE EXISTING STRUCTURES DURING THE ENTIRE CONSTRUCTION OF ADDITIONS TO AND/OR ALTERATIONS OF THE EXISTING STRUCTURE AND SHALL TAKE ADEQUATE PRECAUTION TO PREVENT DAMAGE TO THE EXISTING STRUCTURAL AND ARCHITECTURAL ELEMENTS. IF ANY DAMAGE TO SAME ELEMENTS OCCURS, IT SHALL BE RECTIFIED TO THE ENTIRE SATISFACTION OF OWNER AT NO EXTRA COST TO THE OWNER.

15. THE CONTRACTOR SHALL PERFORM ALL WORK (INCLUDING DEMOLITION & ERECTION) WITH DUE REGARD TO LIFE AND PROPERTY IN THE VICINITY OF THE WORK AREA. CONTRACTOR ALONE SHALL BE RESPONSIBLE FOR PROTECTION OF SAME FROM ANY HARM OR DAMAGE DURING THE ENTIRE CONSTRUCTION AND/OR ALTERATION. ANY HARM OR DAMAGE SHALL BE RECTIFIED TO THE ENTIRE SATISFACTION OF OWNER AT NO ADDITIONAL COST TO OWNER.

16. CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ALL CONSTRUCTION DEBRIS IN THE VICINITY OF WORK.

17. CONTRACTOR MUST PROVIDE ADEQUATE SHORING AND/OR TEMPORARY SUPPORT WHEREVER REQUIRED TO THE EXISTING AND NEW STRUCTURES DURING THE ENTIRE CONSTRUCTION PERIOD.

18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF THE INTERIOR OF THE BUILDING AND ALL CONTENTS FROM WEATHER OR ANY OTHER ELEMENTS THAT COULD CAUSE DAMAGE.

19. THE CONTRACTOR SHALL BE COMPLETELY RESPONSIBLE FOR THE SAFETY OF ADJACENT STRUCTURES.

20. ALL WORK SHALL HAVE SPECIAL INSPECTION CONFORMING TO BUILDING CODE OF THE CITY OF NEW YORK, 2014 REQUIREMENTS. SPECIAL INSPECTION SHALL BE BY AN INDEPENDENT TESTING AGENCY HIRED BY THE OWNER AND APPROVED BY NYC DOB AND THE EOR.

21. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING THE COMPLETE LAYOUT AND DETAILS OF ALL STRUCTURAL WORK TO BE PERFORMED. THE CONTRACTOR MAY NOT PERFORM WORK UNTIL THE SHOP DRAWINGS HAVE BEEN APPROVED.

22. THE CONTRACTOR SHALL SUBMIT THE WELDING PROCEDURE TO EXISTING STEEL FOR ENGINEERS APPROVAL.

23. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE LANDLORDS RULES AND REGULATIONS.

24. ALL CONTRACTORS ARE REQUIRED TO EXAMINE THE DRAWINGS AND SPECIFICATIONS CAREFULLY, VISIT THE JOB SITE AND FULLY INFORM THEMSELVES TO ALL EXISTING CONDITIONS AND LIMITATIONS PRIOR TO SUBMITTING THEIR PROPOSAL. FAILURE TO VISIT THE SITE AND NOT BEING FAMILIAR WITH THE EXISTING CONDITIONS AND LIMITATIONS WILL IN NO WAY RELIEVE THE SUCCESSFUL BIDDER FROM FURNISHING ANY MATERIALS OR PERFORMING ANY WORK. THAT MAY BE REQUIRED TO COMPLETE WORK IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS WITHOUT ADDITIONAL COST TO THE OWNER.

25. STRUCTURAL SUBMITTALS REQUIRED:

A. THE FOLLOWING ITEMS REQUIRE SUBMITTAL OF SHOP AND ERECTION DRAWINGS, FOR REVIEW:
   i) REINFORCING STEEL FOR CAST-IN-PLACE CONCRETE
   ii) CAST-IN-PLACE CONSTRUCTION JOINT LOCATIONS
   iii) COMPOSITE DRAWING OF ALL SLAB PENETRATIONS

B. THE FOLLOWING ITEMS REQUIRE SUBMITTAL OF SHOP AND ERECTION DRAWINGS AND STRUCTURAL CALCULATIONS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF THIS PROJECT:
   i) PRECAST CONCRETE - PLANK, WALL PANELS, ETC.
   ii) FACADE SYSTEMS
   iii) CONCRETE DESIGN MIXES
   iv) SHORING AND RESHORING
   v) EXCAVATION SUPPORT, SHEETING, OR BENCHING WHERE SOILS REQUIRE SUCH BY VIRTUE OF OSHA REQUIREMENTS (ALL EXCAVATIONS GREATER THAN 5' REQUIRE SPECIFIC TRENCHING CONSIDERATIONS) OR SOIL CONDITIONS

NON STRUCTURAL ITEMS

1. COORDINATE THE EXTENT AND LOCATION OF CURBS, MECHANICAL PADS AND MASONRY DOWELS WITH THE ARCHITECTURAL AND MECHNICAL DRAWINGS. TYPICAL DETAILS ARE SHOWN ON THE STRUCTURAL DRAWINGS. REINFORCE NON-STRUCTURAL FILL WITH 6x6 - W1.4xW1.4 WWF LOCATED 1" FROM TOP.

CODES

1. 2014 NEW YORK CITY BUILDING CODE (2014 NYCBC). INCLUDING (BUT NOT LIMITED TO) THE FOLLOWING REFERENCED STANDARDS. SEE CHAPTER 35 OF THE 2014 NYCBC FOR FULL LIST OF REFERENCED STANDARDS.

1.1. ACI 318-11 - AMERICAN CONCRETE INSTITUTE "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE".

1.2. ACI 530-08 - AMERICAN CONCRETE INSTITUTE "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES."

1.3. ASCE 7-05 - AMERICAN SOCIETY OF CIVIL ENGINEERS "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES."

1.4. ASCE 7-10 - AMERICAN SOCIETY OF CIVIL ENGINEERS "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES."

STRUCTURAL STABILITY

1. THE ENTIRE STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH THE STRUCTURAL STABILITY PROVISIONS OF THE 2014 NYC BC SECTION 1615 "STRUCTURAL INTEGRITY - PRESCRIPTIVE REQUIREMENTS".

2. THE PROVISIONS OF THE 2014 NYC BC SECTION 1616 "STRUCTURAL INTEGRITY - KEY ELEMENT ANALYSIS" ARE NOT REQUIRED FOR THIS STRUCTURE AS PER SECTION 1616.1.

FLOOD RESISTANT CONSTRUCTION NOTES

1. THE ENTIRE STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH ASCE 24, INCLUDING THE PILE FOUNDATION AND BUILDING STRUCTURE ATTACHED THERETO IS DESIGNED TO BE ANCHORED TO RESIST FLOTATION, COLLAPSE AND LATERAL MOVEMENT DUE TO THE EFFECTS OF WIND, AND FLOOD LOADS ACTING SIMULTANEOUSLY ON ALL BUILDING COMPONENTS, AND OTHER LOAD REQUIREMENTS OF CHAPTER 16 OF THE NEW YORK CITY BUILDING CODE
2. THE FOLLOWING FLOOD HAZARD MAP AND SUPPORTING DATA ARE IN EFFECT IN ACCORDANCE WITH SECTION G102.2 OF THE 2014 NYC BC:
   2.1. FEMA FIS 360497
   2.2. FEMA FIRMs 360497
3. THE FOLLOWING PRELIMINARY FLOOD INSURANCE STUDY AND RATE MAPS ARE IN EFFECT IN ACCORDANCE WITH SECTION G102.2.1 OF THE 2014 NYC BC:
   3.1. FEMA PFIS 360497
   3.2. FEMA PFIRMs 360497

4. THE BUILDING IS LOCATED IN A COASTAL A-ZONE.
   4.1. BASE FLOOD ELEVATION (BFE) = 10.00' (NAVD 88)
   4.2. DESIGN FLOOD ELEVATION (DFE) = 11.00' (NAVD 88)

STRUCTURAL TESTS, SPECIAL AND PROGRESS INSPECTIONS

1. THE OWNER SHALL ENGAGE AN INDEPENDENT NYC BUILDING DEPARTMENT APPROVED SPECIAL INSPECTION AGENCY TO PERFORM SPECIAL INSPECTIONS AND TESTING AND PROGRESS INSPECTIONS FOR, BUT NOT LIMITED TO, THE STRUCTURAL ITEMS INDICATED IN THE CHARTS BELOW AS REQUIRED BY THE 2014 NYC BC.

SPECIAL INSPECTIONS

SPECIAL INSPECTION ITEMS	CODE/SECTION	FOUNDATION SCOPE	STRUCTURAL SCOPE	CLASS INSPECTION
STRUCTURAL STEEL - WELDING	BC 1704.3.1			CLASS 1 (MAJOR BUILDING)
STRUCTURAL STEEL - DETAILS	BC 1704.3.2			
STRUCTURAL STEEL - HIGH STRENGTH BOLTING	BC 1704.3.3			
STRUCTURAL COLD FORMED STEEL	BC 1704.3.4			
CONCRETE - CAST-IN-PLACE	BC 1704.4	X	X	
CONCRETE - PRECAST	BC 1704.4			
CONCRETE - PRESTRESSED	BC 1704.4			
MASONRY	BC 1704.5			
WOOD - INSTALLATION OF HIGH-LOAD DIAPHRAGMS	BC 1704.6.1			
WOOD - INSTALLATION OF METAL-PLATE-CONNECTED TRUSSES	BC 1704.6.2			
WOOD - INSTALLATION OF PREFABRICATED I-JOIST	BC 1704.6.3			
SUBGRADE INSPECTION	BC 1704.7.1	X		
SUBSURFACE CONDITIONS - FILL PLACEMENT & IN-PLACE DENSITY	BC 1704.7.2, BC 1704.7.3	X		
SUBSURFACE INVESTIGATIONS (BORINGS/TEST PITS)	BC 1704.7.4	X		
DEEP FOUNDATION ELEMENTS	BC 1704.8	X		
HELICAL PILES	BC 1704.8.5			
ALTERNATIVE MATERIALS	BC 1704.14			
STRUCTURAL STABILITY - EXISTING BUILDINGS	BC 1704.20.1			
EXCAVATIONS - SHEETING, SHORING, AND BRACING	BC 1704.20.2	X		
UNDERPINNING	BC 1704.20.3, BC 1814			
MECHANICAL DEMOLITION	BC 1704.20.4			
POST INSTALLED ANCHORS	BC 1704.32			
CONCRETE DESIGN MIX	BC 1905.3, BC 1913.5	X	X	
CONCRETE SAMPLING AND TESTING	BC 1905.6, BC 1913.10	X	X	

PROGRESS INSPECTIONS

PROGRESS INSPECTION CATEGORIES	CODE/SECTION	FOUNDATION SCOPE	STRUCTURAL SCOPE	CLASS INSPECTION
FOOTING AND FOUNDATION	BC 110.3.1	X		CLASS 1 (MAJOR BUILDING)
LOWEST FLOOR ELEVATION	BC 110.3.2	X		
STRUCTURAL WOOD FRAME	BC 110.3.3			
FINAL	28-116.2.4.2, BC 110.5, DIRECTIVE 14 OF 1975 AND 1 RCNY 101-10		X	



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1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
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FACADE:
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NEW YORK , NY10036

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LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

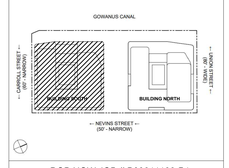
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
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KEY PLAN



DOB NOW JOB # B00611166-P1

No	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

498 UNION ST.

BROOKLYN, NY 11217

DRAWING TITLE:

GENERAL NOTES I

SEAL & SIGNATURE:



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SCOPE OF WORK:

1. INCLUDES THE CONSTRUCTION OF A NEW 22 STORY BUILDING. STRUCTURE WILL CONSIST OF CAST IN PLACE CONCRETE SLABS AND COLUMNS. LATERAL SYSTEM WILL CONSIST OF CONCRETE SLAB DIAPHRAGMS WITH ORDINARY REINFORCED CAST IN PLACE CONCRETE SHEAR WALLS.

DESIGN SCOPE OF WORK (STRUCTURAL)

ITEM	TITAN ENGINEERS PC
STRUCTURAL DESIGN (SUPERSTRUCTURE) INCLUDING COLUMNS, SHEAR WALLS, AND SLABS 2ND FLOOR THRU ROOF (AND FIRST FLOOR FRAMED SLAB)	YES
DEMOLITION MEANS OF OPERATION (DMO)	NO
PRECONSTRUCTION SURVEYS	NO
CONSTRUCTION MONITORING PLANS	NO
CONSTRUCTION MONITORING	NO
SITE SAFETY PLAN	NO

DESIGN SCOPE (FOUNDATION/SOE)

ITEM	TITAN ENGINEERS PC
STRUCTURAL DESIGN (FOUNDATION) INCLUDING COLUMNS, SHEAR WALLS, AND SLABS UP TO 1ST FLOOR	YES
SUPPORT OF EXCAVATION (SOE)	NO

GENERAL DOB FILING REQUIREMENTS:

DOB NOW STRUCTURAL "ALL RELATED APPLICATION" NUMBER: NB#:B00611166-I1

RELATED APPLICATIONS INCLUDE (BUT MAY NOT BE LIMITED TO) GENERAL CONSTRUCTION, ARCHITECTURAL, AND EQUIPMENT DRAWINGS.

1. FOUNDATION (FO), #:B00611166-S1
2. STRUCTURAL (ST), #:B00611166-S2
3. MECHANICAL (MS), #:B00611166-S3
4. PLUMBING (PL), #:B00611166-S4
5. EXCAVATION (SOE), #:B00611166-S5
6. FOUNDATION (FO) LIMITED WORK, #B00611166-S6

DESIGN LOADS:

1. THE FOLLOWING DESIGN LOADS COMPLY WITH THE PROVISIONS OF THE 2014 NYC BC AS PER SECTIONS BC 107.7 AND BC 1604.

LATERAL LOAD DESIGN SCHEDULE
2014 NYC BC

WIND LOAD
ASCE 7-05 PER 2014 NYC BC

ITEM	SYMBOL	VALUE
BASIC WIND SPEED (3 SEC. GUST)	V	98
WIND LOAD IMPORTANCE FACTOR	I_w	1.0
WIND LOAD EXPOSURE CATEGORY	-	C
INTERNAL PRESSURE COEFFICIENT	GCpi	±0.18
WIND BASE SHEAR	V_x	1087 KIPS
	V_y	770 KIPS
COMPONENTS AND CLADDING WIND LOADS		SEE COMPONENTS AND CLADDING WIND LOAD TABLES

SEISMIC LOAD
ASCE 7-10 PER 2014 NYC BC

ITEM	SYMBOL	VALUE
IMPORTANCE FACTOR	I_E	1.0
STRUCTURAL OCCUPANCY/RISK CATEGORY	SORC	II
SHORT PERIOD SPECTRAL ACCELERATION	S_S	0.281g
1 SECOND PERIOD SPECTRAL ACCELERATION	S_1	0.073g
MAPPED LONG-PERIOD TRANSITION PERIOD	T_L	6 SECONDS
SITE CLASSIFICATION	S	D
SITE COEFFICIENT (SHORT PERIOD)	Fa	1.57
SITE COEFFICIENT (1 SEC PERIOD)	Fv	2.40
SPECTRAL RESP COEFFICIENT (SHORT PERIOD)	Sds	0.295
SPECTRAL RESP COEFFICIENT (1 SEC PERIOD)	Sd1	0.117
SEISMIC DESIGN CATEGORY	-	B
SEISMIC RESPONSE COEFFICIENT	Csx	0.013
	Csy	0.013
BASIC SEISMIC-RESISTING SYSTEM		ORDINARY REINFORCED CONCRETE SHEAR WALLS
RESPONSE MODIFICATION FACTOR	R	5
DEFLECTION AMPLIFICATION FACTOR	C_d	4.5
SEISMIC BASE SHEAR	V_x	699 KIPS
	V_y	706 KIPS
ANALYSIS PROCEDURE		EQUIVALENT LATERAL FORCE PROCEDURE

DESIGN LOAD SCHEDULE
PER 2014 NYC BC
(ALL LOADS SHOWN ARE IN POUNDS PER SQ. FT.)

FLOOR	PARTITION	CEILING & MECH.	FLOOR FINISH	LIVE[3]	TOTAL IMPOSED	LIVE LOAD REDUCTION?
Apartments & Corridors Serving Them	12	-	5	40	57	NO
Lobby/Commercial	-	5[1]	20	100	125	NO
Roof/Public Roof[2]	-	5	25	100	130	NO
Stairs & Egress	-	-	-	100	100	NO
Parking	-	-	-	40	40	NO
Residential Balconies	-	-	5	60	65	NO

[1] LOAD APPLIED TO THE FLOOR SLAB ABOVE THIS LEVEL

[2] HEAVIER LOADS FOR LANDSCAPED, SWIMMING POOL AREAS, MECHANICAL EQUIPMENT ETC. WHERE APPLICABLE SEE PLAN.

[3] LIVE LOAD REDUCTION IS BASED ON NYCBC 2014

[4] LIVE LOAD PER STACKER MANUFACTURER'S RECOMMENDATION

SNOW DESIGN LOAD SCHEDULE
2014 NYC BC AND ASCE 7-05

ITEM	SYMBOL	VALUE
GROUND SNOW LOAD	P_g	25
SNOW EXPOSURE FACTOR	C_e	1.0
SNOW LOAD IMPORTANCE FACTOR	I_s	1.0
THERMAL FACTOR	C_t	1.0
RAIN ON SNOW SURCHARGE		-
FLAT-ROOF SNOW LOAD	P_f	20 PSF (MIN.)

COMPONENT AND CLADDING WIND LOAD TABLES — SERVICE (ASD)

HEIGHT ABOVE GROUND, z	POSITIVE WALL LOADS (PSF) ZONE 4 & 5		
	AREA ≤ 20 FT²	AREA = 100 FT²	AREA ≥ 500 FT²
UP TO 100	+29.3	+25.3	+21.4
101 TO 200	+33.1	+28.5	+23.9
201 TO 300	+35.5	+30.5	+25.5

INTERIOR ZONES
ROOFS-ZONE 1/WALLS-ZONE 4

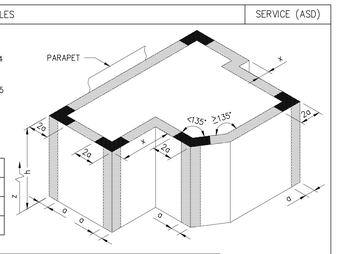
END ZONES
ROOFS-ZONE 2/WALLS-ZONE 5

CORNER ZONES
ROOFS-ZONE 3

NEGATIVE WALL LOADS (PSF)					
ZONE 4			ZONE 5		
AREA ≤ 20 FT²	AREA = 100 FT²	AREA ≥ 500 FT²	AREA ≤ 20 FT²	AREA = 100 FT²	AREA ≥ 500 FT²
-33.1	-30.0	-26.9	-60.6	-48.4	-36.1

ROOF LOADS (PSF)								
ZONE 1			ZONE 2			ZONE 3		
AREA ≤ 10 FT²	AREA = 100 FT²	AREA ≥ 500 FT²	AREA ≤ 10 FT²	AREA = 100 FT²	AREA ≥ 500 FT²	AREA ≤ 10 FT²	AREA = 100 FT²	AREA ≥ 500 FT²
-48.4	-39.5	-33.1	-75.9	-63.4	-54.5	-103.4	-87.2	-75.9

PARAPET LOADS (PSF)			
T.O. PARAPET HEIGHT ABOVE GROUND, z	AREA ≤ 10 FT²	AREA = 100 FT²	AREA ≥ 500 FT²
UP TO 100	±84.6	±69.8	±58.2
101 TO 200	±97.9	±80.8	±67.3
201 TO 300	±106.7	±88.0	±73.3



NOTES:

1) WIND PRESSURES SHALL BE INTERPOLATED ACCORDINGLY TO DESIRED EFFECTIVE AREA
2) 'a' INDICATES 10% OF LEAST HORIZONTAL DIMENSION, BUT NOT LESS THAN 3FT.
3) 'x' INDICATES PLAN OFFSET DISTANCE
4) 'h' INDICATES MEAN ROOF HEIGHT, IN FEET.
5) WHERE ROOF PARAPETS ARE PROVIDED THAT ARE ≥ 3'-0", ZONE 3 PRESSURES SHALL BE REDUCED TO ZONE 2 PRESSURES.
6) + AND - INDICATE PRESSURE ACTING TOWARD AND AWAY FROM THE SURFACE, RESPECTIVELY.
5) ± INDICATES PRESSURE THAT CAN ACT EITHER TOWARD OR AWAY FROM SURFACE.
6) IF x ≤ a, THEN ZONE 3 AND ZONE 5 NEED NOT BE APPLIED AT THAT CORNER.
7) IF THE INTERIOR ANGLE IS ≥ 135°, THEN ZONE 3 AND ZONE 5 NEED NOT BE APPLIED AT THAT CORNER.

DRAWING LIST

● ISSUED - NEW SHEET
◒ ISSUED - REVISION MADE
○ ISSUED - NO REVISION MADE
⊗ SHEET REMOVED

80% CONSTRUCTION DRAWINGS 12/21/22	FOUNDATION 100% CD 11/18/22	FOUNDATION FILING SET 08/19/22	100% DD 07/15/22	50% DD 06/24/22	SCHEMATIC DRAWINGS 03/18/22	ISSUED FOR FILING 10/08/21	ISSUE DATE	SHT	DWG NO	DRAWING TITLE
○	○	○	○	●				1	FO-001	GENERAL NOTES I
○	○	○	○	●				2	FO-002	GENERAL NOTES II
○	○	○	○	●				3	FO-003	GENERAL NOTES III
○	○	○	○	●				4	FO-010	SITE PLAN
					⊗	●			FO-101	FOUNDATION / FIRST FLOOR FRAMING PLAN
					⊗	●			FO-200	PILE CAP DETAILS
◒	◒	◒	◒	◒	◒	●		5	FO-100B	FOUNDATION PLAN
○	◒	○	○	○	○	●		6	FO-300	TYPICAL FOUNDATION DETAILS I
○	◒	◒	○	○	○	●		7	FO-301	TYPICAL FOUNDATION DETAILS II
○	◒	◒	○	○	○	●		8	FO-302	TYPICAL FOUNDATION DETAILS III
○	◒	◒	◒	●				9	FO-310	PILE CAP DETAILS
○	◒	◒				●		10	FO-400	FOUNDATION SECTIONS
○					◒	●		11	S-001	GENERAL NOTES I
○					◒	●		12	S-002	GENERAL NOTES II
○						●		13	S-003	GENERAL NOTES III
○				●				14	S-010	SITE PLAN
◒			◒	◒	●			15	S-101B	1ST FLOOR FRAMING PLAN
◒				●				16	S-101BM	MEZZANINE FRAMING PLAN
◒			◒	◒	●			17	S-102B	2ND FLOOR FRAMING PLAN
◒			◒	◒	●			18	S-103B	3RD FLOOR FRAMING PLAN
◒			◒	◒	●			19	S-104B	4TH FLOOR FRAMING PLAN
◒			◒	◒	●			20	S-105B	5TH FLOOR FRAMING PLAN
◒			◒	◒	●			21	S-106B	6TH FLOOR FRAMING PLAN
◒			◒	◒	●			22	S-107B	7TH FLOOR FRAMING PLAN
◒			◒	◒	●			23	S-108B	8TH FLOOR FRAMING PLAN
◒			◒	◒	●			24	S-109B	9TH FLOOR FRAMING PLAN
◒			◒	◒	●			25	S-110B	10TH FLOOR FRAMING PLAN
●								26	S-111B	11TH TO 17TH FLOOR FRAMING PLAN
◒			◒	◒	●			27	S-118B	18TH FLOOR FRAMING PLAN
◒			◒	◒	●			28	S-119B	19TH TO 20TH FLOOR FRAMING PLAN
◒			◒	●				29	S-121B	21ST FLOOR FRAMING PLAN
◒			◒	●				30	S-122B	22ND FLOOR FRAMING PLAN
◒			◒	◒	●			31	S-123B	ROOF FRAMING PLAN
◒			◒	◒	●			32	S-124B	BULKHEAD ROOF FRAMING PLAN
◒	◒	○	◒		◒	●		33	S-200	COLUMN SCHEDULE I
◒	◒	○	◒		●			34	S-201	COLUMN SCHEDULE II
◒	◒	○	◒		●			35	S-202	COLUMN SCHEDULE III
◒	◒	○	●					36	S-203	COLUMN SCHEDULE IV
◒	◒		◒		◒	●		37	S-210	SHEAR WALL SCHEDULE I
◒	◒		◒		◒	●		38	S-211	SHEAR WALL SCHEDULE II
◒	◒		●					39	S-212	SHEAR WALL SCHEDULE III
◒	◒		●					40	S-213	SHEAR WALL SCHEDULE IV
◒	◒		●					41	S-214	SHEAR WALL SCHEDULE V
○	○		○	◒	●			42	S-220	SHEAR WALL DETAILS
◒			○	◒	●			43	S-350	TYPICAL DETAILS I
○			○	◒	●			44	S-351	TYPICAL DETAILS II
○			○	◒	●			45	S-352	TYPICAL DETAILS III
○			○	◒	●			46	S-353	TYPICAL DETAILS IV
○			○	◒	●			47	S-354	TYPICAL DETAILS V
○			○	◒	●			48	S-355	TYPICAL DETAILS VI
○			○	◒	●			49	S-356	TYPICAL DETAILS VII
○			○	◒	●			50	S-357	TYPICAL DETAILS VIII
○			○	◒	●			51	S-358	TYPICAL DETAILS IX
○			○	◒	●			52	S-359	TYPICAL DETAILS X
●								53	S-450	STRUCTURAL SECTIONS I



OWNER:
CHARNEY COMPANIES
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BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

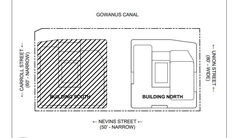
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
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NEW YORK, NY 10007

KEY PLAN



DOB NOW JOB # B00611166-P1

No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:
498 UNION ST.
BROOKLYN, NY 11217

DRAWING TITLE:
GENERAL NOTES II

SEAL & SIGNATURE:

STATE OF NEW YORK · FOSTER ADYEMENG · LICENSED PROFESSIONAL ENGINEER

DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	T.21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-002.00
PAGE No.:	12 OF 53

I:\PROJECTS\2021\T.21395.01 - 300 NEVINS STREET, BROOKLYN, NY 11215\DWGS\STRUCTWORKING\CAD\T.21395.01 S-400'S.DWG

FOUNDATION

1. FOUNDATION DESIGN IS BASED ON THE GEOTECHNICAL INVESTIGATION REPORT BY GEOTECHNICAL ENGINEERING SERVICES, P.C., DATED 04.29.2022.

2. PILES- ALL PILE CAPACITIES TO BE VERIFIED BY PILE DRIVING CONTRACTOR FOLLOWING THE PILE TESTING PROGRAM AS REQUIRED BY NYC BC SECTION 1808.3, 1818.4, GEOTECHNICAL REPORT AND PILE SPECIFICATIONS.

   A. DRILLED PILES SHALL HAVE THE FOLLOWING CAPACITY:

   i) PILE TYPE A:xx" DIAMETER CASED PILES
      a) 75 TONS IN COMPRESSION
      b) 40 TONS IN TENSION.
      c) 1 TONS IN LATERAL

   ii) PILE TYPE B:xx" DIAMETER CASED PILES
      a) 150 TONS IN COMPRESSION
      b) 50 TONS IN TENSION.
      c) 1 TONS IN LATERAL

   B. ALL PILES SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2014 NYC BUILDING CODE AND PROJECT SPECIFICATIONS.

   C. ALL DRIVEN PILES SHALL BE INSTALLED PER THE DRIVING CRITERIA ESTABLISHED FOR THE PROJECT IN ACCORDANCE WITH THE PILE LOAD TESTS.

   D. STRUCTURAL PILES SHALL BE INSTALLED IN THE PRESENCE OF A PROFESSIONAL ENGINEER, LICENSED IN THE STATE OF NEW YORK, AND LICENSED AS A SPECIAL INSPECTION AGENCY BY NYC IN ACCORDANCE WITH SECTION 1704.8 OF THE NYC BUILDING CODE.

   E. MAXIMUM ALLOWABLE DEVIATION FOR PILES SHALL BE THREE (3) INCHES IN EITHER DIRECTION, EXPECT EIGHT INCHES ALONG GRADE BEAM AXIS FOR PILES CAPPED BY GRADE BEAMS.

   F. THE CONTRACTOR SHALL PROVIDE A SURVEY OF "AS-BUILT" PILE LOCATIONS INDICATING NORTH-SOUTH AND EAST-WEST OUT OF TOLERANCE DIMENSIONS FROM THE THEORETICAL PILE CENTERLINE. PILES WHICH ARE OUT OF TOLERANCE OR DO NOT ACHIEVE THE REQUIRED STRENGTH WILL BE SUBJECT TO REDESIGN. THE ENGINEERING COST OF THE REDESIGN, THE ADDITIONAL COST FOR THE PILES AND ADDITIONAL PILE CAP COSTS SHALL BE BORNE BY THE CONTRACTOR.

   G. THE CONTRACTOR SHALL PROVIDE THE "AS-BUILT" PILE LOCATION PLAN(S), INCLUDING A PLAN SHOWING THE NUMBERING OF ALL PILES, AND PILE LOGS TO BE FILED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE BUILDING DEPARTMENT. NO PILE CAPS ARE TO BE PLACED BEFORE RECEIVING BUILDING DEPARTMENT APPROVAL FOR THE ABOVE.

3. GEOTECHNICAL REPORT ESTIMATES THE GROUND WATER TABLE (GWT) TO BE BETWEEN 5'-6" TO 7'-6" BELOW THE GRADE.

4. NO BACKFILL SHALL BE PLACED AGAINST FOUNDATION WALLS UNLESS SUPPORTING SLABS ARE IN PLACE AND SET OR THE WALLS ARE ADEQUATELY BRACED.

5. DEWATERING OF THE SITE IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL TAKE PRECAUTIONS TO AVOID UNDERMINING EXISTING FOUNDATIONS. METHOD OF DEWATERING AND RELATED CALCULATIONS IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND MUST COMPLY WITH THE SOILS AND GROUNDWATER MANAGEMENT SPECIFICATIONS FOR THIS PROJECT.

6. PROVIDE DOWELS IN FOUNDATIONS FOR ALL WALLS, COLUMNS AND SHEAR WALLS OF SAME NUMBER AND SIZE AS THE VERTICAL REINFORCEMENT ABOVE.

7. PROVIDE WATERSTOP AT ALL VERTICAL CONSTRUCTION JOINTS IN WALLS BELOW GRADE.

8. CONTRACTOR TO INSTALL ALL PIPE SLEEVES, BOXED OPENINGS, ANCHOR BOLTS, INSERTS ETC. AS REQUIRED FOR THE VARIOUS TRADES. WALL POCKETS AND EMBED PLATES, TO RECEIVE BEAMS AND SLABS, SHALL BE PROVIDED AS REQUIRED FOR THE SUPERSTRUCTURE. SHOP DRAWINGS SHOWING THE POSITION OF THE OPENINGS SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO PLACEMENT OF CONCRETE.

9. SLAB ON GROUND SHALL BE PLACED ON SELECT FILL COMPACTED TO 95 PERCENT MODIFIED PROCTOR MAXIMUM DRY DENSITY (ASTM D1557). PROVIDE VAPOR BARRIER AND MIN. 6-INCH THICK GRAVEL BED UNDER THE SLAB.

10. CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE SUBSURFACE AND EXISTING CONDITIONS BEFORE COMMENCING THE WORK.

11. CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATE PROTECTION OF ALL EXCAVATION SLOPES. WHERE NECESSARY, SHEETING, SHORING AND UNDERPINNING OF EXCAVATION SHALL BE PROVIDED WITH ALL REQUIRED TIE BACKS AND BRACING.

12. METHODS EMPLOYED IN ALL SHEETING, SHORING AND UNDERPINNING SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER RETAINED BY THE CONTRACTOR AND LICENSED IN THE STATE OF NEW YORK.

13. TEMPORARY BRACING SHALL BE PROVIDED FOR ALL BUTTRESSES. WHERE BUTTRESSES DO NOT EXIST OR SPACING BETWEEN BUTTRESSES EXCEEDS 25 FEET, AND WHERE THE DIFFERENCE IN LEVEL BETWEEN INSIDE AND OUTSIDE GRADE IS MORE THAN 4'-0", INTERMEDIATE BRACING SHALL BE PROVIDED. WHERE RAMPS OCCUR, THE GRADE ELEVATION OUTSIDE OF RAMP WALLS SHALL BE USED IN FIGURING THE DIFFERENCE IN LEVEL. CORNER BUTTRESSES NEED NOT BE BRACED. NO BACKFILLING IS TO BE DONE BEFORE ALL SLABS WHICH PROVIDE BRACING FOR WALLS ARE IN PLACE, UNLESS APPROVED BY THE ENGINEER. PROVIDE TEMPORARY BRACING FOR ALL PIERS AND SUMP PITS.

14. ALL FOUNDATION ELEMENTS ARE TO BE CENTERED ON COLUMN ABOVE, U.O.N.

15. ALL FILL SHALL BE PLACED IN EIGHT INCH LOOSE LIFTS (MAXIMUM) COMPACTED WITH VIBRATORY ROLLERS. FILL MATERIAL SHALL BE TESTED BY MODIFIED PROCTOR DENSITY METHOD (ASTM D1557) AND MUST QUALIFY AS SELECT, WITH LESS THAN 10% PASSING THROUGH THE NO. 200 SEIVE. SOIL SHALL BE PLACED WITH MOISTURE CONTENT AND ENERGY TO PROVIDE 92% OF MAXIMUM DRY DENSITY BELOW SLABS ON GRADE AND 95% BELOW FOOTINGS. IN PLACE DENSITY TESTS SHALL BE TAKEN FOR EACH 10,000 S.F. IN EACH LIFT. FOR ACCEPTANCE OF SOIL, THE AVERAGE OF DENSITY TESTS MUST EXCEED THE SPECIFIED COMPACTION. NO TESTS SHALL BE PERMITTED TO FALL BELOW 88% COMPACTION BELOW SLABS ON GRADE OR 90% COMPACTION BELOW FOOTINGS.

16. FOUNDATION ELEVATIONS SHOWN ON THE DRAWINGS HAVE BEEN ESTIMATED USING THE GEOTECHNICAL REPORT. ACTUAL ELEVATIONS OF FOUNDATION ELEMENT BOTTOMS WILL BE DETERMINED BY FIELD CONDITIONS, WHICH SHALL BE CONFIRMED BY THE LICENSED ENGINEER PERFORMING THE SUBGRADE SPECIAL INSPECTION.

REINFORCED CONCRETE

1. PROVIDE THE FOLLOWING MINIMUM 28 DAY CONCRETE COMPRESSIVE STRENGTHS, U.O.N. ON DRAWINGS:

I.	PILE CAPS	10,000 PSI
II.	FOUNDATION WALLS, BUTTRESS, GRADE BEAMS	5,000 PSI
III.	SLAB AND BEAMS	SEE PLANS
IV	COLUMN AND SHEAR WALLS	6,000-8,000 PSI

2. ALL CONCRETE AGGREGATE SHALL INCLUDE SERVICE RECORD DATA INDICATING ABSENCE OF DELETERIOUS EXPANSION OF CONCRETE DUE TO ALKALI AGGREGATE REACTIVITY.

3. ALL EXPOSED CONCRETE SHALL HAVE AN AIR ENTRAINING AGENT WITH AN AIR CONTENT OF 6% ±1.5%.

4. ALL REINFORCING STEEL SHALL CONFORM TO:

I.	DEFORMED BARS #10 OR SMALLER	ASTM A615, GRADE 60
II.	DEFORMED BARS #11 OR LARGER	ASTM A615, GRADE 75
III.	WELDED WIRE FABRIC (PLAIN & DEFORMED)	ASTM A1064

5. REINFORCING STEEL SHALL HAVE A MIN. CLEAR COVER AS FOLLOWS:

II.	CONCRETE POURED AGAINST EARTH	3"
II.	CONCRETE EXPOSED TO EARTH OR WEATHER:	
	#5 OR SMALLER	1½"
	#6 OR LARGER	2"
III.	CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH EARTH:	
	COLUMNS, BEAMS	1½"
	SLABS, WALLS AND JOISTS:	
	#14 OR #18 BARS	1½"
	#11 OR SMALLER	¾"

   INDICATE ALL CONCRETE COVER ON THE SHOP DRAWINGS SUBMITTED FOR REVIEW.

6. STRUCTURAL CONCRETE AND CONCRETING PRACTICES SHALL CONFORM WITH ACI-318, "AMERICAN CONCRETE INSTITUTE, BUILDING CODE FOR REINFORCED CONCRETE." DETAILS SHALL BE IN ACCORDANCE WITH ACI-315-99, "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" UNLESS OTHERWISE NOTED ON THE DRAWINGS. CONCRETE TESTS FOR THE PRELIMINARY DESIGN MIX PREPARED BY AN APPROVED LABORATORY MUST BE SUBMITTED TO THE ENGINEER. NO CONCRETE TO BE PLACED BEFORE THIS IS APPROVED BY THE ENGINEER.

7. ALL REINFORCEMENT SHALL BE SECURELY HELD IN PLACE WHILE PLACING CONCRETE. IF REQUIRED, ADDITIONAL BARS OR STIRRUPS SHALL BE PROVIDED BY THE CONTRACTOR TO FURNISH SUPPORT FOR ALL BARS. THE ENGINEER OR HIS FIELD QUALIFIED REPRESENTATIVE MUST CHECK AND APPROVE ALL STEEL REINFORCEMENT PRIOR TO CONCRETE PLACEMENT.

8. NO CONCRETE TEST WILL BE ACCEPTED IF CONCRETE IS TAMPERED WITH IN ANY WAY AFTER SAID TEST IS PERFORMED. REPEAT TEST IF WATER IS ADDED AFTER INITIAL SAMPLING.

9. THE CONTRACTOR SHALL PROVIDE REINFORCING STEEL ERECTOR WITH A SET OF STRUCTURAL PLANS FOR FIELD USE.

10. ALL ADJOINING SURFACES NOT CAST MONOLITHICALLY SHALL BE ROUGHENED TO ¼ INCH AMPLITUDE FOR THE ENTIRE INTERSECTING SURFACE ACCORDING TO ACI RECOMMENDATIONS.

11. CONTRACTOR SHALL USE RIGID TEMPLATES TO INSTALL ANCHOR BOLTS.

12. CONCRETE FOR NON-STRUCTURAL FILL SHALL BE REINFORCED WITH 6X6-W1.4XW1.4 W.W.F.

13. TEMPORARY SHORING AND RESHORING SHALL REMAIN IN PLACE AT LEAST 28 DAYS AFTER PLACEMENT OF CONCRETE.

14. ALL WELDED WIRE FABRIC REINFORCEMENT SHALL CONFORM TO ASTM A-185, GRADE 65.

15. PROVIDE CHAIRS FOR WELDED WIRE FABRIC TO INSURE PROPER POSITION DURING CONCRETE PLACEMENT.

16. PROVIDE LAP SPLICES FOR REINFORCING BARS AS SHOWN ON THE DRAWINGS. WHERE NOT SPECIFICALLY INDICATED, USE TENSION LAP SPLICE LENGTHS WITH APPLICABLE MODIFICATION FACTORS. LOCATE SPLICES AS PER RECOMMENDATIONS OF ACI 135 AND INDICATE ON SHOP DRAWINGS SUBMITTED FOR REVIEW.

17. PROVIDE CONSTRUCTION JOINTS IN ACCORDANCE WITH ACI 318. INDICATE JOINT LOCATIONS AND POUR SEQUENCE ON THE SHOP DRAWINGS.

18. NO HORIZONTAL JOINT WILL BE PERMITTED IN THE BEAMS, WALLS AND SLABS U.O.N. ON THE DRAWINGS AT THE SPECIFIC LOCATION. VERTICAL CONSTRUCTION JOINTS WILL BE LOCATED AT LEAST FOUR FEET AWAY FROM ANY COLUMN LINE OR WALL OPENING IN FOUNDATION WALLS.

19. INSTALL ALL SLEEVES, INSERTS, FLOOR DRAINS, ETC. PROVIDED BY THE SUBCONTRACTOR BEFORE PLACING CONCRETE.

20. PROVIDE AT LEAST 1" (U.O.N.) SEPARATION USING HIGH DENSITY STYROFOAM WHEN PLACING CONCRETE AGAINST AN ADJACENT EXISTING STRUCTURE.

21. DO NOT INSTALL ANY CONCRETE FLOOR SYSTEM UNTIL AT LEAST TWO HOURS HAVE PASSED AFTER THE SUPPORTING COLUMNS AND WALLS ARE PLACED.

22. MEANS AND METHODS FOR SHORING CONCRETE ELEMENTS INCLUDING THE USE OF ADJACENT EXISTING STRUCTURES TO SUPPORT LATERAL LOADS IMPOSED BY CONCRETE ELEMENTS ARE TO BE DESIGNED BY THE CONTRACTORS ENGINEER LICENSED IN THE STATE OF NEW YORK.

23. CANTILEVERED CORNERS ARE TO REMAIN SHORED BY MEANS OF "STAY-IN-PLACE" PRE-SHORE CUTOUTS OR A SIMILAR METHOD. CONTRACTOR SHALL SUBMIT SHORING PLANS, SIGNED AND SEALED BY THEIR LICENSED PROFESSIONAL ENGINEER FOR REVIEW.

24. ADDITIONAL SHORING MAY BE REQUIRED AT HOIST PLATFORMS, BRIDGING, ETC. CONTRACTOR TO SUBMIT PLANS, DETAILS AND CALCULATIONS FOR SUCH LOCATIONS, SIGNED & SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW YORK.

25. PIPES OR CONDUITS PLACED WITHIN THE SLAB SHALL NOT HAVE A DIAMETER GREATER THAN ⅓ SLAB THICKNESS OR 2 INCHES. THEIR SPACING SHALL NOT BE CLOSER THAN 3X DIAMETER OF CONDUIT AND NO CONDUIT SHALL BE PLACED WITHIN 12 INCHES OF A COLUMN FACE. ALUMINUM CONDUITS ARE NOT ALLOWED.

26. SIZE OF JUNCTION BOXES PLACED WITHIN THE CONCRETE SHALL BE LIMITED TO 4½"X 4½" X 3½" DEEP AND SEPARATED BY NOT LESS THAN 8 INCHES.

27. SLABS ON GRADE SHALL BE PLACED BY THE LONG STRIP CAST METHOD. REFER TO ACI 302 AND 360 FOR RECOMMENDED METHODS OF PLACEMENT. PROVIDE CONTROL JOINTS AT MAXIMUM 20 FEET SPACING ON EACH DIRECTION. CONTROL JOINTS SHALL BE FORMED BY SAW CUTTING. JOINTS SHALL BE AT LEAST ¼"OF THE SLAB THICKNESS AND ¼" MAXIMUM WIDTH AND SHALL BE FILLED WITH CONTROL JOINT SEALANT OR FILLER AND SHALL HAVE DISCONTINUOUS REINFORCEMENT THROUGH THE JOINT. SAW CUTTING SHALL BE PERFORMED NO LATER THAN 3 HOURS AFTER THE FINAL TROWELING. ALL SAW CUTS MUST BE ALIGNED AND CONTINUOUS.

MASONRY NOTES

1. CONCRETE AND/OR CLAY MASONRY WORK SHALL CONFORM TO NEW YORK CITY CODE PROVISIONS FOR MASONRY AND ACI 530/530.1.

2. USE ASTM A-615 GRADE 60 FOR ALL REINFORCING STEEL. ALL LAP SPLICE LENGTHS SHALL FOLLOW LAP SPLICE TABLE BELOW. REINFORCEMENT MUST BE CONTINUOUS AROUND WALL CORNERS AND AT INTERSECTIONS.

BAR SIZE, db	LAP SPLICE LENGTH
#3	27"
#4	36"
#5	45"
#6	54"
#7	63"

3. ALL REINFORCING STEEL SHALL HAVE A MIN. CLEAR COVER AS FOLLOWS:

I.	MASONRY EXPOSED TO EARTH OR WEATHER:	
	#5 OR SMALLER	1½"
	#6 OR LARGER	2"
II.	MASONRY NOT EXPOSED TO WEATHER OR IN CONTACT WITH EARTH:	
	WALLS AND BEAMS	1½"

4. THE MINIMUM SPECIFIED COMPRESSIVE STRENGTH OF MASONRY WALL/COLUMN SHALL BE:

   f'm = 2,000 PSI FOR CONCRETE MASONRY UNITS
   f'm = 1,500 PSI FOR CLAY MASONRY UNITS

   A. CONCRETE MASONRY UNITS SHALL BE NORMAL WEIGHT CONFORMING TO MINIMUM REQUIREMENTS OF ASTM C90 SAMPLED AND TESTING IN ACCORDANCE TO ASTM C140 PLACED IN RUNNING BOND. CLAY MASONRY UNITS SHALL BE GRADE SW CONFORMING TO MINIMUM REQUIREMENTS OF ASTM C62 SAMPLED AND TESTING IN ACCORDANCE TO ASTM C67 PLACED IN RUNNING BOND.

   B. MASONRY STRENGTH SHALL CONFORM TO THE FOLLOWING:

NET AREA COMPRESSIVE STRENGTH OF MASONRY WALL/COLUMN, f'm	NET AREA COMPRESSIVE STRENGTH OF:	
	CONCRETE MASONRY UNIT	CLAY MASONRY UNIT
1,500 PSI	-	3,350 PSI
2,000 PSI	2,800 PSI	4,950 PSI
2,500 PSI	3,750 PSI	6,600 PSI
3,000 PSI	4,800 PSI	8,250 PSI

   C. MORTAR SHALL BE TYPE M OR S CONFORMING TO ASTM C270. THE THICKNESS OF BED JOINTS FOR BOTH TYPES OF MASONRY SHALL NOT EXCEED ⅜".

   D. GROUT SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH EQUAL TO THE COMPRESSIVE STRENGTH OF MASONRY, f'm, BUT NOT LESS THAN 2,000 PSI CONFORMING TO ASTM C476 AND TESTING IN ACCORDANCE TO ASTM C1019. GROUT SHALL BE USED AS FILLING FOR VERTICAL CAVITIES, BOND BEAMS, LINTELS AND HOLLOW MASONRY UNITS DESIGNATED AS SOLID GROUTED IN THE DESIGN DRAWINGS. GROUT SHALL HAVE A MINIMUM SLUMP OF 8 INCHES. ALL CELLS WITH REINFORCEMENT SHALL BE GROUTED SOLID. THE LOW-LIFT METHOD SHALL BE USED FOR THE GROUTING OF THE CONCRETE MASONRY UNITS. MORTAR IS NOT PERMITTED TO BE USED AS A SUBSTITUTE FOR GROUT.

5. U.O.N. HORIZONTAL REINFORCEMENT SHALL BE MIN. OF 9 GAUGE DUR-O-WAL TRUSS OR LADUR TYPE OR APPROVED EQUAL WITH 2 #3 LONGTUDINAL BARS AT EVERY OTHER COURSE.

6. REFER TO ARCHITECTURAL DRAWINGS FOR SIZE AND LOCATIONS OF MASONRY WALLS AND FOR DETAILS OF EXPANSION JOINTS AND CONTROL JOINTS.

7. PROVIDE ADDITIONAL BARS ON BOTH SIDE OF CONTROL JOINTS, WINDOW JAMBS, DOOR JAMBS, END OF WALLS, AND CORNERS. SEE TYPICAL DETAILS.

8. ALL MASONRY WALLS SHALL BE ANCHORED AT TOP AND BOTTOM. TOP OF WALL SHALL BE ANCHORED WITH CAPACITY OF MINIMUM 200 LB/FT ALONG THE WALL, AS PER TYPICAL DETAILS.

9. COLD WEATHER CONSTRUCTION:

   I. COLD WEATHER CONSTRUCTION PROVISIONS OF TMS 602/ACI 530.1 ARTICLE 1.8C SHALL BE IMPLEMENTED WHEN EITHER THE AMBIENT TEMPERATURE FALLS BELOW 40°F OR THE TEMPERATURE OF THE MASONRY UNITS FALLS BELOW 40°F.

   II. SALT OR OTHER CHEMICALS FOR THE PURPOSE OF LOWERING THE FREEZING TEMPERATURE OF THE WATER SHALL NOT BE PERMITTED.

   III. CONTRACTOR TO PROVIDE COLD WEATHER CONSTRUCTION PROCEDURE TO THE ENGINEER FOR APPROVAL. NO WORK SHALL COMMENCE UNTIL PROCEDURE IS APPROVED.

10. HOT WEATHER CONSTRUCTION:

   I. HOT WEATHER CONSTRUCTION PROVISIONS OF TMS 602/ACI 530.1 ARTICLE 1.8D SHALL BE IMPLEMENTED WHEN THE TEMPERATURE EXCEEDS 100°F OR 90°F WITH A WIND-VELOCITY GREATER THAN 8 MPH.

   II. CONTRACTOR TO PROVIDE HOT WEATHER CONSTRUCTION PROCEDURE TO THE ENGINEER FOR APPROVAL. NO WORK SHALL COMMENCE UNTIL PROCEDURE IS APPROVED.

COLD WEATHER CONSTRUCTION:

1. COLD WEATHER CONSTRUCTION REQUIREMENTS SHALL FOLLOW SECTION 1905.12 OF THE 2014 NYC BUILDING CODE WHEN THE AMBIENT AIR TEMPERATURE HAS FALLEN TO, OR IS EXPECTED TO FALL BELOW 40°F.

2. DETAILED PROCEDURES FOR THE PRODUCTION, TRANSPORTATION, PLACEMENT, PROTECTION, CURING AND TEMPERATURE MONITORING OF CONCRETE SHALL BE SUBMITTED FOR THE ENGINEERS APPROVAL. GUIDELINES FOR COLD WEATHER CONSTRUCTION SHALL FOLLOW ACI-306R "GUIDE TO COLD WEATHER CONCRETING". NO COLD WEATHER CONSTRUCTION SHALL COMMENCE UNTIL PROCEDURES HAVE BEEN APPROVED BY THE ENGINEER.

   2.1. ADEQUATE EQUIPMENT SHALL BE USED TO PROTECT AND INSULATE THE CONCRETE FROM COLD WEATHER TEMPERATURES.

   2.2. CONCRETE MATERIALS, AND REINFORCEMENT, FORMS, FILLERS AND GROUND WITH WHICH CONCRETE WILL BE IN CONTACT WITH SHALL BE FREE FROM FROST. TEMPERATURES OF ALL SURFACES IN CONTACT WITH FRESH CONCRETE SHALL BE KEPT ABOVE FREEZING.

   2.3. FROZEN MATERIALS OR MATERIALS CONTAINING ICE SHALL NOT BE USED.

HOT WEATHER CONSTRUCTION:

1. HOT WEATHER CONSTRUCTION REQUIREMENTS SHALL FOLLOW SECTION 1905.13 OF THE 2014 NYC BUILDING CODE WHEN THE AMBIENT AIR TEMPERATURE IS ABOVE 80°F.

2. DETAILED PROCEDURES FOR THE PRODUCTION, TRANSPORTATION, PLACEMENT, PROTECTION, CURING AND TEMPERATURE MONITORING OF CONCRETE SHALL BE SUBMITTED FOR THE ENGINEERS APPROVAL. GUIDELINES FOR HOT WEATHER CONSTRUCTION SHALL FOLLOW ACI-305R "GUIDE TO HOT WEATHER CONCRETING". NO HOT WEATHER CONSTRUCTION SHALL COMMENCE UNTIL PROCEDURES HAVE BEEN APPROVED BY THE ENGINEER.

ABBREVIATIONS

AB	ANCHOR BOLT
AESS	ARCHITECTURALLY EXPOSED STRUCTURAL STEEL
CJ	CONTROL JOINT
EDB	ELEVATOR DIVIDER BEAM
EJ	EXPANSION JOINT
EE	EACH END
EF	EACH FACE
EW	EACH WAY
EOS	EDGE OF SLAB
HSS	HOLLOW STRUCTURAL STEEL
IF	INSIDE FACE
LW	LONG WAY
NFP	NO FIREPROOFING
NTS	NOT TO SCALE
OC	ON CENTER
SIM	SIMILAR
SOG	SLAB ON GRADE
STL	STEEL
T&B	TOP AND BOTTOM
TOC	TOP OF CONCRETE
TOS	TOP OF SLAB
TOSTL	TOP OF STEEL
TOW	TOP OF WALL
UON	UNLESS OTHERWISE NOTED
VIF	VERIFY IN FIELD
WP	WORKING POINT
WWF	WELDED WIRE FABRIC



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FACADE:
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ELEVATOR:
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CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
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NEW YORK, NY 0016

LANDSCAPE:
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NEW YORK, NY 10018

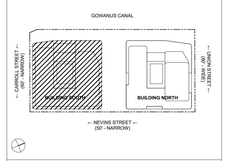
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KEY PLAN



DOB NOW JOB # B00611166-P1

No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

498 UNION ST.

BROOKLYN, NY 11217

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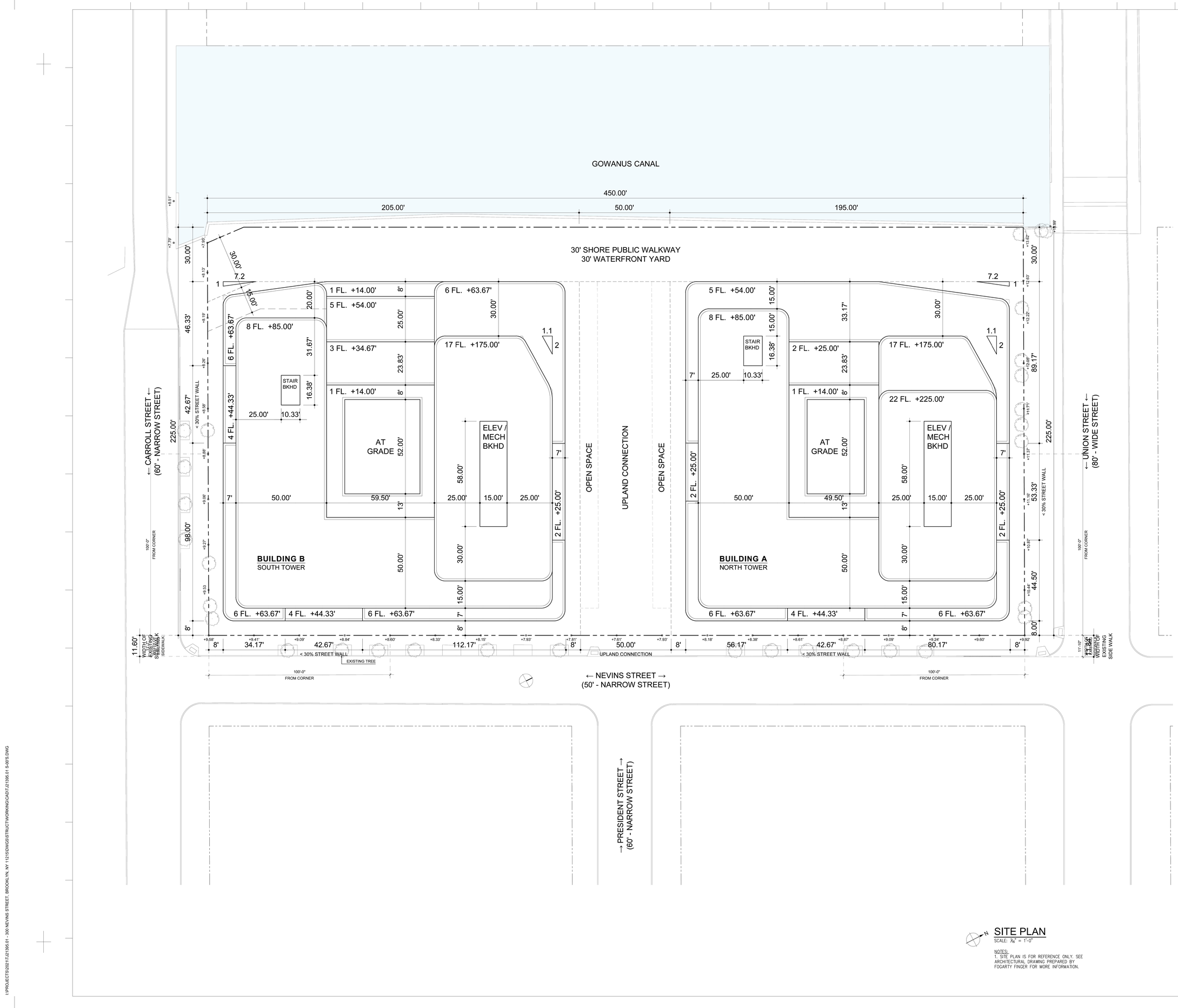
GENERAL NOTES III

SEAL & SIGNATURE:



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DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-003.00
PAGE No.:	13 OF 53

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SITE PLAN

SCALE: 1/16" = 1'-0"

NOTES:
1. SITE PLAN IS FOR REFERENCE ONLY. SEE ARCHITECTURAL DRAWING PREPARED BY FOGARTY FINGER FOR MORE INFORMATION.



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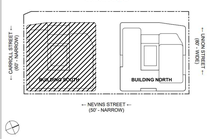
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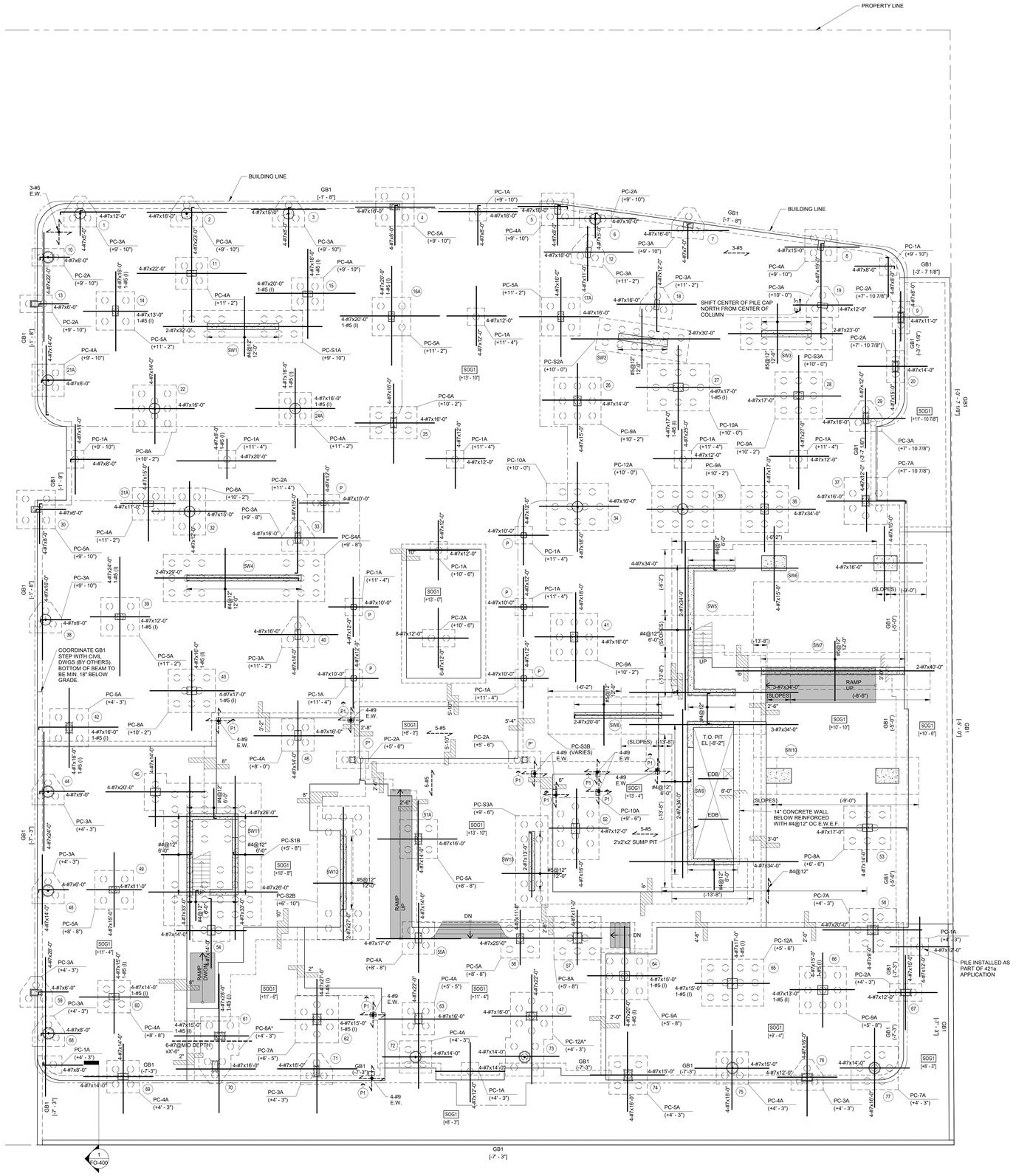
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SITE PLAN

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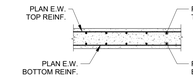
1ST FLOOR FRAMING PLAN
1/8" = 1'-0"

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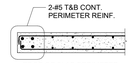
1. [XX-XX"] INDICATES TOP OF SLAB ELEVATION RELATIVE TO NAVD88 DATUM.
   (+XX'-XX") INDICATES ELEVATION RELATIVE TO TOP OF SLAB ELEVATION
2. SX INDICATES SLAB TYPE. SEE SLAB SCHEDULE ON THIS SHEET.
3. SEE THE FOLLOWING DRAWINGS FOR THE ITEMS NOTED:

GENERAL NOTES	S-001's
COLUMN/SHEAR WALL SCHEDULE & DETAILS	S-200's
TYPICAL DETAILS	S-300's
SECTIONS & DETAILS	S-400's
GEOMETRY PLAN	S-500's

4. COORDINATE ALL SLAB OPENINGS WITH MECHANICAL SHOP DRAWINGS. PROVIDE REINFORCEMENT AT ALL OPENINGS AND SLAB EDGES AS PER THE TYPICAL DETAILS AND PLANS.
5. SEE ARCHITECTURAL EDGE OF SLAB DRAWINGS FOR ALL DIMENSIONS AND COORDINATES, U.O.N.



DIRECTION OF OUTER BARS



EDGE OF SLAB PERIMETER REINFORCEMENT



TYPICAL REBAR OVER COLUMN

LEGEND:

- ADDITIONAL TOP STEEL
- ADDITIONAL BOTTOM STEEL
- ADDITIONAL CONTINUOUS BOTTOM STEEL
- (#) INDICATES COLUMN NUMBER
- (#)W INDICATES WALKING COLUMN, SEE COLUMN SCHEDULE AND WALKING COLUMN TYPICAL DETAILS
- EDB INDICATES HSS6x4x3/8" ELEVATOR DIVIDER BEAM
- (P) INDICATES 14"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- (P') INDICATES 10"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- INDICATES COLUMN BELOW / ABOVE
- INDICATES (0,0) COORDINATE LOCATION (CORNER OF PROPERTY LINE)
- INDICATES SLAB STRESS LINE
- INDICATES STEP IN FRAMED SLAB WITH DASHED BOTTOM OF SLAB EXTENTS. SEE S-300'S SERIES FOR TYPICAL STEP IN FRAMED SLAB DETAIL.
- HATCH INDICATES EITHER BUILT-UP STAIR, STAIR LANDING OR RAMP. COORDINATE ELEVATIONS W/ ARCHITECTURAL DRAWINGS. SEE S-300'S SERIES FOR "TYPICAL BUILT UP SLAB DETAIL".
- (X'-XX") INDICATES TRANSFER BEAM W/ (X'-XX") TOP OF BEAM ELEVATION. SEE TRANSFER BEAM SCHEDULE FOR ADD'L INFO.
- INDICATES SLAB SHEAR STIRRUP OR STUD RAIL REINFORCEMENT. SEE SCHEDULE, THIS SHEET.

MINIMUM PILE REQUIREMENTS
(DESIGN BY OTHERS)

PILE TYPE	MINIMUM DIAMETER	MINIMUM COMPRESSION CAPACITY	MINIMUM TENSILE CAPACITY	MINIMUM LATERAL CAPACITY
TYPE A	7 5/8"	75 TONS	40 TONS	1 TONS
TYPE B	12 5/8"	150 TONS	50 TONS	1 TONS

FRAMED SLAB ON GRADE SCHEDULE

SLAB MARK	SLAB THICKNESS	CONCRETE WEIGHT (PCF)	CONCRETE STRENGTH	TYPICAL SLAB REINFORCEMENT	NOTES:
SOG1	10"	150-NWT	6,000 PSI	#5@12" O.C. EACH WAY, T & B	SEE PLAN FOR ADDITIONAL REINFORCEMENT. SLAB ON GRADE OVER STEGO 20 MIL VAPOR BARRIER AND 6" GRAVEL FILL. PROVIDE 2" CLEAR COVER TO BOTTOM BARS

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION

GRADE BEAM SCHEDULE

MARK	SIZE - WxD			REINFORCEMENT						NOTES:
				BOTTOM		TOP		SIDE***	STIRRUP		
	WIDTH	DEPTH		CONT.	ADD'L	CONT.	ADD'L	SIZE & SPACING	SIZE & SPACING	# OF LEGS	
GB1	12	18*		2-#8	-	2-#8	-		#4@12" O.C.	2	-

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION.
WHERE GRADE BEAM MEETS FOUNDATION, PROVIDE #4@12" O.C. VERTICAL DOWELS TYING BEAM INTO PILE CAP
*BEAM DEPTH IS AS SHOWN ON SCHEDULE, INDICATED AS ELEV. ON PLAN, OR 18" BELOW GRADE, WHICHEVER IS GREATER.
*** PROVIDE #4@12" SIDE BARS FOR ALL BEAMS WITH DEPTH GREATER THAN 36", U.O.N.



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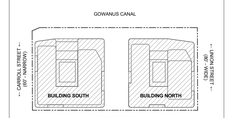
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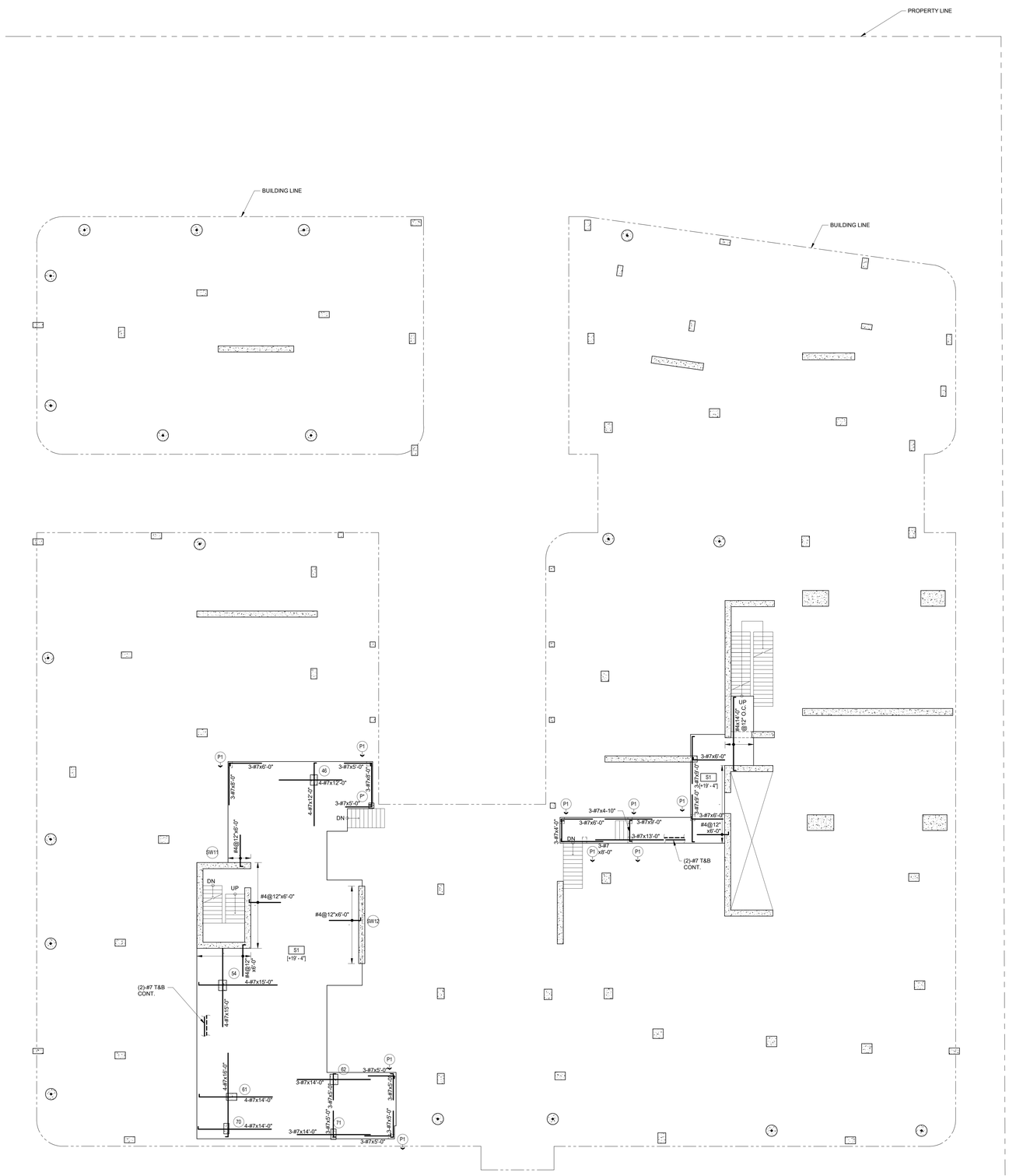
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1ST FLOOR FRAMING PLAN

SEAL & SIGNATURE



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DRAWING No.:	S-101B.00
PAGE No.:	15 OF 53



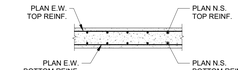
MEZZANINE FLOOR FRAMING PLAN BUILDING B
1/8" = 1'-0"

NOTES:

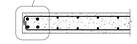
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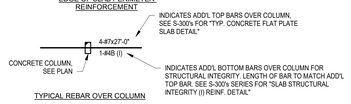
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DIRECTION OF OUTER BARS



EDGE OF SLAB PERIMETER REINFORCEMENT



TYPICAL REBAR OVER COLUMN

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CONCRETE SLAB SCHEDULE

SLAB MARK	SLAB THICKNESS	CONCRETE WEIGHT (PCF)	CONCRETE STRENGTH	TYPICAL SLAB REINFORCEMENT	NOTES:
S1	8"	150 - NWT	5000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S1A	10"	150 - NWT	5000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S2	8"	150 - NWT	6000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S3	10"	150 - NWT	6000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S4	8"	150 - NWT	8000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S5	12"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S6	14"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7	16"	150 - NWT	8000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7A	16"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINF. SLAB SHALL HAVE 2" TOP & 3/4" BOT. CLR. COVER. PROVIDE 3 GAL OF DCI CORROSION INHIBITOR PER CUBIC YARD OF CONC. MIX.
S8	18"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S9	20"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S10	22"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S11	26"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S12	8"	150 - NWT	10,000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S13	14"	150 - NWT	10,000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S14	16"	150 - NWT	10,000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S15	20"	150 - NWT	10,000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION

CONCRETE BEAM SCHEDULE

MARK	SIZE - WxD		REINFORCEMENT						NOTES:
	WIDTH	DEPTH	BOTTOM		TOP		SIDE***	STIRRUP		
			CONT.	ADD'L	CONT.	ADD'L	SIZE & SPACING	SIZE & SPACING	# OF LEGS	
B1	12"	**	3-#8	-	3-#8	-	-	#4@6" O.C.	2	EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B2	48"	36"	33-#9	-	33-#9	-	-	#4@6" O.C.	8	-
B3	8"	18"	2-#7	-	2-#7	-	-	#3@6" O.C.	1	T&B BARS PLACED IN 2 LAYERS. EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B4	26"	16"	5-#9	-	5-#9	-	-	#4@6" O.C.	2	

** BEAM DEPTH TO MATCH SLAB THICKNESS
*** PROVIDE #4@12" SIDE BARS FOR ALL BEAMS WITH DEPTH GREATER THAN 36", U.O.N.
NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION



OWNER:
CHARNEY COMPANIES
5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101
TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

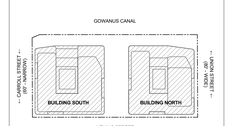
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 Ninth Avenue, Suite 902
New York, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



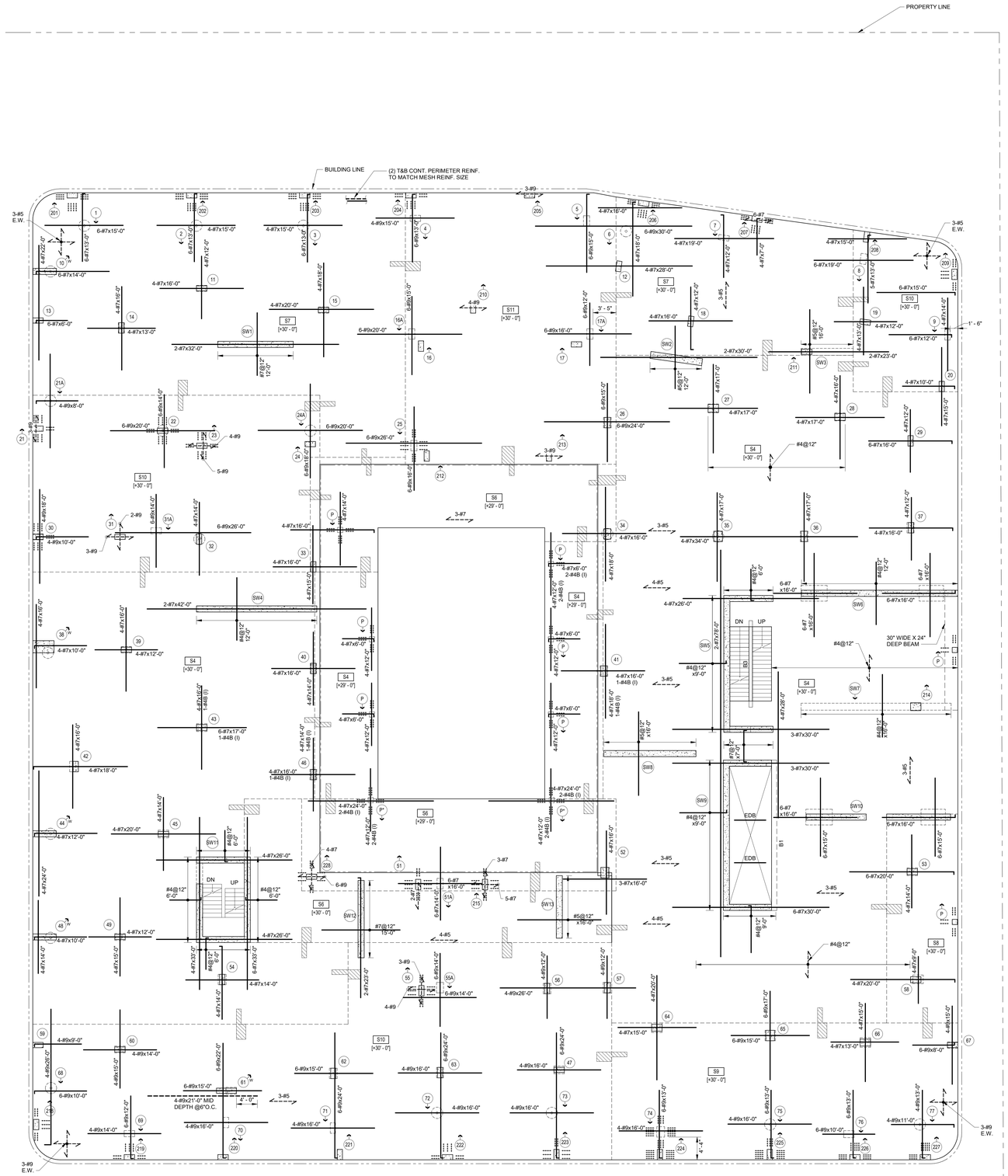
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5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:
498 UNION ST.
BROOKLYN, NY 11217

DRAWING TITLE:
MEZZANINE FLOOR FRAMING PLAN BUILDING B

SEAL & SIGNATURE:
STATE OF NEW YORK · JOSEPH ALEXANDER · 088852 · LICENSED PROFESSIONAL ENGINEER

DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-101BM.00
PAGE No.:	16 OF 53



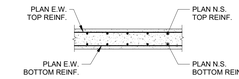
2ND FLOOR FRAMING PLAN
1/8" = 1'-0"

NOTES:

1. [XX'-XX"] INDICATES TOP OF SLAB ELEVATION RELATIVE TO NAVD88 DATUM.
   [±XX'-XX"] INDICATES ELEVATION RELATIVE TO TOP OF SLAB ELEVATION
2. SX INDICATES SLAB TYPE. SEE SLAB SCHEDULE ON THIS SHEET.
3. SEE THE FOLLOWING DRAWINGS FOR THE ITEMS NOTED:

GENERAL NOTES	S-001's
COLUMN/SHEAR WALL SCHEDULE & DETAILS	S-200's
TYPICAL DETAILS	S-300's
SECTIONS & DETAILS	S-400's
GEOMETRY PLAN	S-500's

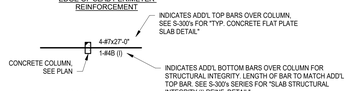
4. COORDINATE ALL SLAB OPENINGS WITH MECHANICAL SHOP DRAWINGS. PROVIDE REINFORCEMENT AT ALL OPENINGS AND SLAB EDGES AS PER THE TYPICAL DETAILS AND PLANS.
5. SEE ARCHITECTURAL EDGE OF SLAB DRAWINGS FOR ALL DIMENSIONS AND COORDINATES, U.O.N.



DIRECTION OF OUTER BARS



EDGE OF SLAB PERIMETER REINFORCEMENT



TYPICAL REBAR OVER COLUMN

LEGEND:

- ADDITIONAL TOP STEEL
- ADDITIONAL BOTTOM STEEL
- ADDITIONAL CONTINUOUS BOTTOM STEEL
- (#) INDICATES COLUMN NUMBER
- (#)W INDICATES WALKING COLUMN, SEE COLUMN SCHEDULE AND WALKING COLUMN TYPICAL DETAILS
- EDB INDICATES HSS6x4x3/8" ELEVATOR DIVIDER BEAM
- (P) INDICATES 14"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- (P1) INDICATES 10"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- INDICATES COLUMN BELOW / ABOVE
- INDICATES (0,0) COORDINATE LOCATION (CORNER OF PROPERTY LINE)
- INDICATES SLAB STRESS LINE
- INDICATES STEP IN FRAMED SLAB WITH DASHED BOTTOM OF SLAB EXTENTS. SEE S-300'S SERIES FOR TYPICAL STEP IN FRAMED SLAB DETAIL.
- HATCH INDICATES EITHER BUILT-UP STAIR, STAIR LANDING OR RAMP. COORDINATE ELEVATIONS W/ ARCHITECTURAL DRAWINGS. SEE S-300'S SERIES FOR "TYPICAL BUILT UP SLAB DETAIL".
- (X'-XX") INDICATES TRANSFER BEAM W/ (X'-XX") TOP OF BEAM ELEVATION. SEE TRANSFER BEAM SCHEDULE FOR ADD'L INFO.
- INDICATES SLAB SHEAR STIRRUP OR STUD RAIL REINFORCEMENT. SEE SCHEDULE, THIS SHEET.

SLAB STUD RAIL SCHEDULE

COL. #	STUD DIAMETER (IN)	STUD SPACING (IN)	# OF RAILS		STUD HEIGHT (IN)	TOTAL RAIL LENGTH (IN)	NOTES
			LONG SIDES	SHORT SIDES			
P	1/2	3	2	2	VARIES	42	STUD RAILS REQUIRED AT POSTS ONLY WHERE SHOWN ON PLAN USE 6 1/2" HEIGHT AT 8" THK SLAB, USE 12 1/2" HEIGHT AT 14" THK SLAB
51, 215, 228	1/2	3	3	2	12 1/2	42	-
201-203, 206, 207	1/2	3	4	3	14 1/2	48	-
74, 224-227	1/2	3	5	3	18 1/2	60	-
21, 22, 23, 30, 55, 209, 218, 219, 222, 223	1/2	3	3	2	20 1/2	66	-
25, 204	1/2	3	3	2	VARIES	78	USE 14 1/2" HEIGHT AT 16" THK SLAB USE 24 1/2" HEIGHTAT 26" THK SLAB

NOTE:
1. SEE MANUFACTURER (DECON OR APPROVED EQUAL) FOR INSTALLATION INSTRUCTION.
2. SEE TYPICAL STUD RAIL REINFORCEMENT DETAILS ON S-300'S SERIES FOR ADDITIONAL INFORMATION.

CONCRETE SLAB SCHEDULE

SLAB MARK	SLAB THICKNESS	CONCRETE WEIGHT (PCF)	CONCRETE STRENGTH	TYPICAL SLAB REINFORCEMENT	NOTES:
S1	8"	150 - NWT	5000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S1A	10"	150 - NWT	5000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S2	8"	150 - NWT	6000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S3	10"	150 - NWT	6000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S4	8"	150 - NWT	8000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S5	12"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S6	14"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7	16"	150 - NWT	8000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7A	16"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINF. SLAB SHALL HAVE 2" TOP & 3/4" BOT. CLR. COVER. PROVIDE 3 GAL OF DCI CORROSION INHIBITOR PER CUBIC YARD OF CONC. MIX.
S8	18"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S9	20"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S10	22"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S11	26"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S12	8"	150 - NWT	10,000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S13	14"	150 - NWT	10,000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S14	16"	150 - NWT	10,000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S15	20"	150 - NWT	10,000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION

CONCRETE BEAM SCHEDULE

MARK	SIZE - WxD		REINFORCEMENT						NOTES:
	WIDTH	DEPTH	BOTTOM		TOP		SIDE***	STIRRUP	
			CONT.	ADD'L	CONT.	ADD'L	SIZE & SPACING	SIZE & SPACING / # OF LEGS	
B1	12"	**	3-#8	-	3-#8	-	-	#4@6" O.C. / 2	EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B2	48"	36"	33-#9	-	33-#9	-	-	#4@6" O.C. / 8	-
B3	8"	18"	2-#7	-	2-#7	-	-	#3@6" O.C. / 1	T&B BARS PLACED IN 2 LAYERS. EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B4	26"	16"	5-#9	-	5-#9	-	-	#4@6" O.C. / 2	

** BEAM DEPTH TO MATCH SLAB THICKNESS
*** PROVIDE #4@12" SIDE BARS FOR ALL BEAMS WITH DEPTH GREATER THAN 36", U.O.N.
NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION



OWNER:
CHARNEY COMPANIES
5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101
TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER architecture | interiors
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STRUCTURAL ENGINEER:
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UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
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FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

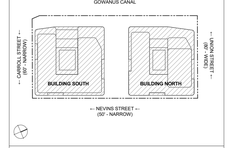
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
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630 Ninth Avenue, Suite 902
New York, NY 10036

CODE CONSULTANT/ EXPEDITOR:
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NEW YORK, NY 10007

KEY PLAN



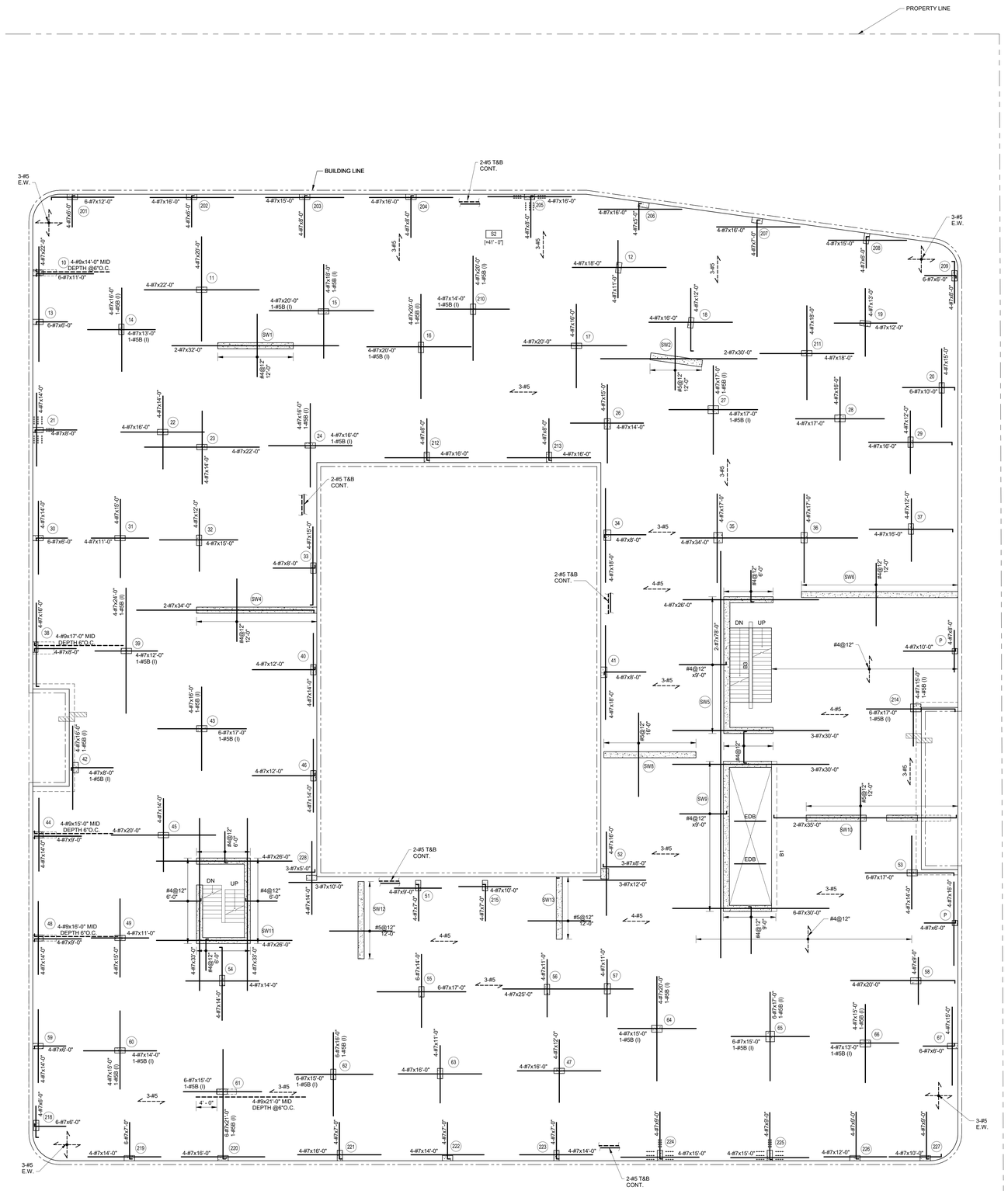
No.	DATE	ISSUE
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5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:
498 UNION ST.
BROOKLYN, NY 11217

DRAWING TITLE:
2ND FLOOR FRAMING PLAN BUILDING B

SEAL & SIGNATURE:
STATE OF NEW YORK · GORDON AUYEUNG · 090457 · LICENSED PROFESSIONAL ENGINEER

DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-102B.00
PAGE No.:	17 OF 53



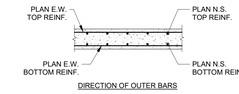
3RD FLOOR FRAMING PLAN
1/8" = 1'-0"

NOTES:

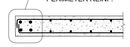
1. [XX'-XX"] INDICATES TOP OF SLAB ELEVATION RELATIVE TO NAVD88 DATUM.
   (±XX'-XX") INDICATES ELEVATION RELATIVE TO TOP OF SLAB ELEVATION
2. SX INDICATES SLAB TYPE. SEE SLAB SCHEDULE ON THIS SHEET.
3. SEE THE FOLLOWING DRAWINGS FOR THE ITEMS NOTED:

GENERAL NOTES	S-001's
COLUMN/SHEAR WALL SCHEDULE & DETAILS	S-200's
TYPICAL DETAILS	S-300's
SECTIONS & DETAILS	S-400's
GEOMETRY PLAN	S-500's

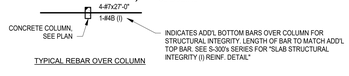
4. COORDINATE ALL SLAB OPENINGS WITH MECHANICAL SHOP DRAWINGS. PROVIDE REINFORCEMENT AT ALL OPENINGS AND SLAB EDGES AS PER THE TYPICAL DETAILS AND PLANS.
5. SEE ARCHITECTURAL EDGE OF SLAB DRAWINGS FOR ALL DIMENSIONS AND COORDINATES, U.O.N.



DIRECTION OF OUTER BARS



EDGE OF SLAB PERIMETER REINFORCEMENT



TYPICAL REBAR OVER COLUMN

LEGEND:

- ADDITIONAL TOP STEEL
- ADDITIONAL BOTTOM STEEL
- ADDITIONAL CONTINUOUS BOTTOM STEEL
- (#) INDICATES COLUMN NUMBER
- (#)W INDICATES WALKING COLUMN, SEE COLUMN SCHEDULE AND WALKING COLUMN TYPICAL DETAILS
- EDB INDICATES HSS6x4x3/8" ELEVATOR DIVIDER BEAM
- (P) INDICATES 14"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- (P1) INDICATES 10"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- INDICATES COLUMN BELOW / ABOVE
- INDICATES (0,0) COORDINATE LOCATION (CORNER OF PROPERTY LINE)
- INDICATES SLAB STRESS LINE
- INDICATES STEP IN FRAMED SLAB WITH DASHED BOTTOM OF SLAB EXTENTS. SEE S-300'S SERIES FOR TYPICAL STEP IN FRAMED SLAB DETAIL.
- HATCH INDICATES EITHER BUILT-UP STAIR, STAIR LANDING OR RAMP. COORDINATE ELEVATIONS W/ ARCHITECTURAL DRAWINGS. SEE S-300'S SERIES FOR "TYPICAL BUILT UP SLAB DETAIL".
- (X'-XX") INDICATES TRANSFER BEAM W/ (X'-XX") TOP OF BEAM ELEVATION. SEE TRANSFER BEAM SCHEDULE FOR ADD'L INFO.
- INDICATES SLAB SHEAR STIRRUP OR STUD RAIL REINFORCEMENT. SEE SCHEDULE, THIS SHEET.

SLAB STUD RAIL SCHEDULE

COL. #	STUD DIAMETER (IN)	STUD SPACING (IN)	# OF RAILS		STUD HEIGHT (IN)	TOTAL RAIL LENGTH (IN)	NOTES
			LONG SIDES	SHORT SIDES			
21, 205, 224, 225	1/2	3	3	2	6-1/2	24	3" TO FIRST STUD

NOTE:
1. SEE MANUFACTURER (DECON OR APPROVED EQUAL) FOR INSTALLATION INSTRUCTION.
2. SEE TYPICAL STUD RAIL REINFORCEMENT DETAILS ON S-300'S SERIES FOR ADDITIONAL INFORMATION.

CONCRETE SLAB SCHEDULE

SLAB MARK	SLAB THICKNESS	CONCRETE WEIGHT (PCF)	CONCRETE STRENGTH	TYPICAL SLAB REINFORCEMENT	NOTES:
S1	8"	150 - NWT	5000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S1A	10"	150 - NWT	5000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S2	8"	150 - NWT	6000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S3	10"	150 - NWT	6000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S4	8"	150 - NWT	8000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S5	12"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S6	14"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7	16"	150 - NWT	8000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7A	16"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINF. SLAB SHALL HAVE 2" TOP & 3/4" BOT. CLR. COVER. PROVIDE 3 GAL OF DCI CORROSION INHIBITOR PER CUBIC YARD OF CONC. MIX.
S8	18"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S9	20"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S10	22"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S11	26"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S12	8"	150 - NWT	10,000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S13	14"	150 - NWT	10,000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S14	16"	150 - NWT	10,000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S15	20"	150 - NWT	10,000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION

CONCRETE BEAM SCHEDULE

MARK	SIZE - WxD		REINFORCEMENT						NOTES:
	WIDTH	DEPTH	BOTTOM		TOP		SIDE***	STIRRUP		
			CONT	ADD'L	CONT.	ADD'L	SIZE & SPACING	SIZE & SPACING	# OF LEGS	
B1	12"	**	3-#8	-	3-#8	-	-	#4@6" O.C.	2	EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B2	48"	36"	33-#9	-	33-#9	-	-	#4@6" O.C.	8	-
B3	8"	18"	2-#7	-	2-#7	-	-	#3@6" O.C.	1	T&B BARS PLACED IN 2 LAYERS. EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B4	26"	16"	5-#9	-	5-#9	-	-	#4@6" O.C.	2	

** BEAM DEPTH TO MATCH SLAB THICKNESS
*** PROVIDE #4@12" SIDE BARS FOR ALL BEAMS WITH DEPTH GREATER THAN 36", U.O.N.
NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION



OWNER:
CHARNEY COMPANIES
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TAVROS HOLDINGS
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MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
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FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

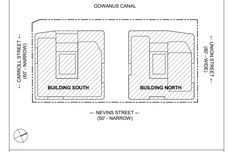
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

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CODE CONSULTANT/ EXPEDITOR:
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KEY PLAN



No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

498 UNION ST.
BROOKLYN, NY 11217

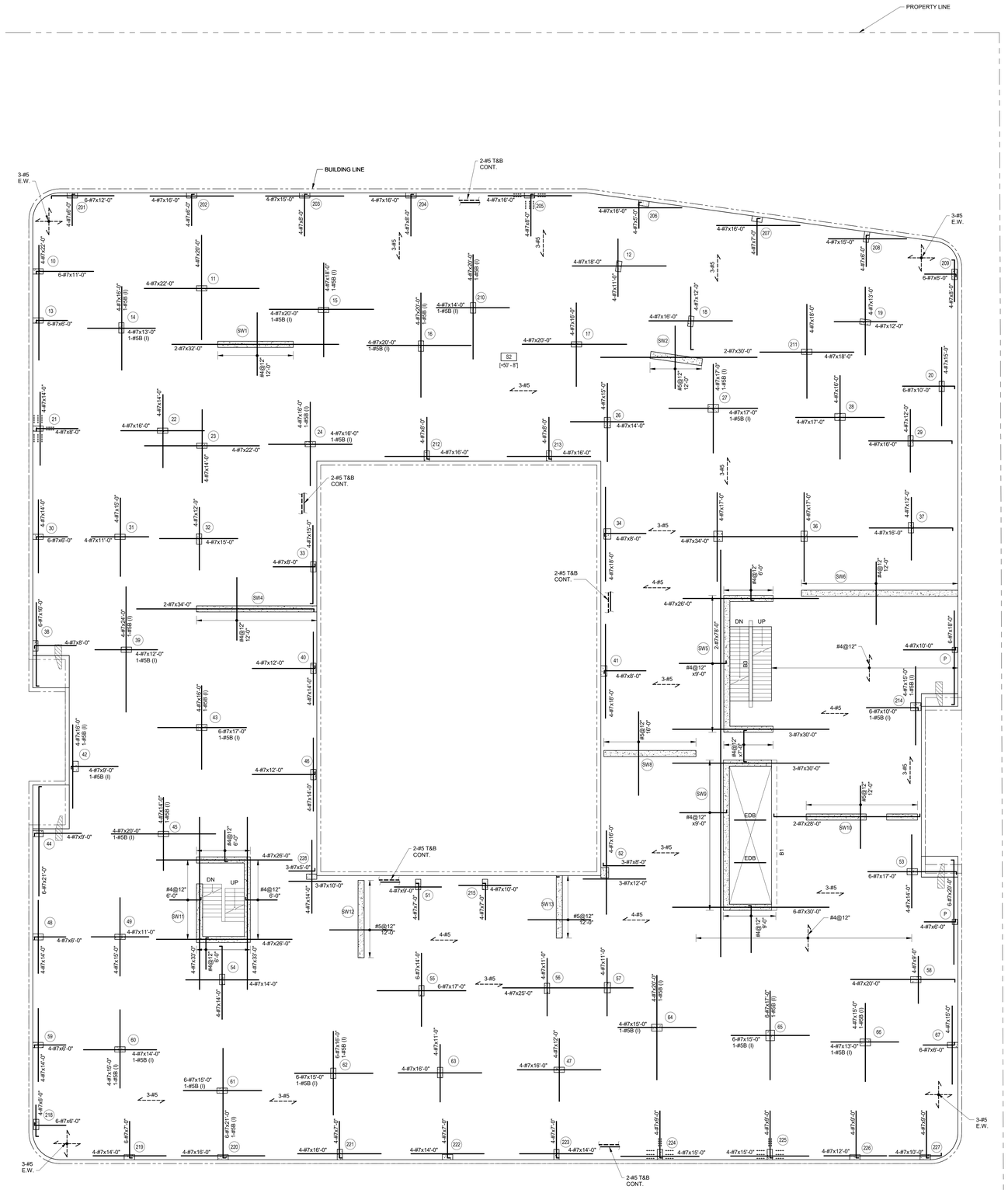
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3RD FLOOR FRAMING PLAN BUILDING B

SEAL & SIGNATURE:



DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-103B.00
PAGE No.:	18 OF 53



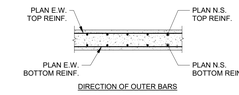
4TH FLOOR FRAMING PLAN
1/8" = 1'-0"

NOTES:

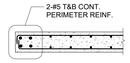
1. [XX'-XX"] INDICATES TOP OF SLAB ELEVATION RELATIVE TO NAVD88 DATUM.
   (±XX'-XX") INDICATES ELEVATION RELATIVE TO TOP OF SLAB ELEVATION
2. SX INDICATES SLAB TYPE. SEE SLAB SCHEDULE ON THIS SHEET.
3. SEE THE FOLLOWING DRAWINGS FOR THE ITEMS NOTED:

GENERAL NOTES	S-001's
COLUMN/SHEAR WALL SCHEDULE & DETAILS	S-200's
TYPICAL DETAILS	S-300's
SECTIONS & DETAILS	S-400's
GEOMETRY PLAN	S-500's

4. COORDINATE ALL SLAB OPENINGS WITH MECHANICAL SHOP DRAWINGS. PROVIDE REINFORCEMENT AT ALL OPENINGS AND SLAB EDGES AS PER THE TYPICAL DETAILS AND PLANS.
5. SEE ARCHITECTURAL EDGE OF SLAB DRAWINGS FOR ALL DIMENSIONS AND COORDINATES, U.O.N.



DIRECTION OF OUTER BARS



EDGE OF SLAB PERIMETER REINFORCEMENT



TYPICAL REBAR OVER COLUMN

LEGEND:

- ADDITIONAL TOP STEEL
- ADDITIONAL BOTTOM STEEL
- ADDITIONAL CONTINUOUS BOTTOM STEEL
- (#) INDICATES COLUMN NUMBER
- (#)W INDICATES WALKING COLUMN, SEE COLUMN SCHEDULE AND WALKING COLUMN TYPICAL DETAILS
- EDB INDICATES HSS6x4x3/8" ELEVATOR DIVIDER BEAM
- (P) INDICATES 14"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- (P1) INDICATES 10"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- INDICATES COLUMN BELOW / ABOVE
- INDICATES (0,0) COORDINATE LOCATION (CORNER OF PROPERTY LINE)
- INDICATES SLAB STRESS LINE
- INDICATES STEP IN FRAMED SLAB WITH DASHED BOTTOM OF SLAB EXTENTS. SEE S-300'S SERIES FOR TYPICAL STEP IN FRAMED SLAB DETAIL.
- HATCH INDICATES EITHER BUILT-UP STAIR, STAIR LANDING OR RAMP. COORDINATE ELEVATIONS W/ ARCHITECTURAL DRAWINGS. SEE S-300'S SERIES FOR "TYPICAL BUILT UP SLAB DETAIL".
- (X'-XX") INDICATES TRANSFER BEAM W/ (X'-XX") TOP OF BEAM ELEVATION. SEE TRANSFER BEAM SCHEDULE FOR ADD'L INFO.
- INDICATES SLAB SHEAR STIRRUP OR STUD RAIL REINFORCEMENT. SEE SCHEDULE, THIS SHEET.

SLAB STUD RAIL SCHEDULE

COL. #	STUD DIAMETER (IN)	STUD SPACING (IN)	# OF RAILS		STUD HEIGHT (IN)	TOTAL RAIL LENGTH (IN)	NOTES
			LONG SIDES	SHORT SIDES			
21, 205, 224, 225	1/2	3	3	2	6-1/2	24	3" TO FIRST STUD

NOTE:
1. SEE MANUFACTURER (DECON OR APPROVED EQUAL) FOR INSTALLATION INSTRUCTION.
2. SEE TYPICAL STUD RAIL REINFORCEMENT DETAILS ON S-300'S SERIES FOR ADDITIONAL INFORMATION.

CONCRETE SLAB SCHEDULE

SLAB MARK	SLAB THICKNESS	CONCRETE WEIGHT (PCF)	CONCRETE STRENGTH	TYPICAL SLAB REINFORCEMENT	NOTES:
S1	8"	150 - NWT	5000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S1A	10"	150 - NWT	5000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S2	8"	150 - NWT	6000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S3	10"	150 - NWT	6000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S4	8"	150 - NWT	8000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S5	12"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S6	14"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7	16"	150 - NWT	8000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7A	16"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINF. SLAB SHALL HAVE 2" TOP & 3/4" BOT. CLR. COVER. PROVIDE 3 GAL OF DCI CORROSION INHIBITOR PER CUBIC YARD OF CONC. MIX.
S8	18"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S9	20"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S10	22"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S11	26"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S12	8"	150 - NWT	10,000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S13	14"	150 - NWT	10,000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S14	16"	150 - NWT	10,000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S15	20"	150 - NWT	10,000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION

CONCRETE BEAM SCHEDULE

MARK	SIZE - WxD		REINFORCEMENT						NOTES:
	WIDTH	DEPTH	BOTTOM		TOP		SIDE***	STIRRUP		
			CONT.	ADD'L	CONT.	ADD'L	SIZE & SPACING	SIZE & SPACING	# OF LEGS	
B1	12"	**	3-#8	-	3-#8	-	-	#4@6" O.C.	2	EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B2	48"	36"	33-#9	-	33-#9	-	-	#4@6" O.C.	8	-
B3	8"	18"	2-#7	-	2-#7	-	-	#3@6" O.C.	1	T&B BARS PLACED IN 2 LAYERS. EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B4	26"	16"	5-#9	-	5-#9	-	-	#4@6" O.C.	2	

** BEAM DEPTH TO MATCH SLAB THICKNESS
*** PROVIDE #4@12" SIDE BARS FOR ALL BEAMS WITH DEPTH GREATER THAN 36", U.O.N.
NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION



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CIVIL ENGINEER:
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102 MADISON AVE #11
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LANDSCAPE:
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NEW YORK, NY 10018

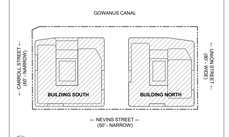
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
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GEOTECH:
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KEY PLAN



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1	03.18.22	SCHEMATIC DRAWINGS

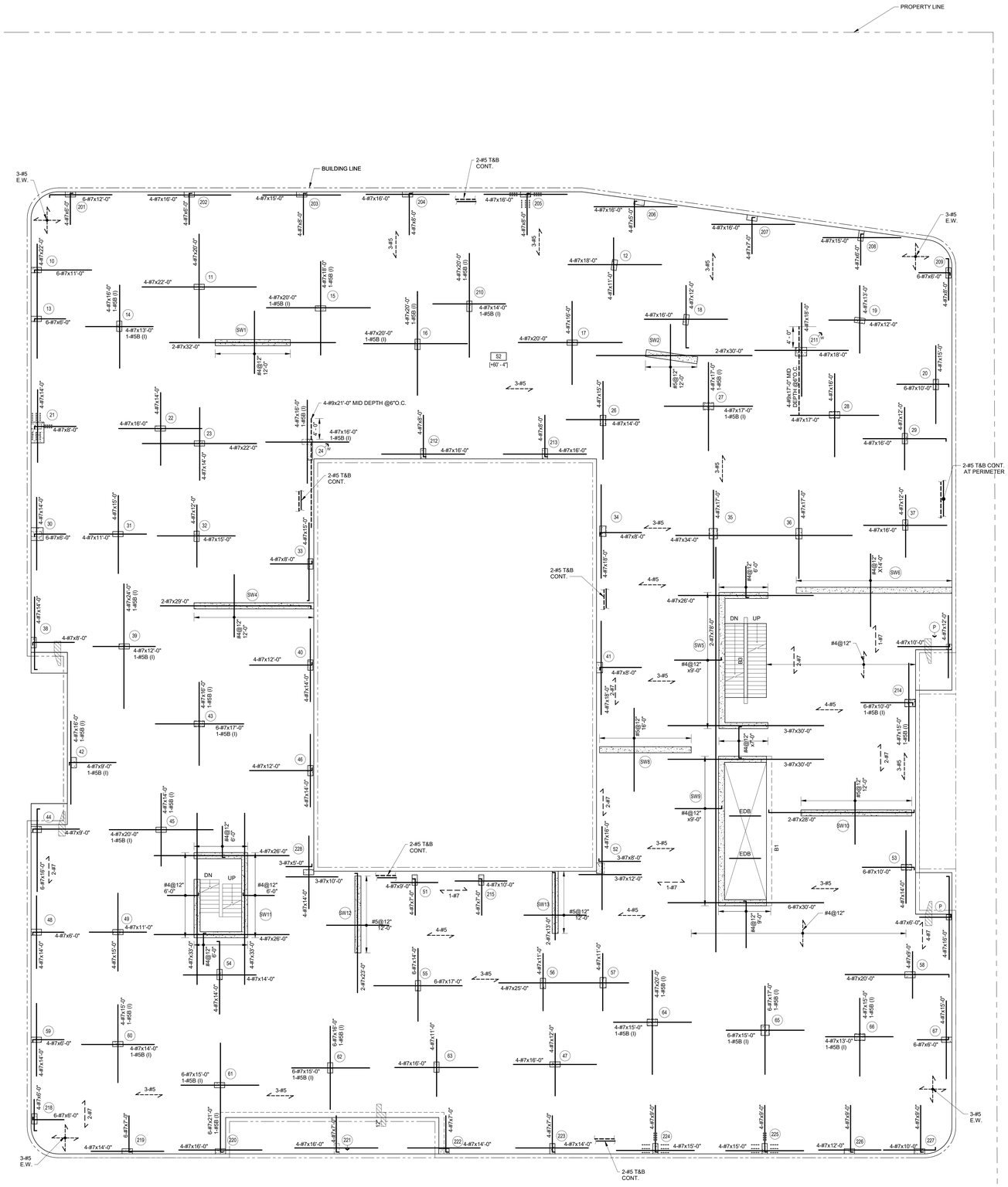
PROJECT:
498 UNION ST.
BROOKLYN, NY 11217

DRAWING TITLE:
4TH FLOOR FRAMING PLAN BUILDING B

SEAL & SIGNATURE:



DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-104B.00
PAGE No.:	19 OF 53



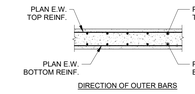
5TH FLOOR FRAMING PLAN
1/8" = 1'-0"

NOTES:

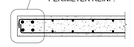
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   (±XX'-XX") INDICATES ELEVATION RELATIVE TO TOP OF SLAB ELEVATION
2. SX INDICATES SLAB TYPE. SEE SLAB SCHEDULE ON THIS SHEET.
3. SEE THE FOLLOWING DRAWINGS FOR THE ITEMS NOTED:

GENERAL NOTES	S-001's
COLUMN/SHEAR WALL SCHEDULE & DETAILS	S-200's
TYPICAL DETAILS	S-300's
SECTIONS & DETAILS	S-400's
GEOMETRY PLAN	S-500's

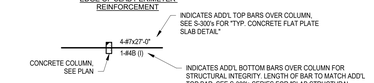
4. COORDINATE ALL SLAB OPENINGS WITH MECHANICAL SHOP DRAWINGS. PROVIDE REINFORCEMENT AT ALL OPENINGS AND SLAB EDGES AS PER THE TYPICAL DETAILS AND PLANS.
5. SEE ARCHITECTURAL EDGE OF SLAB DRAWINGS FOR ALL DIMENSIONS AND COORDINATES, U.O.N.



DIRECTION OF OUTER BARS



EDGE OF SLAB PERIMETER REINFORCEMENT



TYPICAL REBAR OVER COLUMN

LEGEND:

- ADDITIONAL TOP STEEL
- ADDITIONAL BOTTOM STEEL
- ADDITIONAL CONTINUOUS BOTTOM STEEL
- (#) INDICATES COLUMN NUMBER
- (#)W INDICATES WALKING COLUMN, SEE COLUMN SCHEDULE AND WALKING COLUMN TYPICAL DETAILS
- EDB INDICATES HSS6x4x3/8" ELEVATOR DIVIDER BEAM
- (P) INDICATES 14"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- (P1) INDICATES 10"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- INDICATES COLUMN BELOW / ABOVE
- INDICATES (0,0) COORDINATE LOCATION (CORNER OF PROPERTY LINE)
- INDICATES SLAB STRESS LINE
- INDICATES STEP IN FRAMED SLAB WITH DASHED BOTTOM OF SLAB EXTENTS. SEE S-300'S SERIES FOR TYPICAL STEP IN FRAMED SLAB DETAIL.
- HATCH INDICATES EITHER BUILT-UP STAIR, STAIR LANDING OR RAMP. COORDINATE ELEVATIONS W/ ARCHITECTURAL DRAWINGS. SEE S-300'S SERIES FOR "TYPICAL BUILT UP SLAB DETAIL".
- (X'-XX") INDICATES TRANSFER BEAM W/ (X'-XX") TOP OF BEAM ELEVATION. SEE TRANSFER BEAM SCHEDULE FOR ADD'L INFO.
- INDICATES SLAB SHEAR STIRRUP OR STUD RAIL REINFORCEMENT. SEE SCHEDULE, THIS SHEET.

SLAB STUD RAIL SCHEDULE

COL. #	STUD DIAMETER (IN)	STUD SPACING (IN)	# OF RAILS		STUD HEIGHT (IN)	TOTAL RAIL LENGTH (IN)	NOTES
			LONG SIDES	SHORT SIDES			
21, 205, 224, 225	1/2	3	3	2	6-1/2	24	3" TO FIRST STUD

NOTE:
1. SEE MANUFACTURER (DECON OR APPROVED EQUAL) FOR INSTALLATION INSTRUCTION.
2. SEE TYPICAL STUD RAIL REINFORCEMENT DETAILS ON S-300'S SERIES FOR ADDITIONAL INFORMATION.

CONCRETE SLAB SCHEDULE

SLAB MARK	SLAB THICKNESS	CONCRETE WEIGHT (PCF)	CONCRETE STRENGTH	TYPICAL SLAB REINFORCEMENT	NOTES:
S1	8"	150 - NWT	5000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S1A	10"	150 - NWT	5000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S2	8"	150 - NWT	6000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S3	10"	150 - NWT	6000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S4	8"	150 - NWT	8000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S5	12"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S6	14"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7	16"	150 - NWT	8000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7A	16"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINF. SLAB SHALL HAVE 2" TOP & 3/4" BOT. CLR. COVER. PROVIDE 3 GAL OF DCI CORROSION INHIBITOR PER CUBIC YARD OF CONC. MIX.
S8	18"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S9	20"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S10	22"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S11	26"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S12	8"	150 - NWT	10,000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S13	14"	150 - NWT	10,000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S14	16"	150 - NWT	10,000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S15	20"	150 - NWT	10,000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION

CONCRETE BEAM SCHEDULE

MARK	SIZE - WxD		REINFORCEMENT						NOTES:
	WIDTH	DEPTH	BOTTOM		TOP		SIDE***	STIRRUP		
			CONT.	ADD'L	CONT.	ADD'L	SIZE & SPACING	SIZE & SPACING	# OF LEGS	
B1	12"	**	3-#8	-	3-#8	-	-	#4@6" O.C.	2	EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B2	48"	36"	33-#9	-	33-#9	-	-	#4@6" O.C.	8	-
B3	8"	18"	2-#7	-	2-#7	-	-	#3@6" O.C.	1	T&B BARS PLACED IN 2 LAYERS. EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B4	26"	16"	5-#9	-	5-#9	-	-	#4@6" O.C.	2	

** BEAM DEPTH TO MATCH SLAB THICKNESS
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NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION



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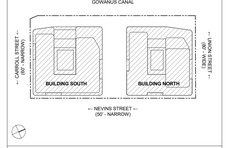
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5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

498 UNION ST.

BROOKLYN, NY 11217

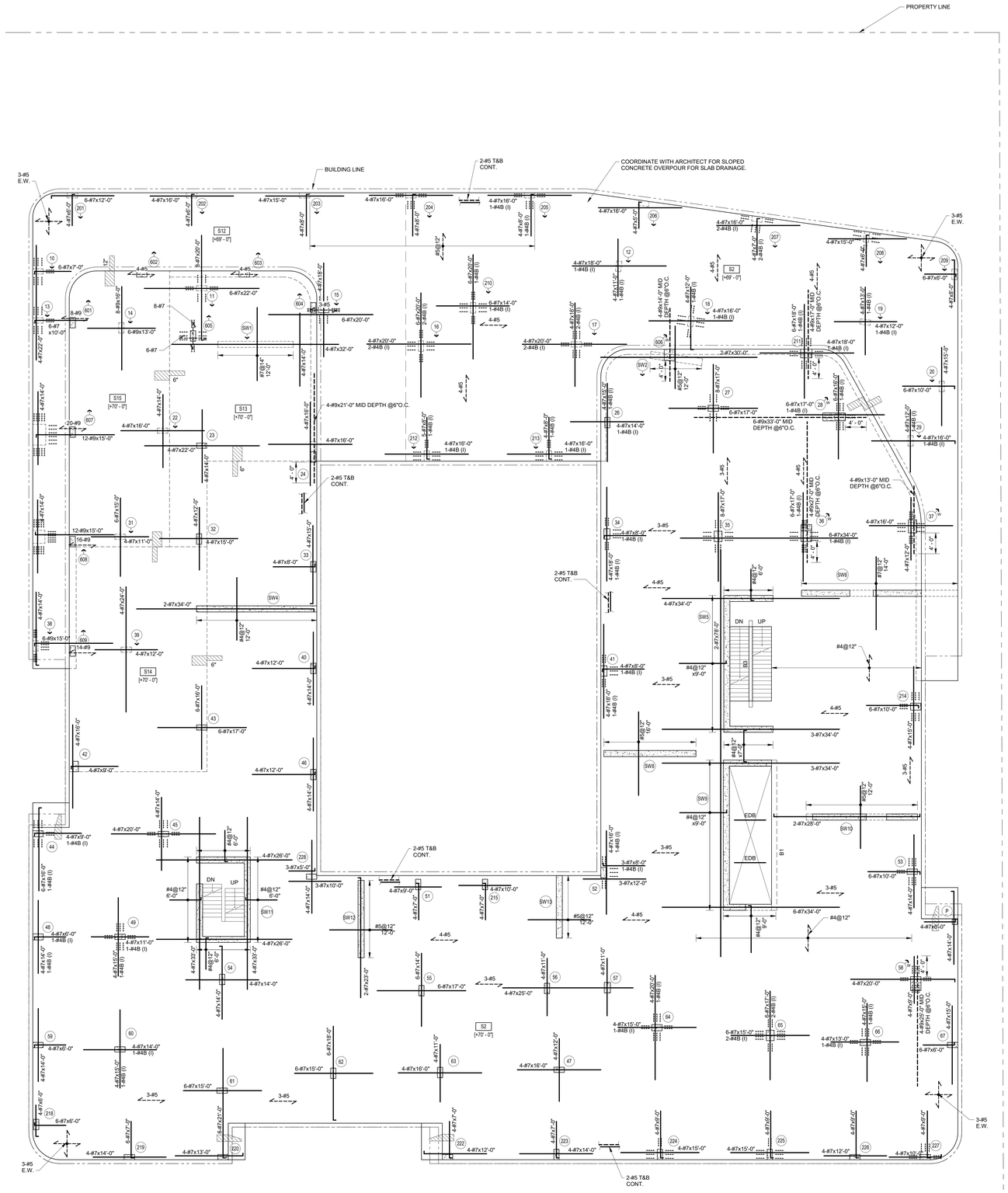
DRAWING TITLE:

5TH FLOOR FRAMING PLAN BUILDING B

SEAL & SIGNATURE:



DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-105B.00
PAGE No.:	20 OF 53



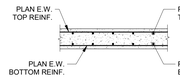
6TH FLOOR FRAMING PLAN
1/8" = 1'-0"

NOTES:

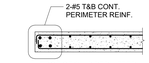
1. [XX'-XX"] INDICATES TOP OF SLAB ELEVATION RELATIVE TO NAVD88 DATUM.
   (±XX'-XX") INDICATES ELEVATION RELATIVE TO TOP OF SLAB ELEVATION
2. (SX) INDICATES SLAB TYPE. SEE SLAB SCHEDULE ON THIS SHEET.
3. SEE THE FOLLOWING DRAWINGS FOR THE ITEMS NOTED:

GENERAL NOTES	S-001's
COLUMN/SHEAR WALL SCHEDULE & DETAILS	S-200's
TYPICAL DETAILS	S-300's
SECTIONS & DETAILS	S-400's
GEOMETRY PLAN	S-500's

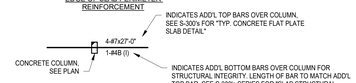
4. COORDINATE ALL SLAB OPENINGS WITH MECHANICAL SHOP DRAWINGS. PROVIDE REINFORCEMENT AT ALL OPENINGS AND SLAB EDGES AS PER THE TYPICAL DETAILS AND PLANS.
5. SEE ARCHITECTURAL EDGE OF SLAB DRAWINGS FOR ALL DIMENSIONS AND COORDINATES, U.O.N.



DIRECTION OF OUTER BARS



EDGE OF SLAB PERIMETER REINFORCEMENT



TYPICAL REBAR OVER COLUMN

LEGEND:

- ADDITIONAL TOP STEEL
- ADDITIONAL BOTTOM STEEL
- ADDITIONAL CONTINUOUS BOTTOM STEEL
- (#) INDICATES COLUMN NUMBER
- (#)W INDICATES WALKING COLUMN, SEE COLUMN SCHEDULE AND WALKING COLUMN TYPICAL DETAILS
- EDB INDICATES HSS6x4x3/8" ELEVATOR DIVIDER BEAM
- (P) INDICATES 14"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- (P1) INDICATES 10"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- INDICATES COLUMN BELOW / ABOVE
- INDICATES (0,0) COORDINATE LOCATION (CORNER OF PROPERTY LINE)
- INDICATES SLAB STRESS LINE
- INDICATES STEP IN FRAMED SLAB WITH DASHED BOTTOM OF SLAB EXTENTS. SEE S-300'S SERIES FOR TYPICAL STEP IN FRAMED SLAB DETAIL.
- HATCH INDICATES EITHER BUILT-UP STAIR, STAIR LANDING OR RAMP. COORDINATE ELEVATIONS W/ ARCHITECTURAL DRAWINGS. SEE S-300'S SERIES FOR "TYPICAL BUILT UP SLAB DETAIL".
- (X'-XX") INDICATES TRANSFER BEAM W/ (X'-XX") TOP OF BEAM ELEVATION. SEE TRANSFER BEAM SCHEDULE FOR ADD'L INFO.
- INDICATES SLAB SHEAR STIRRUP OR STUD RAIL REINFORCEMENT. SEE SCHEDULE, THIS SHEET.

SLAB STUD RAIL SCHEDULE

COL. #	STUD DIAMETER (IN)	STUD SPACING (IN)	# OF RAILS		STUD HEIGHT (IN)	TOTAL RAIL LENGTH (IN)	NOTES
			LONG SIDES	SHORT SIDES			
10, 13, 16, 17, 18, 27, 28, 34, 37, 41, 44, 49, 52, 53, 58, 64, 66, 204, 205, 207, 208, 211, 212, 213, 224, 225, 227	1/2	3	3	2	6 1/2	24	-
15, 35, 36, 210, 214	1/2	3	3	3	6 1/2	36	-
65	1/2	3	4	2	6 1/2	36	-
11, 605	1/2	3	3	2	12 1/2	42	-
21, 30	1/2	3	6	5	6 1/2	60	-
38	1/2	3	4	3	6 1/2	60	-

NOTE:
1. SEE MANUFACTURER (DECON OR APPROVED EQUAL) FOR INSTALLATION INSTRUCTION.
2. SEE TYPICAL STUD RAIL REINFORCEMENT DETAILS ON S-300'S SERIES FOR ADDITIONAL INFORMATION.

CONCRETE SLAB SCHEDULE

SLAB MARK	SLAB THICKNESS	CONCRETE WEIGHT (PCF)	CONCRETE STRENGTH	TYPICAL SLAB REINFORCEMENT	NOTES:
S1	8"	150 - NWT	5000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S1A	10"	150 - NWT	5000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S2	8"	150 - NWT	6000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S3	10"	150 - NWT	6000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S4	8"	150 - NWT	8000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S5	12"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S6	14"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7	16"	150 - NWT	8000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7A	16"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINF. SLAB SHALL HAVE 2" TOP & 3/4" BOT. CLR. COVER. PROVIDE 3 GAL OF DCI CORROSION INHIBITOR PER CUBIC YARD OF CONC. MIX.
S8	18"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S9	20"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S10	22"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S11	26"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S12	8"	150 - NWT	10,000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S13	14"	150 - NWT	10,000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S14	16"	150 - NWT	10,000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S15	20"	150 - NWT	10,000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION

CONCRETE BEAM SCHEDULE

MARK	SIZE - WxD		REINFORCEMENT						NOTES:
	WIDTH	DEPTH	BOTTOM		TOP		SIDE***	STIRRUP		
			CONT.	ADD'L	CONT.	ADD'L	SIZE & SPACING	SIZE & SPACING	# OF LEGS	
B1	12"	**	3-#8	-	3-#8	-	-	#4@6" O.C.	2	EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B2	48"	36"	33-#9	-	33-#9	-	-	#4@6" O.C.	8	-
B3	8"	18"	2-#7	-	2-#7	-	-	#3@6" O.C.	1	T&B BARS PLACED IN 2 LAYERS. EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B4	26"	16"	5-#9	-	5-#9	-	-	#4@6" O.C.	2	

** BEAM DEPTH TO MATCH SLAB THICKNESS
*** PROVIDE #4@12" SIDE BARS FOR ALL BEAMS WITH DEPTH GREATER THAN 36", U.O.N.
NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION



OWNER:
CHARNEY COMPANIES
5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101
TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

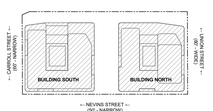
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 Ninth Avenue, Suite 902
New York, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



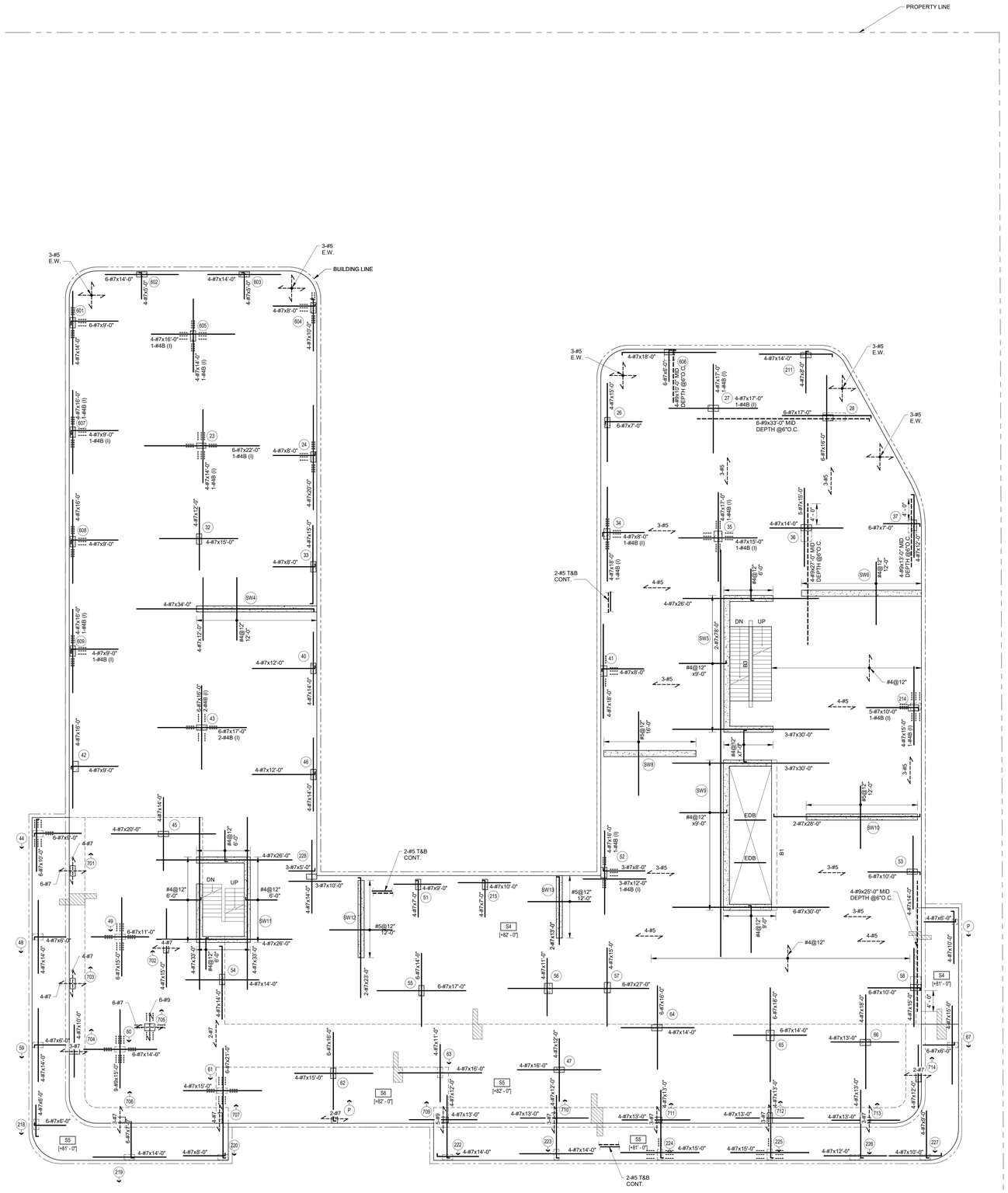
No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:
498 UNION ST.
BROOKLYN, NY 11217

DRAWING TITLE:
6TH FLOOR FRAMING PLAN BUILDING B

SEAL & SIGNATURE:
STATE OF NEW YORK · JOSEPH AUYEUNG · 090402 · LICENSED PROFESSIONAL ENGINEER

DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-106B.00
PAGE No.:	21 OF 53



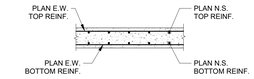
7TH FLOOR FRAMING PLAN
1/8" = 1'-0"

NOTES:

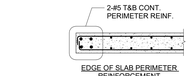
1. [XX-XX"] INDICATES TOP OF SLAB ELEVATION RELATIVE TO NAVD88 DATUM.
   [±XX-XX"] INDICATES ELEVATION RELATIVE TO TOP OF SLAB ELEVATION
2. SX INDICATES SLAB TYPE. SEE SLAB SCHEDULE ON THIS SHEET.
3. SEE THE FOLLOWING DRAWINGS FOR THE ITEMS NOTED:

GENERAL NOTES	S-001's
COLUMN/SHEAR WALL SCHEDULE & DETAILS	S-200's
TYPICAL DETAILS	S-300's
SECTIONS & DETAILS	S-400's
GEOMETRY PLAN	S-500's

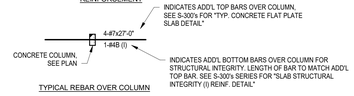
4. COORDINATE ALL SLAB OPENINGS WITH MECHANICAL SHOP DRAWINGS. PROVIDE REINFORCEMENT AT ALL OPENINGS AND SLAB EDGES AS PER THE TYPICAL DETAILS AND PLANS.
5. SEE ARCHITECTURAL EDGE OF SLAB DRAWINGS FOR ALL DIMENSIONS AND COORDINATES, U.O.N.



DIRECTION OF OUTER BARS



EDGE OF SLAB PERIMETER REINFORCEMENT



TYPICAL REBAR OVER COLUMN

LEGEND:

- ADDITIONAL TOP STEEL
- ADDITIONAL BOTTOM STEEL
- ADDITIONAL CONTINUOUS BOTTOM STEEL
- (#) INDICATES COLUMN NUMBER
- (#)W INDICATES WALKING COLUMN, SEE COLUMN SCHEDULE AND WALKING COLUMN TYPICAL DETAILS
- EDB INDICATES HSS6x4x3/8" ELEVATOR DIVIDER BEAM
- (P) INDICATES 14"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- (P1) INDICATES 10"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- INDICATES COLUMN BELOW / ABOVE
- INDICATES (0,0) COORDINATE LOCATION (CORNER OF PROPERTY LINE)
- INDICATES SLAB STRESS LINE
- INDICATES STEP IN FRAMED SLAB WITH DASHED BOTTOM OF SLAB EXTENTS. SEE S-300'S SERIES FOR TYPICAL STEP IN FRAMED SLAB DETAIL.
- HATCH INDICATES EITHER BUILT-UP STAIR, STAIR LANDING OR RAMP. COORDINATE ELEVATIONS W/ ARCHITECTURAL DRAWINGS. SEE S-300'S SERIES FOR "TYPICAL BUILT UP SLAB DETAIL".
- (X'-XX") INDICATES TRANSFER BEAM W/ (X'-XX") TOP OF BEAM ELEVATION. SEE TRANSFER BEAM SCHEDULE FOR ADD'L INFO.
- INDICATES SLAB SHEAR STIRRUP OR STUD RAIL REINFORCEMENT. SEE SCHEDULE, THIS SHEET.

SLAB STUD RAIL SCHEDULE

COL. #	STUD DIAMETER (IN)	STUD SPACING (IN)	# OF RAILS		STUD HEIGHT (IN)	TOTAL RAIL LENGTH (IN)	NOTES
			LONG SIDES	SHORT SIDES			
23, 24, 34, 35, 41, 43, 52, 601, 604, 605, 607, 608, 609	1/2	3	3	2	6 1/2	24	-
214	1/2	3	3	3	6 1/2	36	-
44, 49, 224, 225, 705	1/2	3	3	2	10 1/2	36	-
60	1/2	3	4	3	10 1/2	48	-
61	1/2	3	3	2	VARIES	42	USE 10 1/2" HEIGHT AT 12" THK SLAB, USE 12 1/2" HEIGHT AT 14" THK SLAB

NOTE:
1. SEE MANUFACTURER (DECON OR APPROVED EQUAL) FOR INSTALLATION INSTRUCTION.
2. SEE TYPICAL STUD RAIL REINFORCEMENT DETAILS ON S-300'S SERIES FOR ADDITIONAL INFORMATION.

CONCRETE SLAB SCHEDULE

SLAB MARK	SLAB THICKNESS	CONCRETE WEIGHT (PCF)	CONCRETE STRENGTH	TYPICAL SLAB REINFORCEMENT	NOTES:
S1	8"	150 - NWT	5000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S1A	10"	150 - NWT	5000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S2	8"	150 - NWT	6000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S3	10"	150 - NWT	6000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S4	8"	150 - NWT	8000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S5	12"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S6	14"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7	16"	150 - NWT	8000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7A	16"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT. SLAB SHALL HAVE 2" TOP & 3/4" BOT. CLR. COVER. PROVIDE 3 GAL OF DCI CORROSION INHIBITOR PER CUBIC YARD OF CONC. MIX.
S8	18"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S9	20"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S10	22"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S11	26"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S12	8"	150 - NWT	10,000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S13	14"	150 - NWT	10,000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S14	16"	150 - NWT	10,000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S15	20"	150 - NWT	10,000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION

CONCRETE BEAM SCHEDULE

MARK	SIZE - WxD		REINFORCEMENT						NOTES:
	WIDTH	DEPTH	BOTTOM		TOP		SIDE***	STIRRUP		
			CONT.	ADD'L	CONT.	ADD'L	SIZE & SPACING	SIZE & SPACING	# OF LEGS	
B1	12"	**	3-#8	-	3-#8	-	-	#4@6" O.C.	2	EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B2	48"	36"	33-#9	-	33-#9	-	-	#4@6" O.C.	8	-
B3	8"	18"	2-#7	-	2-#7	-	-	#3@6" O.C.	1	T&B BARS PLACED IN 2 LAYERS. EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B4	26"	16"	5-#9	-	5-#9	-	-	#4@6" O.C.	2	

** BEAM DEPTH TO MATCH SLAB THICKNESS
*** PROVIDE #4@12" SIDE BARS FOR ALL BEAMS WITH DEPTH GREATER THAN 36", U.O.N.
NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION



OWNER:
CHARNEY COMPANIES
5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

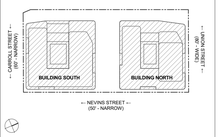
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 Ninth Avenue, Suite 902
New York, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.16.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

498 UNION ST.

BROOKLYN, NY 11217

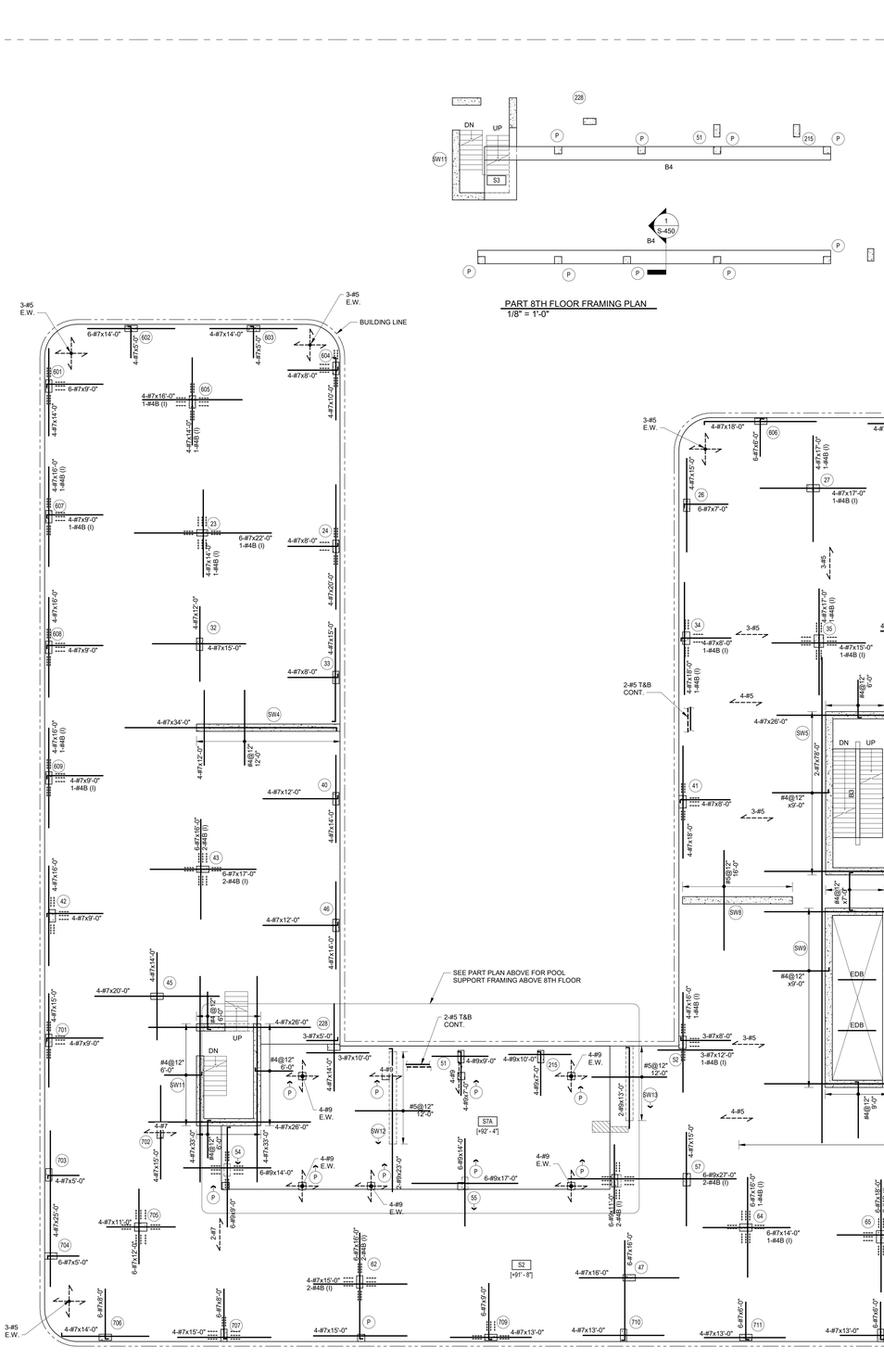
DRAWING TITLE:

7TH FLOOR FRAMING PLAN BUILDING B

SEAL & SIGNATURE:



DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-107B.00
PAGE No.:	22 OF 53



PART 8TH FLOOR FRAMING PLAN
1/8" = 1'-0"

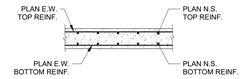
8TH FLOOR FRAMING PLAN
1/8" = 1'-0"

NOTES:

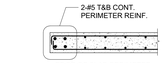
1. [XX-XX"] INDICATES TOP OF SLAB ELEVATION RELATIVE TO NAVD88 DATUM.
   (±XX-XX") INDICATES ELEVATION RELATIVE TO TOP OF SLAB ELEVATION
2. SX INDICATES SLAB TYPE. SEE SLAB SCHEDULE ON THIS SHEET.
3. SEE THE FOLLOWING DRAWINGS FOR THE ITEMS NOTED:

GENERAL NOTES	S-001's
COLUMN/SHEAR WALL SCHEDULE & DETAILS	S-200's
TYPICAL DETAILS	S-300's
SECTIONS & DETAILS	S-400's
GEOMETRY PLAN	S-500's

4. COORDINATE ALL SLAB OPENINGS WITH MECHANICAL SHOP DRAWINGS. PROVIDE REINFORCEMENT AT ALL OPENINGS AND SLAB EDGES AS PER THE TYPICAL DETAILS AND PLANS.
5. SEE ARCHITECTURAL EDGE OF SLAB DRAWINGS FOR ALL DIMENSIONS AND COORDINATES, U.O.N.



DIRECTION OF OUTER BARS



EDGE OF SLAB PERIMETER REINFORCEMENT



TYPICAL REBAR OVER COLUMN

LEGEND:

- ADDITIONAL TOP STEEL
- ADDITIONAL BOTTOM STEEL
- ADDITIONAL CONTINUOUS BOTTOM STEEL
- (#) INDICATES COLUMN NUMBER
- (#) W INDICATES WALKING COLUMN. SEE COLUMN SCHEDULE AND WALKING COLUMN TYPICAL DETAILS
- EDB INDICATES HSS6x4x3/8" ELEVATOR DIVIDER BEAM
- (P) INDICATES 14"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- (P1) INDICATES 10"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- INDICATES COLUMN BELOW / ABOVE
- INDICATES (0,0) COORDINATE LOCATION (CORNER OF PROPERTY LINE)
- INDICATES SLAB STRESS LINE
- INDICATES STEP IN FRAMED SLAB WITH DASHED BOTTOM OF SLAB EXTENTS. SEE S-300'S SERIES FOR TYPICAL STEP IN FRAMED SLAB DETAIL.
- HATCH INDICATES EITHER BUILT-UP STAIR, STAIR LANDING OR RAMP. COORDINATE ELEVATIONS W/ ARCHITECTURAL DRAWINGS. SEE S-300'S SERIES FOR "TYPICAL BUILT UP SLAB DETAIL".
- (X'-XX") INDICATES TRANSFER BEAM W/ (X'-XX") TOP OF BEAM ELEVATION. SEE TRANSFER BEAM SCHEDULE FOR ADD'L INFO.
- INDICATES SLAB SHEAR STIRRUP OR STUD RAIL REINFORCEMENT. SEE SCHEDULE, THIS SHEET.

SLAB STUD RAIL SCHEDULE

COL. #	STUD DIAMETER (IN)	STUD SPACING (IN)	# OF RAILS		STUD HEIGHT (IN)	TOTAL RAIL LENGTH (IN)	NOTES
			LONG SIDES	SHORT SIDES			
23, 24, 34, 35, 41, 42, 43, 52, 53, 58, 62, 64, 601, 604, 605, 607, 608, 609, 701, 707, 709	1/2	3	3	2	6 1/2	24	-
65	1/2	3	3	2	6 1/2	30	-
214	1/2	3	3	3	6 1/2	36	-
705	1/2	3	3	2	10 1/2	36	-
54, 56	1/2	3	4	3	VARIES	54	USE 6 1/2" HEIGHT AT 8" THK SLAB, USE 14 1/2" HEIGHT AT 16" THK SLAB

NOTE:
1. SEE MANUFACTURER (DECON OR APPROVED EQUAL) FOR INSTALLATION INSTRUCTION.
2. SEE TYPICAL STUD RAIL REINFORCEMENT DETAILS ON S-300'S SERIES FOR ADDITIONAL INFORMATION.

CONCRETE SLAB SCHEDULE

SLAB MARK	SLAB THICKNESS	CONCRETE WEIGHT (PCF)	CONCRETE STRENGTH	TYPICAL SLAB REINFORCEMENT	NOTES:
S1	8"	150 - NWT	5000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S1A	10"	150 - NWT	5000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S2	8"	150 - NWT	6000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S3	10"	150 - NWT	6000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S4	8"	150 - NWT	8000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S5	12"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S6	14"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7	16"	150 - NWT	8000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7A	16"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINF. SLAB SHALL HAVE 2" TOP & 3/4" BOT. CLR. COVER. PROVIDE 3 GAL OF DCI CORROSION INHIBITOR PER CUBIC YARD OF CONC. MIX.
S8	18"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S9	20"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S10	22"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S11	26"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S12	8"	150 - NWT	10,000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S13	14"	150 - NWT	10,000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S14	16"	150 - NWT	10,000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S15	20"	150 - NWT	10,000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION

CONCRETE BEAM SCHEDULE

MARK	SIZE - WxD			REINFORCEMENT							NOTES:
	WIDTH	DEPTH		BOTTOM		TOP		SIDE***	STIRRUP		
				CONT.	ADD'L	CONT.	ADD'L	SIZE & SPACING	SIZE & SPACING	# OF LEGS	
B1	12"	**		3-#8	-	3-#8	-	-	#4@6" O.C.	2	EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B2	48"	36"		33-#9	-	33-#9	-	-	#4@6" O.C.	8	-
B3	8"	18"		2-#7	-	2-#7	-	-	#3@6" O.C.	1	T&B BARS PLACED IN 2 LAYERS. EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B4	26"	16"		5-#9	-	5-#9	-	-	#4@6" O.C.	2	

** BEAM DEPTH TO MATCH SLAB THICKNESS.
*** PROVIDE #4@12" SIDE BARS FOR ALL BEAMS WITH DEPTH GREATER THAN 36", U.O.N.
NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION



OWNER:
CHARNEY COMPANIES
5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

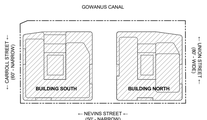
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 Ninth Avenue, Suite 902
New York, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

498 UNION ST.

BROOKLYN, NY 11217

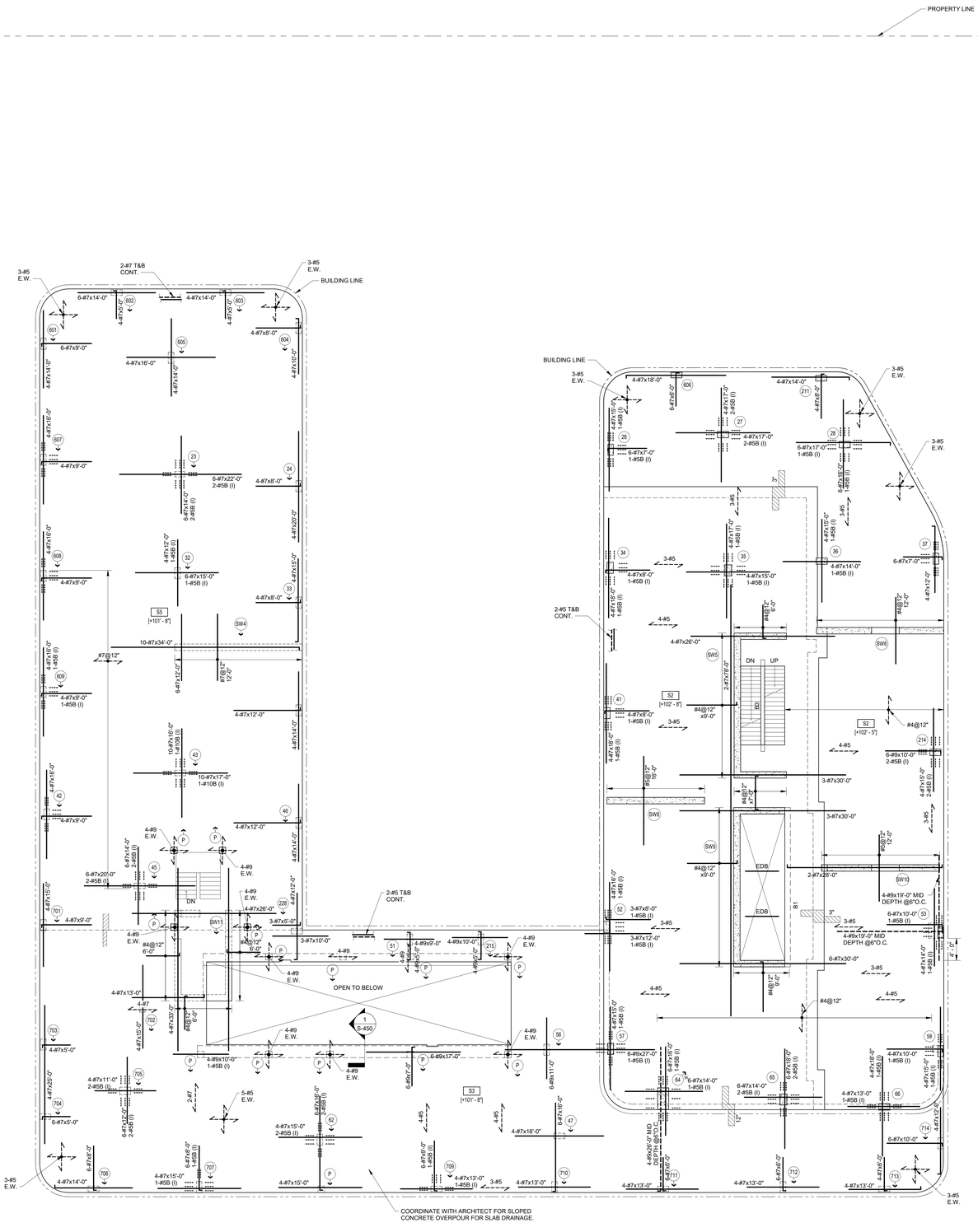
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8TH FLOOR FRAMING PLAN BUILDING B

SEAL & SIGNATURE:



DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-108B.00
PAGE No.:	23 OF 53



9TH FLOOR FRAMING PLAN
1/8" = 1'-0"



OWNER:

CHARNEY COMPANIES
5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:

FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:

TITAN ENGINEERS
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UNION, NJ 07083

MEP ENGINEER:

ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:

SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

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5 CLIMAX ROAD
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121 W. 27th Street,
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BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:

PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:

JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

LANDSCAPE:

GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:

GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

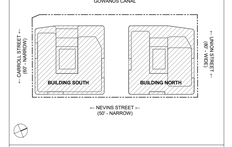
ZONING SPECIALIST:

DEVELOPMENT CONSULTING SERVICES
630 Ninth Avenue, Suite 902
New York, NY 10036

CODE CONSULTANT/ EXPEDITOR:

WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN

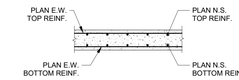


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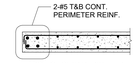
1. [XX'-XX"] INDICATES TOP OF SLAB ELEVATION RELATIVE TO NAVD88 DATUM.
   (±XX'-XX") INDICATES ELEVATION RELATIVE TO TOP OF SLAB ELEVATION
2. SX INDICATES SLAB TYPE. SEE SLAB SCHEDULE ON THIS SHEET.
3. SEE THE FOLLOWING DRAWINGS FOR THE ITEMS NOTED:

GENERAL NOTES	S-001's
COLUMN/SHEAR WALL SCHEDULE & DETAILS	S-200's
TYPICAL DETAILS	S-300's
SECTIONS & DETAILS	S-400's
GEOMETRY PLAN	S-500's

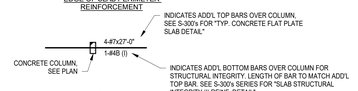
4. COORDINATE ALL SLAB OPENINGS WITH MECHANICAL SHOP DRAWINGS. PROVIDE REINFORCEMENT AT ALL OPENINGS AND SLAB EDGES AS PER THE TYPICAL DETAILS AND PLANS.
5. SEE ARCHITECTURAL EDGE OF SLAB DRAWINGS FOR ALL DIMENSIONS AND COORDINATES, U.O.N.



DIRECTION OF OUTER BARS



EDGE OF SLAB PERIMETER REINFORCEMENT



TYPICAL REBAR OVER COLUMN

LEGEND:

- ADDITIONAL TOP STEEL
- ADDITIONAL BOTTOM STEEL
- ADDITIONAL CONTINUOUS BOTTOM STEEL
- (#) INDICATES COLUMN NUMBER
- (#)W INDICATES WALKING COLUMN, SEE COLUMN SCHEDULE AND WALKING COLUMN TYPICAL DETAILS
- EDB INDICATES HSS6x4x3/8" ELEVATOR DIVIDER BEAM
- (P) INDICATES 14"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
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- INDICATES COLUMN BELOW / ABOVE
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- INDICATES SLAB STRESS LINE
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- (X'-XX") INDICATES TRANSFER BEAM W/ (X'-XX") TOP OF BEAM ELEVATION. SEE TRANSFER BEAM SCHEDULE FOR ADD'L INFO.
- INDICATES SLAB SHEAR STIRRUP OR STUD RAIL REINFORCEMENT. SEE SCHEDULE, THIS SHEET.

SLAB STUD RAIL SCHEDULE

COL. #	STUD DIAMETER (IN)	STUD SPACING (IN)	# OF RAILS		STUD HEIGHT (IN)	TOTAL RAIL LENGTH (IN)	NOTES
			LONG SIDES	SHORT SIDES			
57, 58, 66	1/2	3	3	2	6-1/2	24	3" SPACING TO 1ST STUD
26, 27, 28, 34, 35, 37, 41, 52, 53, 64, 65, 214	1/2	3	3	3	6-1/2	30	3" SPACING TO 1ST STUD
62, 705, 707, 709	1/2	3	3	2	8-1/2	30	3" SPACING TO 1ST STUD
23, 42, 43, 45, 607, 608, 609	1/2	3	3	2	10-1/2	36	3" SPACING TO 1ST STUD

NOTE:
1. SEE MANUFACTURER (DECON OR APPROVED EQUAL) FOR INSTALLATION INSTRUCTION.
2. SEE TYPICAL STUD RAIL REINFORCEMENT DETAILS ON S-300'S SERIES FOR ADDITIONAL INFORMATION.

CONCRETE SLAB SCHEDULE

SLAB MARK	SLAB THICKNESS	CONCRETE WEIGHT (PCF)	CONCRETE STRENGTH	TYP/CAL SLAB REINFORCEMENT	NOTES:
S1	8"	150 - NWT	5000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S1A	10"	150 - NWT	5000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S2	8"	150 - NWT	6000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S3	10"	150 - NWT	6000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S4	8"	150 - NWT	8000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S5	12"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S6	14"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7	16"	150 - NWT	8000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7A	16"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINF. SLAB SHALL HAVE 2" TOP & 3/4" BOT. CLR. COVER. PROVIDE 3 GAL OF DCI CORROSION INHIBITOR PER CUBIC YARD OF CONC. MIX.
S8	18"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S9	20"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S10	22"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S11	26"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S12	8"	150 - NWT	10,000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S13	14"	150 - NWT	10,000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S14	16"	150 - NWT	10,000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S15	20"	150 - NWT	10,000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION

CONCRETE BEAM SCHEDULE

MARK	SIZE - WxD		REINFORCEMENT						NOTES:
	WIDTH	DEPTH	BOTTOM		TOP		SIDE***	STIRRUP		
			CONT	ADD'L	CONT.	ADD'L	SIZE & SPACING	SIZE & SPACING	# OF LEGS	
B1	12"	**	3-#8	-	3-#8	-	-	#4@6" O.C.	2	EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B2	48"	36"	33-#9	-	33-#9	-	-	#4@6" O.C.	8	-
B3	8"	18"	2-#7	-	2-#7	-	-	#3@6" O.C.	1	T&B BARS PLACED IN 2 LAYERS. EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B4	26"	16"	5-#9	-	5-#9	-	-	#4@6" O.C.	2	

** BEAM DEPTH TO MATCH SLAB THICKNESS
*** PROVIDE #4@12" SIDE BARS FOR ALL BEAMS WITH DEPTH GREATER THAN 36", U.O.N.
NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION

No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

498 UNION ST.
BROOKLYN, NY 11217

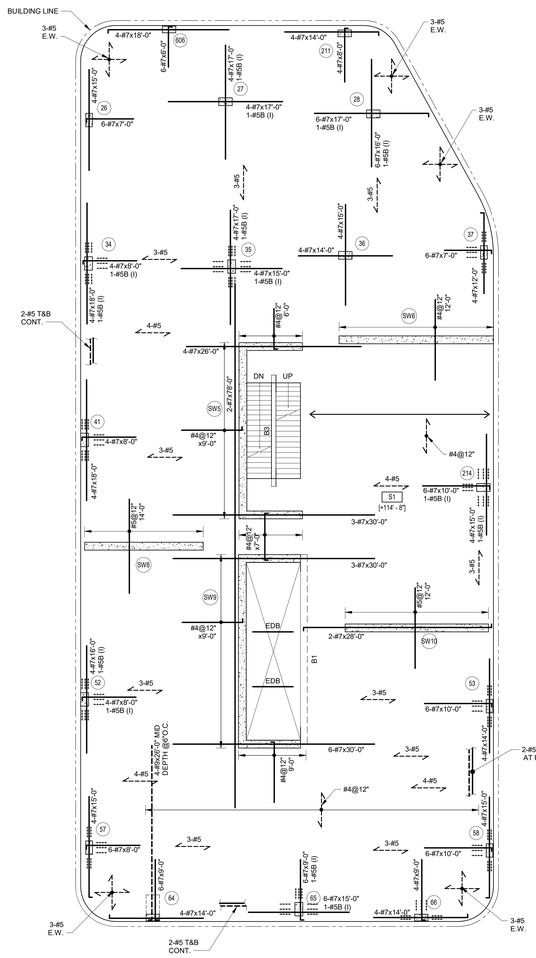
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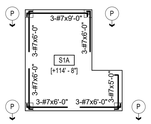
9TH FLOOR FRAMING PLAN BUILDING B

SEAL & SIGNATURE:



DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-109B.00
PAGE No.:	24 OF 53





10TH FLOOR FRAMING PLAN
1/8" = 1'-0"

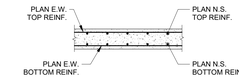


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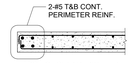
1. [XX'-XX"] INDICATES TOP OF SLAB ELEVATION RELATIVE TO NAVD88 DATUM.
   (±XX'-XX") INDICATES ELEVATION RELATIVE TO TOP OF SLAB ELEVATION
2. SX INDICATES SLAB TYPE. SEE SLAB SCHEDULE ON THIS SHEET.
3. SEE THE FOLLOWING DRAWINGS FOR THE ITEMS NOTED:

GENERAL NOTES	S-001's
COLUMN/SHEAR WALL SCHEDULE & DETAILS	S-200's
TYPICAL DETAILS	S-300's
SECTIONS & DETAILS	S-400's
GEOMETRY PLAN	S-500's

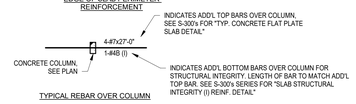
4. COORDINATE ALL SLAB OPENINGS WITH MECHANICAL SHOP DRAWINGS. PROVIDE REINFORCEMENT AT ALL OPENINGS AND SLAB EDGES AS PER THE TYPICAL DETAILS AND PLANS.
5. SEE ARCHITECTURAL EDGE OF SLAB DRAWINGS FOR ALL DIMENSIONS AND COORDINATES, U.O.N.



DIRECTION OF OUTER BARS



EDGE OF SLAB PERIMETER REINFORCEMENT



TYPICAL REBAR OVER COLUMN

LEGEND:

- ADDITIONAL TOP STEEL
- ADDITIONAL BOTTOM STEEL
- ADDITIONAL CONTINUOUS BOTTOM STEEL
- (#) INDICATES COLUMN NUMBER
- (#)W INDICATES WALKING COLUMN, SEE COLUMN SCHEDULE AND WALKING COLUMN TYPICAL DETAILS
- EDB INDICATES HSS6x4x3/8" ELEVATOR DIVIDER BEAM
- (P) INDICATES 14"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- (P1) INDICATES 10"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- INDICATES COLUMN BELOW / ABOVE
- INDICATES (0,0) COORDINATE LOCATION (CORNER OF PROPERTY LINE)
- INDICATES SLAB STRESS LINE
- INDICATES STEP IN FRAMED SLAB WITH DASHED BOTTOM OF SLAB EXTENTS. SEE S-300'S SERIES FOR TYPICAL STEP IN FRAMED SLAB DETAIL.
- HATCH INDICATES EITHER BUILT-UP STAIR, STAIR LANDING OR RAMP. COORDINATE ELEVATIONS W/ ARCHITECTURAL DRAWINGS. SEE S-300'S SERIES FOR "TYPICAL BUILT UP SLAB DETAIL".
- (X'-XX") INDICATES TRANSFER BEAM W/ (X'-XX") TOP OF BEAM ELEVATION. SEE TRANSFER BEAM SCHEDULE FOR ADD'L INFO.
- INDICATES SLAB SHEAR STIRRUP OR STUD RAIL REINFORCEMENT. SEE SCHEDULE, THIS SHEET.

SLAB STUD RAIL SCHEDULE

COL. #	STUD DIAMETER (IN)	STUD SPACING (IN)	# OF RAILS		STUD HEIGHT (IN)	TOTAL RAIL LENGTH (IN)	NOTES
			LONG SIDES	SHORT SIDES			
37, 53, 57, 58, 66	1/2	3	3	2	6 1/2	24	3" SPACING TO 1ST STUD
34, 35, 41, 52, 65, 214	1/2	3	3	3	6 1/2	24	3" SPACING TO 1ST STUD

NOTE:
1. SEE MANUFACTURER (DECON OR APPROVED EQUAL) FOR INSTALLATION INSTRUCTION.
2. SEE TYPICAL STUD RAIL REINFORCEMENT DETAILS ON S-300'S SERIES FOR ADDITIONAL INFORMATION.

CONCRETE SLAB SCHEDULE

SLAB MARK	SLAB THICKNESS	CONCRETE WEIGHT (PCF)	CONCRETE STRENGTH	TYPICAL SLAB REINFORCEMENT	NOTES:
S1	8"	150 - NWT	5000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S1A	10"	150 - NWT	5000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S2	8"	150 - NWT	6000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S3	10"	150 - NWT	6000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S4	8"	150 - NWT	8000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S5	12"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S6	14"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7	16"	150 - NWT	8000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7A	16"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINF. SLAB SHALL HAVE 2" TOP & 3/4" BOT. CLR. COVER. PROVIDE 3 GAL OF DCI CORROSION INHIBITOR PER CUBIC YARD OF CONC. MIX.
S8	18"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S9	20"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S10	22"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S11	26"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S12	8"	150 - NWT	10,000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S13	14"	150 - NWT	10,000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S14	16"	150 - NWT	10,000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S15	20"	150 - NWT	10,000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION

CONCRETE BEAM SCHEDULE

MARK	SIZE - WxD		REINFORCEMENT						NOTES:
	WIDTH	DEPTH	BOTTOM		TOP		SIDE***	STIRRUP	
			CONT	ADD'L	CONT	ADD'L	SIZE & SPACING	SIZE & SPACING	# OF LEGS	
B1	12"	**	3-#8	-	3-#8	-	-	#4@6" O.C.	2	EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B2	48"	36"	33-#9	-	33-#9	-	-	#4@6" O.C.	8	-
B3	8"	18"	2-#7	-	2-#7	-	-	#3@6" O.C.	1	T&B BARS PLACED IN 2 LAYERS. EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B4	26"	16"	5-#9	-	5-#9	-	-	#4@6" O.C.	2	

** BEAM DEPTH TO MATCH SLAB THICKNESS
*** PROVIDE #4@12" SIDE BARS FOR ALL BEAMS WITH DEPTH GREATER THAN 36", U.O.N.
NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION



OWNER:
CHARNEY COMPANIES
5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

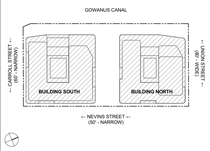
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 Ninth Avenue, Suite 902
New York, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



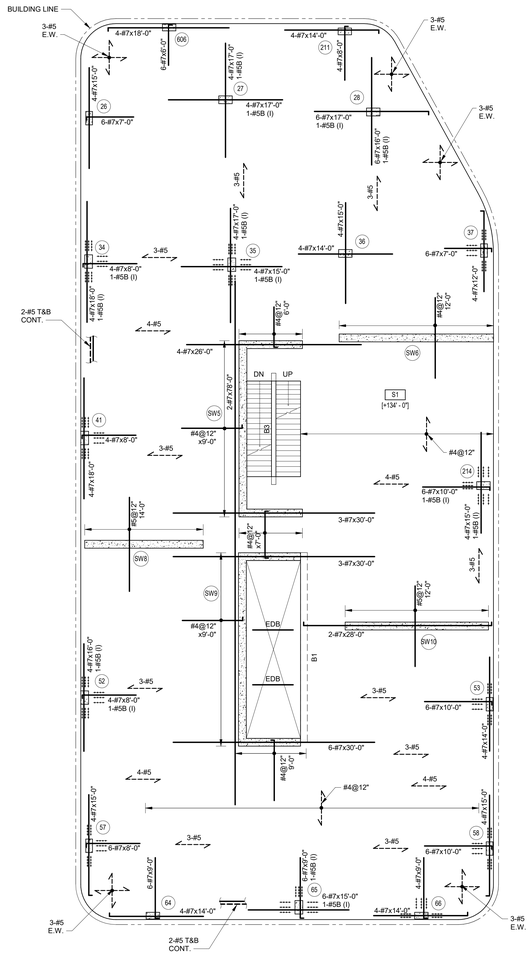
No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:
498 UNION ST.
BROOKLYN, NY 11217

DRAWING TITLE:
10TH FRAMING PLAN
BUILDING B

SEAL & SIGNATURE:
STATE OF NEW YORK · GORDON AUYEUNG · 049457 · LICENSED PROFESSIONAL ENGINEER

DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-110B.00
PAGE No.:	25 OF 53



1/8" = 1'-0"

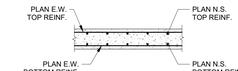
11TH -17TH FLOOR FRAMING PLAN

NOTES:

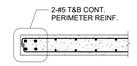
1. [XX'-XX"] INDICATES TOP OF SLAB ELEVATION RELATIVE TO NAVD88 DATUM.
   (±XX'-XX") INDICATES ELEVATION RELATIVE TO TOP OF SLAB ELEVATION
2. SX INDICATES SLAB TYPE. SEE SLAB SCHEDULE ON THIS SHEET.
3. SEE THE FOLLOWING DRAWINGS FOR THE ITEMS NOTED:

GENERAL NOTES	S-001's
COLUMN/SHEAR WALL SCHEDULE & DETAILS	S-200's
TYPICAL DETAILS	S-300's
SECTIONS & DETAILS	S-400's
GEOMETRY PLAN	S-500's

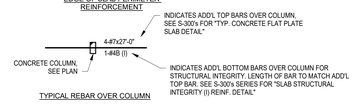
4. COORDINATE ALL SLAB OPENINGS WITH MECHANICAL SHOP DRAWINGS. PROVIDE REINFORCEMENT AT ALL OPENINGS AND SLAB EDGES AS PER THE TYPICAL DETAILS AND PLANS.
5. SEE ARCHITECTURAL EDGE OF SLAB DRAWINGS FOR ALL DIMENSIONS AND COORDINATES, U.O.N.



DIRECTION OF OUTER BARS



EDGE OF SLAB PERIMETER REINFORCEMENT



TYPICAL REBAR OVER COLUMN

LEGEND:

- ADDITIONAL TOP STEEL
- ADDITIONAL BOTTOM STEEL
- ADDITIONAL CONTINUOUS BOTTOM STEEL
- (#) INDICATES COLUMN NUMBER
- (#)W INDICATES WALKING COLUMN, SEE COLUMN SCHEDULE AND WALKING COLUMN TYPICAL DETAILS
- EDB INDICATES HSS6x4x3/8" ELEVATOR DIVIDER BEAM
- (P) INDICATES 14"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- (P1) INDICATES 10"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- INDICATES COLUMN BELOW / ABOVE
- INDICATES (0,0) COORDINATE LOCATION (CORNER OF PROPERTY LINE)
- INDICATES SLAB STRESS LINE
- INDICATES STEP IN FRAMED SLAB WITH DASHED BOTTOM OF SLAB EXTENTS. SEE S-300'S SERIES FOR TYPICAL STEP IN FRAMED SLAB DETAIL.
- HATCH INDICATES EITHER BUILT-UP STAIR, STAIR LANDING OR RAMP. COORDINATE ELEVATIONS W/ ARCHITECTURAL DRAWINGS. SEE S-300'S SERIES FOR "TYPICAL BUILT UP SLAB DETAIL".
- (X'-XX") INDICATES TRANSFER BEAM W/ (X'-XX") TOP OF BEAM ELEVATION. SEE TRANSFER BEAM SCHEDULE FOR ADD'L INFO.
- INDICATES SLAB SHEAR STIRRUP OR STUD RAIL REINFORCEMENT. SEE SCHEDULE, THIS SHEET.

SLAB STUD RAIL SCHEDULE

COL. #	STUD DIAMETER (IN)	STUD SPACING (IN)	# OF RAILS		STUD HEIGHT (IN)	TOTAL RAIL LENGTH (IN)	NOTES
			LONG SIDES	SHORT SIDES			
37, 53, 57, 58, 66	1/2	3	3	2	6 1/2	24	3" SPACING TO 1ST STUD
34, 35, 41, 52, 65, 214	1/2	3	3	3	6 1/2	24	3" SPACING TO 1ST STUD

NOTE:
1. SEE MANUFACTURER (DECON OR APPROVED EQUAL) FOR INSTALLATION INSTRUCTION.
2. SEE TYPICAL STUD RAIL REINFORCEMENT DETAILS ON S-300'S SERIES FOR ADDITIONAL INFORMATION.

CONCRETE SLAB SCHEDULE

SLAB MARK	SLAB THICKNESS	CONCRETE WEIGHT (PCF)	CONCRETE STRENGTH	TYPICAL SLAB REINFORCEMENT	NOTES:
S1	8"	150 - NWT	5000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S1A	10"	150 - NWT	5000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S2	8"	150 - NWT	6000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S3	10"	150 - NWT	6000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S4	8"	150 - NWT	8000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S5	12"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S6	14"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7	16"	150 - NWT	8000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7A	16"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINF. SLAB SHALL HAVE 2" TOP & 3/4" BOT. CLR. COVER. PROVIDE 3 GAL OF DCI CORROSION INHIBITOR PER CUBIC YARD OF CONC. MIX.
S8	18"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S9	20"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S10	22"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S11	26"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S12	8"	150 - NWT	10,000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S13	14"	150 - NWT	10,000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S14	16"	150 - NWT	10,000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S15	20"	150 - NWT	10,000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION

CONCRETE BEAM SCHEDULE

MARK	SIZE - WxD		REINFORCEMENT						NOTES:
	WIDTH	DEPTH	BOTTOM		TOP		SIDE***	STIRRUP		
			CONT	ADD'L	CONT	ADD'L	SIZE & SPACING	SIZE & SPACING	# OF LEGS	
B1	12"	**	3-#8	-	3-#8	-	-	#4@6" O.C.	2	EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B2	48"	36"	33-#9	-	33-#9	-	-	#4@6" O.C.	8	-
B3	8"	18"	2-#7	-	2-#7	-	-	#3@6" O.C.	1	T&B BARS PLACED IN 2 LAYERS. EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B4	26"	16"	5-#9	-	5-#9	-	-	#4@6" O.C.	2	

** BEAM DEPTH TO MATCH SLAB THICKNESS
*** PROVIDE #4@12" SIDE BARS FOR ALL BEAMS WITH DEPTH GREATER THAN 36", U.O.N.
NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION



OWNER:
CHARNEY COMPANIES
5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

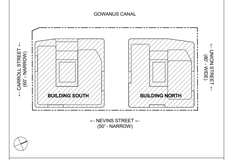
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 Ninth Avenue, Suite 902
New York, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

498 UNION ST.

BROOKLYN, NY 11217

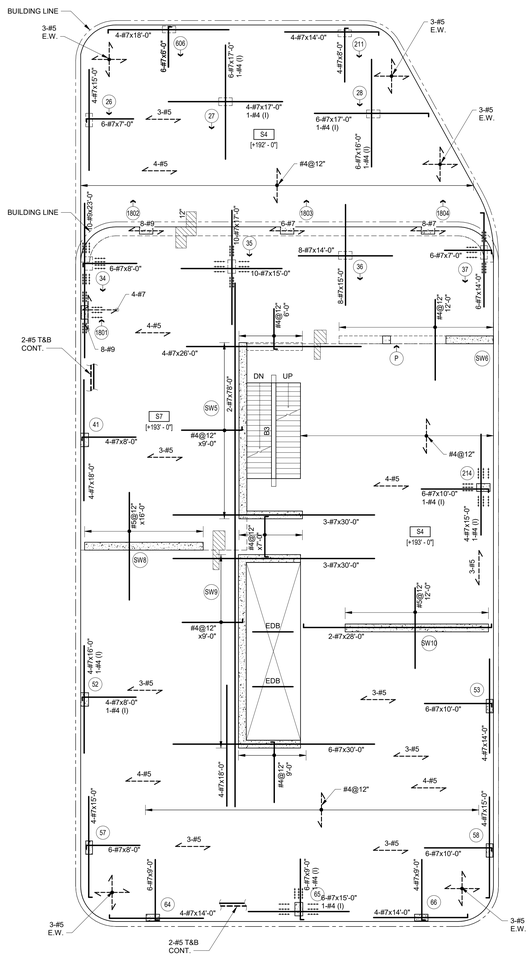
DRAWING TITLE:

11TH-17TH FLOOR FRAMING PLAN BUILDING B

SEAL & SIGNATURE:

STATE OF NEW YORK · GORDON AUYEUNG · 049857 · LICENSED PROFESSIONAL ENGINEER

DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-111B.00
PAGE No.:	26 OF 53



18TH FLOOR FRAMING PLAN
1/8" = 1'-0"

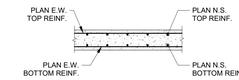


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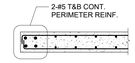
1. [XX'-XX"] INDICATES TOP OF SLAB ELEVATION RELATIVE TO NAVD88 DATUM.
   [±XX'-XX"] INDICATES ELEVATION RELATIVE TO TOP OF SLAB ELEVATION
2. SX INDICATES SLAB TYPE. SEE SLAB SCHEDULE ON THIS SHEET.
3. SEE THE FOLLOWING DRAWINGS FOR THE ITEMS NOTED:

GENERAL NOTES	S-001's
COLUMN/SHEAR WALL SCHEDULE & DETAILS	S-200's
TYPICAL DETAILS	S-300's
SECTIONS & DETAILS	S-400's
GEOMETRY PLAN	S-500's

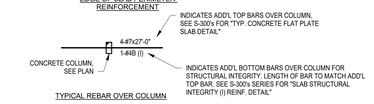
4. COORDINATE ALL SLAB OPENINGS WITH MECHANICAL SHOP DRAWINGS. PROVIDE REINFORCEMENT AT ALL OPENINGS AND SLAB EDGES AS PER THE TYPICAL DETAILS AND PLANS.
5. SEE ARCHITECTURAL EDGE OF SLAB DRAWINGS FOR ALL DIMENSIONS AND COORDINATES, U.O.N.



DIRECTION OF OUTER BARS



EDGE OF SLAB PERIMETER REINFORCEMENT



TYPICAL REBAR OVER COLUMN

LEGEND:

	ADDITIONAL TOP STEEL
	ADDITIONAL BOTTOM STEEL
	ADDITIONAL CONTINUOUS BOTTOM STEEL
#	INDICATES COLUMN NUMBER
# W	INDICATES WALKING COLUMN, SEE COLUMN SCHEDULE AND WALKING COLUMN TYPICAL DETAILS
EDB	INDICATES HSS6x4x3/8" ELEVATOR DIVIDER BEAM
P	INDICATES 14"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
P1	INDICATES 10"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
	INDICATES COLUMN BELOW / ABOVE
	INDICATES (0,0) COORDINATE LOCATION (CORNER OF PROPERTY LINE)
	INDICATES SLAB STRESS LINE
	INDICATES STEP IN FRAMED SLAB WITH DASHED BOTTOM OF SLAB EXTENTS. SEE S-300'S SERIES FOR TYPICAL STEP IN FRAMED SLAB DETAIL.
	HATCH INDICATES EITHER BUILT-UP STAIR, STAIR LANDING OR RAMP. COORDINATE ELEVATIONS W/ ARCHITECTURAL DRAWINGS. SEE S-300'S SERIES FOR "TYPICAL BUILT UP SLAB DETAIL".
(X'-XX")	INDICATES TRANSFER BEAM W/ (X'-XX") TOP OF BEAM ELEVATION. SEE TRANSFER BEAM SCHEDULE FOR ADD'L INFO.
	INDICATES SLAB SHEAR STIRRUP OR STUD RAIL REINFORCEMENT. SEE SCHEDULE, THIS SHEET.

SLAB STUD RAIL SCHEDULE

COL. #	STUD DIAMETER (IN)	STUD SPACING (IN)	# OF RAILS		STUD HEIGHT (IN)	TOTAL RAIL LENGTH (IN)	NOTES
			LONG SIDES	SHORT SIDES			
35	1/2	3	3	2	6 1/2	24	-
65, 214	1/2	3	3	3	6 1/2	24	-
1801	1/2	3	3	2	14 1/2	30	-
37	1/2	3	3	2	6 1/2	48	USE 6 1/2" HEIGHT AT 8" SLAB
34	1/2	3	4	3	VARIES	75	USE 14 1/2" HEIGHT AT 16" SLAB USE 18 1/2" HEIGHT AT 20" SLAB

NOTE:
1. SEE MANUFACTURER (DECON OR APPROVED EQUAL) FOR INSTALLATION INSTRUCTION.
2. SEE TYPICAL STUD RAIL REINFORCEMENT DETAILS ON S-300'S SERIES FOR ADDITIONAL INFORMATION.

CONCRETE SLAB SCHEDULE

SLAB MARK	SLAB THICKNESS	CONCRETE WEIGHT (PCF)	CONCRETE STRENGTH	TYPICAL SLAB REINFORCEMENT	NOTES:
S1	8"	150 - NWT	5000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S1A	10"	150 - NWT	5000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S2	8"	150 - NWT	6000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S3	10"	150 - NWT	6000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S4	8"	150 - NWT	8000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S5	12"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S6	14"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7	16"	150 - NWT	8000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7A	16"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINF. SLAB SHALL HAVE 2" TOP & 3/4" BOT. CLR. COVER. PROVIDE 3 GAL OF DCI CORROSION INHIBITOR PER CUBIC YARD OF CONC. MIX.
S8	18"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S9	20"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S10	22"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S11	26"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S12	8"	150 - NWT	10,000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S13	14"	150 - NWT	10,000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S14	16"	150 - NWT	10,000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S15	20"	150 - NWT	10,000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION

CONCRETE BEAM SCHEDULE

MARK	SIZE - WxD		REINFORCEMENT						NOTES:
	WIDTH	DEPTH	BOTTOM		TOP		SIDE***	STIRRUP	
			CONT.	ADD'L	CONT.	ADD'L	SIZE & SPACING	SIZE & SPACING # OF LEGS	
B1	12"	**	3-#8	-	3-#8	-	-	#4@6" O.C. 2	EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B2	48"	36"	33-#9	-	33-#9	-	-	#4@6" O.C. 8	-
B3	8"	18"	2-#7	-	2-#7	-	-	#3@6" O.C. 1	T&B BARS PLACED IN 2 LAYERS. EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B4	26"	16"	5-#9	-	5-#9	-	-	#4@6" O.C. 2	

** BEAM DEPTH TO MATCH SLAB THICKNESS
*** PROVIDE #4@12" SIDE BARS FOR ALL BEAMS WITH DEPTH GREATER THAN 36", U.O.N.
NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION



OWNER:
CHARNEY COMPANIES
5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101
TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

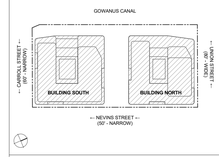
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 Ninth Avenue, Suite 902
New York, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



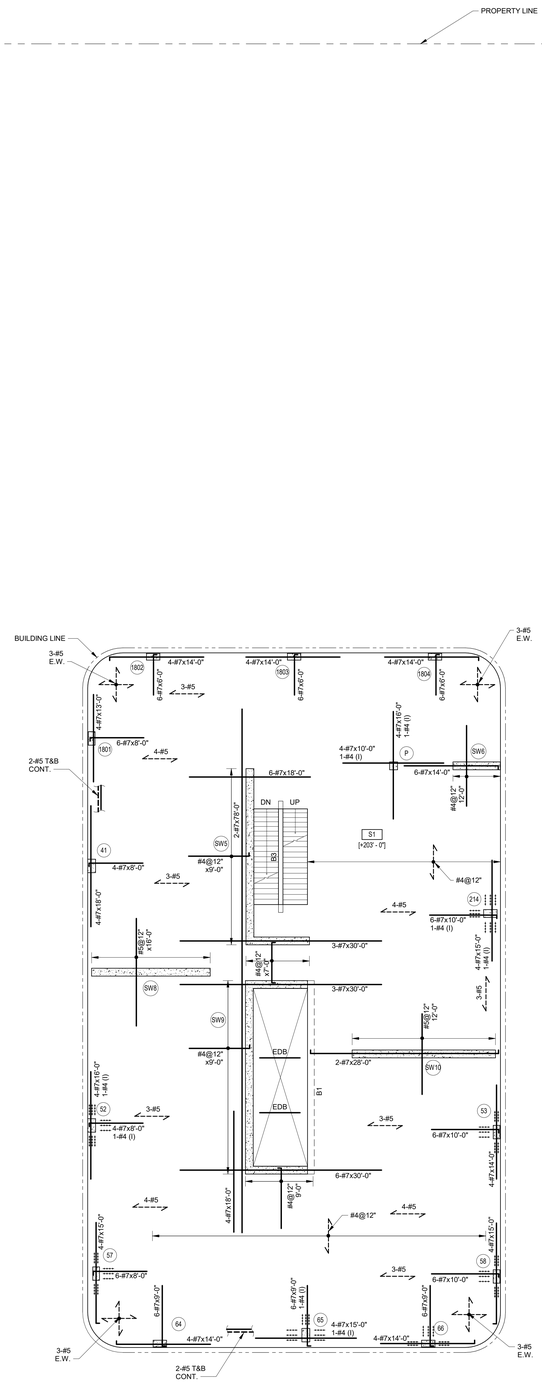
No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:
498 UNION ST.
BROOKLYN, NY 11217

DRAWING TITLE:
18TH FLOOR FRAMING PLAN BUILDING B

SEAL & SIGNATURE:
STATE OF NEW YORK · JOSEPH ADVERSINO · 088852 · LICENSED PROFESSIONAL ENGINEER

DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-118B.00
PAGE No.:	27 OF 53



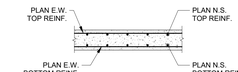
19TH -20TH FLOOR FRAMING PLAN
1/8" = 1'-0"

NOTES:

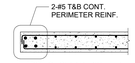
1. [XX'-XX"] INDICATES TOP OF SLAB ELEVATION RELATIVE TO NAVD88 DATUM.
   (±XX'-XX") INDICATES ELEVATION RELATIVE TO TOP OF SLAB ELEVATION
2. SX INDICATES SLAB TYPE. SEE SLAB SCHEDULE ON THIS SHEET.
3. SEE THE FOLLOWING DRAWINGS FOR THE ITEMS NOTED:

GENERAL NOTES	S-001's
COLUMN/SHEAR WALL SCHEDULE & DETAILS	S-200's
TYPICAL DETAILS	S-300's
SECTIONS & DETAILS	S-400's
GEOMETRY PLAN	S-500's

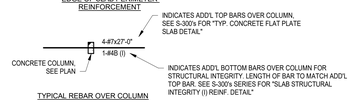
4. COORDINATE ALL SLAB OPENINGS WITH MECHANICAL SHOP DRAWINGS. PROVIDE REINFORCEMENT AT ALL OPENINGS AND SLAB EDGES AS PER THE TYPICAL DETAILS AND PLANS.
5. SEE ARCHITECTURAL EDGE OF SLAB DRAWINGS FOR ALL DIMENSIONS AND COORDINATES, U.O.N.



DIRECTION OF OUTER BARS



EDGE OF SLAB PERIMETER REINFORCEMENT



TYPICAL REBAR OVER COLUMN

LEGEND:

- ADDITIONAL TOP STEEL
- ADDITIONAL BOTTOM STEEL
- ADDITIONAL CONTINUOUS BOTTOM STEEL
- (#) INDICATES COLUMN NUMBER
- (#)W INDICATES WALKING COLUMN, SEE COLUMN SCHEDULE AND WALKING COLUMN TYPICAL DETAILS
- EDB INDICATES HSS6x4x3/8" ELEVATOR DIVIDER BEAM
- (P) INDICATES 14"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- (P1) INDICATES 10"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- INDICATES COLUMN BELOW / ABOVE
- INDICATES (0,0) COORDINATE LOCATION (CORNER OF PROPERTY LINE)
- INDICATES SLAB STRESS LINE
- INDICATES STEP IN FRAMED SLAB WITH DASHED BOTTOM OF SLAB EXTENTS. SEE S-300'S SERIES FOR TYPICAL STEP IN FRAMED SLAB DETAIL.
- HATCH INDICATES EITHER BUILT-UP STAIR, STAIR LANDING OR RAMP. COORDINATE ELEVATIONS W/ ARCHITECTURAL DRAWINGS. SEE S-300'S SERIES FOR "TYPICAL BUILT UP SLAB DETAIL".
- (X'-XX") INDICATES TRANSFER BEAM W/ (X'-XX") TOP OF BEAM ELEVATION. SEE TRANSFER BEAM SCHEDULE FOR ADD'L INFO.
- INDICATES SLAB SHEAR STIRRUP OR STUD RAIL REINFORCEMENT. SEE SCHEDULE, THIS SHEET.

SLAB STUD RAIL SCHEDULE

COL. #	STUD DIAMETER (IN)	STUD SPACING (IN)	# OF RAILS		STUD HEIGHT (IN)	TOTAL RAIL LENGTH (IN)	NOTES
			LONG SIDES	SHORT SIDES			
53, 57, 58, 66	1/2	3	3	2	6 1/2	24	-
52, 65, 214	1/2	3	3	3	6 1/2	24	-

NOTE:
1. SEE MANUFACTURER (DECON OR APPROVED EQUAL) FOR INSTALLATION INSTRUCTION.
2. SEE TYPICAL STUD RAIL REINFORCEMENT DETAILS ON S-300'S SERIES FOR ADDITIONAL INFORMATION.

CONCRETE SLAB SCHEDULE

SLAB MARK	SLAB THICKNESS	CONCRETE WEIGHT (PCF)	CONCRETE STRENGTH	TYPICAL SLAB REINFORCEMENT	NOTES:
S1	8"	150 - NWT	5000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S1A	10"	150 - NWT	5000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S2	8"	150 - NWT	6000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S3	10"	150 - NWT	6000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S4	8"	150 - NWT	8000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S5	12"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S6	14"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7	16"	150 - NWT	8000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7A	16"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINF. SLAB SHALL HAVE 2" TOP & 3/4" BOT. CLR. COVER. PROVIDE 3 GAL OF DCI CORROSION INHIBITOR PER CUBIC YARD OF CONC. MIX.
S8	18"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S9	20"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S10	22"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S11	26"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S12	8"	150 - NWT	10,000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S13	14"	150 - NWT	10,000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S14	16"	150 - NWT	10,000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S15	20"	150 - NWT	10,000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION

CONCRETE BEAM SCHEDULE

MARK	SIZE - WxD		REINFORCEMENT						NOTES:
	WIDTH	DEPTH	BOTTOM		TOP		SIDE***	STIRRUP	
			CONT.	ADD'L	CONT.	ADD'L	SIZE & SPACING	SIZE & SPACING # OF LEGS	
B1	12"	**	3-#8	-	3-#8	-	-	#4@6" O.C. 2	EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B2	48"	36"	33-#9	-	33-#9	-	-	#4@6" O.C. 8	-
B3	8"	18"	2-#7	-	2-#7	-	-	#3@6" O.C. 1	T&B BARS PLACED IN 2 LAYERS. EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B4	26"	16"	5-#9	-	5-#9	-	-	#4@6" O.C. 2	

** BEAM DEPTH TO MATCH SLAB THICKNESS
*** PROVIDE #4@12" SIDE BARS FOR ALL BEAMS WITH DEPTH GREATER THAN 36", U.O.N.
NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION



OWNER:
CHARNEY COMPANIES
5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101
TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

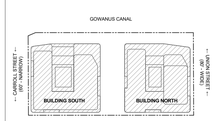
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 Ninth Avenue, Suite 902
New York, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



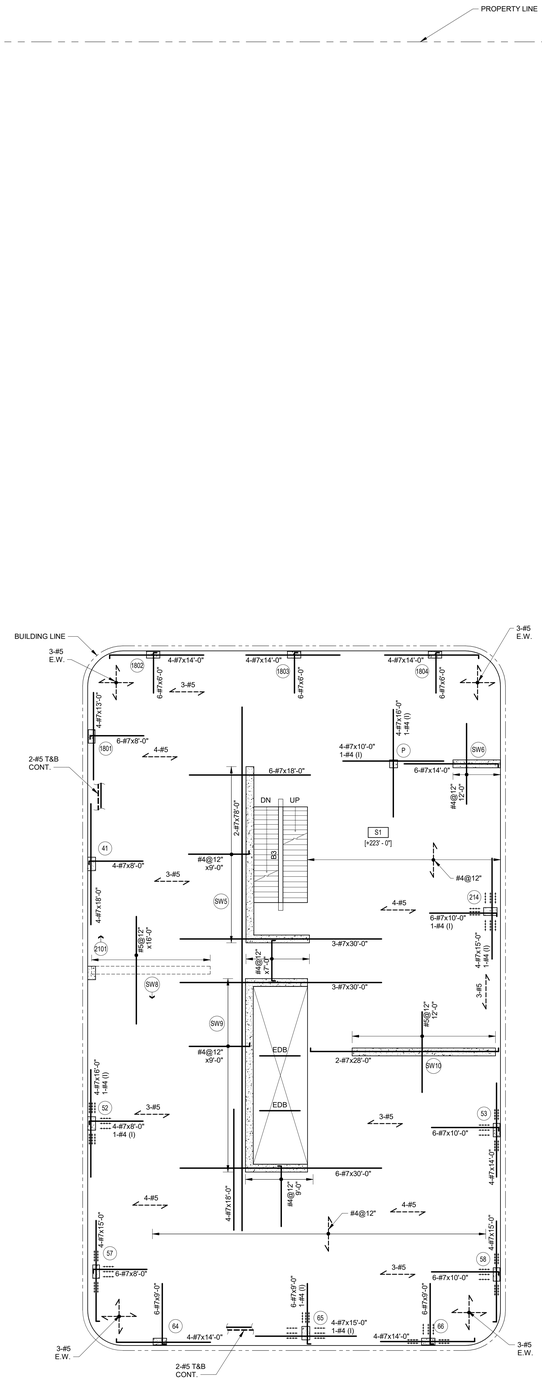
No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:
498 UNION ST.
BROOKLYN, NY 11217

DRAWING TITLE:
19TH-20TH FLOOR FRAMING PLAN BUILDING B

SEAL & SIGNATURE:
STATE OF NEW YORK · JOSEPH ADYEMPA · 088424 · LICENSED PROFESSIONAL ENGINEER

DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-119B.00
PAGE No.:	28 OF 53



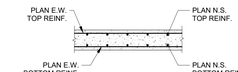
21TH FLOOR FRAMING PLAN
1/8" = 1'-0"

NOTES:

1. [XX'-XX"] INDICATES TOP OF SLAB ELEVATION RELATIVE TO NAVD88 DATUM.
   (±XX'-XX") INDICATES ELEVATION RELATIVE TO TOP OF SLAB ELEVATION
2. SX INDICATES SLAB TYPE. SEE SLAB SCHEDULE ON THIS SHEET.
3. SEE THE FOLLOWING DRAWINGS FOR THE ITEMS NOTED:

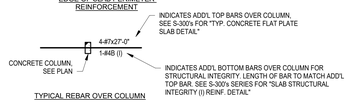
GENERAL NOTES	S-001's
COLUMN/SHEAR WALL SCHEDULE & DETAILS	S-200's
TYPICAL DETAILS	S-300's
SECTIONS & DETAILS	S-400's
GEOMETRY PLAN	S-500's

4. COORDINATE ALL SLAB OPENINGS WITH MECHANICAL SHOP DRAWINGS. PROVIDE REINFORCEMENT AT ALL OPENINGS AND SLAB EDGES AS PER THE TYPICAL DETAILS AND PLANS.
5. SEE ARCHITECTURAL EDGE OF SLAB DRAWINGS FOR ALL DIMENSIONS AND COORDINATES, U.O.N.



DIRECTION OF OUTER BARS

EDGE OF SLAB PERIMETER REINFORCEMENT



TYPICAL REBAR OVER COLUMN

LEGEND:

- ADDITIONAL TOP STEEL
- ADDITIONAL BOTTOM STEEL
- ADDITIONAL CONTINUOUS BOTTOM STEEL
- (#) INDICATES COLUMN NUMBER
- (#)W INDICATES WALKING COLUMN, SEE COLUMN SCHEDULE AND WALKING COLUMN TYPICAL DETAILS
- EDB INDICATES HSS6x4x3/8" ELEVATOR DIVIDER BEAM
- (P) INDICATES 14"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- (P1) INDICATES 10"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- INDICATES COLUMN BELOW / ABOVE
- INDICATES (0,0) COORDINATE LOCATION (CORNER OF PROPERTY LINE)
- INDICATES SLAB STRESS LINE
- INDICATES STEP IN FRAMED SLAB WITH DASHED BOTTOM OF SLAB EXTENTS. SEE S-300'S SERIES FOR TYPICAL STEP IN FRAMED SLAB DETAIL.
- HATCH INDICATES EITHER BUILT-UP STAIR, STAIR LANDING OR RAMP. COORDINATE ELEVATIONS W/ ARCHITECTURAL DRAWINGS. SEE S-300'S SERIES FOR "TYPICAL BUILT UP SLAB DETAIL".
- (X'-XX") INDICATES TRANSFER BEAM W/ (X'-XX") TOP OF BEAM ELEVATION. SEE TRANSFER BEAM SCHEDULE FOR ADD'L INFO.
- INDICATES SLAB SHEAR STIRRUP OR STUD RAIL REINFORCEMENT. SEE SCHEDULE, THIS SHEET.

SLAB STUD RAIL SCHEDULE

COL. #	STUD DIAMETER (IN)	STUD SPACING (IN)	# OF RAILS		STUD HEIGHT (IN)	TOTAL RAIL LENGTH (IN)	NOTES
			LONG SIDES	SHORT SIDES			
53, 57, 58, 66	1/2	3	3	2	6 1/2	24	-
52, 65, 214	1/2	3	3	3	6 1/2	24	-

NOTE:
1. SEE MANUFACTURER (DECON OR APPROVED EQUAL) FOR INSTALLATION INSTRUCTION.
2. SEE TYPICAL STUD RAIL REINFORCEMENT DETAILS ON S-300'S SERIES FOR ADDITIONAL INFORMATION.

CONCRETE SLAB SCHEDULE

SLAB MARK	SLAB THICKNESS	CONCRETE WEIGHT (PCF)	CONCRETE STRENGTH	TYPICAL SLAB REINFORCEMENT	NOTES:
S1	8"	150 - NWT	5000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S1A	10"	150 - NWT	5000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S2	8"	150 - NWT	6000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S3	10"	150 - NWT	6000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S4	8"	150 - NWT	8000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S5	12"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S6	14"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7	16"	150 - NWT	8000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7A	16"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINF. SLAB SHALL HAVE 2" TOP & 3/4" BOT. CLR. COVER. PROVIDE 3 GAL OF DCI CORROSION INHIBITOR PER CUBIC YARD OF CONC. MIX.
S8	18"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S9	20"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S10	22"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S11	26"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S12	8"	150 - NWT	10,000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S13	14"	150 - NWT	10,000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S14	16"	150 - NWT	10,000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S15	20"	150 - NWT	10,000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION

CONCRETE BEAM SCHEDULE

MARK	SIZE - WxD		REINFORCEMENT						NOTES:
	WIDTH	DEPTH	BOTTOM		TOP		SIDE***	STIRRUP		
			CONT.	ADD'L	CONT.	ADD'L	SIZE & SPACING	SIZE & SPACING	# OF LEGS	
B1	12"	**	3-#8	-	3-#8	-	-	#4@6" O.C.	2	EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B2	48"	36"	33-#9	-	33-#9	-	-	#4@6" O.C.	8	-
B3	8"	18"	2-#7	-	2-#7	-	-	#3@6" O.C.	1	T&B BARS PLACED IN 2 LAYERS. EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B4	26"	16"	5-#9	-	5-#9	-	-	#4@6" O.C.	2	

** BEAM DEPTH TO MATCH SLAB THICKNESS
*** PROVIDE #4@12" SIDE BARS FOR ALL BEAMS WITH DEPTH GREATER THAN 36", U.O.N.
NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION



OWNER:
CHARNEY COMPANIES
5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER architecture | interiors
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t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
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NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

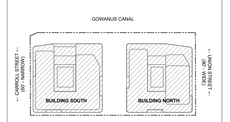
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
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CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



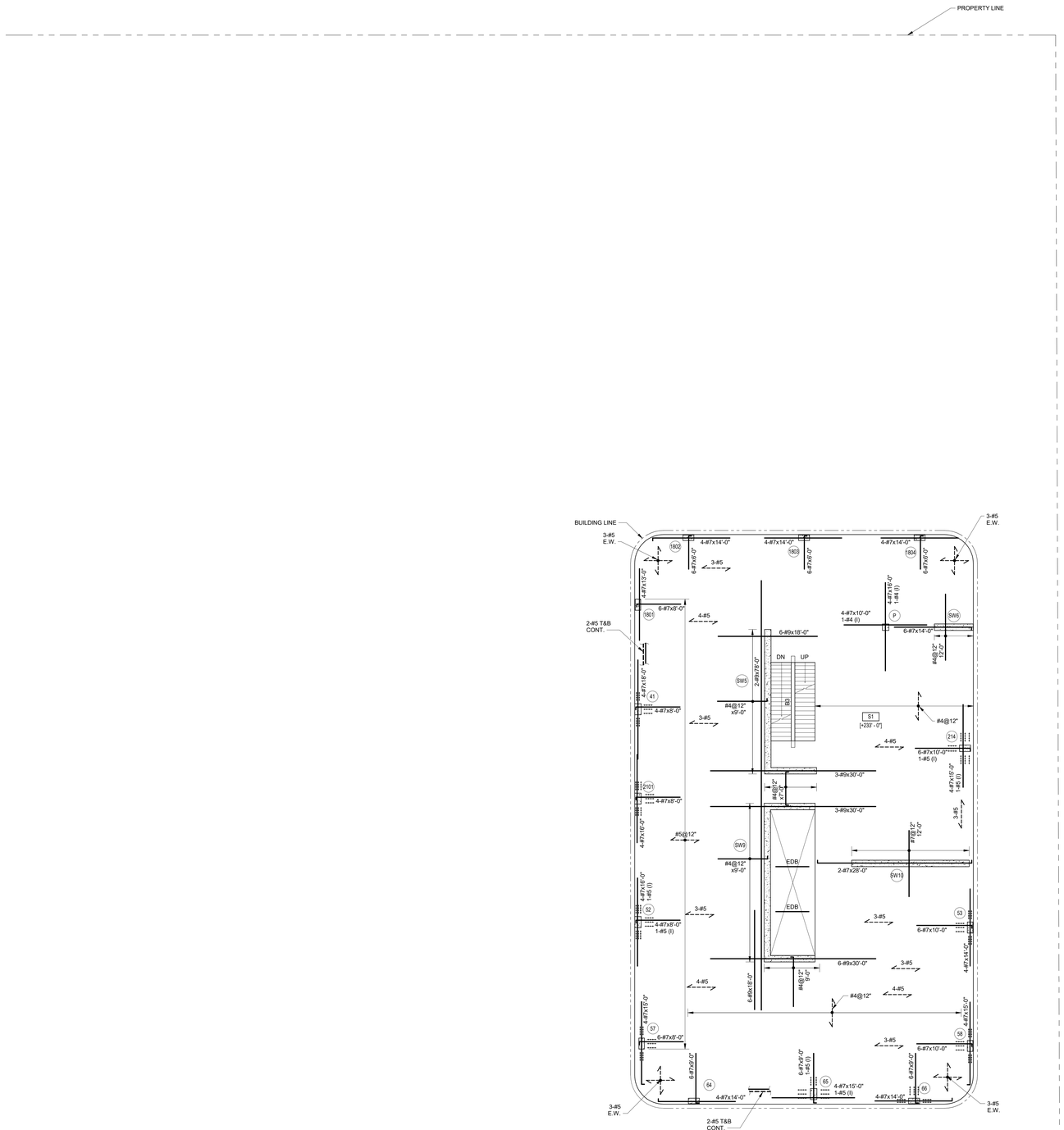
No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:
498 UNION ST.
BROOKLYN, NY 11217

DRAWING TITLE:
21ST FLOOR FRAMING PLAN BUILDING B

SEAL & SIGNATURE:
STATE OF NEW YORK · JOSEPH ADYEMPA · 088472 · LICENSED PROFESSIONAL ENGINEER

DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-121B.00
PAGE No.:	29 OF 53



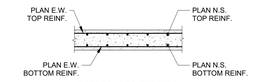
22TH FLOOR FRAMING PLAN
1/8" = 1'-0"

NOTES:

1. [XX'-XX"] INDICATES TOP OF SLAB ELEVATION RELATIVE TO NAVD88 DATUM.
   (±XX'-XX") INDICATES ELEVATION RELATIVE TO TOP OF SLAB ELEVATION
2. SX INDICATES SLAB TYPE. SEE SLAB SCHEDULE ON THIS SHEET.
3. SEE THE FOLLOWING DRAWINGS FOR THE ITEMS NOTED:

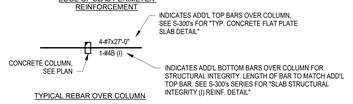
GENERAL NOTES	S-001's
COLUMN/SHEAR WALL SCHEDULE & DETAILS	S-200's
TYPICAL DETAILS	S-300's
SECTIONS & DETAILS	S-400's
GEOMETRY PLAN	S-500's

4. COORDINATE ALL SLAB OPENINGS WITH MECHANICAL SHOP DRAWINGS. PROVIDE REINFORCEMENT AT ALL OPENINGS AND SLAB EDGES AS PER THE TYPICAL DETAILS AND PLANS.
5. SEE ARCHITECTURAL EDGE OF SLAB DRAWINGS FOR ALL DIMENSIONS AND COORDINATES, U.O.N.



DIRECTION OF OUTER BARS

EDGE OF SLAB PERIMETER REINFORCEMENT



TYPICAL REBAR OVER COLUMN

LEGEND:

- ADDITIONAL TOP STEEL
- ADDITIONAL BOTTOM STEEL
- ADDITIONAL CONTINUOUS BOTTOM STEEL
- (#) INDICATES COLUMN NUMBER
- (#)W INDICATES WALKING COLUMN, SEE COLUMN SCHEDULE AND WALKING COLUMN TYPICAL DETAILS
- EDB INDICATES HSS6x4x3/8" ELEVATOR DIVIDER BEAM
- (P) INDICATES 14"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- (P1) INDICATES 10"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- INDICATES COLUMN BELOW / ABOVE
- INDICATES (0,0) COORDINATE LOCATION (CORNER OF PROPERTY LINE)
- INDICATES SLAB STRESS LINE
- INDICATES STEP IN FRAMED SLAB WITH DASHED BOTTOM OF SLAB EXTENTS. SEE S-300'S SERIES FOR TYPICAL STEP IN FRAMED SLAB DETAIL.
- HATCH INDICATES EITHER BUILT-UP STAIR, STAIR LANDING OR RAMP. COORDINATE ELEVATIONS W/ ARCHITECTURAL DRAWINGS. SEE S-300'S SERIES FOR "TYPICAL BUILT UP SLAB DETAIL".
- (X'-XX") INDICATES TRANSFER BEAM W/ (X'-XX") TOP OF BEAM ELEVATION. SEE TRANSFER BEAM SCHEDULE FOR ADD'L INFO.
- INDICATES SLAB SHEAR STIRRUP OR STUD RAIL REINFORCEMENT. SEE SCHEDULE, THIS SHEET.

SLAB STUD RAIL SCHEDULE

COL. #	STUD DIAMETER (IN)	STUD SPACING (IN)	# OF RAILS		STUD HEIGHT (IN)	TOTAL RAIL LENGTH (IN)	NOTES
			LONG SIDES	SHORT SIDES			
41, 53, 57, 58, 66	1/2	3	3	2	6 1/2	24	-
52, 65, 214, 2101	1/2	3	3	3	6 1/2	24	-

NOTE:
1. SEE MANUFACTURER (DECON OR APPROVED EQUAL) FOR INSTALLATION INSTRUCTION.
2. SEE TYPICAL STUD RAIL REINFORCEMENT DETAILS ON S-300'S SERIES FOR ADDITIONAL INFORMATION.

CONCRETE SLAB SCHEDULE

SLAB MARK	SLAB THICKNESS	CONCRETE WEIGHT (PCF)	CONCRETE STRENGTH	TYPICAL SLAB REINFORCEMENT	NOTES:
S1	8"	150 - NWT	5000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S1A	10"	150 - NWT	5000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S2	8"	150 - NWT	6000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S3	10"	150 - NWT	6000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S4	8"	150 - NWT	8000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S5	12"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S6	14"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7	16"	150 - NWT	8000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7A	16"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINF. SLAB SHALL HAVE 2" TOP & 3/4" BOT. CLR. COVER. PROVIDE 3 GAL OF DCI CORROSION INHIBITOR PER CUBIC YARD OF CONC. MIX.
S8	18"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S9	20"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S10	22"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S11	26"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S12	8"	150 - NWT	10,000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S13	14"	150 - NWT	10,000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S14	16"	150 - NWT	10,000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S15	20"	150 - NWT	10,000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION

CONCRETE BEAM SCHEDULE

MARK	SIZE - WxD		REINFORCEMENT						NOTES:
	WIDTH	DEPTH	BOTTOM		TOP		SIDE***	STIRRUP		
			CONT.	ADD'L	CONT.	ADD'L	SIZE & SPACING	SIZE & SPACING	# OF LEGS	
B1	12"	**	3-#8	-	3-#8	-	-	#4@6" O.C.	2	EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B2	48"	36"	33-#9	-	33-#9	-	-	#4@6" O.C.	8	-
B3	8"	18"	2-#7	-	2-#7	-	-	#3@6" O.C.	1	T&B BARS PLACED IN 2 LAYERS. EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B4	26"	16"	5-#9	-	5-#9	-	-	#4@6" O.C.	2	

** BEAM DEPTH TO MATCH SLAB THICKNESS
*** PROVIDE #4@12" SIDE BARS FOR ALL BEAMS WITH DEPTH GREATER THAN 36", U.O.N.
NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION



OWNER:
CHARNEY COMPANIES
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TAVROS HOLDINGS
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FOGARTY FINGER architecture | interiors
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STRUCTURAL ENGINEER:
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MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
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102 MADISON AVE #11
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4 BRYANT PARK,
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LANDSCAPE:
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BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
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ZONING SPECIALIST:
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New York, NY 10036

CODE CONSULTANT/ EXPEDITOR:
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299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



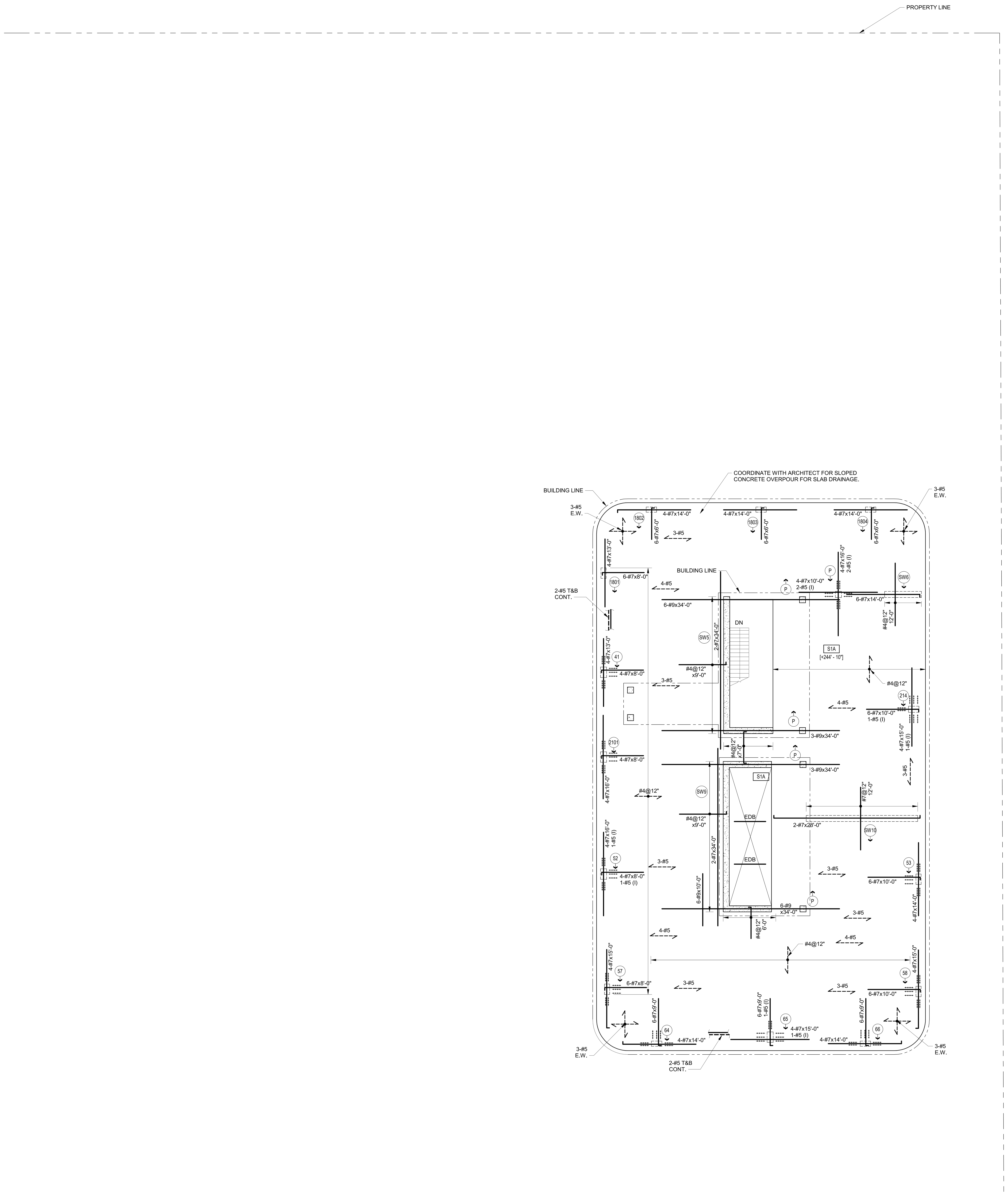
No.	DATE	ISSUE
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5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:
498 UNION ST.
BROOKLYN, NY 11217

DRAWING TITLE:
22TH FLOOR FRAMING PLAN BUILDING B

SEAL & SIGNATURE:
STATE OF NEW YORK · JOSEPH ADYEMPA · 090424 · LICENSED PROFESSIONAL ENGINEER

DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-122B.00
PAGE No.:	30 OF 53



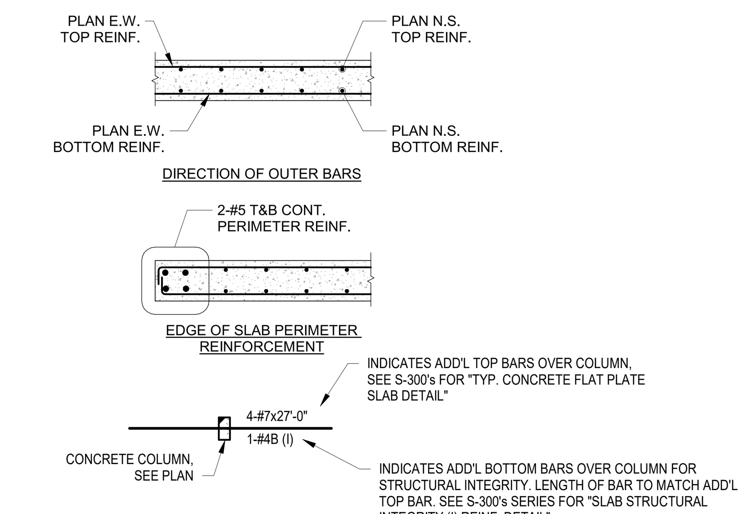
ROOF FRAMING PLAN
1/8" = 1'-0"

NOTES:

1. [XX'-XX"] INDICATES TOP OF SLAB ELEVATION RELATIVE TO NAVD88 DATUM.
{±XX'-XX"} INDICATES ELEVATION RELATIVE TO TOP OF SLAB ELEVATION
2. SX INDICATES SLAB TYPE. SEE SLAB SCHEDULE ON THIS SHEET.
3. SEE THE FOLLOWING DRAWINGS FOR THE ITEMS NOTED:

GENERAL NOTES	S-001's
COLUMN/SHEAR WALL SCHEDULE & DETAILS	S-200's
TYPICAL DETAILS	S-300's
SECTIONS & DETAILS	S-400's
GEOMETRY PLAN	S-500's

4. COORDINATE ALL SLAB OPENINGS WITH MECHANICAL SHOP DRAWINGS. PROVIDE REINFORCEMENT AT ALL OPENINGS AND SLAB EDGES AS PER THE TYPICAL DETAILS AND PLANS.
5. SEE ARCHITECTURAL EDGE OF SLAB DRAWINGS FOR ALL DIMENSIONS AND COORDINATES, U.O.N.



DIRECTION OF OUTER BARS

EDGE OF SLAB PERIMETER REINFORCEMENT

TYPICAL REBAR OVER COLUMN

LEGEND:

- ADDITIONAL TOP STEEL
- ADDITIONAL BOTTOM STEEL
- ADDITIONAL CONTINUOUS BOTTOM STEEL
- INDICATES COLUMN NUMBER
- INDICATES WALKING COLUMN, SEE COLUMN SCHEDULE AND WALKING COLUMN TYPICAL DETAILS
- EDB INDICATES HSS6x4x3/8" ELEVATOR DIVIDER BEAM
- INDICATES 14"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- INDICATES 10"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- INDICATES COLUMN BELOW / ABOVE
- INDICATES (0,0) COORDINATE LOCATION (CORNER OF PROPERTY LINE)
- INDICATES SLAB STRESS LINE
- INDICATES STEP IN FRAMED SLAB WITH DASHED BOTTOM OF SLAB EXTENTS. SEE S-300'S SERIES FOR TYPICAL STEP IN FRAMED SLAB DETAIL.
- HATCH INDICATES EITHER BUILT-UP STAIR, STAIR LANDING OR RAMP. COORDINATE ELEVATIONS W/ ARCHITECTURAL DRAWINGS. SEE S-300'S SERIES FOR "TYPICAL BUILT UP SLAB DETAIL".
- (X'-XX") INDICATES TRANSFER BEAM W/ (X'-XX") TOP OF BEAM ELEVATION. SEE TRANSFER BEAM SCHEDULE FOR ADD'L INFO.
- INDICATES SLAB SHEAR STIRRUP OR STUD RAIL REINFORCEMENT. SEE SCHEDULE, THIS SHEET.

SLAB STUD RAIL SCHEDULE

COL. #	STUD DIAMETER (IN)	STUD SPACING (IN)	# OF RAILS LONG SIDES	# OF RAILS SHORT SIDES	STUD HEIGHT (IN)	TOTAL RAIL LENGTH (IN)	NOTES
41, 52, 53, 57, 58, 64, 65, 66, 214, 2101	1/2	3	3	2	8 1/2	30	-
P	1/2	3	2	2	8 1/2	30	-

NOTE:
1. SEE MANUFACTURER (DECON OR APPROVED EQUAL) FOR INSTALLATION INSTRUCTION.
2. SEE TYPICAL STUD RAIL REINFORCEMENT DETAILS ON S-300'S SERIES FOR ADDITIONAL INFORMATION.

CONCRETE SLAB SCHEDULE

SLAB MARK	SLAB THICKNESS	CONCRETE WEIGHT (PCF)	CONCRETE STRENGTH	TYPICAL SLAB REINFORCEMENT	NOTES:
S1	8"	150 - NWT	5000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S1A	10"	150 - NWT	5000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S2	8"	150 - NWT	6000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S3	10"	150 - NWT	6000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S4	8"	150 - NWT	8000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S5	12"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S6	14"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7	16"	150 - NWT	8000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7A	16"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINF. SLAB SHALL HAVE 2" TOP & 3/4" BOT. CLR. COVER. PROVIDE 3 GAL OF DCI CORROSION INHIBITOR PER CUBIC YARD OF CONC. MIX.
S8	18"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S9	20"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S10	22"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S11	26"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S12	8"	150 - NWT	10,000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S13	14"	150 - NWT	10,000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S14	16"	150 - NWT	10,000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S15	20"	150 - NWT	10,000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION

CONCRETE BEAM SCHEDULE

MARK	SIZE - WxD WIDTH	SIZE - WxD DEPTH	BOTTOM CONT.	BOTTOM ADD'L	TOP CONT.	TOP ADD'L	SIDE*** SIZE & SPACING	STIRRUP SIZE & SPACING	STIRRUP # OF LEGS	NOTES:
B1	12"	**	3-#8	-	3-#8	-	-	#4@6" O.C.	2	EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B2	48"	36"	33-#9	-	33-#9	-	-	#4@6" O.C.	8	-
B3	8"	18"	2-#7	-	2-#7	-	-	#3@6" O.C.	1	T&B BARS PLACED IN 2 LAYERS. EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B4	26"	16"	5-#9	-	5-#9	-	-	#4@6" O.C.	2	

** BEAM DEPTH TO MATCH SLAB THICKNESS
*** PROVIDE #4@12" SIDE BARS FOR ALL BEAMS WITH DEPTH GREATER THAN 36", U.O.N.
NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION



OWNER:
CHARNEY COMPANIES
5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

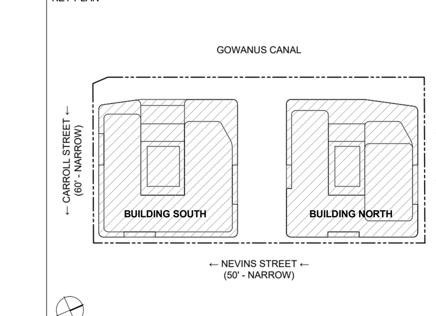
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 Ninth Avenue, Suite 902
New York, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

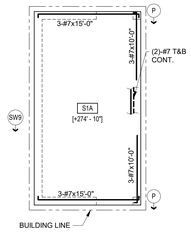
PROJECT:
498 UNION ST.
BROOKLYN, NY 11217

DRAWING TITLE:
ROOF FRAMING PLAN BUILDING B

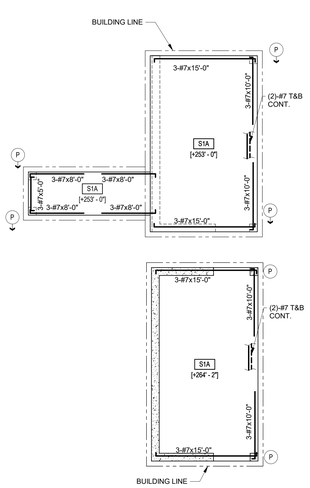
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DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-123B.00
PAGE No.:	31 OF 53



ELEVATOR BULKHEAD ROOF FRAMING PLAN
1/8" = 1'-0"



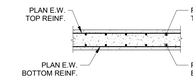
BULKHEAD FRAMING PLAN
1/8" = 1'-0"

NOTES:

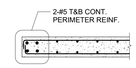
1. [XX'-XX"] INDICATES TOP OF SLAB ELEVATION RELATIVE TO NAVD88 DATUM.
   (±XX'-XX") INDICATES ELEVATION RELATIVE TO TOP OF SLAB ELEVATION
2. SX INDICATES SLAB TYPE. SEE SLAB SCHEDULE ON THIS SHEET.
3. SEE THE FOLLOWING DRAWINGS FOR THE ITEMS NOTED:

GENERAL NOTES	S-001's
COLUMN/SHEAR WALL SCHEDULE & DETAILS	S-200's
TYPICAL DETAILS	S-300's
SECTIONS & DETAILS	S-400's
GEOMETRY PLAN	S-500's

4. COORDINATE ALL SLAB OPENINGS WITH MECHANICAL SHOP DRAWINGS. PROVIDE REINFORCEMENT AT ALL OPENINGS AND SLAB EDGES AS PER THE TYPICAL DETAILS AND PLANS.
5. SEE ARCHITECTURAL EDGE OF SLAB DRAWINGS FOR ALL DIMENSIONS AND COORDINATES, U.O.N.



DIRECTION OF OUTER BARS



EDGE OF SLAB PERIMETER REINFORCEMENT



TYPICAL REBAR OVER COLUMN

LEGEND:

- ADDITIONAL TOP STEEL
- ADDITIONAL BOTTOM STEEL
- ADDITIONAL CONTINUOUS BOTTOM STEEL
- (#) INDICATES COLUMN NUMBER
- (#)W INDICATES WALKING COLUMN, SEE COLUMN SCHEDULE AND WALKING COLUMN TYPICAL DETAILS
- EDB INDICATES HSS6x4x3/8" ELEVATOR DIVIDER BEAM
- (P) INDICATES 14"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- (P1) INDICATES 10"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- INDICATES COLUMN BELOW / ABOVE
- INDICATES (0,0) COORDINATE LOCATION (CORNER OF PROPERTY LINE)
- INDICATES SLAB STRESS LINE
- INDICATES STEP IN FRAMED SLAB WITH DASHED BOTTOM OF SLAB EXTENTS. SEE S-300'S SERIES FOR TYPICAL STEP IN FRAMED SLAB DETAIL.
- HATCH INDICATES EITHER BUILT-UP STAIR, STAIR LANDING OR RAMP. COORDINATE ELEVATIONS W/ ARCHITECTURAL DRAWINGS. SEE S-300'S SERIES FOR "TYPICAL BUILT UP SLAB DETAIL".
- (X'-XX") INDICATES TRANSFER BEAM W/ (X'-XX") TOP OF BEAM ELEVATION. SEE TRANSFER BEAM SCHEDULE FOR ADD'L INFO.
- INDICATES SLAB SHEAR STIRRUP OR STUD RAIL REINFORCEMENT. SEE SCHEDULE, THIS SHEET.

CONCRETE SLAB SCHEDULE

SLAB MARK	SLAB THICKNESS	CONCRETE WEIGHT (PCF)	CONCRETE STRENGTH	TYPICAL SLAB REINFORCEMENT	NOTES:
S1	8"	150 - NWT	5000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S1A	10"	150 - NWT	5000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S2	8"	150 - NWT	6000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S3	10"	150 - NWT	6000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S4	8"	150 - NWT	8000 PSI	#4@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S5	12"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S6	14"	150 - NWT	8000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7	16"	150 - NWT	8000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S7A	16"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINF. SLAB SHALL HAVE 2" TOP & 3/4" BOT. CLR. COVER. PROVIDE 3 GAL OF DCI CORROSION INHIBITOR PER CUBIC YARD OF CONC. MIX.
S8	18"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S9	20"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S10	22"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S11	26"	150 - NWT	8000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S12	8"	150 - NWT	10,000 PSI	#5@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S13	14"	150 - NWT	10,000 PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S14	16"	150 - NWT	10,000PSI	#7@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT
S15	20"	150 - NWT	10,000 PSI	#9@12" O.C. EACH WAY, T&B	SEE PLAN FOR ADD'L REINFORCEMENT

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION

CONCRETE BEAM SCHEDULE

MARK	SIZE - WxD		REINFORCEMENT						NOTES:
	WIDTH	DEPTH	BOTTOM		TOP		SIDE***	STIRRUP		
			CONT	ADD'L	CONT	ADD'L	SIZE & SPACING	SIZE & SPACING	# OF LEGS	
B1	12"	**	3-#8	-	3-#8	-	-	#4@6" O.C.	2	EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B2	48"	36"	33-#9	-	33-#9	-	-	#4@6" O.C.	8	-
B3	8"	18"	2-#7	-	2-#7	-	-	#3@6" O.C.	1	T&B BARS PLACED IN 2 LAYERS. EXTEND TOP BARS 6'-0" BEYOND COLUMN/WALL
B4	26"	16"	5-#9	-	5-#9	-	-	#4@6" O.C.	2	

** BEAM DEPTH TO MATCH SLAB THICKNESS
*** PROVIDE #4@12" SIDE BARS FOR ALL BEAMS WITH DEPTH GREATER THAN 36", U.O.N.
NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION



OWNER:
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5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
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NEW YORK, NY 10010

ARCHITECT:
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STRUCTURAL ENGINEER:
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MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
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NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

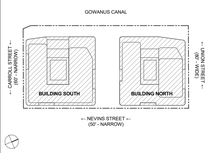
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
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New York, NY 10036

CODE CONSULTANT/EXPEDITOR:
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299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



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3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:
498 UNION ST.
BROOKLYN, NY 11217

DRAWING TITLE:
BULKHEAD FRAMING PLAN BUILDING B

SEAL & SIGNATURE:
STATE OF NEW YORK · STEVEN ALVEREZ · 088852 · LICENSED PROFESSIONAL ENGINEER

DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-124B.00
PAGE No.:	32 OF 53

COLUMN SCHEDULE

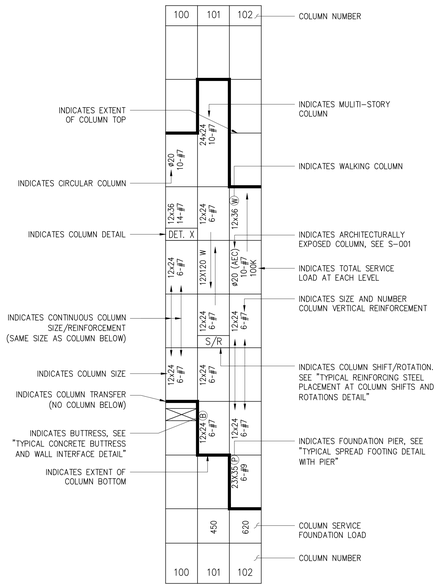
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BULKHEAD ROOF																																											
ROOF																																											
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5TH FLOOR										12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9		12x24 6-#9		12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	30x48 15-#9	12x24 6-#9	12x24 6-#9		12x48 W 12-#9		12x24 6-#9	14x24 8-#9	14x24 8-#9	14x24 6-#9	12x24 6-#9	28x30 12-#9		12x24 6-#9			14x24 6-#9	18x24 12-#9	14x24 8-#9	12x24 6-#9
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6,000 PSI CONCRETE

8,000 PSI CONCRETE

NOTES:

1. SEE PLAN FOR COLUMN ORIENTATION.
2. CONCRETE STRENGTH OF COLUMNS TO BE AS NOTED ON THE COLUMN SCHEDULE.
3. COLUMN LOADS INDICATED ARE FOR SERVICE LOADS IN KIP.
4. SEE TYPICAL DETAILS FOR ADDITIONAL INFORMATION.
5. ALL COLUMNS LOCATED IN PARKING AREAS SHALL BE CHAMFERED PER TYPICAL CONCRETE COLUMN DETAIL LOCATED IN THE S-300'S SERIES



COLUMN SCHEDULE LEGEND



OWNER:
CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
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ARCHITECT:
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FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
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5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
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LANDSCAPE:
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4 BRYANT PARK,
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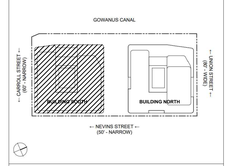
LANDSCAPE:
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339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
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6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
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NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:
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NEW YORK, NY 10007

KEY PLAN



DOB NOW JOB # B00611166-P1

No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

498 UNION ST.

BROOKLYN, NY 11217

DRAWING TITLE:

COLUMN SCHEDULE I

SEAL & SIGNATURE:



DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-200.01
PAGE No.:	33 OF 53

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COLUMN SCHEDULE

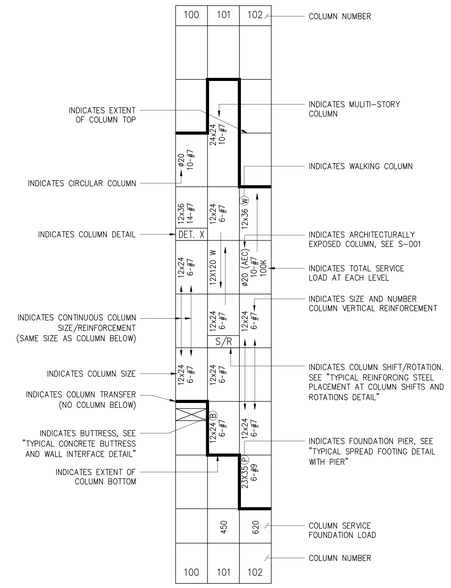
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BULKHEAD ROOF																																										
ROOF																																									
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10TH FLOOR																												12x24 6-#9													
9TH FLOOR															12x24 6-#9	12x24 6-#9					12x24 6-#9	12x24 6-#9						24x47 W 6-#9	14x24 8-#9	12x24 6-#9										
8TH FLOOR			12x24 6-#9		12x24 6-#9	12x24 6-#9		12x24 6-#9	12x24 6-#9	12x24 6-#9				12x24 6-#9	35x33 W 6-#9					14x24 8-#9	14x24 8-#9	14x24 8-#9			12x24 6-#9			14x24 8-#9	18x24 12-#9	14x24 8-#9										
7TH FLOOR															12x24 6-#9	12x24 6-#9			18x24 12-#9			14x24 8-#9																			
6TH FLOOR							14x24 8-#9				14x24 8-#9	12x24 6-#9																														
5TH FLOOR	12x24 6-#9	12x24 6-#9				12x24 6-#9								14x24 8-#9	12x24 6-#9	12x24 6-#9						14x24 8-#9						14x24 8-#9	18x24 12-#9	14x24 8-#9										
4TH FLOOR						14x24 6-#9								18x24 12-#9	14x24 8-#9													16x24 10-#9	20x24 16-#9	16x24 10-#9										
3RD FLOOR	12x24 6-#9						14x24 8-#9				14x24 8-#9														12x24 6-#9																
2ND FLOOR	28x41 W 6-#9	12x24 6-#9	12x24 6-#9	14x24 8-#9	12x24 6-#9 S/R	14x24 6-#9	14x54 W 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	14x54 W 6-#9	12x24 6-#9	12x24 6-#9	18x24 12-#9	14x24 8-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	14x24 8-#9	14x24 8-#9 S/R	12x24 6-#9	12x24 6-#9	12x46 W 6-#9	12x24 6-#9	12x24 6-#9	16x24 10-#9	20x24 16-#9	16x24 10-#9	12x24 6-#9									
1ST FLOOR	#26 9-#9	14x24 8-#9	14x24 8-#9	18x24 12-#9	14x24 8-#9	18x24 12-#9	#26 9-#9	18x24 12-#9	16x24 10-#9	18x24 12-#9	#26 9-#9	16x24 10-#9	14x24 8-#9	20x24 16-#9	20x24 16-#9	18x24 12-#9	16x24 10-#9	12x24 6-#9	18x24 12-#9	20x24 16-#9	20x24 16-#9	12x24 6-#9	16x24 10-#9	16x24 10-#9	18x24 12-#9	16x24 10-#9	22x24 16-#9	24x24 16-#9	22x24 16-#9	14x24 8-#9	#26 9-#9	14x24 8-#9	12x24 6-#9	12x24 6-#9	#26 9-#9	#26 9-#9	18x24 12-#9	#26 9-#9	16x24 10-#9	#26 9-#9
COLUMN SERVICE LOAD (KIPS)																																									
FLOOR \ COLUMN NO.	38	39	40	41	42	43	44	45	46	47	48	49	51A	51	52	53	54	55A	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77

6,000 PSI CONCRETE

8,000 PSI CONCRETE

NOTES:

1. SEE PLAN FOR COLUMN ORIENTATION.
2. CONCRETE STRENGTH OF COLUMNS TO BE AS NOTED ON THE COLUMN SCHEDULE.
3. COLUMN LOADS INDICATED ARE FOR SERVICE LOADS IN KIP.
4. SEE TYPICAL DETAILS FOR ADDITIONAL INFORMATION.
5. ALL COLUMNS LOCATED IN PARKING AREAS SHALL BE CHAMFERED PER TYPICAL CONCRETE COLUMN DETAIL LOCATED IN THE S-300'S SERIES



COLUMN SCHEDULE LEGEND



OWNER:
CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

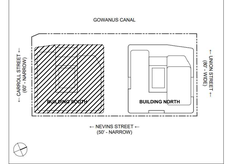
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLANS



DOB NOW JOB # B00611166-P1

No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

498 UNION ST.

BROOKLYN, NY 11217

DRAWING TITLE:

COLUMN SCHEDULE II

SEAL & SIGNATURE:



DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-201.00
PAGE No.:	34 OF 53

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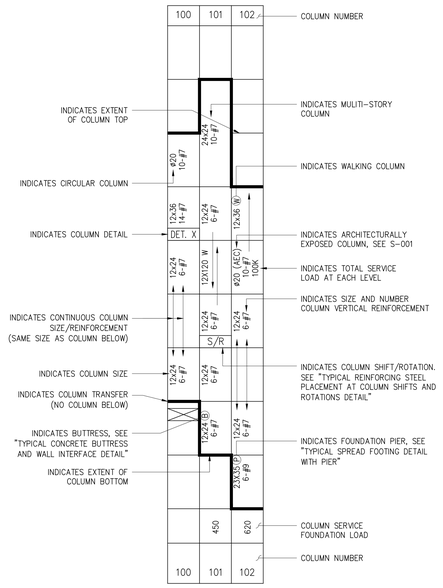
COLUMN SCHEDULE

FLOOR \ COLUMN NO.	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	218	219	220	221	222	223	224	225	226	227	228	601	602	603	604	605	606	607	608	609
BULKHEAD ROOF																																			
ROOF																																			
22ND FLOOR														14x24 8-#9																					
21ST FLOOR																																			
20TH FLOOR																																			
19TH FLOOR																																			
18TH FLOOR																																			
17TH FLOOR											12x24 6-#9																					12x24 6-#9			
16TH FLOOR																																			
15TH FLOOR																																			
14TH FLOOR																																			
13TH FLOOR																																			
12TH FLOOR																																			
11TH FLOOR																																			
10TH FLOOR																																			
9TH FLOOR																																			
8TH FLOOR														12x24 6-#9												12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9		12x24 6-#9	12x24 6-#9	12x24 6-#9
7TH FLOOR														14x24 8-#9																	12x24 6-#9				
6TH FLOOR											12x24 6-#9			18x24 10-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	24x26 W (6-#9 VAR)	12x24 6-#9	12x24 6-#9	12x24 6-#9
5TH FLOOR (8,000 PSI CONCRETE)	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	20x26 W	12x24 6-#9	12x24 6-#9	16x24 10-#9																		SWZ			
4TH FLOOR											12x24 6-#9			18x24 12-#9				12x24 6-#9																	
3RD FLOOR																																			
2ND FLOOR	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	18x24 12-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9									
1ST FLOOR																																			
COLUMN SERVICE LOAD (KIPS)																																			
FLOOR \ COLUMN NO.	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	218	219	220	221	222	223	224	225	226	227	228	601	602	603	604	605	606	607	608	609

6,000 PSI CONCRETE

NOTES:

1. SEE PLAN FOR COLUMN ORIENTATION.
2. CONCRETE STRENGTH OF COLUMNS TO BE AS NOTED ON THE COLUMN SCHEDULE.
3. COLUMN LOADS INDICATED ARE FOR SERVICE LOADS IN KIP.
4. SEE TYPICAL DETAILS FOR ADDITIONAL INFORMATION.
5. ALL COLUMNS LOCATED IN PARKING AREAS SHALL BE CHAMFERED PER TYPICAL CONCRETE COLUMN DETAIL LOCATED IN THE S-300'S SERIES



COLUMN SCHEDULE LEGEND



OWNER:
CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

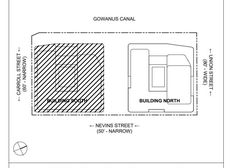
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLANS



DOB NOW JOB # B00611166-P1

No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

498 UNION ST.

BROOKLYN, NY 11217

DRAWING TITLE:

COLUMN SCHEDULE III

SEAL & SIGNATURE:



DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-202.00
PAGE No.:	35 OF 53

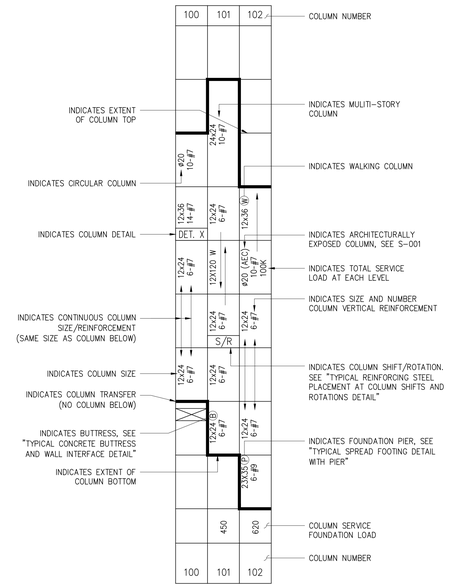
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COLUMN SCHEDULE

FLOOR \ COLUMN NO.	701	702	703	704	705	706	707	709	710	711	712	713	714	1801	1802	1803	1804	2101
BULKHEAD ROOF																		
ROOF																		
22ND FLOOR														12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	14x24 8-#9
21ST FLOOR																		14x24 8-#9
20TH FLOOR																		
19TH FLOOR																		
18TH FLOOR														12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	
17TH FLOOR																		
16TH FLOOR (6,000 PSI CONCRETE)																		
15TH FLOOR																		
14TH FLOOR																		
13TH FLOOR																		
12TH FLOOR																		
11TH FLOOR																		
10TH FLOOR																		
9TH FLOOR																		
8TH FLOOR	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	16x24 10-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9					
7TH FLOOR	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	16x24 10-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9					
6TH FLOOR																		
5TH FLOOR (8,000 PSI CONCRETE)																		
4TH FLOOR																		
3RD FLOOR																		
2ND FLOOR																		
1ST FLOOR																		
COLUMN SERVICE LOAD (KIPS)																		
FLOOR \ COLUMN NO.	701	702	703	704	705	706	707	709	710	711	712	713	714	1801	1802	1803	1804	2101

NOTES:

1. SEE PLAN FOR COLUMN ORIENTATION.
2. CONCRETE STRENGTH OF COLUMNS TO BE AS NOTED ON THE COLUMN SCHEDULE.
3. COLUMN LOADS INDICATED ARE FOR SERVICE LOADS IN KIP.
4. SEE TYPICAL DETAILS FOR ADDITIONAL INFORMATION.
5. ALL COLUMNS LOCATED IN PARKING AREAS SHALL BE CHAMFERED PER TYPICAL CONCRETE COLUMN DETAIL LOCATED IN THE S-300'S SERIES



COLUMN SCHEDULE LEGEND



OWNER:
CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

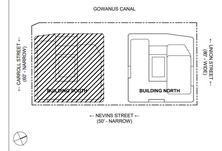
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



DOB NOW JOB # B00611166-P1

No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

498 UNION ST.
BROOKLYN, NY 11217

DRAWING TITLE:

COLUMN SCHEDULE IV

SEAL & SIGNATURE:



DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-203.00
PAGE No.:	36 OF 53

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CONCRETE SHEAR WALL "ZONE" VERTICAL REINFORCEMENT SCHEDULE

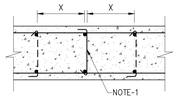
MARK / LEVELS	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5	ZONE 6	ZONE 7	ZONE 8	ZONE 9	ZONE 10	ZONE 11	ZONE 12	ZONE 13	ZONE 14	ZONE 14A
1ST TO MEZZANINE	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	10-#9	10-#9	10-#9	10-#9	8-#9	8-#9	8-#9	6-#9	-
MEZZANINE TO 2ND FLOOR	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	10-#9	10-#9	10-#9	10-#9	6-#9	6-#9	-	6-#9	6-#9
2ND TO 6TH FLOOR	6-#9	6-#9	6-#9	6-#9	-	-	8-#9	8-#9	6-#9	6-#9	6-#9	6-#9	4-#9	4-#9	-
6TH TO 9TH FLOOR	-	-	-	-	-	-	-	-	6-#9	6-#9	6-#9	6-#9	4-#9	4-#9	-
9TH FLOOR TO BULKHEAD	-	-	-	-	-	-	-	-	4-#9	4-#9	6-#9	6-#9	4-#9	4-#9	-

NON-"ZONE" REINFORCING SCHEDULE

WALL THICKNESS	TIES IN "ZONE"	HORIZ. REBAR	NON-"ZONE" VERT. REBAR
12" WALL	#4 @ 12"	#4 @ 12"	#4 @ 12"
14" WALL	#4 @ 12"	#5 @ 12"	#5 @ 12"
16" WALL	#4 @ 12"	#5 @ 12"	#5 @ 12"
36" WALL			

NOTES:

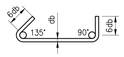
1. SHEAR WALLS SHALL HAVE $f'c$ = 8,000 PSI FROM LOWEST LEVEL TO 9TH FLOOR, AND $f'c$ = 6,000 PSI FROM 9TH FLOOR TO HIGHEST LEVEL.
2. SEE SHEAR WALL DETAILS ON S-220 FOR ZONE REINFORCEMENT SPACING.
3. SHEAR WALL VERTICAL REINFORCEMENT OUTSIDE "ZONE" AREA AND SHEAR WALL HORIZONTAL REINFORCEMENT TO BE AS INDICATED IN SCHEDULE, U.O.N.
4. ALL SHEAR WALL REINFORCEMENT LAP SPLICES ARE STANDARD TENSION SPLICES U.O.N.
5. PROVIDE TIES AND CROSS TIES WITHIN BOUNDARY ZONE AS PER SHEAR WALL TIE DETAIL.
6. SEE PLAN FOR SHEAR WALL LENGTH AND LOCATION.
7. SEE S-220 FOR TYPICAL SHEAR WALL DETAILS.
8. FOR SHEAR WALLS AT ELEVATORS, CONTRACTOR SHALL COORDINATE ALL EMBEDMENT PLATES AND BEAM POCKETS WITH ELEVATOR SHOP DRAWINGS.
9. FOR SHEAR WALLS COINCIDENTAL WITH FOUNDATION WALLS, PROVIDE THE LARGER SIZE AND SMALLER SPACING OF THE SHEAR WALL OR FOUNDATION WALL REINFORCEMENT AT EACH FACE, EACH DIRECTION.



SHEAR WALL TIE DETAIL

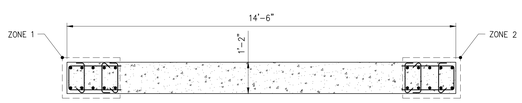
NOTES:

1. ALTERNATE TIES MAY BE OMITTED WHERE CLEAR DISTANCE "X" IS 6" OR LESS.
2. SHEAR WALL TIE REINFORCEMENT TO BE AS INDICATED IN SCHEDULE.

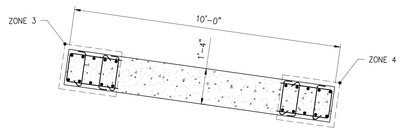


SUPPLEMENTARY CROSS TIES

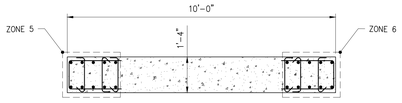
(ALTERNATE 90° AND 135° ENDS ON CONSECUTIVE CROSS TIES)



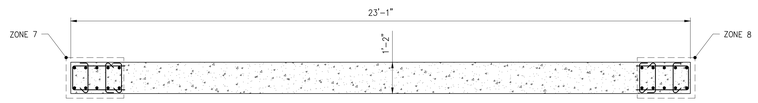
SHEAR WALL 1
1ST TO 6TH FLOOR



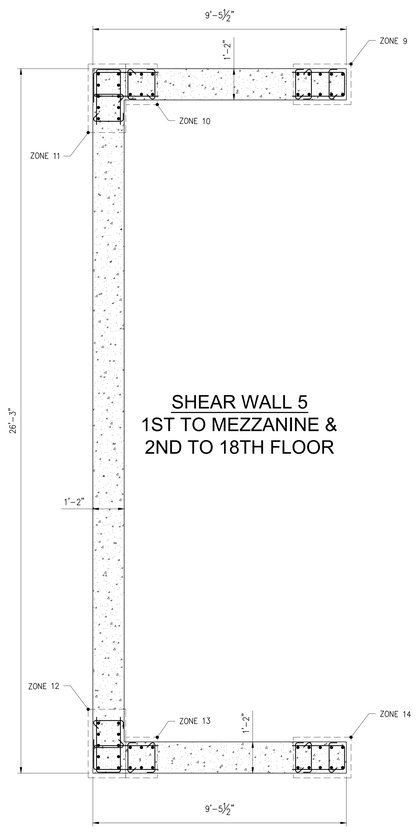
SHEAR WALL 2
1ST TO 6TH FLOOR



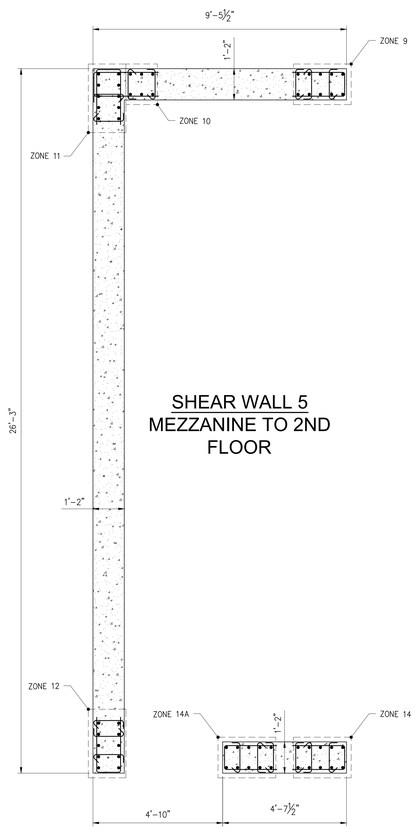
SHEAR WALL 3
1ST TO 2ND FLOOR



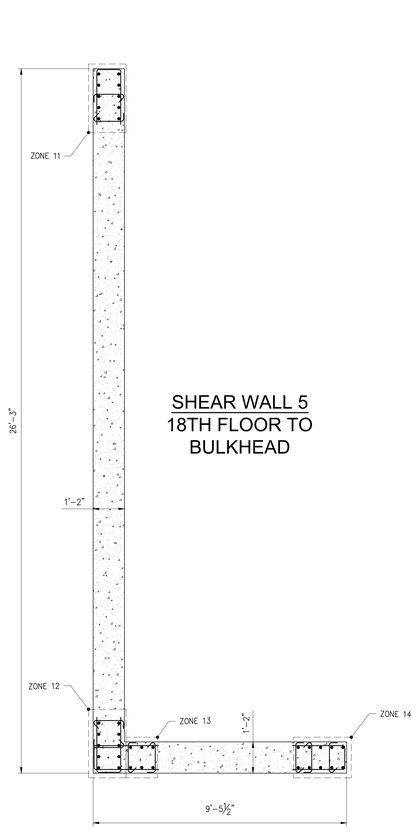
SHEAR WALL 4
1ST TO 9TH FLOOR



SHEAR WALL 5
1ST TO MEZZANINE &
2ND TO 18TH FLOOR



SHEAR WALL 5
MEZZANINE TO 2ND
FLOOR



SHEAR WALL 5
18TH FLOOR TO
BULKHEAD



OWNER:

CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:

FOGARTY FINGER
architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:

TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:

ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:

SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:

JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:

BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:

BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:

PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:

JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

LANDSCAPE:

GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:

GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

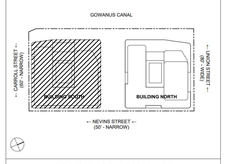
ZONING SPECIALIST:

DEVELOPMENT CONSULTING SERVICES
630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:

WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN:



DOB NOW JOB # B00611166-P1

No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

498 UNION ST.
BROOKLYN, NY 11217

DRAWING TITLE:

SHEAR WALL SCHEDULE I

SEAL & SIGNATURE:

STATE OF NEW YORK
VISION AUTHORIZATION
LICENSED PROFESSIONAL ENGINEER
OSBORN

DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-210.00
PAGE No.:	37 OF 53

I:\PROJECTS\2021\TJ21395.01 - 300 NEVINS STREET, BROOKLYN, NY 11215\DWGS\STRUCTWORK\NG\CADT\TJ21395.01 S-200S.DWG

CONCRETE SHEAR WALL "ZONE" VERTICAL REINFORCEMENT SCHEDULE

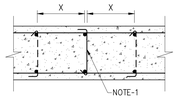
LEVELS \ MARK	ZONE 15	ZONE 15A	ZONE 16	ZONE 17	ZONE 17A	ZONE 18	ZONE 19	ZONE 20	ZONE 21	ZONE 22
1ST TO 2ND FLOOR	30-#9	-	30-#9	-	-	-	6-#9	6-#9	6-#9	6-#9
2ND TO 6TH FLOOR	26-#9	-	26-#9	-	-	-			6-#9	6-#9
6TH TO 7TH FLOOR	8-#9	8-#9	-	16-#10	16-#10	-	-	-	6-#9	6-#9
7TH TO 9TH FLOOR	14-#9	-	-	14-#9	-	-	-	-	6-#9	6-#9
9TH TO 10TH FLOOR	8-#9	8-#9	-	12-#9	12-#9	-	-	-	6-#9	6-#9
10TH TO 18TH FLOOR	10-#9	-	-	10-#9	-	-	-	-	6-#9	6-#9
18TH FLOOR TO BULKHEAD	-	-	-	4-#9	-	4-#9	-	-	4-#9	4-#9

NON-"ZONE" REINFORCING SCHEDULE

WALL THICKNESS	TIES IN "ZONE"	HORIZ. REBAR	NON-"ZONE" VERT. REBAR
12" WALL	#4 @ 12"	#4 @ 12"	#4 @ 12"
14" WALL	#4 @ 12"	#5 @ 12"	#5 @ 12"
16" WALL	#4 @ 12"	#5 @ 12"	#5 @ 12"
36" WALL			

NOTES:

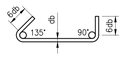
1. SHEAR WALLS SHALL HAVE $f'c$ = 8,000 PSI FROM LOWEST LEVEL TO 9TH FLOOR, AND $f'c$ = 6,000 PSI FROM 9TH FLOOR TO HIGHEST LEVEL.
2. SEE SHEAR WALL DETAILS ON S-220 FOR ZONE REINFORCEMENT SPACING.
3. SHEAR WALL VERTICAL REINFORCEMENT OUTSIDE "ZONE" AREA AND SHEAR WALL HORIZONTAL REINFORCEMENT TO BE AS INDICATED IN SCHEDULE, U.O.N.
4. ALL SHEAR WALL REINFORCEMENT LAP SPLICES ARE STANDARD TENSION SPLICES U.O.N.
5. PROVIDE TIES AND CROSS TIES WITHIN BOUNDARY ZONE AS PER SHEAR WALL TIE DETAIL.
6. SEE PLAN FOR SHEAR WALL LENGTH AND LOCATION.
7. SEE S-220 FOR TYPICAL SHEAR WALL DETAILS.
8. FOR SHEAR WALLS AT ELEVATORS, CONTRACTOR SHALL COORDINATE ALL EMBEDMENT PLATES AND BEAM POCKETS WITH ELEVATOR SHOP DRAWINGS.
9. FOR SHEAR WALLS COINCIDENTAL WITH FOUNDATION WALLS, PROVIDE THE LARGER SIZE AND SMALLER SPACING OF THE SHEAR WALL OR FOUNDATION WALL REINFORCEMENT AT EACH FACE, EACH DIRECTION.



SHEAR WALL TIE DETAIL

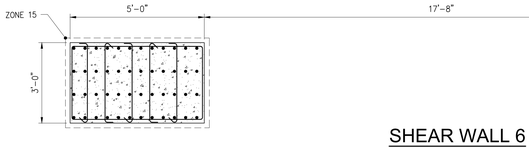
NOTES:

1. ALTERNATE TIES MAY BE OMITTED WHERE CLEAR DISTANCE "X" IS 6" OR LESS.
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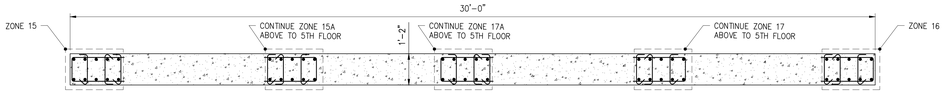


SUPPLEMENTARY CROSS TIES

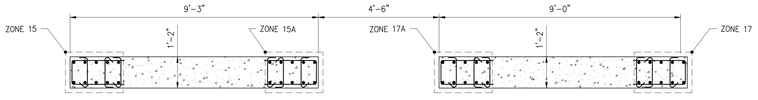
(ALTERNATE 90° AND 135° ENDS ON CONSECUTIVE CROSS TIES)



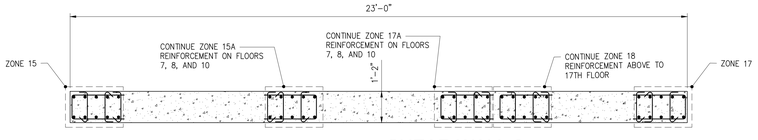
SHEAR WALL 6
1ST TO 2ND FLOOR



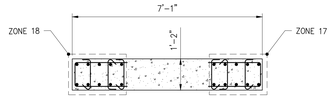
SHEAR WALL 6
2ND TO 6TH FLOOR



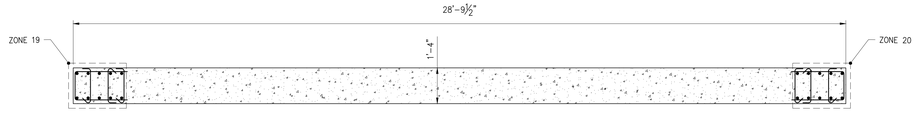
SHEAR WALL 6
6TH TO 7TH FLOOR &
9TH TO 10TH FLOOR



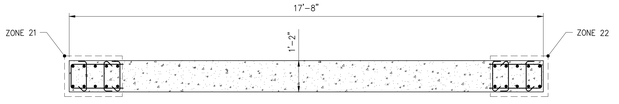
SHEAR WALL 6
7TH TO 9TH FLOOR &
10TH TO 18TH FLOOR



SHEAR WALL 6
18TH TO 21ST FLOOR



SHEAR WALL 7
1ST TO 2ND FLOOR



SHEAR WALL 8
1ST TO 21ST FLOOR



OWNER:

CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:

FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:

TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:

ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:

SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:

JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:

BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:

BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:

PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:

JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

LANDSCAPE:

GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:

GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

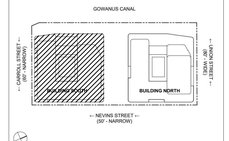
ZONING SPECIALIST:

DEVELOPMENT CONSULTING SERVICES
630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:

WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



DOB NOW JOB # B00611166-P1

No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

498 UNION ST.
BROOKLYN, NY 11217

DRAWING TITLE:

SHEAR WALL SCHEDULE II

SEAL & SIGNATURE:

STATE OF NEW YORK — KEVIN C. AUYEUNG — 090501 — LICENSED PROFESSIONAL ENGINEER

DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	T.021395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-211.00
PAGE No.:	38 OF 53

I:\PROJECTS\2021\T.021395.01 - 300 NEVINS STREET, BROOKLYN, NY 11215\DWGS\STRUCT\WORKING\CAD\T.021395.01 S-200S.DWG

CONCRETE SHEAR WALL "ZONE" VERTICAL REINFORCEMENT SCHEDULE

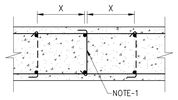
MARK / LEVELS	ZONE 23	ZONE 24	ZONE 25	ZONE 25A	ZONE 26A	ZONE 26	ZONE 27	ZONE 28	ZONE 29	ZONE 29A	ZONE 29B	ZONE 30	ZONE 30A	ZONE 31	ZONE 31A
1ST TO MEZZANINE	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	24-#9	-	-	24-#9	-	-	-
MEZZANINE TO 2ND FLOOR	6-#9	6-#9	6-#9	-	-	6-#9	6-#9	6-#9	24-#9	-	-	24-#9	-	-	-
2ND TO 4TH FLOOR	6-#9	6-#9	4-#9	-	-	6-#9	6-#9	6-#9	14-#9	14-#9	-	10-#9	10-#10	10-#10	-
4TH TO 7TH FLOOR	4-#9	4-#9	4-#9	-	-	6-#9	6-#9	6-#9	6-#9	6-#9	-	-	8-#9	8-#9	-
7TH TO 11TH FLOOR	4-#9	4-#9	4-#9	-	-	6-#9	16-#9	16-#9	12-#9	-	12-#9	-	-	12-#9	12-#9
11TH TO 12TH FLOOR	4-#9	4-#9	4-#9	-	-	4-#9	4-#9	4-#9	6-#9	-	-	-	-	6-#9	-
12TH FLOOR TO BULKHEAD	4-#9	4-#9	4-#9	-	-	4-#9	4-#9	4-#9	4-#9	-	-	-	-	4-#9	-

NON-"ZONE" REINFORCING SCHEDULE

WALL THICKNESS	TIES IN "ZONE"	HORIZ. REBAR	NON-"ZONE" VERT. REBAR
12" WALL	#4 @ 12"	#4 @ 12"	#4 @ 12"
14" WALL	#4 @ 12"	#5 @ 12"	#5 @ 12"
16" WALL	#4 @ 12"	#5 @ 12"	#5 @ 12"
36" WALL			

NOTES:

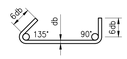
1. SHEAR WALLS SHALL HAVE $f'c$ = 8,000 PSI FROM LOWEST LEVEL TO 9TH FLOOR, AND $f'c$ = 6,000 PSI FROM 9TH FLOOR TO HIGHEST LEVEL.
2. SEE SHEAR WALL DETAILS ON S-220 FOR ZONE REINFORCEMENT SPACING.
3. SHEAR WALL VERTICAL REINFORCEMENT OUTSIDE "ZONE" AREA AND SHEAR WALL HORIZONTAL REINFORCEMENT TO BE AS INDICATED IN SCHEDULE, U.O.N.
4. ALL SHEAR WALL REINFORCEMENT LAP SPLICES ARE STANDARD TENSION SPLICES U.O.N.
5. PROVIDE TIES AND CROSS TIES WITHIN BOUNDARY ZONE AS PER SHEAR WALL TIE DETAIL.
6. SEE PLAN FOR SHEAR WALL LENGTH AND LOCATION.
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8. FOR SHEAR WALLS AT ELEVATORS, CONTRACTOR SHALL COORDINATE ALL EMBEDMENT PLATES AND BEAM POCKETS WITH ELEVATOR SHOP DRAWINGS.
9. FOR SHEAR WALLS COINCIDENTAL WITH FOUNDATION WALLS, PROVIDE THE LARGER SIZE AND SMALLER SPACING OF THE SHEAR WALL OR FOUNDATION WALL REINFORCEMENT AT EACH FACE, EACH DIRECTION.



SHEAR WALL TIE DETAIL

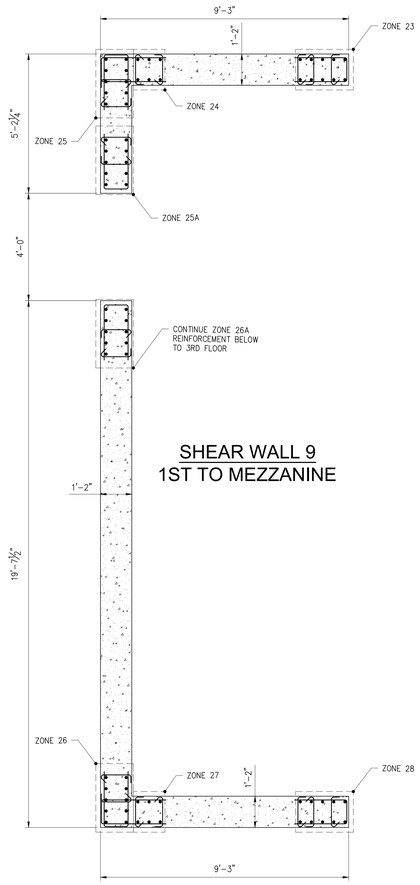
NOTES:

1. ALTERNATE TIES MAY BE OMITTED WHERE CLEAR DISTANCE "X" IS 6" OR LESS.
2. SHEAR WALL TIE REINFORCEMENT TO BE AS INDICATED IN SCHEDULE.

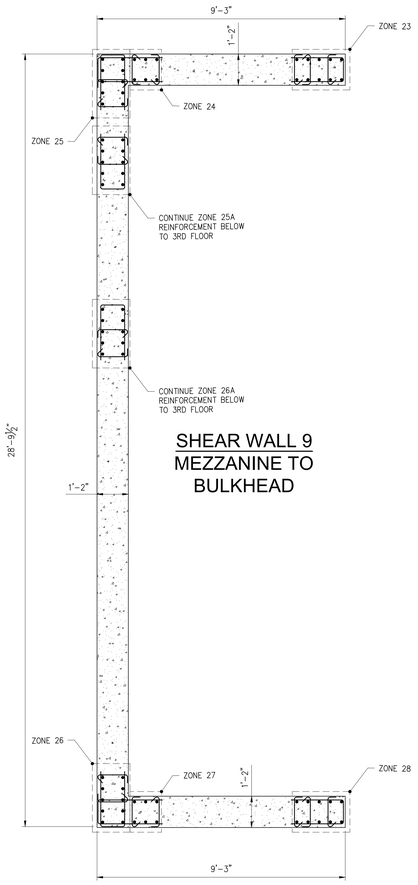


SUPPLEMENTARY CROSS TIES

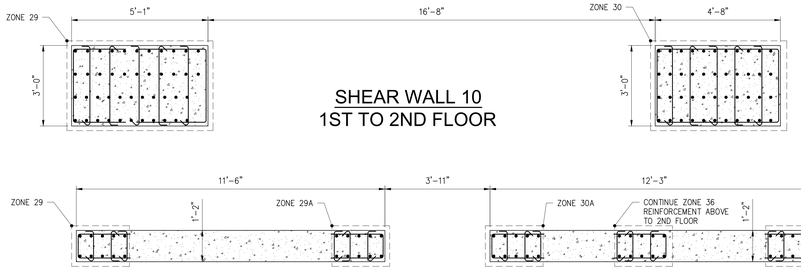
(ALTERNATE 90° AND 135° ENDS ON CONSECUTIVE CROSS TIES)



SHEAR WALL 9
1ST TO MEZZANINE

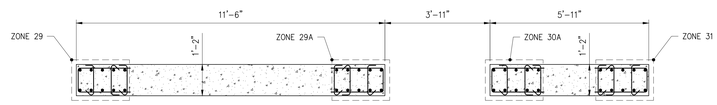


SHEAR WALL 9
MEZZANINE TO BULKHEAD

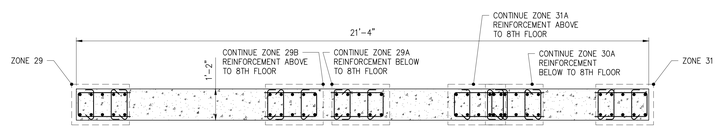


SHEAR WALL 10
1ST TO 2ND FLOOR

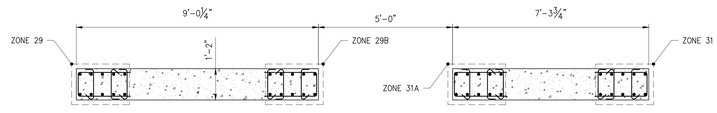
SHEAR WALL 10
2ND TO 3RD FLOOR



SHEAR WALL 10
3RD TO 7TH FLOOR



SHEAR WALL 10
7TH TO 9TH FLOOR & 10TH TO ROOF



SHEAR WALL 10
9TH TO 10TH FLOOR



OWNER:

CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:

FOGARTY FINGER
architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:

TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:

ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:

SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:

JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:

BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:

BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:

PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:

JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

LANDSCAPE:

GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:

GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

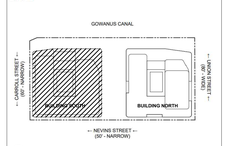
ZONING SPECIALIST:

DEVELOPMENT CONSULTING SERVICES
630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:

WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN:



DOB NOW JOB # B00611166-P1

No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

498 UNION ST.
BROOKLYN, NY 11217

DRAWING TITLE:

SHEAR WALL SCHEDULE III

SEAL & SIGNATURE:

STATE OF NEW YORK · KEVIN AUYEUNG · 099001 · LICENSED PROFESSIONAL ENGINEER

DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	T.21195.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-212.00
PAGE No.:	39 OF 53

I:\PROJECTS\2021\T.21195.01 - 300 NEVINS STREET, BROOKLYN, NY 11215\DWGS\STRUCT\WORKING\CAD\T.21195.01 S-200'S.DWG

CONCRETE SHEAR WALL "ZONE" VERTICAL REINFORCEMENT SCHEDULE

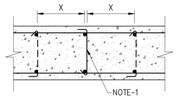
MARK / LEVELS	ZONE 32	ZONE 32A	ZONE 33	ZONE 33A	ZONE 34	ZONE 34A	ZONE 35	ZONE 36	ZONE 36A	ZONE 36B	ZONE 37	ZONE 38	ZONE 39	ZONE 39A
1ST TO 2ND FLOOR	16-#9	-	16-#9	-	24-#9	-	24-#9	10-#10	10-#10	-	10-#10	16-#9	-	14-#9
2ND TO 5TH FLOOR	14-#9	-	14-#9	-	-	16-#9	16-#9	10-#9	-	-	10-#9	16-#9	16-#9	-
5TH TO 7TH FLOOR	8-#9	-	8-#9	-	-	8-#9	8-#9	6-#9	-	-	6-#9	10-#9	10-#9	-
7TH TO 9TH FLOOR	6-#9	4-#9	6-#9	4-#9	-	6-#9	6-#9	6-#9	-	6-#9	4-#9	4-#9	4-#9	-

NON-"ZONE" REINFORCING SCHEDULE

WALL THICKNESS	TIES IN "ZONE"	HORIZ. REBAR	NON-"ZONE" VERT. REBAR
12" WALL	#4 @ 12"	#4 @ 12"	#4 @ 12"
14" WALL	#4 @ 12"	#5 @ 12"	#5 @ 12"
16" WALL	#4 @ 12"	#5 @ 12"	#5 @ 12"
36" WALL			

NOTES:

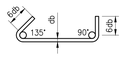
1. SHEAR WALLS SHALL HAVE $f'c$ = 8,000 PSI FROM LOWEST LEVEL TO 9TH FLOOR, AND $f'c$ = 6,000 PSI FROM 9TH FLOOR TO HIGHEST LEVEL.
2. SEE SHEAR WALL DETAILS ON S-220 FOR ZONE REINFORCEMENT SPACING.
3. SHEAR WALL VERTICAL REINFORCEMENT OUTSIDE "ZONE" AREA AND SHEAR WALL HORIZONTAL REINFORCEMENT TO BE AS INDICATED IN SCHEDULE, U.O.N.
4. ALL SHEAR WALL REINFORCEMENT LAP SPLICES ARE STANDARD TENSION SPLICES U.O.N.
5. PROVIDE TIES AND CROSS TIES WITHIN BOUNDARY ZONE AS PER SHEAR WALL TIE DETAIL.
6. SEE PLAN FOR SHEAR WALL LENGTH AND LOCATION.
7. SEE S-220 FOR TYPICAL SHEAR WALL DETAILS.
8. FOR SHEAR WALLS AT ELEVATORS, CONTRACTOR SHALL COORDINATE ALL EMBEDMENT PLATES AND BEAM POCKETS WITH ELEVATOR SHOP DRAWINGS.
9. FOR SHEAR WALLS COINCIDENTAL WITH FOUNDATION WALLS, PROVIDE THE LARGER SIZE AND SMALLER SPACING OF THE SHEAR WALL OR FOUNDATION WALL REINFORCEMENT AT EACH FACE, EACH DIRECTION.



SHEAR WALL TIE DETAIL

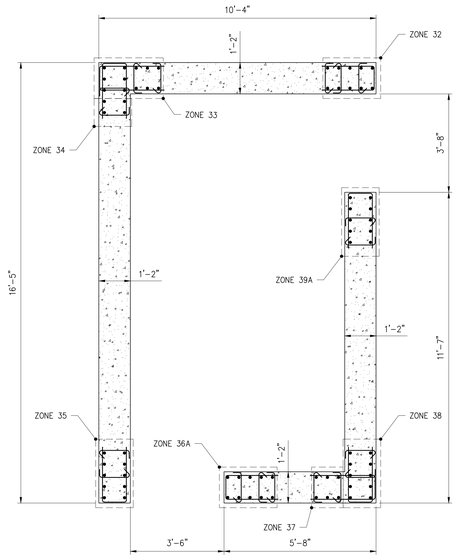
NOTES:

1. ALTERNATE TIES MAY BE OMITTED WHERE CLEAR DISTANCE "X" IS 6" OR LESS.
2. SHEAR WALL TIE REINFORCEMENT TO BE AS INDICATED IN SCHEDULE.

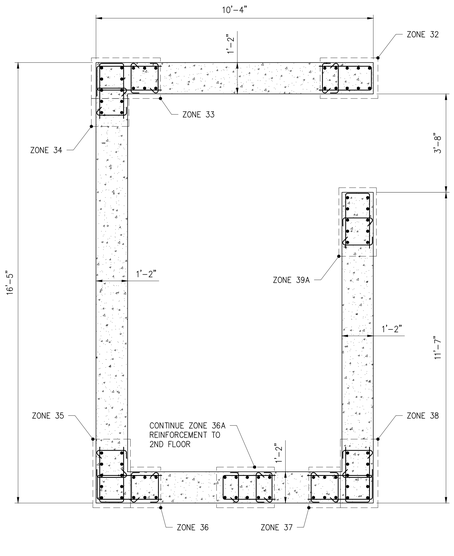


SUPPLEMENTARY CROSS TIES

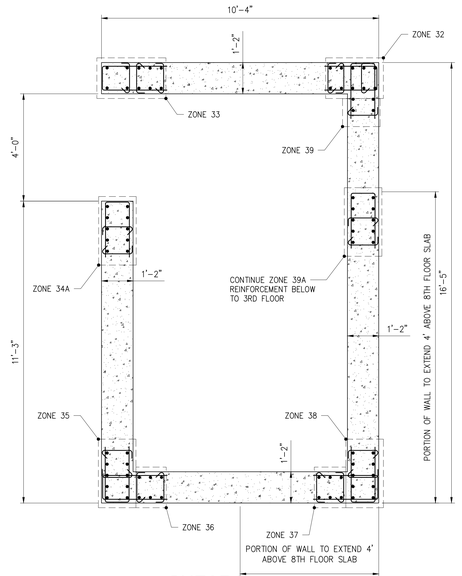
(ALTERNATE 90° AND 135° ENDS ON CONSECUTIVE CROSS TIES)



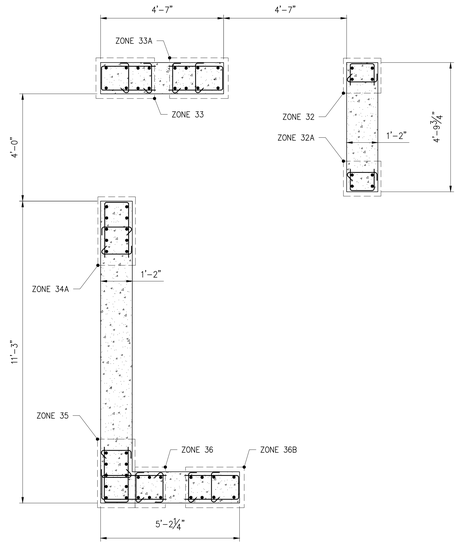
SHEAR WALL 11
1ST TO MEZZANINE



SHEAR WALL 11
MEZZANINE TO 2ND FLOOR



SHEAR WALL 11
2ND TO 8TH FLOOR



SHEAR WALL 11
8TH TO 9TH FLOOR



OWNER:

CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

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ARCHITECT:

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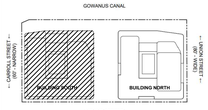
ZONING SPECIALIST:

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NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:

WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN:



DOB NOW JOB # B00611166-P1

No	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
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2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

498 UNION ST.
BROOKLYN, NY 11217

DRAWING TITLE:

SHEAR WALL SCHEDULE IV

SEAL & SIGNATURE:



DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ2136.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-213.00
PAGE No.:	40 OF 53

I:\PROJECTS\2021\TJ2136.01 - 300 NEVINS STREET, BROOKLYN, NY 11215\DWGS\S-STRUCTWORK\NS\CAD\TJ2136.01 S-200'S.DWG

CONCRETE SHEAR WALL "ZONE" VERTICAL REINFORCEMENT SCHEDULE

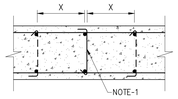
LEVELS \ MARK	ZONE 40	ZONE 41	ZONE 42	ZONE 43			
1ST TO 8TH FLOOR	4-#3	4-#3	4-#3	4-#3	-	-	-

NON-"ZONE" REINFORCING SCHEDULE

WALL THICKNESS	TIES IN "ZONE"	HORIZ. REBAR	NON-"ZONE" VERT. REBAR
12" WALL	#4 @ 12"	#4 @ 12"	#4 @ 12"
14" WALL	#4 @ 12"	#5 @ 12"	#5 @ 12"
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36" WALL			

NOTES:

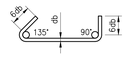
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SHEAR WALL TIE DETAIL

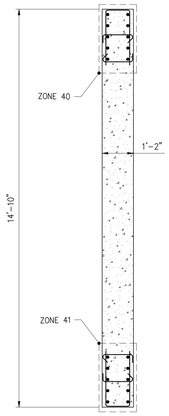
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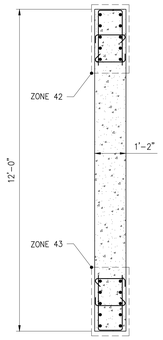


SUPPLEMENTARY CROSS TIES

(ALTERNATE 90° AND 135° ENDS ON CONSECUTIVE CROSS TIES)



SHEAR WALL 12
1ST TO 8TH FLOOR



SHEAR WALL 13
1ST TO 8TH FLOOR



OWNER:

CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

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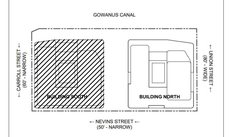
ZONING SPECIALIST:

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NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:

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PROJECT:

498 UNION ST.
BROOKLYN, NY 11217

DRAWING TITLE:

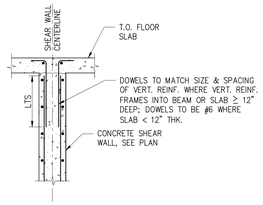
SHEAR WALL SCHEDULE V

SEAL & SIGNATURE:



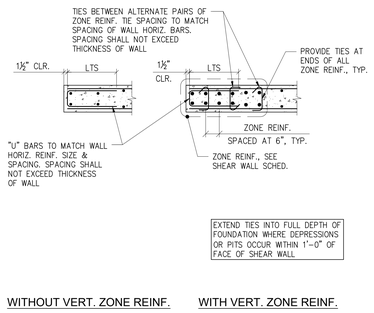
DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	T-21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-214.00
PAGE No.:	41 OF 53

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SHEAR WALL AT TOP LEVEL

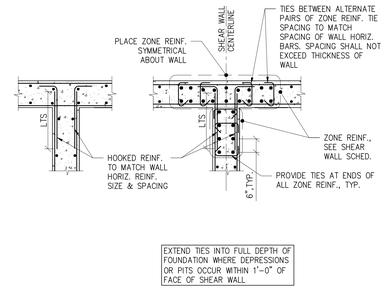
SCALE: N.T.S.



WITHOUT VERT. ZONE REINF. WITH VERT. ZONE REINF.

SHEAR WALL END

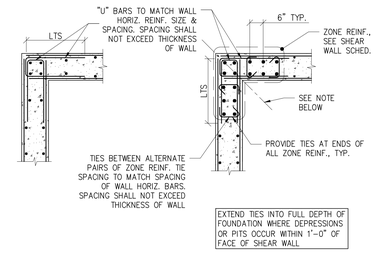
SCALE: N.T.S.



WITHOUT VERT. ZONE REINF. WITH VERT. ZONE REINF.

SHEAR WALL INTERSECTION

SCALE: N.T.S.

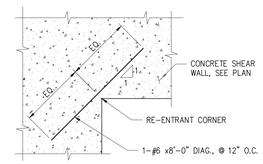


WITHOUT VERT. ZONE REINF. WITH VERT. ZONE REINF.

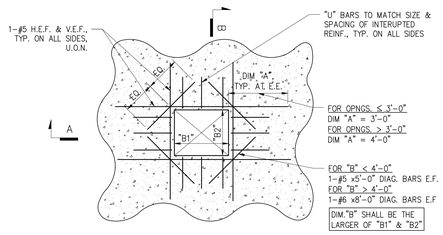
NOTE:
INSTALL ZONE VERT. REINFORCING STEEL SYMMETRICALLY ABOUT CORNER, U.O.N.; WHERE ZONE REINF. IS IDENTIFIED SEPARATELY IN THE SHEAR WALL SCHEDULE ON EACH INTERSECTING WALL INSTALL THE INDICATED ZONE STEEL IN EACH WALL IN WHICH THOSE ZONE BARS ARE INDICATED.

SHEAR WALL CORNER

SCALE: N.T.S.

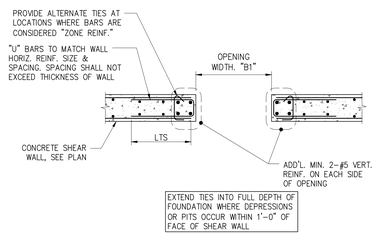


DIAGONAL REINFORCEMENT AT RE-ENTRANT CORNERS IN SHEAR WALLS

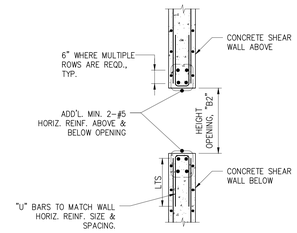


NOTES:

1. THIS DETAIL APPLIES AT RECTANGULAR AND ROUND OPENINGS AND AT EFFECTIVE OPENINGS AROUND GROUPS OF SLEEVES
2. OPENINGS < 12" ON ALL SIDES REQUIRE NO ADDITIONAL REINF., U.O.N..
3. REINFORCING SHOWN AROUND OPENINGS ON THE SHEAR WALL ELEVATIONS SUPERCEDES THE MINIMUM REINFORCING STEEL INDICATED IN THIS DETAIL.



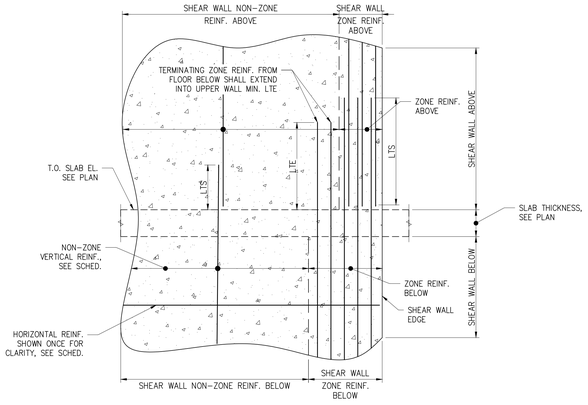
SECTION A-A



SECTION B-B

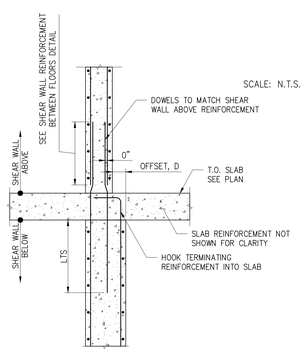
SHEAR WALL REINFORCING AT OPENINGS

SCALE: N.T.S.

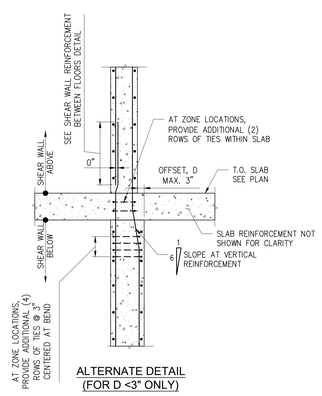


SHEAR WALL REINFORCEMENT BETWEEN FLOORS

SCALE: N.T.S.



SCALE: N.T.S.



ALTERNATE DETAIL
(FOR D <3" ONLY)

SHEAR WALL REINFORCEMENT AT THICKNESS CHANGE

SCALE: N.T.S.



OWNER:
CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

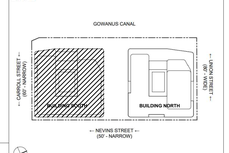
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



DOB NOW JOB # B00611166-P1

No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

498 UNION ST.

BROOKLYN, NY 11217

DRAWING TITLE:

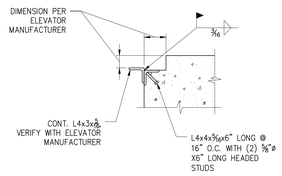
SHEAR WALL DETAILS

SEAL & SIGNATURE:



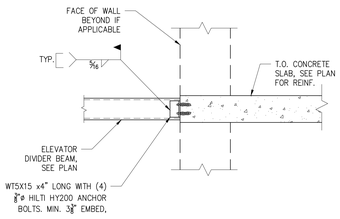
DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-220.00
PAGE No.:	42 OF 53

I:\PROJECTS\2021\TJ21395.01 - 300 NEVINS STREET, BROOKLYN, NY 11215\DWG\SIS\TRUCTWORK\NG\CAD\TJ21395.01 S-200S.DWG

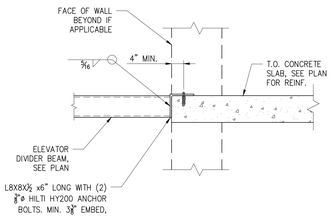


ELEVATOR SILL DETAIL

SCALE: N.T.S.



OPTION "A"

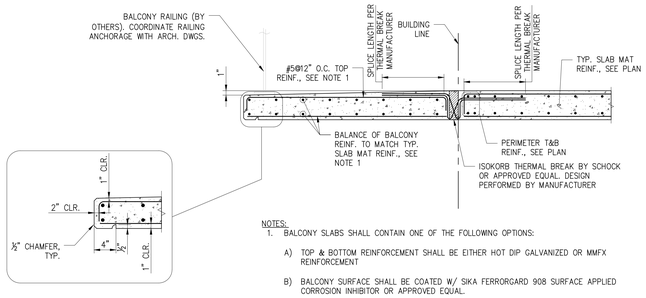


OPTION "B"

NOTE:
1. SEE TYPICAL BEAM POCKET DETAIL FOR DIVIDER BEAM TO WALL CONNECTION
2. VERIFY ALL STEEL CONNECTIONS WITH ELEVATOR MANUFACTOR

TYPICAL ELEVATOR DIVIDER BEAM DETAIL

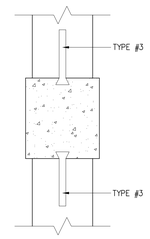
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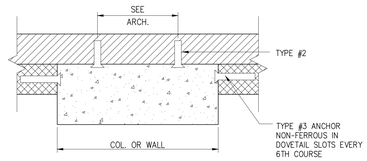
NOTES:
1. BALCONY SLABS SHALL CONTAIN ONE OF THE FOLLOWING OPTIONS:
   A) TOP & BOTTOM REINFORCEMENT SHALL BE EITHER HOT DIP GALVANIZED OR MMFX REINFORCEMENT
   B) BALCONY SURFACE SHALL BE COATED W/ SIKA FERRORGARD 908 SURFACE APPLIED CORROSION INHIBITOR OR APPROVED EQUAL.

TYPICAL BALCONY DETAIL

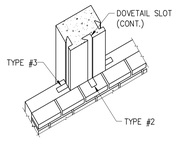
SCALE: N.T.S.



PART PLAN OF INTERIOR COL. SHOWING PARTITION ANCHORAGES



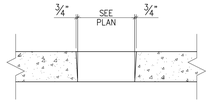
PART PLAN OF MASONRY WALL



ISOMETRIC SHOWING METHOD OF ANCHORING

TYPICAL PARTITION ANCHORAGE DETAILS

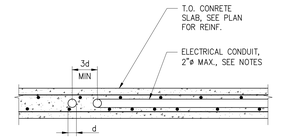
SCALE: N.T.S.



NOTE:
FOR DIMENSION AND LOCATION OF PLUMBING SLOTS, SEE MECHANICAL PLANS. ALL SLOTS SHALL BE FILLED WITH CONCRETE AFTER PIPING HAS BEEN INSTALLED.

TYPICAL PLUMBING SLOT DETAIL

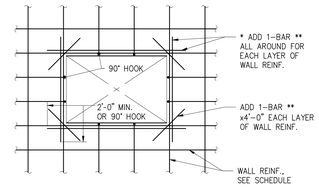
SCALE: N.T.S.



NOTES:
1. CONTRACTOR TO PROVIDE A PLAN SHOWING ALL PROPOSED CONDUIT SIZES AND LOCATIONS FOR ENGINEER REVIEW AND APPROVAL PRIOR TO INSTALLING ANY CONDUIT.
2. ALUMINUM CONDUIT IS NOT PERMITTED.
3. MAXIMUM CONDUIT SIZE ALLOWED IN SLAB IS 2".
4. CONDUIT SHALL NOT BE SPACED CLOSER THAN 3 DIAMETERS OR WIDTHS ON CENTER.
5. CONDUIT CANNOT BE PLACED WHERE IT WOULD INTERFERE OR DISPLACE REINFORCEMENT FROM ITS PROPER LOCATION.

TYPICAL CONDUIT IN SLAB DETAIL

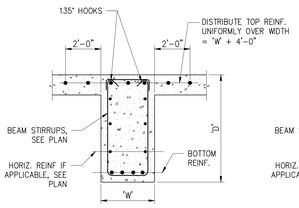
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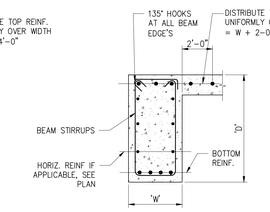
NOTES:
1. START HORIZONTAL AND VERTICAL BARS 1" CLEAR OF THE EDGE OF OPENING.
2. * OMIT ADDED REINFORCEMENT WHEN SPECIAL REINF. INDICATED ON PLANS OR DETAILS.
3. ** BAR SIZE IS ONE SIZE LARGER THAN TYPICAL REINF. IN LAYER.

WALL OPENING REINFORCEMENT DETAIL

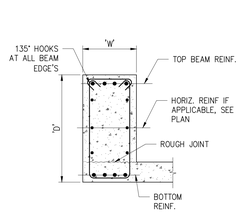
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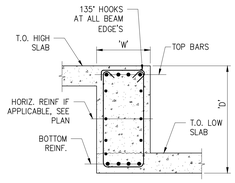
TYPICAL BEAM



EDGE BEAM



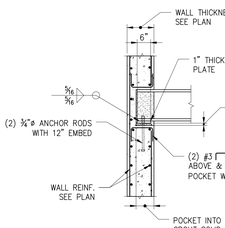
UPTURN BEAM



BEAM AT HIGH & LOW SLAB

TYPICAL BEAM DETAILS

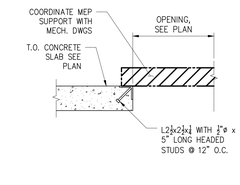
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NOTE:
1. POCKETS SHALL NOT BE PLACED AT SHEAR WALLS WHERE ZONE REINF. IS LOCATED.

TYPICAL BEAM POCKET IN WALL DETAIL

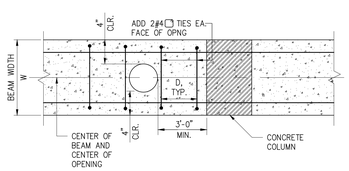
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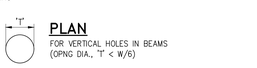


NOTE:
1. REINFORCEMENT NOT SHOWN FOR CLARITY
2. INSTALL EMBEDS ON SHORT SIDES OF OPENINGS ONLY, U.O.N.

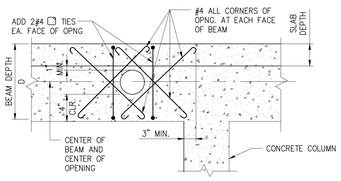
TYPICAL EMBED AT MECHANICAL OPENINGS

SCALE: N.T.S.





PLAN
FOR VERTICAL HOLES IN BEAMS (OPNG DIA., "T" < W/6)



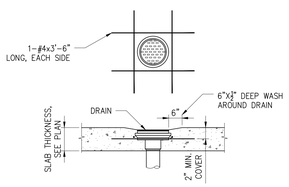


ELEVATION
FOR HORIZ. HOLES IN BEAMS (OPNG DIA., "T" < THAN D/6)

NOTE:
OPENINGS LARGER THAN SPECIFIED ABOVE ARE NOT PERMITTED IN CONC. BEAMS UNLESS SPECIFICALLY INDICATED ON STRUCTURAL PLANS. ALL BEAM REINF. SHOULD NOT BE INTERRUPTED BY OPNGS.

TYPICAL DETAIL OF OPENING IN CONCRETE BEAM

SCALE: N.T.S.



SLAB REINFORCEMENT NOT SHOWN FOR CLARITY, SEE PLAN

NOTE:
SEE ARCHITECTURAL AND MECHANICAL DRAWINGS FOR DRAIN LOCATIONS AND DETAILS, INCLUDING DRAIN FOR TOPPING SLAB.

TYPICAL FLOOR DRAIN IN SLAB/MAT DETAIL

SCALE: N.T.S.



OWNER:
CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
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ARCHITECT:
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STRUCTURAL ENGINEER:
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UNION, NJ 07083

MEP ENGINEER:
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NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

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EXTERIOR LIGHTING:
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121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
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CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
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LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
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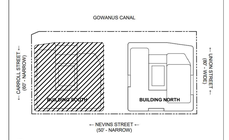
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



DOB NOW JOB # B00611166-P1

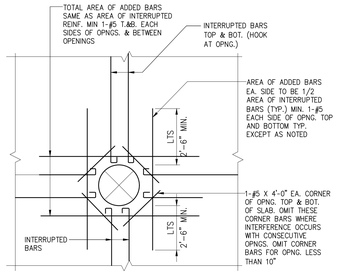
No.	DATE	ISSUE
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5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:
498 UNION ST.
BROOKLYN, NY 11217

DRAWING TITLE:
TYPICAL DETAILS I

SEAL & SIGNATURE:
STATE OF NEW YORK · JOSEPH AUYEUNG · 098451 · LICENSED PROFESSIONAL ENGINEER

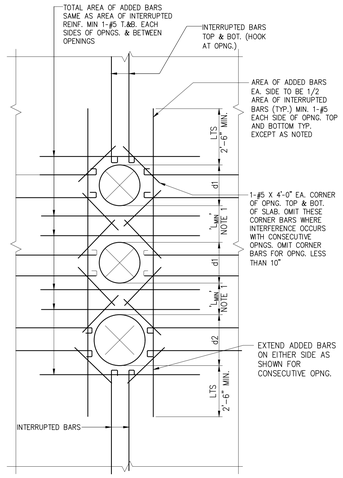
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PROJECT No.:	T-21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-350.00
PAGE No.:	43 OF 53



AT INDIVIDUAL PIPE SLEEVE

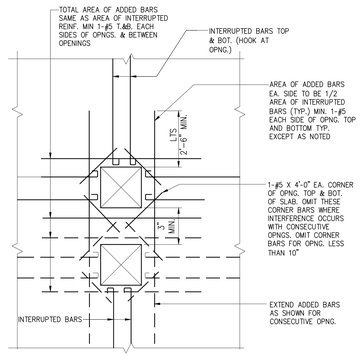
NOTES:
1. OMIT ADDED BARS WHERE EACH DIMENSION OF OPNG IS 10" OR LESS, RUN NORMAL SLAB REINF. BY SIDE OF OPNG.
2. WHERE OPENINGS ARE NEAR OR AGAINST EXTERIOR BEAMS OR COLUMNS & ADDED REINFORCING CAN'T BE EXTENDED TO REQUIRED LENGTH, HOOK ADDED BARS.
3. LTS SEE SCHEDULE OF EMBEDMENT & SPLICE LENGTHS

NOTE:
IF SLEEVES ARE TO BE CORED, X-RAY SLAB PRIOR TO DRILLING

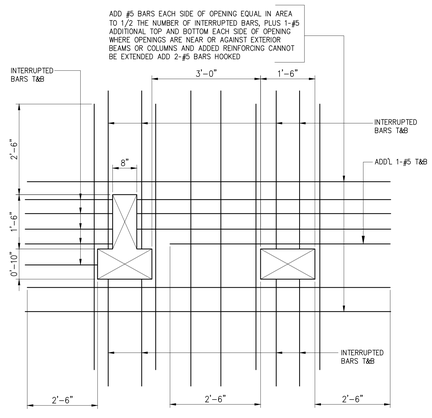


AT CONSECUTIVE PIPE SLEEVE

NOTES:
1. FOR PIPE SLEEVES LESS THAN 8" DIA., l_{ad1} SHALL BE 2" FOR PIPE SLEEVES GREATEER THAN 8" DIA., l_{ad1} SHALL BE 0.5 x THE GREATER OF THE ADJACENT PIPE DIA.



AT SQUARE OR RECTANGLE OPENING



TYPICAL SLAB OPENING REINFORCING U.O.N. ON PLAN

NOTE:
COORDINATE OPENING REQUIREMENTS AT BATHROOMS W/ GENERAL CONTRACTOR

DETAIL AT SLAB OPENINGS
SCALE: N.T.S.

fy = 60000 psi f'c = 5000 psi cylinder strength

BAR SIZE db	COMPRESSION		TENSION EMBEDMENT LENGTH				TENSION LAP SPLICE LENGTH - CLASS B			
	EMBEDMENT LENGTH	LAP SPLICE LENGTH	TOP BARS		OTHER BARS		TOP BARS		OTHER BARS	
			CATEGORY		CATEGORY		CATEGORY		CATEGORY	
			I	II	I	II	I	II	I	II
#3	8	12	17	25	13	19	22	32	17	25
#4	9	15	22	33	17	25	29	43	22	33
#5	11	19	28	41	21	32	36	54	28	41
#6	14	23	33	50	25	38	43	65	33	50
#7	16	26	48	72	37	56	63	94	48	72
#8	18	30	55	83	42	64	72	108	55	83
#9	20	34	62	93	48	72	81	121	62	93
#10	23	38	70	105	54	81	91	137	70	105
#11	25	42	78	117	60	90	101	152	78	117
NOTATION USED ON DRAWING			• LCE	• LCS	• LTE		• LTS			

fy = 60000 psi f'c = 6000 psi cylinder strength

BAR SIZE db	COMPRESSION		TENSION EMBEDMENT LENGTH				TENSION LAP SPLICE LENGTH - CLASS B			
	EMBEDMENT LENGTH	LAP SPLICE LENGTH	TOP BARS		OTHER BARS		TOP BARS		OTHER BARS	
			CATEGORY		CATEGORY		CATEGORY		CATEGORY	
			I	II	I	II	I	II	I	II
#3	8	12	15	23	12	17	20	29	15	23
#4	9	15	20	30	15	23	26	39	20	30
#5	11	19	25	38	19	29	33	49	25	38
#6	14	23	30	45	23	35	39	59	30	45
#7	16	26	44	66	34	51	57	86	44	66
#8	18	30	50	76	39	58	62	98	50	76
#9	20	34	57	85	44	66	74	111	57	85
#10	23	38	64	96	49	74	83	125	64	96
#11	25	42	71	106	55	82	92	138	71	106

NOTES FOR EMBEDMENT & SPLICE SCHEDULE

1) THESE SCHEDULES APPLY FOR NORMAL WEIGHT CONCRETE (W=150 PCF). FOR LIGHT WEIGHT CONCRETE MULTIPLE TABLE VALUES BY 1.33.

2) THE CATEGORY OF THE REINFORCEMENT FOR DETERMINING THE EMBEDMENT & SPLICE LENGTHS SHALL BE OBTAINED FROM THE FOLLOWING TABLE: (db = BAR DIAMETER).

CATEGORY	CLEAR COVER	CLEAR SPACING	REMARKS
I	≥ db	≥ db	BEAM STIRRUPS OR COLUMN TIES THROUGHOUT DEVELOPMENT LENGTH >= CODE MINIMUM.
I	≥ db	≥ 2 db	
II	OTHER CASES		

3) TENSION LAP SPLICE LENGTH CATEGORIES I, II ARE BASED ON ACI CLASS B CONDITIONS. LESSER LENGTHS MAY BE ACCEPTABLE, BUT ONLY IF HALF OR LESS OF THE BARS ARE SPLICED AT A POINT AND REINFORCEMENT AREA IS AT LEAST TWICE THAT REQUIRED BY ANALYSIS. CONTRACTOR CAN REQUEST SUCH REDUCTION BY INDICATING THE FOLLOWING:

A) WHERE THE SIZE AND NUMBER OF TIES OR SPIRALS PERMITS THE REDUCTION OF LAP LENGTH, THOSE BARS SHALL BE INDICATED ON THE DETAILS.

B) WHERE COMPUTED STRESS VALUES PERMIT THE REDUCTION OF LAP LENGTH. COMPUTATIONS SHALL BE SUBMITTED FOR REVIEW.

C) THE APPLICABLE SECTION OF THE ACI CODE, PERMITTING THE LESSER SPLICE LENGTH, SHALL BE INDICATED ON THE SUBMITTED MATERIAL.

4) WHERE BARS OF DIFFERENT SIZE ARE TO BE SPLICED, THE SPLICE LENGTH FOR ALL BARS SHALL BE THAT REQUIRED FOR THE LARGEST BAR.

5) USE TENSION LAP SPLICE LENGTH (LTS) AT ALL SPLICE LOCATIONS NOT SPECIFICALLY DETAILED UNLESS INDICATED OTHERWISE ON PLANS OR DETAILS.

6) TOP BARS ARE HORIZONTAL BARS PLACED SUCH THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE BAR.

7) WHEN REINFORCING BARS ARE EPOXY-COATED, THE VALUES FOR TENSION EMBEDMENT AND LAP SPLICE LENGTHS FOR TOP BARS SHALL BE INCREASED BY 30% AND THE VALUES FOR THE OTHER BARS SHALL BE INCREASED BY 50%.

8) FOR BUNDLED BARS INCREASE EMBEDMENT & SPLICE LENGTHS BY 20% FOR 3-BAR BUNDLE AND BY 33% FOR 4-BAR BUNDLE. IN DETERMINING THE CATEGORY OF BUNDLE REINF., TREAT THE BUNDLE AS A SINGLE BAR WITH A DIAMETER DERIVED FROM THE EQUIVALENT TOTAL AREA.

9) FOR TENSION SPLICING OF #14 BARS USE MECHANICAL COUPLERS. MECHANICAL COUPLERS MUST DEVELOP A MIN OF 125% OF SPECIFIED YIELD STRENGTH (fy) OF BAR.

10) SPLICE LENGTHS SHALL BE DIMENSIONED AT ALL LOCATIONS ON ALL SHOP DRAWINGS.

11) FOR CONCRETE STRENGTHS NOT PROVIDED, MULTIPLY TABLE VALUES FOR 5000 PSI BY:

f'c (PSI)	COMPRESSION FACTOR	TENSION FACTOR
7,000	1.00	0.84
8,000	1.00	0.79
9,000	1.00	0.74
10,000	1.00	0.71
12,000	1.00	0.65
14,000	1.00	0.60

12) FOR YIELD STRENGTH NOT PROVIDED, MULTIPLY TABLE VALUES BY:

fy (PSI)	YIELD STRENGTH FACTOR
75,000	1.25

DETAIL OF SPLICE LENGTH
SCALE: N.T.S.



OWNER:
CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

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t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27TH Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

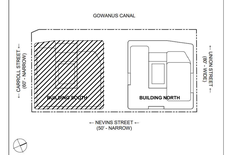
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



DOB NOW JOB # B00611166-P1

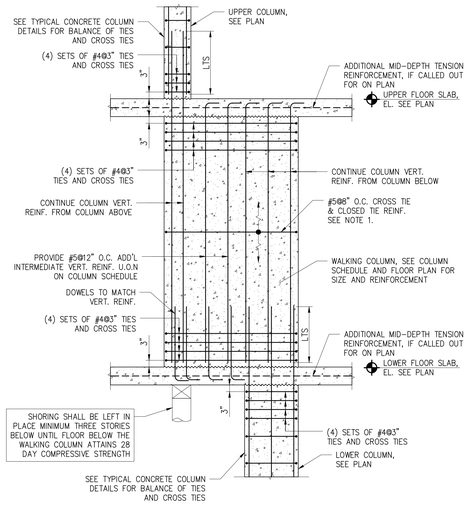
No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:
498 UNION ST.
BROOKLYN, NY 11217

DRAWING TITLE:
TYPICAL DETAILS II

SEAL & SIGNATURE:
STATE OF NEW YORK · JUSTIN AUYEUNG · 039452 · LICENSED PROFESSIONAL ENGINEER

DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-351.00
PAGE No.:	44 OF 53



NOTES:

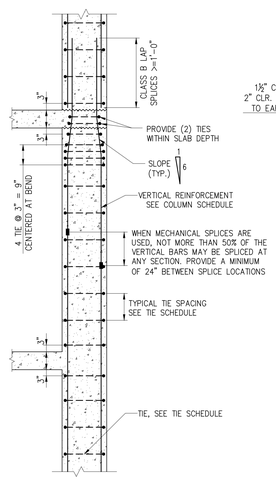
1. IT IS ACCEPTABLE TO USE "U" BARS IN LIEU OF CLOSED TIES FOR COLUMNS EXCEEDING 36" IN LENGTH.

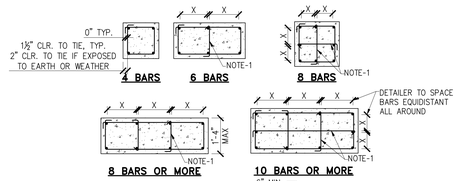


2. TIEING REQUIREMENTS AS INDICATED IN THE TYPICAL CONCRETE COLUMN DETAIL SHALL BE SATISFIED WITH ADDITIONAL CROSS TIES AND TIES.

TYPICAL WALKING COLUMN DETAILS

SCALE: N.T.S.





NOTE:

1. ALTERNATE TIES MAY BE OMITTED WHERE "X" DISTANCE IS 6" OR LESS.

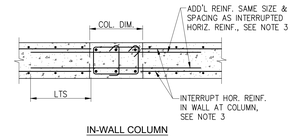
TIE SCHEDULE

SMALLEST COLUMN DIMENSION	SIZE OF VERT. REINFORCING STEEL	SIZE AND SPACING OF TIES
10"	#5 TO #10	#3@10"
	#11 & LARGER	#4@10"
12"	#5	#3@10"
	#6 TO #10	#3@12"
	#11 & LARGER	#4@12"
14"	#6	#3@12"
	#7 TO #10	#3@14"
	#11 & LARGER	#4@14"
16"	#6	#3@12"
	#7	#3@14"
	#8 TO #10	#3@16"
	#11 & LARGER	#4@16"
18"	#6	#3@12"
	#7	#3@14"
	#8	#3@16"
	#9 & #10	#3@18"
	#11 & LARGER	#4@18"
20"	#6	#3@12"
	#7	#3@14"
	#8	#3@16"
	#9 & #10	#3@18"
	#11 & LARGER	#4@20"
22" & LARGER	#6	#3@12"
	#7	#3@14"
	#8	#3@16"
	#9 & #10	#3@18"
	#11 & LARGER	#4@22"

NOTE:
ALL COLUMNS TO HAVE TIES AS PER THIS SCHEDULE U.O.N.

TYPICAL CONCRETE COLUMN DETAILS

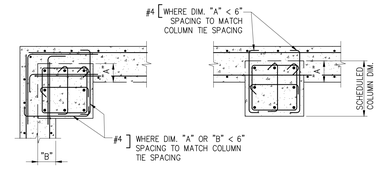
SCALE: N.T.S.



IN-WALL COLUMN

NOTES:

1. SEE SCHEDULE FOR COLUMN DIMENSIONS AND REINFORCING.
2. CONSTRUCT AJOINING CONCRETE WALLS MONOLITHIC WITH COLUMNS.
3. INSTALL HORIZONTAL WALL REINFORCING STEEL CONTINUOUS THROUGH INTERSECTING COLUMNS OR SPLICE HORIZONTAL REINFORCING WITH TENSION LAP SPLICES IF REQUIRED TO PERMIT PROPER PLACEMENT OF COLUMN REINFORCING STEEL.

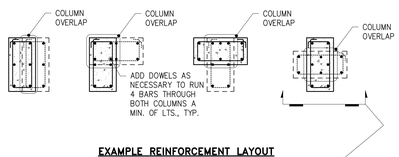


COLUMN IN CORNER OF WALL

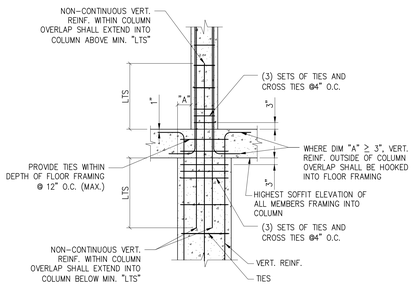
COLUMN PROTRUDING FROM WALL

CONCRETE BUTTRESS AND WALL INTERFACE DETAIL

SCALE: N.T.S.



EXAMPLE REINFORCEMENT LAYOUT AT COLUMN SHIFTS AND ROTATIONS

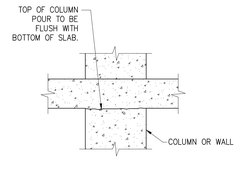


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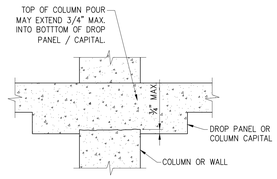
1. SEE "TYPICAL CONCRETE COLUMN DETAILS" FOR NOTES AND ADDITIONAL INFORMATION.

REINFORCING STEEL PLACEMENT AT COLUMN SHIFTS AND ROTATIONS

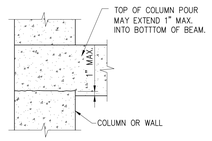
SCALE: N.T.S.



COLUMN OR WALL INTERFACE WITH SLAB



COLUMN OR WALL INTERFACE WITH SLAB W/ DROP PANEL



COLUMN OR WALL INTERFACE WITH CONCRETE BEAM

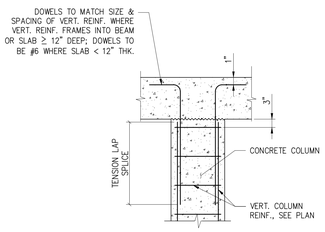
NOTES:

WHERE COLUMN POUR EXTENDS INTO BOTTOM OF FLOOR FRAMING FARTHER THAN PERMITTED,

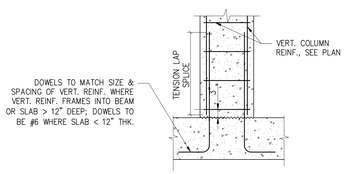
1. CHIP COLUMN CONCRETE FLUSH TO UNDERSIDE OF FLOOR FRAMING FOR 2" WIDTH AROUND PERMETER OF COLUMN.
2. TOP OF COLUMN POUR MAY STOP 1" MAX. BELOW BOTTOM OF FLOOR FRAMING.

COLUMN AND WALL INTERFACE WITH FLOOR FRAMING

SCALE: N.T.S.



REINFORCEMENT TERMINATING AT TOP LEVEL



REINFORCEMENT TERMINATING AT BOTTOM LEVEL

COLUMN REINFORCING TERMINATING AT TOP/BOTTOM LEVELS

SCALE: N.T.S.



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architecture | interiors
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UNION, NJ 07083

MEP ENGINEER:

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SOCOTEC, Inc
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CIVIL ENGINEER:

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LANDSCAPE:

JAMES CORNER FIELD OPERATIONS
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NEW YORK, NY 10018

LANDSCAPE:

GRAIN COLLECTIVE
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ELMSFORD, NY 10523

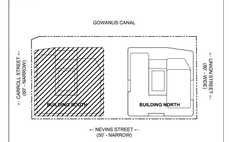
ZONING SPECIALIST:

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CODE CONSULTANT/ EXPEDITOR:

WILLIAM VITACCO ASSOCIATES
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NEW YORK, NY 10007

KEY PLAN



DOB NOW JOB # B00611166-P1

No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

498 UNION ST.
BROOKLYN, NY 11217

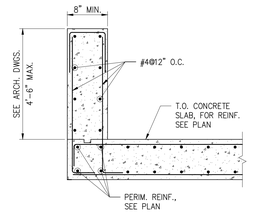
DRAWING TITLE:

TYPICAL DETAILS III

SEAL & SIGNATURE:



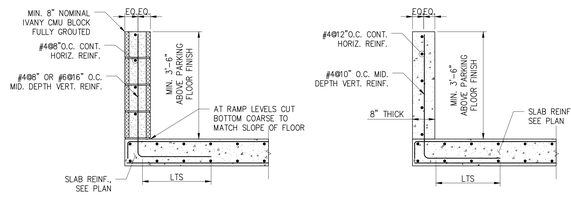
DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-352.00
PAGE No.:	45 OF 53



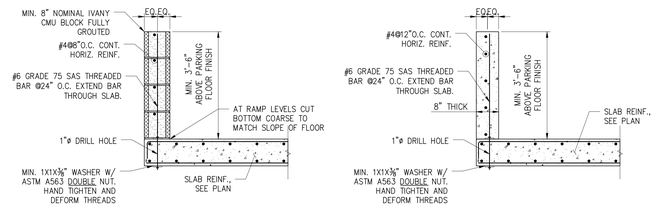
NOTE:
THIS DETAIL IS NOT APPLICABLE AT PARKING LEVELS OR ANY FLOOR/ROOF WHERE IMPACT LOADS GREATER THAN 200#'S IS A DESIGN CONSIDERATION

TYPICAL PARAPET DETAIL

SCALE: N.T.S.



CAST-IN PLACE OPTION

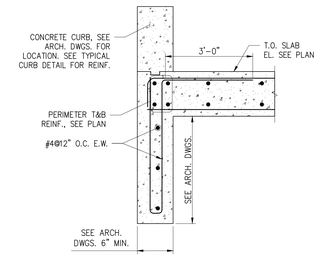


NOTE:
1. THIS DETAIL IS APPLICABLE AT ALL PARKING/RAMP LEVELS WHERE IMPACT LOADS ARE A DESIGN CONSIDERATION
2. SEE GENERAL NOTES FOR ALL MASONRY MATERIAL SPECIFICATIONS

POST-INSTALLED OPTION

TYPICAL CAR BARRIER DETAIL

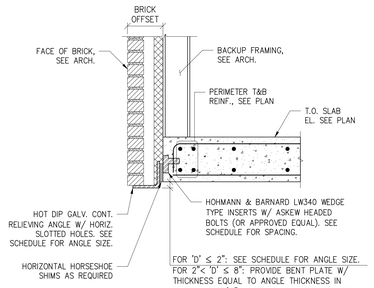
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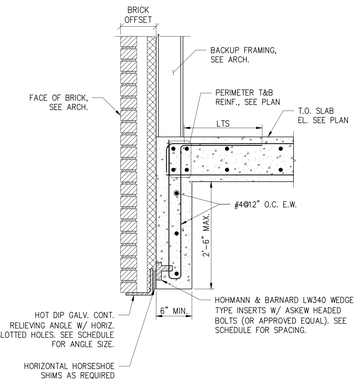
NOTE:
1. COORDINATE LOCATION W/ ARCH. DWGS.

TYPICAL DOWNTURN PARAPET AT EXTERIOR SLAB EDGE DETAIL

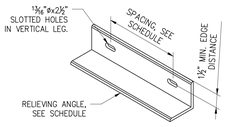
SCALE: N.T.S.



TYPICAL SLAB EDGE DETAIL



ALTERNATE DOWNTURN SLAB EDGE DETAIL



RELIEVING ANGLE

SCHEDULE OF BRICK RELIEVING ANGLES FOR VARYING OFFSETS (OUTSIDE FACE OF BRICK TO FACE OF SUPPORT)

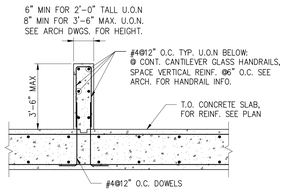


OFFSET DIMENSION	RELIEVING ANGLE SIZE	BRICK HEIGHT (FL.-FL. TYPICAL)	H&B INSERT SPACING	REMARKS
5 IN.	L6x4x5/16 LLV	UP TO 12'-0"	2'-6" O.C.	
		12'-0" TO 16'-0"	2'-0" O.C.	
6 IN.	L5x5x5/16	UP TO 12'-0"	2'-6" O.C.	
		12'-0" TO 16'-0"	2'-0" O.C.	
7 IN.	L6x6x3/8	UP TO 12'-0"	2'-6" O.C.	
		12'-0" TO 16'-0"	2'-0" O.C.	
8 IN.	L8"x6x7/16 LLH	UP TO 12'-0"	2'-6" O.C.	
		12'-0" TO 16'-0"	2'-0" O.C.	* TRIM 1" FROM 8" LEG

NOTES:
1. ALL ANGLES TO BE A36.
2. ANGLE SIZE TO BE CONFIRMED WITH FINALIZED WALL CONSTRUCTION
3. BRICK SHELF TO BE INSTALLED AT EACH FLOOR, UNLESS SPECIFICALLY INDICATED OTHERWISE ON THE STRUCTURAL DRAWINGS

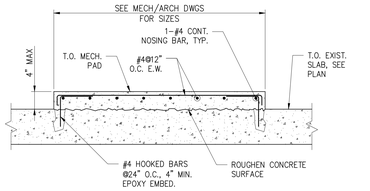
TYPICAL EXTERIOR SLAB EDGE DETAIL (BRICK LOCATION)

SCALE: N.T.S.



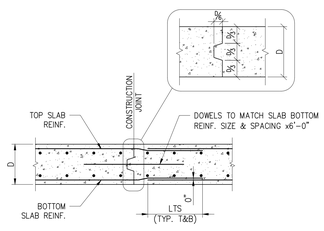
TYPICAL CURB DETAIL

SCALE: N.T.S.

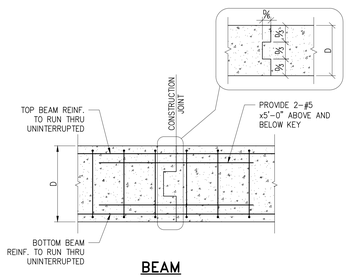


MECHANICAL PAD DETAIL

SCALE: N.T.S.



FRAMED SLAB

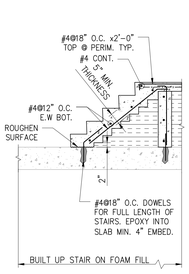


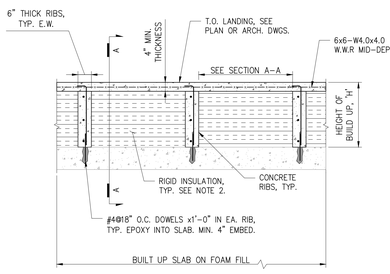
BEAM

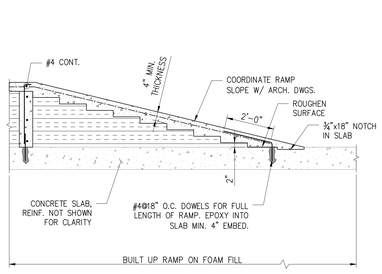
NOTE:
1. ALL CONSTRUCTION JOINT LOCATIONS SHALL BE SUBMITTED TO ENGINEER FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION

CONSTRUCTION JOINT DETAILS AT SLABS AND BEAMS

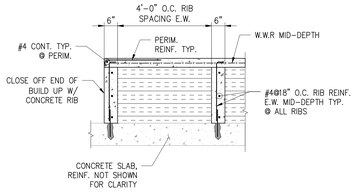
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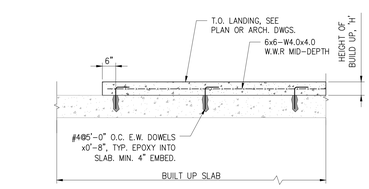


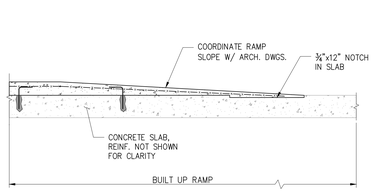


FOR 'H' > 4"



SECTION A-A





FOR 'H ≤ 4"

NOTES:
1. CAST IN PLACE SLAB DOWELS MAY BE USED IN LIEU OF POST INSTALLED DOWELS, AT CONTRACTORS OPTION.
2. STRUCTURAL POLYSTYRENE SHALL BE OWENS CORNING FOAMULAR 400 HIGH DENSITY EXTRUDED POLYSTYRENE INSULATION OR APPROVED EQUAL: MIN. REQUIRED COMPRESSIVE STRENGTH = 40 PSI (PER ASTM D1621), MIN. REQUIRED COMPRESSIVE MODULUS = 1,400 PSI (PER ASTM D1621), MIN. REQUIRED INSULATION FOUNDATION MODULUS "K" = 300 PCI.
3. SEE ARCH. DWGS. FOR STAIR/RAMP DIMENSIONS, DETAILS AND ADDITIONAL INFO.
4. ALL INTERIOR CONCRETE SHALL BE 4,000 PSI. ALL EXTERIOR OR EXPOSED TO WEATHER CONCRETE SHALL BE 5,000 PSI.

TYPICAL BUILT UP SLAB DETAIL

SCALE: N.T.S.



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FACADE:
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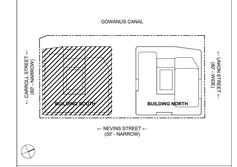
LANDSCAPE:
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KEY PLAN



DOB NOW JOB # B00611166-P1

No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
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2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

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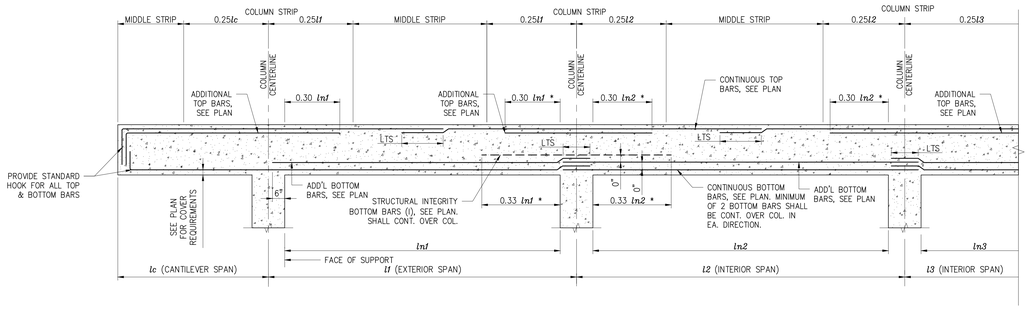
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TYPICAL DETAILS IV

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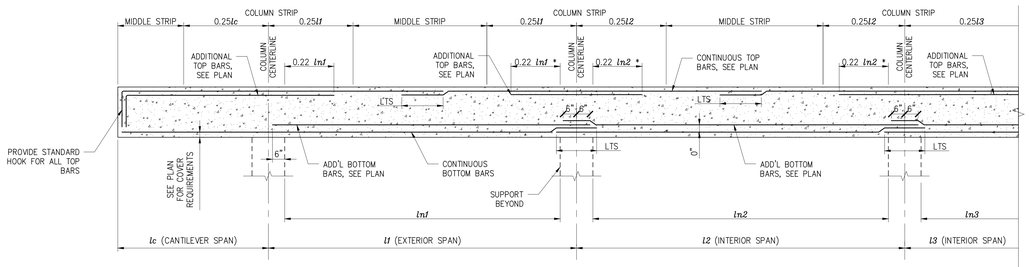


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CHK BY:	AM
DRAWING No.:	S-353.00
PAGE No.:	46 OF 53



NOTE:
BAR LENGTHS SHOWN ON PLAN SHALL GOVERN OVER SPAN FRACTION SHOWN

COLUMN STRIP



NOTE:
BAR LENGTHS SHOWN ON PLAN SHALL GOVERN OVER SPAN FRACTION SHOWN

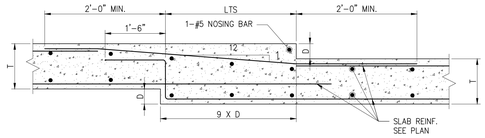
MIDDLE STRIP

NOTES:

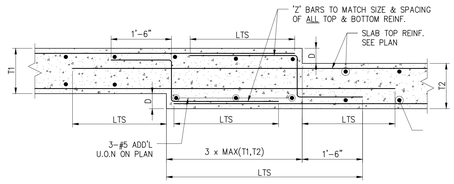
1. SEE TYPICAL CONCRETE BAR PLACEMENT DETAIL FOR REBAR PLACEMENT.
2. * INDICATES GREATER OF ADJACENT CLEAR SPANS (*ln1, ln2*)

TYPICAL CONCRETE FLAT PLATE SLAB DETAIL

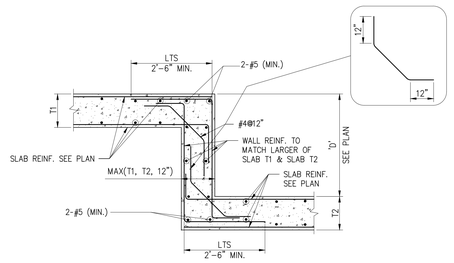
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FOR "D" EQUAL TO OR LESS THAN 2"



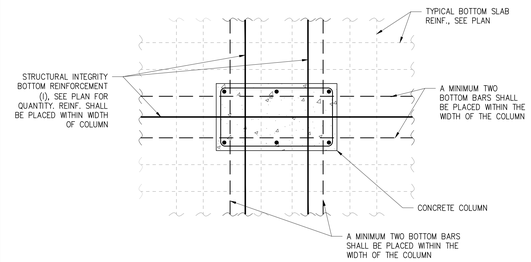
FOR "D" GREATER THAN 2" BUT LESS THAN OR EQUAL TO "T"



FOR "D" GREATER THAN "T"

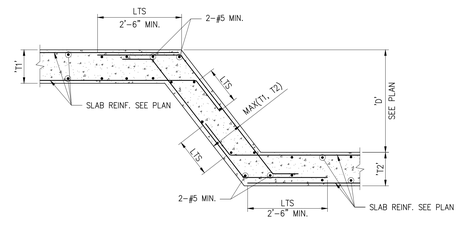
STEP IN FRAMED SLAB DETAIL

SCALE: N.T.S.



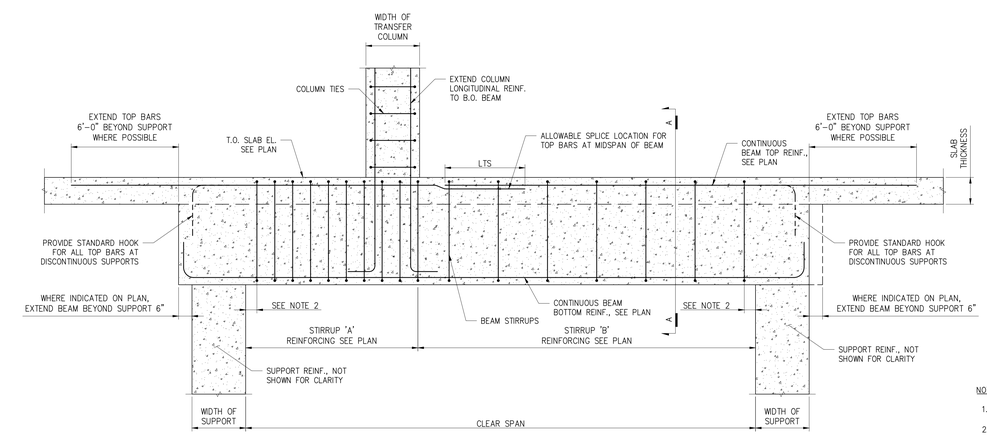
SLAB STRUCTURAL INTEGRITY (I) REINFORCEMENT DETAIL

SCALE: N.T.S.



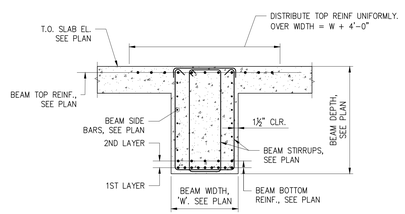
TYPICAL SLOPING FRAMED SLAB DETAIL

SCALE: N.T.S.



TYPICAL TRANSFER BEAM DETAILS

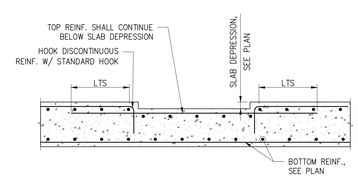
SCALE: N.T.S.



SECTION A–A (TYPICAL)

NOTES:

1. WHERE BARS ARE PLACED IN (2) LAYERS THE MINIMUM CLEAR DISTANCE BETWEEN LAYERS SHALL BE 3".
2. THE FIRST STIRRUP AT EACH END SHALL BE PLACED ½ THE SCHEDULED STIRRUP SPACING MEASURED FROM THE FACE OF THE SUPPORT.



TYPICAL SLAB DEPRESSION DETAIL

SCALE: N.T.S.



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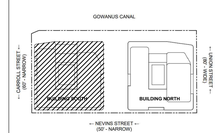
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KEY PLAN



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PROJECT:

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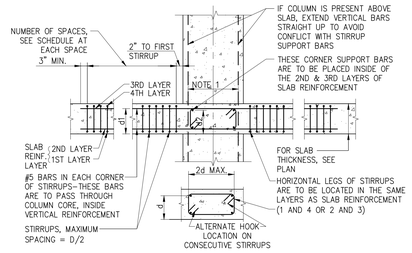
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TYPICAL DETAILS V

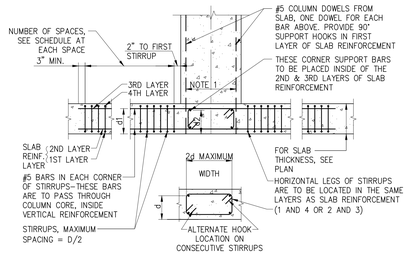
SEAL & SIGNATURE:

STATE OF NEW YORK · JOSEPH ANTHONY VITACCO · 088455 · LICENSED PROFESSIONAL ENGINEER

DATE (YYYY/MM/DD)	2022.03.18
PROJECT No:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No:	S-354.00
PAGE No:	47 OF 53



SLAB SHEAR REINFORCEMENT AT SUPPORT COLUMN



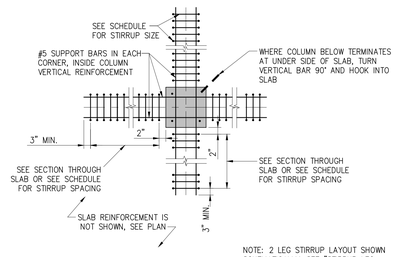
SLAB SHEAR REINFORCEMENT AT COLUMN PICKUP

NOTES:

1. ALL STIRRUP LEGS SHALL BE PLACED WITHIN THE VERTICAL COLUMN REINFORCEMENT.
2. SLAB REINFORCEMENT IS NOT SHOWN, SEE PLANS
3. BOTTOM SLAB REINFORCEMENT WILL ALWAYS BE PRESENT IN BOTH DIRECTIONS.
4. TOP SLAB REINFORCEMENT MAY BE PRESENT IN ONE OR BOTH DIRECTIONS, OR NOT AT ALL DEPENDING UPON LOCATION OF COLUMN BEING PICK UP.

SLAB SHEAR REINFORCEMENT

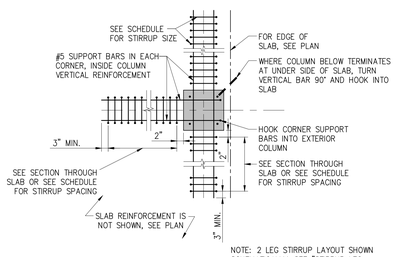
SCALE: N.T.S.



NOTE: 2 LEG STIRRUP LAYOUT SHOWN SCHEMATICALLY. SEE "STIRRUP LEG CONFIGURATIONS" FOR ADDITIONAL LAYOUTS.

SLAB SHEAR REINFORCEMENT - SCHEMATIC PLAN LAYOUT AT TYPICAL INTERIOR COLUMN

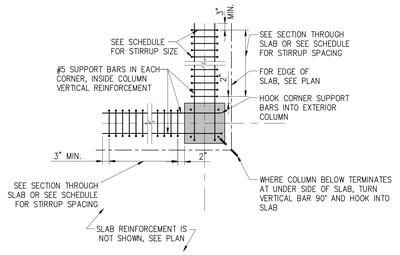
SCALE: N.T.S.



NOTE: 2 LEG STIRRUP LAYOUT SHOWN SCHEMATICALLY. SEE "STIRRUP LEG CONFIGURATIONS" FOR ADDITIONAL LAYOUTS.

SLAB SHEAR REINFORCEMENT - SCHEMATIC PLAN LAYOUT AT TYPICAL EDGE COLUMN

SCALE: N.T.S.

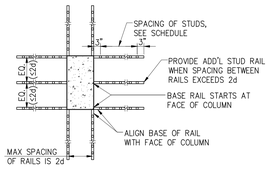


NOTE: 2 LEG STIRRUP LAYOUT SHOWN SCHEMATICALLY. SEE "STIRRUP LEG CONFIGURATIONS" FOR ADDITIONAL LAYOUTS.

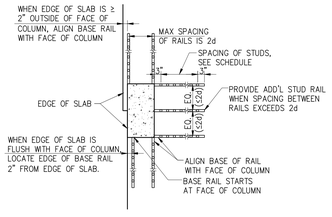
SLAB SHEAR REINFORCEMENT - SCHEMATIC PLAN LAYOUT AT TYPICAL CORNER COLUMN

SCALE: N.T.S.

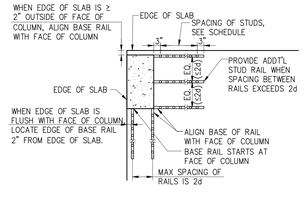
SHEAR REINFORCEMENT DETAILS



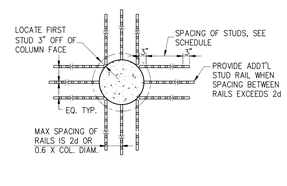
INTERIOR COLUMN



EDGE COLUMN



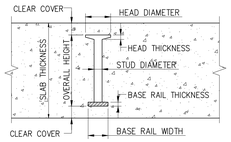
CORNER COLUMN



CIRCULAR COLUMN

SLAB STUD RAIL REINFORCEMENT - TYPICAL PLAN LAYOUTS

SCALE: N.T.S.



STUD RAIL SECTION

STUD RAIL MINIMUM DIMENSIONAL REQUIREMENTS					
STUD DIAMETER (IN)	CROSS SECTIONAL AREA (IN^2)	HEAD DIAMETER (IN)	HEAD THICKNESS (IN)	BASE RAIL WIDTH (IN)	BASE RAIL THICKNESS (IN)
⅜	0.11	1.19	0.21	1	5/16
½	0.20	1.58	0.28	1¼	¼
⅝	0.31	1.98	0.35	1¾	5/16
¾	0.44	2.37	0.42	2	⅜

EFFECTIVE DEPTH	
TYPE OF SLAB	EFFECTIVE DEPTH "d"
TYP. 8" SLAB	6.5"
TYP. 10" SLAB	8.5"
TYP. 12" SLAB	10.5"
TYP. 14" SLAB	12.5"

NOTE:
"d" IS THE EFFECTIVE SLAB DEPTH, MEASURED FROM COMPRESSION FACE TO CENTER OF TENSION REINFORCEMENT, NOT THE SLAB THICKNESS. REFERENCE "EFFECTIVE DEPTH" TABLE FOR USE WITH THIS DETAIL ONLY.

NOTES:

1. SHEAR REINFORCEMENT AT THE SLAB–COLUMN CONNECTION SHALL BE STUD RAILS AS MANUFACTURED BY DECON OR APPROVED EQUAL.
2. THE SHEAR STUDS USED IN THE FABRICATION OF STUDRAILS SHALL BE LOW CARBON STEEL, GRADE 1010 THROUGH 1020, IN ACCORDANCE WITH ASTM–A108. THE STRENGTH AND DUCTILITY REQUIREMENTS ARE:

   YIELD STRENGTH: 51,000 PSI MIN.
   TENSILE STRENGTH: 65,000 PSI MIN.
   ELONGATION IN 2": 20% MIN.
   REDUCTION OF AREA: 50% MIN.

3. THE RAILS USED IN STUDRAILS SHALL BE LOW CARBON STEEL WITH THE FOLLOWING STRENGTH AND DUCTILITY REQUIREMENTS, IN ACCORDANCE WITH ASTM–A1044:

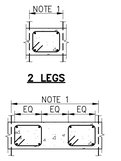
   YIELD STRENGTH: 44,000 PSI MIN.
   TENSILE STRENGTH: 65,000 PSI MIN.
   ELONGATION IN 8": 20% MIN.

3. STUDS SHALL BE FACTORY WELDED TO THE RAILS IN CONFORMANCE WITH ASTM–A1044 AND AWS D1.1.

SLAB STUD RAIL REINFORCEMENT DETAILS

SCALE: N.T.S.

STUD RAIL REINFORCEMENT DETAILS



NOTES:

1. ALL STIRRUP LEGS SHALL BE PLACED WITHIN THE VERTICAL COLUMN REINFORCEMENT.
2. ALTERNATE HOOK LOCATION ON CONSECUTIVE STIRRUPS.
3. HORIZONTAL LEGS OF STIRRUPS SHALL BE LOCATED IN THE SAME LAYERS AS SLAB REINFORCEMENT.
4. #5 BARS IN EACH CORNER OF THE STIRRUPS SHALL PASS THROUGH COLUMN CORE, INSIDE VERTICAL REINFORCEMENT.

SLAB SHEAR REINFORCEMENT - STIRRUP LEG CONFIGURATIONS

SCALE: N.T.S.



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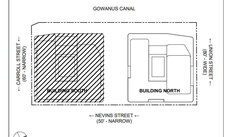
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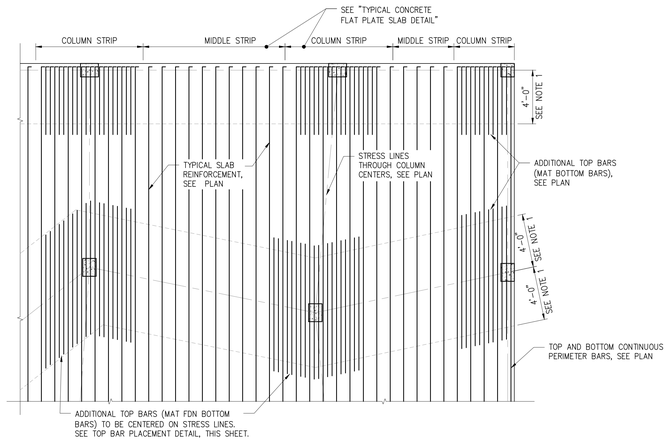
DRAWING TITLE:

TYPICAL DETAILS VI

SEAL & SIGNATURE:

STATE OF NEW YORK · JOSEPH ADYEMO · 090824 · LICENSED PROFESSIONAL ENGINEER

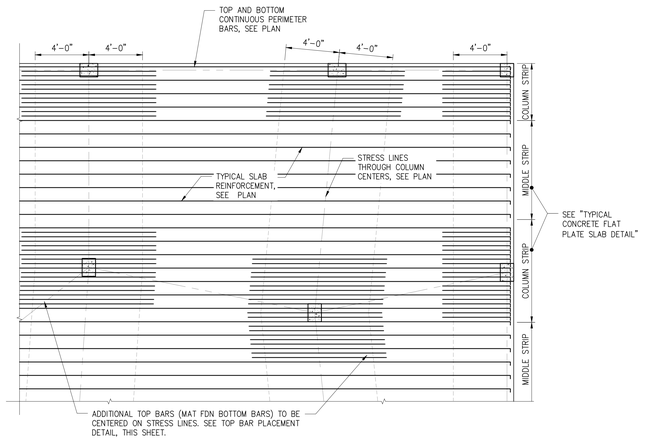
DATE (YYYY/MM/DD):	2022.03.18
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DRAWING No.:	S-355.00
PAGE No.:	48 OF 53



NORTH-SOUTH SLAB TOP REINFORCEMENT PLAN
(MAT FOUNDATION BOTTOM REINFORCEMENT PLAN)

NOTES:

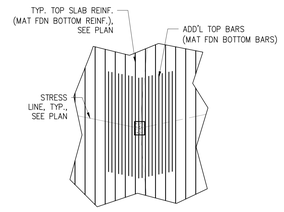
1. LAP SPLICING OF REINFORCEMENT SHALL BE AVOIDED WITHIN 4'-0" OF THE STRESS LINES SHOWN ON PLAN WHEN POSSIBLE.
2. TYPICAL REINFORCEMENT LAP SPLICES SHALL BE STAGGERED WITH NO MORE THAN 50% OF THE BARS SPLICED AT ANY LOCATION.
3. PROVIDE STANDARD HOOK AT EDGES OF SLAB AND OPENINGS PER TYPICAL CONCRETE FLAT PLATE DETAIL



EAST-WEST SLAB TOP REINFORCEMENT PLAN
(MAT FOUNDATION BOTTOM REINFORCEMENT PLAN)

NOTES:

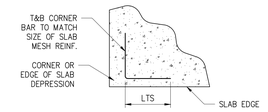
1. LAP SPLICING OF REINFORCEMENT SHALL BE AVOIDED WITHIN 4'-0" OF THE STRESS LINES SHOWN ON PLAN WHEN POSSIBLE.
2. TYPICAL REINFORCEMENT LAP SPLICES SHALL BE STAGGERED WITH NO MORE THAN 50% OF THE BARS SPLICED AT ANY LOCATION.
3. PROVIDE STANDARD HOOK AT EDGES OF SLAB AND OPENINGS PER TYPICAL CONCRETE FLAT PLATE DETAIL



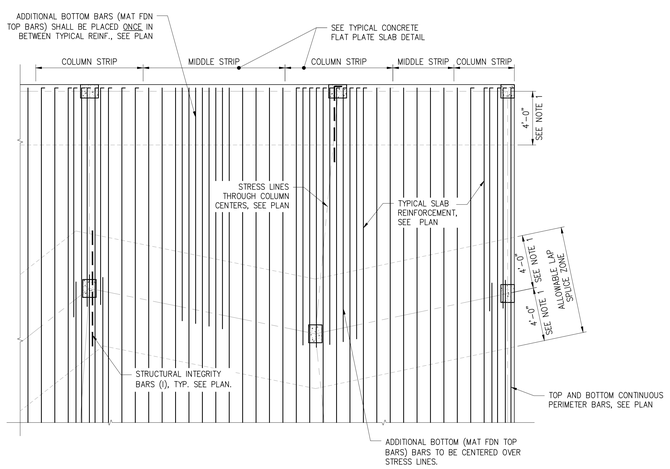
NOTES:

1. ALL ADD'L TOP REINFORCEMENT (MAT FDN BOTTOM REINFORCEMENT) AS CALLED OUT ON PLAN SHALL BE PLACED TWICE INBETWEEN TYPICAL REINF. SPACING (SEE FIGURE ABOVE).
2. A MINIMUM 2 OF THE ADDITIONAL TOP BARS SHALL BE PLACED WITHIN THE WIDTH OF THE COLUMN, TYP.

TOP BAR
(MAT FDN BOTTOM BAR) PLACEMENT DETAIL



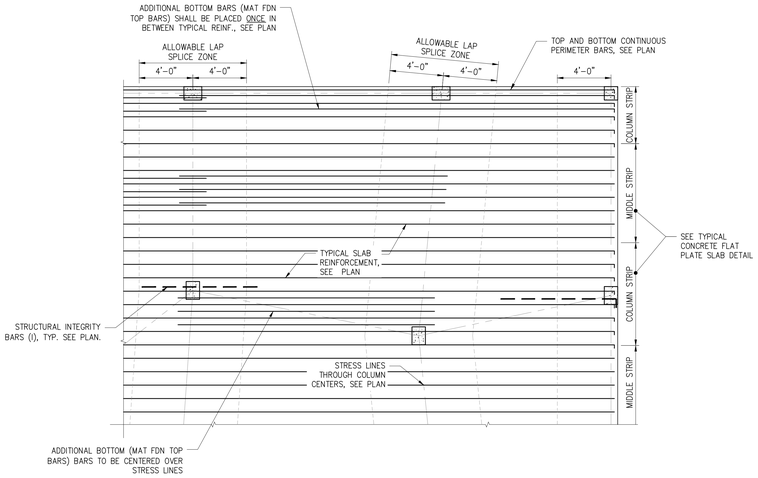
DETAIL AT CORNERS



NORTH-SOUTH SLAB BOTTOM REINFORCEMENT PLAN
(MAT FOUNDATION TOP REINFORCEMENT PLAN)

NOTES:

1. LAP SPLICING OF REINFORCEMENT SHALL BE DONE WITHIN 4'-0" OF THE STRESS LINES SHOWN ON PLAN.
2. TYPICAL REINFORCEMENT LAP SPLICES SHALL BE STAGGERED WITH NO MORE THAN 50% OF THE BARS SPLICED AT ANY LOCATION.
3. ALL COLUMN STRIP BOTTOM BARS (MAT FOUNDATION TOP BARS) SHALL BE HOOKED AT EDGES OF SLAB PER TYPICAL CONCRETE FLAT PLATE SLAB DETAIL.
4. A MINIMUM OF TWO BOTTOM BARS SHALL BE PLACED WITHIN THE WIDTH OF THE COLUMN, TYP.



EAST-WEST SLAB BOTTOM REINFORCEMENT PLAN
(MAT FOUNDATION TOP REINFORCEMENT PLAN)

NOTES:

1. LAP SPLICING OF REINFORCEMENT SHALL BE DONE WITHIN 4'-0" OF THE STRESS LINES SHOWN ON PLAN.
2. TYPICAL REINFORCEMENT LAP SPLICES SHALL BE STAGGERED WITH NO MORE THAN 50% OF THE BARS SPLICED AT ANY LOCATION.
3. ALL COLUMN STRIP BOTTOM BARS (MAT FOUNDATION TOP BARS) SHALL BE HOOKED AT EDGES OF SLAB PER TYPICAL CONCRETE FLAT PLATE SLAB DETAIL.
4. A MINIMUM OF TWO BOTTOM BARS SHALL BE PLACED WITHIN THE WIDTH OF THE COLUMN, TYP.

TYPICAL CONCRETE FLAT SLAB BAR PLACEMENT DETAILS
SCALE: N.T.S.



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LANDSCAPE:
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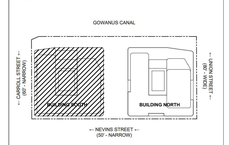
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KEY PLAN



DOB NOW JOB # B00611166-P1

No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

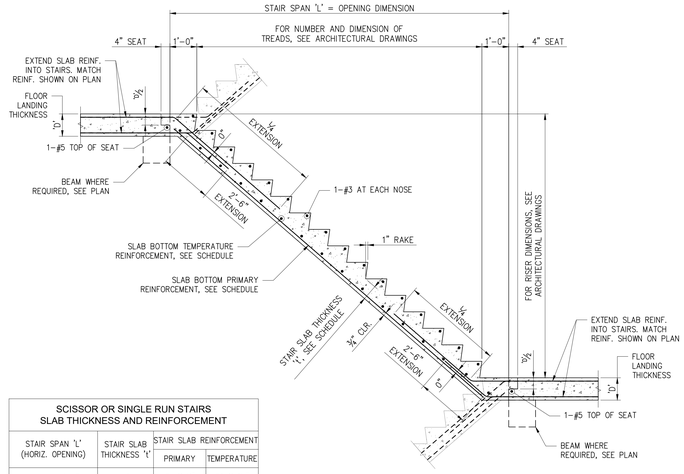
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DRAWING TITLE:
TYPICAL DETAILS VII

SEAL & SIGNATURE:



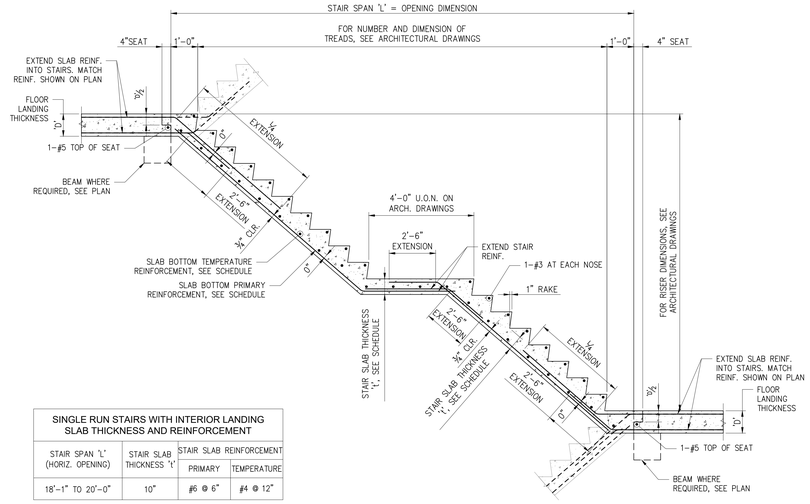
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SCISSOR OR SINGLE RUN STAIRS SLAB THICKNESS AND REINFORCEMENT			
STAIR SPAN 'L' (HORIZ. OPENING)	STAIR SLAB THICKNESS 't'	STAIR SLAB REINFORCEMENT	
		PRIMARY	TEMPERATURE
UP TO 13'-0"	6"	#5 @ 8"	#4 @ 15"
13'-1" TO 16'-0"	7"	#5 @ 6"	#4 @ 15"
16'-1" TO 18'-0"	8"	#5 @ 5"	#4 @ 12"
18'-1" TO 20'-0"	9"	#5 @ 5"	#4 @ 12"

SCISSOR OR SINGLE RUN STAIR DETAIL

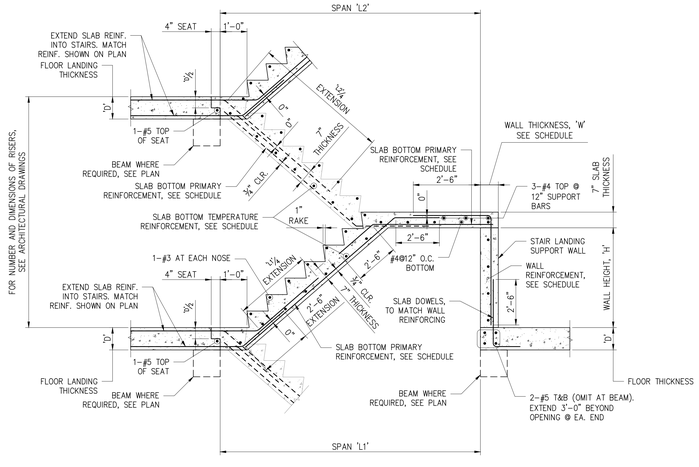
SCALE: N.T.S.



SINGLE RUN STAIRS WITH INTERIOR LANDING SLAB THICKNESS AND REINFORCEMENT			
STAIR SPAN 'L' (HORIZ. OPENING)	STAIR SLAB THICKNESS 't'	STAIR SLAB REINFORCEMENT	
		PRIMARY	TEMPERATURE
18'-1" TO 20'-0"	10"	#6 @ 6"	#4 @ 12"

SINGLE RUN STAIR WITH INTERIOR LANDING DETAIL

SCALE: N.T.S.



TWO-RUN OR THREE-RUN STAIRS REINFORCEMENT FOR SLAB 't' = 7"		
STAIR SPAN L1, L2, L3, L4 (HORIZ. OPENING)	STAIR SLAB REINFORCEMENT	
	PRIMARY	TEMPERATURE
UP TO 10'-0"	#4 @ 8"	#4 @ 15"
10'-1" TO 12'-0"	#4 @ 6"	#4 @ 15"
12'-1" TO 14'-0"	#5 @ 8"	#4 @ 15"
14'-1" TO 16'-0"	#5 @ 6"	#4 @ 15"

STAIR LANDING SUPPORT WALL SCHEDULE		
WALL HEIGHT, 'H'	WALL THICKNESS, 'W'	WALL REINFORCEMENT
UP TO 8'-0"	6"	#4 @ 12" O.C. EACH WAY, MID-DEPTH
8'-1" TO 16'-0"	8"	#4 @ 18" O.C. EACH WAY & EACH FACE

TWO-RUN STAIR DETAIL

SCALE: N.T.S.



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LANDSCAPE:
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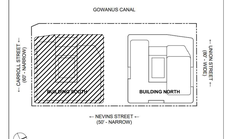
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BROOKLYN, NY 11217

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KEY PLAN



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2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

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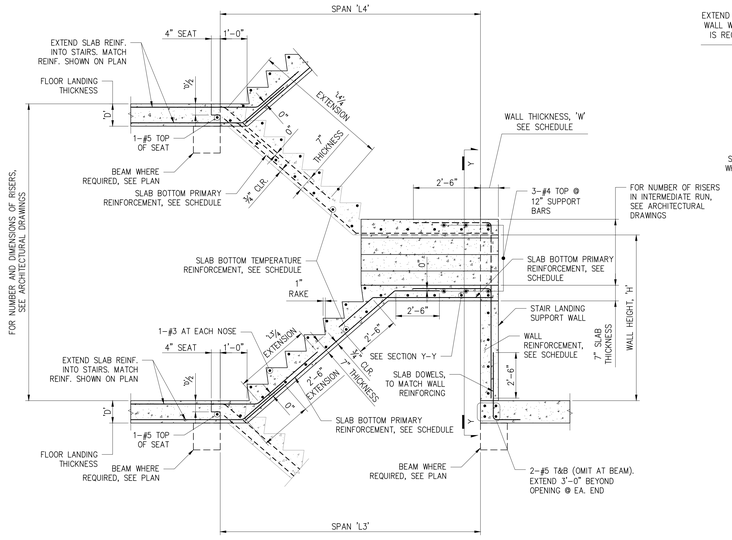
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TYPICAL DETAILS VIII

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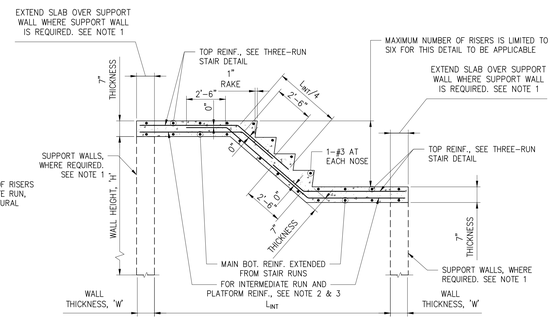


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DRAWING No.:	S-357.00
PAGE No.:	50 OF 53



THREE-RUN STAIR DETAIL

SCALE: N.T.S.



SECTION Y–Y
(AT THREE–RUN STAIR)

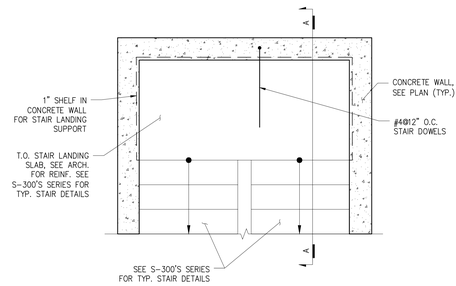
TWO-RUN OR THREE-RUN STAIRS REINFORCEMENT FOR SLAB 't' = 7"		
STAIR SPAN L1, L2, L3, L4 (HORIZ. OPENING)	STAIR SLAB REINFORCEMENT	
	PRIMARY	TEMPERATURE
UP TO 10'-0"	#4 @ 8"	#4 @ 15"
10'-1" TO 12'-0"	#4 @ 6"	#4 @ 15"
12'-1" TO 14'-0"	#5 @ 8"	#4 @ 15"
14'-1" TO 16'-0"	#5 @ 6"	#4 @ 15"

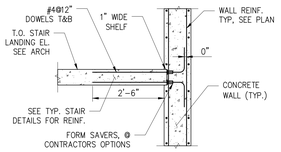
STAIR LANDING SUPPORT WALL SCHEDULE		
WALL HEIGHT, 'H'	WALL THICKNESS, 'W'	WALL REINFORCEMENT
UP TO 8'-0"	6"	#4 @ 12" O.C. EACH WAY, MID-DEPTH
8'-1" TO 16'-0"	8"	#4 @ 18" O.C. EACH WAY & EACH FACE

NOTES:

1. PROVIDE SUPPORT WALLS WHERE L_{INT} IS > 10'-0". EXTEND SLAB AND REINFORCEMENT OVER SUPPORT WALLS AS REQUIRED ABOVE OR WHERE WALLS ARE SHOWN ON PLANS. FOR WALL REINFORCEMENT AND THICKNESS, SEE STAIR LANDING SUPPORT WALL SCHEDULE.
2. WHERE L_{INT} IS NOT SUPPORTED AT ENDS, PROVIDE: #4@12" BOTTOM.
3. WHERE L_{INT} IS SUPPORTED AT ENDS, PROVIDE: #4@6" BOTTOM FOR L_{INT} UP TO 10'-0". #4@6" BOTTOM FOR L_{INT} BETWEEN 10'-1" AND 12'-0".

   FOR L SPANNING MORE THAN 12'-0", DESIGNER TO PROVIDE DETAILS.





SECTION A–A

TYPICAL STAIR LANDING CONNECTION AT WALL DETAIL

SCALE: N.T.S.

NOTE:
REFERENCE TYPICAL STAIR DETAILS FOR INFORMATION NOT SHOWN

RAISED FLOOR STAIR LANDING DETAIL

SCALE: N.T.S.

BOTTOM OF STAIR DETAIL - NO SLAB OPENING

SCALE: N.T.S.

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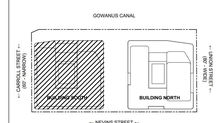
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KEY PLAN



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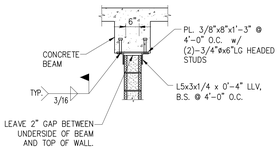
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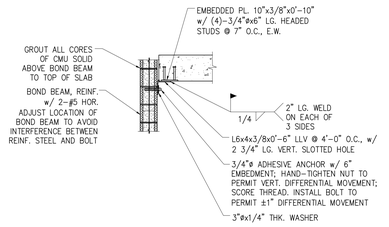
STATE OF NEW YORK · CODY J. AUYEUNG · 088427 · LICENSED PROFESSIONAL ENGINEER

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PROJECT No.:	T.21195.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-358.00
PAGE No.:	51 OF 53



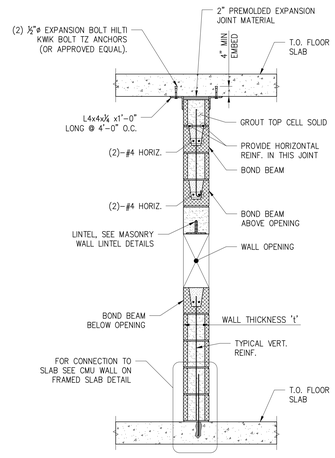
MASONRY PARTITION WALL CONNECTION TO UNDERSIDE OF CONCRETE BEAM

SCALE: N.T.S.



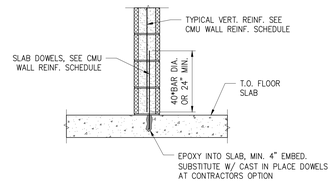
MASONRY WALL CONNECTION TO CONCRETE SLAB

SCALE: N.T.S.



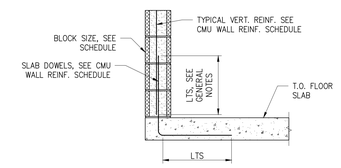
DETAIL AT CMU

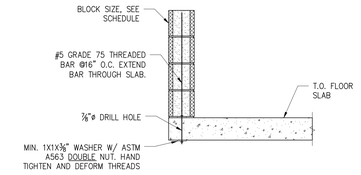
SCALE: N.T.S.



CMU WALL ON FRAMED SLAB DETAIL (TOP & BOTTOM SUPPORT CONDITION)

SCALE: N.T.S.





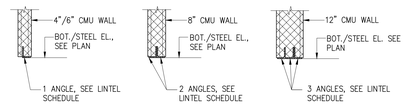
NOTE:
THIS DETAIL IS NOT APPLICABLE AT PARKING LEVELS OR ANY FLOOR/ROOF WHERE IMPACT LOADS GREATER THAN 200#'S IS A DESIGN CONSIDERATION

CMU WALL ON FRAMED SLAB DETAIL (CANTILEVER SUPPORT CONDITION)

SCALE: N.T.S.

6" CMU LINTEL SCHEDULE					
SPAN LENGTH	STEEL LINTEL SIZE	CONCRETE/MASONRY/PRECAST LINTELS			
		SIZE		REINF. STEEL	
		WIDTH	DEPTH	BOTTOM	STIRRUPS
UP TO 4'-0"	L6x4x3/8" (LLV)	6"	8"	2 #4	–
4'-0" TO 6'-0"	L6x4x3/8" (LLV)	6"	8"	2 #5	–
6'-0" TO 8'-0"	L6x4x5/8" (LLV)	6"	16"	2 #5	#3@8" U BARS
8'-0" TO 10'-8"	–	6"	16"	2 #5	#3@8" U BARS

8" CMU LINTEL SCHEDULE					
SPAN LENGTH	STEEL LINTEL SIZE	CONCRETE/MASONRY/PRECAST LINTELS			
		SIZE		REINF. STEEL	
		WIDTH	DEPTH	BOTTOM	STIRRUPS
UP TO 4'-0"	(2) L3½"x3½"x5/16"	8"	8"	2 #4	–
4'-0" TO 6'-0"	(2) L5"x3½"x5/16" (LLV)	8"	8"	2 #4	–
6'-0" TO 8'-0"	(2) L6"x3½"x5/16" (LLV)	8"	16"	2 #5	#3@8" U BARS
8'-0" TO 10'-8"	(2) L6"x3½"x⅝" (LLV)	8"	16"	2 #5	#3@8" U BARS



NOTES:

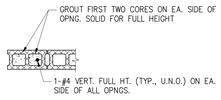
1. STEEL LINTELS SHALL HAVE MINIMUM OF 6" BEARING. CONCRETE/MASONRY LINTELS SHALL HAVE MINIMUM 8" BEARING.
2. ALL CONCRETE LINTELS SHALL BE f'c = 3000 PSI MIN.
3. GROUT ALL MASONARY LINTELS SOLID W/ f'm = 2000 PSI MIN.

MASONRY WALL LINTEL DETAILS

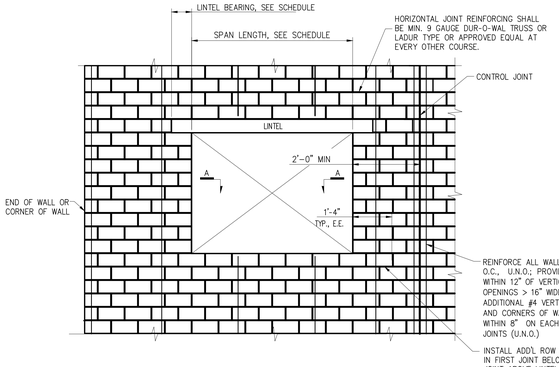
SCALE: N.T.S.

CMU WALL REINFORCEMENT SCHEDULE				
LOCATION	HEIGHT OF WALL	MIN. BLOCK THICKNESS	VERTICAL REINFORCEMENT	DOWELS FROM WALL OR SLAB
INTERIOR	UP TO 10'-0"	4"	#4 @ 48"	#4 @ 48"
	10'-1" TO 16'-0"	6"	#4 @ 48"	#4 @ 48"
	16'-1" TO 22'-6"	8"	#4 @ 48"	#4 @ 48"
EXTERIOR	UP TO 8'-0"	4"	#4 @ 32"	#4 @ 16"
	8'-1" TO 10'-0"	6"	#4 @ 32"	#4 @ 16"
	10'-1" TO 12'-0"	8"	#4 @ 32"	#4 @ 16"
	12'-1" TO 16'-0"	8"	#4 @ 16"	#5 @ 16"
	16'-1" TO 20'-0"	12"	#4 @ 16"	#5 @ 16"
	CANT. UP TO 8'-0"	8"	#4 @ 16"	#5 @ 16"
INTERIOR FOR VEHICLE IMPACT*	UP TO 14'-0"	8"	#6 @ 16"	#5 @ 16"
	CANT.	SEE "TYPICAL CAR BARRIER DETAIL"		

NOTE:
• THIS CONDITION IS APPLICABLE AT PARKING LEVELS WHERE VEHICLE IMPACT LOADS ARE A DESIGN CONSIDERATION



SECTION A

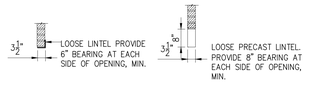


NOTE:
REINFORCING SHOWN IN THIS DETAIL INDICATES MINIMUM REINFORCING STEEL REQUIRED IN ALL MASONRY PARTITION WALLS. PROVIDE ADDITIONAL REINFORCING AND/OR LARGER REINFORCING BAR SIZES WHERE INDICATED ELSEWHERE.

MASONRY WALL REINFORCING

SCALE: N.T.S.

NOTE:
LINTEL DOES NOT REPLACE RELIEVING ANGLE



TYPE	OPENING WIDTH	LINTEL SIZE	REMARKS
STEEL	UP TO 4'-0"	L3½"x3½"x5/16" GALV.	
	4'-0" TO 6'-0"	L5"x3½"x5/16" LLV GALV.	ANGLES SHALL BE FIREPROOFED, SEE ARCH.
	6'-0" TO 8'-0"	L6"x3½"x5/16" LLV GALV.	
PRECAST	4'-0" TO 12'-0"	4"x8" PRECAST LINTEL REINF. W/ 1#5 BAR T&B W/ #3 CLOSED STIRRUP @ 4" O.C.	

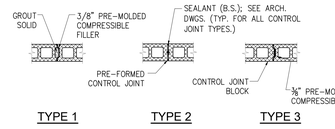
NOTE:
ALL ANGLES TO BE A36 GALV. STL.

DETAIL AT LOOSE LINTEL FOR BRICK

SCALE: N.T.S.

CONTROL JOINT SPACING CRITERIA

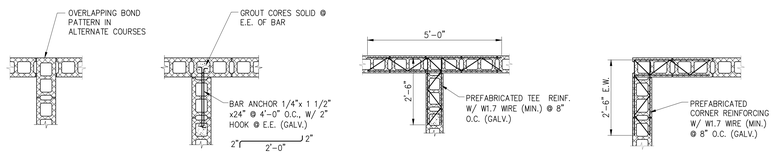
1. INSTALL VERTICAL CONTROL JOINTS IN ALL MASONRY WALLS:
   - AT 25'-0" O.C., MAXIMUM.
   - AT INTERSECTIONS OF BEARING WALLS AND NON-BEARING WALLS.
   - AT ALL CHANGES IN WALL HEIGHTS AND THICKNESSES.
   - AT ALL WINDOW AND DOOR OPENINGS.
   - AT INTERSECTIONS OF WALLS WITH COLUMNS, PIERS AND PILASTERS.
   - WITHIN 10'-0 OF ALL CORNERS.
   - NO CLOSER THAN 2'-0" TO EDGE OF ANY OPENING IN WALL
2. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF ALL CONTROL JOINTS IN MASONRY WALLS; WHERE DISCREPANCIES EXIST BETWEEN CONTROL JOINT SPACING REQUIREMENTS ON ARCHITECTURAL DRAWINGS AND SPACING REQUIREMENTS INDICATED IN THIS DETAIL, CONTRACTOR SHALL NOTIFY THE ARCHITECT AND ENGINEER TO RESOLVE DISCRPANCY.



NOTES:
1. SEE ARCH. DWGS. FOR WALL FINISHES (WHERE REQ'D.)
2. PROVIDE GROUT AND VERTICAL REINFORCING STEEL IN CORES OF MASONRY WHERE INDICATED (ELSEWHERE).

CONTROL JOINTS IN MASONRY WALLS

SCALE: N.T.S.



WALL INTERSECTION AT "TEES"

WALL INTERSECTION AT CORNERS

NOTE:

CONTRACTOR HAS OPTION OF PROVIDING EITHER OPTION "A" "B" OR "C" AT "TEE" INTERSECTIONS.

REINFORCING AT INTERSECTING MASONRY WALLS

SCALE: N.T.S.



OWNER:

CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:

FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:

TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:

ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:

SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:

JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:

BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:

BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:

PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:

JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

LANDSCAPE:

GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:

GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

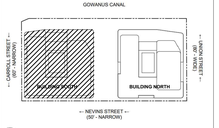
ZONING SPECIALIST:

DEVELOPMENT CONSULTING SERVICES
630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:

WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



DOB NOW JOB # B00611166-P1

No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
5	11.18.22	FOUNDATION 100% CD
4	08.19.22	ISSUED FOR D.O.B. FILING - F.O. PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

498 UNION ST.
BROOKLYN, NY 11217

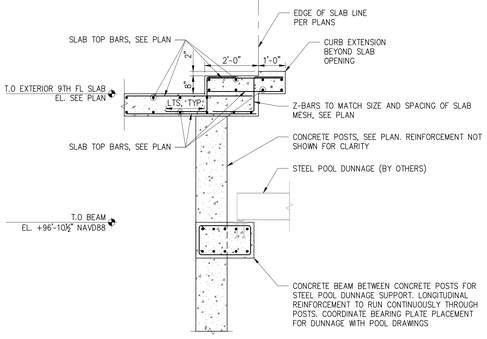
DRAWING TITLE:

TYPICAL DETAILS X

SEAL & SIGNATURE:



DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-359.00
PAGE No.:	52 OF 53



SECTION

SCALE: ½" = 1'-0"

1



OWNER:

CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
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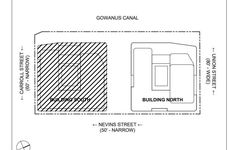
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WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



DOB NOW JOB # B00611166-P1

No.	DATE	ISSUE
6	12.21.22	80% CONSTRUCTION DRAWINGS
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1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

498 UNION ST.
BROOKLYN, NY 11217

DRAWING TITLE:

STRUCTURAL SECTIONS I

SEAL & SIGNATURE:



DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-450.00
PAGE No.:	53 OF 53

I:\PROJECTS\2021\TJ21395.01 - 300 NEVINS STREET, BROOKLYN, NY 11215\DWGS\STRUCTWORKING\CAD\TJ21395.01 S-450'S.DWG

GENERAL NOTES

1. ALL ELEVATIONS INDICATED IN THESE DRAWINGS ARE REFERENCED TO THE PROJECT DATUM +0'-0" WHICH CORRESPONDS TO +14.00' NAVD88 ELEVATION.

2. WORK NOT INDICATED ON A PART OF THE DRAWINGS BUT REASONABLY IMPLIED TO BE SIMILAR TO THAT SHOWN AT CORRESPONDING PLACES SHALL BE REPEATED.

3. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THE STRUCTURAL DRAWINGS WITH THE ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS. IN CASE OF CONFLICT BETWEEN THE STRUCTURAL DRAWINGS AND DRAWINGS RELATED TO OTHER TRADES, THE CONTRACTOR SHALL MAKE ALLOWANCE IN HIS BID FOR THE MORE STRINGENT REQUIREMENTS. CONFLICTS BETWEEN THE STRUCTURAL DRAWINGS AND THE DRAWINGS OF OTHER TRADES SHALL NOT BE REASON FOR ANY EXTRA COST OR DELAY IN THE EXECUTION OF THE WORK.

4. IN ANY CASE OF CONFLICT BETWEEN THE NOTES, DETAILS AND SPECIFICATIONS, THE MOST RIGID REQUIREMENTS SHALL GOVERN.

5. CONTRACTOR SHALL MAKE NO DEVIATION FROM DESIGN DRAWINGS WITHOUT WRITTEN APPROVAL OF THE ARCHITECT AND/OR STRUCTURAL ENGINEER.

6. ALL DIMENSIONS INDICATED ON THE DRAWINGS ARE BASED UPON THE AVAILABLE INFORMATION AND SHALL NOT BE USED FOR ORDERING AND/OR FABRICATING MATERIALS. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING DIMENSIONS PRIOR TO ORDERING AND/OR FABRICATING MATERIALS.

7. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS BY MEASUREMENTS AT THE JOB SITE AND SHALL TAKE ANY AND ALL OTHER MEASUREMENTS NECESSARY TO VERIFY THE DRAWINGS AND TO PERFORM HIS WORK PROPERLY.

8. THE CONTRACTOR SHALL EXPOSE THE EXISTING CONSTRUCTION, VERIFY AND CHECK FIELD DIMENSIONS OF ALL EXISTING MEMBERS PRIOR TO THE PREPARATION OF SHOP DRAWINGS. IN THE EVENT THAT EXISTING CONDITIONS OR DETAILS OF CONSTRUCTION VARY FROM THOSE SHOWN ON THE STRUCTURAL DRAWINGS AND DETAILS, THE CONTRACTOR MUST MAKE NECESSARY SKETCHES SHOWING THE EXISTING CONDITIONS AND, SUBMIT THE SAME TO THE ARCHITECT AND ENGINEER FOR REVIEW AND RESOLUTION.

9. CONTRACTOR SHALL ALLOW FOR THE COST OF OPENING AND EXPOSING EXISTING STRUCTURAL FRAMING TO VERIFY AND MEASURE THE EXISTING CONDITIONS AND MEMBERS.

10. MATERIALS AND EQUIPMENT SHALL BE STORED AND TRANSPORTED IN A MANNER COMPATIBLE WITH THE ALLOWABLE FLOOR LOADINGS.

11. FOR WATERPROOFING DETAILS AND LOCATIONS, SEE ARCHITECTURAL DRAWINGS.

12. FOR LOCATION OF FLOOR DRAINS, CURBS, CONCRETE PADS AND FLOOR DEPRESSIONS, ETC. SEE ARCHITECTURAL AND MECHANICAL DRAWINGS.

13. ALL CONSTRUCTION SHALL BE PERFORMED IN CONFORMANCE WITH THE REQUIREMENTS OF THE BUILDING CODE OF THE CITY OF NEW YORK, LATEST EDITION AND REVISIONS.

14. CONTRACTOR ALONE SHALL BE RESPONSIBLE FOR THE SAFETY OF THE EXISTING STRUCTURES DURING THE ENTIRE CONSTRUCTION OF ADDITIONS TO AND/OR ALTERATIONS OF THE EXISTING STRUCTURE AND SHALL TAKE ADEQUATE PRECAUTION TO PREVENT DAMAGE TO THE EXISTING STRUCTURAL AND ARCHITECTURAL ELEMENTS. IF ANY DAMAGE TO SAME ELEMENTS OCCURS, IT SHALL BE RECTIFIED TO THE ENTIRE SATISFACTION OF OWNER AT NO EXTRA COST TO THE OWNER.

15. THE CONTRACTOR SHALL PERFORM ALL WORK (INCLUDING DEMOLITION & ERECTION) WITH DUE REGARD TO LIFE AND PROPERTY IN THE VICINITY OF THE WORK AREA. CONTRACTOR ALONE SHALL BE RESPONSIBLE FOR PROTECTION OF SAME FROM ANY HARM OR DAMAGE DURING THE ENTIRE CONSTRUCTION AND/OR ALTERATION. ANY HARM OR DAMAGE SHALL BE RECTIFIED TO THE ENTIRE SATISFACTION OF OWNER AT NO ADDITIONAL COST TO OWNER.

16. CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ALL CONSTRUCTION DEBRIS IN THE VICINITY OF WORK.

17. CONTRACTOR MUST PROVIDE ADEQUATE SHORING AND/OR TEMPORARY SUPPORT WHEREVER REQUIRED TO THE EXISTING AND NEW STRUCTURES DURING THE ENTIRE CONSTRUCTION PERIOD.

18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF THE INTERIOR OF THE BUILDING AND ALL CONTENTS FROM WEATHER OR ANY OTHER ELEMENTS THAT COULD CAUSE DAMAGE.

19. THE CONTRACTOR SHALL BE COMPLETELY RESPONSIBLE FOR THE SAFETY OF ADJACENT STRUCTURES.

20. ALL WORK SHALL HAVE SPECIAL INSPECTION CONFORMING TO BUILDING CODE OF THE CITY OF NEW YORK, 2014 REQUIREMENTS. SPECIAL INSPECTION SHALL BE BY AN INDEPENDENT TESTING AGENCY HIRED BY THE OWNER AND APPROVED BY NYC DOB AND THE EOR.

21. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING THE COMPLETE LAYOUT AND DETAILS OF ALL STRUCTURAL WORK TO BE PERFORMED. THE CONTRACTOR MAY NOT PERFORM WORK UNTIL THE SHOP DRAWINGS HAVE BEEN APPROVED.

22. THE CONTRACTOR SHALL SUBMIT THE WELDING PROCEDURE TO EXISTING STEEL FOR ENGINEERS APPROVAL.

23. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE LANDLORDS RULES AND REGULATIONS.

24. ALL CONTRACTORS ARE REQUIRED TO EXAMINE THE DRAWINGS AND SPECIFICATIONS CAREFULLY, VISIT THE JOB SITE AND FULLY INFORM THEMSELVES TO ALL EXISTING CONDITIONS AND LIMITATIONS PRIOR TO SUBMITTING THEIR PROPOSAL. FAILURE TO VISIT THE SITE AND NOT BEING FAMILIAR WITH THE EXISTING CONDITIONS AND LIMITATIONS WILL IN NO WAY RELIEVE THE SUCCESSFUL BIDDER FROM FURNISHING ANY MATERIALS OR PERFORMING ANY WORK. THAT MAY BE REQUIRED TO COMPLETE WORK IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS WITHOUT ADDITIONAL COST TO THE OWNER.

25. STRUCTURAL SUBMITTALS REQUIRED:

A. THE FOLLOWING ITEMS REQUIRE SUBMITTAL OF SHOP AND ERECTION DRAWINGS, FOR REVIEW:
   i) REINFORCING STEEL FOR CAST-IN-PLACE CONCRETE
   ii) CAST-IN-PLACE CONSTRUCTION JOINT LOCATIONS
   iii) COMPOSITE DRAWING OF ALL SLAB PENETRATIONS

B. THE FOLLOWING ITEMS REQUIRE SUBMITTAL OF SHOP AND ERECTION DRAWINGS AND STRUCTURAL CALCULATIONS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF THIS PROJECT:
   i) PRECAST CONCRETE - PLANK, WALL PANELS, ETC.
   ii) FACADE SYSTEMS
   iii) CONCRETE DESIGN MIXES
   iv) SHORING AND RESHORING
   v) EXCAVATION SUPPORT, SHEETING, OR BENCHING WHERE SOILS REQUIRE SUCH BY VIRTUE OF OSHA REQUIREMENTS (ALL EXCAVATIONS GREATER THAN 5' REQUIRE SPECIFIC TRENCHING CONSIDERATIONS) OR SOIL CONDITIONS

NON STRUCTURAL ITEMS

1. COORDINATE THE EXTENT AND LOCATION OF CURBS, MECHANICAL PADS AND MASONRY DOWELS WITH THE ARCHITECTURAL AND MECHNICAL DRAWINGS. TYPICAL DETAILS ARE SHOWN ON THE STRUCTURAL DRAWINGS. REINFORCE NON-STRUCTURAL FILL WITH 6x6 - W1.4xW1.4 WWF LOCATED 1" FROM TOP.

CODES

1. 2014 NEW YORK CITY BUILDING CODE (2014 NYCBC). INCLUDING (BUT NOT LIMITED TO) THE FOLLOWING REFERENCED STANDARDS. SEE CHAPTER 35 OF THE 2014 NYCBC FOR FULL LIST OF REFERENCED STANDARDS.

1.1. ACI 318-11 - AMERICAN CONCRETE INSTITUTE "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE".

1.2. ACI 530-08 - AMERICAN CONCRETE INSTITUTE "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES."

1.3. ASCE 7-05 - AMERICAN SOCIETY OF CIVIL ENGINEERS "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES."

1.4. ASCE 7-10 - AMERICAN SOCIETY OF CIVIL ENGINEERS "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES."

STRUCTURAL STABILITY

1. THE ENTIRE STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH THE STRUCTURAL STABILITY PROVISIONS OF THE 2014 NYC BC SECTION 1615 "STRUCTURAL INTEGRITY - PRESCRIPTIVE REQUIREMENTS".

2. THE PROVISIONS OF THE 2014 NYC BC SECTION 1616 "STRUCTURAL INTEGRITY - KEY ELEMENT ANALYSIS" ARE NOT REQUIRED FOR THIS STRUCTURE AS PER SECTION 1616.1.

FLOOD RESISTANT CONSTRUCTION NOTES

1. THE ENTIRE STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH ASCE 24, INCLUDING THE PILE FOUNDATION AND BUILDING STRUCTURE ATTACHED THERETO IS DESIGNED TO BE ANCHORED TO RESIST FLOTATION, COLLAPSE AND LATERAL MOVEMENT DUE TO THE EFFECTS OF WIND, AND FLOOD LOADS ACTING SIMULTANEOUSLY ON ALL BUILDING COMPONENTS, AND OTHER LOAD REQUIREMENTS OF CHAPTER 16 OF THE NEW YORK CITY BUILDING CODE
2. THE FOLLOWING FLOOD HAZARD MAP AND SUPPORTING DATA ARE IN EFFECT IN ACCORDANCE WITH SECTION G102.2 OF THE 2014 NYC BC:
   2.1. FEMA FIS 360497
   2.2. FEMA FIRMs 360497
3. THE FOLLOWING PRELIMINARY FLOOD INSURANCE STUDY AND RATE MAPS ARE IN EFFECT IN ACCORDANCE WITH SECTION G102.2.1 OF THE 2014 NYC BC:
   3.1. FEMA PFIS 360497
   3.2. FEMA PFIRMs 360497

4. THE BUILDING IS LOCATED IN A COASTAL A-ZONE.
   4.1. BASE FLOOD ELEVATION (BFE) = 10.00' (NAVD 88)
   4.2. DESIGN FLOOD ELEVATION (DFE) = 11.00' (NAVD 88)

STRUCTURAL TESTS, SPECIAL AND PROGRESS INSPECTIONS

1. THE OWNER SHALL ENGAGE AN INDEPENDENT NYC BUILDING DEPARTMENT APPROVED SPECIAL INSPECTION AGENCY TO PERFORM SPECIAL INSPECTIONS AND TESTING AND PROGRESS INSPECTIONS FOR, BUT NOT LIMITED TO, THE STRUCTURAL ITEMS INDICATED IN THE CHARTS BELOW AS REQUIRED BY THE 2014 NYC BC.

SPECIAL INSPECTIONS

SPECIAL INSPECTION ITEMS	CODE/SECTION	FOUNDATION SCOPE	STRUCTURAL SCOPE	CLASS INSPECTION
STRUCTURAL STEEL - WELDING	BC 1704.3.1			CLASS 1 (MAJOR BUILDING)
STRUCTURAL STEEL - DETAILS	BC 1704.3.2			
STRUCTURAL STEEL - HIGH STRENGTH BOLTING	BC 1704.3.3			
STRUCTURAL COLD FORMED STEEL	BC 1704.3.4			
CONCRETE - CAST-IN-PLACE	BC 1704.4	X	X	
CONCRETE - PRECAST	BC 1704.4			
CONCRETE - PRESTRESSED	BC 1704.4			
MASONRY	BC 1704.5			
WOOD - INSTALLATION OF HIGH-LOAD DIAPHRAGMS	BC 1704.6.1			
WOOD - INSTALLATION OF METAL-PLATE-CONNECTED TRUSSES	BC 1704.6.2			
WOOD - INSTALLATION OF PREFABRICATED I-JOIST	BC 1704.6.3			
SUBGRADE INSPECTION	BC 1704.7.1	X		
SUBSURFACE CONDITIONS - FILL PLACEMENT & IN-PLACE DENSITY	BC 1704.7.2, BC 1704.7.3	X		
SUBSURFACE INVESTIGATIONS (BORINGS/TEST PITS)	BC 1704.7.4	X		
DEEP FOUNDATION ELEMENTS	BC 1704.8	X		
HELICAL PILES	BC 1704.8.5			
ALTERNATIVE MATERIALS	BC 1704.14			
STRUCTURAL STABILITY - EXISTING BUILDINGS	BC 1704.20.1			
EXCAVATIONS - SHEETING, SHORING, AND BRACING	BC 1704.20.2	X		
UNDERPINNING	BC 1704.20.3, BC 1814			
MECHANICAL DEMOLITION	BC 1704.20.4			
POST INSTALLED ANCHORS	BC 1704.32			
CONCRETE DESIGN MIX	BC 1905.3, BC 1913.5	X	X	
CONCRETE SAMPLING AND TESTING	BC 1905.6, BC 1913.10	X	X	

PROGRESS INSPECTIONS

PROGRESS INSPECTION CATEGORIES	CODE/SECTION	FOUNDATION SCOPE	STRUCTURAL SCOPE	CLASS INSPECTION
FOOTING AND FOUNDATION	BC 110.3.1	X		CLASS 1 (MAJOR BUILDING)
LOWEST FLOOR ELEVATION	BC 110.3.2	X		
STRUCTURAL WOOD FRAME	BC 110.3.3			
FINAL	28-116.2.4.2, BC 110.5, DIRECTIVE 14 OF 1975 AND 1 RCNY 101-10		X	



OWNER:
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UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
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NEW YORK, NY 10018

FACADE:
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NEW YORK , NY10036

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INTERIOR LIGHTING:
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CIVIL ENGINEER:
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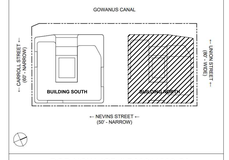
LANDSCAPE:
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BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
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NEW YORK, NY 10007

KEY PLAN



DOB NOW JOB # B00611202-S8

No.	DATE	ISSUE
7	12.14.22	ISSUED FOR 80% CONSTRUCTION
6	12.07.22	ISSUED FOR DOB
5	11.18.22	100% FOUNDATION DRAWINGS
4	08.19.22	ISSUED FOR DOB FILING - FO PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

417 CARROLL ST.

BROOKLYN, NY 11217

DRAWING TITLE:

GENERAL NOTES I

SEAL & SIGNATURE:

DATE (YYYY/MM/DD):	2022.12.07
PROJECT No.:	TJ21395.01
DRAWING BY:	KAS/KC
CHK BY:	AM
DRAWING No.:	FO-001.00
PAGE No.:	1 OF 51

I:\PROJECTS\2021\TJ21395.01 - 300 NEVINS STREET, BROOKLYN, NY 11215\DWG\SIS\TRUCTWORK\NG\CAD\TJ21395.01 S-001S.DWG

SCOPE OF WORK:

1. INCLUDES THE CONSTRUCTION OF A NEW 17 STORY BUILDING. STRUCTURE WILL CONSIST OF CAST IN PLACE CONCRETE SLABS AND COLUMNS. LATERAL SYSTEM WILL CONSIST OF CONCRETE SLAB DIAPHRAGMS WITH ORDINARY REINFORCED CAST IN PLACE CONCRETE SHEAR WALLS.

DESIGN SCOPE OF WORK (STRUCTURAL)

ITEM	TITAN ENGINEERS PC
STRUCTURAL DESIGN (SUPERSTRUCTURE) INCLUDING COLUMNS, SHEAR WALLS, AND SLABS 2ND FLOOR THRU ROOF (AND FIRST FLOOR FRAMED SLAB)	YES
DEMOLITION MEANS OF OPERATION (DMO)	NO
PRECONSTRUCTION SURVEYS	NO
CONSTRUCTION MONITORING PLANS	NO
CONSTRUCTION MONITORING	NO
SITE SAFETY PLAN	NO

DESIGN SCOPE (FOUNDATION/SOE)

ITEM	TITAN ENGINEERS PC
STRUCTURAL DESIGN (FOUNDATION) INCLUDING COLUMNS, SHEAR WALLS, AND SLABS UP TO 1ST FLOOR	YES
SUPPORT OF EXCAVATION (SOE)	NO

GENERAL DOB FILING REQUIREMENTS:

DOB NOW STRUCTURAL "ALL RELATED APPLICATION" NUMBER: NB#:B00611202-I1

RELATED APPLICATIONS INCLUDE (BUT MAY NOT BE LIMITED TO) GENERAL CONSTRUCTION, ARCHITECTURAL, AND EQUIPMENT DRAWINGS.

1. FOUNDATION (FO), #:B00611202-S1
2. STRUCTURAL (ST), #:B00611202-S2
3. MECHANICAL (MS), #:B00611202-S3
4. PLUMBING (PL), #:B00611202-S4
5. EXCAVATION (SOE), #:B00611202-S5
6. FOUNDATION (FO) LIMITED WORK, #B00611202-S6

DESIGN LOADS:

1. THE FOLLOWING DESIGN LOADS COMPLY WITH THE PROVISIONS OF THE 2014 NYC BC AS PER SECTIONS BC 107.7 AND BC 1604.

LATERAL LOAD DESIGN SCHEDULE
2014 NYC BC

WIND LOAD
ASCE 7-05 PER 2014 NYC BC

ITEM	SYMBOL	VALUE
BASIC WIND SPEED (3 SEC. GUST)	V	98
WIND LOAD IMPORTANCE FACTOR	I_w	1.0
WIND LOAD EXPOSURE CATEGORY	-	B
INTERNAL PRESSURE COEFFICIENT	GCpi	±0.18
WIND BASE SHEAR	V_x	648 KIPS
	V_y	499 KIPS
COMPONENTS AND CLADDING WIND LOADS		SEE COMPONENTS AND CLADDING WIND LOAD TABLES

SEISMIC LOAD
ASCE 7-10 PER 2014 NYC BC

ITEM	SYMBOL	VALUE
IMPORTANCE FACTOR	I_E	1.0
STRUCTURAL OCCUPANCY/RISK CATEGORY	SORC	II
SHORT PERIOD SPECTRAL ACCELERATION	S_S	0.281g
1 SECOND PERIOD SPECTRAL ACCELERATION	S_1	0.073g
MAPPED LONG-PERIOD TRANSITION PERIOD	T_L	6 SECONDS
SITE CLASSIFICATION	S	D
SITE COEFFICIENT (SHORT PERIOD)	Fa	1.57
SITE COEFFICIENT (1 SEC PERIOD)	Fv	2.40
SPECTRAL RESP COEFFICIENT (SHORT PERIOD)	Sds	0.295
SPECTRAL RESP COEFFICIENT (1 SEC PERIOD)	Sd1	0.117
SEISMIC DESIGN CATEGORY	-	B
SEISMIC RESPONSE COEFFICIENT	Csx	0.0143
	Csy	0.0154
BASIC SEISMIC-RESISTING SYSTEM		ORDINARY REINFORCED CONCRETE SHEAR WALLS
RESPONSE MODIFICATION FACTOR	R	5
DEFLECTION AMPLIFICATION FACTOR	C_d	4.5
SEISMIC BASE SHEAR	V_x	720 KIPS
	V_y	778 KIPS
ANALYSIS PROCEDURE		EQUIVALENT LATERAL FORCE PROCEDURE

DESIGN LOAD SCHEDULE
PER 2014 NYC BC
(ALL LOADS SHOWN ARE IN POUNDS PER SQ. FT.)

FLOOR	PARTITION	CEILING & MECH.	FLOOR FINISH	LIVE[3]	TOTAL IMPOSED	LIVE LOAD REDUCTION?
Apartments & Corridors Serving Them	12	-	5	40	57	NO
Lobby/Commercial	-	5[1]	20	100	125	NO
Roof/Public Roof[2]	-	5	25	100	130	NO
Stairs & Egress	-	-	-	100	100	NO
Parking	-	-	-	40	40	NO
Residential Balconies	-	-	5	60	65	NO

[1] LOAD APPLIED TO THE FLOOR SLAB ABOVE THIS LEVEL

[2] HEAVIER LOADS FOR LANDSCAPED, SWIMMING POOL AREAS, MECHANICAL EQUIPMENT ETC. WHERE APPLICABLE SEE PLAN.

[3] LIVE LOAD REDUCTION IS BASED ON NYCBC 2014

[4] LIVE LOAD PER STACKER MANUFACTURER'S RECOMMENDATION

SNOW DESIGN LOAD SCHEDULE
2014 NYC BC AND ASCE 7-05

ITEM	SYMBOL	VALUE
GROUND SNOW LOAD	P_g	25
SNOW EXPOSURE FACTOR	C_e	1.0
SNOW LOAD IMPORTANCE FACTOR	I_s	1.0
THERMAL FACTOR	C_t	1.0
RAIN ON SNOW SURCHARGE		-
FLAT-ROOF SNOW LOAD	P_f	20 PSF (MIN.)

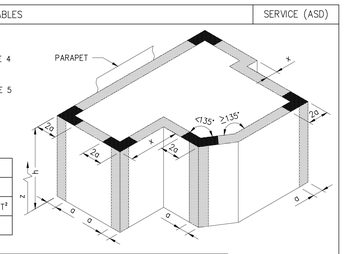
COMPONENT AND CLADDING WIND LOAD TABLES — SERVICE (ASD)

HEIGHT ABOVE GROUND, z	POSITIVE WALL LOADS (PSF) ZONE 4 & 5		
	AREA ≤ 20 FT²	AREA = 100 FT²	AREA ≥ 500 FT²
UP TO 100	+29.2	+25.2	+21.3
101 TO 200	+32.9	+28.3	+23.8
201 TO 300	+35.4	+30.4	+25.4

INTERIOR ZONES
ROOFS-ZONE 1/WALLS-ZONE 4

END ZONES
ROOFS-ZONE 2/WALLS-ZONE 5

CORNER ZONES
ROOFS-ZONE 3



NEGATIVE WALL LOADS (PSF)					
ZONE 4			ZONE 5		
AREA ≤ 20 FT²	AREA = 100 FT²	AREA ≥ 500 FT²	AREA ≤ 20 FT²	AREA = 100 FT²	AREA ≥ 500 FT²
-32.3	-29.3	-26.3	-59.3	-47.3	-35.3

ROOF LOADS (PSF)								
ZONE 1			ZONE 2			ZONE 3		
AREA ≤ 10 FT²	AREA = 100 FT²	AREA ≥ 500 FT²	AREA ≤ 10 FT²	AREA = 100 FT²	AREA ≥ 500 FT²	AREA ≤ 10 FT²	AREA = 100 FT²	AREA ≥ 500 FT²
-47.3	-38.6	-32.3	-74.2	-62.0	-53.3	-101.2	-85.3	-74.2

PARAPET LOADS (PSF)			
T.O. PARAPET HEIGHT ABOVE GROUND, z	AREA ≤ 10 FT²	AREA = 100 FT²	AREA ≥ 500 FT²
UP TO 100	±84.6	±69.8	±58.2
101 TO 200	±97.9	±80.8	±67.3
201 TO 300	±106.7	±88.0	±73.3

NOTES:

1) WIND PRESSURES SHALL BE INTERPOLATED ACCORDINGLY TO DESIRED EFFECTIVE AREA
2) 'a' INDICATES 10% OF LEAST HORIZONTAL DIMENSION, BUT NOT LESS THAN 3FT.
3) 'x' INDICATES PLAN OFFSET DISTANCE
4) 'h' INDICATES MEAN ROOF HEIGHT, IN FEET.
5) WHERE ROOF PARAPETS ARE PROVIDED THAT ARE ≥ 3'-0", ZONE 3 PRESSURES SHALL BE REDUCED TO ZONE 2 PRESSURES.
6) + AND - INDICATE PRESSURE ACTING TOWARD AND AWAY FROM THE SURFACE, RESPECTIVELY.
5) ± INDICATES PRESSURE THAT CAN ACT EITHER TOWARD OR AWAY FROM SURFACE.
6) IF x ≤ a, THEN ZONE 3 AND ZONE 5 NEED NOT BE APPLIED AT THAT CORNER.
7) IF THE INTERIOR ANGLE IS ≥ 135°, THEN ZONE 3 AND ZONE 5 NEED NOT BE APPLIED AT THAT CORNER.

DRAWING LIST

● ISSUED - NEW SHEET
◒ ISSUED - REVISION MADE
○ ISSUED - NO REVISION MADE
⊗ SHEET REMOVED

80% CONSTRUCTION DRAWINGS 12/14/22	FOUNDATION 100% CD 11/18/22	FOUNDATION FILING SET 08/19/22	100% DD 07/15/22	50% DD 06/24/22	SCHEMATIC DRAWINGS 03/18/22	ISSUED FOR FILING 10/08/21	SHT	DWG NO	DRAWING TITLE
○	◒	○	○	●			1	FO-001	GENERAL NOTES I
○	○	○	○	●			2	FO-002	GENERAL NOTES II
○	○	○	○	●			3	FO-003	GENERAL NOTES III
○	○	○	○	●			4	FO-010	SITE PLAN
					⊗	●		FO-101	FOUNDATION / FIRST FLOOR FRAMING PLAN
					⊗	●		FO-200	PILE CAP DETAILS
◒	●						5	FO-099A	LOWER FOUNDATION/CELLAR FRAMING PLAN
◒	◒	◒	◒	◒	●		6	FO-100A	UPPER FOUNDATION PLAN
○	◒	○	○	○	○	●	7	FO-300	TYPICAL FOUNDATION DETAILS I
○	◒	◒	○	○	○	●	8	FO-301	TYPICAL FOUNDATION DETAILS II
○	◒	◒	○	○	○	●	9	FO-302	TYPICAL FOUNDATION DETAILS III
◒	◒	◒	◒	●			10	FO-310	PILE CAP DETAILS
○	◒	◒				●	11	FO-400	FOUNDATION SECTIONS
○				◒	◒	●	12	S-001	GENERAL NOTES I
○				◒	◒	●	13	S-002	GENERAL NOTES II
○						●	14	S-003	GENERAL NOTES III
○					●		15	S-010	SITE PLAN
◒			◒	◒	●		16	S-101A	1ST FLOOR FRAMING PLAN
◒							17	S-101AM	MEZZANINE FRAMING PLAN
◒			◒	◒	●		18	S-102A	2ND FLOOR FRAMING PLAN
◒			◒	◒	●		19	S-103A	3RD FLOOR FRAMING PLAN
◒			◒	◒	●		20	S-104A	4TH FLOOR FRAMING PLAN
◒			◒	◒	●		21	S-105A	5TH FLOOR FRAMING PLAN
◒			◒	◒	●		22	S-106A	6TH FLOOR FRAMING PLAN
◒			◒	◒	●		23	S-107A	7TH FLOOR FRAMING PLAN
◒			◒	◒	●		24	S-108A	8TH FLOOR FRAMING PLAN
◒			◒	◒	●		25	S-109A	9TH FLOOR FRAMING PLAN
◒			◒	◒	●		26	S-110A	10TH FLOOR FRAMING PLAN
◒							27	S-111A	11TH TO 14TH FLOOR FRAMING PLAN
◒							28	S-115A	15TH FLOOR FRAMING PLAN
◒			◒	●			29	S-116A	16TH FLOOR FRAMING PLAN
◒			◒	●			30	S-117A	17TH FLOOR FRAMING PLAN
◒			◒	●	●		31	S-118A	ROOF FRAMING PLAN
◒			◒	●	●		32	S-119A	BULKHEAD ROOF FRAMING PLAN
◒	◒	○	◒		◒	●	33	S-200	COLUMN SCHEDULE I
◒	◒	○	◒		●		34	S-201	COLUMN SCHEDULE II
◒	◒	○	◒		●		35	S-202	COLUMN SCHEDULE III
◒	◒	○	●				36	S-203	COLUMN SCHEDULE IV
◒	◒		◒		◒	●	37	S-210	SHEAR WALL SCHEDULE I
◒	◒		◒		◒	●	38	S-211	SHEAR WALL SCHEDULE II
◒							39	S-212	SHEAR WALL SCHEDULE III
◒							40	S-213	SHEAR WALL SCHEDULE IV
○			○	◒	●		41	S-220	SHEAR WALL DETAILS
○			○	◒	●		42	S-350	TYPICAL DETAILS I
○			○	◒	●		43	S-351	TYPICAL DETAILS II
◒			○	◒	●		44	S-352	TYPICAL DETAILS III
○			○	◒	●		45	S-353	TYPICAL DETAILS IV
○			○	◒	●		46	S-354	TYPICAL DETAILS V
○			○	◒	●		47	S-355	TYPICAL DETAILS VI
○			○	◒	●		48	S-356	TYPICAL DETAILS VII
○			○	◒	●		49	S-357	TYPICAL DETAILS VIII
○			○	◒	●		50	S-358	TYPICAL DETAILS IX
○			○	◒	●		51	S-359	TYPICAL DETAILS X



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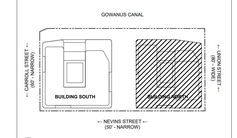
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KEY PLAN



DOB NOW JOB # B00611202-S8

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PROJECT:
417 CARROLL ST.
BROOKLYN, NY 11217

DRAWING TITLE:
GENERAL NOTES II

SEAL & SIGNATURE:

DATE (YYYY/MM/DD): 2022.12.07
PROJECT No.: T.I21395.01
DRAWING BY: KAS/KC
CHK BY: AM
DRAWING No.: FO-002.00
PAGE No.: 2 OF 51

I:\PROJECTS\2021\T.I21395.01 - 300 NEVINS STREET, BROOKLYN, NY 11215\DWGS\STRUCTWORKING\CAD\T.I21395.01 S-GN'S.DWG

FOUNDATION

1. FOUNDATION DESIGN IS BASED ON THE GEOTECHNICAL INVESTIGATION REPORT BY GEOTECHNICAL ENGINEERING SERVICES, P.C., DATED 04.29.2022.

2. PILES- ALL PILE CAPACITIES TO BE VERIFIED BY PILE DRIVING CONTRACTOR FOLLOWING THE PILE TESTING PROGRAM AS REQUIRED BY NYC BC SECTION 1808.3, 1818.4, GEOTECHNICAL REPORT AND PILE SPECIFICATIONS.

   A. DRILLED PILES SHALL HAVE THE FOLLOWING CAPACITY:

   i) PILE TYPE A:xx" DIAMETER CASED PILES
      a) 75 TONS IN COMPRESSION
      b) 40 TONS IN TENSION.
      c) 1 TONS IN LATERAL

   ii) PILE TYPE B:xx" DIAMETER CASED PILES
      a) 150 TONS IN COMPRESSION
      b) 50 TONS IN TENSION.
      c) 1 TONS IN LATERAL

   B. ALL PILES SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2014 NYC BUILDING CODE AND PROJECT SPECIFICATIONS.

   C. ALL DRIVEN PILES SHALL BE INSTALLED PER THE DRIVING CRITERIA ESTABLISHED FOR THE PROJECT IN ACCORDANCE WITH THE PILE LOAD TESTS.

   D. STRUCTURAL PILES SHALL BE INSTALLED IN THE PRESENCE OF A PROFESSIONAL ENGINEER, LICENSED IN THE STATE OF NEW YORK, AND LICENSED AS A SPECIAL INSPECTION AGENCY BY NYC IN ACCORDANCE WITH SECTION 1704.8 OF THE NYC BUILDING CODE.

   E. MAXIMUM ALLOWABLE DEVIATION FOR PILES SHALL BE THREE (3) INCHES IN EITHER DIRECTION, EXPECT EIGHT INCHES ALONG GRADE BEAM AXIS FOR PILES CAPPED BY GRADE BEAMS.

   F. THE CONTRACTOR SHALL PROVIDE A SURVEY OF "AS-BUILT" PILE LOCATIONS INDICATING NORTH-SOUTH AND EAST-WEST OUT OF TOLERANCE DIMENSIONS FROM THE THEORETICAL PILE CENTERLINE. PILES WHICH ARE OUT OF TOLERANCE OR DO NOT ACHIEVE THE REQUIRED STRENGTH WILL BE SUBJECT TO REDESIGN. THE ENGINEERING COST OF THE REDESIGN, THE ADDITIONAL COST FOR THE PILES AND ADDITIONAL PILE CAP COSTS SHALL BE BORNE BY THE CONTRACTOR.

   G. THE CONTRACTOR SHALL PROVIDE THE "AS-BUILT" PILE LOCATION PLAN(S), INCLUDING A PLAN SHOWING THE NUMBERING OF ALL PILES, AND PILE LOGS TO BE FILED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE BUILDING DEPARTMENT. NO PILE CAPS ARE TO BE PLACED BEFORE RECEIVING BUILDING DEPARTMENT APPROVAL FOR THE ABOVE.

3. GEOTECHNICAL REPORT ESTIMATES THE GROUND WATER TABLE (GWT) TO BE BETWEEN 5'-6" TO 7'-6" BELOW THE GRADE.

4. NO BACKFILL SHALL BE PLACED AGAINST FOUNDATION WALLS UNLESS SUPPORTING SLABS ARE IN PLACE AND SET OR THE WALLS ARE ADEQUATELY BRACED.

5. DEWATERING OF THE SITE IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL TAKE PRECAUTIONS TO AVOID UNDERMINING EXISTING FOUNDATIONS. METHOD OF DEWATERING AND RELATED CALCULATIONS IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND MUST COMPLY WITH THE SOILS AND GROUNDWATER MANAGEMENT SPECIFICATIONS FOR THIS PROJECT.

6. PROVIDE DOWELS IN FOUNDATIONS FOR ALL WALLS, COLUMNS AND SHEAR WALLS OF SAME NUMBER AND SIZE AS THE VERTICAL REINFORCEMENT ABOVE.

7. PROVIDE WATERSTOP AT ALL VERTICAL CONSTRUCTION JOINTS IN WALLS BELOW GRADE.

8. CONTRACTOR TO INSTALL ALL PIPE SLEEVES, BOXED OPENINGS, ANCHOR BOLTS, INSERTS ETC. AS REQUIRED FOR THE VARIOUS TRADES. WALL POCKETS AND EMBED PLATES, TO RECEIVE BEAMS AND SLABS, SHALL BE PROVIDED AS REQUIRED FOR THE SUPERSTRUCTURE. SHOP DRAWINGS SHOWING THE POSITION OF THE OPENINGS SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO PLACEMENT OF CONCRETE.

9. SLAB ON GROUND SHALL BE PLACED ON SELECT FILL COMPACTED TO 95 PERCENT MODIFIED PROCTOR MAXIMUM DRY DENSITY (ASTM D1557). PROVIDE VAPOR BARRIER AND MIN. 6-INCH THICK GRAVEL BED UNDER THE SLAB.

10. CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE SUBSURFACE AND EXISTING CONDITIONS BEFORE COMMENCING THE WORK.

11. CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATE PROTECTION OF ALL EXCAVATION SLOPES. WHERE NECESSARY, SHEETING, SHORING AND UNDERPINNING OF EXCAVATION SHALL BE PROVIDED WITH ALL REQUIRED TIE BACKS AND BRACING.

12. METHODS EMPLOYED IN ALL SHEETING, SHORING AND UNDERPINNING SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER RETAINED BY THE CONTRACTOR AND LICENSED IN THE STATE OF NEW YORK.

13. TEMPORARY BRACING SHALL BE PROVIDED FOR ALL BUTTRESSES. WHERE BUTTRESSES DO NOT EXIST OR SPACING BETWEEN BUTTRESSES EXCEEDS 25 FEET, AND WHERE THE DIFFERENCE IN LEVEL BETWEEN INSIDE AND OUTSIDE GRADE IS MORE THAN 4'-0", INTERMEDIATE BRACING SHALL BE PROVIDED. WHERE RAMPS OCCUR, THE GRADE ELEVATION OUTSIDE OF RAMP WALLS SHALL BE USED IN FIGURING THE DIFFERENCE IN LEVEL. CORNER BUTTRESSES NEED NOT BE BRACED. NO BACKFILLING IS TO BE DONE BEFORE ALL SLABS WHICH PROVIDE BRACING FOR WALLS ARE IN PLACE, UNLESS APPROVED BY THE ENGINEER. PROVIDE TEMPORARY BRACING FOR ALL PIERS AND SUMP PITS.

14. ALL FOUNDATION ELEMENTS ARE TO BE CENTERED ON COLUMN ABOVE, U.O.N.

15. ALL FILL SHALL BE PLACED IN EIGHT INCH LOOSE LIFTS (MAXIMUM) COMPACTED WITH VIBRATORY ROLLERS. FILL MATERIAL SHALL BE TESTED BY MODIFIED PROCTOR DENSITY METHOD (ASTM D1557) AND MUST QUALIFY AS SELECT, WITH LESS THAN 10% PASSING THROUGH THE NO. 200 SIEVE. SOIL SHALL BE PLACED WITH MOISTURE CONTENT AND ENERGY TO PROVIDE 92% OF MAXIMUM DRY DENSITY BELOW SLABS ON GRADE AND 95% BELOW FOOTINGS. IN PLACE DENSITY TESTS SHALL BE TAKEN FOR EACH 10,000 S.F. IN EACH LIFT. FOR ACCEPTANCE OF SOIL, THE AVERAGE OF DENSITY TESTS MUST EXCEED THE SPECIFIED COMPACTION. NO TESTS SHALL BE PERMITTED TO FALL BELOW 88% COMPACTION BELOW SLABS ON GRADE OR 90% COMPACTION BELOW FOOTINGS.

16. FOUNDATION ELEVATIONS SHOWN ON THE DRAWINGS HAVE BEEN ESTIMATED USING THE GEOTECHNICAL REPORT. ACTUAL ELEVATIONS OF FOUNDATION ELEMENT BOTTOMS WILL BE DETERMINED BY FIELD CONDITIONS, WHICH SHALL BE CONFIRMED BY THE LICENSED ENGINEER PERFORMING THE SUBGRADE SPECIAL INSPECTION.

REINFORCED CONCRETE

1. PROVIDE THE FOLLOWING MINIMUM 28 DAY CONCRETE COMPRESSIVE STRENGTHS, U.O.N. ON DRAWINGS:

I.	PILE CAPS	10,000 PSI
II.	FOUNDATION WALLS, BUTTRESS, GRADE BEAMS	5,000 PSI
III.	SLAB AND BEAMS	SEE PLANS
IV	COLUMN AND SHEAR WALLS	6,000-8,000 PSI

2. ALL CONCRETE AGGREGATE SHALL INCLUDE SERVICE RECORD DATA INDICATING ABSENCE OF DELETERIOUS EXPANSION OF CONCRETE DUE TO ALKALI AGGREGATE REACTIVITY.

3. ALL EXPOSED CONCRETE SHALL HAVE AN AIR ENTRAINING AGENT WITH AN AIR CONTENT OF 6% ±1.5%.

4. ALL REINFORCING STEEL SHALL CONFORM TO:

I.	DEFORMED BARS #10 OR SMALLER	ASTM A615, GRADE 60
II.	DEFORMED BARS #11 OR LARGER	ASTM A615, GRADE 75
III.	WELDED WIRE FABRIC (PLAIN & DEFORMED)	ASTM A1064

4. REINFORCING STEEL SHALL HAVE A MIN. CLEAR COVER AS FOLLOWS:

II.	CONCRETE POURED AGAINST EARTH	3"
II.	CONCRETE EXPOSED TO EARTH OR WEATHER:	
	#5 OR SMALLER	1½"
	#6 OR LARGER	2"
III.	CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH EARTH:	
	COLUMNS, BEAMS	1½"
	SLABS, WALLS AND JOISTS:	
	#14 OR #18 BARS	1½"
	#11 OR SMALLER	¾"

INDICATE ALL CONCRETE COVER ON THE SHOP DRAWINGS SUBMITTED FOR REVIEW.

5. STRUCTURAL CONCRETE AND CONCRETING PRACTICES SHALL CONFORM WITH ACI-318, "AMERICAN CONCRETE INSTITUTE, BUILDING CODE FOR REINFORCED CONCRETE." DETAILS SHALL BE IN ACCORDANCE WITH ACI-315-99, "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" UNLESS OTHERWISE NOTED ON THE DRAWINGS. CONCRETE TESTS FOR THE PRELIMINARY DESIGN MIX PREPARED BY AN APPROVED LABORATORY MUST BE SUBMITTED TO THE ENGINEER. NO CONCRETE TO BE PLACED BEFORE THIS IS APPROVED BY THE ENGINEER.

6. ALL REINFORCEMENT SHALL BE SECURELY HELD IN PLACE WHILE PLACING CONCRETE. IF REQUIRED, ADDITIONAL BARS OR STIRRUPS SHALL BE PROVIDED BY THE CONTRACTOR TO FURNISH SUPPORT FOR ALL BARS. THE ENGINEER OR HIS FIELD QUALIFIED REPRESENTATIVE MUST CHECK AND APPROVE ALL STEEL REINFORCEMENT PRIOR TO CONCRETE PLACEMENT.

7. NO CONCRETE TEST WILL BE ACCEPTED IF CONCRETE IS TAMPERED WITH IN ANY WAY AFTER SAID TEST IS PERFORMED. REPEAT TEST IF WATER IS ADDED AFTER INITIAL SAMPLING.

8. THE CONTRACTOR SHALL PROVIDE REINFORCING STEEL ERECTOR WITH A SET OF STRUCTURAL PLANS FOR FIELD USE.

9. ALL ADJOINING SURFACES NOT CAST MONOLITHICALLY SHALL BE ROUGHENED TO ¼ INCH AMPLITUDE FOR THE ENTIRE INTERSECTING SURFACE ACCORDING TO ACI RECOMMENDATIONS.

10. CONTRACTOR SHALL USE RIGID TEMPLATES TO INSTALL ANCHOR BOLTS.

11. CONCRETE FOR NON-STRUCTURAL FILL SHALL BE REINFORCED WITH 6X6-W1.4XW1.4 W.W.F.

12. TEMPORARY SHORING AND RESHORING SHALL REMAIN IN PLACE AT LEAST 28 DAYS AFTER PLACEMENT OF CONCRETE.

13. ALL WELDED WIRE FABRIC REINFORCEMENT SHALL CONFORM TO ASTM A-185, GRADE 65.

14. PROVIDE CHAIRS FOR WELDED WIRE FABRIC TO INSURE PROPER POSITION DURING CONCRETE PLACEMENT.

15. PROVIDE LAP SPLICES FOR REINFORCING BARS AS SHOWN ON THE DRAWINGS. WHERE NOT SPECIFICALLY INDICATED, USE TENSION LAP SPLICE LENGTHS WITH APPLICABLE MODIFICATION FACTORS. LOCATE SPLICES AS PER RECOMMENDATIONS OF ACI 135 AND INDICATE ON SHOP DRAWINGS SUBMITTED FOR REVIEW.

16. PROVIDE CONSTRUCTION JOINTS IN ACCORDANCE WITH ACI 318. INDICATE JOINT LOCATIONS AND POUR SEQUENCE ON THE SHOP DRAWINGS.

17. NO HORIZONTAL JOINT WILL BE PERMITTED IN THE BEAMS, WALLS AND SLABS U.O.N. ON THE DRAWINGS AT THE SPECIFIC LOCATION. VERTICAL CONSTRUCTION JOINTS WILL BE LOCATED AT LEAST FOUR FEET AWAY FROM ANY COLUMN LINE OR WALL OPENING IN FOUNDATION WALLS.

18. INSTALL ALL SLEEVES, INSERTS, FLOOR DRAINS, ETC. PROVIDED BY THE SUBCONTRACTOR BEFORE PLACING CONCRETE.

19. PROVIDE AT LEAST 1" (U.O.N.) SEPARATION USING HIGH DENSITY STYROFOAM WHEN PLACING CONCRETE AGAINST AN ADJACENT EXISTING STRUCTURE.

20. DO NOT INSTALL ANY CONCRETE FLOOR SYSTEM UNTIL AT LEAST TWO HOURS HAVE PASSED AFTER THE SUPPORTING COLUMNS AND WALLS ARE PLACED.

21. MEANS AND METHODS FOR SHORING CONCRETE ELEMENTS INCLUDING THE USE OF ADJACENT EXISTING STRUCTURES TO SUPPORT LATERAL LOADS IMPOSED BY CONCRETE ELEMENTS ARE TO BE DESIGNED BY THE CONTRACTORS ENGINEER LICENSED IN THE STATE OF NEW YORK.

22. CANTILEVERED CORNERS ARE TO REMAIN SHORED BY MEANS OF "STAY-IN-PLACE" PRE-SHORE CUTOUTS OR A SIMILAR METHOD. CONTRACTOR SHALL SUBMIT SHORING PLANS, SIGNED AND SEALED BY THEIR LICENSED PROFESSIONAL ENGINEER FOR REVIEW.

23. ADDITIONAL SHORING MAY BE REQUIRED AT HOIST PLATFORMS, BRIDGING, ETC. CONTRACTOR TO SUBMIT PLANS, DETAILS AND CALCULATIONS FOR SUCH LOCATIONS, SIGNED & SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW YORK.

24. PIPES OR CONDUITS PLACED WITHIN THE SLAB SHALL NOT HAVE A DIAMETER GREATER THAN ⅓ SLAB THICKNESS OR 2 INCHES. THEIR SPACING SHALL NOT BE CLOSER THAN 3X DIAMETER OF CONDUIT AND NO CONDUIT SHALL BE PLACED WITHIN 12 INCHES OF A COLUMN FACE. ALUMINUM CONDUITS ARE NOT ALLOWED.

25. SIZE OF JUNCTION BOXES PLACED WITHIN THE CONCRETE SHALL BE LIMITED TO 4½"X 4½" X 3½" DEEP AND SEPARATED BY NOT LESS THAN 8 INCHES.

26. SLABS ON GRADE SHALL BE PLACED BY THE LONG STRIP CAST METHOD. REFER TO ACI 302 AND 360 FOR RECOMMENDED METHODS OF PLACEMENT. PROVIDE CONTROL JOINTS AT MAXIMUM 20 FEET SPACING ON EACH DIRECTION. CONTROL JOINTS SHALL BE FORMED BY SAW CUTTING. JOINTS SHALL BE AT LEAST ¼"OF THE SLAB THICKNESS AND ¼" MAXIMUM WIDTH AND SHALL BE FILLED WITH CONTROL JOINT SEALANT OR FILLER AND SHALL HAVE DISCONTINUOUS REINFORCEMENT THROUGH THE JOINT. SAW CUTTING SHALL BE PERFORMED NO LATER THAN 3 HOURS AFTER THE FINAL TROWELING. ALL SAW CUTS MUST BE ALIGNED AND CONTINUOUS.

MASONRY NOTES

1. CONCRETE AND/OR CLAY MASONRY WORK SHALL CONFORM TO NEW YORK CITY CODE PROVISIONS FOR MASONRY AND ACI 530/530.1.

2. USE ASTM A-615 GRADE 60 FOR ALL REINFORCING STEEL. ALL LAP SPLICE LENGTHS SHALL FOLLOW LAP SPLICE TABLE BELOW. REINFORCEMENT MUST BE CONTINUOUS AROUND WALL CORNERS AND AT INTERSECTIONS.

BAR SIZE, db	LAP SPLICE LENGTH
#3	27"
#4	36"
#5	45"
#6	54"
#7	63"

3. ALL REINFORCING STEEL SHALL HAVE A MIN. CLEAR COVER AS FOLLOWS:

   I. MASONRY EXPOSED TO EARTH OR WEATHER:
      #5 OR SMALLER 1½"
      #6 OR LARGER 2"

   II. MASONRY NOT EXPOSED TO WEATHER OR IN CONTACT WITH EARTH:
      WALLS AND BEAMS 1½"

4. THE MINIMUM SPECIFIED COMPRESSIVE STRENGTH OF MASONRY WALL/COLUMN SHALL BE:

   f'm = 2,000 PSI FOR CONCRETE MASONRY UNITS
   f'm = 1,500 PSI FOR CLAY MASONRY UNITS

   A. CONCRETE MASONRY UNITS SHALL BE NORMAL WEIGHT CONFORMING TO MINIMUM REQUIREMENTS OF ASTM C90 SAMPLED AND TESTING IN ACCORDANCE TO ASTM C140 PLACED IN RUNNING BOND. CLAY MASONRY UNITS SHALL BE GRADE SW CONFORMING TO MINIMUM REQUIREMENTS OF ASTM C62 SAMPLED AND TESTING IN ACCORDANCE TO ASTM C67 PLACED IN RUNNING BOND.

   B. MASONRY STRENGTH SHALL CONFORM TO THE FOLLOWING:

NET AREA COMPRESSIVE STRENGTH OF MASONRY WALL/COLUMN, f'm	NET AREA COMPRESSIVE STRENGTH OF:	
	CONCRETE MASONRY UNIT	CLAY MASONRY UNIT
1,500 PSI	-	3,350 PSI
2,000 PSI	2,800 PSI	4,950 PSI
2,500 PSI	3,750 PSI	6,600 PSI
3,000 PSI	4,800 PSI	8,250 PSI

   C. MORTAR SHALL BE TYPE M OR S CONFORMING TO ASTM C270. THE THICKNESS OF BED JOINTS FOR BOTH TYPES OF MASONRY SHALL NOT EXCEED ⅜".

   D. GROUT SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH EQUAL TO THE COMPRESSIVE STRENGTH OF MASONRY, f'm, BUT NOT LESS THAN 2,000 PSI CONFORMING TO ASTM C476 AND TESTING IN ACCORDANCE TO ASTM C1019. GROUT SHALL BE USED AS FILLING FOR VERTICAL CAVITIES, BOND BEAMS, LINTELS AND HOLLOW MASONRY UNITS DESIGNATED AS SOLID GROUTED IN THE DESIGN DRAWINGS. GROUT SHALL HAVE A MINIMUM SLUMP OF 8 INCHES. ALL CELLS WITH REINFORCEMENT SHALL BE GROUTED SOLID. THE LOW-LIFT METHOD SHALL BE USED FOR THE GROUTING OF THE CONCRETE MASONRY UNITS. MORTAR IS NOT PERMITTED TO BE USED AS A SUBSTITUTE FOR GROUT.

5. U.O.N. HORIZONTAL REINFORCEMENT SHALL BE MIN. OF 9 GAUGE DUR-O-WAL TRUSS OR LADUR TYPE OR APPROVED EQUAL WITH 2 #3 LONGTUDINAL BARS AT EVERY OTHER COURSE.

6. REFER TO ARCHITECTURAL DRAWINGS FOR SIZE AND LOCATIONS OF MASONRY WALLS AND FOR DETAILS OF EXPANSION JOINTS AND CONTROL JOINTS.

7. PROVIDE ADDITIONAL BARS ON BOTH SIDE OF CONTROL JOINTS, WINDOW JAMBS, DOOR JAMBS, END OF WALLS, AND CORNERS. SEE TYPICAL DETAILS.

8. ALL MASONRY WALLS SHALL BE ANCHORED AT TOP AND BOTTOM. TOP OF WALL SHALL BE ANCHORED WITH CAPACITY OF MINIMUM 200 LB/FT ALONG THE WALL, AS PER TYPICAL DETAILS.

9. COLD WEATHER CONSTRUCTION:

   I. COLD WEATHER CONSTRUCTION PROVISIONS OF TMS 602/ACI 530.1 ARTICLE 1.8C SHALL BE IMPLEMENTED WHEN EITHER THE AMBIENT TEMPERATURE FALLS BELOW 40°F OR THE TEMPERATURE OF THE MASONRY UNITS FALLS BELOW 40°F.

   II. SALT OR OTHER CHEMICALS FOR THE PURPOSE OF LOWERING THE FREEZING TEMPERATURE OF THE WATER SHALL NOT BE PERMITTED.

   III. CONTRACTOR TO PROVIDE COLD WEATHER CONSTRUCTION PROCEDURE TO THE ENGINEER FOR APPROVAL. NO WORK SHALL COMMENCE UNTIL PROCEDURE IS APPROVED.

10. HOT WEATHER CONSTRUCTION:

   I. HOT WEATHER CONSTRUCTION PROVISIONS OF TMS 602/ACI 530.1 ARTICLE 1.8D SHALL BE IMPLEMENTED WHEN THE TEMPERATURE EXCEEDS 100°F OR 90°F WITH A WIND-VELOCITY GREATER THAN 8 MPH.

   II. CONTRACTOR TO PROVIDE HOT WEATHER CONSTRUCTION PROCEDURE TO THE ENGINEER FOR APPROVAL. NO WORK SHALL COMMENCE UNTIL PROCEDURE IS APPROVED.

COLD WEATHER CONSTRUCTION:

1. COLD WEATHER CONSTRUCTION REQUIREMENTS SHALL FOLLOW SECTION 1905.12 OF THE 2014 NYC BUILDING CODE WHEN THE AMBIENT AIR TEMPERATURE HAS FALLEN TO, OR IS EXPECTED TO FALL BELOW 40°F.

2. DETAILED PROCEDURES FOR THE PRODUCTION, TRANSPORTATION, PLACEMENT, PROTECTION, CURING AND TEMPERATURE MONITORING OF CONCRETE SHALL BE SUBMITTED FOR THE ENGINEERS APPROVAL. GUIDELINES FOR COLD WEATHER CONSTRUCTION SHALL FOLLOW ACI-306R "GUIDE TO COLD WEATHER CONCRETING". NO COLD WEATHER CONSTRUCTION SHALL COMMENCE UNTIL PROCEDURES HAVE BEEN APPROVED BY THE ENGINEER.

   2.1. ADEQUATE EQUIPMENT SHALL BE USED TO PROTECT AND INSULATE THE CONCRETE FROM COLD WEATHER TEMPERATURES.

   2.2. CONCRETE MATERIALS, AND REINFORCEMENT, FORMS, FILLERS AND GROUND WITH WHICH CONCRETE WILL BE IN CONTACT WITH SHALL BE FREE FROM FROST. TEMPERATURES OF ALL SURFACES IN CONTACT WITH FRESH CONCRETE SHALL BE KEPT ABOVE FREEZING.

   2.3. FROZEN MATERIALS OR MATERIALS CONTAINING ICE SHALL NOT BE USED.

HOT WEATHER CONSTRUCTION:

1. HOT WEATHER CONSTRUCTION REQUIREMENTS SHALL FOLLOW SECTION 1905.13 OF THE 2014 NYC BUILDING CODE WHEN THE AMBIENT AIR TEMPERATURE IS ABOVE 80°F.

2. DETAILED PROCEDURES FOR THE PRODUCTION, TRANSPORTATION, PLACEMENT, PROTECTION, CURING AND TEMPERATURE MONITORING OF CONCRETE SHALL BE SUBMITTED FOR THE ENGINEERS APPROVAL. GUIDELINES FOR HOT WEATHER CONSTRUCTION SHALL FOLLOW ACI-305R "GUIDE TO HOT WEATHER CONCRETING". NO HOT WEATHER CONSTRUCTION SHALL COMMENCE UNTIL PROCEDURES HAVE BEEN APPROVED BY THE ENGINEER.

ABBREVIATIONS

AB	ANCHOR BOLT
AESS	ARCHITECTURALLY EXPOSED STRUCTURAL STEEL
CJ	CONTROL JOINT
EDB	ELEVATOR DIVIDER BEAM
EJ	EXPANSION JOINT
EE	EACH END
EF	EACH FACE
EW	EACH WAY
EOS	EDGE OF SLAB
HSS	HOLLOW STRUCTURAL STEEL
IF	INSIDE FACE
LW	LONG WAY
NFP	NO FIREPROOFING
NTS	NOT TO SCALE
OC	ON CENTER
SIM	SIMILAR
SOG	SLAB ON GRADE
STL	STEEL
T&B	TOP AND BOTTOM
TOC	TOP OF CONCRETE
TOS	TOP OF SLAB
TOSTL	TOP OF STEEL
TOW	TOP OF WALL
UON	UNLESS OTHERWISE NOTED
VIF	VERIFY IN FIELD
WP	WORKING POINT
WWF	WELDED WIRE FABRIC



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INTERIOR LIGHTING:
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CIVIL ENGINEER:
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102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

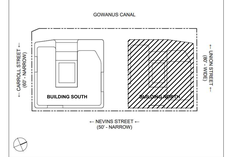
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
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KEY PLAN



DOB NOW JOB # B00611202-S8

No.	DATE	ISSUE
7	12.14.22	ISSUED FOR 80% CONSTRUCTION
6	12.07.22	ISSUED FOR DOB
5	11.18.22	100% FOUNDATION DRAWINGS
4	08.19.22	ISSUED FOR DOB FILING - FO PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

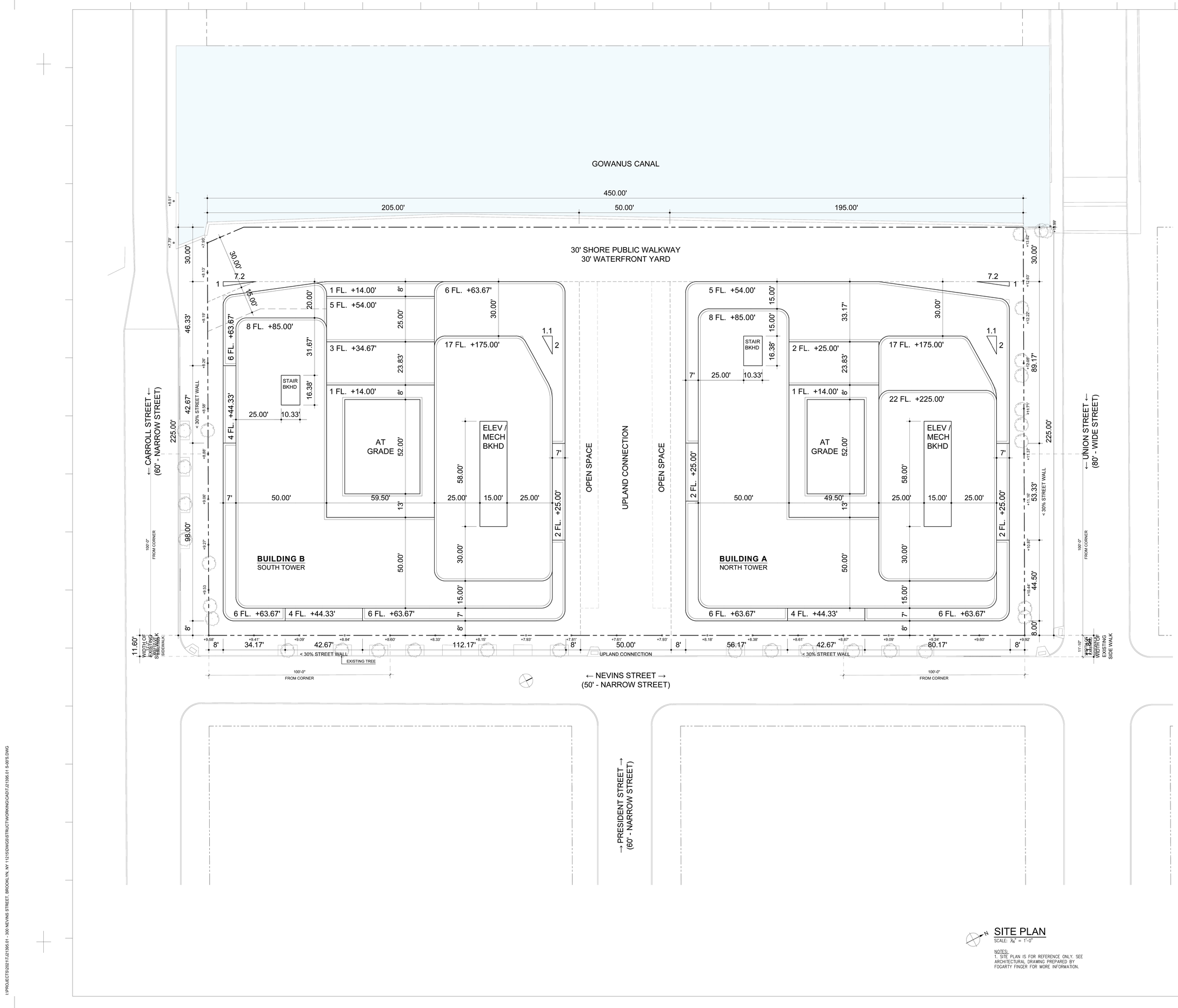
PROJECT:
417 CARROLL ST.
BROOKLYN, NY 11217

DRAWING TITLE:
GENERAL NOTES III

SEAL & SIGNATURE:

DATE (YYYY/MM/DD):	2022.12.07
PROJECT No.:	TJ21395.01
DRAWING BY:	KAS/KC
CHK BY:	AM
DRAWING No.:	FO-003.00
PAGE No.:	3 OF 51

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SITE PLAN

SCALE: 1/16" = 1'-0"

NOTES:
1. SITE PLAN IS FOR REFERENCE ONLY. SEE ARCHITECTURAL DRAWING PREPARED BY FOGARTY FINGER FOR MORE INFORMATION.



OWNER:
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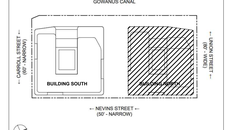
LANDSCAPE:
GRAIN COLLECTIVE
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KEY PLAN



DOB NOW JOB # B00611202-S8

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7	12.14.22	ISSUED FOR 80% CONSTRUCTION
6	12.07.22	ISSUED FOR DOB
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1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

417 CARROLL ST.

BROOKLYN, NY 11217

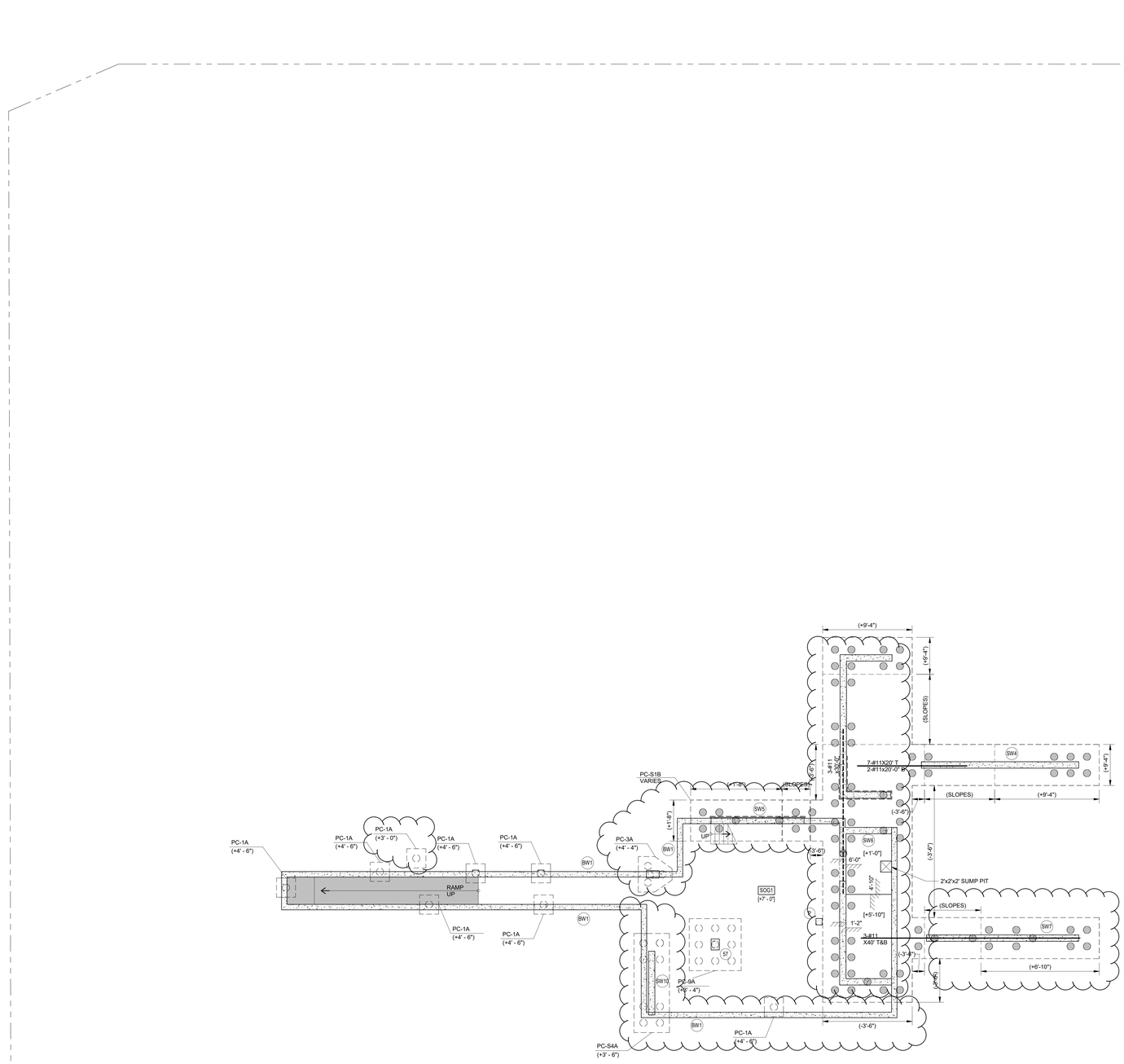
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SITE PLAN

SEAL & SIGNATURE:

DATE (YYYY/MM/DD):	2022.12.07
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DRAWING BY:	KAS/KC
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LOWER FOUNDATION & CELLAR FRAMING PLAN
1/8" = 1'-0"

FOUNDATION NOTES:

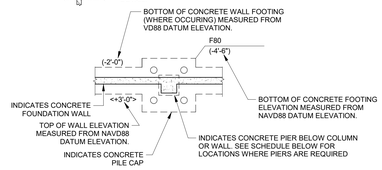
1. [XX'-XX"] INDICATES TOP OF SLAB ELEVATION RELATIVE TO NAVD88 DATUM.
   [+/-XX'-XX"] INDICATES ELEVATION RELATIVE TO TOP OF SLAB ELEVATION.
   SEE ARCH/CIVIL DRAWINGS FOR NAVD 88 ELEVATION RELATIVE TO PROJECT DATUM 0'-0".
2. SOGX INDICATES SLAB TYPE. SEE SLAB SCHEDULE ON THIS SHEET.
3. SEE THE FOLLOWING DRAWINGS FOR THE ITEMS NOTED:

GENERAL NOTES	FO-001's
COLUMN/SHEAR WALL SCHEDULES & DETAILS	S-200's
TYPICAL FOUNDATION DETAILS	FO-200's AND FO-300's
FOUNDATION SECTIONS	FO-400's
FOUNDATION GEOMETRY PLANS	FO-500's

4. COORDINATE ALL SLAB OPENINGS WITH MECHANICAL SHOP DRAWINGS. PROVIDE REINFORCEMENT AT ALL OPENINGS AND SLAB EDGES AS PER THE TYPICAL DETAILS AND PLANS.
5. SEE ARCHITECTURAL EDGE OF SLAB DRAWINGS FOR ALL DIMENSIONS AND COORDINATES, U.O.N.
6. TOP OF PILE CAP SHALL BE TOP OF SLAB, U.O.N. BOTTOM OF PILE CAP ELEVATION IS AS SHOWN, OR 4' BELOW GRADE AT SLAB PERIMETER, WHICHEVER IS LOWER.
7. SEE GROUND FLOOR FRAMING PLAN FOR GROUND FLOOR SLAB REINFORCMENT AND BALANCE OF INFORMATION

LEGEND:

- ADDITIONAL TOP STEEL
- ADDITIONAL BOTTOM STEEL
- ADDITIONAL CONTINUOUS TOP STEEL
- (#) INDICATES COLUMN NUMBER
- EDB INDICATES HSS6x4x3/8" ELEVATOR DIVIDER BEAM
- (P) INDICATES 14"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- (P1) INDICATES 8"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- INDICATES COLUMN BELOW / ABOVE
- INDICATES (0,0) COORDINATE LOCATION (CORNER OF PROPERTY LINE)
- INDICATES SLAB STRESS LINE
- INDICATES STEP IN FRAMED SLAB WITH DASHED BOTTOM OF SLAB EXTENTS. SEE S-300'S SERIES FOR TYPICAL STEP IN FRAMED SLAB DETAIL.



MINIMUM PILE REQUIREMENTS (DESIGN BY OTHERS)

PILE TYPE	MINIMUM DIAMETER	MINIMUM COMPRESSION CAPACITY	MINIMUM TENSILE CAPACITY	MINIMUM LATERAL CAPACITY
TYPE A	7 5/8"	75 TONS	40 TONS	1 TONS
TYPE B	12 5/8"	150 TONS	50 TONS	1 TONS

FRAMED SLAB ON GRADE SCHEDULE

SLAB MARK	SLAB THICKNESS	CONCRETE WEIGHT (PCF)	CONCRETE STRENGTH	TYPICAL SLAB REINFORCEMENT	NOTES:
SOG1	10"	150-NWT	6,000 PSI	#5@12" O.C. EACH WAY, T & B	SEE PLAN FOR ADDITIONAL REINFORCEMENT. SLAB ON GRADE OVER STEGO 20 MIL VAPOR BARRIER AND 6" GRAVEL FILL. PROVIDE 2" CLEAR COVER TO BOTTOM BARS

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION

GRADE BEAM SCHEDULE

MARK	SIZE - WxD		REINFORCEMENT						NOTES:
			BOTTOM		TOP		SIDE***	STIRRUP	
	WIDTH	DEPTH	CONT.	ADD'L	CONT.	ADD'L	SIZE & SPACING	SIZE & SPACING	# OF LEGS
GB1	12	18*	2-#8	-	2-#8	-		#4@12" O.C.	2	-

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION.
WHERE GRADE BEAM MEETS FOUNDATION, PROVIDE #4@12" O.C. VERTICAL DOWELS TYING BEAM INTO PILE CAP
*BEAM DEPTH IS AS SHOWN ON SCHEDULE, INDICATED AS ELEV. ON PLAN, OR 18" BELOW GRADE, WHICHEVER IS GREATER.
*** PROVIDE #4@12" SIDE BARS FOR ALL BEAMS WITH DEPTH GREATER THAN 36", U.O.N.

CONCRETE PIER SCHEDULE

COL. #/ WALL #	SIZE		REINFORCEMENT
	WIDTH	LENGTH	
1, 3, 4, 5A, 6, 8, 10, 12A, 13, 23, 32A, 33, 36, 43, 46A, 50, 51, 54, 56B, 58, 63, 66, 70-73, 75A, 76-85, 87, P*	SEE NOTE 1		
SW1, SW2, SW3, SW5, SW8, SW9	SEE NOTE 1	CONTINUOUS	SEE NOTE 2

NOTES: 1. SEE TYPICAL PILE CAP AND FRAMED SLAB WITH PIER DETAIL ON FO-300'S.
2. PIER REINFORCMENT TO MATCH SHEAR WALL REINFORCEMENT.

COLUMN PILE CAP SCHEDULE (75 TONS PILE, TYPE A)

PILE CAP MARK	THICKNESS (IN)	REINFORCEMENT				NOTES:
		BOTTOM		TOP		
		LONG WAY	SHORT WAY	LONG WAY	SHORT WAY	
PC-1A	30	7-#6	7-#6	-	-	HOOK REINF.
PC-2A	30	7-#6	10-#6	-	-	HOOK REINF.
PC-3A	32	5-#7 THREE - WAY		-	-	HOOK REINF.
PC-4A	32	8-#8	8-#8	-	-	HOOK REINF.
PC-5A	32	10-#8	10-#8	-	-	HOOK REINF.
PC-6A	44	10-#8	11-#8	-	-	HOOK REINF.
PC-7A	44	11-#8	12-#8	11-#8	12-#8	HOOK REINF.
PC-8A	44	13-#8	14-#8	-	-	HOOK REINF.
PC-9A	44	16-#8	16-#8	-	-	HOOK REINF.
PC-10A	46	18-#9	20-#9	-	-	HOOK REINF.
PC-11A	46	20-#9	22-#9	-	-	HOOK REINF.
PC-12A	46	22-#9	24-#9	-	-	HOOK REINF.

NOTE: PILE CAP CONCRETE STRENGTH SHALL BE fc = 10,000 PSI.
SEE PILE CAP LAYOUT AND DETAILS ON FO-300 SERIES FOR ADDITIONAL INFORMATION.

SHEAR WALL PILE CAP SCHEDULE (75 TONS PILE, TYPE A)

PILE CAP MARK	THICKNESS (IN)	REINFORCEMENT				NOTES:
		BOTTOM		TOP		
		LONG WAY	SHORT WAY	LONG WAY	SHORT WAY	
PC-S1A	44	#9@12" OC		#7@12" OC		HOOK REINF. @ EDGE
PC-S2A	44	#8@12" OC		#6@12" OC		HOOK REINF. @ EDGE
PC-S3A	40	13-#9	#9@12" OC	7-#7	#7@12" OC	HOOK REINF. @ EDGE
PC-S4A	42	13-#8	#8@12" OC	7-#6	#4@12" OC	HOOK REINF. @ EDGE

NOTE: PILE CAP CONCRETE STRENGTH SHALL BE fc = 10,000 PSI.
SEE PILE CAP LAYOUT AND DETAILS ON FO-300 SERIES FOR ADD'L INFO & ADD'L REBAR.

SHEAR WALL PILE CAP SCHEDULE (150 TONS PILE, TYPE B)

	THICKNESS (IN)	REINFORCEMENT				NOTES:
		BOTTOM		TOP		
		LONG WAY	SHORT WAY	LONG WAY	SHORT WAY	
PC-S1B	54	#11@6" OC		#11@12" OC		HOOK REINF. @ EDGE

NOTE: PILE CAP CONCRETE STRENGTH SHALL BE fc = 10,000 PSI.
SEE PILE CAP LAYOUT AND DETAILS ON FO-300 SERIES FOR ADD'L INFO & ADD'L REBAR.

FOUNDATION WALL SCHEDULE

WALL MARK	WALL THICKNESS	VERTICAL BARS		HORIZONTAL BARS		NOTES:
		INSIDE FACE	OUTSIDE FACE	INSIDE FACE	OUTSIDE FACE	
BW1	12"	#5@12" O.C.	#4@12" O.C.	#4@12" O.C.	#4@12" O.C.	-

NOTES:

1. SEE TYPICAL DETAILSAND SECTIONS FOR ADDITIONAL INFORMATION
2. FOR SHEAR WALLS COINCIDENTAL WITH FOUNDATION WALLS, PROVIDE THE LARGER SIZE AND SMALLER SPACING OF THE SHEAR WALL OR FOUNDATION WALL REINFORCEMENT AT EACH FACE, EACH DIRECTION.



OWNER:
CHARNEY COMPANIES
5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101
TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

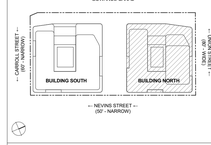
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 Ninth Avenue, Suite 902
New York, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



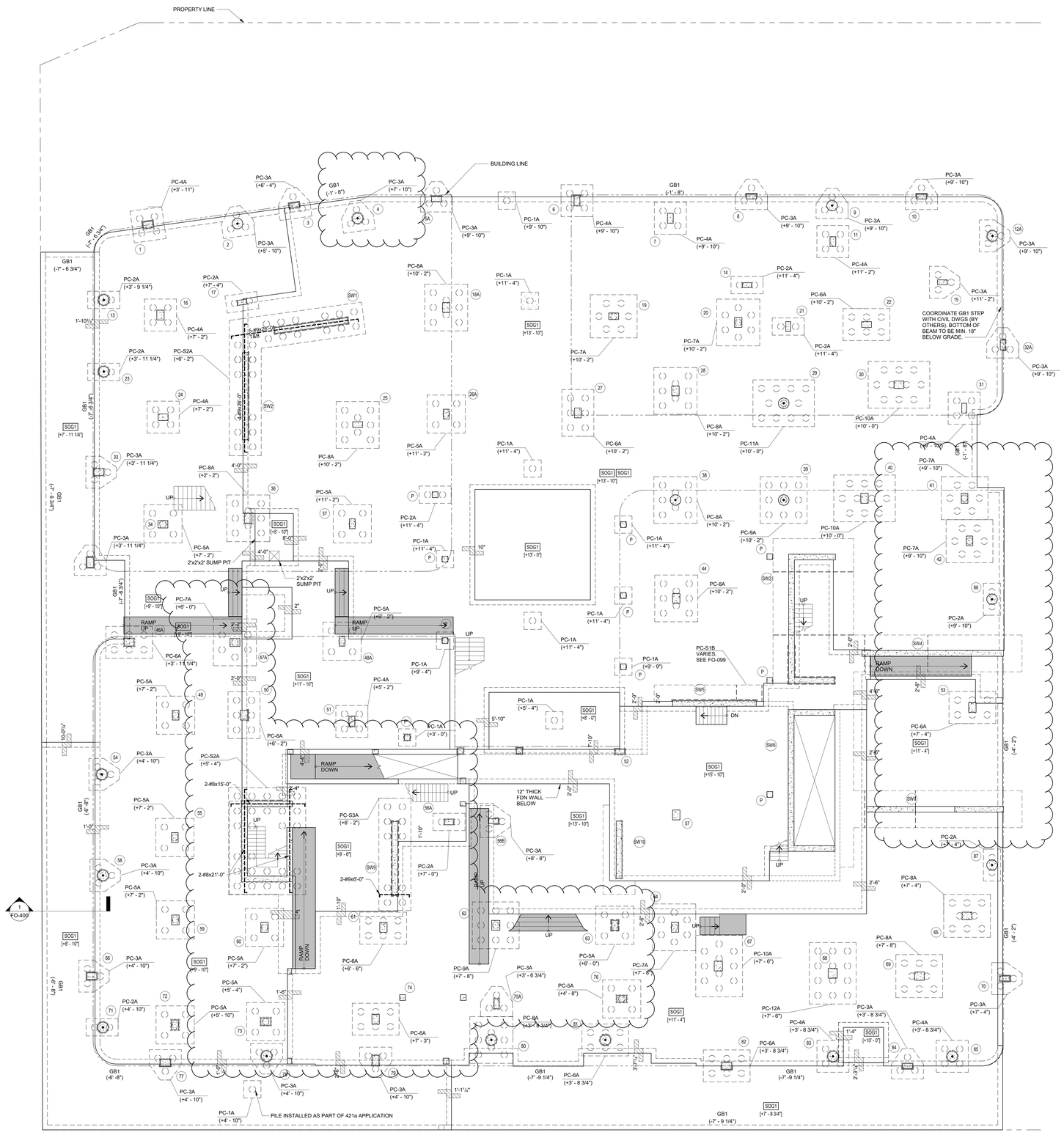
No.	DATE	ISSUE
7	12.14.22	ISSUED FOR 80% CONSTRUCTION
6	12.07.22	ISSUED FOR DOB
5	11.18.22	100% FOUNDATION DRAWINGS
4	08.19.22	ISSUED FOR DOB FILING - FO PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:
417 CARROLL ST.
BROOKLYN, NY 11217

DRAWING TITLE:
LOWER FOUNDATION/CELLAR FRAMING PLAN

SEAL & SIGNATURE:

DATE (YYYY/MM/DD): Issue Date
PROJECT No.: TAV_300 NEVINS
DRAWING BY: Checker
CHK BY: Author
DRAWING No.: FO-099A.00
PAGE No.: 5 OF 51



UPPER FOUNDATION PLAN
1/8" = 1'-0"



FOUNDATION NOTES:

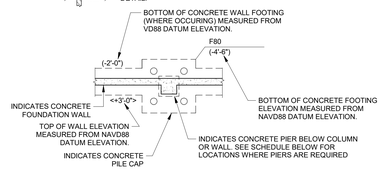
1. [XX'-XX"] INDICATES TOP OF SLAB ELEVATION RELATIVE TO NAVD88 DATUM. [+/-XX'-XX"] INDICATES ELEVATION RELATIVE TO TOP OF SLAB ELEVATION. SEE ARCH/CIVIL DRAWINGS FOR NAVD 88 ELEVATION RELATIVE TO PROJECT DATUM 0'-0".
2. SOGX INDICATES SLAB TYPE. SEE SLAB SCHEDULE ON THIS SHEET.
3. SEE THE FOLLOWING DRAWINGS FOR THE ITEMS NOTED:

GENERAL NOTES	FO-001's
COLUMN/SHEAR WALL SCHEDULES & DETAILS	S-200's
TYPICAL FOUNDATION DETAILS	FO-200's AND FO-300's
FOUNDATION SECTIONS	FO-400's
FOUNDATION GEOMETRY PLANS	FO-500's

4. COORDINATE ALL SLAB OPENINGS WITH MECHANICAL SHOP DRAWINGS. PROVIDE REINFORCEMENT AT ALL OPENINGS AND SLAB EDGES AS PER THE TYPICAL DETAILS AND PLANS.
5. SEE ARCHITECTURAL EDGE OF SLAB DRAWINGS FOR ALL DIMENSIONS AND COORDINATES, U.O.N.
6. TOP OF PILE CAP SHALL BE TOP OF SLAB, U.O.N. BOTTOM OF PILE CAP ELEVATION IS AS SHOWN, OR 4' BELOW GRADE AT SLAB PERIMETER, WHICHEVER IS LOWER.
7. SEE GROUND FLOOR FRAMING PLAN FOR GROUND FLOOR SLAB REINFORCMENT AND BALANCE OF INFORMATION

LEGEND:

- ADDITIONAL TOP STEEL
- ADDITIONAL BOTTOM STEEL
- ADDITIONAL CONTINUOUS TOP STEEL
- (#) INDICATES COLUMN NUMBER
- ED8 INDICATES HSS6x4x3/8" ELEVATOR DIVIDER BEAM
- (P) INDICATES 14"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- (P1) INDICATES 8"x14" CONCRETE POST WITH 4-#7 VERTICAL BARS AND #4@12" TIES
- INDICATES COLUMN BELOW / ABOVE
- INDICATES (0,0) COORDINATE LOCATION (CORNER OF PROPERTY LINE)
- INDICATES SLAB STRESS LINE
- INDICATES STEP IN FRAMED SLAB WITH DASHED BOTTOM OF SLAB EXTENTS. SEE S-300'S SERIES FOR TYPICAL STEP IN FRAMED SLAB DETAIL.



MINIMUM PILE REQUIREMENTS
(DESIGN BY OTHERS)

PILE TYPE	MINIMUM DIAMETER	MINIMUM COMPRESSION CAPACITY	MINIMUM TENSILE CAPCITY	MINIMUM LATERAL CAPACITY
TYPE A	7 5/8"	75 TONS	40 TONS	1 TONS
TYPE B	12 5/8"	150 TONS	50 TONS	1 TONS

FRAMED SLAB ON GRADE SCHEDULE

SLAB MARK	SLAB THICKNESS	CONCRETE WEIGHT (PCF)	CONCRETE STRENGTH	TYPICAL SLAB REINFORCEMENT	NOTES:
SOG1	10"	150-NWT	6,000 PSI	#5@12" O.C. EACH WAY, T & B	SEE PLAN FOR ADDITIONAL REINFORCEMENT. SLAB ON GRADE OVER STEGO 20 MIL VAPOR BARRIER AND 6" GRAVEL FILL. PROVIDE 2" CLEAR COVER TO BOTTOM BARS

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION

GRADE BEAM SCHEDULE

MARK	SIZE - WxD		REINFORCEMENT						NOTES:
	WIDTH	DEPTH	BOTTOM CONT.	BOTTOM ADD'L	TOP CONT.	TOP ADD'L	SIDE*** SIZE & SPACING	STIRRUP SIZE & SPACING	STIRRUP # OF LEGS	
GB1	12	18"	2-#8	-	2-#8	-		#4@12" O.C.	2	-

NOTE: SEE TYPICAL DETAILS AND SECTIONS FOR ADDITIONAL INFORMATION.
WHERE GRADE BEAM MEETS FOUNDATION, PROVIDE #4@12" O.C. VERTICAL DOWELS TYING BEAM INTO PILE CAP
*BEAM DEPTH IS AS SHOWN ON SCHEDULE, INDICATED AS ELEV. ON PLAN, OR 18" BELOW GRADE, WHICHEVER IS GREATER.
*** PROVIDE #4@12" SIDE BARS FOR ALL BEAMS WITH DEPTH GREATER THAN 36", U.O.N.

CONCRETE PIER SCHEDULE

COL. #/ WALL #	SIZE WIDTH	SIZE LENGTH	REINFORCEMENT
3, 4, 5A, 6, 8, 10, 10A, 12, 32, 32A, 36, 43, 46A, 50, 51, 54, 56B, 58, 63, 66, 70-73, 75A, 76-85, 87, P*	SEE NOTE 1		
SW1, SW2, SW3, SW5, SW8, SW9	SEE NOTE 1	CONTINUOUS	SEE NOTE 2

NOTES: 1. TYPICAL PILE CAP AND FRAMED SLAB WITH PIER DETAIL ON FO-300'S.
2. PIER REINFORCMENT TO MATCH SHEAR WALL REINFORCEMENT.

COLUMN PILE CAP SCHEDULE
(75 TONS PILE, TYPE A)

PILE CAP MARK	THICKNESS (IN)	REINFORCEMENT BOTTOM LONG WAY	BOTTOM SHORT WAY	TOP LONG WAY	TOP SHORT WAY	NOTES:
PC-1A	30	7-#6	7-#6	-	-	HOOK REINF.
PC-2A	30	7-#6	10-#6	-	-	HOOK REINF.
PC-3A	32	5-#7 THREE - WAY		-	-	HOOK REINF.
PC-4A	32	8-#8	8-#8	-	-	HOOK REINF.
PC-5A	32	10-#8	10-#8	-	-	HOOK REINF.
PC-6A	44	10-#8	11-#8	-	-	HOOK REINF.
PC-7A	44	11-#8	12-#8	11-#8	12-#8	HOOK REINF.
PC-8A	44	13-#8	14-#8	-	-	HOOK REINF.
PC-9A	44	16-#8	16-#8	-	-	HOOK REINF.
PC-10A	46	18-#9	20-#9	-	-	HOOK REINF.
PC-11A	46	20-#9	22-#9	-	-	HOOK REINF.
PC-12A	46	22-#9	24-#9	-	-	HOOK REINF.

NOTE: PILE CAP CONCRETE STRENGTH SHALL BE f'c = 10,000 PSI,
SEE PILE CAP LAYOUT AND DETAILS ON FO-300 SERIES FOR ADDITIONAL INFORMATION.

SHEAR WALL PILE CAP SCHEDULE
(75 TONS PILE, TYPE A)

PILE CAP MARK	THICKNESS (IN)	REINFORCEMENT BOTTOM LONG WAY	BOTTOM SHORT WAY	TOP LONG WAY	TOP SHORT WAY	NOTES:
PC-S1A	44	#9@12" OC		#7@12" OC		HOOK REINF. @ EDGE
PC-S2A	44	#8@12" OC		#6@12" OC		HOOK REINF. @ EDGE
PC-S3A	40	13-#9	#9@12" OC	7-#7	#7@12" OC	HOOK REINF. @ EDGE
PC-S4A	42	13-#8	#8@12" OC	7-#6	#4@12" OC	HOOK REINF. @ EDGE

NOTE: PILE CAP CONCRETE STRENGTH SHALL BE f'c = 10,000 PSI.
SEE PILE CAP LAYOUT AND DETAILS ON FO-300 SERIES FOR ADD'L INFO & ADD'L REBAR.

SHEAR WALL PILE CAP SCHEDULE
(150 TONS PILE, TYPE B)

	THICKNESS (IN)	REINFORCEMENT BOTTOM LONG WAY	BOTTOM SHORT WAY	TOP LONG WAY	TOP SHORT WAY	NOTES:
PC-S1B	54	#11@6" OC		#11@12" OC		HOOK REINF. @ EDGE

NOTE: PILE CAP CONCRETE STRENGTH SHALL BE f'c = 10,000 PSI.
SEE PILE CAP LAYOUT AND DETAILS ON FO-300 SERIES FOR ADD'L INFO & ADD'L REBAR.



OWNER:
CHARNEY COMPANIES
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TAVROS HOLDINGS
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FOGARTY FINGER architecture | interiors
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STRUCTURAL ENGINEER:
TITAN ENGINEERS
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UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
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NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

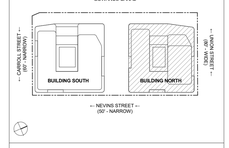
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
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ZONING SPECIALIST:
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New York, NY 10036

CODE CONSULTANT/EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



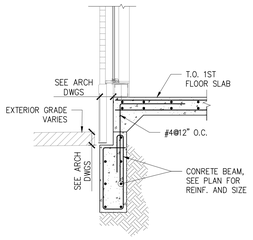
No.	DATE	ISSUE
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6	12.07.22	ISSUED FOR DOB
5	11.18.22	100% FOUNDATION DRAWINGS
4	08.19.22	ISSUED FOR DOB FILING - FO PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:
417 CARROLL ST.
BROOKLYN, NY 11217

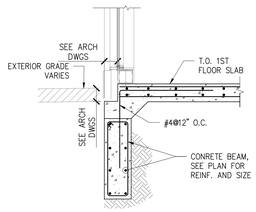
DRAWING TITLE:
UPPER FOUNDATION PLAN

SEAL & SIGNATURE:

DATE (YYYY/MM/DD): Issue Date
PROJECT No.: TAV_300 NEVINS
DRAWING BY: Checker
CHK BY: Author
DRAWING No.: FO-100A.00
PAGE No.: 6 OF 51



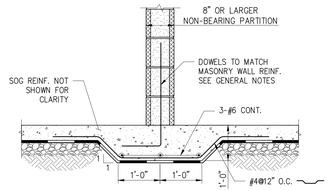
AT EXTERIOR GRADE ELEVATION MORE THAN 12" BELOW GROUND FLOOR ELEVATION



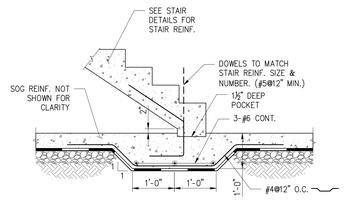
AT EXTERIOR GRADE ELEVATION LESS THAN 12" BELOW GROUND FLOOR ELEVATION

EDGE OF SLAB DETAILS AT FACADE WALLS

SCALE: N.T.S.



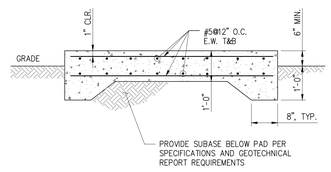
AT PARTITIONS



AT STAIR STRINGER

TYPICAL DETAIL AT PARTITIONS OR STAIRS ON SLAB ON GRADE

SCALE: N.T.S.

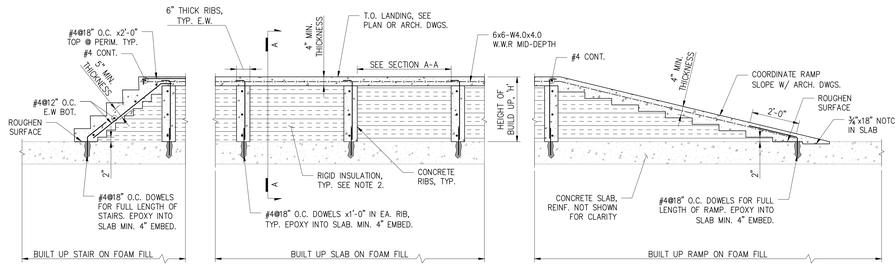


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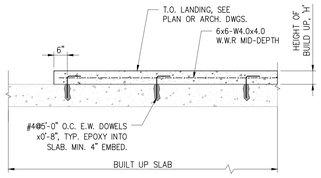
1. COORDINATE EQUIPMENT ANCHORAGE WITH EQUIPMENT MANUFACTURER.

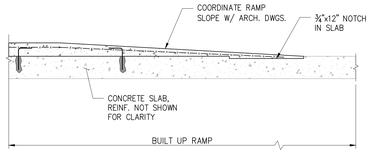
TYPICAL CONCRETE PAD FOR EXTERIOR EQUIPMENT

SCALE: N.T.S.

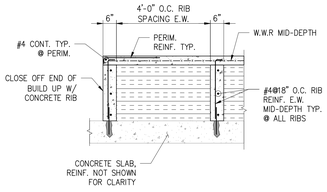


FOR 'H' > 4"





FOR 'H ≤ 4"



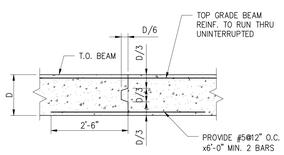
SECTION A-A

NOTES:

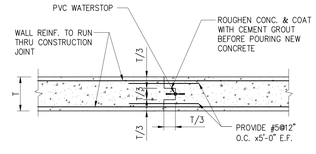
1. CAST IN PLACE SLAB DOWELS MAY BE USED IN LIEU OF POST INSTALLED DOWELS, AT CONTRACTORS OPTION.
2. STRUCTURAL POLYSTYRENE SHALL BE OWENS CORNING FOAMULAR 400 HIGH DENSITY EXTRUDED POLYSTYRENE INSULATION OR APPROVED EQUAL:
   MIN. REQUIRED COMPRESSIVE STRENGTH = 40 PSI (PER ASTM D1621),
   MIN. REQUIRED COMPRESSIVE MODULUS = 1,400 PSI (PER ASTM D1621),
   MIN. REQUIRED INSULATION FOUNDATION MODULUS "K" = 300 PCI.
3. SEE ARCH. DWGS. FOR STAIR/RAMP DIMENSIONS, DETAILS AND ADDITIONAL INFO.
4. ALL INTERIOR CONCRETE SHALL BE 4,000 PSI. ALL EXTERIOR OR EXPOSED TO WEATHER CONCRETE SHALL BE 5,000 PSI.

TYPICAL BUILT UP SLAB DETAIL

SCALE: N.T.S.



GRADE BEAM



FOUNDATION WALLS

NOTE: CONSTRUCTIONS JOINTS SHALL BE PLACED NO MORE THAN 50'-0" OF WALL LENGTH APART. AFTER INSTALLATION OF CONSTRUCTION JOINT, THE NEXT PORTION OF FOUNDATION WALL SHALL BE POURED NO LESS THAN 24 HOURS OF THE PREVIOUS POUR. CONSTRUCTION JOINTS SHALL NOT BE PLACED WHERE SHEAR WALLS AND FOUNDATION WALLS COINCIDE.

CONSTRUCTION JOINT DETAILS AT FOUNDATIONS

SCALE: N.T.S.



OWNER:

CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:

FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:

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1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:

ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:

SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:

JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:

BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

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BOLD
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CIVIL ENGINEER:

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102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:

JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

LANDSCAPE:

GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:

GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

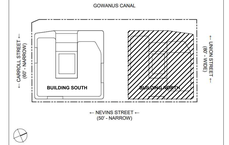
ZONING SPECIALIST:

DEVELOPMENT CONSULTING SERVICES
630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:

WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



DOB NOW JOB # B00611202-S8

No.	DATE	ISSUE
7	12.14.22	ISSUED FOR 80% CONSTRUCTION
6	12.07.22	ISSUED FOR DOB
5	11.18.22	100% FOUNDATION DRAWINGS
4	08.19.22	ISSUED FOR DOB FILING - FO PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

417 CARROLL ST.
BROOKLYN, NY 11217

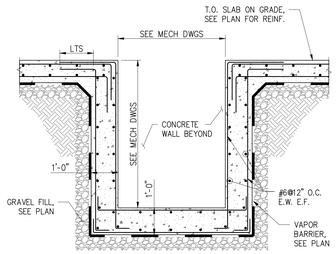
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TYPICAL FOUNDATION DETAILS I

SEAL & SIGNATURE:

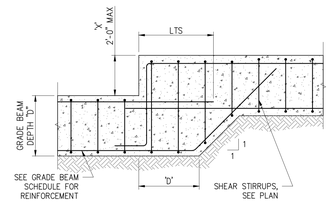
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PROJECT No.:	T-21395.01
DRAWING BY:	KAS/KC
CHK BY:	AM
DRAWING No.:	FO-300.00
PAGE No.:	7 OF 51

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TYPICAL EJECTOR PIT FOUNDATION DETAILS

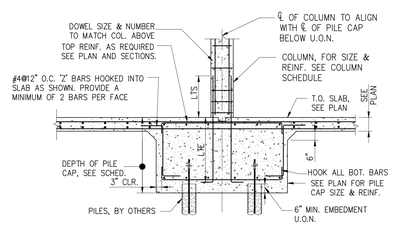
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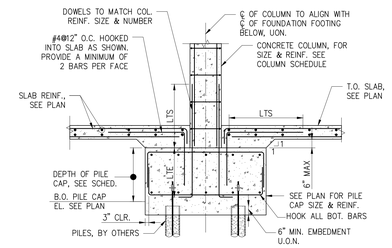
NOTE: MINIMUM DISTANCE BETWEEN STEPS TO BE 2X.

TYPICAL STEP IN GRADE BEAM DETAIL

SCALE: N.T.S.



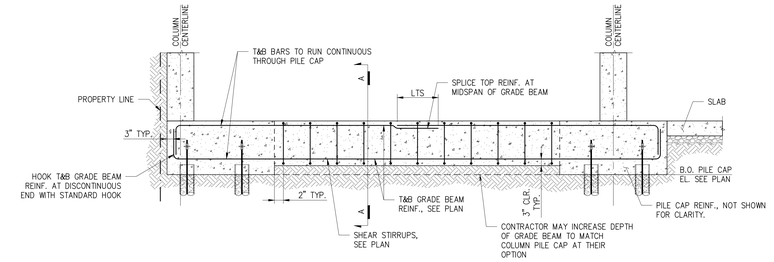
WHERE TOP OF SLAB IS EQUAL TO TOP OF PILE CAP



WHERE BOTTOM OF SLAB ≤ 6" FROM TOP OF PILE CAP

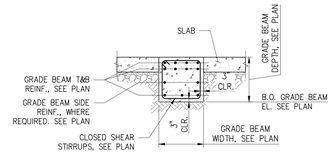
TYPICAL PILE CAP AND FRAMED SLAB DETAILS

SCALE: N.T.S.



TYPICAL GRADE BEAM AND PILE CAP DETAIL

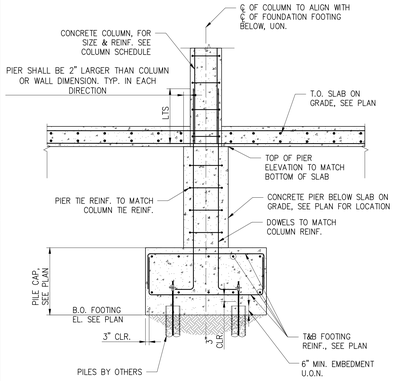
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SECTION A-A

NOTES:

1. WHERE BARS ARE PLACED IN (2) LAYERS THE MINIMUM CLEAR DISTANCE BETWEEN LAYERS SHALL BE 2".



TYPICAL PILE CAP AND FRAMED SLAB WITH PIER

SCALE: N.T.S.



OWNER:

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KEY PLAN



DOB NOW JOB # B00611202-S8

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PROJECT:

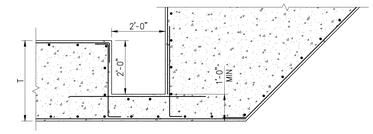
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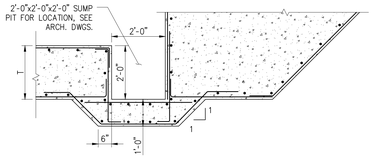
TYPICAL FOUNDATION DETAILS II

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CHK BY:	AM
DRAWING No.:	FO-301.01
PAGE No:	8 OF 51

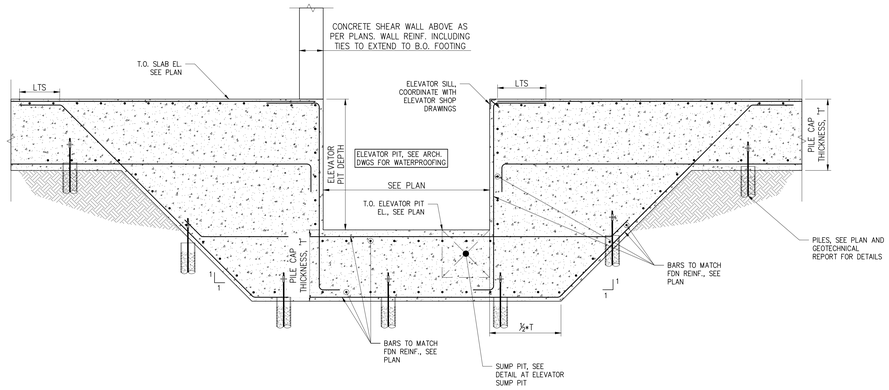


FOR 'T' ≥ 3'-0"



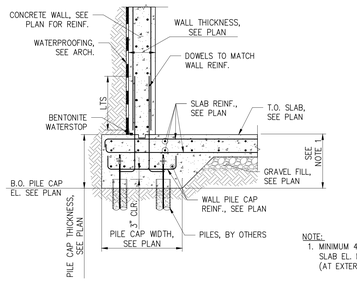
FOR 'T' < 3'-0"

DETAIL AT ELEVATOR SUMP PIT

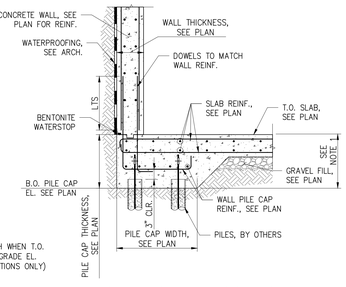


TYPICAL ELEVATOR PIT FOUNDATION DETAIL

SCALE: N.T.S.



CONCENTRIC WALL FOOTING

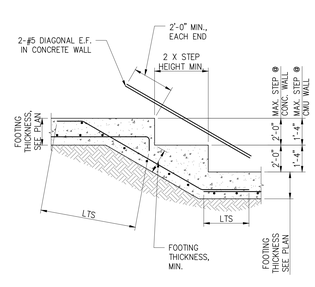


NOTE:
1. MINIMUM 4'-0" DEPTH WHEN T.O. SLAB EL. MATCHES GRADE EL. (AT EXTERIOR CONDITIONS ONLY)

ECCENTRIC WALL FOOTING

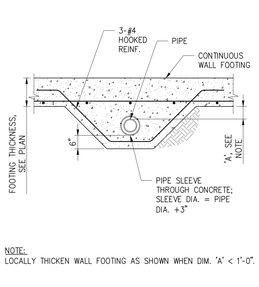
TYPICAL WALL FOOTING DETAIL

SCALE: N.T.S.



TYPICAL DETAIL OF STEPPED WALL FOOTING

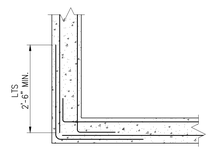
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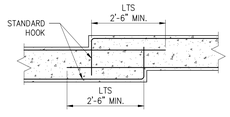
NOTE:
LOCALLY THICKEN WALL FOOTING AS SHOWN WHEN DIM. 'A' < 1'-0".

TYPICAL PIPE BELOW WALL FOOTING

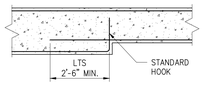
SCALE: N.T.S.



EXTERIOR CORNER



WALL OFFSET



CHANGE IN WALL THICKNESS

NOTE:

1. THIS DETAIL APPLIES TO CONT. REINFORCEMENT ONLY.
2. IF BARS LAPPED ARE DIFFERENT IN SIZE, PROVIDE LAP TO ACCOMMODATE THE LARGER OF THE TWO BARS.
3. 'LTS' - SEE SCHEDULE OF EMBEDMENT AND SPLICE LENGTHS.
4. VERTICAL BARS ARE NOT SHOWN FOR CLARITY.

TYPICAL FOUNDATION WALL DETAILS

SCALE: N.T.S.

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SHEET INTENTIONALLY LEFT BLANK



OWNER:

CHARNEY COMPANIES
5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

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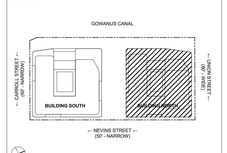
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CODE CONSULTANT/ EXPEDITOR:

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KEY PLAN



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PROJECT:

417 CARROLL ST.
BROOKLYN, NY 11217

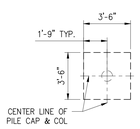
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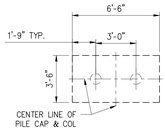
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PAGE No.:	9 OF 51

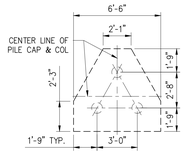
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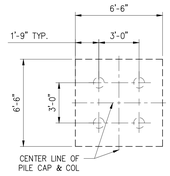
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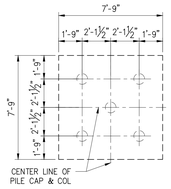
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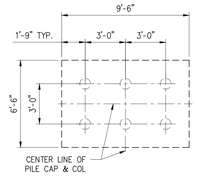
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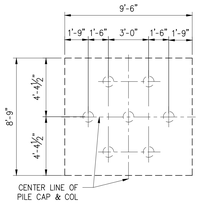
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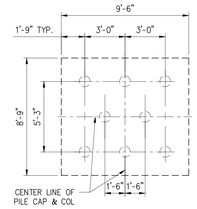
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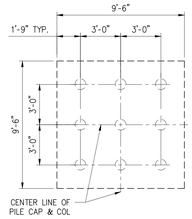
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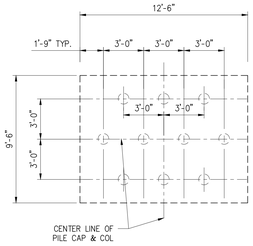
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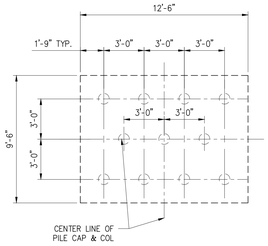
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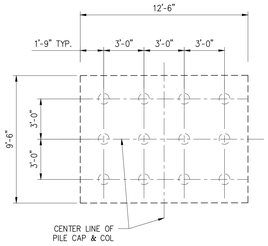
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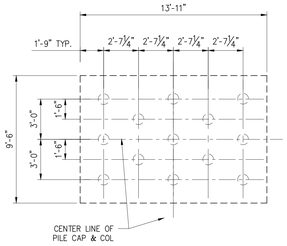
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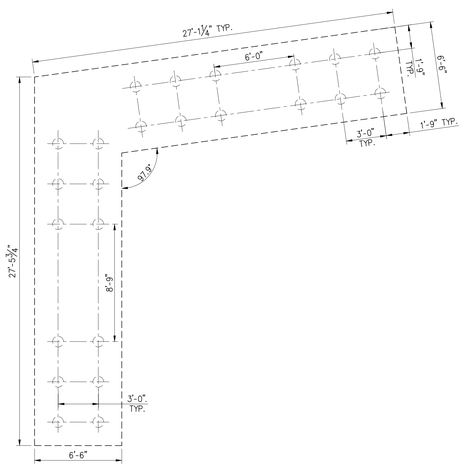
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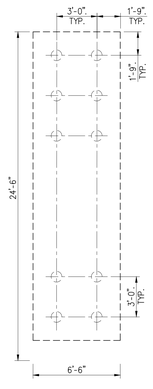
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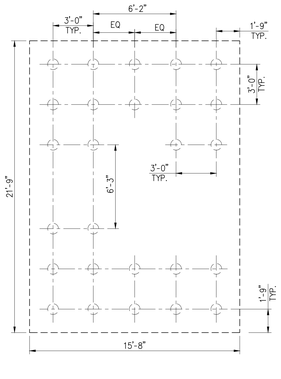
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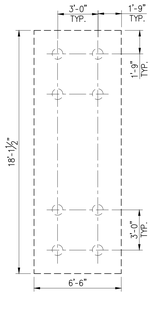
PC-S1A



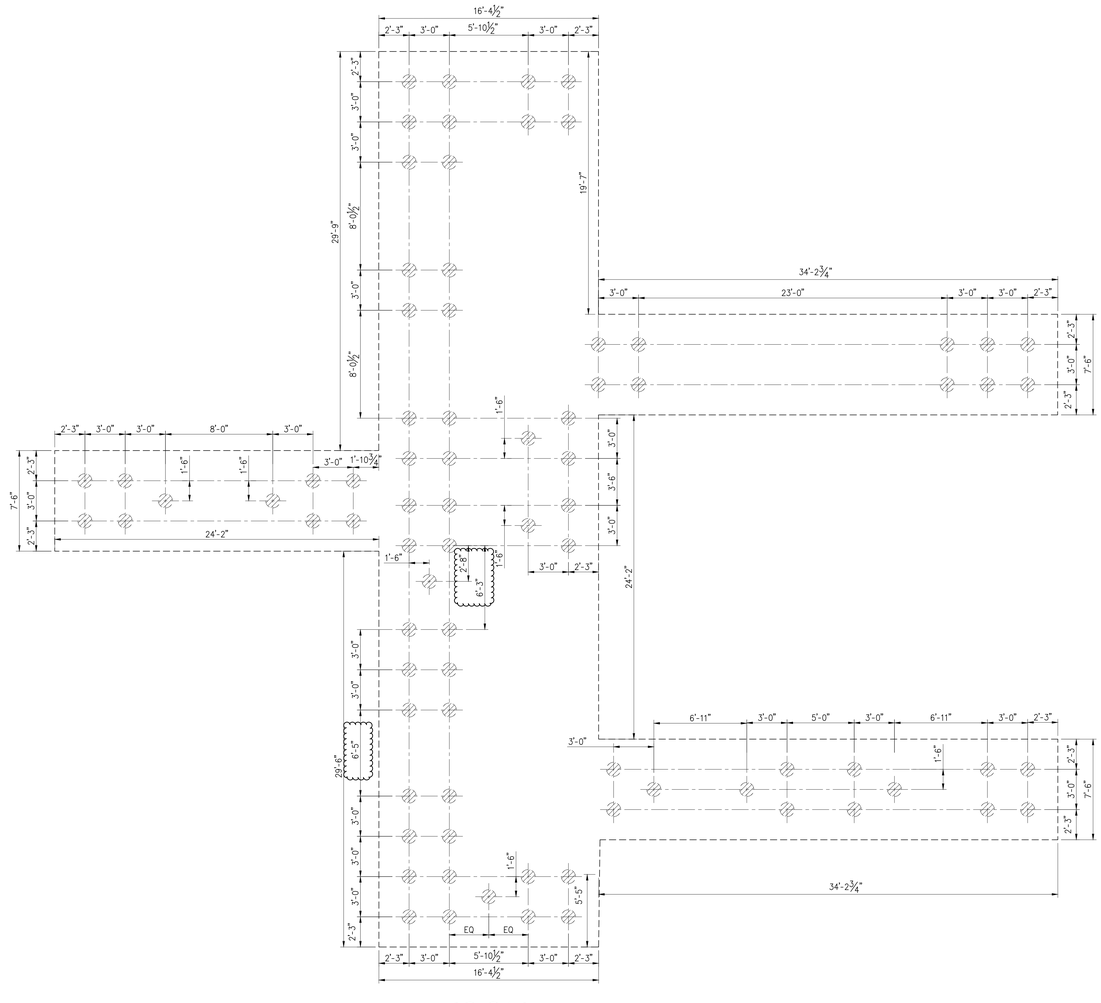
PC-S3A



PC-S2A



PC-S4A



PC-S1B

FOUNDATION CAP PILE DETAILS

SCALE: ¾" =1'-0"

OWNER:
CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER
architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



DOB NOW JOB # B00611202-S8

No.	DATE	ISSUE
7	12.14.22	ISSUED FOR 80% CONSTRUCTION
6	12.07.22	ISSUED FOR DOB
5	11.18.22	100% FOUNDATION DRAWINGS
4	08.19.22	ISSUED FOR DOB FILING - FO PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

417 CARROLL ST.
BROOKLYN, NY 11217

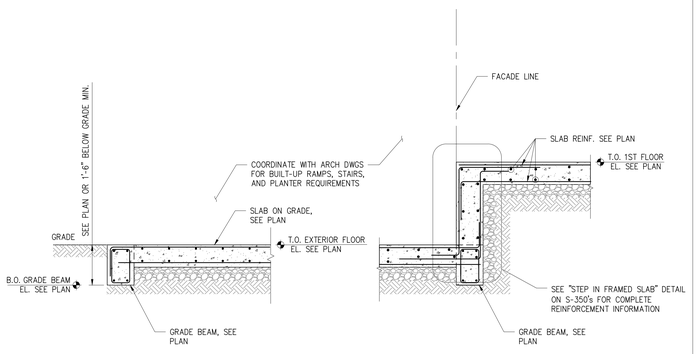
DRAWING TITLE:

PILE CAP DETAILS

SEAL & SIGNATURE:

DATE (YYYY/MM/DD):	2022.12.07
PROJECT No.:	T.21395.01
DRAWING BY:	KAS/KC
CHK BY:	AM
DRAWING No.:	FO-310.00
PAGE No.:	10 OF 51

I:\PROJECTS\2021\T.21395.01 - 300 NEVINS STREET, BROOKLYN, NY 11215\DWGS\STRUCTWORKING\CADT.21395.01 FO-300S.DWG



SECTION 1

SCALE: ½" = 1'-0"



OWNER:

CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:

FOGARTY FINGER
architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:

TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:

ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:

SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:

JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:

BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:

BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:

PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:

JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

LANDSCAPE:

GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:

GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

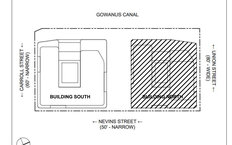
ZONING SPECIALIST:

DEVELOPMENT CONSULTING SERVICES
630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:

WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



DOB NOW JOB # B00611202-S8

No.	DATE	ISSUE
7	12.14.22	ISSUED FOR 80% CONSTRUCTION
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3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

417 CARROLL ST.
BROOKLYN, NY 11217

DRAWING TITLE:

FOUNDATION SECTIONS

SEAL & SIGNATURE:

DATE (YYYY/MM/DD):	2022.12.07
PROJECT No.:	TJ21395.01
DRAWING BY:	KAS/KC
CHK BY:	AM
DRAWING No.:	FO-400.01
PAGE No.:	11 OF 51

I:\PROJECTS\2021\TJ21395.01 - 300 NEVINS STREET, BROOKLYN, NY 11215\DWGS\STRUCTWORK\NG\CADT\J21395.01 FO-400'S.DWG

COLUMN SCHEDULE

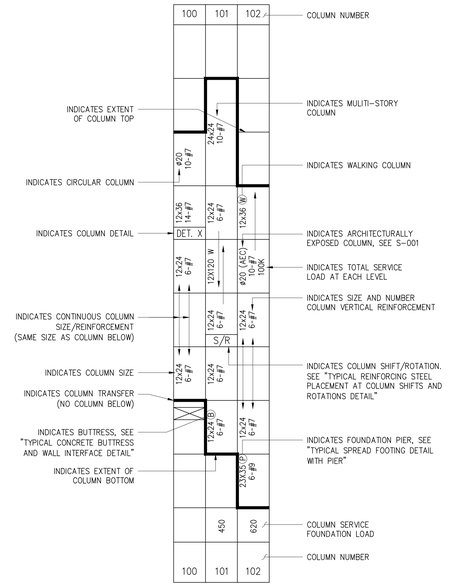
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BULKHEAD ROOF																																											
ROOF																							12x24 6-#9		#24 9-#9							12x24 6-#9	12x24 6-#9	12x24 6-#9										12x24 6-#9	12x24 6-#9
17TH FLOOR																																12x24 6-#9	12x24 6-#9										
16TH FLOOR																																											
15TH FLOOR																																32x25											
14TH FLOOR																																12x24 6-#9											
13TH FLOOR																																											
12TH FLOOR																																											
11TH FLOOR																																											
10TH FLOOR																																12x24 6-#9	12x24 6-#9	12x24 6-#9										
9TH FLOOR																																14x24 8-#9	14x24 8-#9	14x24 8-#9										
8TH FLOOR																	12x24 6-#9															14x24 8-#9	14x24 8-#9	14x24 8-#9 S/R							12x24 6-#9	12x24 6-#9			
7TH FLOOR																	12x24 6-#9 S/R								#24 9-#9 S/R							12x24 6-#9	14x49 W	#24 9-#9 S/R										
6TH FLOOR				12x24 6-#9	12x24 6-#9			12x24 6-#9				12x24 6-#9	12x24 6-#9				12x24 6-#9	12x24 6-#9		12x24 6-#9		12x24 6-#9	12x24 6-#9 S/R	12x24 6-#9		12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x30 W	12x24 6-#9									14x46 W	14x24 8-#9	14x24 8-#9			12x24 6-#9	12x24 6-#9	12x24 6-#9 S/R
5TH FLOOR												14x24 8-#9										14x24 8-#9									12x24 6-#9									14x24 8-#9	18x24 12-#9	16x24 10-#9						14x24 8-#9	14x24 8-#9	16x24 10-#9
4TH FLOOR																																											
3RD FLOOR																										12x24 6-#9																			
2ND FLOOR				12x24 6-#9	12x24 6-#9			12x24 6-#9				12x24 6-#9	12x24 6-#9					12x24 6-#9		12x24 6-#9		12x24 6-#9		12x24 6-#9		12x54 W	12x24 6-#9	12x24 6-#9	12x24 6-#9									14x24 8-#9	18x24 12-#9	16x24 10-#9			12x24 6-#9	12x24 6-#9	12x24 6-#9		12x41	12x24 6-#9	14x24 8-#9	24x25 W	12x24 6-#9	14x48 W	16x24 10-#9
1ST FLOOR	16x24 10-#9	#26 9-#9	12x24 6-#9	#26 9-#9		12x24 6-#9	14x24 8-#9	14x24 8-#9	12x24 6-#9	#26 9-#9	12x24 6-#9	14x24 8-#9		#26 9-#9	#25 9-#9	12x24 6-#9	12x24 6-#9	18x24 12-#9	12x24 6-#9		18x24 12-#9	16x24 10-#9	18x24 12-#9	12x24 6-#9	16x24 10-#9	#26 9-#9	18x24 12-#9	16x24 10-#9	14x24 6-#9		14x24 6-#9	16x24 10-#9	18x24 12-#9	#26 9-#9	18x24 12-#9	12x24 6-#9		12x24 6-#9	12x24 6-#9	16x24 10-#9	18x24 12-#9	18x24 12-#9	#26 9-#9
CELLAR	P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN		P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN		P1 SEE PLAN	P1 SEE PLAN											P1 SEE PLAN	P1 SEE PLAN						P1 SEE PLAN				P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN					
COLUMN SERVICE LOAD (KIPS)	496	375	354	415		377	449	539	388	333	400	428		369	259	88	413	657	69		988	911	919	208	755	265	517	642		605	709	1076	1436	1239	444		274	316	637	1009	585	1056	1164
FLOOR \ COLUMN NO.	1	2	3	4	5	5A	6	7	8	9	10	11	12	12A	13	14	15	16	17	18	18A	19	20	21	22	23	24	25	26	26A	27	28	29	30	31	32	32A	33	34	36	37	38	39

6,000 PSI CONCRETE

8,000 PSI CONCRETE

NOTES:

1. SEE PLAN FOR COLUMN ORIENTATION.
2. CONCRETE STRENGTH OF COLUMNS TO BE AS NOTED ON THE COLUMN SCHEDULE.
3. COLUMN LOADS INDICATED ARE FOR SERVICE LOADS IN KIP.
4. SEE TYPICAL DETAILS FOR ADDITIONAL INFORMATION.
5. ALL COLUMNS LOCATED IN PARKING AREAS SHALL BE CHAMFERED PER TYPICAL CONCRETE COLUMN DETAIL LOCATED IN THE S-300'S SERIES



COLUMN SCHEDULE LEGEND



OWNER:

CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:

FOGARTY FINGER
architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:

TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:

ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:

SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:

JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:

BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:

BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:

PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:

JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

LANDSCAPE:

GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:

GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

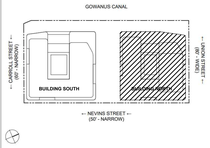
ZONING SPECIALIST:

DEVELOPMENT CONSULTING SERVICES
630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:

WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



DOB NOW JOB # B00611202-S8

No.	DATE	ISSUE
7	12.14.22	ISSUED FOR 80% CONSTRUCTION
6	12.07.22	ISSUED FOR DOB
5	11.18.22	100% FOUNDATION DRAWINGS
4	08.19.22	ISSUED FOR DOB FILING - FO PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

417 CARROLL ST.
BROOKLYN, NY 11217

DRAWING TITLE:

COLUMN SCHEDULE I

SEAL & SIGNATURE:

DATE (YYYY/MM/DD):	2022.12.07
PROJECT No.:	TJ21395.01
DRAWING BY:	KAS/KC
CHK BY:	AM
DRAWING No.:	S-200.01
PAGE No.:	33 OF 51

I:\PROJECTS\2021\TJ21395.01 - 300 NEVINS STREET, BROOKLYN, NY 11215\DWGS\STRUCTWORKING\CAD\TJ21395.01 S-200S.DWG

COLUMN SCHEDULE

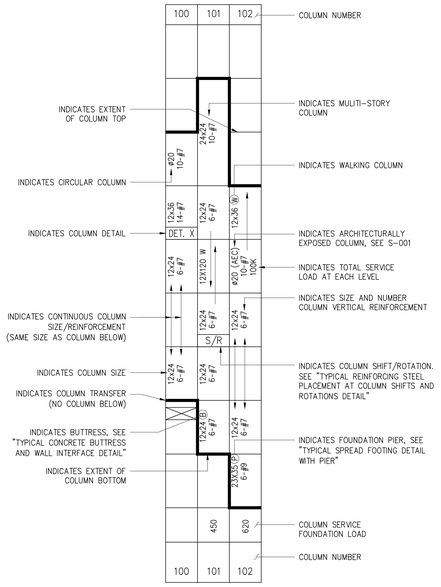
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BULKHEAD ROOF																																												
ROOF																																												
17TH FLOOR	12x24 6-#9		12x24 6-#9		12x24 6-#9												12x24 6-#9						12x24 6-#9							12x24 6-#9	12x24 6-#9		12x24 6-#9	12x24 6-#9	12x24 6-#9									
16TH FLOOR	12x24 6-#9																																											
15TH FLOOR	32x24 W 12-#9	18x24 12-#9																																										
14TH FLOOR	14x24 8-#9	12x24 6-#9																																										
13TH FLOOR																																												
12TH FLOOR																																												
11TH FLOOR																																												
10TH FLOOR			12x24 12-#9																														12x24	12x24										
9TH FLOOR			14x52 W																														30x43 W	16x24 10-#9										
8TH FLOOR	14x24 8-#9	12x24 6-#9	12x24 6-#9						12x24 6-#9		12x24 6-#9			12x24 6-#9	12x24 6-#9					12x24 6-#9	12x24 6-#9					12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9		12x24 6-#9		12x24 6-#9	16x32 W										
7TH FLOOR	14x57 W	27x26 W																												39x24 W				16x24 10-#9	12x24 6-#9 S/R									
6TH FLOOR	14x24 8-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9		12x24 6-#9				12x24 6-#9				12x24 6-#9	12x24 6-#9				12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9 S/R	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	16x24 10-#9	14x24 8-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9
5TH FLOOR	16x24 10-#9	14x24 8-#9	14x24 8-#9		14x24 8-#9				14x24 8-#9													16x24 10-#9							14x24 8-#9	14x24 8-#9		16x24 10-#9	20x24 16-#9									
4TH FLOOR																																												
3RD FLOOR		14x24 8-#9																12x24 6-#9					12x24 6-#9												12x24 6-#9								
2ND FLOOR	16x24 10-#9	14x49 W	14x24 8-#9	12x24 6-#9	14x24 8-#9	12x24 6-#9	12x24 6-#9		14x24 8-#9		12x24 6-#9		12x24 6-#9	12x24 6-#9	12x24 6-#9		12x24 6-#9	12x48 W	12x24 6-#9	12x24 6-#9	12x24 6-#9		16x24 10-#9	12x50 W	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	14x24 8-#9	14x24 8-#9	12x24 6-#9	16x24 10-#9	20x24 16-#9	14x24 8-#9	12x24 6-#9	12x50 W	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9		12x24 6-#9
1ST FLOOR	18x24 12-#9	16x24 10-#9	16x24 10-#9	16x24 10-#9	18x24 12-#9			18x24 12-#9		20x24 16-#9		14x24 8-#9	16x24 10-#9	18x24 12-#9	14x24 8-#9	12x24 6-#9	18x24 12-#9	#26 9-#9	16x24 10-#9		14x24 8-#9	12x24 6-#9	18x24 12-#9	#26 9-#9	18x24 12-#9	18x24 12-#9	20x24 16-#9	22x24 16-#9	20x24 16-#9	12x24 6-#9	18x24 12-#9		16x24 10-#9	15x24 12-#9	20x24 16-#9	20x24 16-#9	12x24 6-#9	18x24 12-#9	18x24 12-#9	18x24 12-#9	18x24 12-#9		12x24 6-#9	16x24 10-#9
CELLAR		P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN				P1 SEE PLAN			P1 SEE PLAN		P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN	12x24B 6-#9	P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN			P1 SEE PLAN	18x24 12-#9	P1 SEE PLAN						P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN		P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN		P1 SEE PLAN	P1 SEE PLAN
COLUMN SERVICE LOAD (KIPS)	1275	924	833	343	1025			724		907		628	577	709	505	166	777	324	484		241	389	1225	384	612	678	709	1121	684	842	960	291	1261	1612	1012	321	229	229	229	229		292	582
FLOOR \ COLUMN NO.	40	41	42	43	44	45	46	46A	47	47A	48	48A	49	50	51	52	53	54	55	56	56A	56B	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	75A	76

6,000 PSI CONCRETE

8,000 PSI CONCRETE

NOTES:

1. SEE PLAN FOR COLUMN ORIENTATION.
2. CONCRETE STRENGTH OF COLUMNS TO BE AS NOTED ON THE COLUMN SCHEDULE.
3. COLUMN LOADS INDICATED ARE FOR SERVICE LOADS IN KIP.
4. SEE TYPICAL DETAILS FOR ADDITIONAL INFORMATION.
5. ALL COLUMNS LOCATED IN PARKING AREAS SHALL BE CHAMFERED PER TYPICAL CONCRETE COLUMN DETAIL LOCATED IN THE S-300'S SERIES



COLUMN SCHEDULE LEGEND



OWNER:

CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:

FOGARTY FINGER
architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:

TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:

ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:

SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:

JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:

BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:

BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:

PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:

JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

LANDSCAPE:

GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:

GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

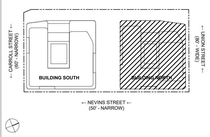
ZONING SPECIALIST:

DEVELOPMENT CONSULTING SERVICES
630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:

WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



DOB NOW JOB # B00611202-S8

No.	DATE	ISSUE
7	12.14.22	ISSUED FOR 80% CONSTRUCTION
6	12.07.22	ISSUED FOR DOB
5	11.18.22	100% FOUNDATION DRAWINGS
4	08.19.22	ISSUED FOR DOB FILING - FO PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

417 CARROLL ST.
BROOKLYN, NY 11217

DRAWING TITLE:

COLUMN SCHEDULE II

SEAL & SIGNATURE:

DATE (YYYY/MM/DD):	2022.12.07
PROJECT No.:	T-21395.01
DRAWING BY:	KAS/KC
CHK BY:	AM
DRAWING No.:	S-201.00
PAGE No.:	34 OF 51

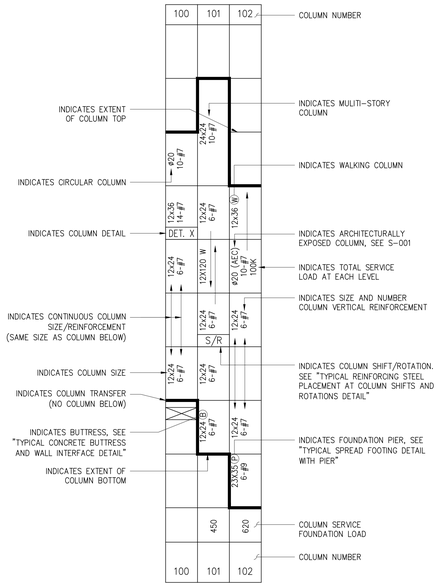
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COLUMN SCHEDULE

FLOOR \ COLUMN NO.	77	78	79	80	81	82	83	84	85	86	87	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	701	702	703	704	705	708	709	710	711	712
BULKHEAD ROOF																																											
ROOF																																											
17TH FLOOR																																											
16TH FLOOR																																											
15TH FLOOR																																											
14TH FLOOR	6,000 PSI CONCRETE																																											
13TH FLOOR																																											
12TH FLOOR																																											
11TH FLOOR																																											
10TH FLOOR																																											
9TH FLOOR																																											
8TH FLOOR																																		12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9
7TH FLOOR																																		12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9
6TH FLOOR	8,000 PSI CONCRETE											12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9									
5TH FLOOR												12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9									
4TH FLOOR												12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9									
3RD FLOOR												12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9									
2ND FLOOR												12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9									
1ST FLOOR		16x24 10-#9	#25 9-#9	16x24 10-#9	#25 9-#9	#25 9-#9	16x24 10-#9	#25 9-#9	12x24 6-#9	#25 9-#9	#25 9-#9	#25 9-#9																															
CELLAR		P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN	P1 SEE PLAN																															
COLUMN SERVICE LOAD (KIPS)		329	342	382	1012	745	691	510	287	461	252	191																						450	620								
FLOOR \ COLUMN NO.	77	78	79	80	81	82	83	84	85	86	87	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	701	702	703	704	705	708	709	710	711	712

NOTES:

1. SEE PLAN FOR COLUMN ORIENTATION.
2. CONCRETE STRENGTH OF COLUMNS TO BE AS NOTED ON THE COLUMN SCHEDULE.
3. COLUMN LOADS INDICATED ARE FOR SERVICE LOADS IN KIP.
4. SEE TYPICAL DETAILS FOR ADDITIONAL INFORMATION.
5. ALL COLUMNS LOCATED IN PARKING AREAS SHALL BE CHAMFERED PER TYPICAL CONCRETE COLUMN DETAIL LOCATED IN THE S-300'S SERIES



COLUMN SCHEDULE LEGEND



OWNER:
CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

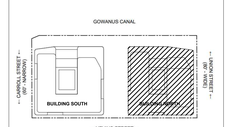
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



DOB NOW JOB # B00611202-S8

No.	DATE	ISSUE
7	12.14.22	ISSUED FOR 80% CONSTRUCTION
6	12.07.22	ISSUED FOR DOB
5	11.18.22	100% FOUNDATION DRAWINGS
4	08.19.22	ISSUED FOR DOB FILING - FO PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

417 CARROLL ST.
BROOKLYN, NY 11217

DRAWING TITLE:

COLUMN SCHEDULE III

SEAL & SIGNATURE:

DATE (YYYY/MM/DD):	2022.12.07
PROJECT No.:	TJ21395.01
DRAWING BY:	KAS/KC
CHK BY:	AM
DRAWING No.:	S-202.00
PAGE No.:	35 OF 51

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COLUMN SCHEDULE

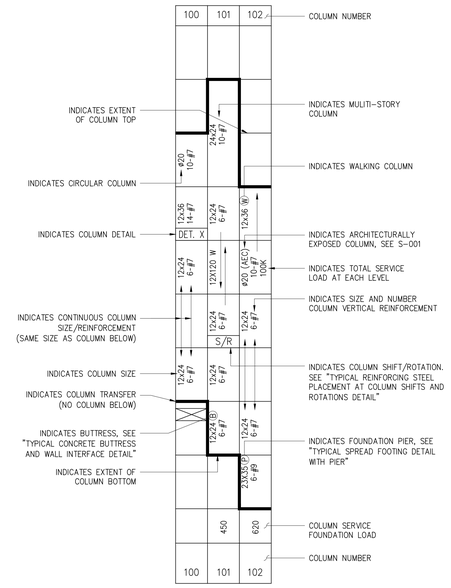
FLOOR \ COLUMN NO.	713	714	715	716	717	718	719	720	721	722	723	724	725	801	802	1601	1602	1603	1604
BULKHEAD ROOF																			
ROOF																			
17TH FLOOR																12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9
16TH FLOOR																12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9
15TH FLOOR																			
14TH FLOOR																			
13TH FLOOR																			
12TH FLOOR																			
11TH FLOOR																			
10TH FLOOR																			
9TH FLOOR																			
8TH FLOOR	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9				
7TH FLOOR	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9	12x24 6-#9						
6TH FLOOR																			
5TH FLOOR																			
4TH FLOOR																			
3RD FLOOR																			
2ND FLOOR																			
1ST FLOOR																			
CELLAR																			
COLUMN SERVICE LOAD (KIPS)																			
FLOOR \ COLUMN NO.	713	714	715	716	717	718	719	720	721	722	723	724	725	801	802	1601	1602	1603	1604

6,000 PSI CONCRETE

8,000 PSI CONCRETE

NOTES:

1. SEE PLAN FOR COLUMN ORIENTATION.
2. CONCRETE STRENGTH OF COLUMNS TO BE AS NOTED ON THE COLUMN SCHEDULE.
3. COLUMN LOADS INDICATED ARE FOR SERVICE LOADS IN KIP.
4. SEE TYPICAL DETAILS FOR ADDITIONAL INFORMATION.
5. ALL COLUMNS LOCATED IN PARKING AREAS SHALL BE CHAMFERED PER TYPICAL CONCRETE COLUMN DETAIL LOCATED IN THE S-300'S SERIES



COLUMN SCHEDULE LEGEND



OWNER:
CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER
architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

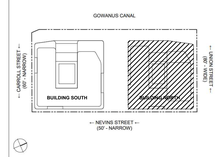
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



DOB NOW JOB # B00611202-S8

No.	DATE	ISSUE
7	12.14.22	ISSUED FOR 80% CONSTRUCTION
6	12.07.22	ISSUED FOR DOB
5	11.18.22	100% FOUNDATION DRAWINGS
4	08.19.22	ISSUED FOR DOB FILING - FO PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:
417 CARROLL ST.
BROOKLYN, NY 11217

DRAWING TITLE:
COLUMN SCHEDULE IV

SEAL & SIGNATURE:

DATE (YYYY/MM/DD):	2022.12.07
PROJECT No.:	TJ21395.01
DRAWING BY:	KAS/KC
CHK BY:	AM
DRAWING No.:	S-203.00
PAGE No.:	36 OF 51

I:\PROJECTS\2021\TJ21395.01 - 300 NEVINS STREET, BROOKLYN, NY 11215\DWGS\STRUCTWORKING\CADT\TJ21395.01 S-200'S.DWG

CONCRETE SHEAR WALL "ZONE" VERTICAL REINFORCEMENT SCHEDULE

MARK / LEVELS	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5	ZONE 5A	ZONE 6	ZONE 7	ZONE 7A	ZONE 8	ZONE 9	ZONE 9A	ZONE 10	ZONE 11	ZONE 11A	ZONE 12	ZONE 12A
CELLAR TO 2ND FLOOR	6-#7	6-#7	6-#7	6-#7	6-#9	-	6-#9	6-#9	-	6-#9	6-#9	-	6-#9	8-#9	-	8-#9	-
2ND TO 6TH FLOOR	6-#7	6-#7	6-#7	6-#7	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	8-#9	6-#9	6-#9	6-#9	-	6-#9	-
6TH TO 9TH FLOOR	6-#7	6-#7	6-#7	6-#7	6-#9	-	6-#9	6-#9	-	6-#9	6-#9	-	6-#9	6-#9	-	6-#9	-
9TH TO 10TH FLOOR	-	-	-	-	8-#9	-	8-#9	6-#9	-	6-#9	6-#9	-	6-#9	6-#9	6-#9	6-#9	6-#9
10TH FLOOR TO BULKHEAD	-	-	-	-	6-#7	-	6-#7	6-#7	-	6-#7	6-#7	-	6-#7	6-#7	-	6-#7	-

CONCRETE SHEAR WALL "ZONE" VERTICAL REINFORCEMENT SCHEDULE

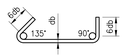
MARK / LEVELS	ZONE 13	ZONE 14	ZONE 15	ZONE 16	ZONE 17	ZONE 18	ZONE 19	ZONE 19A	ZONE 20	ZONE 20A	ZONE 21	ZONE 21A	ZONE 22	ZONE 22A
CELLAR TO 2ND FLOOR	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9
2ND TO 6TH FLOOR	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	-	6-#9	-	6-#9	-	6-#9	-
6TH TO 9TH FLOOR	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	-	6-#9	-	6-#9	-	6-#9	-
9TH TO 10TH FLOOR	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	-	6-#9	-	6-#9	6-#9	6-#9	6-#9
10TH FLOOR TO BULKHEAD	6-#7	6-#7	6-#7	6-#7	6-#7	6-#7	6-#7	-	6-#7	-	6-#7	-	6-#7	-

NOTES:

1. SHEAR WALLS SHALL HAVE f'c = 8,000 PSI FROM FOUNDATION TO 9TH FLOOR & f'c = 6,000 FROM 9TH FLOOR TO BULKHEAD.
2. SEE SHEAR WALL DETAILS ON S-220 FOR ZONE REINFORCEMENT SPACING.
3. SHEAR WALL VERTICAL REINFORCEMENT OUTSIDE "ZONE" AREA AND SHEAR WALL HORIZONTAL REINFORCEMENT TO BE AS INDICATED IN SCHEDULE, U.O.N.
4. ALL SHEAR WALL REINFORCEMENT LAP SPLICES ARE STANDARD TENSION SPLICES U.O.N.
5. PROVIDE TIES AND CROSS TIES WITHIN BOUNDARY ZONE AS PER SHEAR WALL TIE DETAIL.
6. SEE PLAN FOR SHEAR WALL LENGTH AND LOCATION.
7. SEE S-220 FOR TYPICAL SHEAR WALL DETAILS.
8. FOR SHEAR WALLS AT ELEVATORS, CONTRACTOR SHALL COORDINATE ALL EMBEDMENT PLATES AND BEAM POCKETS WITH ELEVATOR SHOP DRAWINGS.
9. FOR SHEAR WALLS COINCIDENTAL WITH FOUNDATION WALLS, PROVIDE THE LARGER SIZE AND SMALLER SPACING OF THE SHEAR WALL OR FOUNDATION WALL REINFORCEMENT AT EACH FACE, EACH DIRECTION.

CONCRETE SHEAR WALL "ZONE" VERTICAL REINFORCEMENT SCHEDULE

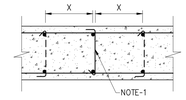
MARK / LEVELS	ZONE 23	ZONE 23A	ZONE 24	ZONE 25	ZONE 26	ZONE 27	ZONE 27A	ZONE 28	ZONE 29	ZONE 29A	ZONE 30	ZONE 31	ZONE 32	ZONE 33	ZONE 34
CELLAR TO 2ND FLOOR	12-#7	-	12-#7	8-#7	8-#7	12-#7	-	12-#7	-	10-#7	10-#7	6-#7	6-#7	6-#7	6-#7
2ND TO 6TH FLOOR	8-#7	8-#7	8-#7	6-#7	6-#7	10-#7	10-#7	10-#7	8-#7	-	8-#7	6-#7	6-#7	6-#7	6-#7
6TH TO 9TH FLOOR	6-#7	-	6-#7	6-#7	6-#7	6-#7	6-#7	6-#7	6-#7	-	6-#7	6-#7	6-#7	6-#7	6-#7
9TH TO 10TH FLOOR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10TH FLOOR TO BULKHEAD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



SUPPLEMENTARY CROSS TIES

(ALTERNATE 90° AND 135° ENDS ON CONSECUTIVE CROSS TIES)

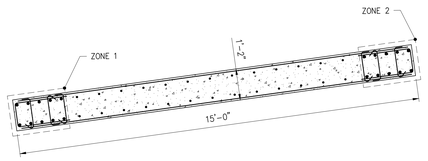
NON-"ZONE" REINFORCING SCHEDULE			
WALL THICKNESS	TIES IN "ZONE"	HORIZ. REBAR	NON-"ZONE" VERT. REBAR
14" WALL	#4 @ 12"	#5 @ 12"	#5 @ 12"



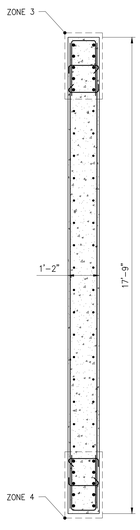
SHEAR WALL TIE DETAIL

NOTES:

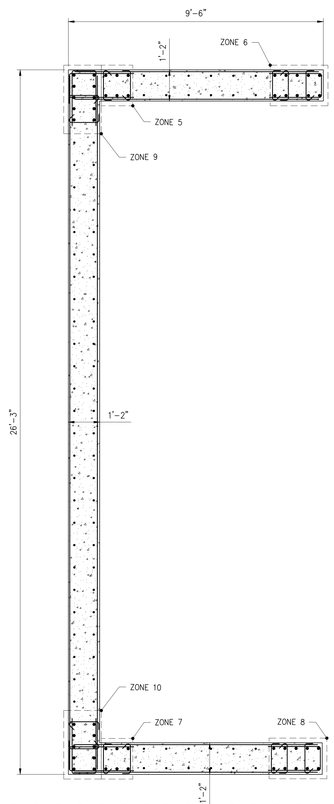
1. ALTERNATE TIES MAY BE OMITTED WHERE CLEAR DISTANCE "X" IS 6" OR LESS.
2. SHEAR WALL TIE REINFORCEMENT TO BE AS INDICATED IN SCHEDULE.



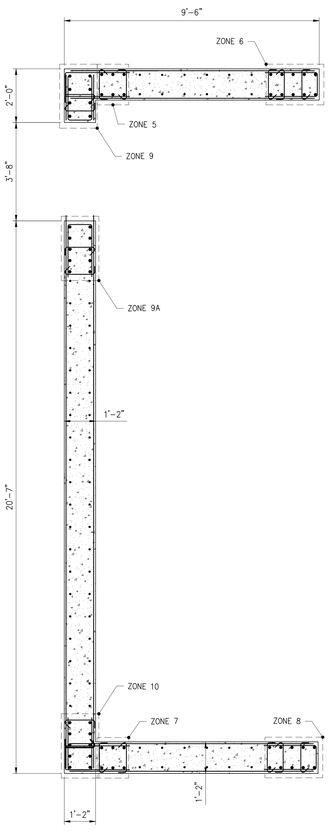
SHEAR WALL 1
CELLAR TO 7TH FLOOR



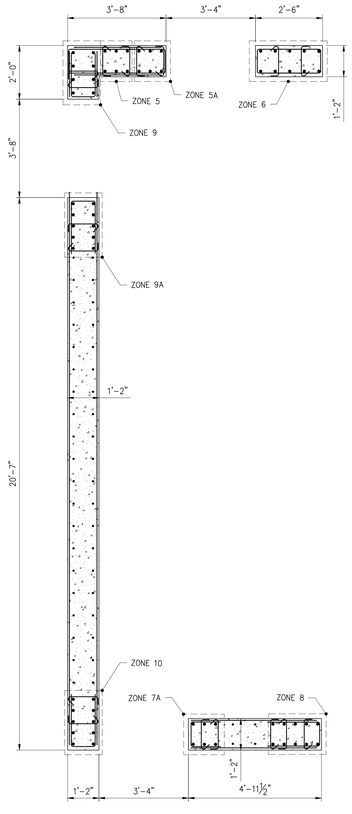
SHEAR WALL 2
GROUND TO 7TH FLOOR



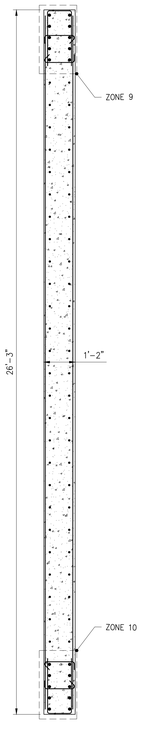
SHEAR WALL 3
GROUND TO MEZZANINE FLOOR & 3RD TO ROOF



SHEAR WALL 3
MEZZANINE TO 2ND FLOOR



SHEAR WALL 3
2ND TO 3RD FLOOR



SHEAR WALL 3
ROOF EMR BULKHEAD

OWNER:
CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:
BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
New York, NY 10001

INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

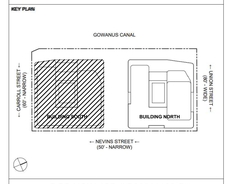
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN:



DOB NOW JOB # B00611166-P1

No.	DATE	ISSUE
7	12.14.22	ISSUED FOR 80% CONSTRUCTION
6	12.07.22	ISSUED FOR DOB
5	11.18.22	100% FOUNDATION DRAWINGS
4	08.19.22	ISSUED FOR DOB FILING - FO PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

417 CARROLL ST.
BROOKLYN, NY 11217

DRAWING TITLE:

SHEAR WALL SCHEDULE I

SEAL & SIGNATURE:

DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-210.00
PAGE No.:	37 OF 51

I:\PROJECTS\2021\TJ21395.01 - 300 NEVINS STREET, BROOKLYN, NY 11215\DWGS\STRUCTWORKINGCADT\21395.01 S-200S.DWG

CONCRETE SHEAR WALL "ZONE" VERTICAL REINFORCEMENT SCHEDULE

MARK / LEVELS	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5	ZONE 5A	ZONE 6	ZONE 7	ZONE 7A	ZONE 8	ZONE 9	ZONE 9A	ZONE 10	ZONE 11	ZONE 11A	ZONE 12	ZONE 12A
CELLAR TO 2ND FLOOR	6-#7	6-#7	6-#7	6-#7	6-#9	-	6-#9	6-#9	-	6-#9	6-#9	-	6-#9	8-#9	-	8-#9	-
2ND TO 6TH FLOOR	6-#7	6-#7	6-#7	6-#7	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	8-#9	6-#9	6-#9	6-#9	-	6-#9	-
6TH TO 9TH FLOOR	6-#7	6-#7	6-#7	6-#7	6-#9	-	6-#9	6-#9	-	6-#9	6-#9	-	6-#9	6-#9	-	6-#9	-
9TH TO 10TH FLOOR	-	-	-	-	8-#9	-	8-#9	6-#9	-	6-#9	6-#9	-	6-#9	6-#9	6-#9	6-#9	6-#9
10TH FLOOR TO BULKHEAD	-	-	-	-	6-#7	-	6-#7	6-#7	-	6-#7	6-#7	-	6-#7	6-#7	-	6-#7	-

CONCRETE SHEAR WALL "ZONE" VERTICAL REINFORCEMENT SCHEDULE

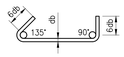
MARK / LEVELS	ZONE 13	ZONE 14	ZONE 15	ZONE 16	ZONE 17	ZONE 18	ZONE 19	ZONE 19A	ZONE 20	ZONE 20A	ZONE 21	ZONE 21A	ZONE 22	ZONE 22A
CELLAR TO 2ND FLOOR	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9
2ND TO 6TH FLOOR	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	-	6-#9	-	6-#9	-	6-#9	-
6TH TO 9TH FLOOR	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	-	6-#9	-	6-#9	-	6-#9	-
9TH TO 10TH FLOOR	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	-	6-#9	-	6-#9	6-#9	6-#9	6-#9
10TH FLOOR TO BULKHEAD	6-#7	6-#7	6-#7	6-#7	6-#7	6-#7	6-#7	-	6-#7	-	6-#7	-	6-#7	-

NOTES:

1. SHEAR WALLS SHALL HAVE f'c = 8,000 PSI FROM FOUNDATION TO 9TH FLOOR & f'c = 6,000 FROM 9TH FLOOR TO BULKHEAD.
2. SEE SHEAR WALL DETAILS ON S-220 FOR ZONE REINFORCEMENT SPACING.
3. SHEAR WALL VERTICAL REINFORCEMENT OUTSIDE "ZONE" AREA AND SHEAR WALL HORIZONTAL REINFORCEMENT TO BE AS INDICATED IN SCHEDULE, U.O.N.
4. ALL SHEAR WALL REINFORCEMENT LAP SPLICES ARE STANDARD TENSION SPLICES U.O.N.
5. PROVIDE TIES AND CROSS TIES WITHIN BOUNDARY ZONE AS PER SHEAR WALL TIE DETAIL.
6. SEE PLAN FOR SHEAR WALL LENGTH AND LOCATION.
7. SEE S-220 FOR TYPICAL SHEAR WALL DETAILS.
8. FOR SHEAR WALLS AT ELEVATORS, CONTRACTOR SHALL COORDINATE ALL EMBEDMENT PLATES AND BEAM POCKETS WITH ELEVATOR SHOP DRAWINGS.
9. FOR SHEAR WALLS COINCIDENTAL WITH FOUNDATION WALLS, PROVIDE THE LARGER SIZE AND SMALLER SPACING OF THE SHEAR WALL OR FOUNDATION WALL REINFORCEMENT AT EACH FACE, EACH DIRECTION.

CONCRETE SHEAR WALL "ZONE" VERTICAL REINFORCEMENT SCHEDULE

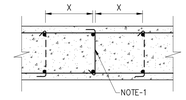
MARK / LEVELS	ZONE 23	ZONE 23A	ZONE 24	ZONE 25	ZONE 26	ZONE 27	ZONE 27A	ZONE 28	ZONE 29	ZONE 29A	ZONE 30	ZONE 31	ZONE 32	ZONE 33	ZONE 34
CELLAR TO 2ND FLOOR	12-#7	-	12-#7	8-#7	8-#7	12-#7	-	12-#7	-	10-#7	10-#7	6-#7	6-#7	6-#7	6-#7
2ND TO 6TH FLOOR	8-#7	8-#7	8-#7	6-#7	6-#7	10-#7	10-#7	10-#7	8-#7	-	8-#7	6-#7	6-#7	6-#7	6-#7
6TH TO 9TH FLOOR	6-#7	-	6-#7	6-#7	6-#7	6-#7	6-#7	6-#7	6-#7	-	6-#7	6-#7	6-#7	6-#7	6-#7
9TH TO 10TH FLOOR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10TH FLOOR TO BULKHEAD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



SUPPLEMENTARY CROSS TIES

(ALTERNATE 90° AND 135° ENDS ON CONSECUTIVE CROSS TIES)

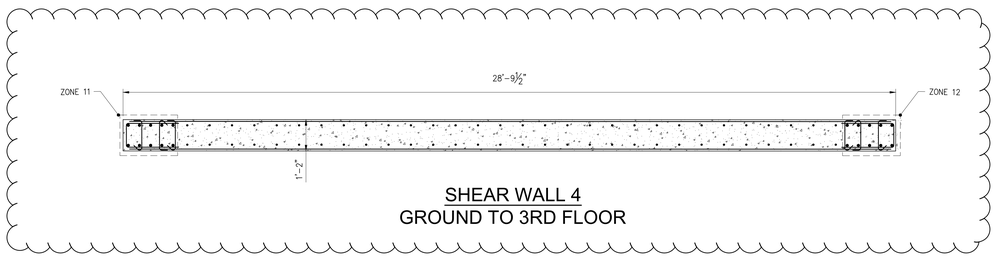
NON-"ZONE" REINFORCING SCHEDULE			
WALL THICKNESS	TIES IN "ZONE"	HORIZ. REBAR	NON-"ZONE" VERT. REBAR
14" WALL	#4 @ 12"	#5 @ 12"	#5 @ 12"



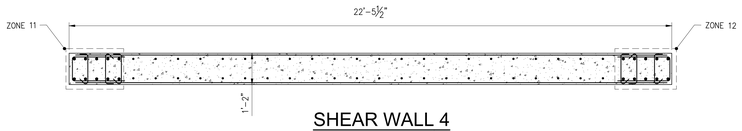
SHEAR WALL TIE DETAIL

NOTES:

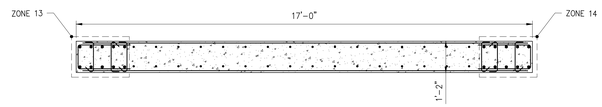
1. ALTERNATE TIES MAY BE OMITTED WHERE CLEAR DISTANCE "X" IS 6" OR LESS.
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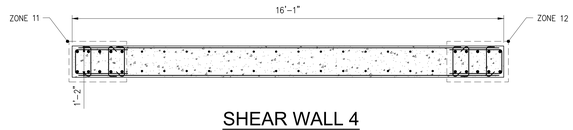
SHEAR WALL 4
GROUND TO 3RD FLOOR



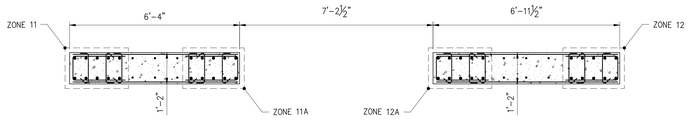
SHEAR WALL 4
3RD TO 7TH FLOOR
8TH TO 9TH FLOOR &
10TH TO 16TH FLOOR



SHEAR WALL 5
GROUND TO 16TH FLOOR



SHEAR WALL 4
7TH TO 8TH FLOOR



SHEAR WALL 4
9TH TO 10TH FLOOR



OWNER:

CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:

FOGARTY FINGER
architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:

TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:

ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:

SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
NEW YORK , NY10036

ELEVATOR:

JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

EXTERIOR LIGHTING:

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121 W. 27th Street,
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INTERIOR LIGHTING:

BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:

PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:

JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

LANDSCAPE:

GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:

GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:

DEVELOPMENT CONSULTING SERVICES
630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:

WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN:



DOB NOW JOB # B00611166-P1

No.	DATE	ISSUE
7	12.14.22	ISSUED FOR 80% CONSTRUCTION
6	12.07.22	ISSUED FOR DOB
5	11.18.22	100% FOUNDATION DRAWINGS
4	08.19.22	ISSUED FOR DOB FILING - FO PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

417 CARROLL ST.
BROOKLYN, NY 11217

DRAWING TITLE:

SHEAR WALL
SCHEDULE II

SEAL & SIGNATURE:

DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-211.00
PAGE No.:	38 OF 51

I:\PROJECTS\2021\TJ21395.01 - 300 NEVINS STREET, BROOKLYN, NY 11215\DWGS\STRUCTWORKING\CADD\TJ21395.01 S-200'S.DWG

CONCRETE SHEAR WALL "ZONE" VERTICAL REINFORCEMENT SCHEDULE

MARK / LEVELS	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5	ZONE 5A	ZONE 6	ZONE 7	ZONE 7A	ZONE 8	ZONE 9	ZONE 9A	ZONE 10	ZONE 11	ZONE 11A	ZONE 12	ZONE 12A
CELLAR TO 2ND FLOOR	6-#7	6-#7	6-#7	6-#7	6-#9	-	6-#9	6-#9	-	6-#9	6-#9	-	6-#9	8-#9	-	8-#9	-
2ND TO 6TH FLOOR	6-#7	6-#7	6-#7	6-#7	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	8-#9	6-#9	6-#9	6-#9	-	6-#9	-
6TH TO 9TH FLOOR	6-#7	6-#7	6-#7	6-#7	6-#9	-	6-#9	6-#9	-	6-#9	6-#9	-	6-#9	6-#9	-	6-#9	-
9TH TO 10TH FLOOR	-	-	-	-	8-#9	-	8-#9	6-#9	-	6-#9	6-#9	-	6-#9	6-#9	6-#9	6-#9	6-#9
10TH FLOOR TO BULKHEAD	-	-	-	-	6-#7	-	6-#7	6-#7	-	6-#7	6-#7	-	6-#7	6-#7	-	6-#7	-

CONCRETE SHEAR WALL "ZONE" VERTICAL REINFORCEMENT SCHEDULE

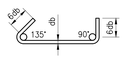
MARK / LEVELS	ZONE 13	ZONE 14	ZONE 15	ZONE 16	ZONE 17	ZONE 18	ZONE 19	ZONE 19A	ZONE 20	ZONE 20A	ZONE 21	ZONE 21A	ZONE 22	ZONE 22A
CELLAR TO 2ND FLOOR	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9
2ND TO 6TH FLOOR	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	-	6-#9	-	6-#9	-	6-#9	-
6TH TO 9TH FLOOR	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	-	6-#9	-	6-#9	-	6-#9	-
9TH TO 10TH FLOOR	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	-	6-#9	-	6-#9	6-#9	6-#9	6-#9
10TH FLOOR TO BULKHEAD	6-#7	6-#7	6-#7	6-#7	6-#7	6-#7	6-#7	-	6-#7	-	6-#7	-	6-#7	-

NOTES:

1. SHEAR WALLS SHALL HAVE f'c = 8,000 PSI FROM FOUNDATION TO 9TH FLOOR & f'c = 6,000 FROM 9TH FLOOR TO BULKHEAD.
2. SEE SHEAR WALL DETAILS ON S-220 FOR ZONE REINFORCEMENT SPACING.
3. SHEAR WALL VERTICAL REINFORCEMENT OUTSIDE "ZONE" AREA AND SHEAR WALL HORIZONTAL REINFORCEMENT TO BE AS INDICATED IN SCHEDULE, U.O.N.
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CONCRETE SHEAR WALL "ZONE" VERTICAL REINFORCEMENT SCHEDULE

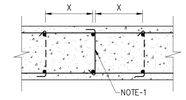
MARK / LEVELS	ZONE 23	ZONE 23A	ZONE 24	ZONE 25	ZONE 26	ZONE 27	ZONE 27A	ZONE 28	ZONE 29	ZONE 29A	ZONE 30	ZONE 31	ZONE 32	ZONE 33	ZONE 34
CELLAR TO 2ND FLOOR	12-#7	-	12-#7	8-#7	8-#7	12-#7	-	12-#7	-	10-#7	10-#7	6-#7	6-#7	6-#7	6-#7
2ND TO 6TH FLOOR	8-#7	8-#7	8-#7	6-#7	6-#7	10-#7	10-#7	10-#7	8-#7	-	8-#7	6-#7	6-#7	6-#7	6-#7
6TH TO 9TH FLOOR	6-#7	-	6-#7	6-#7	6-#7	6-#7	6-#7	6-#7	6-#7	-	6-#7	6-#7	6-#7	6-#7	6-#7
9TH TO 10TH FLOOR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10TH FLOOR TO BULKHEAD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



SUPPLEMENTARY CROSS TIES

(ALTERNATE 90° AND 135° ENDS ON CONSECUTIVE CROSS TIES)

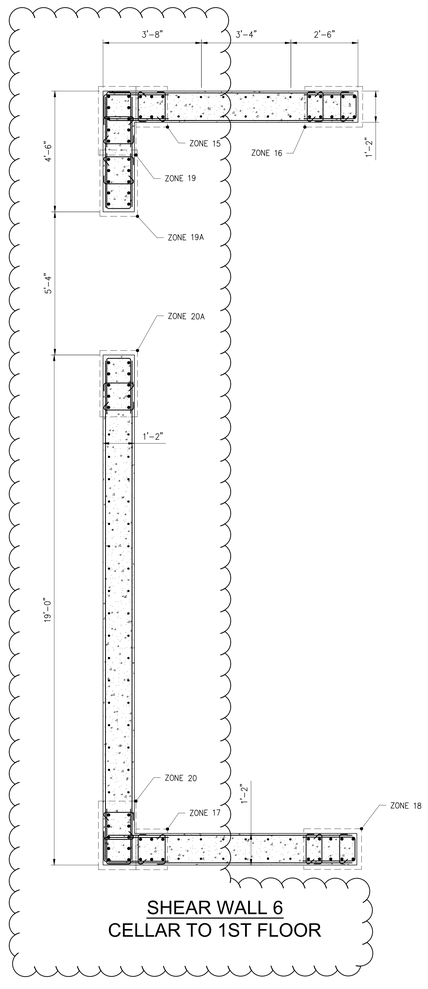
NON-"ZONE" REINFORCING SCHEDULE			
WALL THICKNESS	TIES IN "ZONE"	HORIZ. REBAR	NON-"ZONE" VERT. REBAR
14" WALL	#4 @ 12"	#5 @ 12"	#5 @ 12"



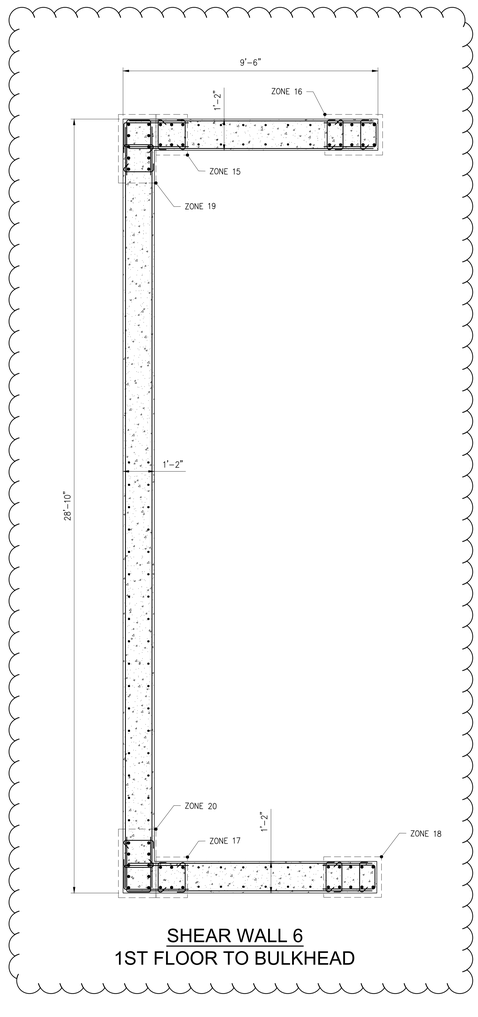
SHEAR WALL TIE DETAIL

NOTES:

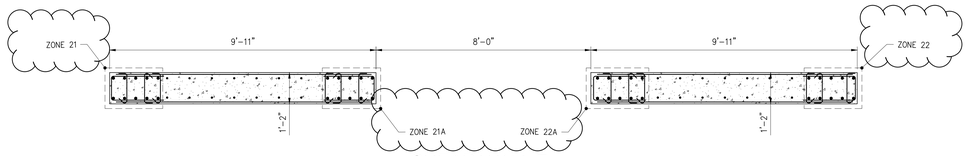
1. ALTERNATE TIES MAY BE OMITTED WHERE CLEAR DISTANCE "X" IS 6" OR LESS.
2. SHEAR WALL TIE REINFORCEMENT TO BE AS INDICATED IN SCHEDULE.



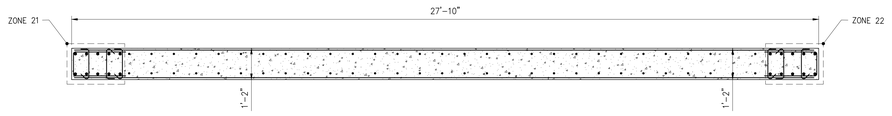
SHEAR WALL 6
CELLAR TO 1ST FLOOR



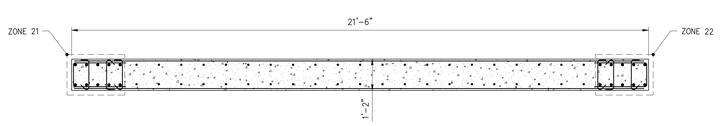
SHEAR WALL 6
1ST FLOOR TO BULKHEAD



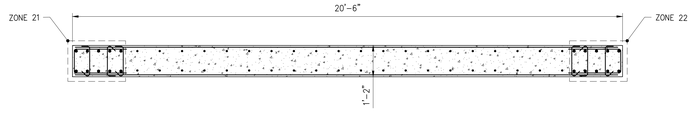
SHEAR WALL 7
GROUND TO 2ND FLOOR



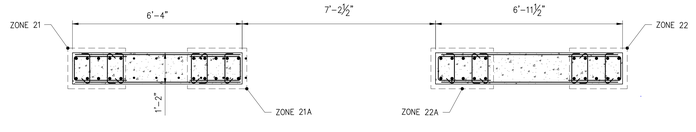
SHEAR WALL 7
2ND TO 3RD FLOOR



SHEAR WALL 7
3RD TO 7TH FLOOR
8TH TO 9TH FLOOR
& 10TH TO 16TH FLOOR



SHEAR WALL 7
7RD TO 8TH FLOOR



SHEAR WALL 7
9TH TO 10TH FLOOR



OWNER:
CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
151 W 42ND STREET, 24th FLOOR
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ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
AVON, CT 06001

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BPI BRANDSTON PARTNERSHIP INC.
121 W. 27th Street,
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INTERIOR LIGHTING:
BOLD
151 W 25TH ST, 11TH FLOOR
NEW YORK, NY 10001

CIVIL ENGINEER:
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102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

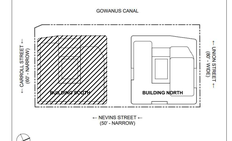
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

ZONING SPECIALIST:
DEVELOPMENT CONSULTING SERVICES
630 NINTH AVENUE, SUITE 902
NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN



DOB NOW JOB # B00611166-P1

No.	DATE	ISSUE
7	12.14.22	ISSUED FOR 80% CONSTRUCTION
6	12.07.22	ISSUED FOR DOB
5	11.18.22	100% FOUNDATION DRAWINGS
4	08.19.22	ISSUED FOR DOB FILING - FO PERMIT
3	07.15.22	100% DD DRAWINGS
2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:

417 CARROLL ST.
BROOKLYN, NY 11217

DRAWING TITLE:

SHEAR WALL SCHEDULE III

SEAL & SIGNATURE:

DATE (YYYY/MM/DD):	2022.03.18
PROJECT No.:	T-21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-212.00
PAGE No.:	39 OF 51

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CONCRETE SHEAR WALL "ZONE" VERTICAL REINFORCEMENT SCHEDULE

MARK / LEVELS	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5	ZONE 5A	ZONE 6	ZONE 7	ZONE 7A	ZONE 8	ZONE 9	ZONE 9A	ZONE 10	ZONE 11	ZONE 11A	ZONE 12	ZONE 12A
CELLAR TO 2ND FLOOR	6-#7	6-#7	6-#7	6-#7	6-#9	-	6-#9	6-#9	-	6-#9	6-#9	-	6-#9	8-#9	-	8-#9	-
2ND TO 6TH FLOOR	6-#7	6-#7	6-#7	6-#7	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	8-#9	6-#9	6-#9	6-#9	-	6-#9	-
6TH TO 9TH FLOOR	6-#7	6-#7	6-#7	6-#7	6-#9	-	6-#9	6-#9	-	6-#9	6-#9	-	6-#9	6-#9	-	6-#9	-
9TH TO 10TH FLOOR	-	-	-	-	8-#9	-	8-#9	6-#9	-	6-#9	6-#9	-	6-#9	6-#9	6-#9	6-#9	6-#9
10TH FLOOR TO BULKHEAD	-	-	-	-	6-#7	-	6-#7	6-#7	-	6-#7	6-#7	-	6-#7	6-#7	-	6-#7	-

CONCRETE SHEAR WALL "ZONE" VERTICAL REINFORCEMENT SCHEDULE

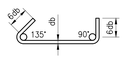
MARK / LEVELS	ZONE 13	ZONE 14	ZONE 15	ZONE 16	ZONE 17	ZONE 18	ZONE 19	ZONE 19A	ZONE 20	ZONE 20A	ZONE 21	ZONE 21A	ZONE 22	ZONE 22A
CELLAR TO 2ND FLOOR	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9
2ND TO 6TH FLOOR	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	-	6-#9	-	6-#9	-	6-#9	-
6TH TO 9TH FLOOR	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	-	6-#9	-	6-#9	-	6-#9	-
9TH TO 10TH FLOOR	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	6-#9	-	6-#9	-	6-#9	6-#9	6-#9	6-#9
10TH FLOOR TO BULKHEAD	6-#7	6-#7	6-#7	6-#7	6-#7	6-#7	6-#7	-	6-#7	-	6-#7	-	6-#7	-

NOTES:

1. SHEAR WALLS SHALL HAVE f'c = 8,000 PSI FROM FOUNDATION TO 9TH FLOOR & f'c = 6,000 FROM 9TH FLOOR TO BULKHEAD.
2. SEE SHEAR WALL DETAILS ON S-220 FOR ZONE REINFORCEMENT SPACING.
3. SHEAR WALL VERTICAL REINFORCEMENT OUTSIDE "ZONE" AREA AND SHEAR WALL HORIZONTAL REINFORCEMENT TO BE AS INDICATED IN SCHEDULE, U.O.N.
4. ALL SHEAR WALL REINFORCEMENT LAP SPLICES ARE STANDARD TENSION SPLICES U.O.N.
5. PROVIDE TIES AND CROSS TIES WITHIN BOUNDARY ZONE AS PER SHEAR WALL TIE DETAIL.
6. SEE PLAN FOR SHEAR WALL LENGTH AND LOCATION.
7. SEE S-220 FOR TYPICAL SHEAR WALL DETAILS.
8. FOR SHEAR WALLS AT ELEVATORS, CONTRACTOR SHALL COORDINATE ALL EMBEDMENT PLATES AND BEAM POCKETS WITH ELEVATOR SHOP DRAWINGS.
9. FOR SHEAR WALLS COINCIDENTAL WITH FOUNDATION WALLS, PROVIDE THE LARGER SIZE AND SMALLER SPACING OF THE SHEAR WALL OR FOUNDATION WALL REINFORCEMENT AT EACH FACE, EACH DIRECTION.

CONCRETE SHEAR WALL "ZONE" VERTICAL REINFORCEMENT SCHEDULE

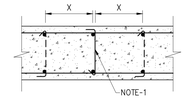
MARK / LEVELS	ZONE 23	ZONE 23A	ZONE 24	ZONE 25	ZONE 26	ZONE 27	ZONE 27A	ZONE 28	ZONE 29	ZONE 29A	ZONE 30	ZONE 31	ZONE 32	ZONE 33	ZONE 34
CELLAR TO 2ND FLOOR	12-#7	-	12-#7	8-#7	8-#7	12-#7	-	12-#7	-	10-#7	10-#7	6-#7	6-#7	6-#7	6-#7
2ND TO 6TH FLOOR	8-#7	8-#7	8-#7	6-#7	6-#7	10-#7	10-#7	10-#7	8-#7	-	8-#7	6-#7	6-#7	6-#7	6-#7
6TH TO 9TH FLOOR	6-#7	-	6-#7	6-#7	6-#7	6-#7	6-#7	6-#7	6-#7	-	6-#7	6-#7	6-#7	6-#7	6-#7
9TH TO 10TH FLOOR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10TH FLOOR TO BULKHEAD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



SUPPLEMENTARY CROSS TIES

(ALTERNATE 90° AND 135° ENDS ON CONSECUTIVE CROSS TIES)

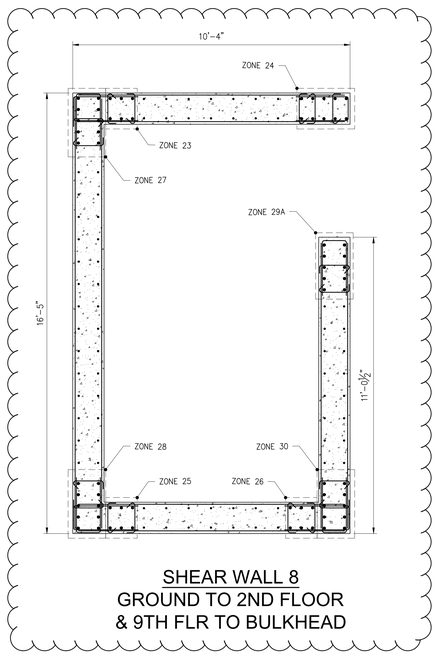
NON-"ZONE" REINFORCING SCHEDULE			
WALL THICKNESS	TIES IN "ZONE"	HORIZ. REBAR	NON-"ZONE" VERT. REBAR
14" WALL	#4 @ 12"	#5 @ 12"	#5 @ 12"



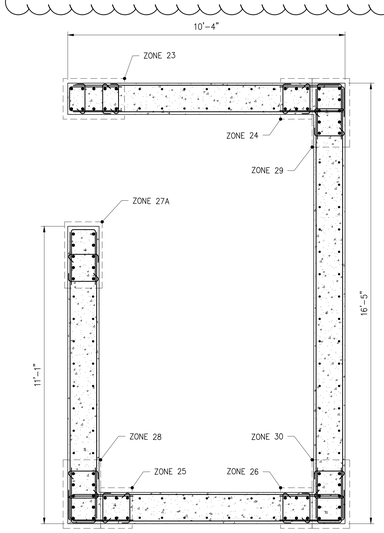
SHEAR WALL TIE DETAIL

NOTES:

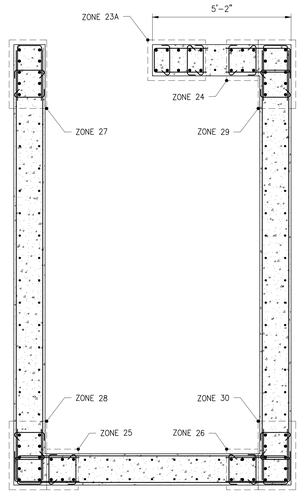
1. ALTERNATE TIES MAY BE OMITTED WHERE CLEAR DISTANCE "X" IS 6" OR LESS.
2. SHEAR WALL TIE REINFORCEMENT TO BE AS INDICATED IN SCHEDULE.



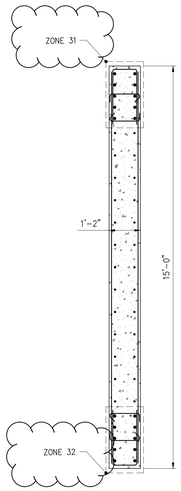
SHEAR WALL 8
GROUND TO 2ND FLOOR
& 9TH FLR TO BULKHEAD



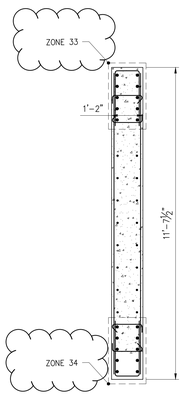
SHEAR WALL 8
3RD TO 9TH FLOOR



SHEAR WALL 8
2ND TO 3RD FLOOR



SHEAR WALL 9
GROUND TO 9TH FLOOR



SHEAR WALL 10
GROUND TO 9TH FLOOR



OWNER:
CHARNEY COMPANIES
5-26 48TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

ARCHITECT:
FOGARTY FINGER architecture | interiors
69 Walker Street New York, NY 10013
t 212 966 7450 f 212 966 7444

STRUCTURAL ENGINEER:
TITAN ENGINEERS
1331 STUYVESANT AVE
UNION, NJ 07083

MEP ENGINEER:
ETTINGER ENGINEERING ASSOCIATES
505 EIGTH AVE 24TH FLOOR
NEW YORK, NY 10018

FACADE:
SOCOTEC, Inc
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NEW YORK , NY10036

ELEVATOR:
JENKINS HUNTINGTON
5 CLIMAX ROAD
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EXTERIOR LIGHTING:
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INTERIOR LIGHTING:
BOLD
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NEW YORK, NY 10001

CIVIL ENGINEER:
PHILIP HABIB & ASSOCIATES
102 MADISON AVE #11
NEW YORK, NY 0016

LANDSCAPE:
JAMES CORNER FIELD OPERATIONS
4 BRYANT PARK,
NEW YORK, NY 10018

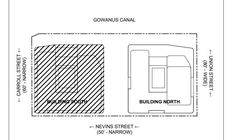
LANDSCAPE:
GRAIN COLLECTIVE
339 DOUGLASS STREET
BROOKLYN, NY 11217

GEOTECH:
GEOTECHNICAL ENGINEERING SERVICES
6 BAYBERRY ROAD
ELMSFORD, NY 10523

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NEW YORK, NY 10036

CODE CONSULTANT/ EXPEDITOR:
WILLIAM VITACCO ASSOCIATES
299 BROADWAY, 5TH FLOOR
NEW YORK, NY 10007

KEY PLAN:



DOB NOW JOB # B00611166-P1

No.	DATE	ISSUE
7	12.14.22	ISSUED FOR 80% CONSTRUCTION
6	12.07.22	ISSUED FOR DOB
5	11.18.22	100% FOUNDATION DRAWINGS
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2	06.24.22	50% DD DRAWINGS
1	03.18.22	SCHEMATIC DRAWINGS

PROJECT:
417 CARROLL ST.
BROOKLYN, NY 11217

DRAWING TITLE:
SHEAR WALL SCHEDULE IV

SEAL & SIGNATURE:

DATE (YYYY.MM.DD):	2022.03.18
PROJECT No.:	TJ21395.01
DRAWING BY:	KC
CHK BY:	AM
DRAWING No.:	S-213.00
PAGE No.:	40 OF 51

I:\PROJECTS\2021\TJ21395.01 - 300 NEVINS STREET, BROOKLYN, NY 11215\DWGS\STRUCTWORK\DGCAD\TJ21395.01 S-200S.DWG

Appendix D

Sanborn Maps

Remedial Action Work Plan
318 Nevins Street, Brooklyn, NY
NYSDEC BCP #C224350

Impact Environmental Engineering and Geology PLLC
170 KEYLAND COURT, BOHEMIA, NEW YORK 11716
TEL (631) 269-8800 ▪ FAX (631) 269-1599

300-344 Nevins Street, Brooklyn, NY
300 Nevins Street
Brooklyn, NY 11215

Inquiry Number: 3359090.3
July 06, 2012

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

7/06/12

Site Name:
300-344 Nevins Street,
300 Nevins Street
Brooklyn, NY 11215

EDR Inquiry # 3359090.3

Client Name:
Hydro Tech Env. Corp.
77 Arkay Drive
Hauppauge, NY 11788-0000

Contact: Alina Jakubowska

EDR® Environmental Data Resources Inc

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by Hydro Tech Env. Corp. were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

Certified Sanborn Results:

Site Name: 300-344 Nevins Street, Brooklyn, NY
Address: 300 Nevins Street
City, State, Zip: Brooklyn, NY 11215
Cross Street:
P.O. # 5159
Project: 120139
Certification # 5CBE-4A96-B4B8

Maps Provided:

2007	2001	1988	1979	1922
2006	1996	1987	1977	1915
2005	1995	1986	1969	1904
2004	1993	1982	1950	1886
2003	1992	1981	1938	
2002	1991	1980	1928	

Sanborn® Library search results
Certification # 5CBE-4A96-B4B8

The Sanborn Library includes more than 1.2 million Sanborn fire insurance maps, which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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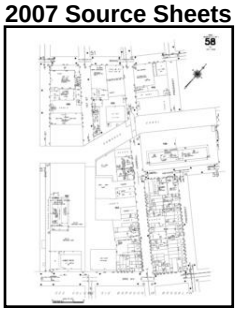
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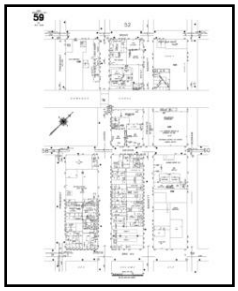
Sanborn Sheet Thumbnails

This Certified Sanborn Map Report is based upon the following Sanborn Fire Insurance map sheets.

2007 Source Sheets



Volume 1, Sheet 58

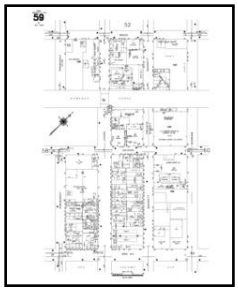


Volume 1, Sheet 59

2006 Source Sheets

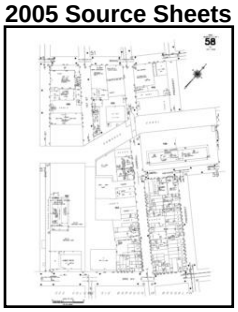


Volume 1, Sheet 58

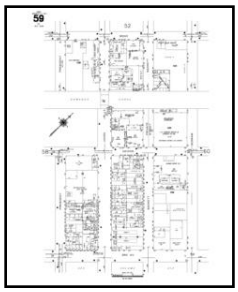


Volume 1, Sheet 59

2005 Source Sheets

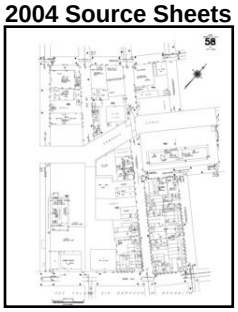


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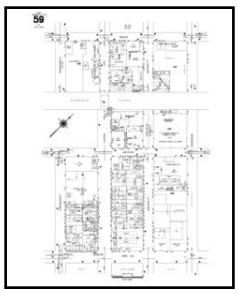


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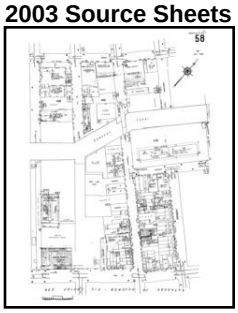


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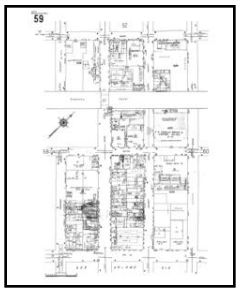


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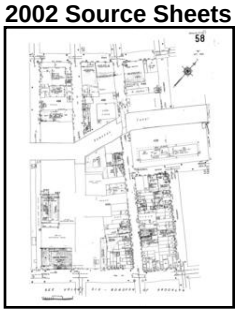


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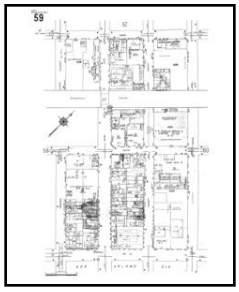


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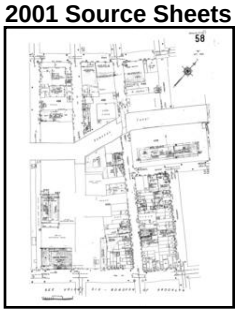


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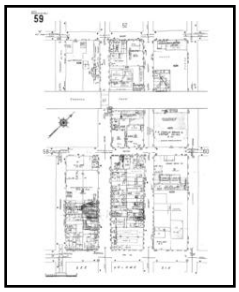


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2001 Source Sheets



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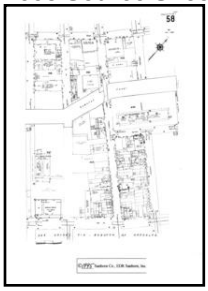


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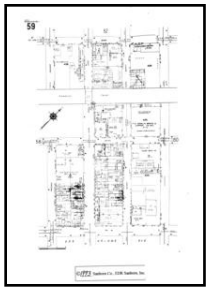


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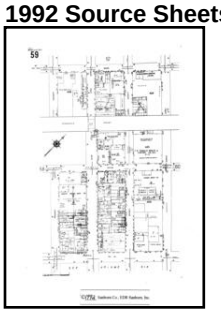


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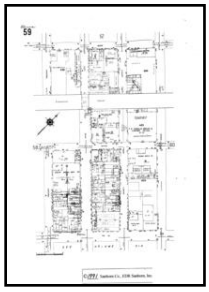


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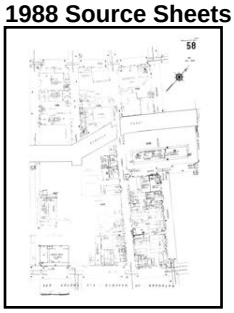


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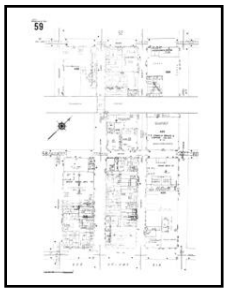


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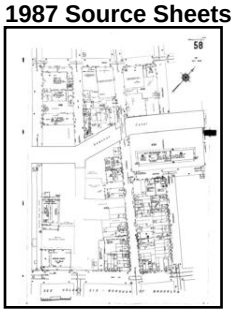


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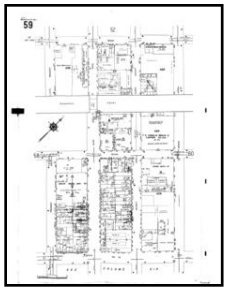


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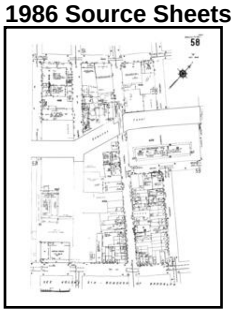


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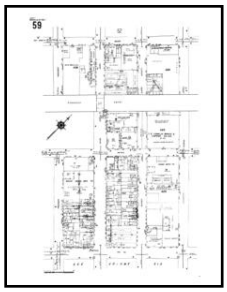


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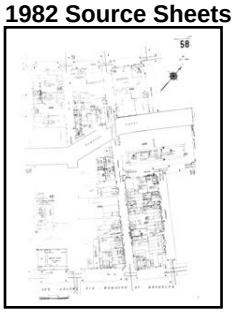


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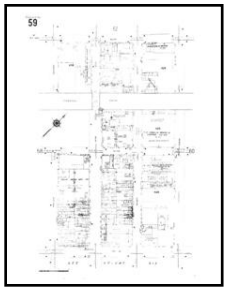


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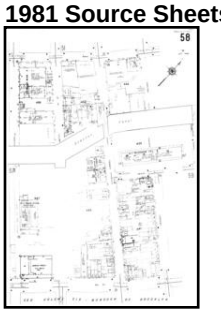


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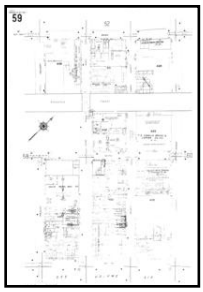


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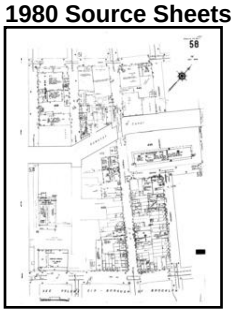


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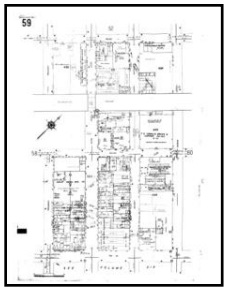


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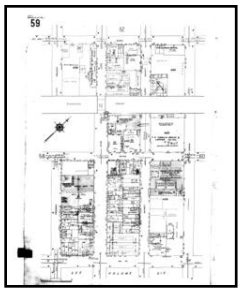


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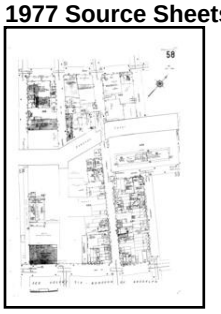


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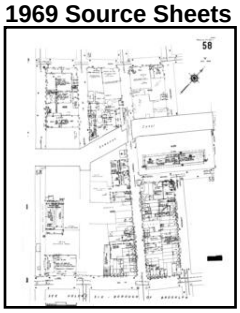


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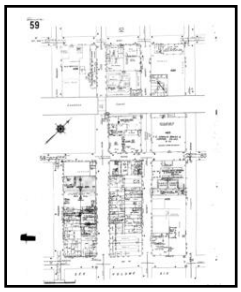


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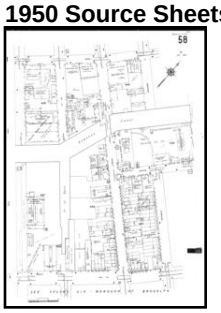


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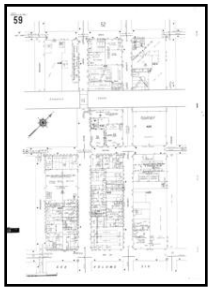


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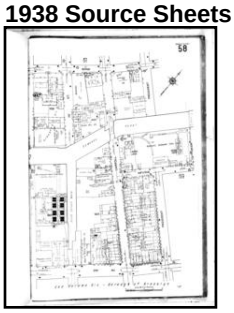


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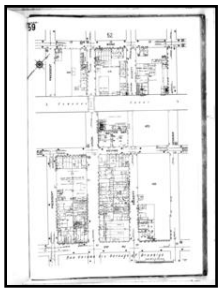


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1938 Source Sheets



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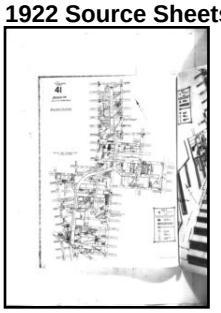
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1928 Source Sheets



Volume Pier Maps, Sheet 49

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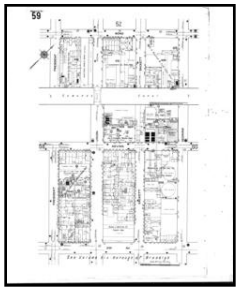


Volume Pier Maps, Sheet 41

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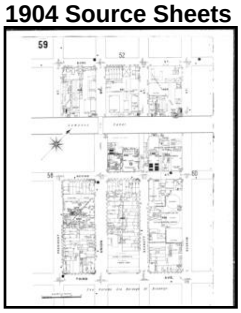


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1904 Source Sheets



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1886 Source Sheets



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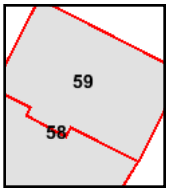
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City, ST, ZIP:	Brooklyn NY 11215
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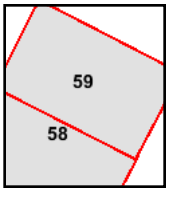


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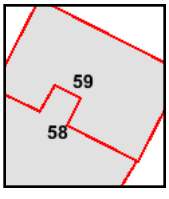
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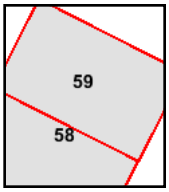
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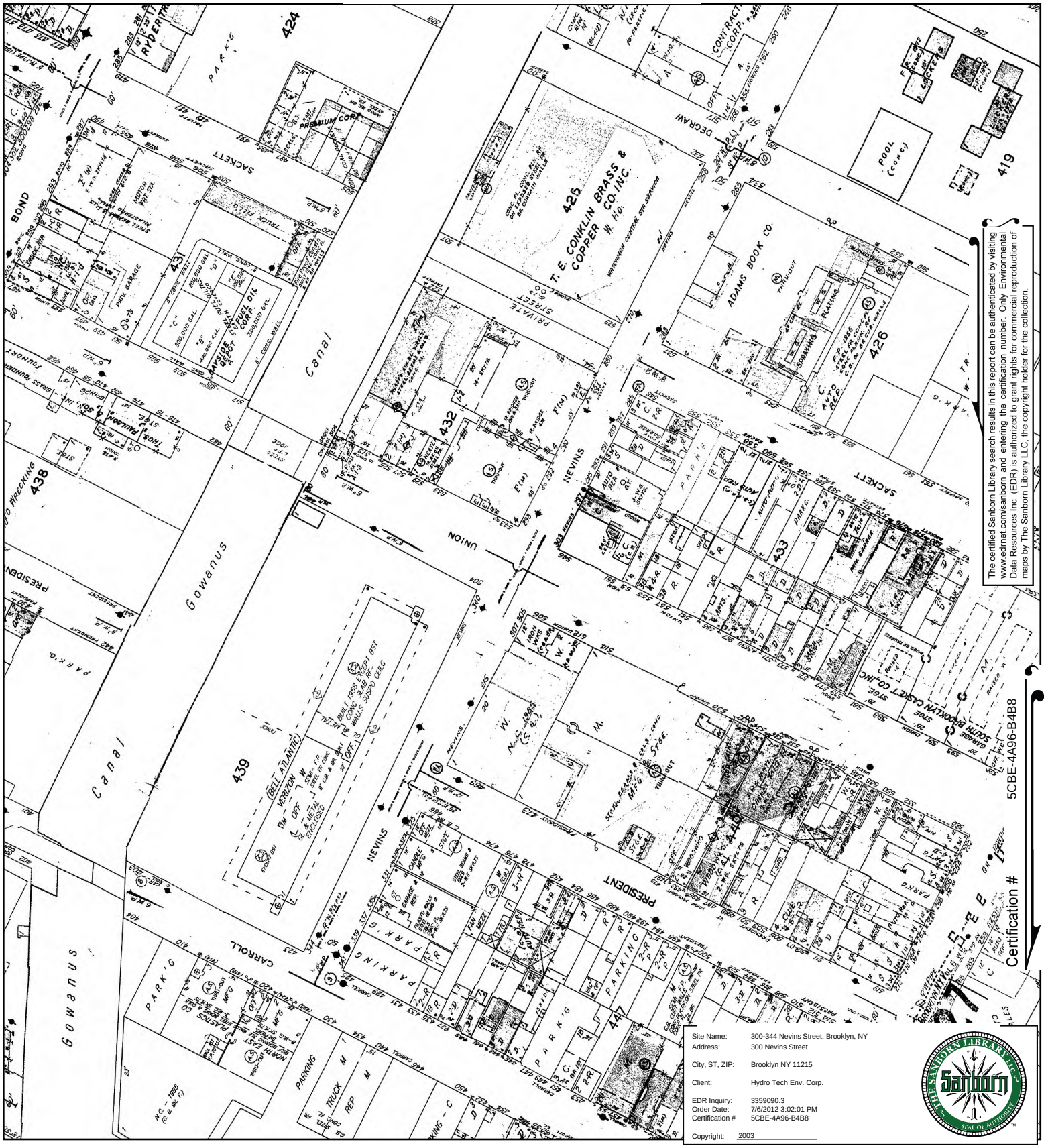




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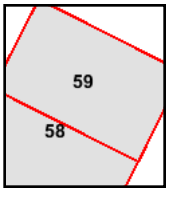
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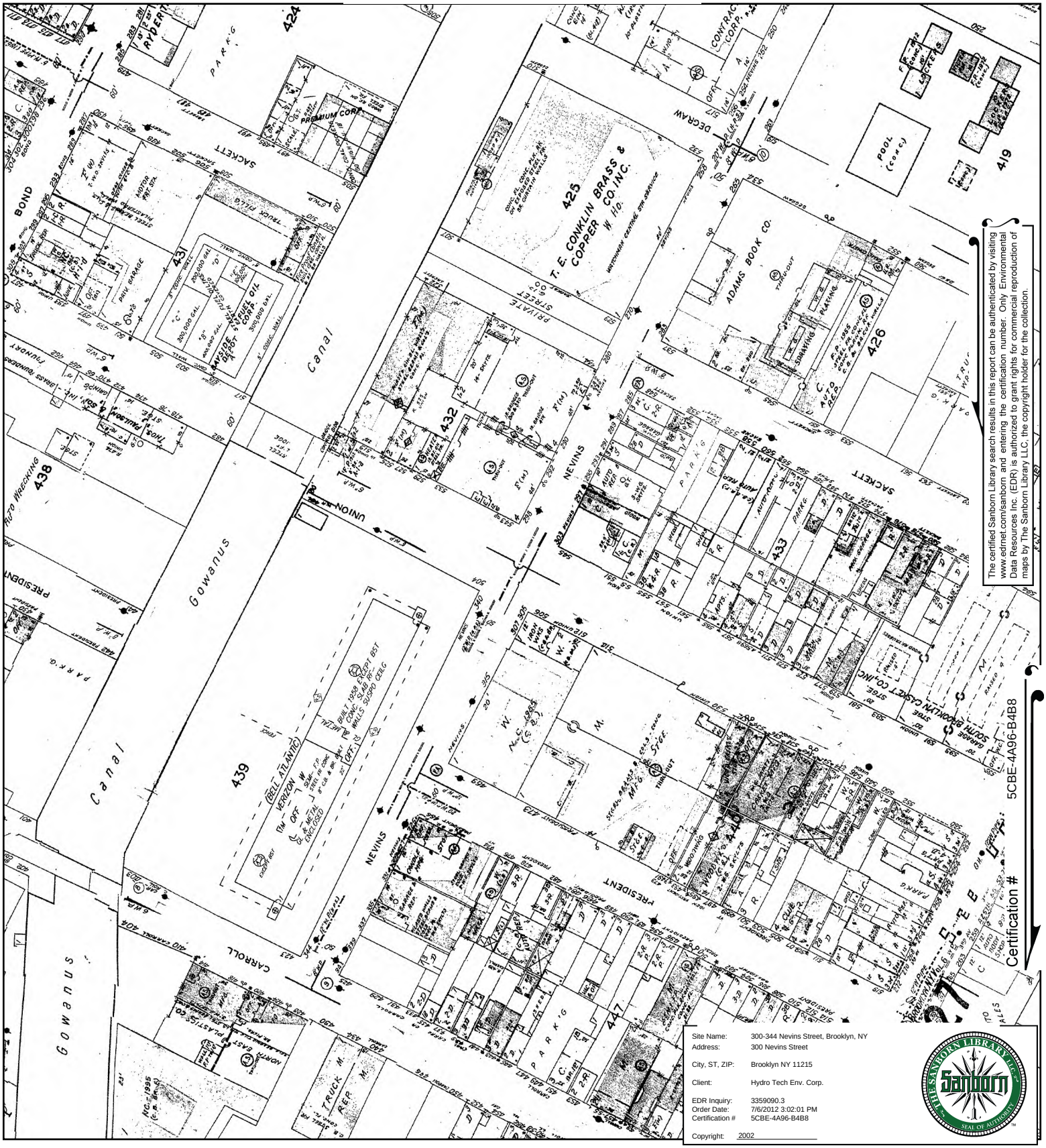




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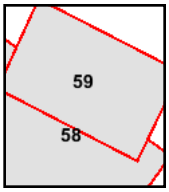
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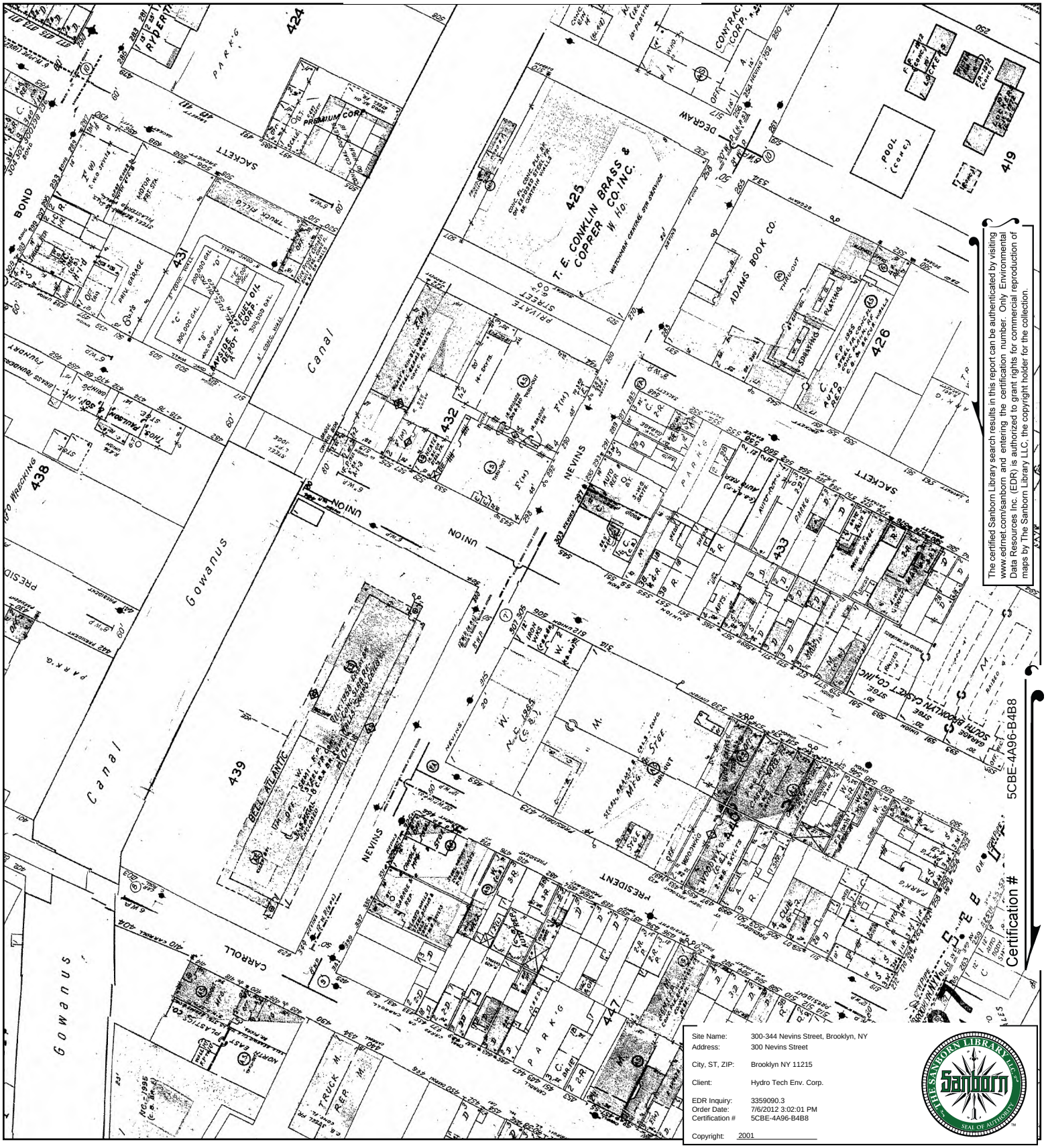




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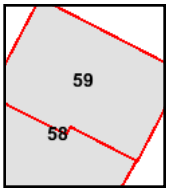
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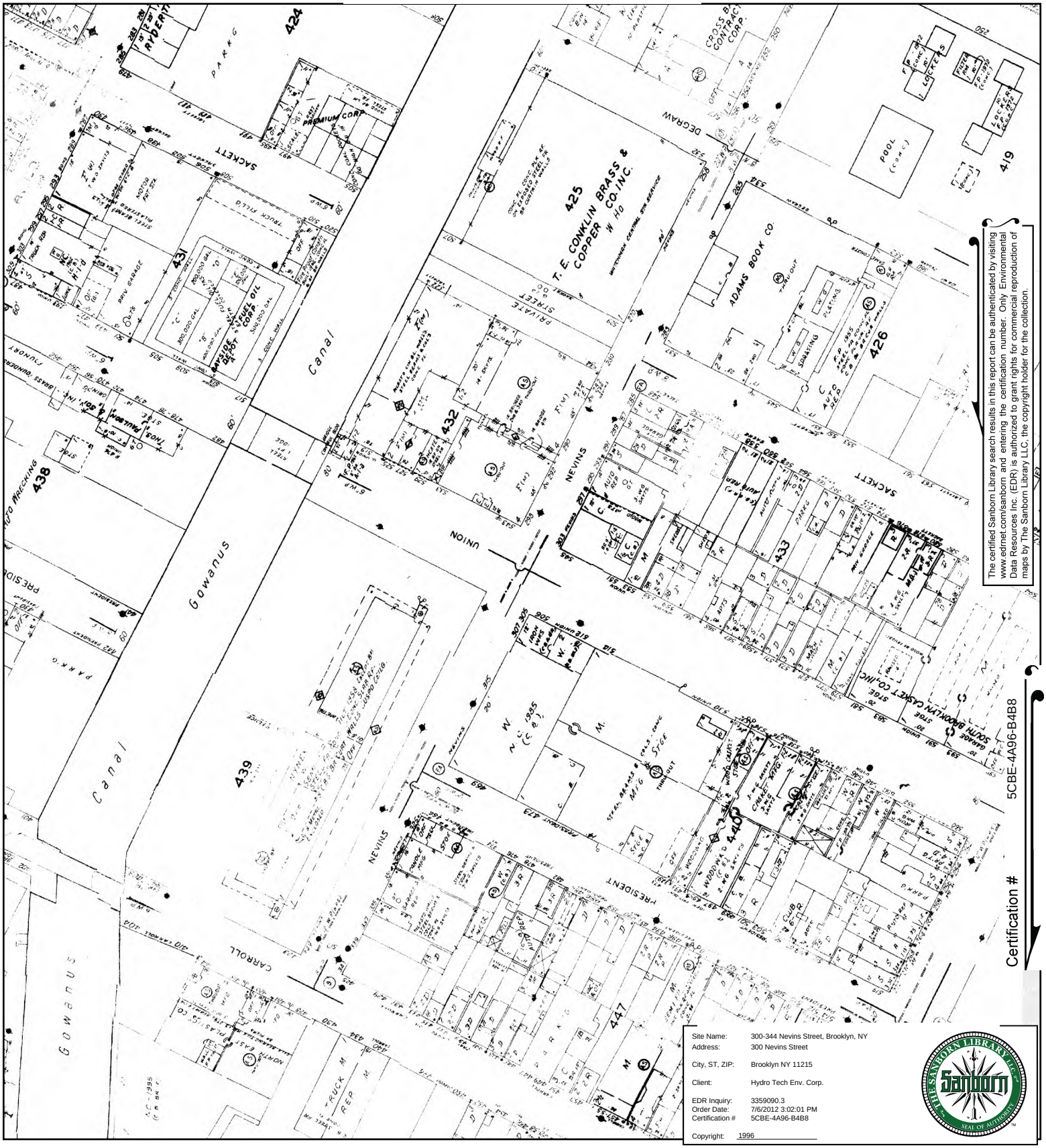


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0 Feet 150 300 600

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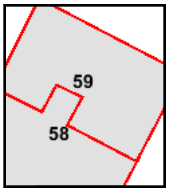
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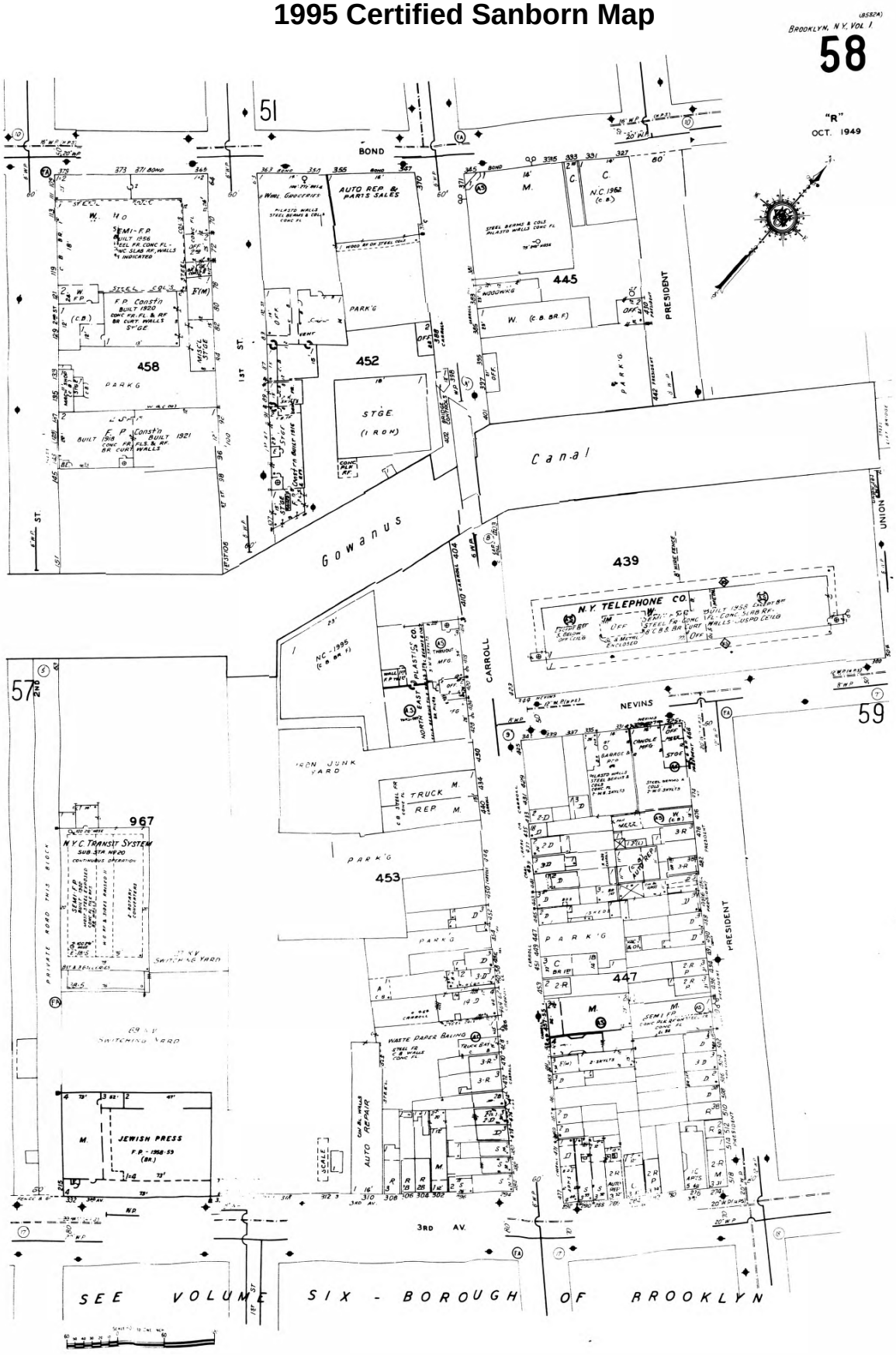




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1995 Certified Sanborn Map



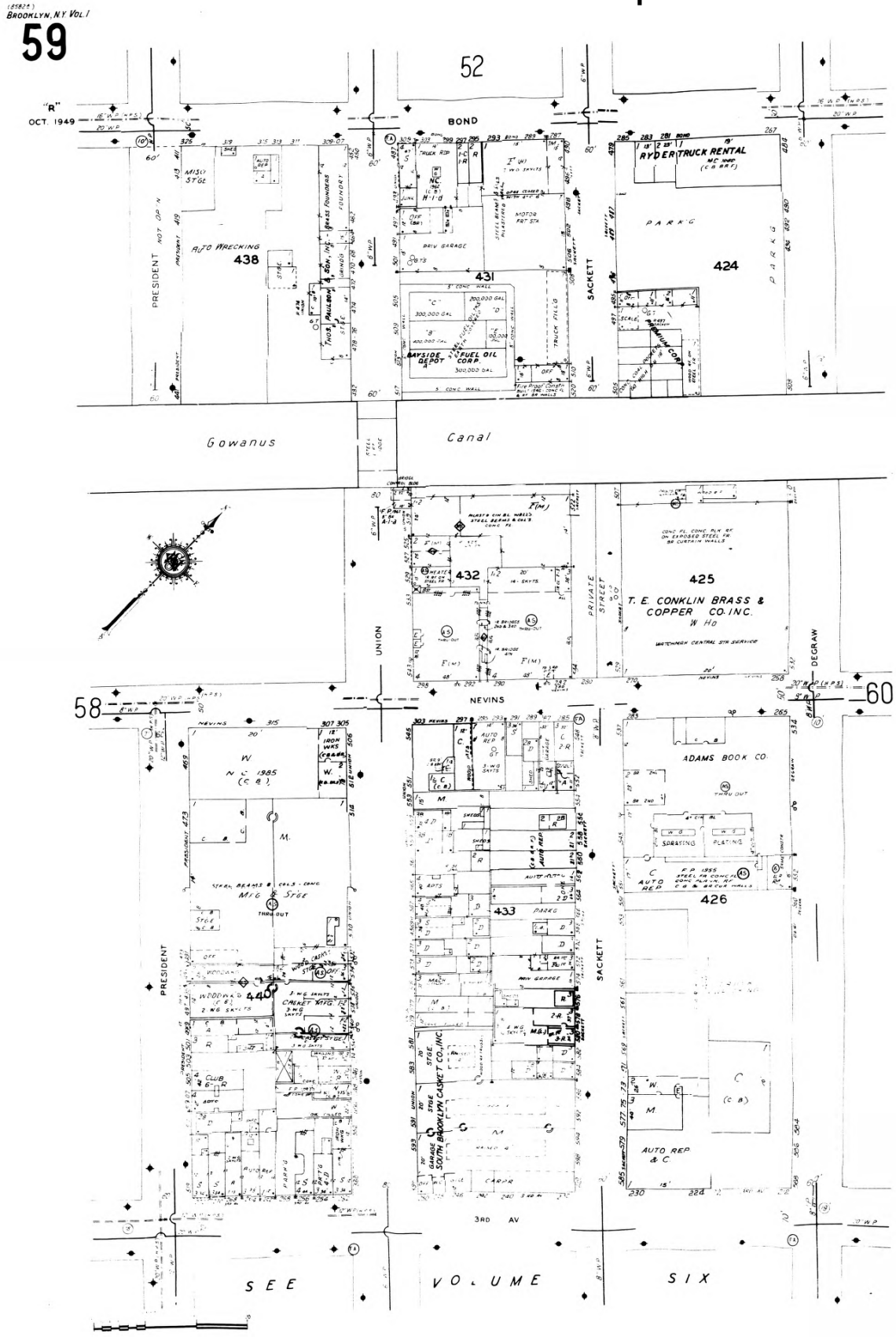
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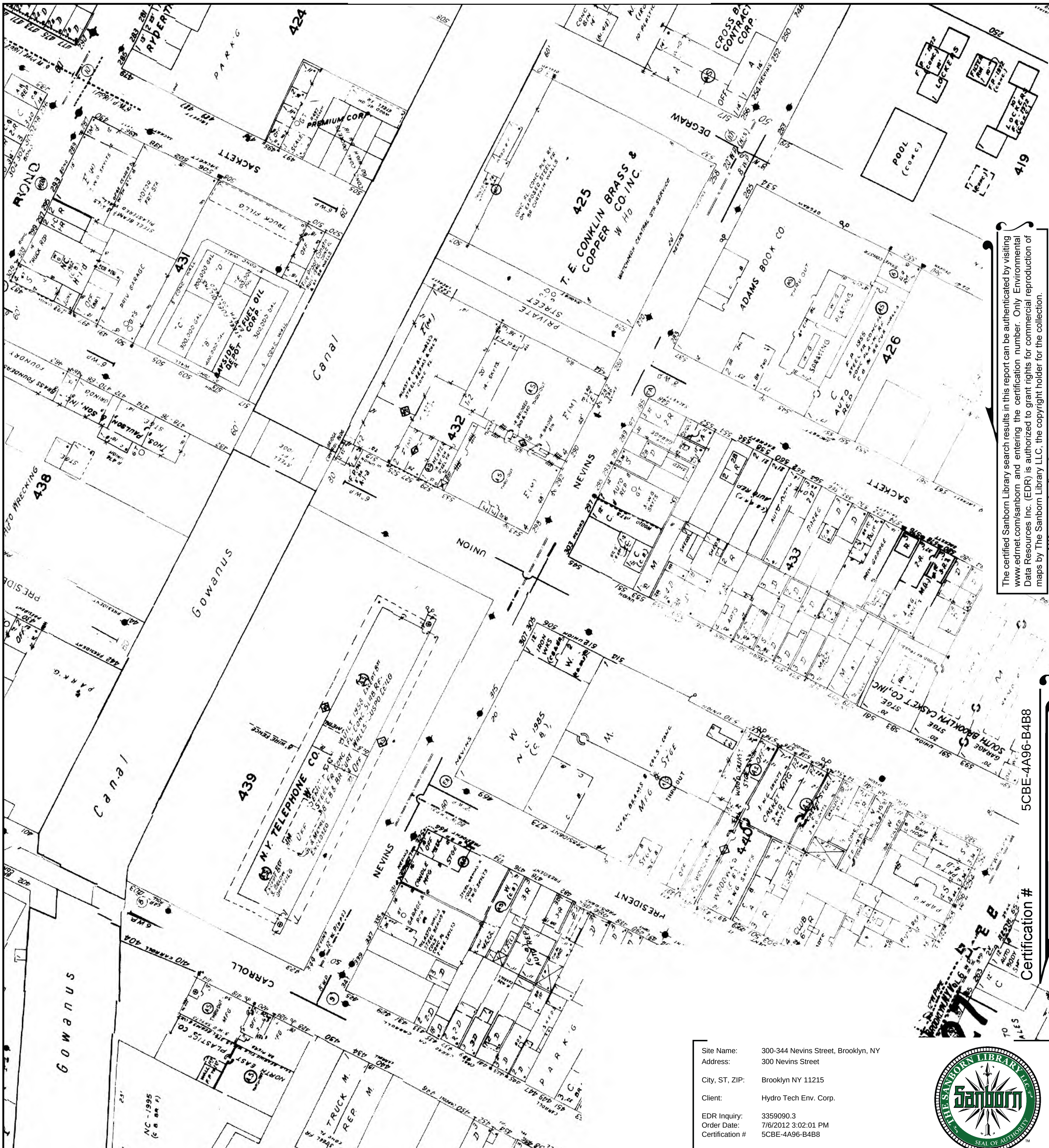
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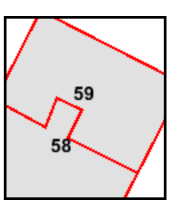
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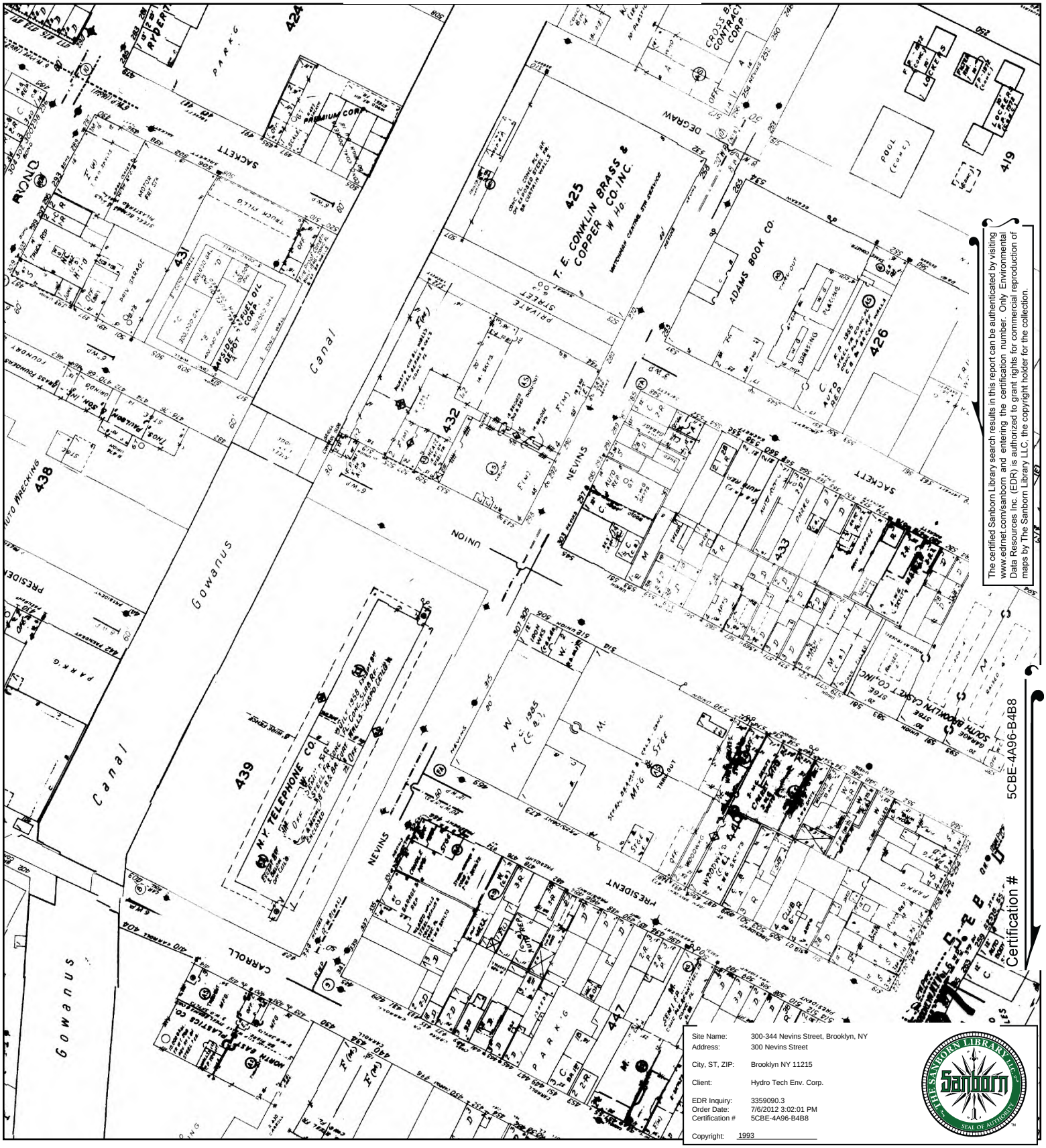
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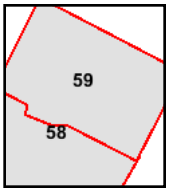


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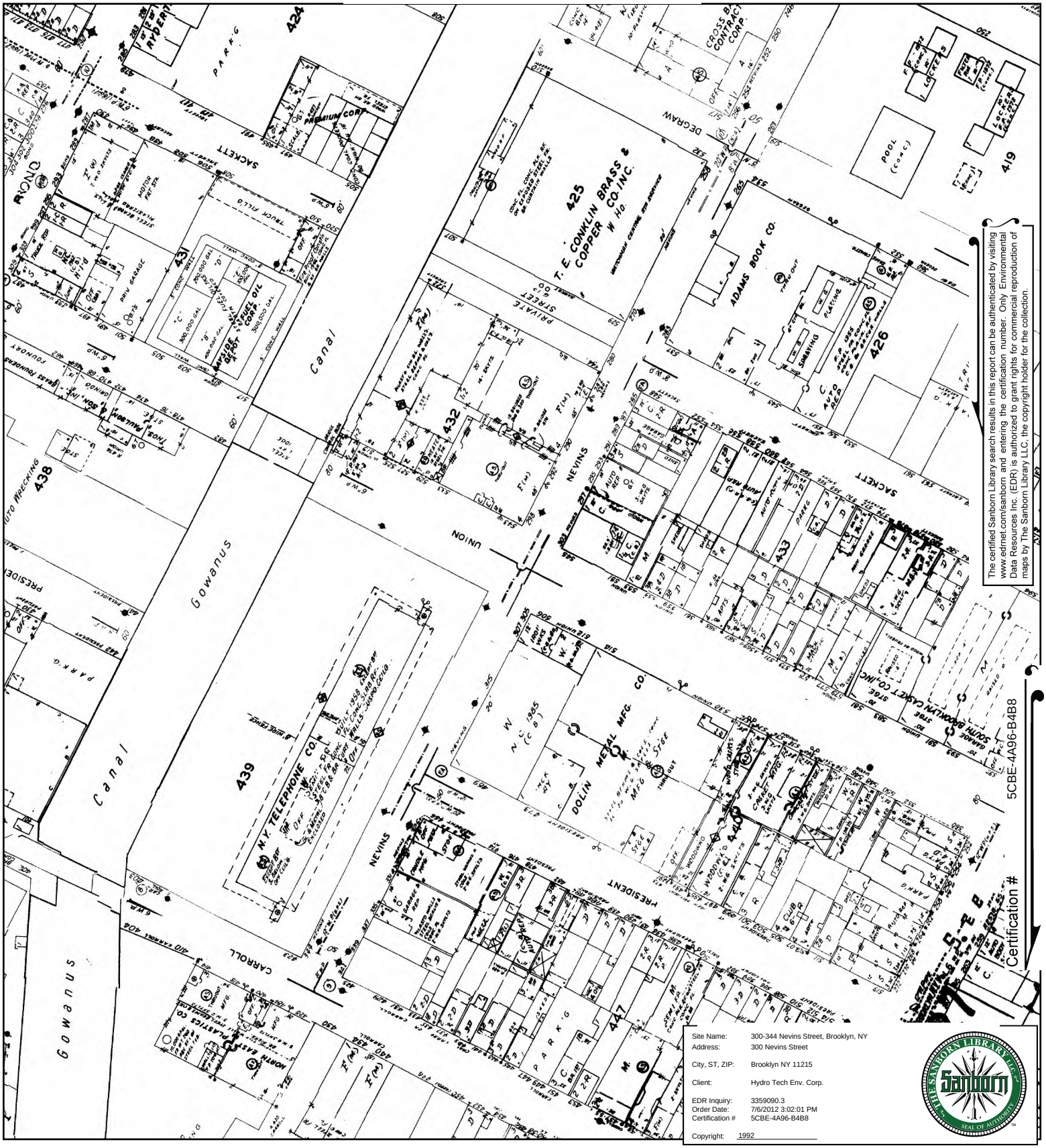




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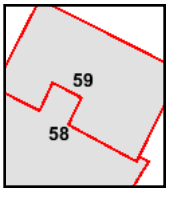


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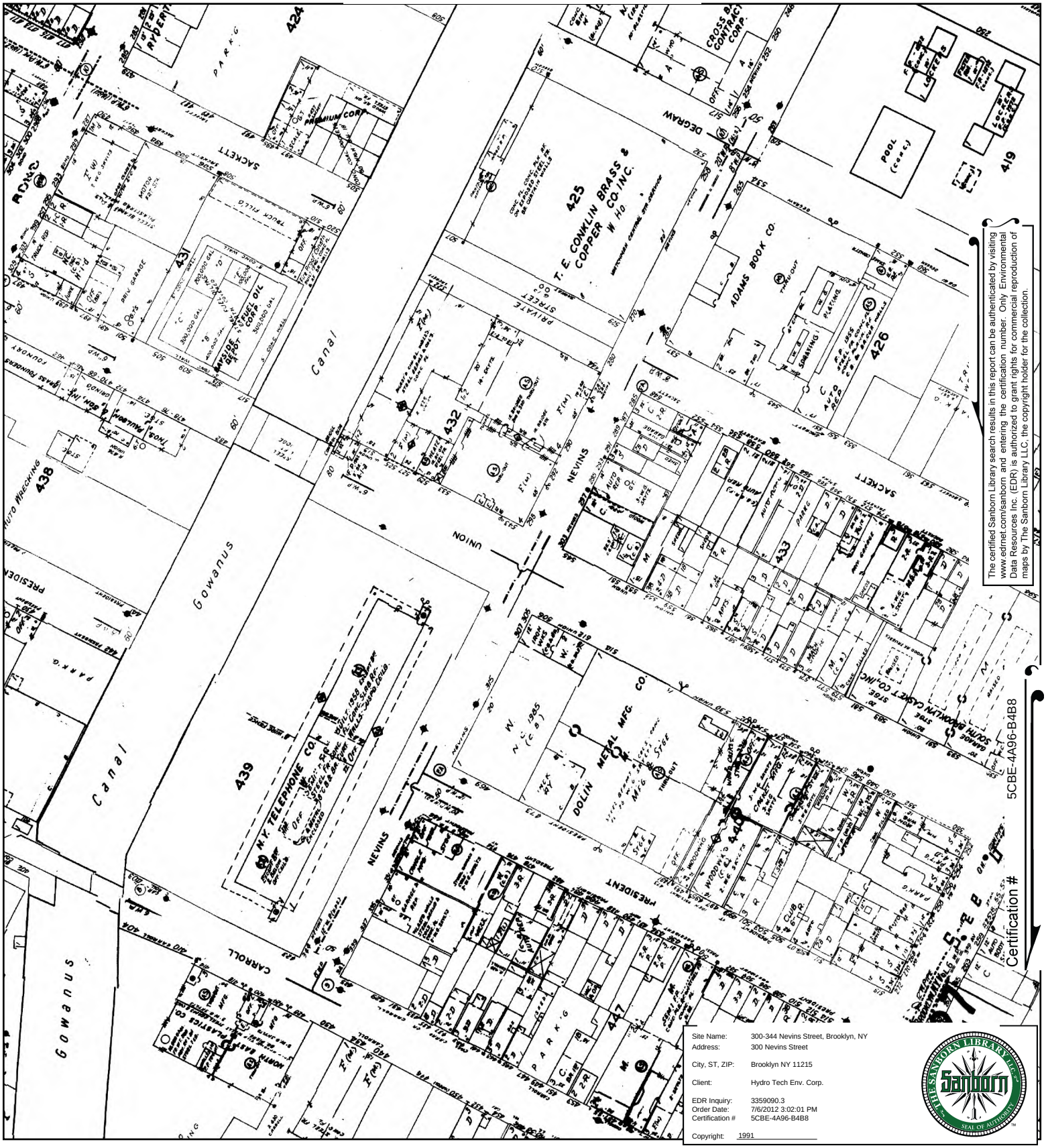




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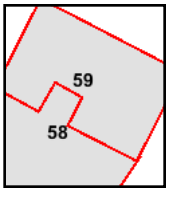
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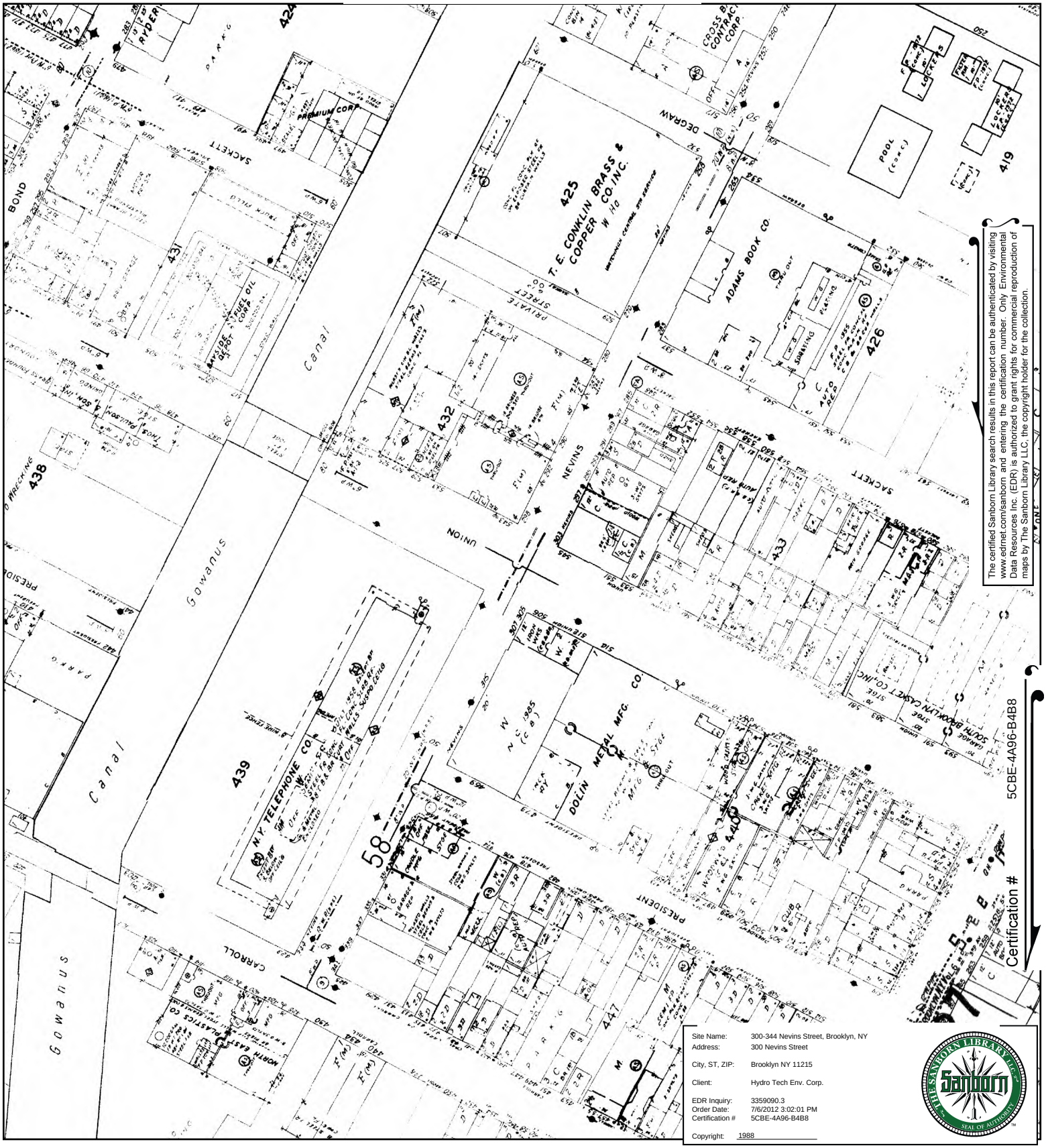




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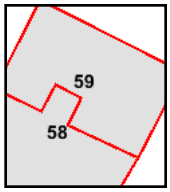
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1987 Certified Sanborn Map

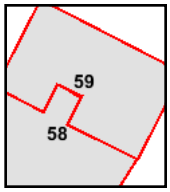


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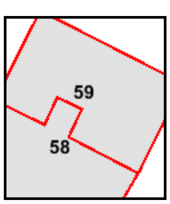
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1982 Certified Sanborn Map



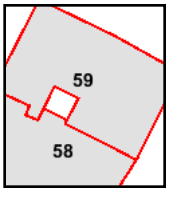
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1981 Certified Sanborn Map



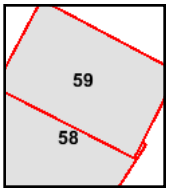
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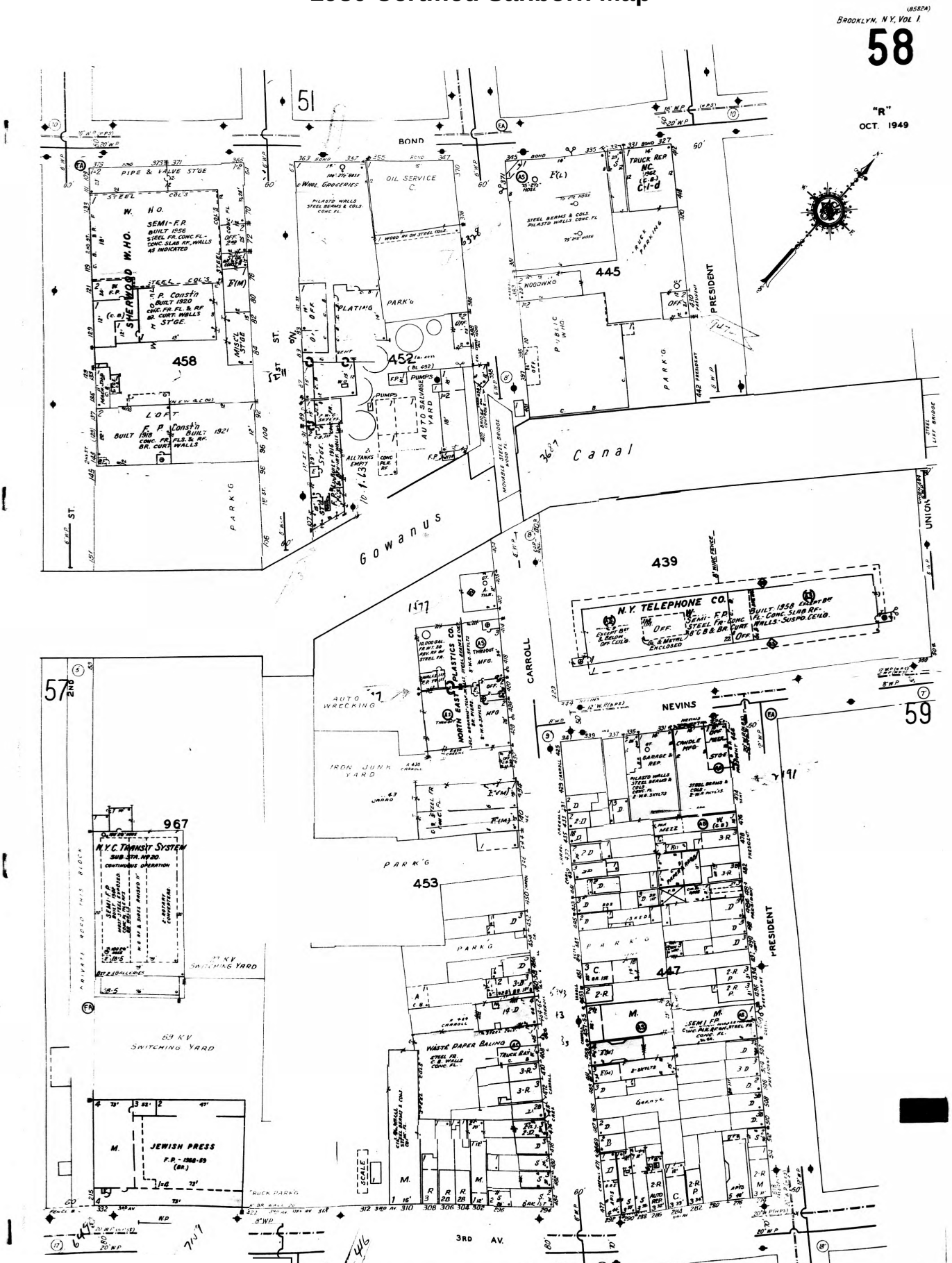


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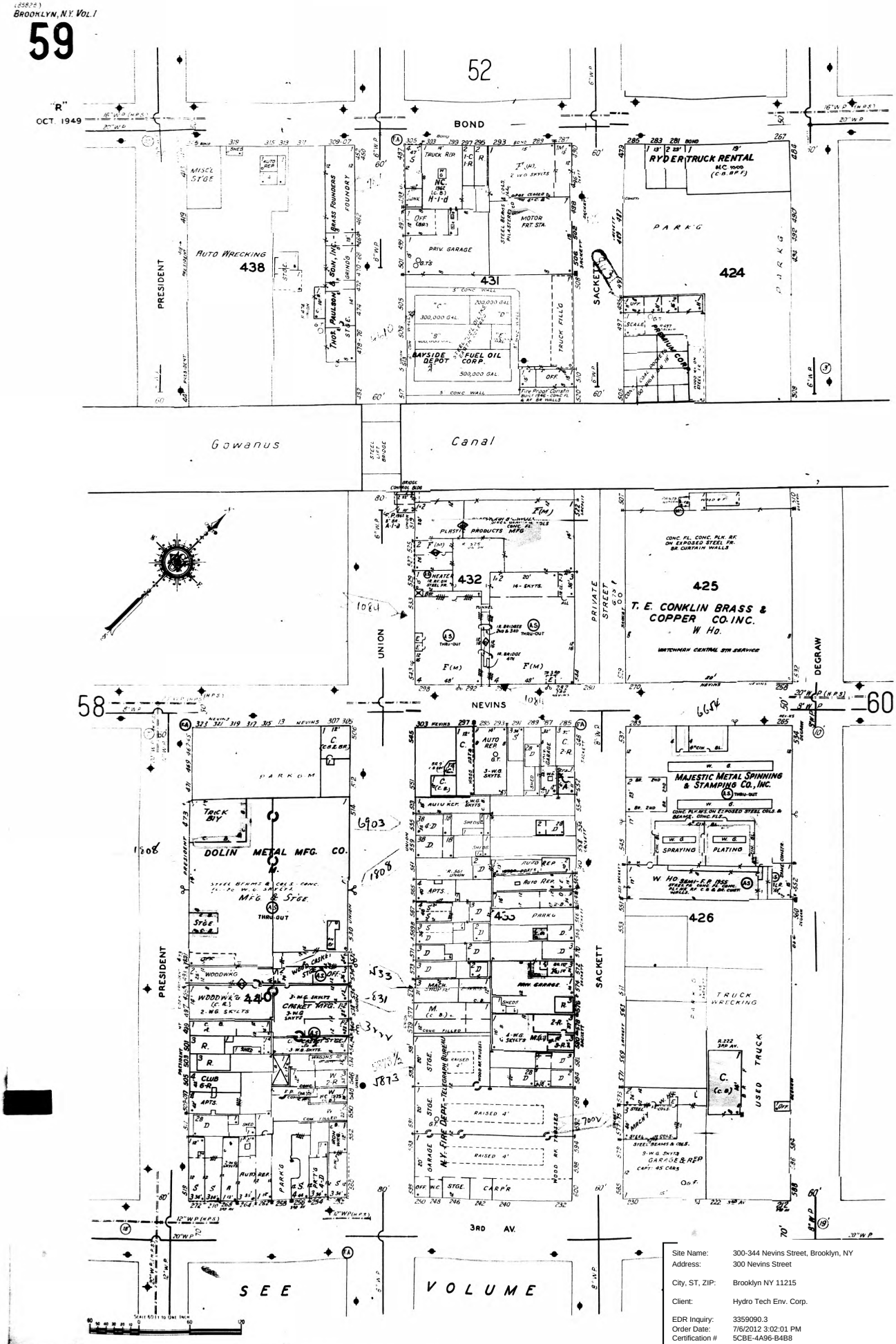


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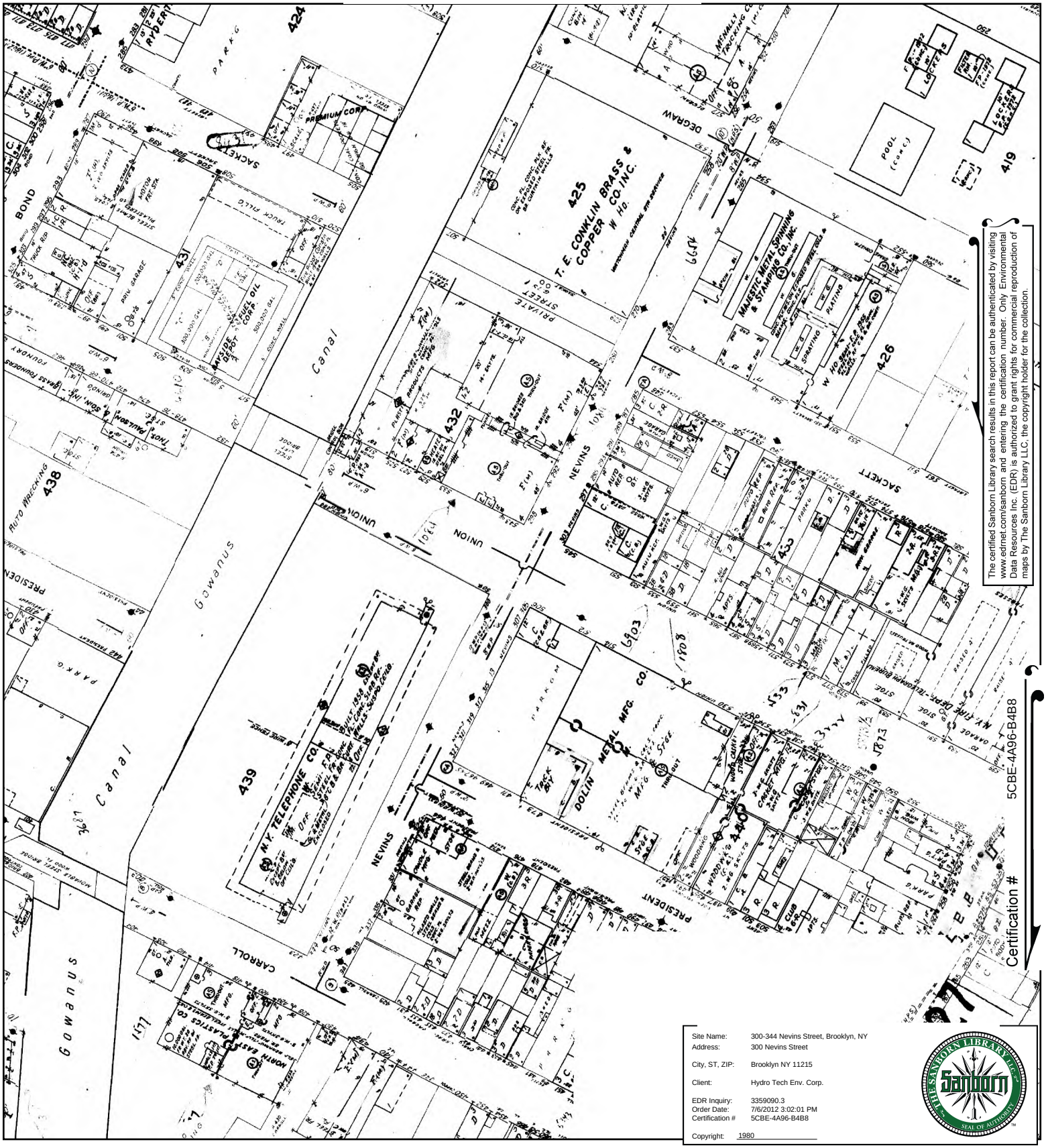


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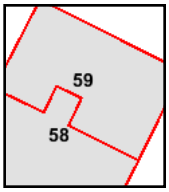
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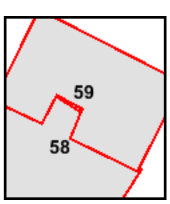
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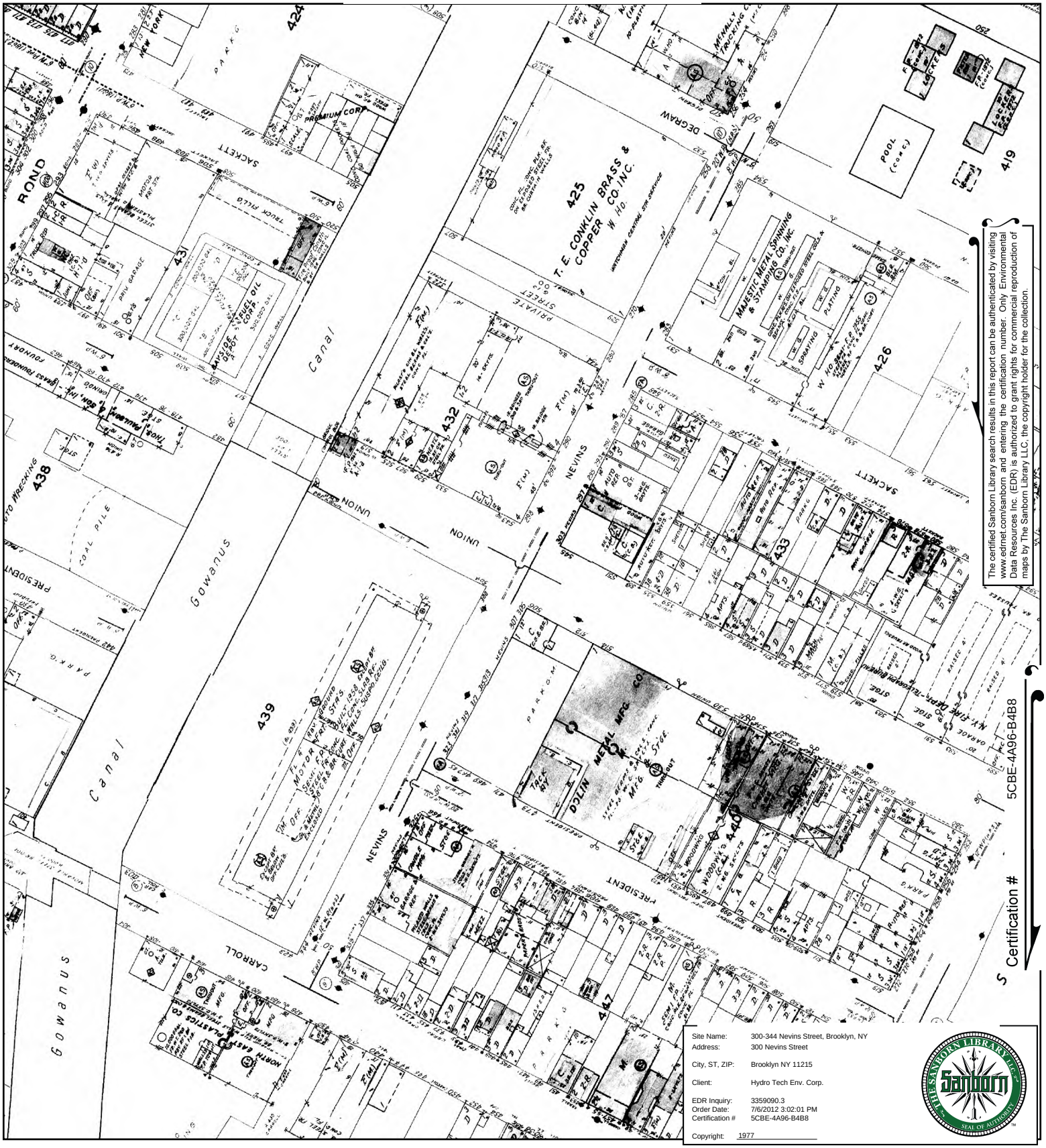




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1977 Certified Sanborn Map



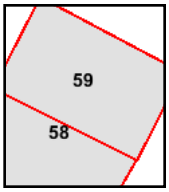
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1969 Certified Sanborn Map

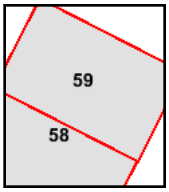


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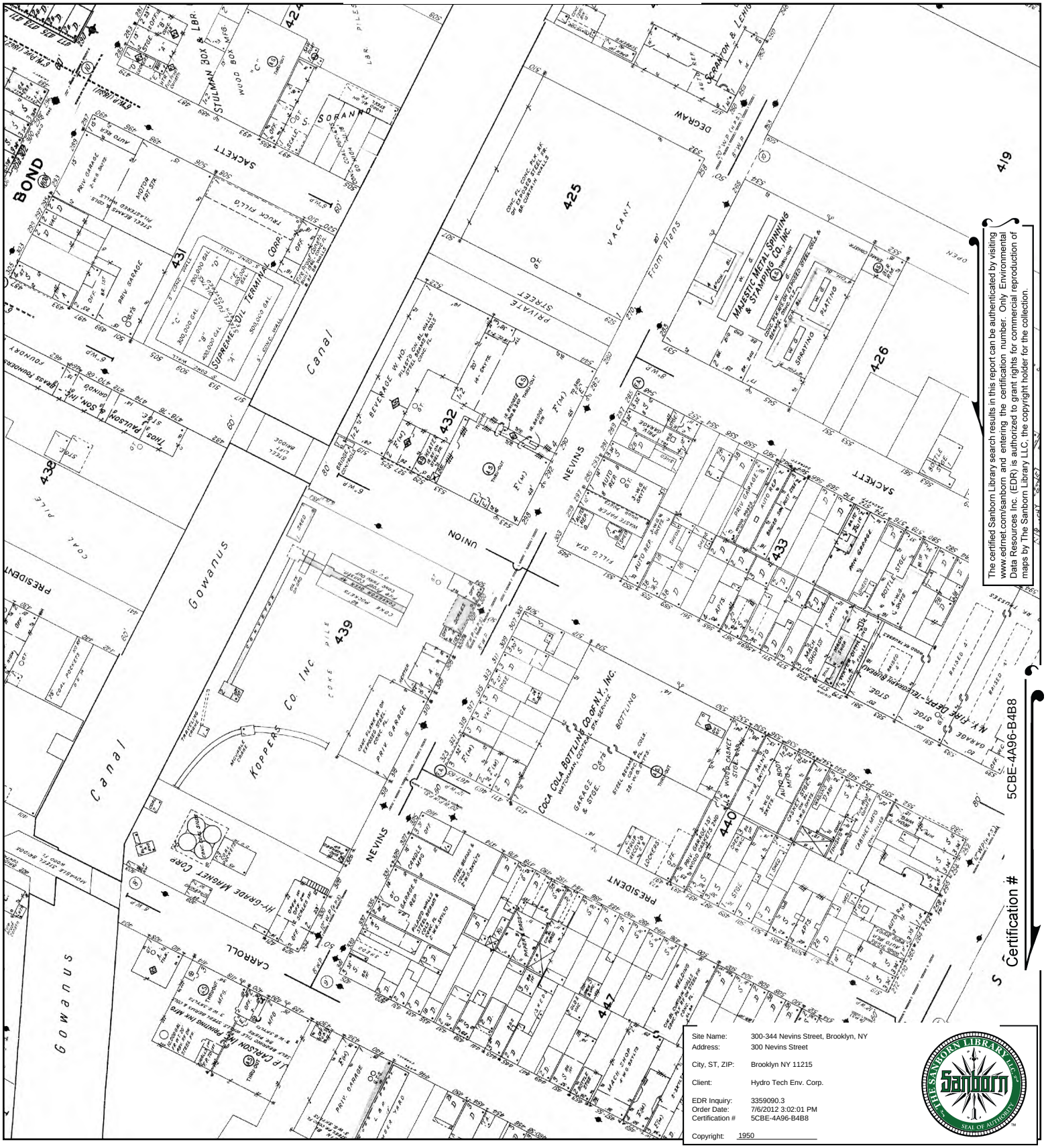
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1950 Certified Sanborn Map



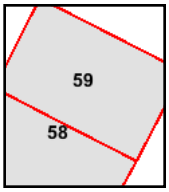
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1938 Certified Sanborn Map



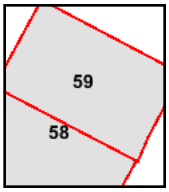
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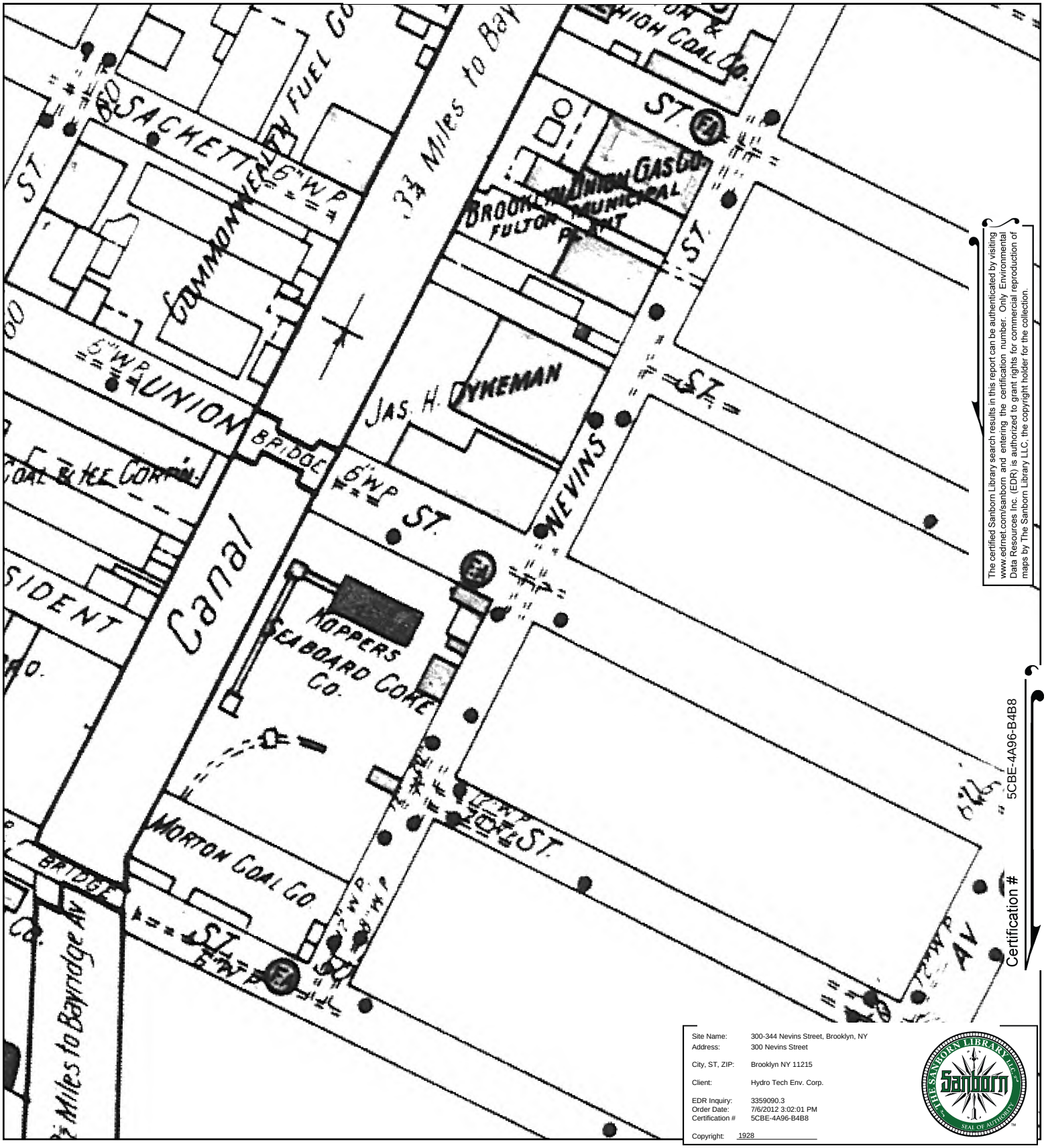




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N

1928 Certified Sanborn Map



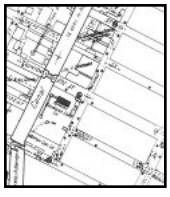
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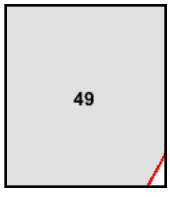
Certification # 5CBE-4A96-B4B8

Site Name:	300-344 Nevins Street, Brooklyn, NY
Address:	300 Nevins Street
City, ST, ZIP:	Brooklyn NY 11215
Client:	Hydro Tech Env. Corp.
EDR Inquiry:	3359090.3
Order Date:	7/6/2012 3:02:01 PM
Certification #	5CBE-4A96-B4B8
Copyright:	1928

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Outlined areas indicate map sheets within the collection.

0 Feet 150 300 600

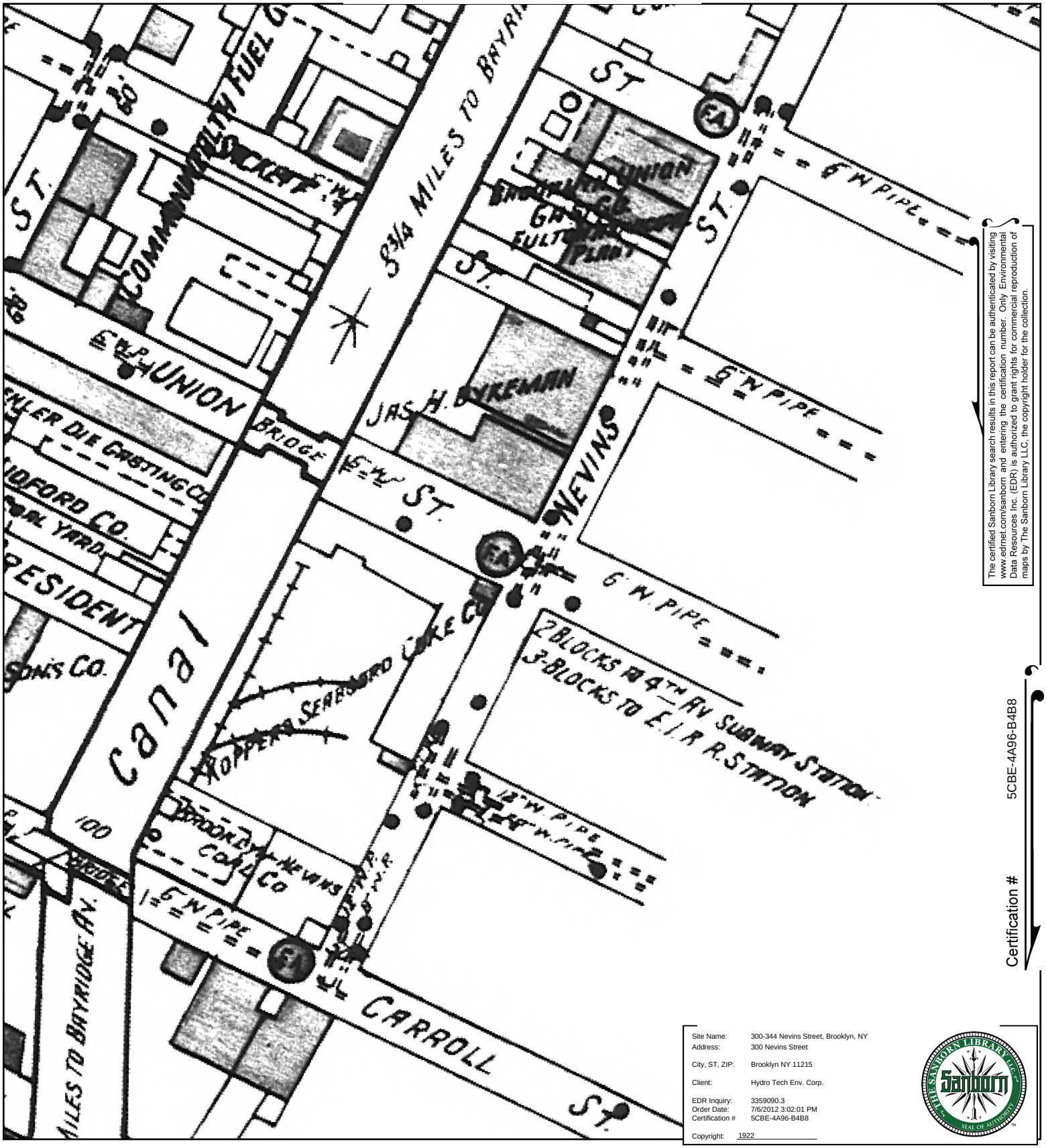




Volume Pier Maps, Sheet 49

N

1922 Certified Sanborn Map



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Certification # 5CBE-4A96-B4B8

Site Name:	300-344 Nevins Street, Brooklyn, NY
Address:	300 Nevins Street
City, ST, ZIP:	Brooklyn NY 11215
Client:	Hydro Tech Env. Corp.
EDR Inquiry:	3359090.3
Order Date:	7/6/2012 3:02:01 PM
Certification #	5CBE-4A96-B4B8
Copyright:	1922

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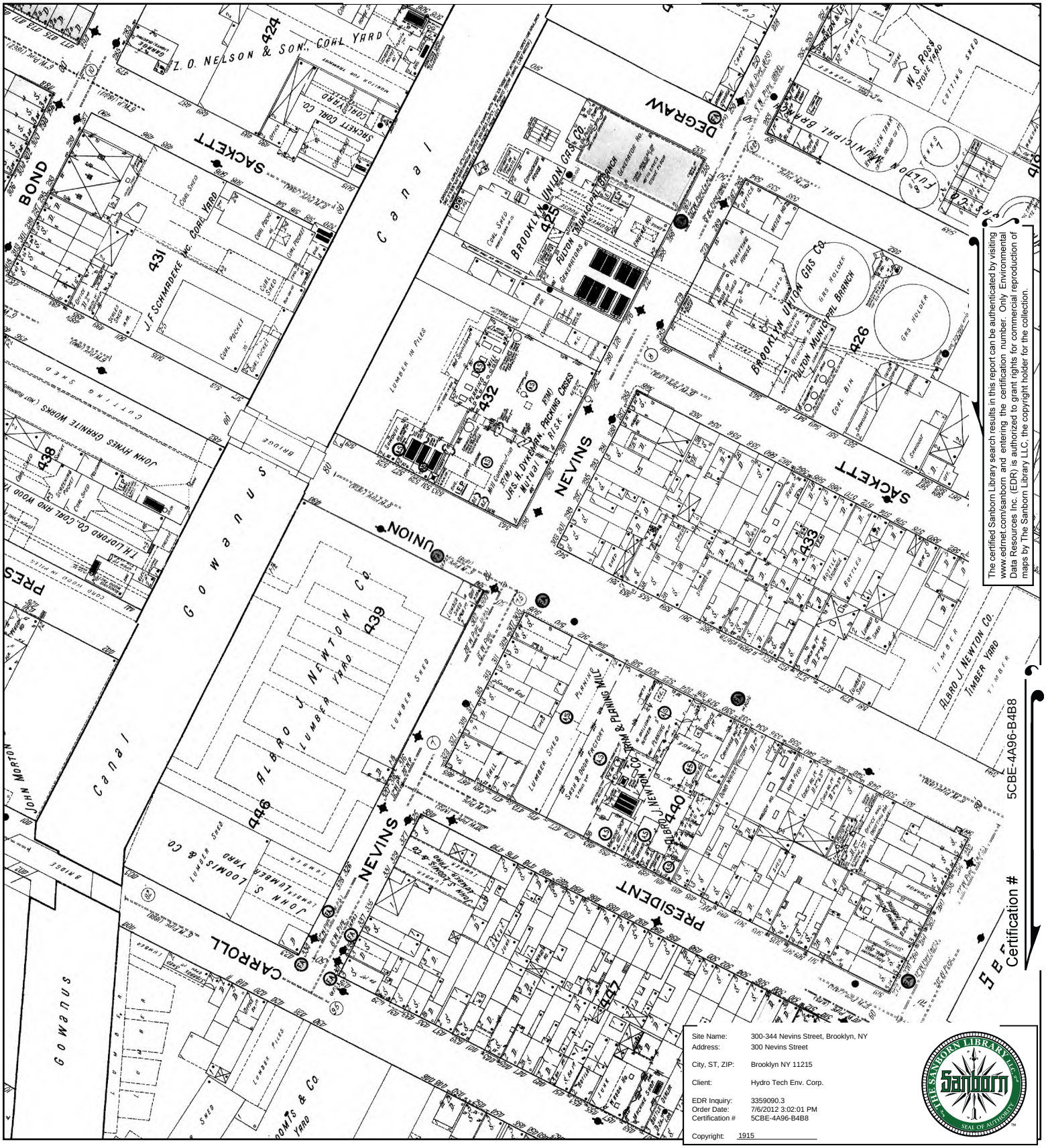


41

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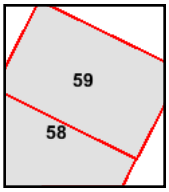
N

1915 Certified Sanborn Map



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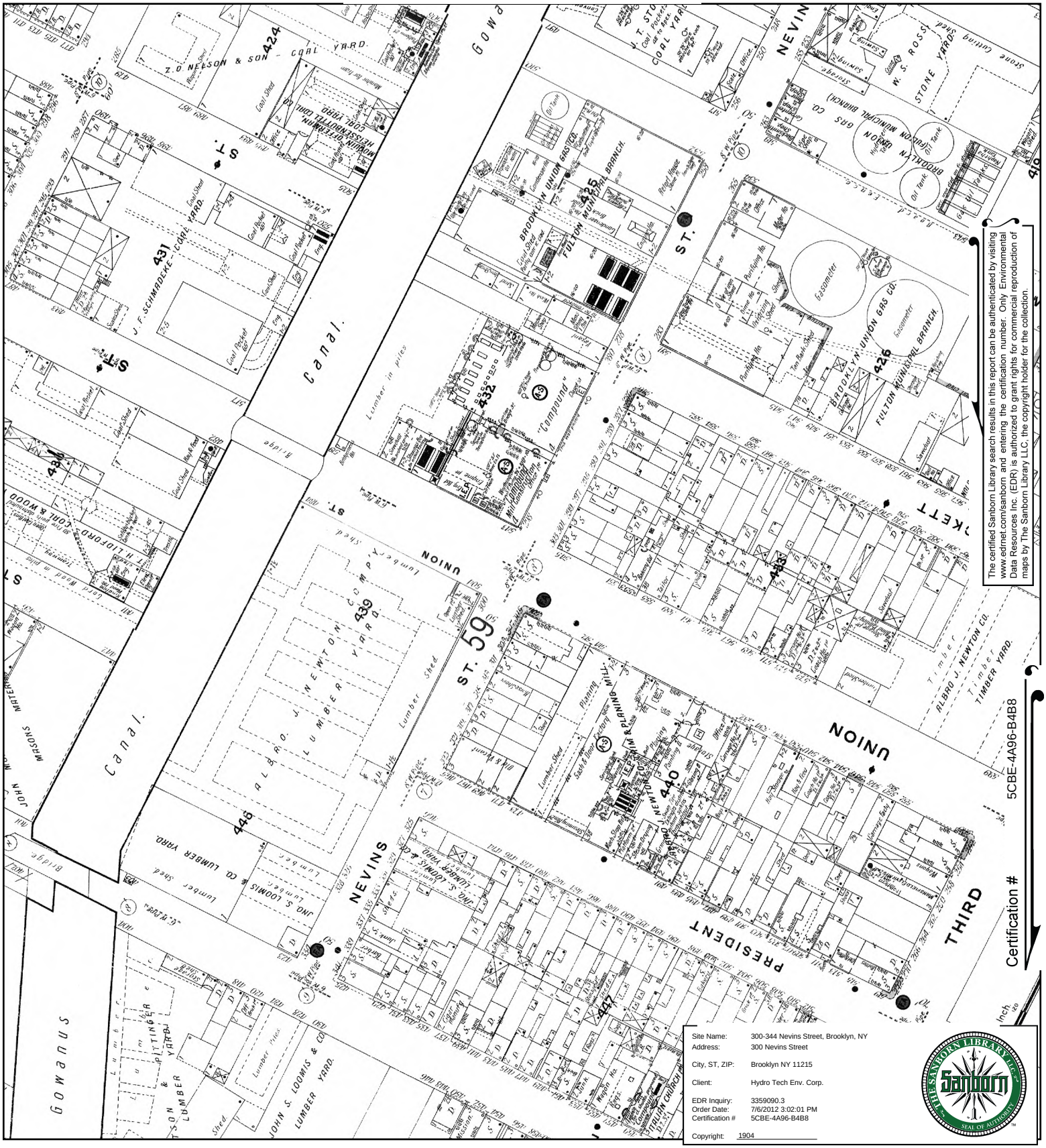


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0 Feet 150 300 600

N

1904 Certified Sanborn Map



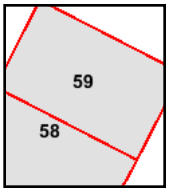
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Site Name:	300-344 Nevins Street, Brooklyn, NY
Address:	300 Nevins Street
City, ST, ZIP:	Brooklyn NY 11215
Client:	Hydro Tech Env. Corp.
EDR Inquiry:	3359090.3
Order Date:	7/6/2012 3:02:01 PM
Certification #	5CBE-4A96-B4B8
Copyright:	1904

This Certified Sanborn Map combines the following sheets.
Outlined areas indicate map sheets within the collection.

0 Feet 150 300 600

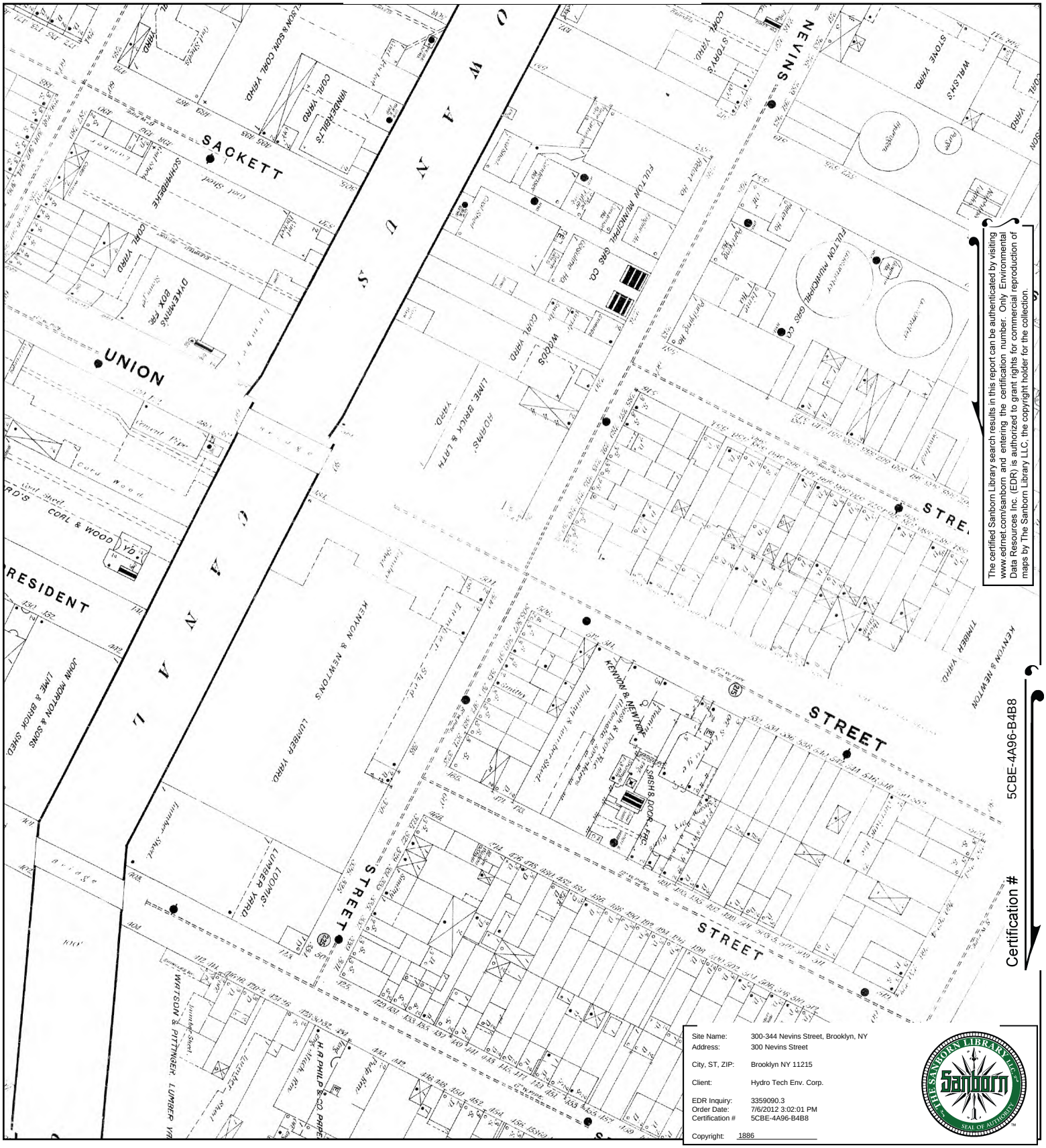




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N

1886 Certified Sanborn Map



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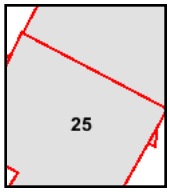
Certification # 5CBE-4A96-B4B8

Site Name:	300-344 Nevins Street, Brooklyn, NY
Address:	300 Nevins Street
City, ST, ZIP:	Brooklyn NY 11215
Client:	Hydro Tech Env. Corp.
EDR Inquiry:	3359090.3
Order Date:	7/6/2012 3:02:01 PM
Certification #	5CBE-4A96-B4B8
Copyright:	1886

This Certified Sanborn Map combines the following sheets.
Outlined areas indicate map sheets within the collection.

0 Feet 150 300 600





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Volume 1, Sheet 25

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Appendix E

RI and Supplemental RI Soil Boring Logs
Remedial Action Work Plan
318 Nevins Street, Brooklyn, NY
NYSDEC BCP #C224350

Impact Environmental Engineering and Geology PLLC
170 KEYLAND COURT, BOHEMIA, NEW YORK 11716
TEL (631) 269-8800 ▪ FAX (631) 269-1599

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-7**	
	Site Address: 318 Nevins Street		
	Weather: Rain, 50		
	Geologist: AK	Total Depth: 15'	
Start Date: 10/3/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 10/3/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 12:00	Sampler Type/Len: Dual Tube	56790.65N, 300995.19E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0	SB-7 (0-2)	0-5	Dry	24"	ML/Fill	Brown silty sand with gravel fill, limited recovery	
	0							
2	0							
3	0							
4	0							
5	0							
6	0	SB-7 (6-8)	5-10'	Wet	35"	ML	Brown/Gray silty sand and clay	
7	0							
8	0							
9	0							
10	0		10-15'	Wet	40"	CL	Gray clay with root fragments	
11	0							
12	0							
13	0	SB-7 (13-15)						
14	0							
15							End of boring at 15 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-8**	
	Site Address: 318 Nevins Street		
	Weather: Rain, 50		
	Geologist: AK	Total Depth: 15'	
Start Date: 10/3/22	Drilling Company: PG	GW: 6-7'	
Start Time: 12:00	Driller: Orlando		
Completion Date: 10/3/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56848.66N, 301023.36E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0	SB-8 (0-2)	0-5	Dry	60"	ML/Fill	2' Brown silty sand with gravel and trace brick and then 2' of 100% brick, bottom 12" silty brown sand	
	0							
2	0							
3	0							
4	0							
5	0		5-10'	Wet	60"	CL/ML	Gray silt and clay	
6	0	SB-8 (6-8)						
7	0							
8	0							
9	0							
10	0		10-15'	Wet	60"	CL	Gray clay	
11	0							
12	0							
13	0	SB-8 (13-15)						
14	0							
15							End of boring at 15 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-9**	
	Site Address: 318 Nevins Street		
	Weather: Rain, 50		
	Geologist: AK	Total Depth: 80'	
Start Date: 10/5/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 10/5/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56855.43N, 300970.35E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0	SB-9 (0-2)	0-5	Dry	60"	ML/Fill	Brick fragments and black compact silt with some sand with trace clay, limited recovery	
	0							
2	0							
3	0							
4	0							
5	1.5		5-10'	Wet	60"	ML/Fill	Gravel, shell pieces, compact silty sand, transistion to compact silty clay at 9'	
6	2.3	SB-9 (6-8)						
7	15.2							
8	5.8							
9	1.5							
10	0		10-15'	Wet	60"	CL	Gray clay and peat with root pieces	
11	0.5							
12	0							
13	1.2							
14	4.3							
15	10.3		15-20'	Wet	60"	CL	Gray clay, at 19-20', black peat with wood, odors	
16	9.8							
17	7.2							
18	8.4							
19	9.2							
20	0		20-25'	Wet	60"	SP/ML	Fine gray sand transistions to silty clay	
21	0							
22	0							
23	0							
24	0							
25								

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-9**	
	Weather: Rain, 50		
	Geologist: AK	Total Depth: 80'	
Start Date: 10/5/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 10/5/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56855.43N, 300970.35E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
25	0		25-30"	Wet	60"	SP	Brown medium to coarse sand	
26	0							
27	0							
28	0							
29	0							
30	0		30-35'	Wet	60"	SP	Brown medium to coarse sand	
31	0							
32	0							
33	0							
34	0							
35	0		35-40'	Wet	60"	SP	Brown medium to coarse sand	
36	0							
37	0							
38	0							
39	0							
40	0		40-45'	Wet	60"	SP	Brown medium to coarse sand	
41	0							
42	0							
43	0							
44	0							
45	0		45-50'	Wet	60"	SP	Brown medium to coarse sand	
46	0							
47	0							
48	0							
49	0							
50								

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-9**	
	Site Address: 318 Nevins Street		
	Weather: Rain, 50		
	Geologist: AK	Total Depth: 80'	
Start Date: 10/5/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 10/5/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56855.43N, 300970.35E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
50	0		50-55'	Wet	60"	SP	Brown medium to coarse sand	
51	0							
52	0							
53	0							
54	0							
55	0		55-60'	Wet	60"	SP	Brown fine to medium sand	
56	0							
57	0							
58	0							
59	0							
60	0		60-65'	Wet	60"	SP/ML	Brown fine sand and silt with some clay, trace gravel	
61	0							
62	0							
63	0							
64	0							
65	0		65-70'	Wet	60"	SP/ML	Brown fine sand and silt with some clay, trace gravel	
66	0							
67	0							
68	0							
69	0							
70	0		70-75'	Wet	60"	ML	Silty sand with clay	
71	0							
72	0							
73	0							
74	0							
75								

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-9**	
	Site Address: 318 Nevins Street		
	Weather: Rain, 50		
	Geologist: AK	Total Depth: 80'	
Start Date: 10/5/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 10/5/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56855.43N, 300970.35E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
76	0		75-80'	Wet	60"	ML	Silty sand with clay	
	0							
77	0							
78	0	SB-9 (78-80)						
79	0							
80							End of boring at 80 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-10**	
	Weather: Rain, 50		
	Geologist: AK	Total Depth: 15'	
Start Date: 10/6/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 10/6/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 11:00	Sampler Type/Len: Dual Tube	56892.18N, 300992.83E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0	SB-10 (0-2)	0-5	Dry	60"	ML/Fill	Brown silty sand with gravel and brick fragments, limited recovery	
	0							
2	0							
3	0							
4	0							
5	0		5-10'	Wet	60"	ML/Fill	Brown silty sand and brick fragments with trace gravel and clay	
6	0	SB-10 (6-8)						
7	0							
8	0							
9	0							
10	0		10-15'	Wet	60"	CL	Gray clay with roots, peaty, trace odor	
11	0							
12	11.1							
13	10.5	SB-10 (13-15)						
14	13							
15							End of boring at 15 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-11**	
	Site Address: 318 Nevins Street		
	Weather: Rain, 50		
	Geologist: AK	Total Depth: 15'	
Start Date: 10/6/22	Drilling Company: PG	GW: 6-7'	
Start Time: 11:00	Driller: Orlando		
Completion Date: 10/6/22	Drill Rig: 7822 DT	GPS Coordinates: 56920.70N, 300997.19E	
Completion Time: 3:00	Sampler Type/Len: Dual Tube		

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0	SB-11 (0-2)	0-5	Dry	60"	ML/Fill	Brown compact silty sand with brick fragments and some gravel	
	0							
2	0							
3	0							
4	0							
5	13		5-10'	Wet	60"	ML	Brown silty sand, wet at 7'	
6	11.8	SB-11 (6-8)						
7	12							
8	5.6							
9	4.8							
10	0		10-15'	Wet	60"	ML	Brown silty sand with medium to coarse sand and gravel	
11	0							
12	0							
13	0	SB-11 (13-15)						
14	0							
15							End of boring at 15 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**TF-2**
	Weather: Rain, 50	
	Geologist: AK	Total Depth: 15'
Start Date: 10/11/22	Drilling Company: PG	GW: 6-7'
Start Time: 7:00	Driller: Orlando	
Completion Date: 10/11/22	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56909.40N, 301002.11E

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0		0-5	Dry	6"	ML/Fill	Black silty sand with gravel and brick fragments, limited recovery	
	0							
2	0							
3	0							
4	0							
5	0		5-10'	Wet	60"	ML	5-8' Black silty sand 8-10' Gray silty sand with gravel, petroleum odors	
6	2.3							
7	16.7							
8	150	TF-2 (8-10)						
9	52.3							
10	32.8	TF-2 (10-12)	10-15'	Wet	60"	SP	10-11' Gray silty sand, trace odors 11-15' transistions to a medium brown sand	
11	1.2							
12	0							
13	0	TF-2 (13-15)						
14	0							
15							End of boring at 15 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**TF-3**	
	Site Address: 318 Nevins Street		
	Weather: Rain, 50		
	Geologist: AK	Total Depth: 10'	
Start Date: 10/12/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 10/12/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56913.07N, 301007.96E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0		0-5	Dry	60"	ML	Tan sand with concrete and brick fragments	
	0							
2	0							
3	0							
4	0							
5	0		5-10'	Wet	60"	ML	Tan sand with trace gravel	
6	0	TF-3 (6')						
7	0							
8	0							
9	0							
10							End of boring at 10 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**TF-4**	
	Site Address: 318 Nevins Street		
	Weather: Rain, 50		
	Geologist: AK	Total Depth: 15'	
Start Date: 10/12/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 10/12/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56905.51N, 301009.08E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0		0-5	Dry	6"	ML/Fill	Black silty sand with gravel and brick fragments, limited recovery	
	0							
2	0							
3	0							
4	0							
5	0		5-10'	Wet	60"	ML	5-8 Black silty sand 8-10 Gray silty sand with gravel, petroleum odors	
6	0	TF-4 (6-7)						
7	20							
8	1050	TF-4 (8-10)						
9	450							
10	37		10-15'	Wet	60"	,.	10-11Gray silty sand, trace odors 11-15 transistions to a medium brown sand	SB-DUP-3/ TF-4 (11-13)
11	0	TF-4 (11-13)						
12	0							
13	0							
14	0							
15							End of boring at 15 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**OWS-1**
	Weather: Rain, 50	
	Geologist: AK	Total Depth: 15'
Start Date: 10/12/22	Drilling Company: PG	GW: 6-7'
Start Time: 7:00	Driller: Orlando	
Completion Date: 10/12/22	Drill Rig: 7822 DT	GPS Coordinates: X,Y
Completion Time: 3:00	Sampler Type/Len: Dual Tube	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0		0-5	Dry	6"	ML	Limited recovery	
	0							
2	0							
3	0							
4	0							
5	0	OWS-1 (4-6)	5-10'	Wet	60"	ML/Fill	Brown fine sand with silt- at 7' chunks of wood with strong odor 7-10 Gray silt with trace clay	
6	0							
7	32	OWS-1 (6-8)						
8	2							
9	0							
10	0		10-15'	Wet	60"	,.	Brown medium sand	
11	0							
12	0							
13	0							
14	0							
15							End of boring at 15 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977 Site/Project Name: 318 Nevins Street Site Address: 318 Nevins Street Weather: Rain, 50	**Boring ID:** **OWS-2**
	Geologist: AK	Total Depth: 15'
Start Date: 10/12/22	Drilling Company: PG	GW: 6-7'
Start Time: 7:00	Driller: Orlando	
Completion Date: 10/12/22	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 3:00	Sampler Type/Len: Dual Tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0		0-5	Dry	6"	ML	Limited recovery	
	0							
2	0							
3	0							
4	0							
5	0		5-10'	Wet	60"	ML	Brown medium sand	
6	32	OWS-2 (6)						
7	0							
8	2							
9	0							
10	0		10-15'	Wet	60"	SP	Brown medium sand	
11	0							
12	0							
13	0							
14	0							
15							End of boring at 15 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**TF-1**	
	Site Address: 318 Nevins Street		
	Weather: Rain, 50		
	Geologist: AK	Total Depth: 10'	
Start Date: 10/11/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 10/11/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56900.41N, 301002.15E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0		0-5	Dry	60"	ML/Fill	Tan sand and brick fragments	
	0							
2	0							
3	0							
4	0							
5	0							
6	0	TF-1 (6')	5-10'	Wet	60"	ML	Tan sand with trace gravel	
7	0							
8	0							
9	0							
10							End of boring at 10 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-12**	
	Site Address: 318 Nevins Street		
	Weather: Rain, 50		
	Geologist: AK	Total Depth: 20'	
Start Date: 10/10/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 10/10/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56801.76N, 300978.16E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0		0-5	Dry	45"	ML/Fill	Concrete, silty sand and brick fragments	
	0							
2	0							
	0							
3	0	SB-12 (4-6)						
4	0		5-10'	Dry	60"	ML/Fill	Black silty sand with some gravel, brick from 5-6'	
	0							
5	0							
	0							
6	0							
	0							
7	0	SB-12 (10-12)	10-15'	Wet	60"	CL	Gray silt with clay, root fragments	
	0							
8	0							
	0							
9	0							
10	0		15-20'	Wet	60"	CL	Gray clay	
	0							
11	0							
	0							
12	0	SB-12 (18-20)						
13	0							
	0							
14	0							
	0							
15	0							
	0							
16	0							
	0							
17	0							
	0							
18	0							
	0							
19	0							
	0							
20							End of boring at 20 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-13**	
	Site Address: 318 Nevins Street		
	Weather: Rain, 50		
	Geologist: AK	Total Depth: 20'	
Start Date: 10/10/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 10/10/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 11:30	Sampler Type/Len: Dual Tube	56830.89N, 300991.07E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0		0-5	Dry	40"	ML/Fill	Silty sand with brick fragments and gravel	
	0							
2	0							
3	0							
4	0							
5	0	SB-13 (4-6)						
	0		5-10'	Dry	60"	ML/Fill	Brown silty sand with brick fragments and trace clay	
6	0							
7	0							
8	0							
9	0							
10	0	SB-13 (10-12)	10-15'	Wet	60"	ML/CL	Brown silty sand with some clay	
11	0							
12	0							
13	0							
14	0							
15	0		15-20'	Wet	60"	CL	Dark brown gravel followed by gray clay with roots, peat	
16	0							
17	0							
18	0							
19	0	SB-13 (18-20)						
20	0							
							End of boring at 80 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-14**	
	Site Address: 318 Nevins Street		
	Weather: Rain, 50		
	Geologist: AK	Total Depth: 20'	
0Start Date: 10/10/22	Drilling Company: PG	GW: 6-7'	
Start Time: 11:30	Driller: Orlando		
Completion Date: 10/10/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 2:45	Sampler Type/Len: Dual Tube	56840.38N, 300998.02E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0		0-5	Dry	40"	ML/Fill	Concrete, brown silty sand with brick fragments	
	0							
2	0							
3	0							
4	0							
5	0	SB-14 (4-6)						
6	0		5-10'	Dry	50"	ML/Fill	Brown to black silty sand with trace clay and brick fragments	
7	0							
8	0							
9	0							
10	0	SB-14 (10-12)	10-15'	Wet	60"	ML	Brown sity sand with clay silt and gravel	
11	0							
12	0							
13	0							
14	0							
15	0		15-20'	Wet	60"	ML/CL	Brown silt and clay with trace gravel	SB-DUP-2/ SB-14 (18-20)
16	0							
17	0							
18	0	SB-14 (18-20)						
19	0							
20							End of boring at 20 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-15**	
	Site Address: 318 Nevins Street		
	Weather: Rain, 50		
	Geologist: AK	Total Depth: 20'	
Start Date: 10/10/22	Drilling Company: PG	GW: 6-7'	
Start Time: 9:30	Driller: Orlando		
Completion Date: 10/10/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 1:30	Sampler Type/Len: Dual Tube	56859.51N, 301008.01E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0		0-5	Dry	24"	ML/Fill	Brown silty sand with gravel and brick	
	0							
2	0							
3	0							
4	0							
5	0		5-10'	Dry	45"	ML	Black silty sand with trace clay, gravel	
6	0							
7	0							
8	0							
9	0							
10	0		10-15'	Wet	60"	ML/CL	Black to brown silty sand, transistions to Gray/black clay at 12.5'	
11	0							
12	0							
13	0							
14	0							
15	0		15-20'	Wet	60"	CL	Gray clay with root fragments, peat and clay	
16	0							
17	0							
18	0							
19	0							
20	0							
							End of boring at 20 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc.
170 Keyland Court
Bohemia, NY 11716
P. (631) 269-8800
F. (631) 269-1599

	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	**SB-16**
	Site Address: 318 Nevins Street	
	Weather: Clear, 65	
	Geologist: AK	Total Depth: 80'
Start Date: 9/27/22	Drilling Company: PG	GW: 6-7'
Start Time: 7:00	Driller: Orlando	
Completion Date: 9/28/22	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56827.72N, 300945.02E

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0.0	SB-16 (0-2)	0-5	Dry	60"	SP/Fill	Black silty sand with brick fragments, limited recovery	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet @6'	60"	ML	Brown to dark brown silt with trace clay and gravel, trace sand, wet at 6'	
6	0.0	SB-16 (6-7)						
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60"	CL	Dark brown silt with clay and trace sand, some wood fragments	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60"	CL	Gray clay, lean, low plasticity	
16	0.0							
17	0.0							
18	0.3							
19	0.0							
20								

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-16**	
	Site Address: 318 Nevins Street		
	Weather: Clear, 65		
	Geologist: AK	Total Depth: 80'	
Start Date: 9/27/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 9/28/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56827.72N, 300945.02E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
20	0.0		20-25'	Wet	60"	CL	Gray clay, lean, low plasticity	
21	0.0							
22	1.0							
23	0.5							
24	0.0							
25	0.0		25-30'	Wet	20"	CL	Limited recovery, fine gray sand, trace silt/clay	
26	0.0							
27	0.0							
28	0.0							
29	0.0							
30	0.0		30-35'	Wet	60"	SP	Fine gray sand, trace silt/clay	
31	0.0							
32	0.0							
33	0.0							
34	0.0							
35	50.0	SB-16 (35-37)	35-40'	Wet	60"	SP	Trace blebs, fine gray sand, odors	
36	8.0							
37	7.0							
38	15.0							
39	10.0							
40	2.0		40-45'	Wet	60"	SP	Brown medium to coarse sand	
41	1.5							
42	1.2							
43	1.0							

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-16**	
	Site Address: 318 Nevins Street		
	Weather: Clear, 65		
	Geologist: AK	Total Depth: 80'	
Start Date: 9/27/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 9/28/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56827.72N, 300945.02E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
44	1.5							
45								

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-16**	
	Site Address: 318 Nevins Street		
	Weather: Clear, 65		
	Geologist: AK	Total Depth: 80'	
Start Date: 9/27/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 9/28/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56827.72N, 300945.02E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
46	41.0	SB-16 (45-47)	45-50'	Wet	60"	SP	Trace impacts in liner, fine sand, napthalene odor	
	41.0							
47	31.0							
48	30.0							
49	11.3							
50	13.0		50-55'	Wet	60"	SP	Medium to coarse sand, trace napthalene odor	
51	8.1							
52	10.2							
53	2.2							
54	2.2							
55	2.7		55-60'	Wet	60"	SP	Medium to coarse brown sand	
56	1.4							
57	1.5							
58	1.7							
59	2.2							
60	0.5		60-65'	Wet	60"	SP/ML	Brown silty sand transition to silt with trace clay at 63'	
61	0.5							
62	0.6							
63	2.3							
64	1.2							
65	4.4		65-70'	Wet	60"	SP	Brown silty sand	
66	7.9							
67	8.3							
68	7.8							
69	7.5							

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-16**	
	Site Address: 318 Nevins Street		
	Weather: Clear, 65		
	Geologist: AK	Total Depth: 80'	
Start Date: 9/27/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 9/28/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56827.72N, 300945.02E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
70	7.5							

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-16**	
	Site Address: 318 Nevins Street		
	Weather: Clear, 65		
	Geologist: AK	Total Depth: 80'	
Start Date: 9/27/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 9/28/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56827.72N, 300945.02E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
71	0.0		70-75'	Wet	60"	SP	Brown silty sand	
	0.0							
72	0.0							
73	0.0							
74	0.0							
75	0.0		75-80'	Wet	60"	SP	Brown silty sand	
76	0.0							
77	0.0							
78	0.0	SB-16 (78-80)						
79	0.0							
80							End of boring at 80 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-17**	
	Site Address: 318 Nevins Street		
	Weather: Clear, 65		
	Geologist: AK	Total Depth: 80'	
Start Date: 9/28/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 9/28/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56883.33N, 300973.09E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0.0	SB-17 (0-2)	0-5'	Dry/ Moist	40"	SP/ML/ Fill	Brown to dark brown compact silty sand with brick and concrete fragments	Impact stepped off the original location 6 times, refusal kept being met at 10-12'
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0							
6	0.0	SB-17 (6-8)	5-10'	Wet @ 7'	40"	ML/CL	Brown silty sand, transitions to Gray clay from 8-10	
	0.0							
7	0.0							
8	0.0							
9	0.0							
10	5.0		10-15'	Wet	50"	ML	Gray silty clay, wood chunks at 10-12 feet	
	5.0							
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	4.0		15-20'	Wet	45"	ML	Gray clayey silt, trace odor	
16	7.0							
17	10.0							
18	28.0							
19	32.0							
20	4.0		20-25'	Wet	60"	SP/ML	Gray silty sand with trace clay, at 23-25 blebs in liner, napthalene-odor	
21	32.0							
22	40.0							
23	130.0	SB-17 (23-25)						
24	55.0							
25								

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-17**	
	Site Address: 318 Nevins Street		
	Weather: Clear, 65		
	Geologist: AK	Total Depth: 80'	
Start Date: 9/28/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 9/28/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56883.33N, 300973.09E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
25	45.0		25-30"	Wet	60"	SP/ML	Free phase tar in liner, Gray silty sand matrix, napthalene-odor	
26	32.0							
27	17.0							
28	6.5							
29	3..8							
30	2.6		30-35'	Wet	60"	SP/ML	Gray silty sand, napthalene-odor	
31	5.0							
32	32.0							
33	56.0							
34	14.1							
35	12.9		35-40'	Wet	60"	SP/ML	Gray silty sand, transition to brown fine sand at 36'	
36	1.7							
37	0.0	SB-17 (37-39)						
38	0.0							
39	0.0							
40	0.0		40-45'	Wet	35"	SP	Brown coarse sand	
41	0.0							
42	0.0							
43	0.0							
44	0.0							
45	5.3		45-50'	Wet	40"	SP	Brown coarse sand	
46	0.0							
47	0.0							
48	0.0							
49	1.2							
50								

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-17**	
	Site Address: 318 Nevins Street		
	Weather: Clear, 65		
	Geologist: AK	Total Depth: 80'	
Start Date: 9/28/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 9/28/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56883.33N, 300973.09E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
50	3.1		50-55'	Wet	60"	SP	Brown coarse sand	
51	5.2							
52	1.2							
53	0.5							
54	1.5							
55	3.4		55-60'	Wet	60"	SP	Brown coarse sand	
56	3.2							
57	0.5							
58	1.2							
59	0.0							
60							refusal @60	
							End of boring at 60' feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-18**	
	Site Address: 318 Nevins Street		
	Weather: Clear, 65		
	Geologist: AK	Total Depth: 80'	
Start Date: 9/29/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 9/30/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56898.26N, 301026.20E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0.0		0-5	dry	NONE	NA	Mud rotary due to numerous refusals. No recovery.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	wet	18"	Gravel/Fill	Limited recovery; very coarse gravel and brick fragments, trace gray silty sand	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	wet	60"	Gravel/ML	10-12': gravel 12-15': gray silt	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	1.5		15-20'	Wet	60"	SP/ML	Gray silt w/ fine sand	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	60"	ML	Gray silt transitioning to fine brown sand and trace silt	
21	0.0							
22	0.0							
23	0.0							
24	0.0							
25								

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-18**	
	Site Address: 318 Nevins Street		
	Weather: Clear, 65		
	Geologist: AK	Total Depth: 80'	
Start Date: 9/29/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 9/30/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56898.26N, 301026.20E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
25	0.0							
26	0.0							
27	0.0		25-30"	Wet	20"	CL	Brown silt with clay transition to fine-medium sand at 27.5	
28	0.0							
29	0.0							
30	0.0							
31	0.0							
32	0.0		30-35'	Wet	60"	SP	Brown medium sand	
33	0.0							
34	0.0							
35	0.0							
36	0.0							
37	0.0		35-40'	Wet	60"	SP	Brown med sand w/ pebbles	
38	0.0							
39	0.0							
40	0.0							
41	0.0							
42	0.0		40-45'	Wet	60"	SP	Brown med sand w/ trace gravel	
43	0.0							
44	0.0							
45	0.0							
46	0.0							
47	0.0		45-50'	Wet	10"	SP	Brown medium sand	
48	0.0							
49	0.0							
50								

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-18**	
	Site Address: 318 Nevins Street		
	Weather: Clear, 65		
	Geologist: AK	Total Depth: 80'	
Start Date: 9/29/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 9/30/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56898.26N, 301026.20E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
50	0.0		50-55'	Wet	60"	SP	Coarse brown sand	
51	0.0							
52	0.0							
53	0.0							
54	0.0							
55	0.0		55-60'	Wet	60"	SP	Coarse brown sand	
56	0.0							
57	0.0							
58	0.0							
59	0.0							
60	0.0		60-65'	Wet	60"	SP	Brown very coarse gravel and sand	
61	0.0							
62	0.0							
63	0.0							
64	0.0							
65	0.0		65-70'	Wet	60"	SP	Coarse gravel and sand	
66	0.0							
67	0.0							
68	0.0							
69	0.0							
70	7.0		70-75'	Wet	60"	SP	Fine to medium sand with trace silt, no odors	
71	7.0							
72	30.0	SB-18 (72-74)						
73	32.0							
74	70.0							
75								

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-18**	
	Weather: Clear, 65		
	Geologist: AK	Total Depth: 80'	
Start Date: 9/29/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 9/30/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56898.26N, 301026.20E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
76	0.0		75-80'	Wet	60"	SP	Fine to medium sand with trace silt	
	0.0							
77	0.0							
78	0.0	SB-18 (78-80)						
79	0.0							
80							End of boring at 80 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-19**	
	Site Address: 318 Nevins Street		
	Weather: Clear, 65		
	Geologist: AK	Total Depth: 80'	
Start Date: 9/30/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 10/3/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56867.99N, 301033.40E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0.0	SB-19 (0-2)	0-5	Dry	60"	SP/Fill	Black and brown silty sand	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0							
6	0.0	SB-19 (6-8)	5-10'	Wet	60"	ML	Tan to black silt w/ trace sand	
7	0.0							
8	0.0							
9	0.0							
10	0.0							
11	6.8							
12	70.0	SB-19 (12-14)	10-15'	Wet	60"	ML/CL	Silty sand then peat w/ wood pieces from 12-15'	
13	35.0							
14	3.0							
15	1.5		15-20'	Wet	60"	SP	Fine sand with silt	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0							
21	0.0		20-25'	Wet	60"	SP	Fine sand	
22	0.0							
23	0.0							

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-19**	
	Site Address: 318 Nevins Street		
	Weather: Clear, 65		
	Geologist: AK	Total Depth: 80'	
Start Date: 9/30/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 10/3/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56867.99N, 301033.40E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
24	0.0							
25	0.0		25-30"	Wet	20"	SP	Fine-medium sand	
26	0.0							
27	0.0							
28	0.0							
29	0.0							
30	0.0		30-35'	Wet	60"	SP	Coarse sand	
31	0.0							
32	0.0							
33	0.0							
34	0.0							
35	0.0		35-40'	Wet	60"	SP	Coarse sand	
36	0.0							
37	0.0							
38	0.0							
39	0.0							
40	0.0		40-45'	Wet	60"	SP	Medium to coarse sand	
41	0.0							
42	0.0							
43	0.0							
44	0.0							
45	0.0							
46	0.0							
47								

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-19**	
	Site Address: 318 Nevins Street		
	Weather: Clear, 65		
	Geologist: AK	Total Depth: 80'	
Start Date: 9/30/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 10/3/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56867.99N, 301033.40E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
47	0.0		45-50'	Wet	10"	SP	Medium to coarse sand	
48	0.0							
49								

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-19**	
	Site Address: 318 Nevins Street		
	Weather: Clear, 65		
	Geologist: AK	Total Depth: 80'	
Start Date: 9/30/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 10/3/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56867.99N, 301033.40E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
49	0.0							
50	0.0		50-55'	Wet	60"	SP	Medium to coarse sand	
51	0.0							
52	0.0							
53	0.0							
54	0.0							
55	0.0		55-60'	Wet	60"	SP	Medium to coarse sand	
56	0.0							
57	0.0							
58	0.0							
59	0.0							
60	0.0		60-65'	Wet	60"	SP	Medium to coarse sand	
61	0.0							
62	0.0							
63	0.0							
64	0.0							
65								

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-19**	
	Site Address: 318 Nevins Street		
	Weather: Clear, 65		
	Geologist: AK	Total Depth: 80'	
Start Date: 9/30/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 10/3/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56867.99N, 301033.40E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
65	0.0		65-70'	Wet	60"	SP	Medium to coarse sand	
66	0.0							
67	0.0							
68	0.0							
69	0.0							
70	0.0		70-75'	Wet	60'	SP	Medium to coarse sand	
71	0.0							
72	0.0							
73	0.0							
74	0.0							
75	0.0		75-80'	Wet	60'	SP	Medium to coarse sand	
76	0.0							
77	0.0							
78	0.0							
79	0.0							
80	0.0		80-85'	Wet	60'	SP	Light brown silty sand	
81	0.0							
82	0.0							
83	0.0	SB-19 (83-85')						
84	0.0							
85							End of boring at 80 feet	

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-20**	
	Site Address: 318 Nevins Street		
	Weather: Rain, 50		
	Geologist: AK	Total Depth: 80'	
Start Date: 10/3/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 10/3/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56788.64N,300972.64E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0	SB-20 (0-2)	0-5	Dry	60"	SP/ML/Fill	Black and brown silty sand with brick fragments, wood with odors at 5', limited recovery	
	0							
2	0							
3	0	SB-20 (3-5)						
4	300							
5	32		5-10'	Wet	60"	ML	Stained silty sand	
6	56	SB-20 (6-8)						
7	80							
8	20							
9	15							
10	20		10-15'	Wet	60"	ML	Silt, stained to Gray, with litte to trace clay	
11	6.8							
12	1.5							
13	2.6							
14	3							
15	1.5		15-20'	Wet	60"	ML/CL	Silty clay transition to gray clay @17.5	
16	0.8							
17	0.6							
18	0							
19	0							
20	1.2		20-25'	Wet	60"	CL	Gray clay, lean, low plasticity	
21	0.6							
22	0							
23	0.5							
24	0							

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-20**	
	Site Address: 318 Nevins Street		
	Weather: Rain, 50		
	Geologist: AK	Total Depth: 80'	
Start Date: 10/3/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 10/3/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56788.64N,300972.64E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
25	0							

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-20**	
	Site Address: 318 Nevins Street		
	Weather: Rain, 50		
	Geologist: AK	Total Depth: 80'	
Start Date: 10/3/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 10/3/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56788.64N,300972.64E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
25								
26	0							
27	0							
28	0		25-30"	Wet	20"	SP	Brown medium to coarse sand	
29	0							
30	0							
31	0							
32	0		30-35'	Wet	60"	SP	Brown medium to coarse sand	
33	0							
34	0							
35	0							
36	0							
37	0		35-40'	Wet	60"	SP	Brown medium to coarse sand	
38	0							
39	0							
40	0							
41	0							
42	0		40-45'	Wet	60"	SP	Brown medium to coarse sand	
43	0							
44	0							
45	0							
46	0							
47	0		45-50'	Wet	60"	SP	Brown medium to coarse sand	
48	0							
49	0							

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-20**	
	Site Address: 318 Nevins Street		
	Weather: Rain, 50		
	Geologist: AK	Total Depth: 80'	
Start Date: 10/3/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 10/3/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56788.64N,300972.64E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
50	0							

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-20**	
	Site Address: 318 Nevins Street		
	Weather: Rain, 50		
	Geologist: AK	Total Depth: 80'	
Start Date: 10/3/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 10/3/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56788.64N,300972.64E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
50	0		50-55'	Wet	60"	SP	Brown medium to coarse sand	
51	0							
52	0							
53	0							
54	0							
55	0		55-60'	Wet	60"	SP	Coarse sand	
56	0							
57	0							
58	0							
59	0							
60	0		60-65'	Wet	60"	SP	Coarse sand	
61	0							
62	0							
63	0							
64	0							
65	0		65-70'	Wet	60"	SP	Coarse sand	
66	0							
67	0							
68	0							
69	0							
70	0		70-75'	Wet	60'	SP	Fine brown silty sand	
71	0							
72	0							
73	0							
74	0							
75								

SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-20**	
	Site Address: 318 Nevins Street		
	Weather: Rain, 50		
	Geologist: AK	Total Depth: 80'	
Start Date: 10/3/22	Drilling Company: PG	GW: 6-7'	
Start Time: 7:00	Driller: Orlando		
Completion Date: 10/3/22	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 3:00	Sampler Type/Len: Dual Tube	56788.64N,300972.64E	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
76	0		75-80'	Wet	60'	SP	Fine brown silty sand	SB-DUP-1/ SB-20 (78-80)
77	0							
78	0							
79	0	SB-20 (78-80)						
80	0							
							End of boring at 80 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Gravels (more than 50% of coarse fraction larger than No. 4 sieve size)	GW GP GM GC
Sands (50% or more of coarse fraction smaller than No. 4 sieve size)	SW SP SM SC
Silts and Clays (liquid limit less than 50%)	ML CL OL
Silts and clays (liquid limit 50% or greater)	MH CH OH
Highly organic soils	PT

SOIL BORING LOG

Unified Soil Classification System

Coarse-Grained Soils (More than 50% pf material is larger than No. 200 sieve size)

Clean Gravel (less than 5% fines)

Well-graded gravels,gravel-sand mixtures, little or no fines

Poorly-graded gravels, granvel-sand mixtures, little or no fines

Gravels with fines (more than 12% fines)

Silty Gravels, gravel-sand-silt-mixtures

Clayey gravels, gravel-sand-clay mixtures

Clean Sands (Less than 5% fines)

Well-graded sands, gravelly sands, little or no fines

Poorly graded sands, gravelly sands, little or no fines

Sands with fines (more than 12% fines)

Silty sands, sand-silt mixtures

Slayey sands, sand-clay mixtures

Fine-Grained Soils (50% or more of material is smaller than No. 20 sieve size)

Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity

Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays

Organic silts and organic silt clays of low plasticity

Inorganic silts, micaetous or diatomaceous fine sandy or silty soils, elastic silts

Inorganic clays of high plasticity, fat clays

Organic clays of medium to high plasticity, organic silts

Peat and other highly organic soils

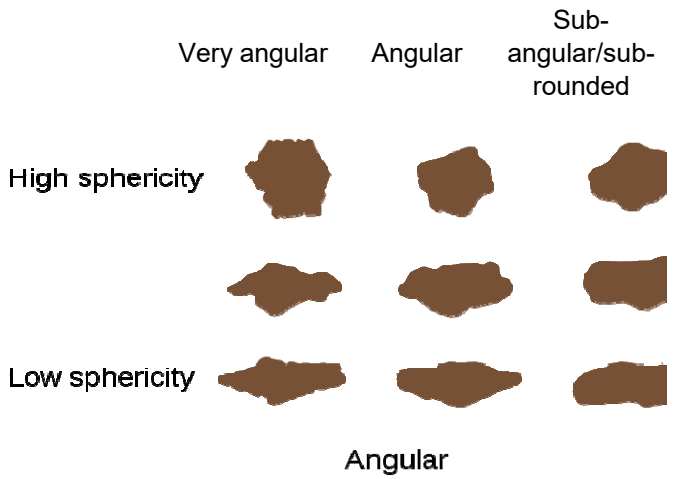
SOIL BORING LOG

Determine percentages of sand and gravel. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5% fines	GW,GP,SW,SP
More than 12% fines	GM,GC,SM,SC
5 to 12 % fines	borderline case requiring Dual symbols

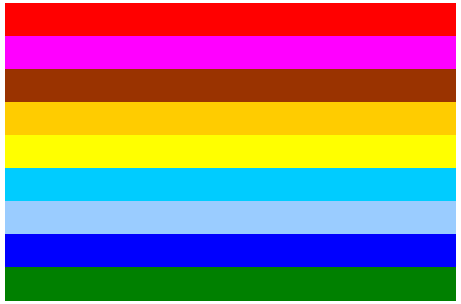
Field Descriptions of Samples for Former Manufactured Gas Plant Sites

[Coarse Grained Example]	NARROWLY GRADED SAND (SP); mostly fine sand; <5% fines; red-brown, moist.
[Fine Grained Example]	SANDY SILT (ML); heterogeneous till structure, nonplastic, ~30% fine to coarse, subangular sand; ~10% subangular fine gravel, max size ~10 mm, brown



BLEBS	spericals of tar/free product-but predominantly the soil matrix is not visibly contaminated or saturated.
Purifier Material	brown/rust or blue/green wood chips or granular material. Associated with a distinctive sulfur-like odor

tar saturated
Coated Material, Lenses
Hardened Tar
Blebs, Globs, Sheen
Staining, Odor
petroleum impacts saturation & sheens
Petroleum Impacts Staining & Odors
Purifier Waste and Odor
No observed Impacts



rounded well-rounded



Rounded

Typically residual product.
. Other colors possible

SOIL BORING LOG

Impact Environmental 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-16-E1**	
	Weather: Clear, 37, overcast		
	Geologist: AK	Total Depth: 60'	
Start Date: 1/10/23	Drilling Company: PG	GW: 6-7'	
Start Time: 8:00	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/10/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0.0		0-5	Dry	40''	Fill/ML	Brown fine silty sand with gravel and brick fragments/crushed	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	15.0		5-10'	Moist	60''	Fill/ML	5-8 Dark gray silt with an interval of wood pieces @ 5.5, trace wood pieces at 7' 8-10 gray silt with clay, trace gravel, little sand	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60''	CL	10-12.5 gray clay with some silt, peat (roots) interval @ 12' 12.5-15 Gray clay	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60''	CL	Gray clay, peat (roots) 3'' @20'	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	60''	CL/ML	20-21 Peat (roots) 21-23 gray clay 23-25 Blue gray silty clay, compact	
21	0.0							
22	0.0							
23	0.0							
24	0.0							
25								

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SOIL BORING LOG

25								
26	0.0							
	0.0							
27	0.0		25-30''	Wet	60''	ML	Fine gray sand and silt	
28	0.0							
29	0.0							
30	0.0							
	0.0							
31	0.0							
32	0.0		30-35'	Wet	60''	SP	Brown fine sand	
33	0.0							
34	0.0							
35	0.0							
36	0.0							
37	0.0		35-40'	Wet	60''	SP	Brown-dark brown fine sand with trace pebbles	
38	0.0							
39	0.0							
40	0.0							
41	0.0							
42	0.0		40-45'	Wet	60''	SP	Medium brown sand	
43	0.0							
44	0.0							
45	0.0							
46	0.0							
47	0.0		45-50'	Wet	60''	SP	Medium- Coarse brown sand	
48	0.0							
49	0.0							
50	0.0							
51	0.0							
52	0.0		50-55'	Wet	60''	SP	Coarse brown sand	
53	0.0							
54	0.0							
55	0.0							
56	0.0							
57	0.0		55-60'	Wet	60''	SP	Medium brown sand	
58	0.0							
59	0.0							
60							End of boring at 60 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-16-N1**	
	Site Address: 318 Nevins Street		
	Weather: Clear, 36, overcast		
	Geologist: AK	Total Depth: 60'	
Start Date: 1/11/23	Drilling Company: PG	GW: 6-7'	
Start Time: 8:00	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/11/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 13:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0.0		0-5	Dry	35"	Fill/ML	Dark brown silty sand with brick fragments and gravel	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	35"	Fill ML/CL	Dark brown silt with some clay, brick fragments and gravel 1" interval of wood at 7'	
6	15.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	45"	Fill/ML	Dark brown silt and clay with gravel	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	40"	Fill/ML	Gray silty clay with some gravel	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	60"	CL/SP	20-21': Meadow mat:peat and roots, slight organic odor 21-24' Gray clay 24-25' Gray fine sand	
21	0.0							
22	0.0							
23	0.0							
24	0.0							
25								

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SOIL BORING LOG

25	0.0		25-30"	Wet	60"	SP	Gray fine sand	
26	0.0							
27	0.0							
28	0.0							
29	0.0							
30	6.0		30-35'	Wet	60"	SP	Gray fine sand with sheen, coal tar coated liner, slight napthalene-like odor. 34-35' heavily coated grains of fine sand	
31	7.9							
32	13.8							
33	47.3	SB-16-N1 (34-35) 9:40						
34	115.2							
35	9.6		35-40'	Wet	60"	SP	35-37' Brown fine sand with trace silt, trace sheen 37-40' tan to brown fine sand	
36	8.2							
37	6.7	SB-16-N1 (37-38) 10:30						
38	4.9							
39	1.4							
40	0.0		40-45'	Wet	60"	SP	Brown medium sand	
41	0.0							
42	0.0							
43	0.0							
44	0.0							
45	-		45-50'	N/A	N/A	N/A	No recovery	
46	-							
47	-							
48	-							
49	-							
50	0.0		50-55'	Wet	60"	SP	Brown course sand	
51	0.0							
52	0.0							
53	0.0							
54	0.0							
55	0.0		55-60'	Wet	60"	SP	Brown Course sand	
56	0.0							
57	0.0							
58	0.0							
59	0.0							
60							End of boring at 60 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-16-S1**	
	Site Address: 318 Nevins Street		
	Weather: Clear, 36, overcast		
	Geologist: AK	Total Depth: 60'	
Start Date: 1/11/23	Drilling Company: PG	GW: 6-7'	
Start Time: 8:00	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/11/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 13:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Moist	30"	Fill/ML	Brown silty sand with gravel	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	30"	Fill/ML	Brown silty clay with gravel	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	45"	Fill (Wood)	95% wood recovered, limited gravel	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	50"	Fill/CL	15-18' Silt with wood and gravel 18-20' Gray clay	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	48.0		20-25'	Wet	60"	CL	20-21' Meadow mat: peat, roots, organic/sulfur odor throughout, wood fragment at 21' 21-25' Gray clay with trace silt	
21	45.0							
22	32.0							
23	28.0							
24	9.0							
25								

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SOIL BORING LOG

25								
26	0.0							
	0.0							
27	0.0		25-30"	Wet	60"	SP	Gray fine sand	
28	0.0							
29	0.0							
30	0.0							
31	0.0							
	0.0							
32	0.0		30-35'	Wet	60"	SP	Gray fine sand	
33	0.0							
34	0.0							
35	0.0							
36	0.0							
	0.0						35-36' Gray silt and fine sand with some clay	
37	0.0		35-40'	Wet	60"	SP	36-39.5' Brown medium-course sand	
38	0.0						39.5-40' Brown silt and clay	
39	0.0							
40	0.0							
41	0.0							
	0.0							
42	0.0		40-45'	Wet	60"	SP	Brown course sand	
43	0.0							
44	0.0							
45	0.0							
46	0.0							
	0.0							
47	0.0		45-50'	Wet	60"	SP	Brown course sand, trace sheen 49-50'	
48	0.0							
49	0.0							
50	11.2	SB-16-N1 (50-51) 11:15						
51	7.9							
	6.4		50-55'	Wet	50"	SP	Blebs on liner, trace napthalene-like odor	
52	9.8						Brown course sand, sheen in portion of liner not recovered	
53	15.9							
54	0.0	SB-16-N1 (55-56) 12:30						
55	0.0							
	0.0		55-60'	Wet	60"	SP	Brown coarse sand	
56	0.0							
57	0.0							
58	0.0							
59							End of boring at 60 feet	
60								

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977		**Boring ID:**
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street		**SB-16-N1E1**
	Weather: Clear, 36, rain		
	Geologist: AK		Total Depth: 45'
Start Date: 1/12/23	Drilling Company: PG		GW: 6-7'
Start Time: 10:15	Driller: Orlando		GW Stabilized: N/A
Completion Date: 1/12/23	Drill Rig: 7822 DT		GPS Coordinates:
Completion Time: 13:00	Sampler Type/Len: Dual tube		X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0.0		0-5	Dry	35''	Fill/ML	Brown silt and sand with crushed brick fragments and gravel.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	50''	Fill/ ML	5-7': Brown silty sand with gravel. 7-8': Wood. 8-10': Gray silt with some clay and gravel.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60''	Fill/ML	10-13': Gray silty sand with gravel. 13-15': Gray clay with roots, faint organic odor at 14-15'.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60''	Fill/ML/PT	15-16': Gray silt with some clay. 16-20': Gray clay, peat and roots for 1" at 20'.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	1.3		20-25'	Wet	60''	PT/CL/SP	20-21': 4-inches of peat, roots and gray clay. 21-24': Gray/blue clay with trace fine sand. 24-25':Gray fine sand.	
21	1.1							
22	0.0							
23	0.0							
24	0.0							

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SOIL BORING LOG

25	0.0								
26	0.0								
27	0.0		25-30''	Wet	60''	SP	Gray fine sand with some silt.		
28	0.0								
29	0.0								
30	0.0								
31	0.0								
32	0.0		30-35'	Wet	60''	SP	Brown fine sand.		
33	0.0								
34	0.0								
35	0.0								
36	0.0								
37	0.0		35-40'	Wet	60''	SP	Brown fine sand.		
38	0.0								
39	0.0								
40	0.0								
41	0.0								
42	0.0		40-45'	Wet	60''	SP	Brown fine sand.		
43	0.0								
44	0.0								
45							End of boring at 45 feet		

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-16-N2**	
	Weather: Clear, 36, rain		
	Geologist: AK	Total Depth: 45'	
Start Date: 1/12/23	Drilling Company: PG	GW: 6-7'	
Start Time: 13:00	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/12/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 11:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0.0		0-5	Dry	40''	Fill/ML	0-2': Brown silty sand. 2-5': Wood, odor.	
	0.0							
2	150.0							
3	98.3							
4	85.3							
5	0.0		5-10'	Wet	50''	Fill ML/CL	Brown/gray silty clay with trace sand and brick fragments. 9-10': Gravel and wood.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	50''	Fill/ML	Dark gray silty clay, trace brick fragments.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	45''	Fill/ML	Gray silt with trace clay, large gravel, trace brick fragments.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	50''	CL/SP/PT	Gray/blue clay with trace silt and fine sand, at 20', 4" of peat roots. 24-25': Gray fine sand.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							

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SOIL BORING LOG

25	0.0								
26	0.0								
27	0.0		25-30''	Wet	45''	SP	Gray fine sand.		
28	0.0								
29	0.0								
30	0.0								
31	0.0								
32	0.0		30-35'	Wet	40''	SP	Gray fine sand.		
33	0.0								
34	0.0								
35	0.0								
36	0.0								
37	0.0		35-40'	Wet	60''	SP	Brown/tan fine sand.		
38	0.0								
39	0.0								
40	0.0								
41	0.0								
42	0.0		40-45'	Wet	50''	SP	Brown/tan fine sand.		
43	0.0								
44	0.0								
45	0.0								
							End of boring at 45 feet		

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-16-S1E1**	
	Weather: Clear, 36, rain		
	Geologist: AK	Total Depth: 60'	
Start Date: 1/12/23	Drilling Company: PG	GW: 6-7'	
Start Time: 11:30	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/12/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:30	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0.0		0-5	Dry	60''	Fill/ML	Brown silty sand with crushed brick, gravel and concrete.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	60''	Fill ML/CL	Brown-dark brown silty sand with wood, gravel and brick. 8-10': Dark brown clay.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60''	Fill/ML/PT	10-11': Gravel and silty clay. 11-12': Peat, roots, faint organic odor. 12-15': Gray clay with roots.	
11	4.3							
12	2.7							
13	0.0							
14	0.0							
15	-		15-20'	N/A	N/A	N/A	No recovery.	
16	-							
17	-							
18	-							
19	-							
20	0.0		20-25'	Wet	60''	CL/SP	20-21': Dark brown peat, roots, faint organic odor. 21-22': Gray blue clay and silt. 22-25': Gray blue fine sand.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							
25	0.0							

SOIL BORING LOG

26	0.0							
27	0.0		25-30''	Wet	50''	SP	Gray clay with silt and fine sand.	
28	0.0							
29	0.0							
30	0.0							
31	0.0							
32	0.0		30-35'	Wet	50''	SP	Brown fine sand.	
33	0.0							
34	0.0							
35	0.0							
36	0.0							
37	0.0		35-40'	Wet	60''	SP	Dark brown fine to medium sand.	
38	0.0							
39	0.0							
40	0.0							
41	0.0							
42	0.0		40-45'	Wet	60''	SP	Brown fine to medium sand.	
43	0.0							
44	0.0							
45	0.0							
46	0.0							
47	0.0		45-50'	Wet	20''	SP/GP	Brown course sand.	
48	0.0							
49	0.0							
50	0.0							
51	0.0							
52	0.0		50-55'	Wet	60''	SP	Brown course sand.	
53	0.0							
54	0.0							
55	0.0							
56	0.0							
57	0.0		55-60'	Wet	60''	SP	Brown fine sand.	
58	0.0							
59	0.0							
60							End of boring at 60 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

SOIL BORING LOG

Impact Environmental , Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-S2**
	Weather: Clear, 36, rain	
	Geologist: AK	Total Depth: 60'
Start Date: 1/12/23	Drilling Company: PG	GW: 6-7'
Start Time: 13:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/12/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 11:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0.0		0-5	Moist	50''	Fill/ML	Brown/dark brown silty sand with glass, gravel and asphault pieces.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	45''	Fill ML/CL	5-7': Brown-dark brown silty sand. 7-9': Gray clay with large gravel. 9-10': Gray silty sand and crushed rock.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	45''	Fill/ML	Brown fine silty sand and clay with large gravel.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	30''	Fill/ML	Gray silt with clay, wood pieces.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	12''	CL/SP/PT	Gray blue clay with trace silt and fine sand, 4" of peat and roots at 20'.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							
25	0.0							

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SOIL BORING LOG

26	0.0							
27	0.0		25-30''	Wet	50''	SP	25-27': Gray fine sand with trace silt.	
28	0.0						27-30': Gray fine sand.	
29	0.0							
30	0.0							
31	0.0		30-35'	Wet	45''	SP	Gray fine sand.	
32	0.0							
33	0.0							
34	0.0							
35	0.0							
36	0.0		35-40'	Wet	60''	SP	35-38': Brown medium to coarse sand.	
37	0.0						38-40': Tan sand with some silt.	
38	0.0							
39	0.0							
40	0.0							
41	0.0		40-45'	Wet	50''	SP	Brown medium sand.	
42	0.0							
43	0.0							
44	0.0							
45	0.0							
46	0.0		45-50'	Wet	60''	SP	Brown medium sand.	
47	0.0							
48	0.0							
49	0.0							
50	0.0							
51	0.0		50-55'	Wet	60''	SP	Brown medium to course sand.	
52	0.0							
53	0.0							
54	0.0							
55	0.0							
56	0.0		55-60'	Wet	60''	SP	Brown course sand.	
57	0.0							
58	0.0							
59	0.0							
60							End of boring at 60 feet	

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SOIL BORING LOG

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800 F. (631) 269-1599	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-16-N2E1**	
	Weather: Clear, 55, overcast		
	Geologist: AK	Total Depth: 40'	
Start Date: 1/13/23	Drilling Company: PG	GW: 6-7'	
Start Time: 7:30	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/13/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 10:30	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	Notes
1	0.0		0-5	Dry/Moist	45''	Fill/ML	Brown compact silty sand with gravel and crushed concrete.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	60''	Fill/ ML/CL	Dark gray silt with trace clay, wood pieces, faint organic odor. 8-10': Dark gray clay with silt and trace fine sand, 1'' peat and roots at 9'.	
6	0.0							
7	0.0							
8	2.7							
9	0.6							
10	0.0		10-15'	Wet	60''	ML/CL	10-12': Dark gray clay, silt and fine sand 2'' roots at 13'. 12-15': Dark gray clay with peat and roots from 14-15'.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	10''	ML	Gray clay and silt with small abundant gravel, limited recovery.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	50''	PT/ML/SP	20-21': Peat, roots and gray clay. 21-22': Gray clay. 22-24': Gray silt with fine sand and trace clay. 24-25': Gray fine sand.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							

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SOIL BORING LOG

25	0.0							
26	0.0							
27	0.0		25-30''	Wet	60''	SP	Gray fine sand with some silt.	
28	0.0							
29	0.0							
30	0.0							
31	0.0							
32	0.0		30-35'	Wet	50''	SP	Brown fine to medium sand.	
33	0.0							
34	0.0							
35	0.0							
36	0.0							
37	0.0		35-40'	Wet	55''	SP	Brown medium to course sand.	
38	0.0							
39	0.0							
40								

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-16-S2E1**
	Weather: 30, overcast	
	Geologist: AK	Total Depth: 60'
Start Date: 1/16/23	Drilling Company: PG	GW: 6-7'
Start Time: 7:30	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/16/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 12:30	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Moist	40''	Fill/ML	Brown compact silt, trace sand, gravel, crushed brick,1"wood interval at 3', faint odor.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	50''	Fill/ML	Dark brown silt with gravel. 9-10': Dark brown silt with clay.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	50''	ML/CL/PT	10-11': Dark gray silt with clay. 11-15': Dark gray clay, peat and roots at 14-15'.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60''	CL/PT	Dark gray clay, trace shell pieces, roots, peat at 19-20'.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	60''	CL	Gray-blue clay with silt.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							
25	0.0							

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SOIL BORING LOG

26	0.0							
27	0.0		25-30''	Wet	60''	SP/CL	Gray-blue fine sand with some clay.	
28	0.0							
29	0.0							
30	0.0							
31	0.0							
32	0.0		30-35'	Wet	60''	SP	Gray fine sand.	
33	0.0							
34	0.0							
35	0.0							
36	0.0							
37	0.0		35-40'	Wet	60''	SP	Brown fine to medium sand.	
38	0.0							
39	0.0							
40	0.0							
41	0.0							
42	0.0		40-45'	Wet	60''	SP	Brown fine to medium sand.	
43	0.0							
44	0.0							
45	0.0							
46	0.0							
47	0.0		45-50'	Wet	60''	SP	Brown coarse sand.	
48	0.0							
49	0.0							
50	0.0							
51	0.0							
52	0.0		50-55'	Wet	40''	GP/SP	Brown medium to coarse gravely sand.	
53	0.0							
54	0.0							
55	0.0							
56	0.0							
57	0.0		55-60'	Wet	60''	GP/SP	Brown coarse gravelly sand.	
58	0.0							
59	0.0							
60							End of boring at 60 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N1**	
	Weather: 34, sunny, NNW 8		
	Geologist: AK	Total Depth: 45'	
Start Date: 1/16/23	Drilling Company: PG	GW: 6-7'	
Start Time: 11:30	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/16/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 15:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	35	Fill/ML	Brown silty sand, asphalt, gravel and crushed brick.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	35	Fill/ML	Brown silty sand with gravel, some crushed brick.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	35	Fill/ML	Dark gray loose silt, trace clay and large gravel.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	35	Fill/CL/PT	15-16': Gray silt and gravel. 16-20': Gray clay, 3" of wood at 17', roots at 20'.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	40	CL SP	20-24': Gray clay. 24-25': Gray fine sand, moderate coating of coal tar, faint naphthalene-like odor.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							
	251.0	SB17N1						

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SOIL BORING LOG

25	251.0	(24-25)						
26	162.0		25-30''	Wet	45	ML	Gray fine sand some silt, trace clay, moderately coated in coal tar, naphthalene-like odor.	
27	154.0							
28	211.0							
29	121.0							
30	387.0							
31	27.8		30-35'	Wet	60	SP	30-32': Gray/brown fine sand.	
32	19.1							
33	12.8					CL	32-35': Light brown clay, faint naphthalene-like odor.	
34	17.5	SB17N1 (33-34)						
35	20.7							
36	21.3		35-40'	Wet	60	ML	Light brown silt/ clay, faint naphthalene-like odor.	
37	15.3							
38	35.1							
39	28.7							
40	30.8							
41	0.1		40-45'	Wet	60	SP	Brown fine-medium sand.	
42	0.0							
43	0.0							
44	0.0							
45	0.0							
							End of boring at 45 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-S1**	
	Weather: 34, sunny, NNW 8		
	Geologist: AK	Total Depth: 40'	
Start Date: 1/16/23	Drilling Company: PG	GW: 6-7'	
Start Time: 11:30	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/16/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:30	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	40''	Fill/ML	Brown-dark brown silty sand, gravel and asphalt.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	40''	Fill/ML	5-6': Dark brown silt. 6-7': Crushed brick. 7-10': Gray silt with clay and gravel.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	40''	Fill/ML	Dark gray silt with some clay and large gravel, 1" wood at 14', faint odor.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	55''	Fill/CL	15-16': Wood. 16-18': Gray silt and gravel. 18-20': Dark gray clay, trace roots at 20'.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	130.0		20-25'	Wet	60''	CL SP	20-23': Gray clay. 23-25': Gray fine sand with light coating of coal tar, faint naphthalene-like odor.	
21	127.0							
22	124.0							
23	87.0	SB-17-S1 (23-24)						
24	200.0							

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SOIL BORING LOG

25	200.0							
26	**too wet		25-30''	Wet	60''	SP	Gray fine sand, moderately coated in coal tar, naphthalene-like odor.	
27	203.0							
28	162.0							
29	148.0							
30	185.0							
31	268.0		30-35'	Wet	60''	ML	Gray fine sand and silt, coated in coal tar, naphthalene-like odor.	
32	394.0							
33	450.0							
34	175.0							
35	320.0							
36	0.0	SB-17-S1 (35-36)	35-40'	Wet	50''	CL	35-39': Brown clay, compact.	
37	0.0							
38	0.0					SP	39-40': Brown fine to medium sand.	
39	0.0							
40	0.0							
							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N1**	
	Weather: 34, sunny, NNW 8		
	Geologist: AK	Total Depth: 45'	
Start Date: 1/17/23	Drilling Company: PG	GW: 6-7'	
Start Time: 11:30	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/17/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 15:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	40	Fill/ML	Brown silty sand, crushed brick, concrete.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	55	Fill/ML	5-6': Crushed concrete and brick. 6-7': Dark gray gravel and silty sand. 7-8': Wood. 7.5 -10': Dark gray silt and sand trace clay.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	Fill/ML CL	10-11': Crushed brick and wood. 11-14': Gray compact silt and sand. 14-15': Dark gray clay with roots.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	0	N/A	No Recovery.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	40	CL/ SP/PT	20-21': Dark bronw roots and peat. 21-24': Dark gray/blue clay. 24-25': Gray/blue fine sand.	
21	0.0							
22	0.0							
23	53.0							
24	25.0							

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SOIL BORING LOG

25	25.0							
26	160.0		25-30''	Wet	50	SP	Gray/blue fine sand, trace silt.	
27	270.0							
28	385.0							
29	420.0							
30	340.0							
31	562.0		30-35'	Wet	60	SP/ML	Brown-dark brown fine sand and silt.	
32	489.0							
33	236.0							
34	320.0							
35	401.0							
36	15.0		35-40'	Wet	50	SP	Fine brown sand.	
37	7.8							
38	3.2							
39	0.5							
40	1.0							
							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N1E1**	
	Weather: 34, sunny, NNW 8		
	Geologist: AK	Total Depth: 40'	
Start Date: 1/17/23	Drilling Company: PG	GW: 6-7'	
Start Time: 8:00	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/17/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 11:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	50	Fill	Dark brown silty sand, crushed brickand concrete.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	55	Fill/ML	5-6': Crushed brick, bottom 3'' wood, faint odor. 6-10': Dark gray silty sand with gravel.	
6	34.0							
7	mojfj							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	CL	Brown/gray clay with roots throughout.	
a 11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	Gray clay with roots.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	60	ML/SP	20-21': Gray/blue clay. 21-25': Gray/blue clay with silt and fine sand, light-moderately coated in coal tar starting at 23', naphthalene-like odor.	
21	0.0							
22	0.0							
23	405.0	SB17-N1E1 (23-25)						
24	287.0							

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SOIL BORING LOG

25	287.0							
26	207.0		25-30''	Wet	50	ML	Gray fine sand and silt,moderately coated in coal tar.	
27	184.0							
28	275.0							
29	**too wet							
30	**too wet							
31	45.0		30-35'	Wet	60	ML	30-32': Brown fine sand, sheen and very trace blebs	
32	52.0							
33	1.5					CL	32-35': Brown finesand, transistions to brown clay.	
34	0.0	SB17-N1E1 (33-35)						
35	0.0							
36	5.3		35-40'	Wet	50	CL	35-36': Brown clay.	
37	11.2							
38	15.0					SP	36-40': Brown fien to medium sand.	
39	10.0							
40	8.6							
41	0.0		40-45'	Wet	55	CL/SP	Brown clay and fine sand.	
42	0.0							
43	0.0							
44	0.0							
45	0.0							
							End of boring at 45 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S1E1**
	Weather: 34, sunny, NNW 8	
	Geologist: AK	Total Depth: 40'
Start Date: 1/17/23	Drilling Company: PG	GW: 6-7'
Start Time: 8:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/17/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 11:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	15	Fill/ML	Brown silt and crushed brick. 2-5': Concrete, crushed.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	60	Fill/ML	Dark gray silt with gravel and crushed brick, 2'' wood at 6'. 9.5-10': Gray clay with roots.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	CL	Gray clay with roots.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL/PT	Gray clay. 19-20': Dark brown roots and peat.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	60	CL SP	20-22.5': Gray clay. 22.5-24': Gray/blue clay. 24-25 Gray fine sand.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							

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SOIL BORING LOG

25	0.0							
26	1.5							
27	0.5		25-30''	Wet	50	SP/ML	Fine gray sand, blebs, sheen	
28	1.9	SB17-S1E1 (28-30)						
29	0.9							
30	240.0							
31	134.0							
32	85.0		30-35'	Wet	60	ML	Gray silt with trace fone sand, moderately coated in coal tar, naphthalene-like odor	
33	45.0							
34	16.0							
35	0.0	SB17-S1E1 (35-37)						
36	0.0							
37	0.0		35-40'	Wet	60	SP	Brown medium sand.	
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-17-N1**	
	Site Address: 318 Nevins Street		
	Weather: 34, sunny, NNW 8		
	Geologist: AK	Total Depth: 45'	
Start Date: 1/17/23	Drilling Company: PG	GW: 6-7'	
Start Time: 11:30	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/17/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 15:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	35	Fill/ML	Bown silt and sand, crushed brick, some gravel and asphalt pieces.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	30	Fill/ML	Bown silt and sand, crushed brick, some gravel and asphalt pieces.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	35	Fill/CL	Dark brown clay with large gravel.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	35	CL	Dark brown clay, bottom foot wood.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	50	CL ML	20-23': Gray/blue clay. 23-25': Gray/blue silt and clay, last foot lightly coated in coal tar, last 2'' fine gray blue sand.	
21	0.0							
22	0.0							
23	0.0							
24	53.0	17S2 (23-25)						
	25.0							

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SOIL BORING LOG

25	160.0		25-30''	Wet	60	ML	Gray/blue silty sand, heavily coated/saturated in coal tar, naphthalene-like odor.	
26	270.0							
27	385.0							
28	420.0							
29	340.0							
30	562.0		30-35'	Wet	60	ML	Gray fine sand and silt, liner is fully saturated in coal tar, naphthalene-like odor.	
31	489.0							
32	236.0							
33	320.0							
34	401.0							
35	15.0	17S2 (35-37)	35-40'	Wet	50	CL	35-39': Brown clay.	
36	7.8							
37	3.2					SP	39-40': Brown medium sand.	
38	0.5							
39	1.0							
40	0.0		40-45'	Wet	60	SP	Brown medium to course sand.	
41	0.0							
42	0.0							
43	0.0							
44	0.0							
45							End of boring at 45 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N1E2**	
	Weather: 34, sunny, NNW 8		
	Geologist: AK	Total Depth: 45'	
Start Date: 1/18/23	Drilling Company: PG	GW: 6-7'	
Start Time: 9:30	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/18/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 12:30	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	Fill/ML	Brown silt and sand, gravel, asphalt, crushed brick.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	60	Fill/ML	5-8': Brown silt and sant and crushed concrete. 8-10': Brown silt and sand little clay, gravel.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	Fill/ML	Darkb brown silt with gravel.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL/PT	15-19': Gray clay. 19-20': Roots and peat.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	60	CL SP	20-23' Gray clay, some roots. 23-25': Gray-blue fine sand, lightly coated in coal tar, lenses, naphthalene-like odor.	
21	0.0							
22	0.0							
23	0.0							
24	294.0	SB17 N1E2 (23-25)						
	320.0							

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SOIL BORING LOG

25	320.0	(25-25)						
26	297.0		25-30''	Wet	60	SP	25-29': Gray fine sand, blebs of coal tar. 29-30': Gray/blue fine sand,lightly coated in coal tar, naphthalene-like odor.	
27	311.0							
28	218.0							
29	28.2							
30	25.0							
31	0.0	SB17 N1E2 (30-31)	30-35'	Wet	60	SP CL	30-31': Brown fine sand. 31-35': Brown clay, some silt.	
32	0.0							
33	0.0							
34	0.0							
35	0.0							
36	0.0		35-40'	Wet	60	SP CL	35-39': Brown fine sand. 39-40': Brown clay.	
37	0.0							
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N2**
	Weather: 34, sunny, NNW 8	
	Geologist: AK	Total Depth: 45'
Start Date: 1/17/23	Drilling Company: PG	GW: 6-7'
Start Time: 13:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/18/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 9:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry Moist	40	Fill/ML	Dark brown silt with some sand, crushed brick and gravel.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	40	Fill/ML CL	Brown silt and crushed brick, 1'' wood at 10'.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	50	Fill/CL	10-14': Dark brown clay and silt 14-15': Wood.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL/PT	15-19': Gray clay with some silt. 19-20': Roots, peat, faint organic odor.	
16	0.0							
17	0.0							
18	65.0							
19	86.0							
20	0.0		20-25'	Wet	50	CL SP	20-21': Gray clay and silt. 21-24;: Gray-blue clay. 24-25': Gray-blue fine sand, moderately coated in coal tar, naphthalene -like odor.	
21	0.0							
22	14.0							
23	33.0	SB17N2 (24-25)						
24	260.0							

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SOIL BORING LOG

25	260.0							
26	545.0		25-30''	Wet	60	SP	Brown fine sand, moderately coated in coal tar, naphthalene-like odor.	
27	312.0							
28	253.0							
29	184.0							
30	93.0							
31	-		30-35'	Wet	0	N/A	No Recovery.	
32	-							
33	-							
34	-							
35	-							
36	0.0	SB17N2 (35-37)	35-40'	Wet	60	SP	Brown fine sand.	
37	0.0							
38	0.0							
39	0.0							
40	0.0							
							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N3**	
	Weather:		
	Geologist: AK	Total Depth: 45'	
Start Date: 1/18/23	Drilling Company: PG	GW: 6-7'	
Start Time: 12:30	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/18/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	40	Fill/ML	Dark brown silt and sand with crushed brick, concrete, gravel.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	45	Fill/ML	Dark brown silt and sand with gravel, bottom foot wood.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	24	Fill	Gray silt and large gravel.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	45	CL/PT	15-16': Gray silt. 16-17': Gray clay. 17-20': Roots and peat, organic odor.	
16	43.0							
17	68.0							
18	57.0							
19	65.0							
20	0.0		20-25'	Wet	40	CL SP	20-23': Gray/blue clay. 23-25': Gray/blue fine sand, lightly coated in coal tar, naphthalene-like odor.	
21	0.0							
22	185.0							
23	240.0	SB17N3 (23-25)						
24	361.0							

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SOIL BORING LOG

25	381.0		25-30''	Wet	60	SP	Brown/tan fine sand, heavily coated/saturated in coal tar, naphthalene-like odor.	
26	432.0							
27	560.0							
28	479.0							
29	521.0							
30	87.0		30-35'	Wet	60	SP/CL	Brown fine sand, lightly to moderatley coated in coal tan, naphthalene-like odor. 33-35':Brown clay.	
31	91.0							
32	102.0							
33	4.3	SB17N3 (33-35)						
34	2.8							
35	0.0		35-40'	Wet	60	SP	35-36': Brown fine to medium sand.	
36	0.0					CL	36-38': Brown clay.	
37	0.0					SP	38-40': Brown fine to medium sand.	
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental , Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-S1E2**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/18/23	Drilling Company: PG	GW: 6-7'
Start Time: 10:00	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/18/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 12:30	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	40	Fill	0-4': Concrete and crushed brick. 4-5': Wood.	
2	0.0							
3	0.0							
4	0.0							
5	0.0							
6	0.0		5-10'	Wet	45	Fill/ML	Dark brown soil and sandm crushed brick and gravel.	
7	0.0							
8	0.0							
9	0.0							
10	0.0							
11	0.0		10-15'	Wet	50	Fill/PT CL	10-12': Gray silt and gravel. 12-12.5': Roots and peat. 12.5-13': Dark brown clay. 13-1':5 Gray clay with roots.	
12	0.0							
13	0.0							
14	0.0							
15	0.0							
16	0.0		15-20'	Wet	60	CL	Gray clay with roots.	
17	0.0							
18	0.0							
19	0.0							
20	0.0							
21	0.0		20-25'	Wet	60	CL	20-21': Gray clay with roots. 21-24': Gray/blue clay.	
22	0.0							
23	0.0							
24	0.0							

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SOIL BORING LOG

25	0.0							
26	0.0							
27	0.0		25-30''	Wet	60	CL	25-29': Gray/blue clay with silt.	
28	0.0					SP	29-30': Brown fine sand.	
29	0.0							
30	1.5							
31	12.8							
32	15.2	SB17 S1E2 (32-34)	30-35'	Wet	60	SP	Brown fine sand, blebs and sheen, faint naphthalene-like odor.	
33	25.0							
34	13.6							
35	0.0	SB17 S1E2 (35-37)						
36	0.0							
37	0.0		35-40'	Wet	60	SP	Brown medium sand.	
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N1E3**	
	Weather:		
	Geologist: AK	Total Depth: 45'	
Start Date: 1/18/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/19/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	50	Fill	0-4': Concrete, crushed brick, trace wood at 4'. 4-5': Brown silt and sand.	
2	0.0							
3	0.0							
4	0.0							
5	0.0							
6	0.0		5-10'	Wet	60	Fill/ML	6-9': Gray silt with little sand, abundant gravel. 9-10': Dark gray clay.	
7	0.0							
8	0.0							
9	0.0							
10	0.0							
11	0.0		10-15'	Wet	60	Fill/ML CL	10-12': Gray silt and sand with gravel. 12-15': Gray clay with roots throughout.	
12	0.0							
13	0.0							
14	0.0							
15	0.0							
16	0.0		15-20'	Wet	60	Fill/ML CL PT	15-16': Gray silt with abundant gravel 16-20': Gray clay with roots. 19-20': Roots and peat, faint organic odor.	
17	0.0							
18	0.0							
19	0.0							
20	0.0							
21	0.0		20-25'	Wet	60	CL SP	20-20.5': Roots. 20.5-22': Gray clay. 22-25': Brown fine sand with silt, coal tar lense at 23-24', faint naphthalene-like odors.	
22	85.0	SB17 N1E3 (22-24)						
23	57.0							
24	21.0							

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SOIL BORING LOG

25	21.0							
26	15.0		25-30''	Wet	60	SP	Brown fine sand, sheen 25-27', faint naphthalene odor.	
27	4.0							
28	3.8							
29	5.0	SB17 N1E3 (28-30)						
30	0.0							
31	0.0		30-35'	Wet	60	SP	30-33': Brown fine sand.	
32	0.0							
33	0.0					CL	33-35': Brown clay.	
34	0.0							
35	0.0							
36	0.0		35-40'	Wet	60	SP	35-36': Brown fine to medium sand.	
37	0.0					CL	36-38': Brown clay.	
38	0.0					SP	38-40': Brown fine to medium sand.	
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N1E4**	
	Weather:		
	Geologist: AK	Total Depth: 45'	
Start Date: 1/19/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/19/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	Fill	0-1': Concrete. 1-5': Brown silt and sand with crushed brick, asphalt and gravel.	
2	0.0							
3	0.0							
4	0.0							
5	0.0							
6	0.0		5-10'	Wet	60	Fill/ML /CL	5-7': Brown silt and sand. 7-8': Concrete and gravel. 8-10': Brown silt and clay.	
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	30	Fill/ML	Gray silt some clay and gravel.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	15-16': Gray silt and clay. 16-20': Gray clay with roots.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	60	SP/PT	20-21': Roots and peat. 21-22': Brown clay. 22-23': Gray/blue clay. 23-25': Gray/blue fine sand.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							

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SOIL BORING LOG

25	0.0							
26	0.0						25-27': Brown fine sand and silt.	
27	0.0		25-30''	Wet	60	ML	27-28': Dark brown silt, trace fine sand.	
28	0.0					CL	28-30': Brown clay and silt.	
29	0.0							
30	0.0							
31	0.0							
32	0.0		30-35'	Wet	60	CL	Brown silty clay.	
33	0.0							
34	0.0							
35	0.0							
36	0.0							
37	0.0		35-40'	Wet	60	SP	35-38': Brown medium to course sand.	
38	0.0					CL	38-40': Brown clay.	
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N4**	
	Weather:		
	Geologist: AK	Total Depth: 45'	
Start Date: 1/19/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/19/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	Fill/ML	Brown silt and sand, asphalt, gravel, trace crushed brick.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	45	Fill/ML	Gray silt, concrete, little gravel and clay.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	45	Fill/CL	Gray clay with roots, 4'' wood at 14'.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	55	CL	15-18': Gray clay and silt. 18-20': Gray clay with roots.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	-		20-25'	Wet	4''	CL	Limited recovery. Light gray clay.	
21	-							
22	0.0							
23	-							
24	-							

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SOIL BORING LOG

25	-							
26	-							
27	-	SB17					Limited recovery.	
28	180.0	N4	25-30''	Wet	4''	SP	Brown fine sand, coated in coal tar, naphthalene-like odor.	
29	-	25-30						
30	-							
31	0.0							
32	0.0							
33	0.0		30-35'	Wet	60	SP	Brown clay.	
34	0.0							
35	0.0							
36	35.2							
37	40.1							
38	23.8		35-40'	Wet	60	SP	Brown fine-medium sand, trace sheen	
39	15.7	SB17						
40	10.2	N4						
41	3.8	38-40						
42	4.3							
43	1.5		40-45'	Wet	60	SP	Brown medium sand.	
44	0.7							
45	0.0							
							End of boring at 45 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N5**	
	Weather:		
	Geologist: AK	Total Depth: 45'	
Start Date: 1/19/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/19/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	55	Fill/ML	Dark brown silt and sand with crushed brick and gravel.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	30	Fill/ML	Dark brown silt and sand with gravel. 7-10': Concrete.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	45	Fill/ML CL	Brown fine sand and silt with gravel. Brown silty clay and gravel.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	50	CL/PT	Gray clay with 2'' wood at 16.5'. 19-20': Roots and peat.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	-		20-25'	Wet	3''	ML	Little to no recovery. Brown silt and fine sand, faint naphthalene-like odor.	
21	-							
22	150.0							
23	-							
24	-							

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SOIL BORING LOG

25	-							
26	452.0	SB17 N5 (25-27)	25-30''	Wet	60	ML/CL	Brown silt and clay, seen to coated in coal tar, naphthalene-like odor.	
27	540.0							
28	387.0							
29	365.0							
30	243.0							
31	50.0		30-35'	Wet	60	ML/CL	Brown clay and silt, trace sheen.	
32	48.7							
33	15.4							
34	10.3	SB17 N5 (33-35)						
35	11.1							
36	0.0		35-40'	Wet	60	CL	35-37': Brown clay.	
37	0.0							
38	0.0					SP	37-40': Brown medium sand.	
39	0.0							
40	0.0							
							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-17-N6**	
	Site Address: 318 Nevins Street		
	Weather:		
	Geologist: AK	Total Depth: 45'	
Start Date: 1/19/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/19/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Moist	55	Fill	Brown silt and sand with gravel, concrete and crushed brick.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	45	Fill/ML	5-9': Brown silty sand and gravel. 9-10': Brown silt trace clay.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	45	CL	Gray clay.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15			15-20'	Wet	50	CL	15-18': Gray clay. 18-20': Roots.	
16								
17								
18								
19								
20	150.0		20-25'	Wet	40	SP	Gray/blue silt and fine sand, coated, naphthalene-like odor.	
21	224.0							
22	382.0							
23	245.0	SB17 N6 (23-35)						
24	250.0							

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SOIL BORING LOG

25	250.0	(25-35)						
26	-		25-30''	N/A	0	N/A	No recovery.	
27	-							
28	-							
29	-							
30	-							
31	471.0		30-35'	Wet	60	SP	Brown fine sand, saturated in coal tar, naphthalene-like odor.	
32	532.0							
33	373.0							
34	405.0							
35	420.0							
36	32.0		35-40'	Wet	60	SP	Brown fine to medium sand, sheen 35-38.	
37	15.1							
38	10.0	SB17 N6 (37-39)						
39	0.0							
40	0.0							
41	0.0		35-40'	Wet	60	SP	40-41': Brown medium sand.	
42	0.0					CL	41-43': Brown clay.	
43	0.0					SP	43-45': Brown medium sand.	
44	0.0							
45							End of boring at 45 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-17-N1E2**	
	Site Address: 318 Nevins Street		
	Weather: 34, sunny, NNW 8		
	Geologist: AK	Total Depth: 45'	
Start Date: 1/18/23	Drilling Company: PG	GW: 6-7'	
Start Time: 9:30	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/18/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 12:30	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	Fill/ML	Brown silt and sand, gravel, asphalt, crushed brick.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	60	Fill/ML	5-8': Brown silt and sand, crushed concrete, 2'' wood at 7.5'. 8-10': Brown silt and sand little clay, gravel.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	Fill/ML	Dark brown silt with gravel.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL/PT	15-19': Gray clay. 19-20': Roots and peat.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	60	CL SP	20-23': Gray clay, roots at 20'. 23-25': Gray-blue fine sand, lightly coated in caol tar, naphthalene-like odor.	
21	0.0							
22	0.0							
23	294.0	SB17 N1E2 (23-25)						
24	320.0							
25								

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SOIL BORING LOG

25	297.0		25-30''	Wet	60	SP	25-29': Gray fine sand, lightly coated in coal tar, blebs throughout, naphthalene-like odor. 29-30': Gray/blue fine sand, coated in coal tar, naphthalene-like odor.	
26	311.0							
27	218.0							
28	28.2							
29	25.0							
30	too wet	SB17 N1E2 (30-31)	30-35'	Wet	60	SP CL	30-31': Brown fine sand. 31-35': Brown clay, some silt.	
31	0.0							
32	0.0							
33	0.0							
34	0.0							
35	0.0		35-40'	Wet	60	SP CL	35-39': Brown fine sand. 39-40': Brown clay.	
36	0.0							
37	0.0							
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N7**	
	Weather:		
	Geologist: AK	Total Depth: 40'	
Start Date: 1/20/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/20/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Moist	40	Fill/ML	0-2': Gravel and asphalt. 2-4': Brown silt with fine sand. 4-5': Brick and concrete.	
2	0.0							
3	0.0							
4	0.0							
5	0.0							
6	0.0		5-10'	Wet	40	Fill/ML	5-7': Dark brown siltand sand with abundant gravel. 7-10': Dark brown silt and sand with clay.	
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	Fill CL	10-12': Gravel, trace dark gray silt and sand. 12-15': Dark gray clay with trace roots, 2'' wood at bottom.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	15-19': Dark gray clay. 19-20': Roots.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	35	SP	Brown fine sand, trace sheen, trace coating at 23-25'.	
21	0.0							
22	28.0							
23	32.0	SB17 N7 (23-25)						
24	45.0							
25								

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SOIL BORING LOG

25	203.0		25-30'	N/A	60	SP	Gray fine sand saturated in coal tar, naphthalene-like odor.	
26	240.0							
27	387.0							
28	262.0							
29	126.0							
30	0.0	SB17 N7 (30-32)	30-35'	Wet	60	ML	30-34': Brown silt and clay.	
31	0.0							
32	0.0							
33	0.0					CL	34-35': Brown clay.	
34	0.0							
35	0.0		35-40'	Wet	60	CL	35-37': Brown clay.	
36	0.0							
37	0.0					SP	37-40': Brown medium sand.	
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N7E1**	
	Weather:		
	Geologist: AK	Total Depth: 40'	
Start Date: 1/20/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/20/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Moist	60	Fill/ML	Light brown silt and sand, with crushed brick and gravel.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	50	Fill/ML	5-5.5': Brown silt and sand. 5.5-7': Concrete. 7-9': Brown silt and sand. 9-10': Brown fine to medium sand.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	50	SP	Brown medium sand, trace gravel and silt	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	55	SP	15-17': Brown medium sand. 17-20': Dark brown clay, bottom 1' roots.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	40	CL SP	20-21': Dark brown clay with some silt. 21-25': Gray/blue fine sand.	
21	0.0							
22	3.2							
23	1.5							
24	2.0							
25								

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SOIL BORING LOG

25								
26	320.0	SB17 N7E1 (25-27)	25-30'	N/A	60	SP	Gray fine sand, trace silt, material coated in coal tar, naphthalene-like odor.	
	281.0							
27	267.0							
28	452.0							
29	165.0							
30	107.0		30-35'	Wet	60	SP/ML	30-33': Gray fine sand and silt, coated in coal tar, naphthalene-like odor. 33-34': Brown clay. 34-35': Brown fine to medium sand.	
31	85.0							
32	63.0							
33	0.0	SB17 N7E1 (33-35)						
34	0.0							
35	0.0		35-40'	Wet	60	SP	35-36': Brown clay. 36-40': Brown fine sand.	
36	0.0							
37	0.0							
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N2E2**	
	Weather:		
	Geologist: AK	Total Depth: 40'	
Start Date: 1/23/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/23/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Moist	50	Fill/ML	Dark bronw silt and sand, crushed brick, asphalt and gravel.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	45	Fill/ML	Dark brown/gray silt and sand, trace gravel and clay.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	Fill/ML CL	10-12': Gray silt, sand and gravel. 12-15': Gray clay and roots, faint organic odors.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	35	SP	15-19': Gray/blue fine sand and silt, at 19-20' material coated in coal tar.	
16	0.0							
17	47.0							
18	175.0	SB17 N2E2 18-20						
19	289.0							
20	321.0		20-25'	Wet	35	SP	Gray/blue fine sand and silt, saturated with coal tar, naphthalene-like odor.	
21	248.0							
22	462.0							
23	429.0							
24	310.0							
25								

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SOIL BORING LOG

25								
26	205.0							
	197.0							
27	221.0		25-30'	N/A	60	SP/ML	Gray/brown fine sand and silt, moderately coated in caol tar, naphthalene-like odor.	
28	165.0							
29	131.0							
30	0.0							
31	0.0							
32	0.0		30-35'	Wet	60	CL	Brown clay.	
33	0.0	SB17 N2E2 33-35						
34	0.0							
35	0.0							
36	0.0							
37	0.0		35-40'	Wet	60	CL	35-37': Brown clay.	
38	0.0					SP	37-40': Brown medium sand.	
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N2E3**	
	Weather:		
	Geologist: AK	Total Depth: 40'	
Start Date: 1/23/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/23/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Moist	50	Fill	Dark gray silt and sand, gravel, crushed concrete, trace crushed brick.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	45	Fill/ML	5-7': Dark gray silt and sand with gravel. 7-8': Gray clay and silt. 8-10': Gray silty sand little gravel.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	CL	Gray clay with roots.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	Gray clay with roots.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	60	SP	Gray/blue fine sand with silt moderately coated in coal tar.	
21	49.0							
22	230.0							
23	290.0	SB17 N2E3 23-25						
24	189.0							
25								

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SOIL BORING LOG

25	345.0		25-30'	N/A	45	SP	Gray/blue finr sand with silt, saturated in coal tar, naphthalene line odor.	
26	291.0							
27	350.0							
28	400.0							
29	245.0							
30	0.0		30-35'	Wet	50	CL SP CL	30-32': Brown Clay, trace sheen at 30-32'. 32-34': Brown medium sand. 34=35': Brown clay.	
31	0.0							
32	0.0							
33	0.0	SB17 N2E3 33-35						
34	0.0							
35	0.0		35-40'	Wet	60	CL SP	35-37': Brown clay. 37-40': Brown medium sand.	
36	0.0							
37	0.0							
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-17-N4E1**	
	Site Address: 318 Nevins Street		
	Weather:		
	Geologist: AK	Total Depth: 40'	
Start Date: 1/23/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/23/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Moist	50	Fill/ML	Dark brown silt and sand, asphalt and crushed brick with gravel.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	40	Fill/ML	5-8': Brown silt and sand. 8-10': Gravel and wood.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	Fill/ML	10-12': Gray silt and sand with gravel. 12-15': Gray clay with roots.	
11	0.0							
12	0.0							
13	0.0							
14	40.0							
15	400.0		15-20'	Wet	60	CL	Gray clay with roots, faint organic odor.	
16	230.0							
17	220.0							
18	301.0							
19	245.0							
20	380.0		20-25'	Wet	60	SP	Gray/blue fine sand, moderately coated in coal tar.	
21	295.0							
22	287.0							
23	341.0	SB17 N4E1 (23-25)						
24	364.0							
25								

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SOIL BORING LOG

25								
26	281.0							
	307.0							
27	195.0		25-30'	N/A	60	SP	Brown fine sand, saturated in coal tar, naphthalene-like odor.	
28	85.0							
29	113.0							
30	0.0							
31	0.0							
32	0.0		30-35'	Wet	60	SP	Brown fine sand, trace sheen at 30-31'.	
33	0.0	SB17 N4E1 (33-35)						
34	0.0							
35	0.0							
36	0.0							
37	0.0		35-40'	Wet	60	SP	Brown course sand.	
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-17-N5E1**	
	Site Address: 318 Nevins Street		
	Weather:		
	Geologist: AK	Total Depth: 40'	
Start Date: 1/23/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/23/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Moist	50	Fill/ML	Brown silt and sand, with gravel and trace brick.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	45	Fill/ML	Brown fine sand and silt, gravel, trace brick.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	Fill/ML	10-12': Coarse gravel. 12-15': Gray silt and sand with gravel.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	12	Fill/ML	Gray silt and sand with course gravel, limited recovery.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	-		20-25'	Wet	10	SP	Brown fine sand, moderately coated in soal tar at 22.5-25'.	
21	-							
22	289.0							
23	312.0	SB17 N5E1 23-25						
24	321.0							
25								

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SOIL BORING LOG

25	425.0		25-30'	N/A	60	SP	Brown fine sand, saturated in coal tar, naphthalene-like odor.	
26	394.0							
27	405.0							
28	287.0							
29	264.0							
30	-		30-35'	Wet	15	N/A	Brown clay and fine sand, limited recovery.	
31	-							
32	0.0							
33	0.0	SB17 N5E1 33-35						
34	0.0							
35	0.0		35-40'	Wet	60	SP	Brown fine-medium sand.	
36	0.0							
37	0.0							
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N5E2**	
	Weather:		
	Geologist: AK	Total Depth: 40'	
Start Date: 1/23/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/23/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Moist	50	Fill	Tan sand, trace brick, gravel, trace silt. **Note: appears to have been previously disturbed/ backfilled, in area of former tank grave**	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	45	Fill	Tan sand and gravel.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	50	Fill ML	10-12': Pea gravel. 12-15': Gray silt and sand with trace gravel, roots at 14.5-15'.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL ML	15-16': Gray/brown clay and silt with fine sand. 16-20': Gray/blue fine silt and sand, trace wood and roots.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	-		20-25'	Wet	25	SP	Gray/blue fine sand trace silt moderatley coated in coal tar.	
21	-							
22	357.0							
23	249.0	SB17 N5E2 23-25						
24	312.0							
25								

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SOIL BORING LOG

25								
26	340.0							
	235.0							
27	209.0		25-30'	N/A	50	SP	Gray/blue fine sand trace silt, saturated coated in coal tar, naphthalene-like odor.	
28	198.0							
29	220.0							
30	0.0							
31	0.0							
32	0.0		30-35'	Wet	60	CL	30-34': Brown clay, trace sheen at 30-32'.	
33	0.0	SB17 N5E2 33-35				SP	34-35': Brown medium sand.	
34	0.0							
35	0.0							
36	0.0							
37	0.0		35-40'	Wet	60	SP	35-36': Brown medium sand.	
38	0.0					CL	36-40': Brown clay.	
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-17-N6E1**	
	Site Address: 318 Nevins Street		
	Weather:		
	Geologist: AK	Total Depth: 40'	
Start Date: 1/23/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/23/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	Fill	Light brown silt and sand, gravel, brick, concrete.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	50	Fill/ML	Gray silt and sand with gravel.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	Fill/ML CL	10-12.5': Gray silt and sand with gravel. 12.5-15': Gray clay with trace roots.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	-		15-20'	Wet	0	N/A	No recovery.	
16	-							
17	-							
18	-							
19	-							
20	284.0		20-25'	Wet	40	SP	Gray/blue fine sand, trace silt, moderately coated in coal tar, naphthalene-like odor.	
21	392.0							
22	341.0	SB17 N6E1 22-24						
23	248.0							
24	261.0							
25								

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SOIL BORING LOG

25	378.0		25-30'	N/A	60	SP	Brown fine sand, saturated in coal tar, naphthalene-like odor.	
26	452.0							
27	279.0							
28	240.0							
29	231.0							
30	78.0		30-35'	Wet	60	SP	30-31': Brown fine sand, moderately coated in coal tar.	
31	20.0					CL	31-33': Brown clay.	
32	0.0					SP	33-35': Brown medium sand.	
33	0.0	SB17 N6E1 33-35						
34	0.0							
35	0.0		35-40'	Wet	60	SP	35-37': Brown clay. 37-40': Brown medium sand.	
36	0.0							
37	0.0							
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N2E4**	
	Weather:		
	Geologist: AK	Total Depth: 40'	
Start Date: 1/24/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/24/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	Fill/ML	0-1': Concrete. 1-4': Brown silt, sand, gravel and asphalt. 4-5': Dark brown silt, some clay.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	45	Fill/ML	Dark brown silt and clay, with some gravel.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	Fill/CL	10-11': Gray loose clay with gravel. 11-15': Gray clay with roots.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	Gray clay with roots.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	55	CL SP	20-21': Gray/blue clay. 21-25': Gray/blue fine sand and silt, lense of coal tar at 23'	
21	0.0							
22	0.0							
23	15.0	SB17 N2E4 23-25						
24	25.0							

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SOIL BORING LOG

25	25.0	25-25						
26	0.0	SB17 N2E4 25-27	25-30'	N/A	60	CL	25-27': Gray/brown silt and clay. 27-30': Brown clay.	
27	0.0							
28	0.0							
29	0.0							
30	0.0							
31	0.0		30-35'	Wet	60	CL	Brown clay.	
32	0.0							
33	0.0							
34	0.0							
35	0.0		35-40'	Wet	60	SP	Brown medium sand.	
36	0.0							
37	0.0							
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N2E5**
	Weather:	
	Geologist: AK	Total Depth: 35'
Start Date: 1/24/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/24/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	50	Fill/ML	0-1': Crushed concrete. 1-5': Brown silt, sand and gravel.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Moist	60	Fill/ML	5-7': Brown silt, sand and gravel. 7-8': Gray silt, trace clay. 8-10': Brown compact silt and sand.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	ML	10-12': Brown silt and sand, some gravel. 12-13': Dark gray clay. 13-15': Brown fine to medium sand, roots at 15'.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	Gray clay with roots.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	60	CL SP	20-22': Gray/brown clay with roots. 22-25': Gray fine sand.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							

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SOIL BORING LOG

25	0.0							
26	0.0							
27	0.0		25-30'	N/A	60	ML	25-28': Gray fine silt and sand. 28-30': Brown silt, little clay.	
28	0.0							
29	0.0							
30	0.0							
31	0.0		30-35'	Wet	60	CL	Brown clay.	
32	0.0							
33	0.0							
34	0.0							
35							End of boring at 35 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N7E2**	
	Weather:		
	Geologist: AK	Total Depth: 40'	
Start Date: 1/24/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/24/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	40	Fill/ML	0-4': Brown silt, sand, gravel and brick. 4-5': Tan fine sand and trace asphalt. This material appears to have been previously disturbed/backfilled, in the area of the the former tank grave.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Moist	40	Fill/SP	Tan fine sand. This material appears to have been previously disturbed/backfilled, in the area of the former tank grave.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	SP ML	10-11': Brown sand. 11-13': White/gray sand with abundant pea gravel, petroleum odors. 13-15': Brown silt and sand trace clay.	
11	45.0							
12	1200.0							
13	27.0							
14	15.0							
15	0.0		15-20'	Wet	60	SP CL	15-17': Brown fine to medium sand. 17-20': Dark gray clay with roots.	
16	0.0							
17	2.5							
18	20.0							
19	37.0							
20	0.0		20-25'	Wet	20	CL	20-22.5': Gray clay. 22.5-25': Gray/blue clay with trace silt.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							

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SOIL BORING LOG

25	0.0							
26	346.0	SB17 N7E2 25-27	25-30'	N/A	60	SP	Brown fine sand, some silt, saturated in coal tar, naphthalene-like odors.	
27	458.0							
28	391.0							
29	505.0							
30	420.0							
31	48.0		30-35'	Wet	60	CL SP	30-32': Brown silt and clay, sheen. 32-34': Brown/dark gray silt and clay. 34-34.5': Brown clay. 34.5-35': Brown medium sand.	
32	15.0							
33	0.0							
34	0.0	SB17 N7E2 33-35						
35	0.0							
36	0.0		35-40'	Wet	60	SP	Brown fine sand.	
37	0.0							
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N7E3**	
	Weather:		
	Geologist: AK	Total Depth: 40'	
Start Date: 1/24/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/24/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	30	Fill/ML	Brown silt and sand, cushed brick, gravel and asphalt.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	60	Fill/ML ML/CL	5-7': Dark brown silt, sand and gravel. 7-10': Gray clay, silt, sand and gravel.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	ML	10-13': Gray silt with gravel. 13-15': Gray-brown silt and clay.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	Dark gray/brown clay with roots throughout.	
16	1.5							
17	3.8							
18	18.0							
19	5.2							
20	0.0		20-25'	Wet	60	ML SP	20-23: Gray silt. 23-25': Gray fine sand.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							

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SOIL BORING LOG

25	0.0							
26	281.0	SB17 N7E3 25-27	25-30'	N/A	60	SP	25-27': Brown fine sand and silt moderately coated in coal tar.	
27	329.0							
28	223.0						27-30': Brown fine sand and silt, saturated in caol tar, naphthalene-like odor.	
29	345.0							
30	380.0							
31	0.0	SB17 N7E3 30-32	30-35'	Wet	60	ML	30-33': Gray silt.	
32	0.0							
33	0.0					CL	33-35': Brown clay.	
34	0.0							
35	0.0							
36	0.0		35-40'	Wet	60	SP	Brown medium sand.	
37	0.0							
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N3E2**	
	Weather:		
	Geologist: AK	Total Depth: 40'	
Start Date: 1/25/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/25/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	50	Fill/ML	0-1': Concrete. 1-5': Brown silt and sand with crushed brick.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Moist	30	Fill/ML	5-6': Concrete. 6-10': Dark gray silt and sand with abundant gravel, some wood. 9-10': Gray silt and clay.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Moist	40	ML CL	Gray silt and clay with gravel and roots from 13-15', faint organic odor.	
11	0.0							
12	68.0							
13	59.0							
14	47.0							
15	32.0		15-20'	Moist	60	CL	Gray clay with roots at 19-20', faint organic odor.	
16	84.0							
17	73.0							
18	200.0							
19	105.0							
20	112.0	SB17 N3E2 20-22	20-25'	Wet	60	CL SP/ML	20-21': Gray clay. 21-25': Gray/blue fine sand and silt saturated in coal tar, naphthalene-like odor.	
21	387.0							
22	493.0							
23	321.0							
24	284.0							

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SOIL BORING LOG

25	284.0							
26	12.8							
27	1.5	SB17 N3E2						
28	0.0	26-28	25-30'	Wet	60	ML	Dark brown silt and fine sand, sheen from 25-27'.	
29	0.0							
30	0.0							
31	0.0							
32	0.0							
33	0.0		30-35'	Wet	60	ML CL	30-32': Brown silt and little fine sand. 32-35': Brown clay.	
34	0.0							
35	0.0							
36	0.0							
37	0.0		35-40'	Wet	60	SP	Brown medium sand.	
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977 Site/Project Name: 318 Nevins Street Site Address: 318 Nevins Street Weather: Geologist: AK	**Boring ID:** **SB-17-N4E2**
Start Date: 1/24/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/24/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	35	Fill/ML	Concrete and gravel, some brown silt and sand.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Moist	25	Fill/ML	Crushed concrete, gravel, wood.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Moist	60	Fill/ML CL	10-13': Gray silt, with abundant gravel and wood pieces. 13-15': Gray clay, gravel, trace roots.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Moist	60	CL	Gray clay with roots.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	31.0	SB17 N4E2 20-22	20-25'	Wet	60	CL ML/SP	20-21': Gray/blue clay. 21-25': Gray/blue silt and sand, coated in coal tar, naphthalene-like odor.	
21	80.0							
22	192.0							
23	230.0							
24	210.0							

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SOIL BORING LOG

25	210.0							
26	25.0		25-30'	Wet	60	ML	Brown fine sand and silt, sheen, faint naphthalene-like odor.	
27	37.0							
28	17.0							
29	41.0							
30	19.0							
31	0.0	SB17 N4E2 30-32	30-35'	Wet	60	CL/ML	Brown silt and clay.	
32	0.0							
33	0.0							
34	0.0							
35	0.0							
36	0.0		35-40'	Wet	60	SP	Brown medium sand.	
37	0.0							
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N4E3**	
	Weather:		
	Geologist: AK	Total Depth: 40'	
Start Date: 1/24/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/24/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	50	Fill/SP	Tan fine sand. This material appears to have been previousy disturbed/backfilled, in the area of the former tank grave.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	35	Fill/ML	5-6': Tan fine sand.This material appears to have been previousy disturbed/backfilled, in the area of the former tank grave. 6-9': Pea gravel. 9-10': Dark gray silt with some clay and gravel.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	50	ML CL	10-11': Gravel. 11-14': Dark gray silt with some clay and gravel. 14-15': Dark brown clay with roots.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	50	CL	15-16': Gravel. 16-20': Dark brown to gray clay with roots, faint organic odor.	
16	27.0							
17	43.0							
18	15.2							
19	14.7							
20	249.0	SB17 N4E3 20-22	20-25'	Wet	60	SP/ML	Gray/blue fine sand and silt, coated with coal tar at 21-22;, lenses of coal tar at 23' and 24', naphthalene-like odor.	
21	497.0							
22	329.0							
23	268.0							
24	322.0							

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SOIL BORING LOG

25	322.0							
26	263.0		25-30'	Wet	60	ML	Brown fine silt with fine sand, sheen.	
27	195.0							
28	102.0							
29	131.0							
30	127.0							
31	0.0	SB17 N4E3 30-32	30-35'	Wet	60	CL	30-33': Brown clay. 33-35': Brown silt and clay.	
32	0.0							
33	0.0							
34	0.0							
35	0.0							
36	0.0							
37	0.0		35-40'	Wet	60	SP	Brown medium sand.	
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N6E2**	
	Weather:		
	Geologist: AK	Total Depth: 40'	
Start Date: 1/25/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/25/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	Fill/SP	tan fine sand "clean fill," and gravel	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Moist	20	Fill/SP	tan fine sand "clean fill," and gravel	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Moist	20	Fill/ML	gravel, dark gray silt	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Moist	60	CL	Brown to gray clay	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	60	CL	20- 22 gray/blue clay with silt	
21	0.0							
22	45.0					ML	22-23 gray/blue silty sand	
23	180.0	SB17 N6E2 23-25				SP	23-25 gray blue fine sand, mod coated in coal tar	
24	192.0							

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SOIL BORING LOG

25	192.0	25-25						
26	230.0		25-30'	Wet	60	ML	brown silt, mod-heavily coated in coal tar, strong sheen	
27	311.0							
28	320.0							
29	195.0							
30	208.0							
31	0.0	SB17 N6E2 30-32	30-35'	Wet	60	CL SP	30-33 brown clay 33-35 brown fine to medium sand	
32	0.0							
33	0.0							
34	0.0							
35	0.0							
36	0.0		35-40'	Wet	60	SP	Brown fine to medium sand	
37	0.0							
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	
	Site Address: 318 Nevins Street	**SB-17-N6E3**
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/25/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/25/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	FIll	0-2': Concrete. 2-5': Ssphalt, gravel, trace silt.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Moist	20	Fill/ML	Gray silt and sand, gravel and wood.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Moist	20	ML CL	Brown silt with gray clay and roots at 14.5-15'.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	N/A	0	N/A	No recovery.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	60	SP	Gray/blue fine sand.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							

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SOIL BORING LOG

25	0.0							
26	256.0	SB17 N6E3 25-27	25-30'	Wet	60	ML	25-27.5': Brown silt some clay, coated in coal tar, naphthalene-like odor.	
27	239.0							
28	195.0					CL	27.5-30': Brown clay.	
29	43.0							
30	27.0							
31	0.0	SB17 N6E3 30-32	30-35'	Wet	60	CL/ML	Brown clay and silt.	
32	0.0							
33	0.0							
34	0.0							
35	0.0							
36	0.0		35-40'	Wet	60	SP	Brown medium sand.	
37	0.0							
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N7E4**	
	Weather:		
	Geologist: AK	Total Depth: 35'	
Start Date: 1/25/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/25/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	30	Fill	Brown silt and sand with crushed brick, asphalt, and gravel.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Moist	45	Fill	5-6': Concrete and gravel. 6-9': Brown silt and sand, pieces of glass, gravel. 9-10': Gravel and little clay.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	50	Fill/CL ML	10-12': Gray clay, little gravel, little silt, roots. 12-15': Gray brown silty clay.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	Dark gray clay with roots.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	15	CL	Gray/blue silt and clay.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							

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SOIL BORING LOG

25	0.0							
26	0.0					ML	25-27': Brown to dark brown fine sand and silt.	
27	0.0		25-30'	Wet	60	CL	27-29': Brown clay.	
28	0.0					SP	29-30': Brown fine sand.	
29	0.0							
30	0.0							
31	0.0							
32	0.0		30-35'	Wet	60	SP	Brown medium sand.	
33	0.0							
34	0.0							
35							End of boring at 35 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N3E3**	
	Weather:		
	Geologist: AK	Total Depth: 35'	
Start Date: 1/26/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/26/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	Fill	0-4': Brown silt and sand, trade brick, abundant gravel. 4-6': Concrete.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	60	Fill/ML	Dark gray silt, little clay, abundant gravel, trace wood at 8'.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	Fill/ML CL	10-13': Gray silt and gravel. 13-15': Gray clay with trace roots.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	Gray clay with roots.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	60	CL SP	20-21': Gray clay. 21-23': Gray/blue clay. 23-25': Gray/blue clay and fine sand, liner lightly coated in coal tar.	
21	0.0							
22	32.0							
23	75.0	SB17 N3E3 23-25						
24	84.0							
25								

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SOIL BORING LOG

25								
	0.0	SB17 N3E3 25-27	25-30'	Wet	60	ML	25-27': Gray/blue silt and clay. 27-30': Brown silt and fine sand.	
26	0.0							
27	0.0							
28	0.0							
29	0.0							
30	0.0		30-35'	Wet	60	ML CL	30-31': Brown silt and fine sand. 31-35': Brown clay.	
31	0.0							
32	0.0							
33	0.0							
34	0.0							
35							End of boring at 35 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N3E4**	
	Weather:		
	Geologist: AK	Total Depth: 30'	
Start Date: 1/26/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/26/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	Fill/ML	Brown silt and sand, gravel, trace brick and concrete.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	60	Fill/ML	Brown silt and, and sand with gravel.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	ML	10-12': Gray silt and sand.	
11	0.0							
12	0.0							
13	0.0					CL	12-15:' Gray clay.	
14	0.0							
15	0.0		15-20'	Wet	60	CL	Gray clay and roots.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	60	ML/SP	Gray/blue fine sand and silt.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							
25								

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SOIL BORING LOG

25								
26	0.0							
27	0.0							
28	0.0		25-30'	Wet	60	SP	25-28': Brown fine sand. 28-30': Brown clay.	
29	0.0							
30	0.0							
							End of boring at 30 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N4E4**	
	Weather:		
	Geologist: AK	Total Depth: 35'	
Start Date: 1/26/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/26/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	45	Fill	Brown silt and sand, concrete and gravel.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Moist	40	Fill/ML	Dark gray silt with gravel and asphalt.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	N/A	0	N/A	No recovery.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Moist	60	CL	gray clay with roots.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	49.0		20-25'	Wet	60	ML	20-21': Gray silt and clay, some gravel. 21-25': Gray/blue silt, coated at 22', naphthalene-like odor.	
21	138.0	SB17 N4E4 21-23						
22	250.0							
23	220.0							
24								

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SOIL BORING LOG

24	48.0							
25	25.0							
26	17.0							
27	0.0		25-30'	Wet	60	ML	25-28': Brown silt with sheen.	
28	0.0	SB17 N4E4 28-30					28-30': Brown clay.	
29	0.0							
30	0.0							
31	0.0							
32	0.0		30-35'	Wet	60	CL	30-33': Brown clay.	
33	0.0					SP	33-35': Brown medium sand.	
34	0.0							
35							End of boring at 35 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N4E5**	
	Weather:		
	Geologist: AK	Total Depth: 30'	
Start Date: 1/26/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/26/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	40	Fill/ML	0-1': Concrete. 1-3': Brown fine sand. 3-5': Dark brown silty sand.	
2	0.0							
3	0.0							
4	0.0							
5	0.0							
6	0.0		5-10'	Moist	50	Fill/ML	Dark gray silt and clay with gravel.	
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Moist	60	CL	Gray clay trace gravel.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Moist	60	CL	15-19': Gray clay with roots. 19-20': Roots.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	25	ML	Gray/blue silt and clay.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							

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SOIL BORING LOG

25	0.0							
26	0.0							
27	0.0		25-30'	Wet	60	ML	25-27': Gray/blue silt. 27-30': Brown silt trace clay.	
28	0.0							
29	0.0							
30							End of boring at 30 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N5E3**	
	Weather:		
	Geologist: AK	Total Depth: 35'	
Start Date: 1/26/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/26/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	40	Fill/ML	Gravek, trace tan fine sand.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	35	Fill/ML	Dark brown silt with gravel, trace wood.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	45	ML	10-13' Gray silt and gravel.	
11	0.0							
12	0.0							
13	0.0					CL	13-15': Gray silt and clay with gravel.	
14	0.0							
15	0.0		15-20'	Wet	60	CL	Dark brown/gray clay with roots.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	30	ML/SP	Gray/blue silt and fine sand, sheen at 24-25'	
21	0.0							
22	0.0							
23	45.0	SB17 N5E3 23-25						
24	38.0							

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SOIL BORING LOG

25	38.0	25-25						
26	-		25-30'	N/A	0	N/A	No recovery.	
27	-							
28	-							
29	-							
30	-							
31	0.0	SB17 N5E3 30-32	30-35'	Wet	50	CL	30-32': Brown clay. 32-25': Berown medium sand.	
32	0.0							
33	0.0							
34	0.0							
35	0.0							
							End of boring at 35 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-17-N5E4**	
	Site Address: 318 Nevins Street		
	Weather:		
	Geologist: AK	Total Depth: 35'	
Start Date: 1/26/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/26/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	50	Fill	0-4': Concrete, crushed brick, brown silt and sand.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Moist Wet	50	Fill/ML	Gray silt with gravel, wood at 6'.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	30	Fill/ML ML/CL	10-12': Gray silt with gravel. 12-15': Gray silt and clay.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Moist	60	CL	15-19': Gray clay with roots. 19-20': Roots.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	60	CL/SP SP	20-21'" Gray/blue fine sand and clay. 21-25': Gray/blue fine sand.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							

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SOIL BORING LOG

25	0.0							
26	36.0	SB17 N5E4 25-27	25-30'	Wet	60	ML	25-27': Brown silt, lightly coated in coal tar. 27-30': Brown silt and clay.	
27	21.0							
28	1.5							
29	0.0	SB17 N5E4 28-30						
30	0.0							
31	0.0		30-35'	Wet	60	SP	Brown fine-medium sand.	
32	0.0							
33	0.0							
34	0.0							
35							End of boring at 35 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-N6E4**	
	Weather:		
	Geologist: AK	Total Depth: 35'	
Start Date: 1/26/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/26/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	Fill	0-2': Gravel and concrete. 2-5': Brown to tan fine sand.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	60	Fill/ML	5-9': Brown silt with gravel, shells at 8'. 9-10': Brown silt and clay.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	CL	10-12': Gray/brown clay. 12-14': Brown silt and clay. 14-15': Brown clay.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	Gray/brown clay with roots.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	60	SP/ML	Gray/blue fine sand and little silt.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							
25								

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SOIL BORING LOG

25								
26	0.0							
	0.0							
27	0.0		25-30'	Wet	60	ML CL	orwn silt which transitions into clay.	
28	0.0							
29	0.0							
30	0.0							
31	0.0							
32	0.0		30-35'	Wet	60	CL SP	Brown clay which transitions into fine sand.	
33	0.0							
34	0.0							
35							End of boring at 35 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-17-E3**	
	Site Address: 318 Nevins Street		
	Weather:		
	Geologist: AK	Total Depth: 35'	
Start Date: 1/27/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/27/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	Fill	Crushed brick, concrete, and gravel, trace wood.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	50	Fill/ML	5-5.5': Concrete. 5.5-10': Dark brown silt and sand, abundant gravel.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	Fill CL	10-12.5': Gravel. 12.5-15': Gray clay with roots at 14-15'.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	55	ML CL	15-16': Gray silt. 16-19': Gray clay with roots, roots at 19-20'.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	30	ML	Brown/gray silt some clay.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							

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SOIL BORING LOG

25	0.0							
26	0.0							
27	0.0						CL	25-26': Gray/blue clay trace silt.
28	0.0		25-30'	Wet	60		ML	26-30': Brown silt.
29	0.0							
30	0.0							
31	0.0							
32	0.0							
33	0.0		30-35'	Wet	60		CL	Brown clay.
34	0.0							
35	0.0							
								End of boring at 35 feet

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	**SB-17-N5E5**
	Site Address: 318 Nevins Street	
	Weather:	
	Geologist: AK	Total Depth: 30'
Start Date: 1/26/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/27/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	Fill/ML	0-1':Concrete. 1-5': Brown silt and sand with crushed brick and gravel.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	60	Fill/ML	5-6': Brown silt and sand with crushed brick and gravel. 6-8'Gray/brown silt and gravel. 8-10': Brown silt, trace clay.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	ML CL SP	10-12': Brown silt, fine sand and trace clay. 12-14': Brown clay. 14.5-15': Brown fine sand.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	ML/CL	Brown silt and clay.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	60	CL SP	20-22.5': Brown clay with roots. 22.5-25': Brown/gray fine sand.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							
25								

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SOIL BORING LOG

25	0.0							
26	0.0							
27	0.0		25-30'	Wet	60	ML	25-28': Brown silt.	
28	0.0					CL	28-30': Brown clay.	
29	0.0							
30							End of boring at 30 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-17-S1E3**	
	Site Address: 318 Nevins Street		
	Weather:		
	Geologist: AK	Total Depth: 35'	
Start Date: 1/27/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/27/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	60	Fill	0-2': Brown silt and sand with gravel. 2-5': Concrete.	
2	0.0							
3	0.0							
4	0.0							
5	0.0							
6	0.0		5-10'	Wet	40	Fill/ML	5-6': Concrete and gravel. 6-10': Brown silt, trace gravel.	
7	0.0							
8	0.0							
9	0.0							
10	0.0							
11	0.0		10-15'	Wet	6	ML	Gravel with trace silt, limited recovery.	
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	15-19': Gray clay. 19-20': Roots.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	60	CL	20-22': Gray clay. 22-25': Gray/blue clay.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							

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SOIL BORING LOG

25	0.0							
26	0.0							
27	0.0		25-30'	Wet	2''	ML	Brown silt, little/no recovery.	
28	0.0							
29	0.0							
30	0.0							
31	0.0							
32	0.0		30-35'	Wet	60	ML	Brown silt.	
33	0.0							
34	0.0							
35							End of boring at 35 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-S2E1**	
	Weather:		
	Geologist: AK	Total Depth: 45'	
Start Date: 1/27/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/27/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	25	Fill/ML	Brown silt and sand with gravel, trace wood at 3'.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	35	Fill/ML	Brown compact silt and sand, trace gravel.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	0	N/A	No recovery.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	45	CL	Gray clay with trace roots.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	30	CL	20-22.5': Gray clay.	
21	0.0							
22	0.0							
23	0.0					SP/ML	22.5 -25': Gray/blue fine sand, trace silt.	
24	0.0							
25								

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SOIL BORING LOG

25								
26	0.0							
	0.0							
27	0.0		25-30'	Wet	60		25-27': Brown silt, trace fine sand. 27-30': Brown fine sand.	
28	0.0							
29	0.0							
30	204.0	SB17 S2E1 30-32						
31	187.0							
32	211.0		30-35'	Wet	30		30-34': Brown silt, coated in coal tar, naphthalene-like odor. 34-35': Brown silt and clay.	
33	145.0							
34	32.0							
35	0.0	SB17 S2E1 35-37						
36	0.0							
37	0.0		35-40'	Wet	60		Brown medium sand.	
38	0.0							
39	0.0							
40	0.0							
41	0.0							
42	0.0		35-40'	Wet	60		Brown medium sand.	
43	0.0							
44	0.0							
45							End of boring at 45 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-S2E2**	
	Weather:		
	Geologist: AK	Total Depth: 40'	
Start Date: 1/27/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/27/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	50	Fill	0-4': Crushed brick. 4-5': Concrete.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	25	Fill/ML	5-7': Gravel. 7-10': Gray/brown silt with trace clay.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60		10-11': Gray silt and gravel. 11-15': Gray clay with roots.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60		Gray clay trace roots.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	N/A	N/A	No recovery.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							

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SOIL BORING LOG

25	0.0							
26	0.0							
27	0.0		25-30'	Wet			25-27': Gray silt, trace fine sand. 27-30': Brown silt.	
28	0.0							
29	0.0							
30	0.0							
31	0.0							
32	0.0		30-35'	Wet			Brown silt, at 34-35' lightly coated in coal tar.	
33	32.0	SB17 S2E2 33-35						
34	67.0							
35	0.0	SB17 S2E2 35-37						
36	0.0							
37	0.0		35-40'	Wet			Brown fine to medium sand.	
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental Closures, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-S2E3**	
	Weather:		
	Geologist: AK	Total Depth: 35'	
Start Date: 1/27/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/27/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	50	Fill	0-1': Concrete. 1-3': Crushed brick. 3-5': Concrete.	
2	0.0							
3	0.0							
4	0.0							
5	0.0							
6	0.0		5-10'	Wet	45	Fill/ML	5-6': Concrete. 6-7': Gravel. 7-10': Brown silt, little sand with gravel.	
7	0.0							
8	0.0							
9	0.0							
10	0.0							
11	0.0		10-15'	Wet	60	Fill/ML CL	10-13': Brown silt and sand with gravel. 13-15': Gray clay with trace roots.	
12	0.0							
13	0.0							
14	0.0							
15	0.0							
16	0.0		15-20'	Wet	60	CL	Gray clay with trace roots.	
17	0.0							
18	0.0							
19	0.0							
20	0.0							
21	0.0		20-25'	Wet	60	CL ML	20-21': Gray clay. 21-25': Gray/blue compact silt.	
22	0.0							
23	0.0							
24	0.0							

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SOIL BORING LOG

25	0.0							
26	0.0							
27	0.0		25-30'	Wet	60	ML	Brown silt, 4'' brown/tan clay at 30'.	
28	0.0							
29	0.0							
30	0.0							
31	0.0					ML		
32	0.0		30-35'	Wet	60	CL	Brown silt and clay.	
33	0.0					ML		
34	0.0							
35							End of boring at 35 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-S3**	
	Weather:		
	Geologist: AK	Total Depth: 45'	
Start Date: 1/30/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/30/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	40	Fill/ML	Brown silt and sand, asphalt, wood and crushed brick.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	40	Fill/ML	Brown silt, brick, wood at 9-10'.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	CL	Gray clay.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	40	Fill/ML	Gray silt with gravel.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	12	CL	Gray/blue silt and clay.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							

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SOIL BORING LOG

25	0.0							
26	381.0	SB17 S3 25-27	25-30'	Wet	55	SP	Brown/gray fine sand, coated, naphthalene-like odor.	
27	297.0							
28	405.0							
29	285.0							
30	310.0							
31	52.0		30-35'	Wet	60	ML SP	Brown silt and fien sand, trace sheen at 30-32'.	
32	45.0							
33	15.0							
34	0.0							
35	0.0							
36	15.1	SB17 S3 35-37	35-40'	Wet	60	SP	Brown fine sand.	
37	6,8							
38	0.0							
39	0.0							
40	0.0							
41	0.0		35-40'	Wet	60	SP	Brown medium to fine sand.	
42	0.0							
43	0.0							
44	0.0							
45	0.0							
							End of boring at 45 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street		
	Site Address: 318 Nevins Street	**SB-17-S3E1**	
	Weather:		
	Geologist: AK	Total Depth: 40'	
Start Date: 1/30/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/30/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	50	Fill/ML	Brown silt with gravel, asphalt, concrete, brick and wood 3-4'.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	50	Fill/ ML/ CL	5-6': Gray silt, gravel, and wood at 6'. 6-9': Gray silt with clay. 9-10': Gray clay.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	Fill/ML/CL	Gray silt, glay,and gravel, some roots.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	55	CL	Gray clay, trace roots.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	50	CL	Gray/blue clay.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							

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SOIL BORING LOG

25	0.0							
26	0.0							
27	0.0		25-30'	Wet	60	SP	Brown silt and fine sand.	
28	0.0							
29	0.0							
30	0.0							
31	0.0		30-35'	Wet	60	SP	Brown fine sand.	
32	0.0							
33	0.0							
34	0.0							
35	0.0		35-40'	Wet	60	SP	Brown fine to course sand	
36	0.0							
37	0.0							
38	0.0							
39	0.0							
							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	**SB-17-S4**
	Site Address: 318 Nevins Street	
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/30/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/30/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	45	Fill/ML	Brown silt and sand with gravel, concrete and brick.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	50	Fill/ML	gray silt and clay, trace brick and gravel.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	CL/Fill	Gray clay with gravel.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	-		15-20'	N/A	0	N/A	No recovery.	
16	-							
17	-							
18	-							
19	-							
20	-		20-25'	N/A	0	N/A	No recovery.	
21	-							
22	-							
23	-							
24								

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SOIL BORING LOG

25	-							
26	0.0	SB17 S4 25-27	25-30'	Wet	60	SP	Gray fine sand, trace silt, lightly coated in coal tar, faint naphthalene-like odor.	
27	0.0							
28	0.0							
29	0.0							
30	0.0							
31	17.3		30-35'	Wet	60	SP	Brown fine sand.	
32	15.5							
33	9.0							
34	0.0	SB17 S4 33-35						
35	0.0		35-40'	Wet	60	SP	Brown medium sand.	
36	0.0							
37	0.0							
38	0.0							
39	0.0							
40	0.0							
							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**	
	Site/Project Name: 318 Nevins Street	**SB-17-S4E1**	
	Site Address: 318 Nevins Street		
	Weather:		
	Geologist: AK	Total Depth: 40'	
Start Date: 1/30/23	Drilling Company: PG	GW: 6-7'	
Start Time:	Driller: Orlando	GW Stabilized: N/A	
Completion Date: 1/30/23	Drill Rig: 7822 DT	GPS Coordinates:	
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y	

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	40	Fill/ML	Brown soil and sand with asphalt, gravel, brick, and small intervals of wood at 2' and 4'.	
	0.0							
2	0.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	45	Fill/ML CL	5-8': Brown/gray silt and sand with gravel. 8-10': Dark gray clay.	
6	0.0							
7	0.0							
8	0.0							
9	0.0							
10	0.0		10-15'	Wet	60	CL	10-12': Gray clay with abundant gravel. 12-15':Gray clay with roots.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	60	CL	Gray clay with roots.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	50	CL ML	20-22': Gray clay. 22-23': Rootsroots. 23-25': Gray/blue silt.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							

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SOIL BORING LOG

25	0.0							
26	0.0							
27	0.0		25-30'	Wet	60	SP	Brown fine sand.	
28	0.0							
29	0.0							
30	0.0							
31	0.0							
32	0.0		30-35'	Wet	60	SP	Brown medium sand.	
33	0.0							
34	0.0							
35	0.0							
36	0.0							
37	0.0		35-40'	Wet	60	SP	Brown medium sand.	
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

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SOIL BORING LOG

Impact Environmental, Inc. 170 Keyland Court Bohemia, NY 11716 P. (631) 269-8800	Project #: 15977	**Boring ID:**
	Site/Project Name: 318 Nevins Street	**SB-17-S5**
	Site Address: 318 Nevins Street	
	Weather:	
	Geologist: AK	Total Depth: 40'
Start Date: 1/27/23	Drilling Company: PG	GW: 6-7'
Start Time:	Driller: Orlando	GW Stabilized: N/A
Completion Date: 1/27/23	Drill Rig: 7822 DT	GPS Coordinates:
Completion Time: 14:00	Sampler Type/Len: Dual tube	X,Y

Depth (Feet)	PID (ppmv)	Sample ID	Depth (From-To)	Moisture Content	Recovery (Inches)	USCS Symbol	Soil Description	MGP Color Code
1	0.0		0-5	Dry	40	Fill/ML	0-1': Crushed brick. 2-3': Wood, treated wood odors. 3-3.5': Brown/gray silt and sand with gravel.	
	97.0							
2	400.0							
3	0.0							
4	0.0							
5	0.0		5-10'	Wet	40	Fill/ML	Gray/brown silt and sand with gravel, wood at 7-8'.	
6	0.0							
7	89.0							
8	35.0							
9	0.0							
10	0.0		10-15'	Wet Moist Wet	50	Fill/ML CL Fill/ML	Gray silt and gravel, some clay.	
11	0.0							
12	0.0							
13	0.0							
14	0.0							
15	0.0		15-20'	Wet	40	Fill/CL	Gray clay and gravel.	
16	0.0							
17	0.0							
18	0.0							
19	0.0							
20	0.0		20-25'	Wet	25	ML/SP	Gray/blue silt and fine sand.	
21	0.0							
22	0.0							
23	0.0							
24	0.0							

DRAFT

SOIL BORING LOG

25	0.0							
26	0.0							
27	0.0		25-30'	Wet	40	ML/SP	Gray/Blue silt and fine sand.	
28	0.0							
29	0.0							
30	0.0							
31	0.0		30-35'	Wet	50	SP	Brown fine sand.	
32	0.0							
33	0.0							
34	0.0							
35	0.0							
36	0.0		35-40'	Wet	60	SP	Brown fine sand.	
37	0.0							
38	0.0							
39	0.0							
40							End of boring at 40 feet	

TRACE = 1 - 10% LITTLE = 11 - 20% SOME = 21 - 35% AND = 36 - 50 %

DRAFT

Appendix F

Citizen Participation Plan (CPP)

Remedial Action Work Plan
318 Nevins Street, Brooklyn, NY
NYSDEC BCP #C224350

Impact Environmental Engineering and Geology PLLC
170 KEYLAND COURT, BOHEMIA, NEW YORK 11716
TEL (631) 269-8800 ▪ FAX (631) 269-1599

NEW YORK STATE | Department of Environmental Conservation

Brownfield Cleanup Program

Citizen Participation Plan
for
318 Nevins Street
April 2023

BCP No: C224350
300-344 Nevins Street
(aka 318 Nevins Street)
Brooklyn, New York
City Tax Map Designation: Block 439; Lot 1

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Note: The information presented in this Citizen Participation Plan was current as of the date of its approval by the New York State Department of Environmental Conservation. Portions of this Citizen Participation Plan may be revised during the site's investigation and cleanup process.

Applicant: **Gowanus 300 Nevins Street LLC**
Site Name: **318 Nevins Street**
Site Address: **300-344 Nevins Street (aka 318 Nevins Street)**
Site County: **Kings County**
Site Number: **C224350**

1. What is New York's Brownfield Cleanup Program?

New York's Brownfield Cleanup Program (BCP) works with private developers to encourage the voluntary cleanup of contaminated properties known as "brownfields" so that they can be reused and developed. These uses include recreation, housing, and business.

A *brownfield* is any real property that is difficult to reuse or redevelop because of the presence or potential presence of contamination. A brownfield typically is a former industrial or commercial property where operations may have resulted in environmental contamination. A brownfield can pose environmental, legal, and financial burdens on a community. If a brownfield is not addressed, it can reduce property values in the area and affect economic development of nearby properties.

The BCP is administered by the New York State Department of Environmental Conservation (NYSDEC) which oversees Applicants who conduct brownfield site investigation and cleanup activities. An Applicant is a person who has requested to participate in the BCP and has been accepted by NYSDEC. The BCP contains investigation and cleanup requirements, ensuring that cleanups protect public health and the environment. When NYSDEC certifies that these requirements have been met, the property can be reused or redeveloped for the intended use.

For more information about the BCP, go online at:
http://www.dec.ny.gov/chemical/8450.html .

2. Citizen Participation Activities

Why NYSDEC Involves the Public and Why It Is Important

NYSDEC involves the public to improve the process of investigating and cleaning up contaminated sites, and to enable citizens to participate more fully in decisions that affect their health, environment, and social well-being. NYSDEC provides opportunities for citizen involvement and encourages early two-way communication with citizens before decision makers form or adopt final positions.

Involving citizens affected and interested in site investigation and cleanup programs is important for many reasons. These include:

- Promoting the development of timely, effective site investigation and cleanup programs that protect public health and the environment

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- Improving public access to, and understanding of, issues and information related to a particular site and that site's investigation and cleanup process

- Providing citizens with early and continuing opportunities to participate in NYSDEC's site investigation and cleanup process

- Ensuring that NYSDEC makes site investigation and cleanup decisions that benefit from input that reflects the interests and perspectives found within the affected community

- Encouraging dialogue to promote the exchange of information among the affected/interested public, State agencies, and other interested parties that strengthens trust among the parties, increases understanding of site and community issues and concerns, and improves decision making.

This Citizen Participation (CP) Plan provides information about how NYSDEC will inform and involve the public during the investigation and cleanup of the site identified above. The public information and involvement program will be carried out with assistance, as appropriate, from the Applicant.

Project Contacts

Appendix A identifies NYSDEC project contact(s) to whom the public should address questions or request information about the site's investigation and cleanup program. The public's suggestions about this CP Plan and the CP program for the site are always welcome. Interested people are encouraged to share their ideas and suggestions with the project contacts at any time.

Locations of Reports and Information

The locations of the reports and information related to the site's investigation and cleanup program also are identified in Appendix A. These locations provide convenient access to important project documents for public review and comment. Some documents may be placed on the NYSDEC web site. If this occurs, NYSDEC will inform the public in fact sheets distributed about the site and by other means, as appropriate.

Site Contact List

Appendix B contains the site contact list. This list has been developed to keep the community informed about, and involved in, the site's investigation and cleanup process. The site contact list will be used periodically to distribute fact sheets that provide updates about the status of the project. These will include notifications of upcoming activities at the site (such as fieldwork), as well as availability of project documents and announcements about public comment periods.

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The site contact list includes, at a minimum:

- chief executive officer and planning board chairperson of each county, city, town and village in which the site is located;
- residents, owners, and occupants of the site and properties adjacent to the site;
- the public water supplier which services the area in which the site is located;
- any person who has requested to be placed on the site contact list;
- the administrator of any school or day care facility located on or near the site for purposes of posting and/or dissemination of information at the facility;
- location(s) of reports and information.

The site contact list will be reviewed periodically and updated as appropriate. Individuals and organizations will be added to the site contact list upon request. Such requests should be submitted to the NYSDEC project contact(s) identified in **Appendix A**. Other additions to the site contact list may be made at the discretion of the NYSDEC project manager, in consultation with other NYSDEC staff as appropriate.

Note: The first site fact sheet (usually related to the draft Remedial Investigation Work Plan) is distributed both by paper mailing through the postal service and through DEC Delivers, its email listserv service. The fact sheet includes instructions for signing up with the appropriate county listserv to receive future notifications about the site. See http://www.dec.ny.gov/chemical/61092.html .

Subsequent fact sheets about the site will be distributed exclusively through the listserv, except for households without internet access that have indicated the need to continue to receive site information in paper form. Please advise the NYSDEC site project manager identified in **Appendix A** if that is the case. Paper mailings may continue during the investigation and cleanup process for some sites, based on public interest and need.

CP Activities

The table at the end of this section identifies the CP activities, at a minimum, that have been and will be conducted during the site's investigation and cleanup program. The flowchart in **Appendix D** shows how these CP activities integrate with the site investigation and cleanup process. The public is informed about these CP activities through fact sheets and notices distributed at significant points during the program. Elements of the investigation and cleanup process that match up with the CP activities are explained briefly in Section 5.

- **Notices and fact sheets** help the interested and affected public to understand contamination issues related to a site, and the nature and progress of efforts to investigate and clean up a site.

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- **Public forums, comment periods and contact with project managers** provide opportunities for the public to contribute information, opinions and perspectives that have potential to influence decisions about a site's investigation and cleanup.

- **Document Repositories** provide locations where the public can read and review any finalized documents produced as part of the cleanup program. The repositories for physical copies of the reports are as follows:
    - Brooklyn Public Library-Carroll Gardens Branch
      396 ClintonStreet
      Brooklyn, NY 11231

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The public is encouraged to contact project staff at any time during the site's investigation and cleanup process with questions, comments, or requests for information.

This CP Plan may be revised due to changes in major issues of public concern identified in Section 3 or in the nature and scope of investigation and cleanup activities. Modifications may include additions to the site contact list and changes in planned citizen participation activities.

Technical Assistance Grant

NYSDEC must determine if the site poses a significant threat to public health or the environment. This determination generally is made using information developed during the investigation of the site, as described in Section 5.

If the site is determined to be a significant threat, a qualifying community group may apply for a Technical Assistance Grant (TAG). The purpose of a TAG is to provide funds to the qualifying group to obtain independent technical assistance. This assistance helps the TAG recipient to interpret and understand existing environmental information about the nature and extent of contamination related to the site and the development/implementation of a remedy.

An eligible community group must certify that its membership represents the interests of the community affected by the site, and that its members' health, economic well-being or enjoyment of the environment may be affected by a release or threatened release of contamination at the site.

As of the date the declaration (page 2) was signed by the NYSDEC project manager, the significant threat determination for the site had not yet been made.

To verify the significant threat status of the site, the interested public may contact the NYSDEC project manager identified in **Appendix A**.

For more information about TAGs, go online at
http://www.dec.ny.gov/regulations/2590.html

Note: The table identifying the citizen participation activities related to the site's investigation and cleanup program follows on the next page:

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Citizen Participation Activities	Timing of CP Activity(ies)
Application Process:	
• Prepare site contact list • Establish document repository(ies)	At time of preparation of application to participate in the BCP.
• Publish notice in Environmental Notice Bulletin (ENB) announcing receipt of application and 30-day public comment period • Publish above ENB content in local newspaper • Mail above ENB content to site contact list • Conduct 30-day public comment period	When NYSDEC determines that BCP application is complete. The 30-day public comment period begins on date of publication of notice in ENB. End date of public comment period is as stated in ENB notice. Therefore, ENB notice, newspaper notice, and notice to the site contact list should be provided to the public at the same time.
After Execution of Brownfield Site Cleanup Agreement (BCA):	
• Prepare Citizen Participation (CP) Plan	Before start of Remedial Investigation **Note:** Applicant must submit CP Plan to NYSDEC for review and approval within 20 days of the effective date of the BCA.
Before NYSDEC Approves Remedial Investigation (RI) Work Plan:	
• Distribute fact sheet to site contact list about proposed RI activities and announcing 30-day public comment period about draft RI Work Plan • Conduct 30-day public comment period	Before NYSDEC approves RI Work Plan. If RI Work Plan is submitted with application, public comment periods will be combined and public notice will include fact sheet. Thirty-day public comment period begins/ends as per dates identified in fact sheet.
After Applicant Completes Remedial Investigation:	
• Distribute fact sheet to site contact list that describes RI results	Before NYSDEC approves RI Report
Before NYSDEC Approves Remedial Work Plan (RWP):	
• Distribute fact sheet to site contact list about draft RWP and announcing 45-day public comment period • Public meeting by NYSDEC about proposed RWP (if requested by affected community or at discretion of NYSDEC project manager) • Conduct 45-day public comment period	Before NYSDEC approves RWP. Forty-five day public comment period begins/ends as per dates identified in fact sheet. Public meeting would be held within the 45-day public comment period.
Before Applicant Starts Cleanup Action:	
• Distribute fact sheet to site contact list that describes upcoming cleanup action	Before the start of cleanup action.
After Applicant Completes Cleanup Action:	
• Distribute fact sheet to site contact list that announces that cleanup action has been completed and that NYSDEC is reviewing the Final Engineering Report • Distribute fact sheet to site contact list announcing NYSDEC approval of Final Engineering Report and issuance of Certificate of Completion (COC)	At the time the cleanup action has been completed. **Note:** The two fact sheets are combined when possible if there is not a delay in issuing the COC.

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3. Major Issues of Public Concern

This section of the CP Plan identifies major issues of public concern that relate to the site. Additional major issues of public concern may be identified during the course of the site's investigation and cleanup process.

No major issues of public concern have been identified at this point in the brownfields cleanup program process. Any future changes to this section will be detailed in the Scoping Sheet for Major Issues of Public Concern and submitted to the NYSDEC.

The site is located in an Environmental Justice Area. Environmental justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

Environmental justice efforts focus on improving the environment in communities, specifically minority and low-income communities, and addressing disproportionate adverse environmental impacts that may exist in those communities.

The site is located in a community with a sizable Hispanic-American and African-American population nearby. Therefore all future fact sheets will be translated into Spanish.

4. Site Information

Appendix C contains a map identifying the location of the site.

Site Description

The Site encompasses a city block, located between Union Street and Carroll Street in the Gowanus neighborhood of Brooklyn, New York (refer to **Figure 1**). This neighborhood was a former industrial zone due to its proximity to Gowanus Canal, a mode of transport which was used to export goods. Currently, the Site is situated in an urban area, surrounding parcels are used for a combination of residential, commercial, and light industrial/manufacturing purposes.

The Site consists of a single parcel of land assigned New York City County Tax Map Designation; Block 439, Lot 1. (**Figure 2**), and occupies 101,930.4-square feet (sf), 2.34 acres. The Site is developed with one (1) vacant, single story building and a bulkhead along Gowanus Canal. Directly north of the property is Union Street, followed by a four-story commercial structure and a single-story commercial warehouse, which houses J&M Special Effects. Directly east of the subject property is Nevins Street, followed by a vacant lot, one (1) multi-family residential structure, and several commercial buildings. The Site is bounded by Carroll Street directly to the south, followed by an active construction site. Directly west of the Site is the Gowanus Canal.

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History of Site Use, Investigation, and Cleanup

- According to historic Sanborn Maps the Site was historically occupied by Kenyon & Newtons Lumber Yard (circa 1886), Albro J. Newtown Lumber Yard, Jno S. Loomis & Company Lumber Yard (circa 1904-1915), Brooklyn Nevins Coal Company (distributions operations) and Koppers Seaboard Coke Company and Brooklyn Nevins Coal Company (circa 1922), Morton Coal Company (distribution operations) and Koppers Seaboard Coke Company (circa 1928), Koppers Seaboard Coke Company and Mortal Coal Company (circa 1928), Koppers Seaboard Coke Company Hy-Grade Magnet (circa 1950), Motor Freight Station (circa 1969-1979), NY Telephone (circa 1980-2001), Bell Atlantic (circa 2002), and Verizon (circa 2003-2007). Additionally, five (5) underground storage tanks were historically depicted on Site. Four (4) underground storage tanks (USTs) were noted in the northeast portion of the Site: one (1) 4,000-gallon diesel UST (removed), one (1) 4,000-gallon gasoline UST (removed), one (1) 2,000-gallon diesel UST (removed), and one (1)_2,000-gallon gasoline UST (removed). Additionally, one (1) 250-gallon used oil UST (abandoned) was located beneath the building slab in the southeastern portion of the structure.

Prior to entry into the NYSDEC BCP, the site was the subject of environmental site assessments and a supplemental investigation, which are documented in the reports summarized below:

HydroTech, Phase I Environmental Site Assessment, Dated August 13, 2012

Within that report the following onsite recognized environmental conditions (RECs) were identified:

1. The presence of two (2) storm water drywells that contain petroleum sheens.
2. The presence of an underground oil/water separator.
3. The presence of two (2) vent pipes typically associated with underground tanks.
4. The presence of a significant amount of petroleum staining on asphalt in poor condition.
5. The presence of 10 monitoring wells in the asphalt parking areas and 8 monitoring wells in concrete sidewalks surrounding the Subject Property.
6. The presence of active NYSDEC Spill #9207367.
7. The presence of SVOCs in soil in the vicinity of an abandoned 550-gallon waste oil UST.
8. The presence of a gasoline tank on historical Sanborn Maps from 1938 and 1950.
9. The historical use of the Subject Property as a coking/coal facility.
10. The inaccurate registration of two (2) 4,000-gallon underground tanks with the NYSDEC Petroleum Bulk Storage (PBS) unit.

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11. The presence of the monitoring wells associated with the USEPA National Priority List (NPL).
12. The presence of a Potential Vapor Encroachment Condition (PVEC) at the Subject Property.

Per the ESA, it was determined that NYSDEC Spill No. 920737 was assigned as a result of a 1992 investigation of the Site that involved the installation and sampling of 12 soil borings and three (3) monitoring wells in the vicinity of the one (1) 2,000-gallon gasoline underground storage tank (UST) and one (1) 2,000-gallon diesel UST. Petroleum impacts were noted in both soil and groundwater which exceeded regulatory standards. Both USTs were abandoned in-place between August through September 1993. Additional monitoring wells were installed during a series of investigations between October 1994 and October 1998. The New York State Department of Environmental Conservation (NYSDEC) required additional onsite and off-Site investigations following bulkhead work along the Gowanus Canal during spring of 1999, which destroyed several monitoring wells. The onsite and off-site investigations were performed during 1999 and 2000.
A passive bioremediation program, consisting of the injection of oxygen-releasing compounds (ORCs), was implemented during March 2001; 360 lbs of ORCs were injected into the saturated zone. An additional 300 lbs of ORCs were injected during March 2002. These injections were performed in the northern portion of the property and along the sidewalk with Union Street.

One (1) 4,000-gallon gasoline UST and one (1) 4,000-gallon diesel UST were removed from the Site during October 2003. During the removal of the tanks, 337 tons of petroleum-contaminated soil was removed; this work was reportedly performed in the northern portion of the property and along the sidewalk with Union Street. A total of 880 lbs of ORCs were placed in the bottom of the excavation.

The two (2) 2,000-gallon USTs (previously abandoned August 19, 1994) were removed during May 2006. During the removal of tanks, a total of 464 tons of petroleum-contaminated soil and 838 gallons of liquid were disposed of.

A series of chemical oxidation injections were performed between September 2008 and May 2009; three (3) separate injections totaling 1,500 lbs was injected via six (6) injection wells.

Since May 2009, a quarterly groundwater monitoring and sampling program and quarterly Enhanced Fluid Recovery (EFR) events have been performed at a monitoring well located in the sidewalk along the north side of Union Street. Numerous monitoring wells have been removed from the monitoring program and are no longer sampled. The most recent groundwater quality data (January through March 2021) indicated total volatile organic compounds (VOC) concentrations ranging from non-detect beneath the sidewalk along the south side of Union Street to over 17,000 parts per billion (ppb) in MW-8 beneath the sidewalk along the south side of Union Street.

An abandoned 550-gallon waste oil UST is present within the footprint of the building. This UST was abandoned on September 23, 1993. During the abandonment, oil was

observed in the fill vault of the UST. Three (3) soil borings were installed in the vicinity of the abandoned USTs and three (3) soil samples were collected for analysis. No VOCs were noted in the soil sampled at concentrations exceeding method detection limits (MDLs). Total semi volatile organic compounds (SVOC) concentrations ranged between 21,009 ppb to 49,620 ppb.

EnviroTrac Ltd. (EnviroTrac), Request for Spill Closure, Dated April 11, 2013

A Request for Spill Closure was completed by EnviroTrac Ltd pertaining to NYSDEC Spill Number 1215913 assigned to the Site on 2/27/2013.

In February 2013 EnviroTrac performed a Phase II in which seven (7) boring were installed throughout the Site in order to investigate identified RECs. All seven (7) soil samples exceeded Unrestricted Use Soil Cleanup Objectives (UU SCOs), with the highest concentrations detected at GP-3. Based on the SVOC detections at GP-3, the NYSDEC Spills Hotline was notified and Spill Number 1215931 was assigned to the Site.

On 3/6/2013, AARCO, under the direction of EnviroTrac, mobilized to the site and excavated the area of the concrete patch where boring GP-3 had previously been installed. Soils within the excavation, which extended down 10 feet bgs, consisted of urban fill. Native soil was encountered at approximately 11 feet bgs consisting of clay intermixed with fine sand and marsh organics. The excavation, which measured 11-feet long, by 5-feet wide by 11-feet deep, was halted due to the presence of urban fill laterally in all directions and structural concerns with the garage. Prior to backfilling, a total of five (5) endpoint soil samples were collected from each sidewall and bottom of the excavation. The samples were analyzed for CP-51 List VOCs and SVOCs. No VOCs were detected at concentrations exceeding UU SCOs in any of the endpoint samples. SVOCs were detected at concentrations exceeding UU SCOs at endpoint samples in the North Sidewall, East Sidewall, West Sidewall and South Sidewall. The endpoint bottom sample was collected in native-appearing soil at 11 feet bgs, confirming the presence of urban fill identified throughout the property.

Based on the findings of the previous borings, and endpoint soil sampling results, SVOCs were detected throughout the Site in urban fill and underlying soils within the garage. A total of 17.75 tons of soils were excavated proximal to GP-3 and properly disposed of off-site at Clean Earth of Carteret, NJ. Due to the area-wide extent of urban fill material, historical uses of the property and structural concerns, additional excavation is not feasible, closure of the spill was requested.

EnviroTrac, Phase II Environmental Site Assessment, Dated April 12, 2013

A Phase II ESA was completed by EnviroTrac based on the seven (7) identified RECs of a Phase I ESA conducted by Cardno ATC (ATC), dated December 19, 2012. The Cardno ATC RECs and associated EnviroTrac findings are summarized below:

1. Soil and groundwater contamination was discovered around former USTs along the south side of Union Street during a subsurface investigation in 1992;

as a result, NYSDEC Spill Number 9207367 was issued for the Property on 9/24/1992. Investigations and remediation activities conducted at the Property beginning in 1992 include a groundwater monitoring program, Oxygen Releasing Material (ORM) injections, and EFR events. The open spill number and on-going remediation was considered a REC.

- EnviroTrac, submitted *an Additional Remedial Work Plan* for NYSDEC Spill Number 9207367 to the DEC on 1/31/2013. The DEC subsequently approved the work in a letter dated 2/1/2013. The *Additional Remedial Work Plan* was implemented in February 2013 and included the excavation of soil from the vicinity of monitoring well MW-8 and the application of
  RegenOx ™ and ORC Advanced® to the excavation. Additionally, the exiting onsite monitoring wells were properly abandoned, and post-excavation soil samples collected from the excavation. Groundwater monitoring is to be performed and reported on a quarterly basis. Results of the off-Site groundwater monitoring would be continually evaluated for the request of spill closure.

2. A former 550-gallon waste oil UST was closed in-place in the "parts" storage area of the motor service area in the northern portion of the building in 1993. According to the *Underground Storage Tank Closures Report*, prepared by Lexicon Environmental Associates, Inc. (Lexicon), dated August 22, 1994, several of the polycyclic aromatic hydrocarbon (PAH) compounds exceeded the NYSDEC TCLP Extraction Alternative Guidance Values for fuel oil contaminated soils. Due to exceedances the closed 55-gallon waste oil UST was considered a REC.
   - Per EnviroTrac's geophysical investigation, the former waste oil UST location was identified, and two (2) borings were installed proximal to the UST. Based on the analytical results from both samples, select SVOCs were detected at concentrations exceeding NYSDEC UU SCOs. However, SVOC detections were consistent throughout the urban fill identified at the Site and previous soil sampling conducted at the time of the UST closure by Lexicon in 1993. VOCs were not detected at concentrations exceeding UU SCOs. Given that the tank appeared to have been property abandoned by Lexicon and the detection of SVOCs appears associated with urban fill throughout the Site, EnviroTrac recommended no further action in reference to the waste oil UST.

3. The report entitled *Summary of EPA Gowanus Canal Remedial Investigation of Verizon New York Inc. Facility, 318 Nevins Street, Brooklyn, NY, NYSDEC Spill Number 92-07367,* prepared by EnviroTrac, dated June 8, 2011, documents a former sewer outfall and oil/water separator outfall that historically discharged into the Gowanus Canal. It was presumed that the outfalls were abandoned when the bulkhead along the Gowanus Canal was replaced in 1999, however, no record of the closure/abandonment was reported and considered a REC.
   - Per EnviroTrac's investigation, pipes were not visible at the canal, and it was presumed that if there were outfalls, they were abandoned when

the bulkhead along the Gowanus Canal was replaced in 1999 by the property owner. Two (2) borings were installed at suspected terminus points of the oil/water separator piping. Based on analytical results from the samples, select SVOCs were detected at concentrations exceeding UU SCOs and VOCs were not detected at concentrations exceeding UU SCOs. Again, SVOCs were consistent with the urban fill identified at the Property. If the oil/water separator is to be used in the future, EnviroTrac recommended that the capping of the discharge piping at the oil/water separator be confirmed and/or connected to the municipal water.

4. The Gowanus Canal, located directly west of the site, is listed on the National Priority List (NPL), CERCLIS and Primary Responsible Party (PRP) databases. The CERCLIS listing indicates that "The Gowanus Canal is impacted by contaminated sediments, principally due to the activities of former Manufactured Gas Plants (MPGs). Surface sediments contain PCBs at levels up to 350 ppm, and coal tar residue up to 23% by weight of sample." The Gowanus Canal listed on regulatory databases as being contaminated was considered a REC.
    - EnviroTrac concluded that this would remain a REC for the property.

5. Historical usage of the Property included a lumber yard, Koppers Seaboard Coke Co., Brooklyn Nevins Coal Company, Morton Coal Company, motor freight station, NY Telephone Co., Bell Atlantic and Verizon. The surrounding properties have been developed as lumber yard, coal yards, manufacturing, commercial, and dwellings from 1886 through 2007. Some of the specific property usage includes the oil and gasoline storage, auto repair, auto wrecking, truck repair, warehouses, foundry, garage, plastics manufacturing, factories, dry color manufacturing, and commercial and manufacturing facilities. Historical usage of the property and surrounding properties was considered a REC.
    - EnviroTrac concluded that this would remain a REC for the property. Urban fill was identified at each Phase II ESA boring location and select SVOCs were detected at all seven (7) soil samples at concentrations exceeding UU SCOs. The suspected source of detected SVOCs at the boring locations was urban fill.

6. ATC observed two (2) aboveground hydraulic lifts, with an aboveground hydraulic tank, in the motor service area of the Property. The aboveground lifts reportedly replaced two (2) former underground lifts which likely had underground components containing hydraulic oil. The former underground lifts are considered a REC as no assessment had been completed in related to them.
    - EnviroTrac concluded that no underground hydraulic lifts were at the Site as none were identified during the geophysical investigation, installation of soil borings or excavation onsite. The suspected source of detected SVOCs at the boring locations with the garage area and proximal to where the lifts were suspected is urban fill.

EnviroTrac recommends no further action in reference to the reported former underground lifts.

7. ATC observed two (2) “stormwater drains/drywells” located in the eastern portion of the asphalt paved parking lot. During the Property reconnaissance, the “stormwater drains/drywells” were observed to be full of water with no lateral pipes observed that would be indicative of catch basins diverting water to a lateral line. A NYCDEP Brooklyn Sewer Map for the area does not show these drains connected to the sewer system on the map. In addition, a slight sheen was observed in the southern stormwater drain/drywell. The stormwater drains/drywells were considered a REC.
    - EnviroTrac concluded that the stormwater drains/drywells were confirmed to be catch basins constructed of a solid concrete bottom and sidewalls with an interconnecting pipe to the municipal storm sewer. No overflow drywells were identified during the geophysical investigation. The bottom sediments were removed from the catch basins by AARC, Verizon’s waste contractor on 2/28/2013 and properly disposed of. EnviroTrac recommended no further action in reference to the catch basins.

EnviroTrac, Update Report, Dated April 29, 2013

EnviroTrac submitted an Update Report for January 2013 through March 2013.
Site Background: A subsurface evaluation was conducted by Lexicon Environmental Associates (Lexicon) in the fall of 1992, which included the advancement of twelve (12) soil borings proximal to the 2,000-gallon gasoline and 2,000-gallon diesel USTs and associated dispensers. Due to refusal, only three (3) samples were collected. Analytical results revealed several BTEX, MTBE and PAH compounds exceeding the NYSDEC TCLP Extraction Guidance Values. Additionally, three (3) monitoring wells were installed. Groundwater analytical results revealed MTBE detected at MW-1 and MW-3 exceeding TCLP Guidance values. On 8/19/1993, the 2,000-gallon USTs were abandoned in-place using a concrete slurry which is summarized in Lexicon’s *Underground Storage Tank Closure Report* dated 8/22/1994. At the request of the NYSDEC, Lexicon completed a *Tidal Evaluation Report* on 4/18/1994, which concluded that off-site sources may have the potential to adversely affect the ground water at the site as a result of tidal fluctuation. Three (3) additional monitoring wells (MW-4 through MW-6) were installed in October 1994 and sampled in November. MTBE and BTEX levels increased and the NYSDEC requested that a remedial program be implemented. Four (4) injection points (IP-1 through IP-4) were installed near MW-1 (area with highest hydrocarbon concentrations) in 1995. After which, a routine sampling program of select monitoring wells and injection points was instituted. MW-7 was installed on 10/23/1998. Following a meeting with the NYSDEC on 5/20/1999, it was determined that Lexicon would conduct an additional investigation to determine the extent of off-Site impacts. Three (3) additional monitoring wells were installed; MW-8 and MW-9 in the sidewalk along Union Street adjacent to the site and MW-10 onsite. On 6/6/2000 a meeting was held with the NYSDEC and further off-site delineation was requested. On 11/8/2020 two (2) additional off-site monitoring wells (MW-11 and MW-12) were installed. A follow-up meeting was held with the NYSDEC

on 1/11/2001, Verizon decided to implement a passive bioremediation program. ORC injection occurred on May 2 and 3, 2001 by advancing 22 boreholes approximately 5 feet into the water table. A total of 360 lbs of ORC was injected. In March 2002 EnviroTrac was elected to continue Site remediation and quarterly sampling. On 5/15/2002 300 lbs of calcium peroxide (Perme-ox Plus™) was injected onsite. UST removal activities occurred in October 2003, one (1) 4,000-gallon gasoline UST and one (1) 4,000-gallon diesel UST were removed and summarized in the *Underground Storage Tank Removals* report dated 12/31/2003. At this time, soil in the area proximal to MW-8 was excavated, a total of 337 tons of petroleum-impacted soil was disposed of and 880 lbs of oxygen releasing material (ORM) was placed in the bottom of the excavation prior to backfilling. Per a *Remedial Work Plan*, dated 7/25/2008, a total of 1,500 lbs of RegenOx ™ was injected using a network of six (6) off-site injection wells (IW-1 through IW-6). Quarterly EFR events at off-site monitoring well MW-8 was initiated in December 2009 and discontinued following the December 2012 event based on NYSDEC approval of the *Additional Remedial Work Plan* dated 1/31/2013.

On 2/1/2013, the NYSDEC approved the *Additional Remedial Work Plan*. The plan outlined the removal of residential-impacted soils in the vicinity of off-site monitoring well MW-8. Following receipt of a sidewalk opening permit, the excavation work was area was split in half in order to allow for sidewalk pedestrian traffic. CAMP was implemented when excavation activities were underway by AARCO.

Excavation activities were initiated along the southern portion of the sidewalk in the area of the fence/wall that abuts the Site. This area contained injection well IW-1 (destroyed during excavation activities). An excavator was utilized to remove an area of concrete sidewalk approximately 10 feet wide (parallel with Gowanus Canal) by 20 feet long (parallel with Union Street). Soils encountered from grade to approximately 12 feet bgs included urban fill materials, groundwater was encountered at 9 feet bgs. Soils were excavated down to 16 feet bgs. A slight petroleum odor was noted in the excavation at the 12-16 feet bgs interval, this soil consisted of brown to gray, medium to coarse, wet sand intermixed with organics and some gravel. Excavated petroleum-impacted soil was stockpiled in sealed roll-off containers for proper off-site disposal. Following soil removal from the excavation, two (2) endpoint sidewall samples and one (1) endpoint bottom sample were collected for laboratory analysis of CP-51 VOCs. VOCs were not detected above UU SCOs nor were supplemental soil cleanup objectives (S SCOs). Prior to backfilling the excavation, a total of 240 lbs of ORC Advanced® was added to the saturated portion of the excavation as a long-term oxygen source in this area. The second half of the excavation was initiated along the northern portion of the sidewalk that abuts Union Street. This area contained MW-8 and injection wells IW-2 and IW-3 (destroyed during excavation activities). The excavator was utilized to remove an area of concrete sidewalk approximately 10 feet wide (parallel with Gowanus Canal) by 20 feet long (parallel with Union Street). Soils encountered from grade to approximately 9 feet bgs included urban fill materials, groundwater was encountered at 9 feet bgs. Black fine sand intermixed with fill and organic materials was encountered from approximately 8 to 15 feet bgs. Soils were excavated down to 16 feet bgs, a slight petroleum odor was noted in the excavation at the 15-16 feet bgs interval, this soil consisted of large tree branches/roots intermixed with course tan sand and gravel. Excavated petroleum-impacted soil was

stockpiled in sealed roll-off containers for proper off-site disposal. Following soil removal from the excavation, one (1) endpoint bottom sample was collected for laboratory analysis of CP-51 VOCs. VOCs were not detected above UU SCOs nor were supplemental soil cleanup objectives (S SCOs). Prior to backfilling the excavation, a total of 240 lbs of ORC Advanced® was added to the saturated portion of the excavation, additionally, 25 lbs of ORC Advanced® was added to provide a long-term oxygen source in this area. MW-8 was then reinstalled to an approximate depth of 14 feet bgs. A total of 82.64 tons of petroleum-impacted soil was removed from the excavations and transported to Clean Earth of Carteret in New Jersey for proper off-Site disposal.

Following the completion of the off-site excavation, onsite monitoring wells: MW-3, MW-4, MW-6, MW-7, MW-10, MW-13, MW-15, MW-16 and MW-17 were abandoned according to NYSDEC specifications on 3/6/2013.

Quarterly sampling was conducted on 3/29/2013, one (1) month after the implementation of the *Additional Remedial Work Plan*. Analytical results revealed that dissolved VOCs continue to be detected at elevated concentrations at off-site monitoring well MW-8. Concentrations of total BTEX increased from 662 ug/L to 4,248 ug/L and concentrations of Total VOCs have increased from 2,690 ug/L to 8,644 ug/L since the previous event. The increases are likely due to the disturbance of subsurface soils and groundwater and the oxidizer application proximal to MW-8. Results of post off-site remediation quarterly 2013 off-site groundwater monitoring will be continually evaluated for the request of spill closure.

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. (Landgan), Phase II, Dated July 19, 2019

A Phase II Report was conducted by Langan. a summary of the investigation findings are presented below:

The investigation included the advancement of eight (8) soil borings in which one (1) discrete sample was collected for laboratory analysis from each boring from the one-foot interval exhibiting the greatest degree of impacts. Two (2) of the soil boring locations were converted into temporary groundwater monitoring wells. One (1) groundwater sample was collected from each of the newly installed wells and from two (2) of the three (3) existing wells. Additionally, three (3) borings were converted into temporary soil vapor probes for collection of three (3) soil vapor samples.

<u>Soil</u>

- Historic Fill material, characterized as fine-grained sand with varying amounts of gravel, clay, brick, concrete, wood, asphalt and slag, was observed directly below the impervious site cover to depths ranging from about 6 to 9 feet bgs in all borings. The historic fill material was underlain by varying amounts of sand, clay and gravel. A clay layer was observed in all borings from about 10 feet bgs to boring termination depths (at most 17 feet bgs) and ranged from 0.5 to 5 feet in thickness.

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- Petroleum-like impacts were observed in four (4) borings at the groundwater interface as evidenced by odor, staining and PID readings above background.
- Petroleum-related VOCs were detected in soil samples collected from two (2) borings at concentrations above UU SCOs and Restricted Use Restricted Residential (RURR) SCOs
- SVOCs and metals characteristic of historic fill material in New York City were detected in soil samples collected from five (5) borings at concentrations above UU and RURR SCOs.

Groundwater

- Depth to groundwater was observed at about 7.5 feet bgs.
- A petroleum-like odor and sheen were observed during sampling of one (1) well.
- Petroleum-related VOCs were detected in a groundwater sample collected from one (1) well at concentrations above the NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values for Class GA Water (NYSDEC SGVs)
- SVOCs were detected in two (2) groundwater samples at concentrations above NYSDEC SGVs. The detected SVOCs may be representative of regional groundwater quality associated with either the Gowanus Canal and upland sources of bank-stored coal tar or entrained historic fill material and groundwater.
- Dissolved metals characteristic of regional groundwater quality in Brooklyn were detected in the groundwater samples collected from two (2) wells at concentrations above NYSDEC SGVs.

Soil Vapor

- Although not a directly applicable comparison criterion, one (1) VOC was detected in soil vapor sample at a concentration above the minimum soil vapor concentrations at which mitigation is recommended.
- Four gasoline-related VOCs were detected at notable concentrations in one (1) soil vapor sample.

IE, Remedial Investigation, November 2021

(IE) conducted a Remedial Investigation performed in consultation under the oversight of New York City Office of Environmental Remediation (NYC OER) at the Site between November 17 and 18, 2021, November 22, 2021 and November 24, 2021. The findings summarized herein are based on qualitative and quantitative data consisting of field observations, instrumental readings, and laboratory analytical results of soil, groundwater, and soil vapor samples collected at the Site, as follows:

1. Elevation of the site ranges from 11 to 16 feet.
2. Depth to groundwater ranges from 5.05 to 6.55 feet at the Site.
3. Groundwater flow presumed to be from northeast to southwest beneath the site.
4. Bedrock was not encountered during this investigation.

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5. Stratigraphy: The surface of the Site down to approximately 5 feet bgs consisted of historic fill material which was characterized as fine-grained sand with varying amounts of of asphalt, brick, clay and concrete. Underlying this layer, a brown fine to medium sand with some silt was observed from approximately 5 to 9 feet bgs, followed by a clay layer that extended to the terminal depth of each boring (at most 17 feet bgs). Other miscellaneous debris noted in the boring located on the western portion of the property (parallel to the Gowanus Canal) included small pieces of coal and odiferous wood fragments.
6. Soil/fill samples were collected were compared to NYSDEC Unrestricted Use Soil Cleanup Objectives (UUSCOs) and Restricted Residential Soil Cleanup Objectives (RRSCOs) as presented in 6NYCRR Part 375-6.8 and CP51. Soil/fill samples showed the following:
    - VOCs were detected above UUSCOs and/or RRSCOs within four (4) soil samples: acetone (maximum concentration 240 ug/kg) was detected above UUSCOs; benzene (maximum concentration of 7,100 ug/kg) was detected above RRSCOs; ethylbenzene (maximum concentration of 1,900 ug/kg) above UUSCOs; n-propylbenzene (maximum concentration of 6,100 ug/kg) was detected above UUSCOs; and tetrachloroethene (maximum concentration of 1,500 ug/kg) above UUSCOs;
    - SVOCs, specifically polycyclic aromatic hydrocarbons (PAHs), exceeded UUSCOs and/or RRSCOs in nine (9) soil samples throughout the site: benzo(a)anthracene (maximum concentration 130,000 ug/kg) was detected above RRSCOs; benzo(a)pyrene (maximum concentration 120,000 ug/kg) was detected above RRSCOs; benzo(b)fluoranthene (maximum concentration 120,000 ug/kg) was detected above RRSCOs; benzo(k)fluoranthene (maximum concentration 57,000 ug/kg) was detected above RRSCOs; chrysene (maximum concentration 110,000 ug/kg) was detected above RRSCOs; fluoranthene (maximum concentration 190,000 ug/kg) was detected above RRSCOs, dibenzo(a,h)anthracene (maximum concentration 22,000 ug/kg) was detected above RRSCOs; indeno(1,2,3-cd)pyrene (maximum concentration 100,00 ug/kg) was detected above RRSCOs; and pyrene (maximum concentration 170,000 ug/kg) was detected above RRSCOs.
    - Metals were detected at concentrations exceeding UUSCOs and/or RRSCOs in ten (10) soil samples: copper (maximum concentration 118.0 mg/kg) was detected above UURSCOs; lead (maximum concentration 581.0 mg/kg) was above UUSCOs, mercury (maximum concentration 2.23 mg/kg) was detected above RRSCOs, nickel (maximum concentration 89.5 mg/kg) was detected above UUSCOs and zinc (maximum concentration 393.0 mg/kg) was detected above RRSCOs; and barium (maximum concentration 499.0 mg/kg) was detected above RRSCOs.
    - PCBs were not detected above laboratory reporting limits within any soil sample;

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- Pesticides exceeded UUSCOs but were below RRSCOS in five (5) soil samples collected at 0-2 feet bgs; 4,4'-DDD (maximum concentration of 46.0 ug/kg); 4,4'-DDE (16.0 ug/kg); 4,4'-DDT (34.0 ug/kg).

7. Groundwater samples collected were compared to NYSDEC Technical Operational Guidance Series (TOGs) 1.1.1, Ambient Water Quality Standards (AWQS). Groundwater samples showed the following;
   - VOCs were detected at concentrations exceeding AWQS in one (1) groundwater sample: benzene (concentration of 2.2 ug/L); isopropyl benzene (concentration of 23 ug/L); n-propylbenzene (concentration op 21 ug/L); and sec-butylbenzene (concentration of 5.3 ug/L).
   - SVOCs, specifically PAHs, exceeded AWQS in three (3) groundwater samples: benzo(a)anthracene (maximum concentration 2.5 ug/L); benzo(a)pyrene (maximum concentration 2.4 ug/L); benzo(b)fluoranthene (maximum concentration 2.2 ug/L); benzo(k)fluoranthene (maximum concentration 2.0 ug/L); chrysene (maximum concentration 2.4 ug/L); indeno(1,2,3-cd)pyrene (maximum concentration 2.2 ug/L); and phenol (maximum concentration of 6.4 ug/L);
   - Metals were detected above AWQS in three (3) groundwater samples: aluminum (maximum concentration 151.0 mg/L); arsenic (maximum concentration 0.207 ug/L); barium (maximum concentration 5.89 mg/L), beryllium (maximum concentration 0.009 mg/L); cadmium (maximum concentration 0.021 mg/L); chromium (maximum concentration 0.142 mg/L); copper (maximum concentration 1.45 mg/L); iron (maximum concentration 287.0 mg/L); lead (maximum concentration 14.4 mg/L); magnesium (maximum concentration 111.0 mg/L); manganese (maximum concentration 5.02 mg/L); nickel (maximum concentration 0.612 mg/L); sodium (maximum concentration 1,090.0 mg/L); and zinc (maximum concentration 6.66 mg/L).
   - PCBs were not detected above laboratory reporting limits within any groundwater sample;
   - Pesticides were not detected above laboratory reporting limits within any groundwater sample;
8. Soil vapor results were compared to the compounds listed in Table 3.1 Air Guidance Values derived by the New York State Department of Health (NYSDOH) located in the NYSDOH Final Guidance for evaluating Soil Vapor Intrusion, dated October 2006 and the revised NYSDOG Decision Matrices dated May 2017. Chlorinated VOCs exceeded the decision matrices within two soil vapor samples: tetrachloroethene (306 ug/m^3) and trichloroethene (141 ug/m^3).

IE, BCP Remedial Investigation, September 2022

The Site was investigated in accordance with the scope of work presented in the NYSDEC-approved Remedial Investigation (RI) Work Plan dated May 11, 2022, Revised September 22, 2022, and a Supplemental RI Work Plan dated December 8, 2022 for delineation of MGP coal tar which was revised December 22 2022. The RI was conducted on September 23, 2022, September 26 through 30, 2022, October 3 through 7, 2022 and

October 10 through 12, 2022. The Supplemental RI for delineation of MGP coal tar was conducted from December 23, 2022 through January 30, 2023. The Remedial Investigation Report (RIR) was submitted to NYSDEC on November 10, 2022 and revised to include the supplemental RI data. The Revised RIR was submitted on March 13, 2023.

A geophysical survey was performed by Nova Geophysical Engineering (Nova) on September 23 and 26, 2022 where ground penetrating radar (GPR) and other subsurface locating equipment were utilized to identify subsurface utility service lines and/or anomalies within the Site boundaries that may hinder the advancement of soil vapor points, soil borings, and monitoring wells. Locations for the water, sewer, drainage and natural gas lines were marked on the Site and three (3) anomalies were detected. The anomalies indicated potential USTs or soil disturbance related to USTs on northwestern portion of the Site; a suspected oil/water separator on the northeastern portion of the Site; and a large, flat uncharacterizable anomaly at the southeastern portion of the Site.

As part of the RI and Supplemental RI, a total of 83 soil borings were advanced at the Site. The following soil borings were advanced utilizing a hydraulically driven direct push Geoprobe® DT22 Soil Sampling System to collect continuous soil cores at the Site as part of the RI and supplemental RI:

- Eight (8) soil borings outside of previous environmental investigation sample locations to further investigate urban fill material. The soil borings included SB-7, SB-8, SB-10 and SB-11 to approximately 15 fbg outside the elevated remnant concrete slab from the former building and soil borings SB-12, SB-13, SB-14 and SB-15 were advanced to approximately 20 fbg through the former building elevated slab.
- Four (4) shallow soil borings to address potential USTs and two (2) soil borings to address a potential oil/water separator. The soil borings for the UST investigation included TF-1, TF-2, TF-3 and TF-4 to approximately 10 fbg and the borings to investigate the suspected oil/water separator included OWS-1 and OWS-2 to approximately 15 fbg.
- Six (6) soil borings to investigate the shallow soil conditions and to investigate the potential for migration of MGP coal tar contamination in deeper soil from an off-site and upgradient source(s). Deep Soil borings SB-9, SB-16, SB-17, SB-18, SB-19 and SB-20 were advanced to depths ranging from 65 to 80 feet bgs.
- Advancement of sixty-three (63) deep soil borings to further investigate and delineate the confirmed migration of MGP coal tar contamination onto the Site from an off-site and upgradient source(s).

Soil was continuously field screened to termination depth at each soil boring using a photoionization detector (PID), and for visual and olfactory indications of contamination (e.g., staining and odor). A total of 138 soil samples were collected from the soil borings advanced during the RI and supplemental RI and submitted to Alpha Analytical (Alpha) of Westborough, MA, a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) Certified Environmental Laboratory (ELAP # 11148). These soil samples were submitted for laboratory analysis of target compound list (TCL) volatile organic compounds (VOCs) per USEPA Method 8260; TCL semi volatile

organic compounds (SVOCs) per USEPA Method 8270; TCL organochlorine pesticides and herbicides per USEPA Methods 8081B and 8151A, respectively; polychlorinated biphenyls (PCBs) by USEPA Method 8082A; target analyte list (TAL) metals plus hexavalent chromium and cyanide by USEPA Methods 6010C/7471B/9010C/7196A, respectively; and emerging contaminants 1,4 -dioxane by USEPA Method 8270 SIM isotope dilution and NYSDEC list of per- and polyfluoroalkyl substances (PFAS) by USEPA Method 537 for initial RI and Method 1633 for supplemental RI.

The following monitoring wells were installed via hollow stem augur utilizing a Geoprobe® DT22 as part of the RI and supplemental RI:

- Installation of five (5) new shallow permanent groundwater interface monitoring wells throughout the property designated as GW-3 through GW-7 (new GW-3 replacement for damaged existing well GW-3). The monitoring wells were installed via auger to 20 fbg. The investigation also included the use of two (2) existing monitoring wells identified as GW-3 and GCMW28.
- Installation of two (2) sets of cluster wells, one at the SB-16 location and one at the SB-17 location. These wells were installed to address the coal tar DNAPL detected in SB-16 and SB-17 and no groundwater samples have been collected as of the date of this report, but will be addressed as part of a design phase work plan.
- The top of casing for the new and existing monitoring wells were surveyed to calculate the groundwater elevation and to prepare the groundwater contour map.

A total of eight (8) shallow groundwater samples were collected from GW-2 through GW-7 and GCMW28. These groundwater samples were submitted to Alpha for laboratory analysis of TCL VOCs per USEPA Method 8260; TCL SVOCs per USEPA Method 8270; TCL organochlorine pesticides and herbicides per USEPA Methods 8081B and 8151A, respectively; PCBs by USEPA Method 8082A; TAL metals plus hexavalent chromium and cyanide by USEPA Methods 6010C/7471B/9010C/7196A, respectively; and emerging contaminants 1,4 -dioxane by USEPA Method 8270 SIM isotope dilution and NYSDEC list of PFAS compounds by USEPA Method 537 in accordance with the initial RI.

The following soil vapor points were installed via hand auger and soft dig techniques:

- Installation of five (5) soil vapor sampling points throughout the property to depths of between 3 and 4 fbg (approximately 2-feet above the water table interface/capillary fringe zone).
- The soil vapor points, designated as SV-4 through SV-8, were each purged to evacuate potential atmospheric air prior to sample collection to ensure the sample would be representative of subsurface soil vapor conditions.

A total of five (5) soil vapor samples were collected to further define the soil vapor beneath the Site. A laboratory supplied clean 6-liter Summa canister with pre-calibrated flow controller (0.02 liters per minute) was used to collect the soil vapor samples over an 8-hour period. Soil vapor samples were submitted to Alpha for laboratory analysis of VOCs via EPA Method TO-15.

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Appendix A -
Project Contacts and Locations of Reports and Information

Project Contacts

For information about the site's investigation and cleanup program, the public may contact any of the following project staff:

New York State Department of Environmental Conservation (NYSDEC):

Project Manager: Aaron Fischer
NYSDEC Region 2
Division of Environmental Remediation
625 Broadway, Albany, NY 12233-7016
Phone: (518) 402-9608
Email: aaron.fischer@dec.ny.gov

Thomas Panzone
Public Participation Specialist
NYSDEC Region 2
1 Hunter's Point Plaza
47-40 21st Street
Long Island City, NY 11101
Phone: (718) 482-4953
Email: Thomas.panzone@dec.ny.gov

New York State Department of Health (NYSDOH):

Project Manager: Arunesh Ghosh
NYSDOH
Empire State Plaza - Corning Tower
Room #1787
Albany, NY 12237
Phone: (518)402-7860
Email: Arunesh.Ghosh@health.ny.gov

Locations of Reports and Information

The facilities identified below are being used to provide the public with convenient access to important project documents:

Brooklyn Public Library-
Carroll Gardens
396 Clinton Street Brooklyn, NY 11217
Attn: Candace Vasquez
Phone: (718) 638-1531
Hours:

Monday	10AM–6PM
Tuesday	1–8PM
Wednesday	10AM–6PM
Thursday	10AM–8PM
Friday	10AM–6PM
Saturday	10AM–5PM
Sunday	CLOSED

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NYSDEC Region 2
625 Broadway, Albany, NY 12233-7016
Attn: Nathan Freeman
Phone: (518) 402-9608
Hours: (call for appointment)

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Appendix B - Site Contact List

Appendix B - Site Contact List
300-344 Nevins Street (aka 318 Nevins Street), Brooklyn, NY

	A	B	C	D	E	F	G	H	I	J
1										
2	Site Contact List									
3	Site #: C224350									
4	Site Name: 585 Union Street			List Last Updated: 8-24-21						
5	Current Occupant	Name, Title	Address 1	Address 2	Address 3	Street Address	City	State	Zip	Phone
6	Current Occupant	Nevins Street Holding								
7		Hon. Brad Lander	NYC Comptroller			1 Centre Street	New York	New York	10007	
8		Hon. Jumaane Williams	Public Advocate			1 Centre Street, 15th Flo	New York	New York	10007	
9		Mike Racioppo	NYC Planning Commission Chairperson			120 Broadway 31st Floor	New York	New York	10271	Phone: (212)-720-3300
10		Antonio Reynoso	Brooklyn Borough President			209 Joralemon Street	Brooklyn	New York	11201	Phone: (718) 802-3700
11	Brooklyn Community Board 6	Kazimir Vilemchik	Brooklyn Borough Commissioner	New York City Department of Buildings	210 Joralemon Street	8th Floor	Brooklyn	New York	11201	(646) 892-1350
12	Brooklyn Community Board 6	Mike Racioppo	District Manager	Brooklyn Community Board 6		251 Douglass Street	Brooklyn	New York	11217	
13	Brooklyn Community Board 6	Peter Fleming	Chairperson	Brooklyn Community Board 6		250 Baltic Street	Brooklyn	New York	11201	(718)-802-3027
14		Lincoln Restler	NYC Council Member	NYC Council	33rd District	410 Atlantic Avenue	Brooklyn	New York	11217	(718) 875-5200
15		Hon. Jabari Brisport	NYS Senator			55 Hanson Place, Suite 70	Brooklyn	New York	11217	
16		Hon. Jo Anne Simon	NYS Assembly member			341 Smith Street	Brooklyn	New York	11217	
17		Hon. Charles Schumer	U.S. Senator			780 Third Avenue, Suite	New York	New York	10017	
18		Hon. Kirsten Gillibrand	U.S. Senator			780 Third Avenue, Suite	New York	New York	10017	
19		Hon. Nydia Velazquez	U.S House of Representatives			266 Broadway, Suite 201	Brooklyn	New York	11211	
20		Nancy T. Sunshine	Kings County Clerk			360 Adams Street Suite	Brooklyn	New York	11201	
21										
22		Rohit T. Aggarwala	Commissioner, NYCDEP			59-17 Junction Boulevard	Elmhurst	New York	11373	
23		Julie Stein	NYCDEP			96-05 Horace Hardin Bou	Flushing	New York	11373	
24		Antonia Yuille	Consolidated Edison Corporate Affairs	Antonia Yuille		30 Flatbush Avenue	Brooklyn	New York	11217	
25		Engine 239	FDNY	Engine 239		395 4th Avenue	Brooklyn	New York	11215	
26		78th Police Precinct Council	NYPD	N. Wayne Bailey President	78th Police Precinct Council	65 6th Avenue	Brooklyn	New York	11217	
27										
28	Schools and Daycare Centers					238 5th Avenue	Brooklyn	New York	11215	
29		Sunflower Childcare	Heather Groth, Executive Director			318 Warren Street	Brooklyn	New York	11201	
30		Open House Nursery School	Tom Cucinotta, Executive Director			71 Lincoln Place	Brooklyn	New York	11201	
31		Park Slope North Child Development Center	Marilus Castellanos, Senior Program Director			147 5th Avenue	Brooklyn	New York	11215	
32		Eladia's Kids	Eladia Causil-Rodriguez, Founder and Owner			565 Baltic St. #1704	Brooklyn	New York	11215	
33		Alonzo A Daughtry Day Care Center	Dr. Karen S. Daughtry, Educational Director			277 3rd Avenue	Brooklyn	New York	11215	
34		Rivendell School	Katy Hill, Executive Director			125 5th Avenue	Brooklyn	New York	11215	
35		NY Kids Club Park Slope	Douglas Rogers, Center Director			125 5th Avenue	Brooklyn	New York	11217	
36		Bumble Bee Daycare	Not Available			258 4th Avenue	Brooklyn	New York	11217	
37		A Strong Place for Hope	Not Available			460 Atlantic Avenue	Brooklyn	New York	11215	
38		PS 032 Samuel Mills Sprole	Denise Watson-Adin, Principal			317 Hoyt Street	Brooklyn	New York	11215	
39		Metrokids Preschool – Cobble Hill School	Not Available			314 Pacific Street	Brooklyn	New York	11215	
40		P.S. 261 - Phillip Livingston	Rosa Amato, Principal			512 Carroll Street	Brooklyn	New York	11201	
41		The Children's School P.S. 372	Rosa Amato, Principal			383 3rd Avenue	Brooklyn	New York	11215	
42		Al-Madinah	Br. Ahmed Jammoudy			610 Baltic Street	Brooklyn	New York	11215	
43		Public School 133	Heather Foster-Mann, Principal			242 Hoyt Street	Brooklyn	New York	11215	
44		New Dawn Charter High School	Ms. Donna Lobato, Principal			347 Baltic Street	Brooklyn	New York	11215	
45		Cobble Hill School of American Studies	Anna Maria Mule, Principal			383 State Street	Brooklyn	New York	11215	
46		P.S. K369 – Coy L. Cox School	Majorie Dalrymple, Principal			450 Pacific Street	Brooklyn	New York	11217	
47		P.S. K38 The Pacific School	Ms. Pascale, Principal			345 Dean Street	Brooklyn	New York	11217	
48		The Math & Science Exploratory School	Arin M. Rusch, Principal							
49										
50	Local Media Outlets	Brooklyn Courrier				One Metrotech Center, Thir	Brooklyn	New York	11201	
51		The Red Hook Star Revue				481 Van Brunt Street, Suite	Brooklyn	New York	11231	
52		New York Times				620 Eighth Ave.	New York	New York	10018	
53		New York Daily News				450 W. 33 Street	New York	New York	10001	
54		New York Post				1211 Avenue of the America	New York	New York	10036-8790	
55	Surrounding Properties									
56	305 Nevins Street (Block 440 Lot 9)	OWNER: Union and Nevins LLC	Owner Address: 51 East 12th Street 7th Floor				New York	New York	10003	
57	469 President Street (Block 440 Lot 1)	OWNER: 473 President LLC	Owner Address: 51 East 12th Street 7th Floor				New York	New York	10003	
58	325 Nevins Street (Block 447 Lot 7)	OWNER: Crusader Candle Co., Inc.	Owner Address: 325 Nevins Street				Brooklyn	New York	11217	
59	335 Nevins Street (Block 447 Lot 4)	OWNER: Crusader Candle Co., Inc.	Owner Address: 325 Nevins Street				Brooklyn	New York	11217	
60	447 Nevins Street (Block 447 Lot 3)	OWNER: Crusader Candle Co., Inc.	Owner Address: 325 Nevins Street				Brooklyn	New York	11217	
61	341 Nevins Street (Block 447 Lot 1)	OWNER: EQR-Gowanus Development LLC	Owner Address: 2 North Riverside Plaza, Suite 400				Chicago	Illinois	60606	
62	420 Carroll Street (Block 453 Lot 1)	OWNER: 420 Caroll LLC	Owner Address: 11 Park Place, Suite 1705				New York	New York	10007	

Appendix C - Site Location Map



Appendix C:
Site Location Map

318 Nevins Street, Brooklyn, NY

PLATE No: 01

PROJECT #	15977
DRAWN BY	DLP
CHECKED BY	DLP
DATE	5-4-22
Revisions	

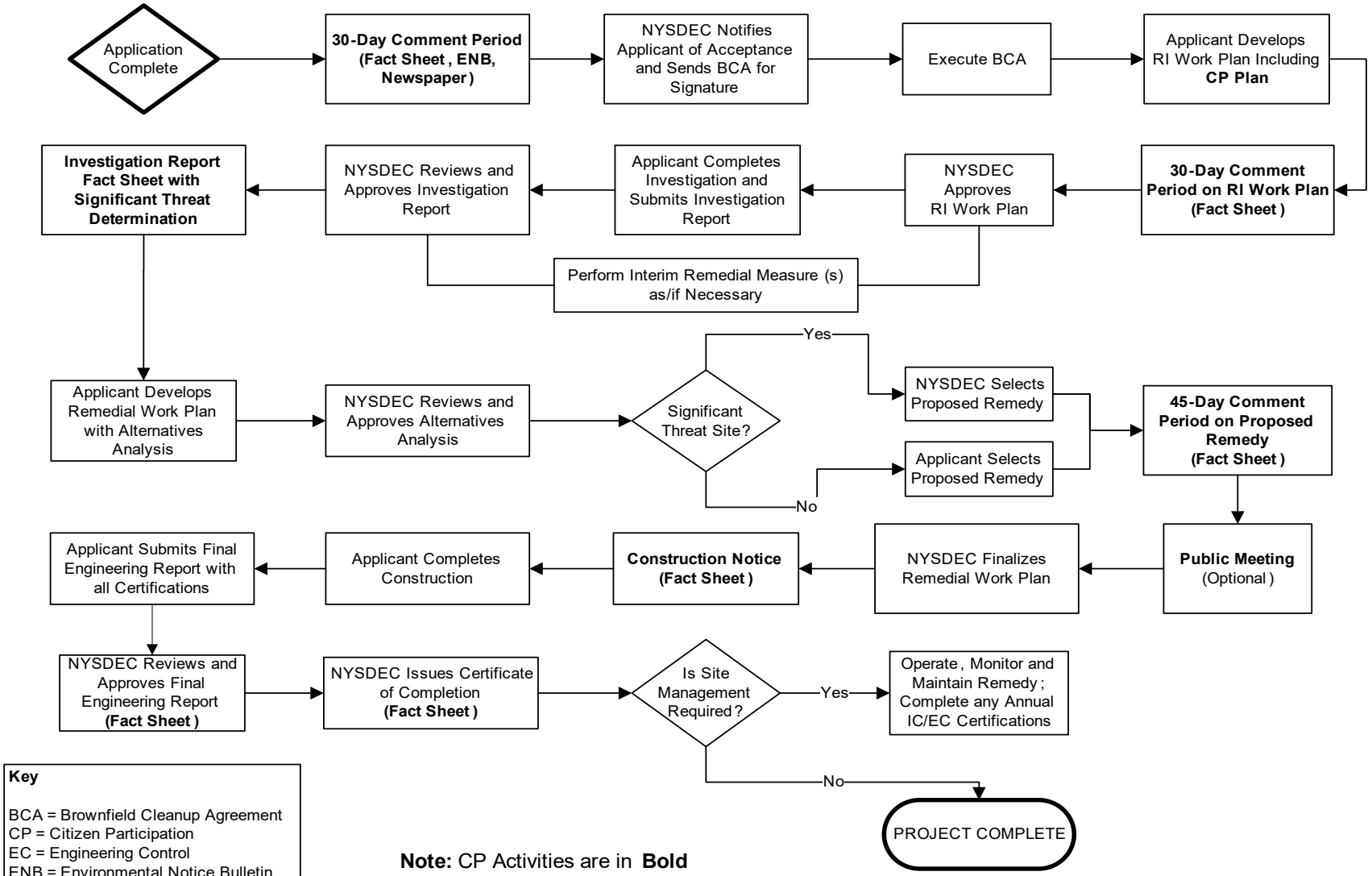
N

Not to scale

IMPACT ENVIRONMENTAL CLOSURES, INC.

170 KEYLAND COURT
BOHEMIA, NEW YORK 11716
TEL (631) 269-8800
FAX (631) 269-1599

Appendix D– Brownfield Cleanup Program Process



Key

BCA = Brownfield Cleanup Agreement
CP = Citizen Participation
EC = Engineering Control
ENB = Environmental Notice Bulletin
IC = Institutional Control
RI = Remedial Investigation

Note: CP Activities are in **Bold**

Division of Environmental Remediation

Remedial Programs
Scoping Sheet for Major Issues of Public Concern

Instructions

This Scoping Sheet assesses major issues of public concern; impacts of the site and its remedial program on the community; community interest in the site; information the public needs; and information needed from the public.

The information generated helps to plan and conduct required citizen participation (CP) activities, and to choose and conduct additional CP activities, if appropriate. The scoping sheet can be revisited and updated as appropriate during the site's remedial process to more effectively implement the site's CP program.

Note: Use the information as an aid to prepare and update the Major Issues of Public Concern section of the site CP Plan.

General Instructions

- When to prepare: During preparation of the CP Plan for the site. It can be revisited and updated anytime during the site remedial process.
- Fill in site name and other information as appropriate.
- The Scoping Sheet may be prepared by DEC or a remedial party, but must be reviewed and approved by the DER site project manager or his/her designee.

Instructions for Numbered Parts

Consider the bulleted issues and questions below and any others that may be unique or appropriate to the site and the community to help complete the five Parts of this Scoping Sheet. Identify the issue stakeholders in Parts 1 through 3 and adjust the site's contact list accordingly.

Part 1. List Major Issues of Public Concern and Information the Community Wants.

- Is our health being impacted? (e.g. Are there problems with our drinking water or air? Are you going to test our water, yards, sumps, basements? Have health studies been done?)
- There are odors in the neighborhood. Do they come from the site and are they hazardous?
- Are there restrictions on what we may do (e.g. Can our children play outside? Can we garden? Must we avoid certain areas? Can we recreate (fish, hunt, hike, etc. on/around the site?)
- How and when were the site's contamination problems created?
- What contaminants are of concern and why? How will you look for contamination and find out where it is going? What is the schedule for doing that?
- The site is affecting our property values!
- How can we get more information (e.g. who are the project contacts?)
- How will we be kept informed and involved during the site remedial process?
- Who has been contacted in the community about site remedial activities?
- What has been done to this point? What happens next and when?
- The site is going to be cleaned up for restricted use. What does that mean? We don't want redevelopment on a "dirty" site.

Part 2. List Important Information Needed From the Community, if Applicable.

- Can the community supplement knowledge about past/current uses of the site?
- Does the community have knowledge that the site may be significantly impacting nearby people, properties, natural resources, etc.?
- Are activities currently taking place at the site or at nearby properties that may need to be restricted?
- Who may be interested or affected by the site that has not yet been identified?
- Are there unique community characteristics that could affect how information is exchanged?
- Does the community and/or individuals have any concerns they want monitored?
- Does the community have information about other sources in the area for the contamination?

Part 3. List Major Issues and Information That Need to be Communicated to the Community.

- Specific site investigation or remediation activities currently underway, or that will begin in the near future.
- The process and general schedule to investigate, remediate and, if applicable, redevelop the site.
- Current understanding about the site contamination and effects, if any, on public health and the environment.
- Site impacts on the community and any restrictions on the public's use of the site and/or nearby properties.
- Planned CP activities, their schedule, and how they relate to the site's remedial process.
- Ways for the community to obtain/provide information (document repositories, contacts, etc.).

Part 4. Community Characteristics

a. - e. Obtain information from local officials, property owners and residents, site reports, site visits, "windshield surveys," other staff, etc.

f. Has the affected community experienced other **significant** present or past environmental problems unrelated to this site? Such experiences could significantly affect public concerns and perspectives about the site; how the community will relate to project staff; the image and credibility of project staff within the community; and the ways in which project staff communicate with the community.

g. In its remedial programs, DER seeks to integrate, and be consistent with, environmental justice principles set forth in *DEC Commissioner Policy 29 on Environmental Justice* and *DER 23 – Citizen Participation Handbook for Remedial Programs*. Is the site and/or affected community wholly or partly in an Environmental Justice (EJ) Area? Use the Search feature on DEC's public web site for "environmental justice". DEC's EJ pages define an EJ area, and link to county maps to help determine if the site and/or community are in an EJ area.

h. Consider factors such as:

- Is English the primary language of the affected community? If not, provisions should be considered regarding public outreach activities such as fact sheets, meetings, door-to-door visits and other activities to ensure their effectiveness.
- The age demographics of the community. For example, is there a significant number of senior citizens in the community? It may be difficult for some to attend public meetings and use document repositories. This may suggest adopting more direct interaction with the community with activities such as door-to-door visits, additional fact sheets, visits to community and church centers, nursing homes, etc.
- How do people travel about the community? Would most people drive to a public meeting or document repository? Is there adequate public transportation?

Part 5. Affected/Interested Public.

Individuals and organizations who need or want information and input can change during the site's remedial process. This need is influenced by real, potential, or perceived impacts of the site or the remedial process. Some people may want information and input throughout the remedial process. Others may participate only during specific remedial stages, or may only be interested in particular issues.

It is important to revisit this question when reviewing this scoping sheet. Knowing who is interested in the site – and the issues that are important to them – will help to select and conduct appropriate outreach activities, and to identify their timing and the information to be exchanged.

Check all affected/interested parties that apply to the site. **Note: Adjust the site's contact list appropriately.** The following are some ways to identify affected/interested parties:

- Tax maps of adjacent property owners
- Attendees at public meetings
- Telephone discussions
- Letters and e-mails to DER, the remedial party, and other agencies
- Political jurisdictions and boundaries
- Media coverage
- Current/proposed uses of site and/or nearby properties (recreational, commercial, industrial)
- Discussions with community organizations: grass roots organizations, local environmental groups, environmental justice groups, churches, and neighborhood advisory groups

Division of Environmental Remediation

Remedial Programs
Scoping Sheet for Major Issues of Public Concern (see instructions)

Site Name: 318 Nevins Street

Site Number: C224350

Site Address and County: 300-344 Nevins Street (aka 318 Nevins Stree) Street, Kings County

Remedial Party(ies): Gowanus 300 Nevins Street LLC

Note: For Parts 1. – 3. the individuals, groups, organizations, businesses and units of government identified should be added to the site contact list as appropriate.

Part 1. List major issues of public concern and information the community wants. Identify individuals, groups, organizations, businesses and/or units of government related to the issue(s) and information needs. **Use this information as an aid to prepare or update the Major Issues of Public Concern section of the site Citizen Participation Plan.**
No issues of major concern have been identified thus far.

How were these issues and/or information needs identified?
N/A

Part 2. List important information needed **from** the community, if applicable. Identify individuals, groups, organizations, businesses and/or units of government related to the information needed.
No information from the community is required at this time.

How were these information needs identified?
N/A

Part 3. List major issues and information that need to be communicated **to** the community. Identify individuals, groups, organizations, businesses and/or units of government related to the issue(s) and/or information.
None at this time.

How were these issues and/or information needs identified?
N/A

Part 4. Identify the following characteristics of the affected/interested community. This knowledge will help to identify and understand issues and information important to the community, and ways to effectively develop and implement the site citizen participation plan (mark all that apply):

a. Land use/zoning at and around site:
☒ **Residential** ☐ **Agricultural** ☐ **Recreational** ☒ **Commercial** ☒ **Industrial**

b. Residential type around site:
☒ **Urban** ☐ **Suburban** ☐ **Rural**

c. Population density around site:
☐ **High** ☒ **Medium** ☐ **Low**

d. Water supply of nearby residences:
☒ **Public** ☐ **Private Wells** ☐ **Mixed**

e. Is part or all of the water supply of the affected/interested community currently impacted by the site?
☐ **Yes** ☒ **No**

Provide details if appropriate:
N/A

f. Other environmental issues significantly impacted/impacting the affected community?
☐ **Yes** ☒ **No**

Provide details if appropriate:
N/A

g. Is the site and/or the affected/interested community wholly or partly in an Environmental Justice Area?
☐ **Yes** ☒ **No**

h. Special considerations:
☒ **Language** ☐ **Age** ☐ **Transportation** ☐ **Other**

Explain any marked categories in **h:**
There is a large Hispanic demographic is the area surrounding the Site.

Part 5. The site contact list must include, at a minimum, the individuals, groups, and organizations identified in Part 2. of the Citizen Participation Plan under 'Site Contact List'. Are *other* individuals, groups, organizations, and units of government affected by, or interested in, the site, or its remedial program? (Mark and identify all that apply, then adjust the site contact list as appropriate.)

☒ **Non-Adjacent Residents/Property Owners:** Click here to enter text.

☒ **Local Officials:** Click here to enter text.

☒ **Media:** Click here to enter text.

☐ **Business/Commercial Interests:** Click here to enter text.

☐ **Labor Group(s)/Employees:** Click here to enter text.

☐ **Indian Nation:** Click here to enter text.

☒ **Citizens/Community Group(s):** Click here to enter text.

☐ **Environmental Justice Group(s):** Click here to enter text.

☐ **Environmental Group(s):** Click here to enter text.

☐ **Civic Group(s):** Click here to enter text.

☐ **Recreational Group(s):** Click here to enter text.

☐ **Other(s):** Click here to enter text.

Prepared/Updated By: Diana Posten **Date:** 5/5/2022

Reviewed/Approved By: Click here to enter text. **Date:** Click here to enter text.

Appendix G

Construction Health and Safety Plan (CHASP)

Remedial Action Work Plan
318 Nevins Street, Brooklyn, NY
NYSDEC BCP #C224350

Impact Environmental Engineering and Geology PLLC
170 KEYLAND COURT, BOHEMIA, NEW YORK 11716
TEL (631) 269-8800 ▪ FAX (631) 269-1599

CONSTRUCTION HEALTH AND SAFETY PLAN

NYSDEC BROWNFIELD CLEANUP PROGRAM

Submitted for:

300-344 Nevins Street (aka 318 Nevins Street)
Brooklyn, New York
County Tax Map Designation: *Block 439; Lot 1*

Submitted to:

New York State Department of Environmental Remediation, Region 2
Division of Environmental Remediation
625 Broadway
Albany, New York 12233-7016

Prepared for:

Gowanus 300 Nevins Street LLC
19 West 24th Street, 12th Floor
New York, NY, 10010

September 20, 2023
***IEC Project Number:* #15977**

IMPACT ENVIRONMENTAL ENGINEERING AND GEOLOGY, PLLC
170 Keyland Court | Bohemia | New York | 11716 | 631.269.8800

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APPENDICES

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Appendix F: Accident Report Form

Appendix G: OSHA Form 200-Occupational Injuries & Illnesses

m

1 Introduction

This Construction Health and Safety Plan (CHASP) describes the procedures to be followed in order to reduce employee exposure to potential health and safety hazards that may be present during environmental investigation and remediation activities being performed at the Site. The emergency response procedures necessary to respond to such hazards are also described within this CHASP. All activities performed under this CHASP are targeted to comply with Occupational Safety and Health Administration (OSHA) Regulations 29 CFR Part 1910.1025.

This document is not, nor does it purport to be, a complete description of all safety and health requirements applicable to work performed at the site. Rather, the CHASP is a general overview of the compliance policies and work practices applicable to the primary tasks and hazards associated with the environmental assessment portion of the development project, as well as a recitation of minimum safety and health compliance obligations for contractors, subcontractors and workers at the site. All subcontractors of any tier operating at the worksite are obligated to implement and maintain comprehensive safety and health plans for their own employees and to ensure that their employees comply with all applicable safety and health requirements. All subcontractors operating at the worksite should refer to the applicable specific OSHA Standards for detailed requirements.

1.1 Purpose

The purpose of this CHASP is to provide the contractors' field personnel, as well as other site-occupants, with an understanding of the potential chemical and physical hazards that exist or may arise while portions of this project are being performed. To this end, this CHASP also presents information on the progression of the environmental restoration activities and specific details regarding the handling of materials excavated from the Site.

The primary objective is to ensure the well being of all field personnel and the community surrounding this site. In order to accomplish this, project staff and approved subcontractors of any tier shall acknowledge and adhere to the policies and procedures established herein. Accordingly, all personnel assigned to the remediation activities associated with this project (Remedial Personnel) shall read this CHASP and sign the Agreement and Acknowledgment Statement (**Appendix A**) to certify that they have read, understood, and agree to abide by its provisions. A copy of this CHASP will be available to anyone that requests it. Personnel involved in construction activities (Construction Personnel) and other Personnel (e.g. government officials, administrators, bank inspectors, assessors, etc.) that will have limited exposure to the site native soil/fill material during construction activities will be instructed on how to reduce the probability of exposure to site contaminants, but will not be required read the CHASP.

2 Application of Health and Safety Plan

The procedures of this CHASP apply for any person that will enter the boundaries of the site or a portion of the Site during environmental investigation/remediation activities or construction, until the existing soil/fill material has been covered with either a paved surface or an uncontaminated soil cap. When the Project Manager has designated an area of the site as clear of any environmental issues, construction contractors and subcontractors of any tier will perform the balance of the work in accordance with their individual OSHA-compliant corporate CHASP.

2.1 Restoration Personnel

Employees of contractors and subcontractors of any tier performing the following activities will be considered Restoration Personnel:

- Excavation of native soil/fill material
- Loading of native soil/fill onto vehicles
- Processing of native soil/fill into components
- Transporting of native soil/fill across the site
- Sampling of native soil/fill material for subsequent physical or chemical analysis
- In Situ Chemical Oxidation Using ISGS® Technology
- Cleaning or decontaminating equipment or personnel
- Handling of ground waters

All subcontractors, of any tier, must submit a CHASP to the Site Health and Safety Officer for review and approval prior to mobilizing to the site. Only CHASPs that comply with this CHASP will be approved. Where a subcontractors CHASP is deficient, the Site Health and Safety Officer will provide written notification of any required changes. Approved CHASPs will be submitted to the Project Manager and retained on-site for reference by the Site Health and Safety Officer.

2.2 Construction Personnel

For this document, “Construction Personnel” is the term given for those employees of contractors and subcontractors of any tier performing activities associated with site development other than those performed by the Remedial Personnel. This designation does not preclude that Construction Personnel will traverse or work upon native soil/fill material, rather, it infers that it will not involve performing tasks that will create a route of exposure to the contaminants contained therein. Construction Personnel will receive instruction to limit the potential for exposure to these contaminants. Construction Personnel will be prohibited from entering Environmental Remediation Areas (i.e., active excavation / handling / processing areas, loading areas, exclusion zones or support zones).

3 Key Personnel / Identification of Health & Safety Personnel

3.1 Key Personnel

A list of the pertinent personnel authorized to be present on site is as follows:

Title	Name	Telephone Number
Senior Project Manager *Impact Environmental Engineering and Geology, PLLC (IEEG)*	Kevin Kleaka	(O) 631-269-8800 ext: 129 (C) 631-252-5480
Project Manager *IEEG*	Diana Posten	(O) 631-269-8800 ext: 189 (C) (631) 664-4425
Field Operations Leader *IEEG*	Alex Keenan	(O) 631-269-8800 ext: 121 (C) 631-901-2470
Site Health & Safety Officer *IEEG*	Hal Benjamin	(O) 631-269-8800 ext: 197 (C) 631-897-7189

3.2 Organizational Responsibility

3.2.1 Senior Project Manager

The Senior Project Manager will be responsible for implementing the project and obtaining any necessary personnel or resources for the completion of the project. Specific duties will include:

- Selecting a Site Health and Safety Officer and field personnel for the work to be undertaken on site;
- Providing authority and resources to ensure that the Site Health and Safety Officer is able to implement and manage safety procedures;
- Preparing reports and recommendations about the project to clients and affected personnel;
- Ensuring that all persons allowed to enter the site (e.g., EPA, contractors, state officials, visitors) are made aware of the potential hazards associated with the substances known or suspected to be on site, and are knowledgeable as to the on-site copy of the specific CHASP; and
- Ensuring that the Site Health and Safety Officer is aware of all of the provisions of this CHASP and is instructing all personnel on site about the safety practices and emergency procedures defined in the plan.

3.2.2 Project Manager

The Project Manager will be responsible for implementing the Senior Project Manager' duties as well as oversee activities regarding the project both in the field and in the office as well as interact with environmental regulatory agencies, sub-contractors and internal company personnel.

- Coordinating the activities of all construction and Remedial Personnel, to include informing them of the required Personal Protective Equipment (PPE) and ensuring their signature acknowledging this CHASP;
- Ensuring that the tasks assigned are being completed as planned and on schedule; and
- Serving as liaison with public officials where there is no Public Affairs official designated.

3.2.3 Field Operations Leader

The Field Operations Leader will be responsible for field operations and safety. Specific duties will include, but are not limited to:

- Scheduling with the construction company and their subcontractors;
- Coordinating with the Site Health and Safety Officer in determining protection levels;
- Documenting field activities;
- Coordinate activities between environmental and construction personnel;
- Coordination with waste management contractors; and
- Review and approval of waste disposal facilities.

In the event that the Project Manager and the Site Health and Safety Officer are not on site, the Field Operations Leader will assume all responsibility of the Site Health and Safety Officer.

3.2.4 Site Health and Safety Officer

The Site Health and Safety Officer shall be responsible for the implementation of the CHASP on site. Specific duties will include:

- Monitoring the compliance of construction and environmental remediation activities personnel (field personnel) for the routine and proper use of the PPE that has been designated for each task;
- Routinely inspecting PPE and clothing to ensure that it is in good condition and is being stored and maintained properly;
- Stopping work on the site or changing work assignments or procedures if any operation threatens the health and safety of workers or the public;
- Monitoring personnel who enter and exit the site and all controlled access points;

- Reporting any signs of fatigue, work-related stress, or chemical exposures to the Project Manager;
- Dismissing field personnel from the site if their actions or negligence endanger themselves, co-workers, or the public, and reporting the same to the Project Manager;
- Reporting any accidents or violations of the CHASP plan to the Project Manager and documenting the same for the project in the records;
- Knowing emergency procedures, evacuation routes, and the telephone numbers of the ambulance, local hospital, poison control center, fire and police departments;
- Ensuring that all project-related personnel have signed the personnel agreement and acknowledgments form contained in this CHASP; and
- Coordinate upgrading and downgrading PPE as necessary due to changes in exposure levels, monitoring results, weather, and other site conditions.

4 Chemical Hazard Analysis and Control Measures

Based on historical subsurface investigations performed at the Site in 2019 and 2020 by Roux Associates (Roux), Impact Environmental Consultants (IEC) and Impact Environmental Engineering and Geology, PLLC (IEEG), the contaminants of concern include the following:

- Volatile organic compounds (VOC's) identified in soil: benzene, toluene, ethylbenzene, total xylenes, n-propylbenzene, 1,3,5-trimethylbenzene and 1,2,4-trimethylbenzene;
- Semi-volatile organic compounds (SVOC's) identified in soil: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene , and indeno(1,2,3-cd)pyrene, fluoranthene, naphthalene, dibenzofuran, 2-methylphenol, 3-methylphenol/4-methylphenol;
- Metals identified in soil: arsenic, barium, copper, lead, mercury, nickel and zinc;
- Coal tar dense non-aqueous phase liquid (DNAPL);
- VOCs identified in groundwater: benzene, isopropylbenzene, n-propylbenzene and 1,2,4,5-tetramethylbenzene;
- Metals identified in groundwater: Arsenic (total), barium (total), chromium (total), iron (total), lead (total), magnesium (total), manganese (total), nickel (total), sodium (total) and thallium (total).
- VOCs identified in soil vapor: Trichloroethene (TCE).

VOCs, SVOCs and metals were detected in both soil and groundwater samples. In addition, TCE was detected in soil vapor samples. Coal Tar dense non-aqueous phase liquid (DNAPL) was detected in saturated soil along the portion of bulkhead associated with SB-16 and SB-17 and within the forty-two DNAPL delineation borings completed on the northwest portion of Site. A summary of the health hazards associated with the contaminant of concerns are shown below.

4.1 Volatile Organic Compounds

The supplemental remedial investigation performed at the Site identified gasoline related VOC's in soil and groundwater, as well as TCE in soil vapor.

Soil and groundwater sample results indicated elevated concentrations of VOCs, including benzene, toluene, ethylbenzene and total xylenes, in samples located adjacent to a former heating oil underground storage tanks (UST) and a former gasoline UST. In addition, soil vapor sampling results indicate elevated concentrations of TCE in sample SV-1, located in the western warehouse building. Prolonged exposure to VOCs above their respective OSHA permissible exposure limits may result in irritation of the mucous membranes of the respiratory system, eyes, and mouth. Overexposure to VOCs may also result in the depression of the central nervous system. Symptoms may include drowsiness, headache, and fatigue.

4.2 Semi-Volatile Organic Compounds

The supplemental remedial investigation performed at the Site have identified Polycyclic Aromatic Hydrocarbons (PAHs) related SVOC's in soil above applicable standards throughout the Site. These SVOCs include Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo (a,h)-anthracene, and indeno(1,2,3-cd)pyrene.

In addition, soil samples collected adjacent to a former heating oil UST and a former gasoline UST contained elevated concentrations of SVOCs related to fuel oil. Prolonged exposure to SVOCs above OSHA permissible exposure limits may result in adverse health effects including endocrine and thyroid disruption, immunotoxicity, reproductive toxicity, cancer, and adverse effects on fetal and child development and neurologic function.

4.3 Metals

The supplemental remedial investigation performed at the Site have identified heavy metals in soil and groundwater throughout the Site. Specifically, arsenic, barium, cadmium, copper, lead, mercury, nickel and zinc.

Prolonged exposure to the above mentions metals above OSHA permissible exposure limits may result in adverse health effects including endocrine and thyroid disruption, immunotoxicity, reproductive toxicity, cancer, and adverse effects on fetal and child development and neurologic function.

4.1 Coal Tar DNAPL

The Remedial Investigation (RI) and Supplemental Remedial Investigation (SRI) identified coal tar DNAP in saturated soil beneath the Site along the bulkhead (SB-16 and SB-17) and was detected in forty-two (42) of the sixty-three (63) supplemental RI delineation borings at depths of approximately 18 to 35 feet below the ground surface (bgs). Some pooling of the DNAPL is indicated due to different permeability of subsurface material and indicates a connected distribution. Coal tar DNAPL can include aromatic hydrocarbons, including polycyclic aromatic hydrocarbons (PAHs), naphthalene, phenanthrene, fluorene, acenaphthene, dibenzofuran and more soluble components such as benzene, toluene, ethylbenzene, xylenes.

5 Health and Safety Risk Analysis

The field tasks covered by the CHASP will include supplemental investigated task such as, drilling for ISCO injection, and containerization of soil/groundwater/soil vapor as samples. Additionally, standard job task hazards that are inherent to an investigative project will exist.

5.1 Chemical Oxidation

To reduce and stabilize the DNAPL mass, Evonic Industries ISGS® will be utilized at the Site for ISCO using direct push injection technology. This in situ geochemical stabilization (ISGS) technology utilizes a permanganate-based oxidant with stable mineral precipitates to reduce mass flux. The ISGS Technology Product Sheet is attached in **Appendix B.** The injection of chemical oxidants into the groundwater requires specialized equipment. Drilling equipment will be used to install permanent and temporary injection points at the site. A mixing tank and pump are necessary to prepare the chemical oxidant solution so it can be pumped into the saturated soil zone via the injection points. The storage and handling of this product must be done in accordance with the manufacturer's specifications and the Safety Data Sheet for the product. Goggles, face shield, chemical resistant rubber gloves, aprons or other equipment, and possible respirator will be used when required for handling and mixing.

5.2 Explosion and Fire

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to explosion and fire. Rather, contractors, subcontractors and workers at the site must refer to OSHA's Fire Protection and Prevention Standard, set forth at 29 C.F.R. § 1910 part 1926.35, as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations. The following are possible fire and explosion hazards that may be encountered on the job site along with fire preventive measures to take.

5.2.1 Flammable Vapors

The presence of flammable vapors can pose a potential fire and health hazard. Hazard reduction procedures include monitoring the ambient air with an oxygen/LEL meter (combustible gas indicator). If the LEL reading exceeds 20%, all work will stop and employees will leave the site immediately and contact the fire department. For OSHA-defined "confined space" activities, work will stop if the LEL reading exceeds 10%.

5.2.2 High Oxygen Levels

Atmospheres that contain a level of oxygen greater than 23% pose an extreme fire hazard (the usual ambient oxygen level is approximately 20.5%). All personnel encountering atmospheres that contain a level of oxygen greater than 23% must evacuate the site immediately and must notify the Fire Department. If the oxygen level is less than 19.5%, do not enter the space without level B PPE.

5.2.3 Fire Prevention

- During equipment operation, periodic vapor concentration measurements should be taken with an explosimeter or combustimeter. If at any time the vapor concentrations exceed 20% of the lower explosive limit (LEL), then the Site Health and Safety Officer or designated field worker should immediately shut down all operations.
- Only approved safety cans will be used to transport and store flammable liquids.
- All gasoline and diesel-driven engines requiring refueling must be shut down and allowed to cool prior to filling.
- Smoking is not allowed during any operations within the work area in which petroleum products or solvents in free-floating, dissolved, or vapor forms, or other flammable liquids may be present.
- No open flame or spark is allowed in any area containing petroleum products or other flammable liquids.

5.3 Operational Safety Hazards

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to earth moving equipment. Rather, contractors, subcontractors and workers at the site must refer to OSHA's Excavation Standard, set forth at 29 C.F.R. § 1910 Subpart P as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations.

5.3.1 Heavy Machinery / Equipment

All site employees must remain aware of those site activities that involve the use of heavy equipment and machinery. Respiratory protection and protective eyewear may be worn frequently during site activities. This protective equipment significantly reduces peripheral vision of the wearer. Therefore, it is essential that all employees at the site exercise extreme caution during operation of equipment and machinery to avoid physical injury to themselves or others.

5.3.2 Vehicular Traffic

All employees will be required to wear a fluorescent safety vest at all times while on site. In addition, supplemental traffic safety equipment use can be exercised when warranted by specific task. Supplemental equipment can be items such as cones, flags, barricades, and/or caution tape. Drivers of waste transportation vehicles will only exit vehicles in designated areas within the Support Zone. During this time, drivers will only be allowed to inspect the placement of waste loads and cover their trailers.

5.4 Noise Hazards

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to noise hazards. Rather, contractors, subcontractors and workers at the site must refer to OSHA's Occupational Noise Exposure Standard, set forth at 29 C.F.R. § 1910 part 1926.52, as well as all supporting OSHA

Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations.

Hearing protection shall be provided to the employees where sound pressure levels exceed 85 dB. Hearing protection shall be worn where sound pressure levels in areas and/or on equipment exceeds 90 dB. Typical heavy excavation operations have been monitored with a sound level meter and indicate that hearing protection is required for all personnel while engaged in this action.

5.5 Safe Material Handling

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to safe material (soil/fill) handling. Rather, contractors, subcontractors and workers at the site must refer to OSHA's Eye and Face, and Respiratory Safety Standards, set forth at 29 C.F.R. § 1910 Parts 1926.102 and 1926.103 as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations.

Skin and eye contact with contaminated soil/fill or materials in contact with the soil/fill may occur during excavation, drilling, sampling, handling and decontamination activities. Nitrile gloves and approved safety glasses must be worn to prevent exposure to the associated contaminants. Employees working at or near (within ten feet of) excavation fronts could be required to wear respiratory protection. If necessary, all associated activities will be performed pursuant to 29 C.F.R. § 1910 Parts 1926.134 (a)(2) and 1926.55.

5.6 Temperature Hazards

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to temperature stresses. Rather, contractors, subcontractors and workers at the site must refer to OSHA's Technical Manual (TED 1-0.15A), Section III – Chapter 4 (1999) as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations.

Since climatic changes cannot be avoided, work schedules will be adjusted to provide time intervals for intake of juices, juice products, and water in an area free from contamination and in quantities appropriate for fluid replacement to prevent heat stress conditions from occurring.

5.6.1 Types of Heat Stress

Heat stress may occur even in moderate temperature areas and may present any or all of the following:

5.6.1.1 Heat Rash

Result of continuous exposure to heat, humid air, and chafing clothes. Heat rash is uncomfortable and decreases the ability to tolerate heat.

5.6.1.2 Heat Cramps

Result of the inadequate replacement of body electrolytes lost through perspiration. Signs include severe spasms and pain in the extremities and abdomen.

5.6.1.3 Heat Exhaustion

Result of increased stress on the vital organs of the body in the effort to meet the body's cooling demands. Signs include shallow breathing; pale, cool, moist skin; profuse sweating; and dizziness.

5.6.1.4 Heat Stroke

Result of overworked cooling system. Heat stroke is the most serious form of heat stress. Body surfaces must be cooled and medical help must be obtained immediately to prevent severe injury and/or death. Signs include red, hot, dry skin, absence of perspiration, nausea, dizziness and confusion, strong, rapid pulse that could lead to coma or death.

5.6.2 Heat Stress Prevention

A. Replace body fluids (water and electrolytes) lost through perspiration. Solutions may include a 0.1% salt and water solution or commercial mixes such as "Gatorade". Employees must be encouraged to drink more than the amount required in order to satisfy thirst.
B. Use cooling devices to aid the natural body ventilation. Cooling occurs through evaporation of perspiration and limited body contact with heat-absorbing protective clothing. Utilize fans and air conditioners to assist in evaporation. Long, cotton underwear is suggested to absorb perspiration and limit any contact with heat-absorbing protective clothing (i.e., coated Tyvek suits).
C. Conduct non-emergency response activities in the early morning or evening during very hot weather.
D. Provide shelter against heat and direct sunlight to protect personnel. Take breaks in shaded areas.
E. Rotate workers utilizing protective clothing during hot weather.
F. Establish a work regime that will provide adequate rest periods, with personnel working in shifts.

5.7 Cold Exposure Hazards

Work schedules will be adjusted to provide sufficient rest periods in a heated area for warming up during operations conducted in cold weather. Also, thermal protective clothing such as wind and/or moisture resistant outerwear is recommended to be worn.

If work is performed continuously in the cold at or below -7 ºC (20 ºF), including wind chill factor, heated warming shelters (tents, cabins, company vehicles, rest rooms, etc.) shall be made available nearby and the worker should be encouraged to use these shelters at regular intervals, the frequency depending on the severity of the environmental exposure. The onset of heavy shivering, frostnip, the feeling of excessive fatigue, drowsiness, irritability, or euphoria,

are indications for immediate return to the shelter. When entering the heated shelter, the outer layer of clothing shall be removed and the remainder of the clothing loosened to permit sweat evaporation. A change of dry work clothing shall be provided as necessary to prevent workers from returning to their work with wet clothing.

Dehydration, or the loss of body fluids, occurs in the cold environment and may increase the susceptibility of the worker to cold injury due to a significant change in blood flow to the extremities. Warm sweet drinks and soups should be provided at the work site to provide caloric intake and fluid volume. The intake of coffee should be limited because of a diuretic and circulatory effect (adapted from TLV's and Biological Exposure Indices 1988-1989, ACGIH).

5.8 Community Air Monitoring Program (CAMP)

Real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary during the Remedial Investigation as Per NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation.

- Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

- Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

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

1 If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2 If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

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

4 All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

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

5 If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.

6 If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other

controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m3 of the upwind level and in preventing visible dust migration.

7 All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

6 Personnel Training

6.1 Pre-assignment and OSHA Training

All Remedial Personnel that will be in direct contact (that is hand digging, sampling, processing) with the native soil/fill materials must complete an initial 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training course and, where necessary, a current eight-hour refresher course (as required annually after initial 40-hour training completion). Restoration Personnel that will not be in direct contact with native soil/fill materials are only required to prove they have read and understood the procedures presented in this CHASP.

On-site managers and supervisors of Restoration Personnel (Field Operations Leader, Site Health and Safety Officer) directly responsible for employees engaged in hazardous substance operations have received an initial 40-hour HAZWOPER training course and an additional (above the 40-hour HAZWOPER) eight hours of supervisory training. These training requirements comply with the OSHA Hazardous Waste Operations and Emergency Response Regulation, 29 CFR 1910.120. The Site Health and Safety Officer will be certified in First Aid and Cardiovascular Pulmonary Resuscitation.

The Site Health and Safety Officer will conduct an on-site training meeting for all Construction Personnel and observers that could potentially be exposed to the native soil/fill material during construction activities. Training meetings will be provided routinely for any new project personnel. This program will cover specific health and safety equipment and protocols and potential problems inherent to each project operation. The Site Health and Safety Officer will be present for any activities being performed by Construction Personnel that will involve the handling of soil/fill during construction activities to provide supervision on exposure reduction. This may include insuring the use of proper PPE and air quality monitoring.

6.2 Respirator Requirements

6.2.1 Respirator Requirements and Fit Testing

The OSHA respiratory protection standard, 29 CFR 1910.134, under paragraph (f)(2), requires fit testing for all employees using tight fitting respirators including filtering facepiece respirator. The fit test must be performed before the respirator is used and must be repeated at least annually and whenever a different respirator facepiece is used or a change in the employee's physical condition could affect the respirator fit.

The user seal check is a separate requirement under paragraph (g)(1)(iii) and must be performed each time the employee dons the respirator. Employers must adhere to the recommendations of the respirator's manufacturer; different manufacturers recommend different procedures.

6.2.2 Medical Surveillance

OSHA requires a medical evaluation to determine whether each employee required to wear a respirator is physically able to wear a respirator and perform the work. This evaluation can be a medical examination or an evaluation of employee responses to the OSHA Respirator Medical Evaluation Questionnaire located in **Appendix C** of the Respiratory Protection Standard. Either method must be performed by a physician or other licensed healthcare professional. **Appendix C** has a copy of the forms to be completed.

A medical examination may be necessary whenever the employee gives a positive response to any of questions 1 through 8 in Appendix C, Part A, Section 2.

7 Personal Protective Equipment

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to personal protective equipment. Rather, contractors, subcontractors and workers at the site must refer to OSHA's Personal Protective Equipment Standard, set forth at 29 C.F.R. § 1910.Part 1926.28(a) as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations.

The purpose of personal protective clothing and equipment (PPE) is to shield or isolate individuals from the chemical, physical, and biological hazards that may be encountered on-site when engineering and other controls are not feasible or cannot provide adequate protection. Careful selection and use of adequate PPE should protect the health of all on-site workers. No single combination of PPE is capable of protecting against all hazards. Therefore, PPE should be used in conjunction with, not in place of, other protective methods, such as engineering controls and safe work practices.

Site-specific chemicals of concern include semi-volatile organic compounds. These chemicals are of moderate to low hazard. Therefore, level D personal protective equipment will be required at all times when on site. The following is a breakdown of the types of protective clothing and equipment to be used during the site activities.

7.1.1 Levels of Protection

The Site Health and Safety Officer will determine whether a level of protection should be upgraded or downgraded. Changes in the level of protection will be recorded in the dedicated site logbook along with the rationale for the changes (see Section 7.1.3 for additional information on PPE upgrades). Level D PPE will be the minimum requirement at all times during the environmental remediation portion of the project.

7.1.2 Level D Personal Protective Equipment

All initial site access and activities will be done in Level D attire. Level D protection is sufficient under conditions where no contaminants are present or those activities that do not pose a potential threat of unexpected inhalation of or contact with hazardous levels of any substances. Typical Level D activities may include sediment, logging and groundwater sampling, and as surficial site surveys.

- Hard hat
- Safety glasses (as appropriate)
- Steel toe and shank boots
- Fluorescent vest
- Hearing protection (as appropriate)

7.1.3 Modified Level D Personal Protective Equipment

- Hard hat
- Safety glasses
- Steel toe and shank boots
- Fluorescent vest
- Nitrile "N-Dex" inner gloves
- Latex outer boots (chemical resistant)
- Polyethylene coated Tyvek suit
- Hearing protection (as appropriate)

7.1.4 Level C Personal Protective Equipment

Level C protection, as described in this plan, will be available at a minimum for those activities that involve surface and subsurface soil (strata disturbance such as well installation, and all subsurface media sampling activities such as split-spoon sampling and borings). Level C protection equipment should be readily available at all times. Consistent with OSHA training, prior to donning Level C, oxygen percent must be continuously monitored.

- Buddy system required at all times
- Full face respirator with NIOSH approved OV/AG/HEPA combination cartridges (MSA GMC-H)
- Saranex coated Tyvek Suit
- Inner Nitrile "N-Dex" gloves
- Outer Nitrile (NBR) gloves
- Steel toe and shank boots
- Outer boots (chemical resistant)
- Hard hat
- Hearing protection (as appropriate)

7.1.5 Level B Personal Protective Equipment

Some activities may require Level B protection. In atmospheres potentially containing toluene and xylenes, the protective ensemble should include chemical resistant clothing since the two compounds have skin absorption potential.

Regional Health and Safety representatives must be on site upon start-up of <u>any</u> project requiring level B protection. This should be understood to include subcontractors conducting Level B activity.

- Buddy system required at all times
- Supplied air respirator or SCBA
- Saranex coated Tyvek Suit
- Inner Nitrile "N-Dex" gloves

- Outer Nitrile (NBR) gloves
- Steel toe and shank boots
- Outer boots (chemical resistant)
- Hard hat
- Hearing protection (as appropriate)

7.1.6 Personal Use Factors and Equipment Change Out Schedule

Prohibitive or precautionary measures should be taken as necessary to prevent workers from jeopardizing safety during equipment use.

If necessary, all respiratory protective equipment used will be approved by NIOSH/MSHA. Respirator cartridges will be changed once per eight-hour shift at a minimum. This can be accomplished at the end of the workday during respirator decontamination. Employees working within the excavation front should change the cartridge of their respirators once every four hours. If odor breakthrough is detected while wearing the respirator or if breathing becomes difficult, change cartridges immediately. A filter change out schedule is provided below.

Remedial Worker	**Work Area**	**Filter Type**	**Replacement Rate**
Site Screener	EZ – At Excavation Front	MSA GMC-H	Every 4 Hours
Laborer	EZ – At Excavation Front	MSA GMC-H	Every 2 Hours
	SZ, CRZ	MSA GMC-H	Every 8 Hours
Equipment Operator	EZ	MSA GMC-H	Every 4 Hours
	SZ, CRZ	MSA GMC-H	Every 8 Hours
Administrator	EZ	MSA GMC-H	Every 4 Hours
	SZ, CRZ	MSA GMC-H	Every 8 Hours

*Work Area Definitions are discussed in the following Section (8.1)

When utilizing protective garments such as Tyvek suits, gloves, and booties, all seams between protective items will be sealed with duct tape.

Contact with contaminated surfaces, or surfaces suspected of being contaminated, should be avoided. This includes walking through, kneeling in, or placing equipment in puddles, mud, discolored surfaces, or on drums and other containers.

Eating, smoking, drinking, and/or the application of cosmetics in the immediate work area is prohibited. Ingestion of contaminants or absorption of contaminants into the skin may occur.

The use of contact lenses on the job site is strongly advised against. Contact lenses may trap contaminants and/or particulate between the lens and eye, causing irritation. However, when glasses are not available, contact lenses are preferred over faulty vision. When contact lenses are worn, safety glasses and/or goggles must be worn at all times while on the job site. Wearing contact lenses with a respirator in a contaminated atmosphere is prohibited under 29 CFR ss1910.134 (e)(5)(iii).

8 Work Zones

8.1 Work Zone Definitions

Work and support areas shall be established based on ambient air data and proposed work sites. They shall be established in order to contain contamination within the smallest areas possible and shall ensure that each employee has the proper PPE for the area or zone in which work is to be performed.

8.1.1 Exclusion Zone (EZ)

It is within this zone that the excavation or environmental remediation activities such as tank abandonment, system installation or other soil disturbance operations are performed. No one shall enter this zone unless the appropriate PPE is donned. The location of this zone will change as the construction-related excavation activities are performed.

8.1.2 Contaminant Reduction Zone (CRZ)

It is within this zone that the decontamination process is undertaken. Personnel and their equipment must be adequately decontaminated before leaving this zone for the support zone. This zone will be set up between the EZ (no less than 100 feet away) and the site boundary.

8.1.3 Support Zone (SZ)

The support zone is considered to be uncontaminated; as such, protective clothing and equipment are not required but should be available for use in emergencies. All equipment and materials are stored and maintained within this zone. Protective clothing is put on within the SZ before entering the EZ or the CRZ. The SZ will be established in a safe environment at least 50 feet away from the EZ.

9 General Safety and Health Provisions

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to general safety and health provisions. Rather, contractors, subcontractors and workers at the site must refer to OSHA's General Safety and Health Provision Standard, set forth at 29 C.F.R. § 1910 subparts C and G as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations.

9.1 Safety Practices / Standing Orders

The following are important safety precautions that will be enforced during work activities.

1. Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of material is prohibited in any area designated as contaminated.
2. Hands and face must be thoroughly washed upon leaving the work area and before eating, drinking, or any other activity.
3. Whenever decontamination procedures for outer garments are in effect, the entire body should be thoroughly washed as soon as possible after the protective garments are removed.
4. Equipment Decontamination and Vehicle Entrance/Exit Standard Operating Procedure.
5. No excessive facial hair that interferes with the effectiveness of a respirator will be permitted on personnel required to wear respiratory protection equipment. The respirator must seal against the face so that the wearer receives air only through the air purifying cartridges attached to the respirator. Fit testing shall be performed prior to respirator use to ensure the wearer obtains a proper seal.
6. Contact with potentially contaminated surfaces should be avoided whenever possible. One should not walk through puddles; kneel on the ground; lean, sit, or place equipment on drums, containers, vehicles, or the ground.
7. Medicine and alcohol can potentate the effect from exposure to certain compounds. Prescribed drugs and alcoholic beverages should not be consumed by personnel involved in the project.
8. Personnel and equipment in the work areas should be minimized, consistent with effective site operations.
9. Work areas for various operational activities should be established.
10. Procedures for leaving the work area must be planned and implemented prior to going to the site. Work areas and decontamination procedures must be established on the basis of prevailing site conditions.
11. Respirators will be issued for the exclusive use of one worker and will be cleaned and disinfected after each use.
12. Safety gloves and boots shall be taped to the disposable, chemical-protective suits as necessary.
13. All unsafe equipment left unattended will be identified by a "DANGER, DO NOT OPERATE" tag.

14. Noise mufflers or earplugs may be required for all site personnel working around heavy equipment. This requirement will be at the discretion of the Site Health and Safety Officer. Disposable, form-fitting plugs are preferred.
15. Cartridges for air-purifying respirators in use will be changed daily at a minimum.

9.2 Buddy System

Site personnel will employ the buddy system when working under certain circumstances, such as enclosed spacing. Under the buddy system, each site worker is responsible for monitoring the well-being of another worker. No one will work alone when the buddy system is implemented. At no time will fewer than two employees be present at the site if activities are underway.

9.3 Site Communications Plan

Mobile telephone and/or two-way radios will be used to communicate between the work parties on the site. The following standard hand signals will be used in case of failure of radio communication:

- Hands on top of head = Need assistance
- Thumbs up = OK, I am alright, I understand
- Thumbs down = No, negative

Personnel in the Contaminated Zone should remain in constant radio communication or within sight of the project team leader. Any failure of radio communication will require the team leader to evaluate whether personnel should leave the zone.

9.4 Retention of Records

The following records will be maintained on-site and in corporate records for no less than three years.

- Fit test results
- OSHA Training Certification
- Medical Questionnaire and/or Medical Clearance
- Medical Data Sheets
- Accident Report Forms

10 Decontamination Plan

10.1 General

Personnel involved in work activities at the site may be exposed to compounds in a number of ways, despite the most stringent protective procedures. Site personnel may come in contact with vapors, gases, mists, particulates in the air, or other site media while performing site duties. Use of monitoring instruments and site equipment can also result in exposure and transmittal of hazardous substances.

In general, decontamination involves scrubbing with a detergent water solution followed by clean water rinses. All disposable items shall be disposed of in a dry container. Certain parts of contaminated respirators, such as harness assemblies and leather or cloth components, are difficult to decontaminate. If grossly contaminated, they may have to be discarded. Rubber components can be soaked in detergent and water and scrubbed with a brush. In addition to being contaminated, all respirators, non-disposable protective clothing, and other personal articles must be sanitized or replaced before they can be used again if they become soiled from exhalation, body oils, and perspiration. The manufacturer's instructions should be followed in sanitizing the respirator masks. The Site Health and Safety Officer will be responsible for the proper maintenance, decontamination, and sanitizing of any respirator equipment that may be used on-site. The decontamination zone layout and procedures should match the prescribed levels of personal protection.

The following procedures have been established to provide site personnel with minimum guidelines for proper decontamination. Personnel leaving the point of operations designated as the EZ must follow these minimum procedures. The decontamination process shall take place within the contaminant reduction zone.

10.2 Minimum Decontamination Procedure

Personnel leaving the point of operations should remove or change outer gloves. At a minimum, boots shall be cleaned of all accumulated soil/fill. Outer boots must be properly washed where gross contamination is evident or disposed of. If Tyvek suits are being utilized, they should be removed or changed. Personnel should remove the Tyvek suits so that the inner clothing does not come in contact with any contaminated surfaces. After Tyvek removal, personnel shall remove and discard outer Nitrile gloves. Personnel shall then remove the respirator, where applicable. Respirators shall be disinfected between uses with towelettes or other sanitary methods. Potable water, at a minimum, will be present so that site personnel can thoroughly wash hands and face after leaving the point of operations.

The Site Health and Safety Officer will monitor decontamination procedures to ensure their effectiveness. Modifications of the decontamination procedure may be necessary as determined by the Site Health and Safety Officer's observations.

10.3 Standard Decontamination Procedure

The following decontamination procedures should be implemented during site operations for the appropriate level of protection.

10.3.1 Level B

Segregated equipment drop	Deposit equipment (tools, sampling devices, notes, monitoring instruments, radios, etc.) used on the site onto plastic drop cloths.
Boot covers and glove wash	Outer boots and outer gloves should be scrubbed with a decontamination solution of detergent and water or replaced.
Rinse off boot covers and gloves	Decontamination solution should be rinsed off boot covers and gloves using generous amounts of water. Repeat as many times as necessary.
Tape removal	Remove tape from around boots and gloves and place into container with plastic liner.
Boot cover removal	Remove disposable boot covers and place into container with plastic liner.
Outer glove removal	Remove outer gloves and deposit in container with plastic liner.
Suit / safety boot wash	Completely wash splash suit, SCBA, gloves, and safety boots. Care should be exercised that no water is allowed into the SCBA regulator. It is suggested that the SCBA regulator be wrapped in plastic.
Suit / safety boot rinse	Thoroughly rinse off all decontamination solution from protective clothing.
Tank or canister changes	This is the last step in the decontamination procedure for those workers wishing to change air tanks and return to the EZ. The worker's air tank or cartridge is exchanged, new outer glove and boot covers are donned, and joints taped.
Removal of safety boots	Remove safety boots and deposit in container with a plastic liner.
SCBA backpack removal	Without removing the face piece, the SCBA backpack should be removed and placed on a table. The face piece should then be disconnected from the remaining SCBA unit and then proceed to the next station.
Splash suit removal	With care, remove the splash suit. The exterior of the splash suit should not come in contact with any inner layers of clothing.
Inner glove wash	The inner gloves should be washed with a mild decontamination solution (detergent / water).
Inner glove rinse	Generously rinse the inner gloves with water.
Face piece removal	Without touching the face with gloves, remove the face piece. The face piece should be deposited into a container that has a plastic liner.
Inner glove removal	Remove the inner glove and deposit into a container that has a plastic liner.
Field wash	Wash hands and face thoroughly. If highly toxic, skin corrosive, or skin absorbent materials are known or suspected to be present, a shower should be taken.

10.3.2 Level C and Level D

The decontamination procedure for Level C and Level D will be satisfied with the Minimum procedures outlined in section 8.2.

10.4 Heavy Equipment and Handling Equipment Decontamination

Equipment traversing the site and exiting the site will be subjected to a decontamination protocol. Steps will be taken to ensure that trucks departing the site will not track soil, fill or debris off-Site. Such actions may include use of temporary asphalt, concrete or stone pads or other aggregate-based egress paths between the truck inspection station and the

property exit. The stabilized construction entrance(s) will be lined and sloped to collect material washed or brushed from vehicles exiting the Site. All vehicles and equipment that contacts soils must be washed using clean water. All debris and wash water will be captured, containerized and disposed of off-site as IDW. Containerization and disposal of IDW must be documented in daily field reports. Measures will be taken to ensure that adjacent roadways will be kept clean of project related soils, fill and debris. An outbound-truck inspection station will be set up close to the Site exit. Before exiting the Site, trucks will be required to stop at the truck inspection station and will be examined for evidence of contaminated soil on the undercarriage, body, and wheels. Soil and debris will be removed. Booms, shovels and clean water will be utilized for the removal of soil from vehicles and equipment, as necessary. All waste haul trucks must be properly covered with an opaque cover, secured to the sides and back of the truck. All IDW manifests will be documented and included in the Final Engineering Report. At the conclusion of the use of each piece of field excavation equipment on the site, it will be decontaminated with an Alconox / water solution followed by a clean water rinse within the Contaminant Reduction Zone.

The equipment decontamination and vehicle entrance/exit standard operating procedure is provided in **Appendix D**.

11 Emergency Response / Contingency Plan

11.1 Pre-Emergency Planning

In order to properly prepare for emergencies, Safety Data Sheets (SDS) will be maintained on-site for the type of contaminants to which workers may be exposed. Based upon the results of previous investigations, The COCs for the Site are

Soil: benzene, toluene, ethylbenzene, total xylenes, n-propylbenzene, 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene , and indeno(1,2,3-cd)pyrene, fluoranthene, naphthalene, dibenzofuran, 2-methylphenol, 3-methylphenol/4-methylphenol, arsenic, barium, copper, lead, mercury, nickel and zinc.

Groundwater: benzene, isopropylbenzene, n-propylbenzene and 1,2,4,5-tetramethylbenzene, Arsenic (total), barium (total), chromium (total), iron (total), lead (total), magnesium (total), manganese (total), nickel (total), sodium (total) and thallium (total).

Soil Vapor: TCE.

The SDS are provided in **Appendix E**. In the event a suspected or known hazardous substance or substance container is encountered during site activities, a contingency plan will be triggered (see Section 11.3).

11.2 Emergency Contact Information

In the event of an accident or emergency situation, emergency procedures will be executed. Said procedures can and will be executed by the first person to observe an accident or emergency situation. The Project Field Manager will be notified about the situation immediately after emergency procedures are implemented.

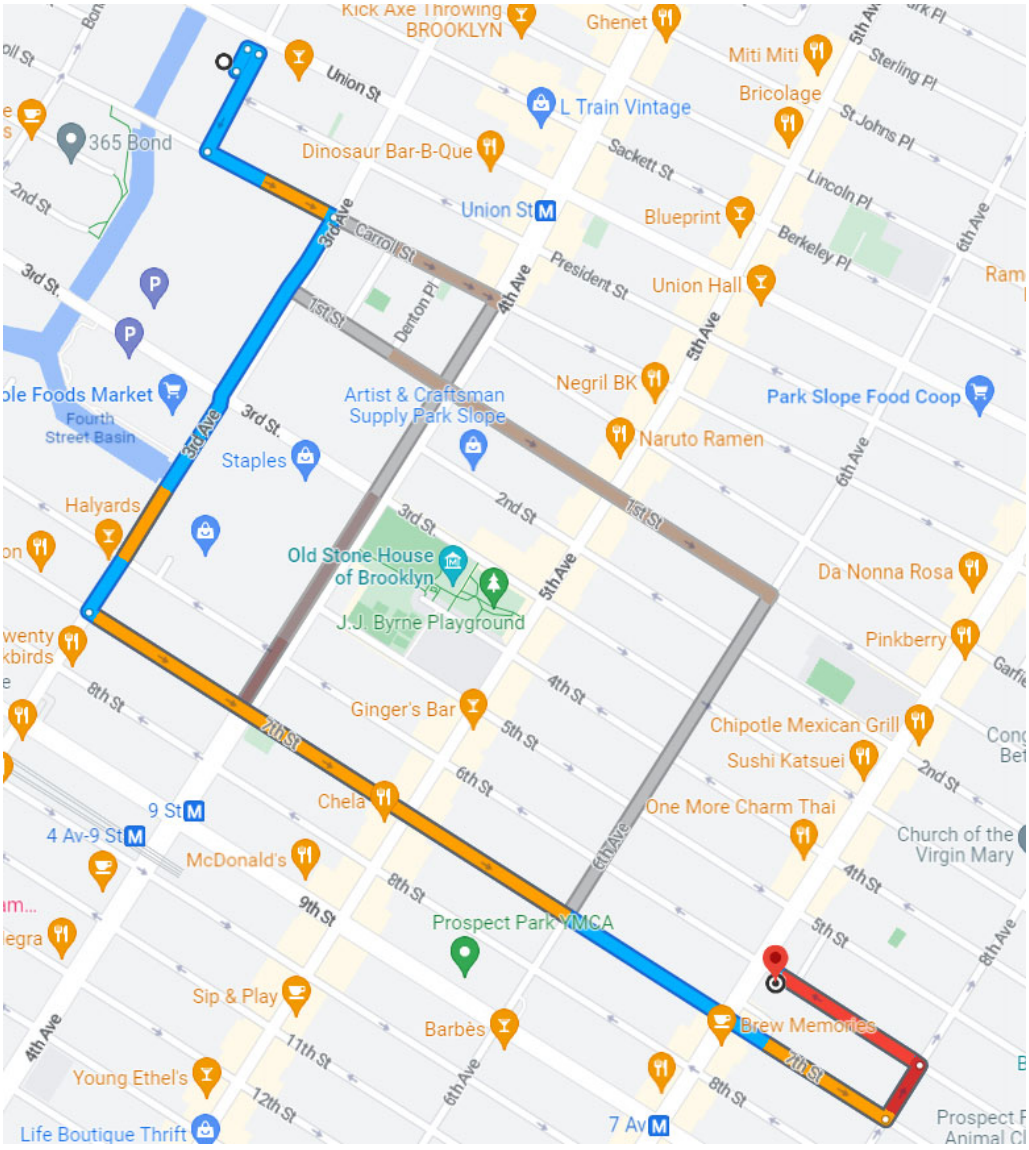
11.2.1 Emergency Contacts

Emergency:	911	
Hospital:	(718) 780-3000	**New York Presbyterian Brooklyn-Methodist hospital**
Police:	911	NYPD
Fire Department:	911	NYFD
Chemtrec:	800-424-9300	
NYC Poison Control Center:	212-764-7667	
National Response Center:	800-424-8802	
US EPA (24-hour hotline):	800-424-9346	

Start: 318 Nevins Street, Brooklyn, NY 11215

- Head south on Nevins Street and east on Carroll Street toward 3rd Avenue – 0.2 Miles
- Turn right at the 1st cross street onto 3rd Avenue – 0.5 mi
- Turn left onto 7th Street – 0.7 mi
- Turn left onto 8th Avenue – 259 ft
- Turn left at the 1st cross street onto 6th Street - 469 ft

End: New York Presbyterian Brooklyn Methodist Hospital – 506 6th Street, Brooklyn, NY 11215



11.2.2 Utility Emergencies / Initiating Subsurface Investigation Work

Where necessary, utility markouts will be called in via the one call center or to the individual entities listed below.

Mark Out One-Call Center (811)	1-800-272-4480	No-Cuts
Gas Company:	718-643-4050	Con Edison
Telephone Company:	516-661-6000	Verizon
Electric Company:	718-643-4050	Con Edison

11.3 Contingency / Evacuation Plan

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to emergency procedures. Rather, contractors, subcontractors and workers at the site must refer to OSHA's Employee Emergency Action Plan Standard, set forth at 29 C.F.R. § 1910 Part 1926.35(a), as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations.

If an unknown substance or substance container is encountered during site activities, the following contingency plan will be triggered.

1. The Site Health and Safety Officer, Project Manager and Field Operations Leader will be notified and an Exclusion Zone (the aerial extent of which will be determined by the above safety staff) will be established.
2. All staff will be evacuated from the Exclusion Zone.
3. Air monitoring will be conducted down-wind of the Exclusion Zone.
4. The NYSDEC, as well as any other Government regulatory agency whose need may be prompted by the particular situation, will be notified.
5. Upon arrival of the NYSDEC or Government regulatory agency representative(s), site control will transfer to the appropriate Government personnel.

It may be possible that a situation could develop site emergency could necessitate the evacuation of all personnel from the site. If such a situation develops, an audible alarm shall be given for site evacuation (consisting of an air horn). Personnel shall evacuate the site in a calm and controlled fashion and regroup at a predetermined location. The route of evacuation will be dependent on wind direction, severity, type of incident, etc. The site must not be re-entered until back-up help, monitoring equipment, and/or personal protective equipment are on hand and the appropriate regulatory agencies have been notified.

11.4 Emergency Medical Treatment Procedures

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to medical treatment and first aid. Rather, contractors, subcontractors and workers at the site must refer to OSHA's Medical Services and First Aid Standard, set forth at 29 C.F.R. § 1910 Part 1926.23 and 1926.50, as well as all supporting OSHA

Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations.

All injuries, no matter how slight, will be reported to the site safety supervisor immediately. The safety supervisor will complete an accident report for all incidents (**Appendix F**).

Some injuries, such as severe lacerations or burns, may require immediate treatment. Unless required due to immediate danger, seriously injured persons should not be moved without direction from attending medical personnel.

11.4.1 Standard Procedures for Injury

1. Notify the Site Health and Safety Officer, Project Manager, and the NYCDEP and NYCDHPD of all accidents, incidents, and near emergency situations.
2. If the injury is minor, trained personnel should proceed to administer appropriate first aid.
3. Telephone for ambulance/medical assistance if necessary. Whenever possible, notify the receiving hospital of the nature of physical injury or chemical overexposure. If no phone is available, transport the person to the nearest hospital. Refer to the map in section 11.2.1.
4. When transporting an injured person to a hospital, bring this Health and Safety Plan with the attached MSDS to assist medical personnel with diagnosis and treatment.

11.4.2 Chemical Overexposure

In all cases of chemical overexposure, follow standard procedures as outlined below for poison management, first aid, and, if applicable, cardiopulmonary resuscitation. Different routes of exposure and their respective first aid/poison management procedures are outlined below.

Ingestion	Do not induce vomiting unless prompted by a health professional. Transport person to nearest hospital immediately.
Inhalation / Confined Space	Do not enter a confined space to rescue someone who has been overcome unless properly equipped and a standby person present.
Inhalation / Other	Move the person from the contaminated environment. Initiate CPR if necessary. Call or have someone call for medical assistance. Refer to MSDS for additional specific information. If necessary, transport the victim to the nearest hospital as soon as possible.
Skin Contact / Non-Caustic Contaminant (Petroleum, Gasoline, etc.)	Wash off skin with a large amount of water immediately. Remove any affected clothing and rewash skin using soap, if available. Transport person to a medical facility if necessary.

Skin Contact / Corrosive Contaminant (Acids, Hydrogen Peroxide, etc.)	Wash off skin with a large amount of water immediately. Remove any affected clothing and rewash skin with water. Transport person to a medical facility if necessary.
Eyes	Hold eyelids open and rinse the eyes immediately with large amounts of water for 15 minutes. Never permit the eyes to be rubbed. Transport person to a medical facility as soon as possible.

11.4.3 First Aid for Injuries Incurred During Field Work

A first aid kit and an emergency eyewash will be available on-site. Field crews, when performing field operations, will carry portable first aid kits that include emergency eye wash stations.

11.4.4 First Aid Equipment List

The first aid kit(s) kept at the site will consist of a weatherproof container with individually sealed packages for each type of item.

The kit will include at least the following items:

- Gauze roller bandages, 1-inch and 2-inch
- Gauze compress bandages, 4-inch
- Gauze pads, 2-inch
- Adhesive tape, 1-inch
- Bandage, 1-inch
- Butterfly bandages
- Triangular bandages, 40-inch
- Ampules of ammonia inhalants
- Antiseptic applicators or swabs
- Burn dressing and sterilized towels
- Surgical scissors
- Eye dressing
- Portable emergency eye wash
- Emergency oxygen supply
- Alcohol
- Hydrogen peroxide
- Clinical grade thermometer
- Tourniquet

11.4.5 Other Emergency Equipment

One portable fire extinguisher with a rating (ratio) of 20 pound A/B/C and one portable fire extinguisher with a rating of 2A will be conspicuously and centrally located between the restricted and non-restricted zones. In addition, similar extinguishers of the same size and class will be located in the site office trailer so that maximum travel distance to the nearest unit shall not exceed 50 feet. Portable extinguishers will be properly tagged with inspection dates and maintained in accordance with standard maintenance procedures for portable fire extinguishers. Field personnel will be trained in fire extinguisher use before field operations begin.

An emergency at any part of the site, such as fire or chemical release, might require that some appropriately trained site workers direct traffic on or near the site.
The following safety equipment to be used for traffic should be kept readily available on site in the field office:

- reflective/fluorescent vests
- flares
- traffic cones (and flags, or the equivalent, as needed)
- hazard tape (barricades as needed)
- working flashlights

11.5 Record of Injuries Incurred On-Site

11.5.1 Occupational Injuries and Illnesses Form (OSHA 200)

All occupational injuries and illnesses that are required to be recorded under the Occupational Safety and Health Act will be registered on OSHA Form 200 (see **Appendix G**). The site safety supervisor will record occupational injuries and illnesses within 48 hours of occurrence, as required by statute.

11.5.2 Employer's First Report of Injury

The site safety supervisor for all accidents involving work injury at the site will complete this form (**Appendix F**). Follow-up procedures will include investigation of each accident or near-miss by the safety supervisor to assure that no similar accidents occur in the future.

Appendix A:
Acknowledgment Statement

DATE	EMPLOYEE NAME	SAFETY OFFICER/SUPERVISOR	ACKNOLEDGEMENT THAT YOU HAVE READ AND UNDERSTSAND THE HASP SUPPLEMENT – TARGET SAFETY TOPIC FOR CONSTRUCTION PERSONNEL

Appendix B:

ISGS Technology Product Sheet

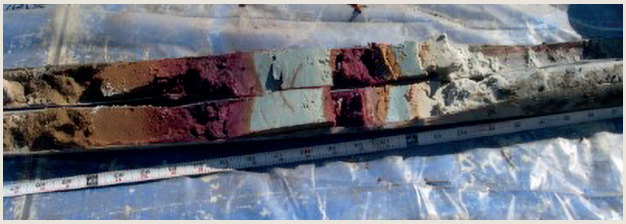
Product Sheet

ISGS® TECHNOLOGY

ISGS® TECHNOLOGY FOR NON-AQUEOUS PHASE LIQUIDS (NAPL)

Evonik's **ISGS® TECHNOLOGY** utilizes a permanganate-based solution to geochemically stabilize non-aqueous phase liquids (NAPL) in the aquifer. Permanganate and other proprietary reagents are selected depending upon the particular characteristics of each location and custom mixed on site into an aqueous solution that can be injected into an aquifer either through existing wells or direct push technology. As the solution migrates through the treatment area it oxidizes contaminants yielding partial mass removal. This in situ geochemical stabilization (ISGS) technology also reacts with contaminants in the treated area thereby coating NAPL surfaces with stable mineral precipitates that reduce mass flux.





Soil core from a site in Gainesville, Florida treated with ISGS® TECHNOLOGY.

THE SOUND SCIENCE OF ISGS®

In the presence of an organic compound (R), permanganate reacts to yield an oxidized intermediate, carbon dioxide, and manganese dioxide:

$$\mathbf{R + MnO_4 \rightarrow MnO_2 + CO_2 \text{ or } ROx}$$

Proprietary additives are added to the solution to form mineral "crusts" or "shells" that are similar to birnessite $(Na_{0.3}Ca_{0.1}K_{0.1})(Mn^{4+},Mn^{3+})_2O_4 \cdot 1.5\ H_2O$, which is an oxide mineral of manganese along with calcium, potassium and sodium.

Field Data from a field application of an ISGS® formulation at a site in Denver, CO are summarized on the following tables:

Contaminant (mg/kg)	Average (n=4) Background	Average (n=4) Treated	% Mass Reduction
LMH PAHs	7,633.50	5,996.75	21
HMW PAHs	1,961.55	1,744.55	10
TOTAL PAHs	9,595.05	7,771.30	19
PENTA	236.00	55.67	76
TOTAL CPs	**284.48**	**59.25**	**79**

Table 1 Mass Reduction following a single ISGS® Treatment

Contaminant (mg/L)	Average (n=4) Background	Average (n=4) Treated	% Flux Reduction
LMH PAHs	34.41	12.75	73
HMW PAHs	6.05	0.11	99
TOTAL PAHs	40.46	12.86	79
PENTA	18.91	9.66	49
TOTAL CPs	**23.38**	**10.41**	**56**

Table 2 Mass Flux Reduction following a single ISGS® Treatment

KEY BENEFITS

When released into the environment, chlorinated solvents, coal tar, creosote and heavy crude oil are frequently present as DNAPL and represent a long-term secondary source of contamination. Physical removal or in situ remediation of DNAPL is not always practicable due to the depth of contamination, aquifer geology or the presence of physical surface structures. In these cases hydraulic containment (e.g., long-term pump-and-treat) or in situ stabilization is the only viable remedial action. ISGS® TECHNOLOGY can represent a more effective and cost-efficient alternative to conventional cement stabilization since the aqueous solution can be injected into an aquifer where it will follow preferred flow paths.

Representative ISGS® chemical costs:

Site Location	Geology	Delivery Method	Contaminants	Approx. Cost – $USD/M³
Denver, CO	Dense Alluvium	Fixed Wells	PAHs, Pentachlorophenol	$40 – 50
Dolomite, AL	Fractured Karst	Direct Push	Phase Separated Creosote	$45 – 50
Gainesville, FL	Sand/Silt	Direct Push and Fixed Wells	Phase Separated Creosote	$60 – 75

For more information and detailed case studies, please visit our website.

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Appendix C:
OSHA Respirator Medical Evaluation Questionnaire

Attachment 4
Appendix C to 1910.134:OSHA Respirator Medical Evaluation Questionnaire (Mandatory)

To the employer: Answers to questions in Section 1, and to question 9 in Section 2 of Part A, do not require a medical examination.

To the employee:
Can you read (circle one): Yes No
Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place
that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health
care professional who will review it.
Part A. Section 1. (Mandatory) The following information must be provided by every employee who has been
selected to use any type of respirator (please print).
1. Today's date:_____
2. Your name:_____
3. Your age (to nearest year):_____
4. Sex (circle one): Male Female
5. Your height: _____ ft. _____ in.
6. Your weight: _____ lbs.
7. Your job title:_____
8. A phone number where you can be reached by the health care professional who reviews this questionnaire
(include the Area Code): _____
9. The best time to phone you at this number: _____
10. Has your employer told you how to contact the health care professional who will review this questionnaire
(circle one): . . . . . Yes No
11. Check the type of respirator you will use (you can check more than one category):
a. _____ N, R, or P disposable respirator (filter-mask, non-cartridge type only).
b. _____ Other type (for example, half- or full-facepiece type, powered-air purifying, supplied-air, self-contained
breathing apparatus).
12. Have you worn a respirator (circle one): . . . . . Yes No
If "yes," what
type(s):_____
_____
_____

Part A. Section 2. (Mandatory) Questions 1 through 9 below must be answered by every employee who has been
selected to use any type of respirator (please circle "yes" or "no").

1. Do you currently smoke tobacco, or have you smoked tobacco in the last month: . . . . . Yes No
2. Have you ever had any of the following conditions?
a. Seizures (fits): . . . . . Yes No
b. Diabetes (sugar disease): . . . . . Yes No
c. Allergic reactions that interfere with your breathing: . . . . . Yes No
d. Claustrophobia (fear of closed-in places): . . . . . Yes No
e. Trouble smelling odors (except when you had a cold): . . . . . Yes No
3. Have you ever had any of the following pulmonary or lung problems?
a. Asbestosis: . . . . . Yes No
b. Asthma: . . . . . Yes No
c. Chronic bronchitis: . . . . . Yes No
d. Emphysema: . . . . . Yes No
e. Pneumonia: . . . . . Yes No
f. Tuberculosis: . . . . . Yes No
g. Silicosis: . . . . . Yes No
h. Pneumothorax (collapsed lung): . . . . . Yes No
i. Lung cancer: . . . . . Yes No
j. Broken ribs: . . . . . Yes No
k. Any chest injuries or surgeries: . . . . . Yes No
l. Any other lung problem that you've been told about: . . . . . Yes No
4. Do you currently have any of the following symptoms of pulmonary or lung illness?
a. Shortness of breath: . . . . . Yes No
b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline: Yes No
c. Shortness of breath when walking with other people at an ordinary pace on level ground: . . Yes No
d. Have to stop for breath when walking at your own pace on level ground: . . . . . Yes No
e. Shortness of breath when washing or dressing yourself: . . . . . Yes No
f. Shortness of breath that interferes with your job: . . . . . Yes No
g. Coughing that produces phlegm (thick sputum): . . . . . Yes No
h. Coughing that wakes you early in the morning: . . . . . Yes No
i. Coughing that occurs mostly when you are lying down: . . . . . Yes No
j. Coughing up blood in the last month: . . . . . Yes No
k. Wheezing: . . . . . Yes No
l. Wheezing that interferes with your job: . . . . . Yes No
m. Chest pain when you breathe deeply: . . . . . Yes No
n. Any other symptoms that you think may be related to lung problems: . . . . . Yes No
5. Have you ever had any of the following cardiovascular or heart problems?
a. Heart attack: . . . . . Yes No
b. Stroke: . . . . . Yes No
c. Angina: . . . . . Yes No
d. Heart failure: . . . . . Yes No
e. Swelling in your legs or feet (not caused by walking): . . . . . Yes No
f. Heart arrhythmia (heart beating irregularly): . . . . . Yes No
g. High blood pressure: . . . . . Yes No
h. Any other heart problem that you've been told about: . . . . . Yes No

6. Have you ever had any of the following cardiovascular or heart symptoms?
a. Frequent pain or tightness in your chest: . . . . . Yes No
b. Pain or tightness in your chest during physical activity: . . . . . Yes No
c. Pain or tightness in your chest that interferes with your job: . . . . . Yes No
d. In the past two years, have you noticed your heart skipping or missing a beat: . . . . . Yes No
e. Heartburn or indigestion that is not related to eating: . . . . . Yes No
f. Any other symptoms that you think may be related to heart or circulation problems: . . . . . Yes No
7. Do you currently take medication for any of the following problems?
a. Breathing or lung problems: . . . . . Yes No
b. Heart trouble: . . . . . Yes No
c. Blood pressure: . . . . . Yes No
d. Seizures (fits): . . . . . Yes No
8. Has your wearing a respirator caused any of the following problems? (If you've never used a respirator, check the following space __ and go to question 9:)
a. Eye irritation: . . . . . Yes No
b. Skin allergies or rashes: . . . . . Yes No
c. Anxiety that occurs only when you use the respirator: . . . . . Yes No
d. Unusual weakness or fatigue: . . . . . Yes No
e. Any other problem that interferes with your use of a respirator: . . . . . Yes No
9. Would you like to talk to the health care professional who will review this questionnaire about your answers
to this questionnaire: . . . . . Yes No
Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-facepiece respirator or a self-contained breathing apparatus (SCBA). For employees who have been
selected to use other types of respirators, answering these questions is voluntary.
10. Have you ever lost vision in either eye (temporarily or permanently): . . . . . Yes No
11. Do you currently have any of the following vision problems?
a. Wear contact lenses: . . . . . Yes No
b. Wear glasses: . . . . . Yes No
c. Color blind: . . . . . Yes No
d. Any other eye or vision problem: . . . . . Yes No
12. Have you ever had an injury to your ears, including a broken ear drum: . . . . . Yes No
13. Do you currently have any of the following hearing problems?
a. Difficulty hearing: . . . . . Yes No
b. Wear a hearing aid: . . . . . Yes No
c. Any other hearing or ear problem: . . . . . Yes No
14. Have you ever had a back injury: . . . . . Yes No
15. Do you currently have any of the following musculoskeletal problems?
a. Weakness in any of your arms, hands, legs, or feet: . . . . . Yes No
b. Back pain: . . . . . Yes No
c. Difficulty fully moving your arms and legs: . . . . . Yes No
d. Pain or stiffness when you lean forward or backward at the waist: . . . . . Yes No
e. Difficulty fully moving your head up or down: . . . . . Yes No
f. Difficulty fully moving your head side to side: . . . . . Yes No
g. Difficulty bending at your knees: . . . . . Yes No
h. Difficulty squatting to the ground: . . . . . Yes No

i. Difficulty climbing a flight of stairs or a ladder carrying more than 25 lbs: . . . . . Yes No
j. Any other muscle or skeletal problem that interferes with using a respirator: . . . . . Yes No

Part B Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.

1. In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal amounts of oxygen: . . . . . Yes No

If "yes," do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when you're working under these conditions: . . . . . Yes No

2. At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (e.g., gases, fumes, or dust), or have you come into skin contact with hazardous chemicals: . . . . . Yes No

If "yes," name the chemicals if you know them:_____
_____
_____

3. Have you ever worked with any of the materials, or under any of the conditions, listed below:

a. Asbestos: . . . . . Yes No
b. Silica (e.g., in sandblasting): . . . . . Yes No
c. Tungsten/cobalt (e.g., grinding or welding this material): . . . . . Yes No
d. Beryllium: . . . . . Yes No
e. Aluminum: . . . . . Yes No
f. Coal (for example, mining): . . . . . Yes No
g. Iron: . . . . . Yes No
h. Tin: . . . . . Yes No
i. Dusty environments: . . . . . Yes No
j. Any other hazardous exposures: . . . . . Yes No

If "yes," describe these exposures:_____
_____
___
_____
___

4. List any second jobs or side businesses you have:_____
_____
____

5. List your previous occupations:_____
_____
_____

6. List your current and previous hobbies:_____
_____
_____

7. Have you been in the military services? . . . . . Yes No

If "yes," were you exposed to biological or chemical agents (either in training or combat): . . . . . Yes No

8. Have you ever worked on a HAZMAT team? . . . . . Yes No

9. Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications): . . . . . Yes No
If "yes," name the medications if you know them:_____
10. Will you be using any of the following items with your respirator(s)?
a. HEPA Filters: . . . . . Yes No
b. Canisters (for example, gas masks): . . . . . Yes No
c. Cartridges: . . . . . Yes No
11. How often are you expected to use the respirator(s) (circle "yes" or "no" for all answers that apply to you)?:
a. Escape only (no rescue): . . . . . Yes No
b. Emergency rescue only: . . . . . Yes No
c. Less than 5 hours per week: . . . . . Yes No
d. Less than 2 hours per day: . . . . . Yes No
e. 2 to 4 hours per day: . . . . . Yes No
f. Over 4 hours per day: . . . . . Yes No
12. During the period you are using the respirator(s), is your work effort:
a. Light (less than 200 kcal per hour): . . . . . Yes No
If "yes," how long does this period last during the average shift:_____hrs._____mins.
Examples of a light work effort are sitting while writing, typing, drafting, or performing light assembly work; or
standing while operating a drill press (1-3 lbs.) or controlling machines.
b. Moderate (200 to 350 kcal per hour): . . . . . Yes No
If "yes," how long does this period last during the average shift:_____hrs._____mins.
Examples of moderate work effort are sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at
trunk level; walking on a level surface about 2 mph or down a 5-degree grade about 3 mph; or pushing a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.
c. Heavy (above 350 kcal per hour): . . . . . Yes No
If "yes," how long does this period last during the average shift:_____hrs._____mins.
Examples of heavy work are lifting a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working
on a loading dock; shoveling; standing while bricklaying or chipping castings; walking up an 8-degree grade
about 2 mph; climbing stairs with a heavy load (about 50 lbs.).
13. Will you be wearing protective clothing and or equipment (other than the respirator) when you're using your
respirator: . . . . . Yes No
If "yes," describe this protective clothing and or equipment:_____
_____
____
14. Will you be working under hot conditions (temperature exceeding 77 deg. F): . . . . . Yes No
15. Will you be working under humid conditions: . . . . . Yes No

16. Describe the work you'll be doing while you're using your respirator(s):
_____
_____
_____
17. Describe any special or hazardous conditions you might encounter when you're using your respirator(s) (for
example, confined spaces, life-threatening gases):
_____
_____
_____
18. Provide the following information, if you know it, for each toxic substance that you'll be exposed to when
you're using your respirator(s):
Name of the first toxic substance:_____
Estimated maximum exposure level per shift:_____
Duration of exposure per shift_____
Name of the second toxic substance:_____
Estimated maximum exposure level per shift:_____
Duration of exposure per shift:_____
Name of the third toxic substance:_____
Estimated maximum exposure level per shift:_____
Duration of exposure per shift:_____
The name of any other toxic substances that you'll be exposed to while using your respirator:
_____
_____
_____
19. Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and
well-being of others (for example, rescue, security):
_____
_____
_____

Apéndice C: Cuestionario de Evaluación Médico obligado por la OSHA (La agencia de seguridad y salud ocupacional) Parte 29 CFR 1910.134 Mandatorio para Proteccion del Sistema Respiratorio

Marque con un circulo para indicar sus respuestas a cada pregunta.
Para el empleado: Puede usted leer (circule uno): Sí o No
Su patrón debe dejarlo responder estas preguntas durante horas de trabajo o en un tiempo y lugar que sea conveniente para usted. Para mantener este cuestionario confidencial, su patrón o supervisor no debe ver o revisar sus respuestas. Su patrón debe informarle a quien dar o enviar este cuestionario para ser revisado por un
profesional de sanidad con licencia autorizado por el estado.

Parte A. Sección 1. (Mandatorio). La siguiente información debe de ser proveida por cada empleado que ha
sido seleccionado para usar cualquier tipo de respirador (escriba claro por favor).

1. Fecha :_____
2. Nombre:_____
3. Edad:_____
4. Su sexo (circule uno) Masculino o Femenino
5. Altura: _____pies _____pulgadas
6. Peso: _____libras
7. Su ocupación, título o tipo de trabajo: _____
8. Número de teléfono al donde pueda ser llamado por un profesional de sanidad con licencia que revisara este cuestionario (incluya el área):_____
9. Indique la hora mas conveniente para llamarle a este numero:_____
10. ¿Le ha informado su patrón como comunicarse con el profesional de sanidad con licencia que va a revisar
este cuestionario (circule una respuesta)? . . . . . Sí o No
11. Anote el tipo de equipo protector respíratorio que va utilizar (puede anotar mas de una categoría)
a._____ Respirador disponible de clase N, R, o P (por ejemplo: respirador de filtro mécanico, respirador sin
cartucho)
b._____ Otros tipos (respirador con cartucho químico, máscara con cartucho químico, máscara con manguera con soplador (PAPR),máscara con manguera sin soplador (SAR), aparato respiratorio autónomos (SCBA)).
12. ¿Ha usado algun tipo de respirador ? . . . . . Sí o No

Si ha usado equipo protector respíratorio, que tipo(s) ha utilizado:
_____
_____

Parte A. Seccion 2. (Mandatorio): Preguntas del 1 al 9 deben ser contestadas por cada empleado que fue seleccionado a usar cualquier tipo de respirador. Marque con un circulo para indicar sus repuestas.

1. ¿Corrientemente fuma tabaco, o ha fumado tabaco durante el ultimo mes? . . . . . Sí o No
2. ¿Ha tenido algunas de las siguientes condiciones medicas?
a. Convulsiones : . . . . . Sí o No
b. Diabetes (azucar en la sangre): . . . . . Sí o No
c. Reacciones alergicas que no lo deja respirar: . . . . . Sí o No
d. Claustrofobia (miedo de estar en espacios cerrados): . . . . . Sí o No
e. Dificultad oliendo excepto cuando ha cogido un resfriado: . . . . . Sí o No
3. ¿Ha tenido algunas de los siguientes problemas pulmonares?
a. Asbestosis: . . . . . Sí o No
b. Asma: . . . . . Sí o No
c. Bronquitis cronica: . . . . . Sí o No
d. Emfisema: . . . . . Sí o No
e. Pulmonía: . . . . . Sí o No
f. Tuberculosis: . . . . . Sí o No
g. Silicosis: . . . . . Sí o No
h. Neumotorax (pulmon colapsado): . . . . . Sí o No
i. Cáncer en los pulmones: . . . . . Sí o No
j. Costillas quebradas: . . . . . Sí o No
k. Injuria o cirujía en el pecho: . . . . . Sí o No
l. Algun otro problema de los pulmones que le ha dicho su medico: . . . . . Sí o No
4. ¿Corrientemente tiene alguno de los siguientes síntomas o enfermedades en sus pulmones?
a. Respiración dificultosa . . . . . Sí o No
b. Respiración dificultosa cuando camina rapido sobre terreno plano o subiendo una colina: Sí o No
c. Respiración dificultosa cuando camina normalmente con otras personas sobre terreno plano: Sí o No
d. Cuando camina normalmente en terreno plano se encuentra corto de resuello? . . . . . Sí o No
e. Respiración dificultosa cuando se esta bañando o vistiendo: . . . . . Sí o No
f. Respiración dificultosa que lo impede trabajar: . . . . . Sí o No
g. Tos con flema: . . . . . Sí o No
h. Tos que lo despierta temprano en la mañana: . . . . . Sí o No
i. Tos que occure cuando esta acostado: . . . . . Sí o No
j. Ha tosido sangre en el ultimo mes: . . . . . Sí o No
k. Silbar o respirar con mucha dificultad: . . . . . Sí o No
l. Silbar que lo impede trabajar: . . . . . Sí o No
m. Dolor del pecho cuando respira profundamente: . . . . . Sí o No
n. Otros símtomas que crea usted estar relacionados a los pulmones: . . . . . Sí o No
5. ¿Ha tenido algunos de los siguientes problemas con el corazón?
a. Ataque cardiaco: . . . . . Sí o No
b. Ataque cerebrovascular: . . . . . Sí o No
c. Dolor en el pecho: . . . . . Sí o No
d. Falla de corazón: . . . . . Sí o No
e. Hinchazón en las piernas o pies (que no sea por caminar): . . . . . Sí o No
f. Latidos irregulares del corazón: . . . . . Sí o No
g. Alta presión: . . . . . Sí o No
h. Algun otro problema cardio-vascular o cardiaco: . . . . . Sí o No
6. ¿Ha tenido algunos de los siguientes síntomas causados por su corazón?
a. Dolor de pecho frecuente o pecho apretado: . . . . . Sí o No
b. Dolor o pecho apretado durante actividad fisica: . . . . . Sí o No

c. Dolor o pecho apretado que no lo deja trabajar normalmente: . . . . . Sí o No
d. En los ultimos dos años ha notado que su corazón late irregularmente: . . . . . Sí o No
e. Dolor en el pecho o indigestion que no es relacionado a la comida: . . . . . Sí o No
f. Algunos otros síntomas que usted piensa ser causado por problemas de su corazón o de su circulation.
. . . . . Sí o No
7. ¿Esta tomando medicina por algunso de los siguientes problemas?
a. Respiración dificultosa: . . . . . Sí o No
b. Problemas del corazón: . . . . . Sí o No
c. Alta presión : . . . . . Sí o No
d. Convulsiones: . . . . . Sí o No
8. ¿Le ha causado alguno de los siguientes problemas usando el respirador? (si no ha usado un respirador, deje
esta pregunta en blanco__ y continue con pregunta 9).
a. Irritación de los ojos: . . . . . Sí o No
b. Alergias del cutis o sarpullido: . . . . . Sí o No
c. Ansiedad que ocurre solamente cuando usa el respirado: . . . . . Sí o No
d. Debilidad, falta de vigor o fatiga desacostumbrada: . . . . . Sí o No
e. Algun otro problema que le impida utilizar su respirador: . . . . . Sí o No
9. ¿Le gustaria hablar con el profesional de sanidad con licencia autorizado por el estado que revisara este cuestionario sobre sus respuestas? . . . . . Sí o No

Las preguntas del 10 al 15 deben ser contestadas por los empleados seleccionados para usar una máscara
con cartucho químico o aparato respiratorio autónomo (SCBA). Los empleados que usan otro tipo de respirador no tienen que contestar estas preguntas.

10. ¿Ha perdido la vista en cualquiera de sus ojos (temporalmente o permanente): . . . . . Sí o No
11. ¿Corrientemente tiene algunos de los siguientes problemas con su vista?
a. Usa lentes de contacto: . . . . . Sí o No
b. Usa lentes: . . . . . Sí o No
c. Daltoniano (dificultad distinguiendo colores): . . . . . Sí o No
d. Tiene algún problema con sus ojos o su vista: . . . . . Sí o No
12. ¿Ha tenido daño en sus oidos incluyendo rotura del tímpano: . . . . . Sí o No
13. ¿Corrientemente tiene uno de las siguientes problemas para oir?
a. Dificultad oyendo: . . . . . Sí o No
b. Usa un aparato para oir: . . . . . Sí o No
c. Tiene algun otro problema con sus oidos o dificultad escuchando: . . . . . Sí o No
14. ¿Se ha dañado o lastimado su espalda? . . . . . Sí o No
15. ¿Tiene uno de los siguientes problemas de su aparato muscular or eskeleto?
a. Debilidad en sus brazos, manos, piernas o pies : . . . . . Sí o No
b. Dolor de espalda: . . . . . Sí o No
c. Dificultad para mover sus brazos y piernas completamente: . . . . . Sí o No
d. Dolor o engarrotamiento cuando se inclina para adelante o para atras: . . . . . Sí o No
e. Dificultad para mover su cabeza para arriba o para abajo completamente: . . . . . Sí o No
f. Dificultad para mover su cabeza de lado a lado: . . . . . Sí o No
g. Dificultad para agacharse doblando sus rodillas: . . . . . Sí o No
h. Dificultad para agacharse hasta tocar el piso: . . . . . Sí o No
i. Dificultad subiendo escaleras cargando mas de 25 libras: . . . . . Sí o No
j. Alguno problema muscular o con sus huesos que le evite usar un respirador: . . . . . Sí o No

Parte B - Las siguientes preguntas pueden ser agregadas al cuestionario a discrecion del profesional de
sanidad con licencia autorizado por el estado.

1. ¿Esta trabajando en las alturas arriba de 5,000 pies o en sitios que tienen menos oxígeno de lo normal? . . . . . Sí o No

Si la respuesta es "Sí", se ha sentido mareado, o ha tenido dificultad respirando, palpitaciones, o cualquier otro síntoma que usted no tiene cuando no esta trabajando bajo estas condiciones: . . . . . Sí o No

2. ¿En el trabajo o en su casa, ha estado expuesto a solventes o contaminantes peligrosos en el aire (por ejemplo, humos, neblina o polvos) o ha tenido contacto del cutis con químicas peligrosas? . . . . . Sí o No

Escriba las químicas y productos con las que ha estado expuesto, si sabe cuales son:_____

3. ¿Ha trabajado con los siguientes materiales o las condiciones anotadas abajo?:

a. Asbestos: . . . . . Sí o No
b. Sílice (Limpiar mediante un chorro de arena): . . . . . Sí o No
c. Tungsteno/Cobalto (pulverizar o soldadura): . . . . . Sí o No
d. Berilio: . . . . . Sí o No
e. Aluminio: . . . . . Sí o No
f. Carbón de piedra (minando): . . . . . Sí o No
g. Hierro: . . . . . Sí o No
h. Estaño: . . . . . Sí o No
i. Ambiente polvoriento: . . . . . Sí o No
j. Otra exposicion peligrosa: . . . . . Sí o No

Describa las exposiciones peligrosas:

_____
_____

4. ¿Tiene usted otro trabajo o un negocio aparte de este?

_____
_____
_____

5. Apunte su previos trabajos:

_____

6. Apunte sus pasatiempos:

_____
_____
_____

7. ¿Tiene servicio militar? . . . . . Sí o No

Si la respuesta es "Sí", ha estado expuesto a agentes químicos o biologicos durante entrenamiento o combate: . . . . . Sí o No

8. ¿Alguna vez ha trabajado en un equipo de HAZMAT (equipo respondedor a incidentes de materiales peligosos con emergencia)? . . . . . Sí o No

9. ¿Esta tomando alguna medicina que no haya mencionado en este cuestionario (incluyendo remedios caseros o
medicinas que compra sin receta)? . . . . . Sí o No
Si la respuesta es “Sí”, cuales son_____
10. ¿Va a usar algunas de las siguientes partes con su respirador?
a. filtros HEPA (filtro de alta eficiencia que remueve partículas tóxicas en la atmósfera): . . . . Sí o No
b. Canastillo (por ejemplo, máscara para gas): . . . . . Sí o No
c. Cartuchos: . . . . . Sí o No
11. ¿Cuántas veces espera usar un respirador?
a. Para salir de peligro solamente (no rescates): . . . . . Sí o No
b. Recates de emergencia solamente: . . . . . Sí o No
c. Menos de 5 horas *por semana*: . . . . . Sí o No
d. Menos de 2 horas *por día*: . . . . . Sí o No
e. 2 a 4 horas *por día*: . . . . . Sí o No
f. Mas de 4 horas *por día*: . . . . . Sí o No
12. ¿Durante el tiempo de usar el respirador, su trabajo es...?
a. **Ligero** (menos de 200 kcal por hora): . . . . . Sí o No
Si la respuesta es “sí”, cuanto tiempo dura la obra _____horas _____minutos
Ejemplos de trabajos ligeros: estar sentado escribiendo, escribiendo a máquina, diseñando, trabajando la línea de
montaje, o estar parado gobernando un taladro o máquinas:
b. **Moderado** (200-350 kcal por hora): . . . . . Sí o No
Si la respuesta es “sí”cuanto tiempo dura en promedio por jornada _____horas_____minutos
Ejemplos de trabajos moderados : sentado clavando o archivando; manejando un camión o autobús en trafico
pesado; estar de pie taladrando, clavando, trabajando la línea de montaje, o transferiendo una carga (de 35 libras)
a la altura de la cintura; caminando sobre tierra plana a 2 millas por hora o bajando a 3 millas por hora; empujando una carretilla con una carga pesada (de 100 libras) sobre terreno plano.
c. **Pesado** (mas de 350 kcal por hora): . . . . . Sí o No
Si la respuesta es “sí”cuanto tiempo dura en promedio por jornada _____horas_____minutos
Ejemplos de trabajos pesados: levantando cargas pesadas (mas de 50 libras) desde el piso hasta la altura de la
cintura o los hombros; trabajando cargando o descargando; transpalear; estar de pie trabajando de albañil o demenuzando moldes; subiendo a 2 millas por hora; subiendo la escalera con una carga pesada (mas de 50 libras).
13. ¿Va a estar usando ropa o equipo protectivo cuando use el respirador? . . . . . Sí o No
Si la respuesta es “sí” describa que va a estar
usando_____
_____
_____
14. ¿Va a estar trabajando en condiciones calurosas (temperatura mas de 77 grados F)? . . . . . Sí o No
15. ¿Va a estar trabajando en condiciones humedas? . . . . . Sí o No

16. Describa el tipo de trabajo que va a estar usted haciendo cuando use el respirador.

_____

_____

17. Describa cualquier situacion especial o peligrosa que pueda encontrar cuando este usando el respirador (por
ejemplo, espacios encerrados, gases que lo puedan matar, etc.)

_____

18. Provea la siguiente informacion si la sabe, por cada sustancia tóxica que usted va a estar expuesto cuando
este usando el respirador(s):

Nombre de la primera sustancia tóxica_____

Maximo nivel de exposición por jornada de trabajo_____

Tiempo de exposición por jornada_____

Nombre de la segunda sustancia tóxica_____

Maximo nivel de exposición por jornada de trabajo_____

Tiempo de exposición por jornada_____

Nombre de la tercera sustancia tóxica_____

Máximo nivel de exposición por jornada de trabajo_____

Tiempo de exposición por jornada_____

El nombre de cualquier sustancia tóxica que usted va a estar expuesto cuando este usted usando el
respirador_____

_____

19. Describa alguna responsabilidad especial que usted va a tener cuando usted este usado el respirador(s) que
pueda afectar la seguridad o la vida de otros (por ejemplo, rescate, seguridad).

_____

Appendix D:

Equipment Decontamination and Vehicle Entrance/Exit SOP

EQUIPMENT DECONTAMINATION AND VEHICLE ENTRANCE/EXIT STANDARD OPERATING PROCEDURE

1.0 Purpose

The purpose of this standard operating procedure (SOP) is to provide the step-by-step procedures for field decontamination of environmental sampling equipment and personal protective equipment (PPE). Decontamination of equipment and PPE is designed to ensure that sample cross-contamination, human-health exposure, and contamination transport are minimized.

2.0 Scope

This procedure applies to all IEEG personnel and subcontractors engaged in collecting environmental samples or operating in environments in which hazardous or contaminating substances are expected to be present.

3.0 Procedure

Decontaminate all non-disposable sampling equipment used at the site both before activities begin and after each sample is collected. Decontaminate all drilling and excavation equipment both before activities begin and between each investigation location. Take care that materials and solutions used for decontamination procedures are themselves not hazardous or could potentially contaminate samples (that is, are acids and solvents).

3.1 Decontamination Area

A localized decontamination area for drill rigs and other sampling equipment will be identified on-Site. The decontamination area will be selected so that decontamination fluids and soil wastes can be managed in a controlled area with minimal risk to the surrounding environment. The decontamination area will be large enough to allow temporary storage of cleaned equipment and materials before use, as well as to stage drums of decontamination investigation-derived waste (IDW). Due to the nature of work to be performed and type of equipment required, the decontamination area will be lined with a heavy-gauge polyethylene sheeting (4-mil minimum) and include a collection system designed to capture potential decontamination IDW. Decontamination areas will be laid out in such a way as to prevent overspray while performing equipment and personnel decontamination.

Smaller decontamination tasks, such as surface water and sediment equipment decontamination, may take place at the sampling locations. In this case, all required decontamination supplies, and equipment must be mobilized to the site and smaller decontamination areas for personnel and portable equipment will be provided as necessary. These locations will include basins or tubs to capture decontamination IDW, which will be transferred to larger containers (drums) as necessary.

3.2 Decontamination Equipment

The following is a list of equipment and materials that may be needed to perform decontamination:

- Plastic sheeting/membrane to serve as secondary containment for liquids
- Drill rig mud-pad

- Brushes and flat-bladed scrapers
- Garden-type water sprayers (without oil-lubricated, moving parts)
- High-pressure washer
- Portable steam cleaner
- Sump or collection system for contaminated liquid
- Wash basins and buckets
- Spray and rinse bottles
- Potable water, deionized water, and laboratory-grade detergent (Liquinox, Alconox, or similar)
- Plastic waste bags
- Leak-tight liquid waste containers (55-gallon drums or similar)

3.3 Decontamination Procedures

3.3.2 General Sampling Equipment

Conduct consistent decontamination of sampling equipment to ensure the quality of the samples collected. Decontaminate all equipment that comes into contact with potentially contaminated samples. Disposable equipment intended for one-time use that is factory wrapped generally does not need to be decontaminated before use, unless evidence of contamination is present. Disposable equipment, such as disposable bailers, spoons, TerraCore® or Encore® VOC samplers, is preferred over reusable equipment; use wherever appropriate. Decontaminate sampling equipment, including split-barrel samplers, hand- augers, reusable bailers, spoons, trowels, shovels, and pumps used to collect samples for chemical analyses before each use and before sampling at a new sampling location.

Take the following steps to decontaminate non-dedicated sampling equipment:

- Decontamination personnel will wear the appropriate PPE.
- The sequence of actual decontamination will be as follows:
    1. Remove as much gross contamination (such as pieces of soil) as possible off equipment at the sampling site.
    2. Wash water-resistant equipment thoroughly and vigorously with potable water containing non-phosphate laboratory-grade detergent such as Liquinox, Alconox, or equivalent, and using a bristle brush or similar utensil to remove any remaining residual contamination.
    3. Rinse equipment thoroughly with potable water (1st rinse).
    4. Rinse equipment thoroughly with portable water (2nd rinse).
    5. Air dry at a location where dust or other fugitive contaminants may not contact the sample equipment. Alternatively, wet equipment maybe dried with a clean, disposable paper towel to assist the drying process. All equipment should be dry before reuse.

- If the equipment is not used soon after decontamination, it should be covered or wrapped in new, oil-free aluminum foil or new, unused plastic bags to protect the decontaminated equipment from fugitive contaminates before reuse.
- Store decontaminated equipment at a secure, unexposed location out of the weather and any potential contaminant exposure.
- Wash water or rinsate solutions will be containerized and poured into a 55-gallon drum.

3.3.3 Groundwater Sampling Equipment

Proper decontamination between wells is essential to avoid introducing contaminants from the sampling equipment. For sampling with a submersible, bladder, or similar pump in which mechanisms of the pump come in direct contact with contaminated water, or sampling with a reusable stainless steel bailer, decontaminate the pump or bailer. The following steps will be used for pumps and bailers contaminated with dissolved phase contamination only:

- Wash the exterior of the pump or bailer and any associated cable thoroughly and vigorously with potable water containing non-phosphate laboratory-grade detergent such as Liquinox, Alconox, or equivalent, and using a dedicated wash bristle brush or similar brush.
- Place the pump into a potable water wash basin/reservoir containing non-phosphate laboratory-grade detergent making sure that the pump intake is fully submerged and the pump outlet is allowed to flow directly back into the wash reservoir. Set the pump to a very low flow rate and turn the pump on, allowing the wash water to recirculate through the pump mechanism for a minimum of 5 minutes. Disregard this step for reusable bailers.
- Initially, rinse the pump or bailer by repeating Steps 1 and 2 using potable water, a dedicated rinse bristle brush, and a rinse basin/reservoir containing only potable water (1st rinse).
- Final rinse the pump or bailer by duplicating Step 3 using potable water (2nd rinse).
- Dry off any excess water with a clean, disposable paper towel and allow to air dry at a location where dust or other fugitive contaminants may not contact the sample pump or bailer.
- Wash water collected within the rinse reservoir will be containerized and poured into a 55-gallon drum.

3.3.4 Measurement Devices and Monitoring Equipment

For water quality instruments, oil-water interface indicators, water level indicators, continuous water level dataloggers, and other field instruments that have the potential to come into contact with site media, at a minimum, wash with dilute laboratory-grade detergent (Liquinox or similar) and double rinse with potable and distilled/deionized water before and after each use using a similar procedure as discussed in Section 3.3.2.

3.3.5 Drilling and Subsurface Soil Sampling Equipment

Drilling equipment and associated materials will be decontaminated by the drilling contractor within the decontamination area prior to any drilling operations and between borings. Decontaminate tools used for soil sampling (for example, split spoon samplers) before and between collecting any analytical samples, as outlined in

Section 3.3.2. Thoroughly clean external and internal surfaces of drilling equipment (that is, drill bits, auger, drilling stem, and hand tools) before beginning any drilling operations and between borings using the following basic sequence:

- Remove as much gross contamination as possible off equipment at the sampling site.
- Wash equipment thoroughly and vigorously with high-temperature potable water using a high-pressure washer and/or steam cleaner. A bristle brush is also suggested to remove any persistent gross contamination.
- Rinse equipment twice thoroughly with potable water (1st and 2nd rinse).
- Air dry at a location where dust or other fugitive contaminants may not contact the sample equipment. All equipment should be dry before reuse.
- Store decontaminated equipment at a location away from any potential exposure from fugitive contamination.
- Wash water or rinsate solutions will be collected and poured into a 55-gallon drum.

4.0 Stabilized Construction Entrance(s)

Steps will be taken to ensure that trucks departing the site will not track soil, fill or debris off-Site. Such actions may include use of temporary asphalt, concrete or stone pads or other aggregate-based egress paths between the truck inspection station and the property exit. The stabilized construction entrance(s) will be lined and sloped to collect material washed or brushed from vehicles exiting the Site. All vehicles and equipment that contacts soils must be washed using clean water. All debris and wash water will be captured, containerized and disposed of off-site as IDW. Containerization and disposal of IDW must be documented in daily field reports. Measures will be taken to ensure that adjacent roadways will be kept clean of project related soils, fill and debris. An outbound-truck inspection station will be set up close to the Site exit. Before exiting the Site, trucks will be required to stop at the truck inspection station and will be examined for evidence of contaminated soil on the undercarriage, body, and wheels. Soil and debris will be removed. Booms, shovels and clean water will be utilized for the removal of soil from vehicles and equipment, as necessary. All waste haul trucks must be properly covered with an opaque cover, secured to the sides and back of the truck. All IDW manifests will be documented and included in the Final Engineering Report.

5.0 Investigation-Derived Wastes

Wash water or rinsate solutions will be accumulated in 55-gallon drums and subsequently transported to a waste storage area designated by the client prior to being properly disposed of off-site.

Appendix E:
SDS Sheets

POTASSIUM PERMANGANATE **ICSC: 0672 (November 2016)**

Permanganic acid potassium salt

CAS #: 7722-64-7
UN #: 1490
EC Number: 231-760-3

	ACUTE HAZARDS	PREVENTION	FIRE FIGHTING
FIRE & EXPLOSION	Not combustible but enhances combustion of other substances. Gives off irritating or toxic fumes (or gases) in a fire. Risk of fire and explosion on contact with combustible substances or reducing agents.	NO contact with combustible substances.	In case of fire in the surroundings, use appropriate extinguishing media.

PREVENT DISPERSION OF DUST! STRICT HYGIENE! IN ALL CASES CONSULT A DOCTOR!			
	SYMPTOMS	**PREVENTION**	**FIRST AID**
Inhalation	Burning sensation. Cough. Sore throat. Shortness of breath. Laboured breathing. Symptoms may be delayed.	Avoid inhalation of dust. Use local exhaust or breathing protection.	Fresh air. Half-upright position. Artificial respiration may be needed. Refer immediately for medical attention.
Skin	Redness. Skin burns. Pain.	Protective gloves. Protective clothing.	Wear protective gloves when administering first aid. First rinse with plenty of water for at least 15 minutes, then remove contaminated clothes and rinse again. Refer for medical attention .
Eyes	Redness. Pain. Severe burns.	Wear face shield or eye protection in combination with breathing protection.	Rinse with plenty of water for several minutes (remove contact lenses if easily possible). Refer immediately for medical attention.
Ingestion	Burning sensation. Abdominal pain. Diarrhoea. Nausea. Vomiting. Shock or collapse.	Do not eat, drink, or smoke during work.	Rinse mouth. If within a few minutes after ingestion, one small glass of water may be given to drink. Do NOT induce vomiting. Refer immediately for medical attention.

SPILLAGE DISPOSAL

Personal protection: chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers. Carefully collect remainder. Then store and dispose of according to local regulations. Do NOT absorb in saw-dust or other combustible absorbents.

STORAGE

Separated from combustible substances, reducing agents and powdered metals. Well closed. Provision to contain effluent from fire extinguishing. Store in an area without drain or sewer access.

PACKAGING

CLASSIFICATION & LABELLING

According to UN GHS Criteria



DANGER

May intensify fire; oxidizer
Harmful if swallowed
Causes severe skin burns and eye damage
Suspected of damaging fertility or the unborn child
Very toxic to aquatic life

Marine pollutant.	**Transportation** **UN Classification** UN Hazard Class: 5.1; UN Pack Group: II

Prepared by an international group of experts on behalf of ILO and WHO, with the financial assistance of the European Commission.
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POTASSIUM PERMANGANATE **ICSC: 0672**

PHYSICAL & CHEMICAL INFORMATION

Physical State; Appearance
DARK PURPLE CRYSTALS.

Physical dangers

Chemical dangers
Decomposes on heating. This produces toxic gases and irritating fumes. The substance is a strong oxidant. It reacts with combustible and reducing materials. This generates fire and explosion hazard. Reacts violently with powdered metals. This generates fire hazard.

Formula: $KMnO_4$
Molecular mass: 158
Decomposes at 240°C
Density: 2.7 g/cm³
Solubility in water, g/100ml at 20°C: 6.4 (moderate)
Vapour pressure at 20°C: negligible
Octanol/water partition coefficient as log Pow: 1.73 (calculated)

EXPOSURE & HEALTH EFFECTS

Routes of exposure
Serious local effects by all routes of exposure.

Effects of short-term exposure
The substance is corrosive to the eyes, skin and respiratory tract. Corrosive on ingestion. Inhalation of dust may cause lung oedema, but only after initial corrosive effects on eyes and/or airways have become manifest. The effects may be delayed. Medical observation is indicated.

Inhalation risk
A harmful concentration of airborne particles can be reached quickly when dispersed, especially if powdered.

Effects of long-term or repeated exposure
The substance may have effects on the lungs. This may result in bronchitis and pneumonia. Animal tests show that this substance possibly causes toxicity to human reproduction or development.

OCCUPATIONAL EXPOSURE LIMITS

TLV: (as Mn, respirable fraction): 0.02 mg/m^3, as TWA; (as Mn, inhalable fraction): 0.1 mg/m^3, as TWA; A4 (not classifiable as a human carcinogen).
EU-OEL: (as Mn, inhalable fraction): 0.2 mg/m^3 as TWA.
EU-OEL: (as Mn, respirable fraction): 0.05 mg/m^3 as TWA.
MAK: (as Mn, inhalable fraction): 0.2 mg/m^3; (as Mn, respirable fraction): 0.02 mg/m^3; peak limitation category: II(1); pregnancy risk group: C; (DFG 2016)

ENVIRONMENT

The substance is very toxic to aquatic organisms.

NOTES

Rinse contaminated clothing with plenty of water because of fire hazard.

ADDITIONAL INFORMATION

EC Classification
Symbol: O, Xn, N; R: 8-22-50/53; S: (2)-60-61

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SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006
Version 5.0 Revision Date 29.10.2012
Print Date 19.04.2017
GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifiers

Product name : Arsenic

Product Number : 267961
Brand : Aldrich
Index-No. : 033-001-00-X
CAS-No. : 7440-38-2

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Israel Ltd.
3 PARK RABIN, PLAUT
7670603 REHOVOT
ISRAEL

Telephone : +972 8948-4222
Fax : +972 8948-4200

1.4 Emergency telephone number

Emergency Phone # : +972 (8) 948-4222

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]
Acute aquatic toxicity (Category 1)
Chronic aquatic toxicity (Category 1)
Acute toxicity, Inhalation (Category 3)
Acute toxicity, Oral (Category 3)

Classification according to EU Directives 67/548/EEC or 1999/45/EC
Toxic by inhalation and if swallowed. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008 [CLP]
Pictogram



Signal word Danger

Hazard statement(s)
H301 Toxic if swallowed.
H331 Toxic if inhaled.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P273 Avoid release to the environment.
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/

physician.

P311	Call a POISON CENTER or doctor/ physician.
P501	Dispose of contents/ container to an approved waste disposal plant.
Supplemental Hazard Statements	none

According to European Directive 67/548/EEC as amended.

Hazard symbol(s)



R-phrase(s)

R23/25	Toxic by inhalation and if swallowed.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S-phrase(s)

S20/21	When using do not eat, drink or smoke.
S28	After contact with skin, wash immediately with plenty of soap and water.
S45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S60	This material and its container must be disposed of as hazardous waste.
S61	Avoid release to the environment. Refer to special instructions/ Safety data sheets.

2.3 Other hazards - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Formula : As
Molecular Weight : 74,92 g/mol

Component		Concentration
Arsenic		
CAS-No.	7440-38-2	-
EC-No.	231-148-6	
Index-No.	033-001-00-X	

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer.

4.3 Indication of any immediate medical attention and special treatment needed

no data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Arsenic oxides

5.3 Advice for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further information
no data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed.

7.2 Conditions for safe storage, including any incompatibilities
Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

7.3 Specific end uses
no data available

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

8.2 Exposure controls

Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Immersion protection
Material: Nitrile rubber
Minimum layer thickness: 0,11 mm
Break through time: > 480 min
Material tested:Dermatril® (Aldrich Z677272, Size M)

Splash protection
Material: Nitrile rubber
Minimum layer thickness: 0,11 mm
Break through time: > 30 min
Material tested:Dermatril® (Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 873000, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N99 (US) or type P2 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: powder Colour: grey
b)	Odour	no data available
c)	Odour Threshold	no data available
d)	pH	no data available
e)	Melting point/freezing point	Melting point/range: 817 °C - lit.
f)	Initial boiling point and boiling range	613 °C - lit.
g)	Flash point	not applicable
h)	Evaporation rate	no data available
i)	Flammability (solid, gas)	no data available
j)	Upper/lower flammability or explosive limits	no data available
k)	Vapour pressure	no data available
l)	Vapour density	no data available
m)	Relative density	5,727 g/mL at 25 °C
n)	Water solubility	no data available
o)	Partition coefficient: n-octanol/water	no data available

p)	Autoignition temperature	no data available
q)	Decomposition temperature	no data available
r)	Viscosity	no data available
s)	Explosive properties	no data available
t)	Oxidizing properties	no data available

9.2 Other safety information
no data available

10. STABILITY AND REACTIVITY

10.1 Reactivity
no data available

10.2 Chemical stability
no data available

10.3 Possibility of hazardous reactions
no data available

10.4 Conditions to avoid
Heat. Exposure to air may affect product quality.

10.5 Incompatible materials
Oxidizing agents, Halogens, Palladium undergoes a violent reaction with arsenic, Zinc, Platinum oxide, Nitrogen trichloride, Bromine azide

10.6 Hazardous decomposition products
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - rat - 763 mg/kg
Remarks: Behavioral:Ataxia. Diarrhoea

LD50 Oral - mouse - 145 mg/kg
Remarks: Behavioral:Ataxia. Diarrhoea

Inhalation: no data available

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
no data available

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity

This is or contains a component that has been reported to be carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification.

IARC: 1 - Group 1: Carcinogenic to humans (Arsenic)

Reproductive toxicity
no data available

Specific target organ toxicity - single exposure
no data available

Specific target organ toxicity - repeated exposure
no data available

Aspiration hazard
no data available

Potential health effects

Inhalation	Toxic if inhaled. May cause respiratory tract irritation.
Ingestion	Harmful if swallowed.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.

Signs and Symptoms of Exposure
Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer.

Additional Information
RTECS: CG0525000

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish	LC50 - Pimephales promelas (fathead minnow) - 9,9 mg/l - 96,0 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 3,8 mg/l - 48 h

12.2 Persistence and degradability
no data available

12.3 Bioaccumulative potential
no data available

12.4 Mobility in soil
no data available

12.5 Results of PBT and vPvB assessment
no data available

12.6 Other adverse effects
Very toxic to aquatic life with long lasting effects.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

14.1 UN number
ADR/RID: 1558 IMDG: 1558 IATA: 1558

14.2 UN proper shipping name
ADR/RID: ARSENIC
IMDG: ARSENIC
IATA: Arsenic

14.3 Transport hazard class(es)

ADR/RID: 6.1	IMDG: 6.1	IATA: 6.1

14.4 Packaging group

ADR/RID: II	IMDG: II	IATA: II

14.5 Environmental hazards

ADR/RID: yes	IMDG Marine pollutant: yes	IATA: no

14.6 Special precautions for user

no data available

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

no data available

15.2 Chemical Safety Assessment

no data available

16. OTHER INFORMATION

Further information

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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

SAFETY DATA SHEET

Revision Date 19-Jan-2018 **Revision Number** 3

1. Identification

Product Name **1,2-Benzanthracene**

Cat No. : **AC105250000; AC105250010; AC105252500**

Synonyms Benzóa!anthracene; Tetraphene

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company

Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Carcinogenicity	Category 1B

Label Elements

Signal Word
Danger

Hazard Statements
May cause cancer



Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Response
IF exposed or concerned: Get medical attention/advice
Storage
Store locked up
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Very toxic to aquatic life with long lasting effects
WARNING. Cancer - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Benz[a]anthracene	56-55-3	99

4. First-aid measures

Eye Contact Immediate medical attention is required. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Skin Contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Immediate medical attention is required.

Inhalation Remove from exposure, lie down. Remove to fresh air. If not breathing, give artificial respiration. Immediate medical attention is required.

Ingestion Call a physician immediately. Clean mouth with water.

Most important symptoms and effects No information available.

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Water spray. Carbon dioxide (CO_2). Dry chemical. Chemical foam.

Unsuitable Extinguishing Media No information available

Flash Point No information available
Method - No information available

Autoignition Temperature Not applicable

Explosion Limits
Upper No data available

Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Do not allow run-off from fire-fighting to enter drains or water courses.

Hazardous Combustion Products
Carbon monoxide (CO). Carbon dioxide (CO_2).
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
0	1	0	N/A

6. Accidental release measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment as required.
Environmental Precautions	Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.
Methods for Containment and Clean Up	Sweep up and shovel into suitable containers for disposal.

7. Handling and storage

Handling	Do not breathe dust. Do not get in eyes, on skin, or on clothing. Handle product only in closed system or provide appropriate exhaust ventilation.
Storage	Keep in a dry, cool and well-ventilated place. Refer product specification and/or product label for specific storage temperature requirement. Keep container tightly closed.

8. Exposure controls / personal protection

Exposure Guidelines	This product does not contain any hazardous materials with occupational exposure limitsestablished by the region specific regulatory bodies.
Engineering Measures	Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure.
Respiratory Protection	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Powder Solid

Appearance	Beige
Odor	Odorless
Odor Threshold	No information available
pH	No information available
Melting Point/Range	158 - 161 °C / 316.4 - 321.8 °F
Boiling Point/Range	437.6 °C / 819.7 °F
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	Not applicable
Specific Gravity	No information available
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	Not applicable
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	C18 H12
Molecular Weight	228.29

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products.

Incompatible Materials Strong oxidizing agents

Hazardous Decomposition Products Carbon monoxide (CO), Carbon dioxide (CO_2)

Hazardous Polymerization No information available.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information No acute toxicity information is available for this product

Component Information

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Benz[a]anthracene	56-55-3	Group 2B	Reasonably Anticipated	A2	X	A2

Mutagenic Effects Ames test: positive.

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed No information available

Endocrine Disruptor Information

Component	EU - Endocrine Disrupters Candidate List	EU - Endocrine Disruptors - Evaluated Substances	Japan - Endocrine Disruptor Information
Benz[a]anthracene	Group III Chemical	Not applicable	Not applicable

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

The product contains following substances which are hazardous for the environment. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Benz[a]anthracene	Not listed	Not listed	EC50 = 0.26 mg/L 15 min	LC50: = 0.01 mg/L, 96h Static (Daphnia magna) EC50: = 0.0042 mg/L, 48h (Daphnia magna)

Persistence and Degradability May persist

Bioaccumulation/ Accumulation No information available.

Mobility . Is not likely mobile in the environment due its low water solubility.

Component	log Pow
Benz[a]anthracene	5.61

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Benz[a]anthracene - 56-55-3	U018	-

14. Transport information

DOT Not regulated
TDG Not regulated
IATA
- **UN-No** UN3077
- **Proper Shipping Name** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.*
- **Hazard Class** 9
- **Packing Group** III

IMDG/IMO
- **UN-No** UN3077
- **Proper Shipping Name** Environmentally hazardous substances, solid, n.o.s.

Hazard Class 9
Packing Group III

15. Regulatory information

United States of America Inventory

Component	CAS-No	TSCA	TSCA Inventory notification - Active/Inactive	TSCA - EPA Regulatory Flags
Benz[a]anthracene	56-55-3	X	ACTIVE	-

Legend:
TSCA - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA 12(b) - Notices of Export Not applicable

International Inventories
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Australia (AICS), China (IECSC), Korea (ECL).

Component	CAS-No	DSL	NDSL	EINECS	PICCS	ENCS	AICS	IECSC	KECL
Benz[a]anthracene	56-55-3	-	X	200-280-6	-	-	-	X	-

U.S. Federal Regulations

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Benz[a]anthracene	56-55-3	99	0.1

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Benz[a]anthracene	-	-	-	X

Clean Air Act Not applicable

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Benz[a]anthracene	10 lb	-

California Proposition 65 This product contains the following Proposition 65 chemicals.

Component	CAS-No	California Prop. 65	Prop 65 NSRL	Category
Benz[a]anthracene	56-55-3	Carcinogen	0.033 µg/day	Carcinogen

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Benz[a]anthracene	X	X	X	X	X

U.S. Department of Transportation
Reportable Quantity (RQ): N

DOT Marine Pollutant	N
DOT Severe Marine Pollutant	N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Revision Date 19-Jan-2018
Print Date 19-Jan-2018
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

SAFETY DATA SHEET

Revision Date 14-Feb-2020 **Revision Number** 2

1. Identification

Product Name **Benzo[a]pyrene**

Cat No. : **15856**

CAS-No 50-32-8
Synonyms Benzo[def]chrysene.; 3,4-Benzopyrene; 3,4-Benzpyrene

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company
Alfa Aesar
Thermo Fisher Scientific Chemicals, Inc.
30 Bond Street
Ward Hill, MA 01835-8099
Tel: 800-343-0660
Fax: 800-322-4757
Email: tech@alfa.com
www.alfa.com

Emergency Telephone Number
During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660.
After normal business hours, call Carechem 24 at (866) 928-0789.

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin Sensitization	Category 1
Germ Cell Mutagenicity	Category 1B
Carcinogenicity	Category 1A
Reproductive Toxicity	Category 1B

Label Elements

Signal Word
Danger

Hazard Statements
May cause an allergic skin reaction
May cause genetic defects
May cause cancer
May damage fertility. May damage the unborn child



Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Avoid breathing dust/fume/gas/mist/vapors/spray
Contaminated work clothing should not be allowed out of the workplace
Wear protective gloves
Response
IF exposed or concerned: Get medical attention/advice
Skin
IF ON SKIN: Wash with plenty of soap and water
If skin irritation or rash occurs: Get medical advice/attention
Wash contaminated clothing before reuse
Storage
Store locked up
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Very toxic to aquatic life with long lasting effects
WARNING. Cancer - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Benzo[a]pyrene	50-32-8	> 96

4. First-aid measures

General Advice If symptoms persist, call a physician.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.

Inhalation Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur.

Ingestion Clean mouth with water and drink afterwards plenty of water. Get medical attention if symptoms occur.

Most important symptoms and effects None reasonably foreseeable. . May cause allergic skin reaction. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Unsuitable Extinguishing Media No information available

Flash Point No information available
Method - No information available

Autoignition Temperature Not applicable
Explosion Limits
Upper No data available
Lower No data available
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Do not allow run-off from fire-fighting to enter drains or water courses.

Hazardous Combustion Products
Carbon monoxide (CO). Carbon dioxide (CO_2).
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
2	1	0	N/A

6. Accidental release measures

Personal Precautions Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust formation.

Environmental Precautions Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.

Methods for Containment and Clean Up Sweep up and shovel into suitable containers for disposal. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling Wear personal protective equipment/face protection. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. Avoid dust formation.

Storage Keep containers tightly closed in a dry, cool and well-ventilated place.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Benzo[a]pyrene		TWA: 0.2 mg/m³		

Legend

OSHA - Occupational Safety and Health Administration

Engineering Measures Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard

EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Powder Solid
Appearance	Dark yellow
Odor	aromatic
Odor Threshold	No information available
pH	Not applicable
Melting Point/Range	175 - 179 °C / 347 - 354.2 °F
Boiling Point/Range	495 °C / 923 °F @ 760 mmHg
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	Not applicable
Specific Gravity	No information available
Solubility	Insoluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	Not applicable
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	C20H12
Molecular Weight	252.31

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products.

Incompatible Materials Oxidizing agent

Hazardous Decomposition Products Carbon monoxide (CO), Carbon dioxide (CO_2)

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization May cause sensitization by skin contact

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Benzo[a]pyrene	50-32-8	Group 1	Reasonably Anticipated	A2	X	A2

IARC (International Agency for Research on Cancer)

NTP: (National Toxicity Program)

ACGIH: (American Conference of Governmental Industrial Hygienists)

IARC (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
Group 2A - Probably Carcinogenic to Humans
Group 2B - Possibly Carcinogenic to Humans
NTP: (National Toxicity Program)
Known - Known Carcinogen
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen
A1 - Known Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Animal Carcinogen
ACGIH: (American Conference of Governmental Industrial Hygienists)

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Endocrine Disruptor Information

Component	EU - Endocrine Disrupters Candidate List	EU - Endocrine Disruptors - Evaluated Substances	Japan - Endocrine Disruptor Information
Benzo[a]pyrene	Group III Chemical	Not applicable	Not applicable

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment.

Persistence and Degradability May persist

Bioaccumulation/ Accumulation No information available.

Mobility Is not likely mobile in the environment due its low water solubility.

Component	log Pow
Benzo[a]pyrene	6.06

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a

hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Benzo[a]pyrene - 50-32-8	U022	-

14. Transport information

DOT

UN-No	UN3077
Proper Shipping Name	Environmentally hazardous substances, solid, n.o.s.
Technical Name	Benzo[a]pyrene
Hazard Class	9
Packing Group	III

TDG

UN-No	UN3077
Proper Shipping Name	Environmentally hazardous substances, solid, n.o.s.
Hazard Class	9
Packing Group	III

IATA

UN-No	UN3077
Proper Shipping Name	Environmentally hazardous substances, solid, n.o.s.
Hazard Class	9
Packing Group	III

IMDG/IMO

UN-No	UN3077
Proper Shipping Name	Environmentally hazardous substances, solid, n.o.s.
Hazard Class	9
Packing Group	III

15. Regulatory information

United States of America Inventory

Component	CAS-No	TSCA	TSCA Inventory notification - Active/Inactive	TSCA - EPA Regulatory Flags
Benzo[a]pyrene	50-32-8	X	ACTIVE	-

Legend:
TSCA - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA 12(b) - Notices of Export Not applicable

International Inventories
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Australia (AICS), China (IECSC), Korea (ECL).

Component	CAS-No	DSL	NDSL	EINECS	PICCS	ENCS	AICS	IECSC	KECL
Benzo[a]pyrene	50-32-8	X	-	200-028-5	X	-	-	X	KE-05-0184

U.S. Federal Regulations

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Benzo[a]pyrene	50-32-8	> 96	0.1

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Benzo[a]pyrene	-	-	X	X

Clean Air Act Not applicable

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA Not applicable

Component	Hazardous Substances RQs	CERCLA EHS RQs
Benzo[a]pyrene	1 lb	-

California Proposition 65 This product contains the following Proposition 65 chemicals.

Component	CAS-No	California Prop. 65	Prop 65 NSRL	Category
Benzo[a]pyrene	50-32-8	Carcinogen	0.06 µg/day	Carcinogen

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Benzo[a]pyrene	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By Health, Safety and Environmental Department
Email: tech@alfa.com
www.alfa.com

Revision Date 14-Feb-2020
Print Date 14-Feb-2020
Revision Summary SDS authoring systems update, replaces ChemGes SDS No. 50-32-8/1.

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

Safety Data Sheet

Revision Date: 07/31/19
www.restek.com

2 Letter ISO country code/language code: US/EN

1. IDENTIFICATION

Catalog Number / Product Name:	**31272 / Benzo(b)fluoranthene Standard**
Company:	Restek Corporation
Address:	110 Benner Circle Bellefonte, Pa. 16823
Phone#:	814-353-1300
Fax#:	814-353-1309
Emergency#:	800-424-9300 (CHEMTREC) 703-527-3887 (Outside the US)
Email:	www.restek.com
Revision Number:	11
Intended use:	For Laboratory use only

2. HAZARD(S)IDENTIFICATION

Emergency Overview:

GHS Hazard Symbols:



GHS Classification:	Carcinogenicity Category 1B Flammable Liquid Category 2 Serious Eye Damage/Eye Irritation Category 2 Specific Target Organ Systemic Toxicity (STOT) - Single Exposure Category 3
GHS Signal Word:	Danger
GHS Hazard:	Highly flammable liquid and vapour. Causes serious eye irritation. May cause drowsiness or dizziness. May cause cancer.
GHS Precautions:	
Safety Precautions:	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. – No smoking. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilation and lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Avoid breathing dust/fume/gas/mist/vapours/spray. Wash hands and skin thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.
First Aid Measures:	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Get medical advice/attention. Call a POISON CENTER or doctor/physician if you feel unwell. If eye irritation persists: Get medical advice/attention. In case of fire: Use extinguishing media in section 5 for extinction.

Storage: Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.

Disposal: Dispose of contents/container according to section 13 of the SDS.

Single Exposure Target Organs: Specific target organ toxicity - Single exposure - STOT SE 3: H336 May cause drowsiness or dizziness.

Repeated Exposure Target Organs: No data available

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
Acetone	67-64-1	200-662-2	99.9
benzo (b) fluoranthene	205-99-2	205-911-9	0.1

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately

Eyes: Flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention.

Skin Contact: Wash with soap and water. Remove contaminated clothing and launder. Get medical attention if irritation develops or persists.

Ingestion: Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS.

5. FIRE- FIGHTING MEASURES

Extinguishing Media: Use alcohol resistant foam, carbon dioxide, or dry chemical extinguishing agents. Water spray or fog may also be effective for extinguishing if swept across the base of the fire. Water can also be used to absorb heat and keep exposed material from being damaged by fire. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.

Fire and/or Explosion Hazards: Vapors may be ignited by heat, sparks, flames or other sources of ignition at or above the low flash point giving rise to a Class B fire. Vapors are heavier than air and may travel to a source of ignition and flash back

Fire Fighting Methods and Protection: Do not enter fire area without proper protection including self-contained toxic breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products. Flammable component(s) of this material may be lighter than water and burn while floating on the surface. Use water spray/fog for cooling. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.

Hazardous Combustion Products: Carbon dioxide, Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment: Exposure to the spilled material may be irritating or harmful. Follow personal protective equipment recommendations found in Section 8 of this SDS. Additional precautions may be necessary based on special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred. Also consider the expertise of employees in the area responding to the spill.

Methods for Clean-up: Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal

evaluation.

7. HANDLING AND STORAGE

Handling Technical Measures and Precautions:	Harmful or irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. Use spark-proof tools and explosion-proof equipment
Storage Technical Measures and Conditions:	Store in a cool dry ventilated location. Isolate from incompatible materials and conditions. Keep container(s) closed. Keep away from sources of ignition

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:

Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
Acetone	67-64-1	2500 ppm IDLH (10% LEL)	750 ppm STEL; 1782 mg/m3 STEL	500 ppm TWA; 1188 mg/m3 TWA	1000 ppm TWA; 2400 mg/m3 TWA
benzo (b) fluoranthene	205-99-2	Not established	None Known	Not established	No data available

Personal Protection:

Engineering Measures:	Local exhaust ventilation is recommended when generating excessive levels of vapours from handling or thermal processing.
Respiratory Protection:	No respiratory protection required under normal conditions of use. Provide general room exhaust ventilation if symptoms of overexposure occur as explained Section 3. A respirator is not normally required.
Eye Protection:	Wear chemically resistant safety glasses with side shields when handling this product. Do not wear contact lenses.
Skin Protection:	Wear protective gloves. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work
Medical Conditions Aggravated By Exposure:	Respiratory disease including asthma and bronchitis

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color:	Depends upon product selection
Odor:	Strong
Physical State:	No data available
pH:	Not applicable
Vapor Pressure:	No data available
Vapor Density:	2.0 (air = 1)
Boiling Point (°C):	56.05 °C at 1013.25 hPa
Melting Point (°C):	-95.4 °C Melting Point
Flash Point (°F):	39
Flammability:	Highly Flammable
Upper Flammable/Explosive Limit, % in air:	No data available
Lower Flammable/Explosive Limit, % in air:	No data available
Autoignition Temperature (°C):	465 deg C
Decomposition Temperature (°C):	No data available
Specific Gravity:	0.7845 g/cm3 at 25 °C
Evaporation Rate:	No data available
Odor Threshold:	ND
Solubility:	Complete; 100%
Partition Coefficient: n-octanol in water:	No data available
VOC % by weight:	99.9
Molecular Weight:	58.08

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions.
Conditions to Avoid:	None known.
Materials to Avoid / Chemical Incompatiability:	Strong oxidizing agents Strong acids
Hazardous Decomposition Products:	Carbon dioxide Carbon monoxide

11. TOXICOLOGICAL INFORMATION

Routes of Entry:	Inhalation, Skin Contact, Eye Contact, Ingestion

Target Organs Potentially Affected By Exposure: Eyes, Central nervous system stimulation, Respiratory Tract, Skin

Chemical Interactions That Change Toxicity: None Known

Immediate (Acute) Health Effects by Route of Exposure:

Inhalation Irritation: Can cause minor respiratory irritation, dizziness, weakness, fatigue, nausea, and headache.

Skin Contact: Can cause minor skin irritation, defatting, and dermatitis.

Eye Contact: Can cause minor irritation, tearing and reddening.

Ingestion Irritation: May be harmful if swallowed.

Ingestion Toxicity: Harmful if swallowed. May cause systemic poisoning.

Long-Term (Chronic) Health Effects:

Carcinogenicity: Contains a probable or known human carcinogen.

Reproductive and Developmental Toxicity: No data available to indicate product or any components present at greater than 0.1% may cause birth defects.

Inhalation: Upon prolonged and/or repeated exposure, can cause minor respiratory irritation, dizziness, weakness, fatigue, nausea, and headache.

Skin Contact: Upon prolonged or repeated contact, can cause minor skin irritation, defatting, and dermatitis.

Component Toxicological Data:

NIOSH:

Chemical Name	CAS No.	LD50/LC50
Acetone	67-64-1	Dermal LD50 Rabbit >15700 mg/kg; Inhalation LC50 Rat 50100 mg/m3 8 h; Oral LD50 Rat 5800 mg/kg

Component Carcinogenic Data:

OSHA:

Chemical Name	CAS No.	
Benzo(b)fluoranthene	205-99-2	Present

ACGIH:

Chemical Name	CAS No.	
Benzo[b]fluoranthene	205-99-2	A2 - Suspected Human Carcinogen
Acetone	67-64-1	A4 - Not Classifiable as a Human Carcinogen

NIOSH:

Chemical Name	CAS No.
No data available	

NTP:

Chemical Name	CAS No.
No data available	

IARC:

Chemical Name	CAS No.	Group No.
Monograph 92 [2010]; Supplement 7 [1987]; Monograph 32 [1983]	205-99-2	Group 2B

12. ECOLOGICAL INFORMATION

Overview: This material is not expected to be harmful to the ecology.

Mobility: No data

Persistence: No data

Bioaccumulation: No data

Degradability: No data

Ecological Toxicity Data: No data available

13. DISPOSAL CONSIDERATIONS

Waste Description of Spent Product: Spent or discarded material is a hazardous waste.Mixing spent or discarded material with other materials may render the mixture hazardous. Perform a hazardous waste determination on mixtures.

Disposal Methods: Dispose of by incineration following Federal, State, Local, or Provincial regulations.

Waste Disposal of Packaging: Comply with all Local, State, Federal, and Provincial Environmental Regulations.

14. TRANSPORTATION INFORMATION

United States:

DOT Proper Shipping Name: Acetone
UN Number: UN1090
Hazard Class: 3
Packing Group: II

International:

IATA Proper Shipping Name: Acetone
UN Number: UN1090
Hazard Class: 3
Packing Group: II

Marine Pollutant: No

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available			

15. REGULATORY INFORMATION

United States:

Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
Acetone	67-64-1	X	-	-	X
benzo (b) fluoranthene	205-99-2	X	X	-	-

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation
Benzo[b]fluoranthene	205-99-2	Prop 65 Cancer

State Right To Know Listing:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
Acetone	67-64-1	X	X	X	X
benzo (b) fluoranthene	205-99-2	X	X	X	X

16. OTHER INFORMATION

Prior Version Date: 08/13/18

Other Information: Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.

References: No data available

Disclaimer: Restek Corporation provides the descriptions, data and information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. It is provided for your guidance only. Because many factors may affect processing or application/use, Restek Corporation recommends you perform an assessment to determine the suitability of a product for your particular purpose prior to use. No warranties of any kind, either expressed or implied, including fitness for a particular purpose, are made regarding products described, data or information set forth. In no case shall the descriptions, information, or data provided be considered a part of our terms and conditions of sale. Further, the descriptions, data and information furnished hereunder are given gratis. No obligation or liability for the description, data and information given are assumed. All such being given and accepted at your risk.

Material Safety Data Sheet
Chrysene, 98%

MSDS# 95251

Section 1 - Chemical Product and Company Identification

MSDS Name:	Chrysene, 98%
Catalog Numbers:	AC224140000, AC224140010, AC224140050, AC224145000
Synonyms:	1,2-Benzophenanthrene; Benzo(a)phenanthrene; 1,2,5,6-Dibenzonaphthalene.
Company Identification:	Acros Organics BVBA Janssen Pharmaceuticalaan 3a 2440 Geel, Belgium
Company Identification: (USA)	Acros Organics One Reagent Lane Fair Lawn, NJ 07410
For information in the US, call:	800-ACROS-01
For information in Europe, call:	+32 14 57 52 11
Emergency Number, Europe:	+32 14 57 52 99
Emergency Number US:	201-796-7100
CHEMTREC Phone Number, US:	800-424-9300
CHEMTREC Phone Number, Europe:	703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#:	218-01-9
Chemical Name:	Chrysene
%:	98
EINECS#:	205-923-4

Hazard Symbols: T



Risk Phrases: 45 50/53

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Caution! May cause respiratory tract irritation. May cause eye and skin irritation. May cause cancer in humans. Target Organs: Liver, skin.

Potential Health Effects

Eye:	May cause eye irritation.
Skin:	May cause skin irritation.
Ingestion:	May cause gastrointestinal irritation with nausea, vomiting and diarrhea.
Inhalation:	May cause respiratory tract irritation.
Chronic:	May cause cancer according to animal studies.

Section 4 - First Aid Measures

Eyes:	Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin: Get medical aid. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Notes to Physician:

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. This material in sufficient quantity and reduced particle size is capable of creating a dust explosion.

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or chemical foam.

Autoignition Temperature: Not available.

Flash Point: Not applicable.

Explosion Limits: Lower: Not available

Explosion Limits: Upper: Not available

NFPA Rating: health: ; flammability: 1; instability: ;

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Wear a self contained breathing apparatus and appropriate personal protection. (See Exposure Controls, Personal Protection section). Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Wash thoroughly after handling. Avoid contact with eyes, skin, and clothing. Use only with adequate ventilation. Avoid breathing dust.

Storage: Store in a tightly closed container. Store in a cool, dry area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Chrysene	0.2 mg/m3 TWA (as benzene soluble aerosol) (listed under Coal tar pitches).	0.1 mg/m3 TWA	0.2 mg/m3 TWA (benzene soluble fraction) (listed under Coal tar pitches).

OSHA Vacated PELs: Chrysene: 0.2 mg/m3 TWA (benzene soluble fraction) (listed under Coal tar pitches)

Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels.

Exposure Limits

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State:	Solid
Color:	very light beige
Odor:	Not available
pH:	Not available
Vapor Pressure:	Not available
Vapor Density:	Not available
Evaporation Rate:	Not available
Viscosity:	Not available
Boiling Point:	448 deg C @ 760 mm Hg (838.40°F)
Freezing/Melting Point:	250-255 deg C
Decomposition Temperature:	Not available
Solubility in water:	insoluble
Specific Gravity/Density:	
Molecular Formula:	C18H12
Molecular Weight:	228.29

Section 10 - Stability and Reactivity

Chemical Stability:	Stable under normal temperatures and pressures.
Conditions to Avoid:	Dust generation.
Incompatibilities with Other Materials	Not available
Hazardous Decomposition Products	Carbon monoxide, carbon dioxide.
Hazardous Polymerization	Has not been reported.

Section 11 - Toxicological Information

RTECS#: CAS# 218-01-9: GC0700000

LD50/LC50: RTECS: Not available.

Carcinogenicity: Chrysene - ACGIH: A1 - Confirmed Human Carcinogen (Coal tar pitches). California: carcinogen, initial date 1/1/90 NTP: Known carcinogen (Coal tar pitches). IARC: Group 1 carcinogen (Coal tar pitches).

Other: See actual entry in RTECS for complete information.

Section 12 - Ecological Information

Ecotoxicity: Water flea LC50 = 1.9 mg/L; 2 Hr.; Unspecified

Section 13 - Disposal Considerations

Dispose of in a manner consistent with federal, state, and local regulations.

Section 14 - Transport Information

US DOT
Shipping Name: Please contact Fisher Scientific for shipping information
Hazard Class:
UN Number:
Packing Group:
Canada TDG
Shipping Name: Not available
Hazard Class:
UN Number:
Packing Group:

USA RQ: CAS# 218-01-9: 100 lb final RQ; 45.4 kg final RQ

Section 15 - Regulatory Information

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: T

Risk Phrases:

R 45 May cause cancer.

R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases:

S 53 Avoid exposure - obtain special instructions before use.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 60 This material and its container must be disposed of as hazardous waste.

S 61 Avoid release to the environment. Refer to special instructions/safety data sheets.

WGK (Water Danger/Protection)

CAS# 218-01-9: Not available

Canada

CAS# 218-01-9 is listed on Canada's DSL List

Canadian WHMIS Classifications: D2A

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

CAS# 218-01-9 is listed on Canada's Ingredient Disclosure List

US Federal

TSCA

CAS# 218-01-9 is listed on the TSCA Inventory.

Section 16 - Other Information

MSDS Creation Date: 6/30/1999

Revision #6 Date 7/20/2009

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantibility or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages howsoever arising, even if the company has been advised of the possibility of such damages.

Safety Data Sheet

Revision Date: 10/02/19
www.restek.com

2 Letter ISO country code/language code: US/EN

1. IDENTIFICATION

Catalog Number / Product Name:	**31276 / Dibenzo(a,h)anthracene Standard**
Company:	Restek Corporation
Address:	110 Benner Circle Bellefonte, Pa. 16823
Phone#:	814-353-1300
Fax#:	814-353-1309
Emergency#:	800-424-9300 (CHEMTREC) 703-527-3887 (Outside the US)
Email:	www.restek.com
Revision Number:	9
Intended use:	For Laboratory use only

2. HAZARD(S)IDENTIFICATION

Emergency Overview:

GHS Hazard Symbols:



GHS Classification:	Carcinogenicity Category 2
GHS Signal Word:	Warning
GHS Hazard:	Suspected of causing cancer.
GHS Precautions:	
Safety Precautions:	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection.
First Aid Measures:	IF exposed or concerned: Get medical advice/attention.
Storage:	Store locked up.
Disposal:	Dispose of contents/container according to section 13 of the SDS.
Single Exposure Target Organs:	No data available
Repeated Exposure Target Organs:	No data available

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
Dichloromethane	75-09-2	200-838-9	99.9
dibenz (a,h) anthracene	53-70-3	200-181-8	0.1

4. FIRST-AID MEASURES

Inhalation:	Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately
Eyes:	Immediately flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention and monitor the eye daily as advised by your physician. Serious harm (damage) may result if treatment is delayed. Continue to flush eyes while awaiting medical attention
Skin Contact:	Wash with soap and water. Remove contaminated clothing, launder immediately, and discard contaminated leather goods. Get medical attention immediately.
Ingestion:	Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS. Never give anything by mouth to an unconscious person

5. FIRE- FIGHTING MEASURES

Extinguishing Media:	Use alcohol resistant foam, carbon dioxide, or dry chemical when fighting fires. Water or foam may cause frothing if liquid is burning but it still may be a useful extinguishing agent if carefully applied to the surface of the fire. Do Not direct a stream of water into the hot burning liquid. Use methods suitable to fight surrounding fire.
Fire and/or Explosion Hazards:	No data.
Fire Fighting Methods and Protection:	Use methods for the surrounding fire.
Hazardous Combustion Products:	Carbon dioxide, Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment:	Exposure to the spilled material may be severely irritating or toxic. Follow personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits.
Methods for Clean-up:	Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation.

7. HANDLING AND STORAGE

Handling Technical Measures and Precautions:	Toxic or severely irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. As with all chemicals, good industrial hygiene practices should be followed when handling this material.
Storage Technical Measures and Conditions:	Store in a cool dry place. Isolate from incompatible materials. Keep container closed when not in use

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:

Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
Dichloromethane	75-09-2	2300 ppm IDLH	None Known	50 ppm TWA	25 ppm TWA; 125 ppm STEL (15 min. TWA)
dibenz (a,h) anthracene	53-70-3	Not established	None Known	Not established	No data available

Personal Protection:

Engineering Measures:	Local exhaust ventilation or other engineering controls are normally required when handling or using this product to avoid overexposure.
Respiratory Protection:	Respiratory protection may be required to avoid overexposure when handling this product. General or local exhaust ventilation is the preferred means of protection. Use a respirator if general room ventilation is not available or sufficient to

	eliminate symptoms.
Eye Protection:	Wear chemically resistant safety glasses with side shields when handling this product. Wear additional eye protection such as chemical splash goggles and/or face shield when the possibility exists for eye contact with splashing or spraying liquid, or airborne material. Do not wear contact lenses. Have an eye wash station available.
Skin Protection:	Avoid skin contact by wearing chemically resistant gloves, an apron and other protective equipment depending upon conditions of use. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work.
Medical Conditions Aggravated By Exposure:	Eye disease Skin disease including eczema and sensitization Respiratory disease including asthma and bronchitis

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color:	Colorless
Odor:	Strong
Physical State:	No data available
pH:	Not applicable
Vapor Pressure:	No data available
Vapor Density:	2.93 (air = 1)
Boiling Point (°C):	524 °C Boiling Point
Melting Point (°C):	-96.7 °C
Flash Point (°F):	No data available
Upper Flammable/Explosive Limit, % in air:	No data available
Lower Flammable/Explosive Limit, % in air:	No data available
Autoignition Temperature (°C):	556 deg C
Decomposition Temperature (°C):	No data available
Specific Gravity:	1.3254 - 1.3258 g/cm3 at 20 °C
Evaporation Rate:	No data available
Odor Threshold:	ND
Solubility:	Moderate; 50-99%
Partition Coefficient: n-octanol in water:	No data available
VOC % by weight:	99.9
Molecular Weight:	No data available

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions.
Conditions to Avoid:	None known.Contamination High temperatures
Materials to Avoid / Chemical Incompatiability:	Strong oxidizing agents Caustics (bases)
Hazardous Decomposition Products:	Carbon dioxide Carbon monoxide

11. TOXICOLOGICAL INFORMATION

Routes of Entry:	Inhalation Absorption Ingestion Skin contact Eye contact
Target Organs Potentially Affected By Exposure:	Skin, Cardiovascular System, Eyes, Liver
Chemical Interactions That Change Toxicity:	None Known

Immediate (Acute) Health Effects by Route of Exposure:

Inhalation Irritation:	Can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.
Inhalation Toxicity:	Harmful! Can cause systemic damage (see "Target Organs)Inhalation may cause severe central nervous system depression (including unconsciousness).
Skin Contact:	Contact causes severe skin irritation and possible burns.
Skin Absorption:	Harmful if absorbed through the skin. May cause severe irritation and systemic damage.
Eye Contact:	Contact with the eyes may cause moderate to severe eye injury. Eye contact may result in tearing and reddening, but not likely to permanently injure eye tissue. Temporary vision impairment (cloudy or blurred vision) is possible.
Ingestion Irritation:	Irritating to mouth, throat, and stomach. Can cause abdominal discomfort, nausea, vomiting and diarrhea.
Ingestion Toxicity:	Harmful if swallowed. May cause systemic poisoning.

Long-Term (Chronic) Health Effects:

Carcinogenicity:	Contains a probable or known human carcinogen.
Reproductive and Developmental Toxicity:	No data available to indicate product or any components

present at greater than 0.1% may cause birth defects.

Inhalation: Upon prolonged and/or repeated exposure, can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.Harmful! Can cause systemic damage upon prolonged and/or repeated exposure (see "Target Organs)

Skin Absorption: Upon prolonged or repeated exposure, harmful if absorbed through the skin. May cause severe irritation and systemic damage

Component Toxicological Data:
NIOSH:

Chemical Name	CAS No.	LD50/LC50
Methane, dichloro-	75-09-2	Inhalation LC50 Rat 53 mg/L 6 h

Component Carcinogenic Data:
OSHA:

Chemical Name	CAS No.	
Dibenz[a,h]anthracene	53-70-3	Present
Methylene chloride	75-09-2	25 ppm TWA (8 hr.); 125 ppm STEL (15 min.); 12.5 ppm Action Level (see 29 CFR 1910.1051); effective date for respiratory protection for certain employers to acheive the 8-hour TWA PEL is August 31, 1998; the start up date to install engineering controls is December 10, 1998.; {OSHA - 29 CFR 1910 Specifically Regulate

ACGIH:

Chemical Name	CAS No.	
Dichloromethane	75-09-2	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

NIOSH:

Chemical Name	CAS No.	
Methylene chloride	75-09-2	potential occupational carcinogen

NTP:

Chemical Name	CAS No.
No data available	

IARC:

Chemical Name	CAS No.	Group No.
Monograph 92 [2010]; Supplement 7 [1987]; Monograph 32 [1983] (overall evaluation upgraded from 2B to 2A with supporting evidence from other relevant data)	53-70-3	Group 2A
Monograph 110 [in preparation]; Monograph 71 [1999]	75-09-2	Group 2A

12. ECOLOGICAL INFORMATION

Overview: Moderate ecological hazard. This product may be dangerous to plants and/or wildlife. Keep out of waterways.
Mobility: No data
Persistence: No data
Bioaccumulation: No data
Degradability: No data
Ecological Toxicity Data: No data available

13. DISPOSAL CONSIDERATIONS

Waste Description of Spent Product: Spent or discarded material is a hazardous waste.Mixing spent or discarded material with other materials may render the mixture hazardous. Perform a hazardous waste determination on mixtures.

Disposal Methods: Incinerate spent or discarded material a permitted hazardous waste facility.

Waste Disposal of Packaging: Comply with all Local, State, Federal, and Provincial Environmental Regulations.

14. TRANSPORTATION INFORMATION

United States:

DOT Proper Shipping Name: Dichloromethane
UN Number: UN1593
Hazard Class: 6.1
Packing Group: III

International:

IATA Proper Shipping Name: Dichloromethane
UN Number: UN1593
Hazard Class: 6.1
Packing Group: III

Marine Pollutant: No

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available			

15. REGULATORY INFORMATION

United States:

Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
Dichloromethane	75-09-2	X	X	-	X
dibenz (a,h) anthracene	53-70-3	X	X	-	X

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation
Dibenz[a,h]anthracene	53-70-3	Prop 65 Cancer
Dichloromethane Dichloromethane (Methylene chloride)	75-09-2	Prop 65 Cancer

State Right To Know Listing:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
Dichloromethane	75-09-2	X	X	X	X
dibenz (a,h) anthracene	53-70-3	X	X	X	X

16. OTHER INFORMATION

Prior Version Date: 06/20/18

Other Information: Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.

References: No data available

Disclaimer: Restek Corporation provides the descriptions, data and information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. It is provided for your guidance only. Because many factors may affect processing or application/use, Restek Corporation recommends you perform an assessment to determine the suitability of a product for your particular purpose prior to use. No warranties of any kind, either expressed or implied, including fitness for a particular purpose, are made regarding products described, data or information set forth. In no case shall the descriptions, information, or data provided be considered a part of our terms and conditions of sale. Further, the descriptions, data and information furnished hereunder are given gratis. No obligation or liability for the description, data and information given are assumed. All such being given and accepted at your risk.

Safety Data Sheet

Revision Date: 06/04/19
www.restek.com

2 Letter ISO country code/language code: US/EN

1. IDENTIFICATION

Catalog Number / Product Name:	**31279 / Indeno(1,2,3-c,d)pyrene Standard**
Company:	Restek Corporation
Address:	110 Benner Circle Bellefonte, Pa. 16823
Phone#:	814-353-1300
Fax#:	814-353-1309
Emergency#:	800-424-9300 (CHEMTREC) 703-527-3887 (Outside the US)
Email:	www.restek.com
Revision Number:	11
Intended use:	For Laboratory use only

2. HAZARD(S)IDENTIFICATION

Emergency Overview:

GHS Hazard Symbols:



GHS Classification:	Carcinogenicity Category 2
GHS Signal Word:	Warning
GHS Hazard:	Suspected of causing cancer.
GHS Precautions:	
Safety Precautions:	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection.
First Aid Measures:	IF exposed or concerned: Get medical advice/attention.
Storage:	Store locked up.
Disposal:	Dispose of contents/container according to section 13 of the SDS.
Single Exposure Target Organs:	No data available
Repeated Exposure Target Organs:	No data available

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
Dichloromethane	75-09-2	200-838-9	99.9
indeno (1,2,3-c,d) pyrene	193-39-5	205-893-2	0.1

4. FIRST-AID MEASURES

Inhalation:	Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately
Eyes:	Immediately flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention and monitor the eye daily as advised by your physician. Serious harm (damage) may result if treatment is delayed. Continue to flush eyes while awaiting medical attention
Skin Contact:	Wash with soap and water. Remove contaminated clothing, launder immediately, and discard contaminated leather goods. Get medical attention immediately.
Ingestion:	Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS. Never give anything by mouth to an unconscious person

5. FIRE- FIGHTING MEASURES

Extinguishing Media:	Use alcohol resistant foam, carbon dioxide, or dry chemical when fighting fires. Water or foam may cause frothing if liquid is burning but it still may be a useful extinguishing agent if carefully applied to the surface of the fire. Do Not direct a stream of water into the hot burning liquid. Use methods suitable to fight surrounding fire.
Fire and/or Explosion Hazards:	No data.
Fire Fighting Methods and Protection:	Use methods for the surrounding fire.
Hazardous Combustion Products:	Carbon dioxide, Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment:	Exposure to the spilled material may be severely irritating or toxic. Follow personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits.
Methods for Clean-up:	Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation.

7. HANDLING AND STORAGE

Handling Technical Measures and Precautions:	Toxic or severely irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. As with all chemicals, good industrial hygiene practices should be followed when handling this material.
Storage Technical Measures and Conditions:	Store in a cool dry place. Isolate from incompatible materials. Keep container closed when not in use

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:

Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
Dichloromethane	75-09-2	2300 ppm IDLH	None Known	50 ppm TWA	25 ppm TWA; 125 ppm STEL (15 min. TWA)
indeno (1,2,3-c,d) pyrene	193-39-5	Not established	None Known	Not established	No data available

Personal Protection:

Engineering Measures:	Local exhaust ventilation or other engineering controls are normally required when handling or using this product to avoid overexposure.
Respiratory Protection:	Respiratory protection may be required to avoid overexposure when handling this product. General or local exhaust ventilation is the preferred means of protection. Use a respirator if general room ventilation is not available or sufficient to

	eliminate symptoms.
Eye Protection:	Wear chemically resistant safety glasses with side shields when handling this product. Wear additional eye protection such as chemical splash goggles and/or face shield when the possibility exists for eye contact with splashing or spraying liquid, or airborne material. Do not wear contact lenses. Have an eye wash station available.
Skin Protection:	Avoid skin contact by wearing chemically resistant gloves, an apron and other protective equipment depending upon conditions of use. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work.
Medical Conditions Aggravated By Exposure:	Eye disease Skin disease including eczema and sensitization Respiratory disease including asthma and bronchitis

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color:	Colorless
Odor:	Strong
Physical State:	No data available
pH:	Not applicable
Vapor Pressure:	No data available
Vapor Density:	2.93 (air = 1)
Boiling Point (°C):	530 °C
Melting Point (°C):	-96.7 °C
Flash Point (°F):	No data available
Upper Flammable/Explosive Limit, % in air:	No data available
Lower Flammable/Explosive Limit, % in air:	No data available
Autoignition Temperature (°C):	556 deg C
Decomposition Temperature (°C):	No data available
Specific Gravity:	1.3254 - 1.3258 g/cm3 at 20 °C
Evaporation Rate:	No data available
Odor Threshold:	ND
Solubility:	Moderate; 50-99%
Partition Coefficient: n-octanol in water:	No data available
VOC % by weight:	99.9
Molecular Weight:	No data available

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions.
Conditions to Avoid:	None known.Contamination High temperatures
Materials to Avoid / Chemical Incompatiability:	Strong oxidizing agents Caustics (bases)
Hazardous Decomposition Products:	Carbon dioxide Carbon monoxide

11. TOXICOLOGICAL INFORMATION

Routes of Entry:	Inhalation Absorption Ingestion Skin contact Eye contact
Target Organs Potentially Affected By Exposure:	Skin, Cardiovascular System, Eyes, Liver
Chemical Interactions That Change Toxicity:	None Known

Immediate (Acute) Health Effects by Route of Exposure:

Inhalation Irritation:	Can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.
Inhalation Toxicity:	Harmful! Can cause systemic damage (see "Target Organs)Inhalation may cause severe central nervous system depression (including unconsciousness).
Skin Contact:	Contact causes severe skin irritation and possible burns.
Skin Absorption:	Harmful if absorbed through the skin. May cause severe irritation and systemic damage.
Eye Contact:	Contact with the eyes may cause moderate to severe eye injury. Eye contact may result in tearing and reddening, but not likely to permanently injure eye tissue. Temporary vision impairment (cloudy or blurred vision) is possible.
Ingestion Irritation:	Irritating to mouth, throat, and stomach. Can cause abdominal discomfort, nausea, vomiting and diarrhea.
Ingestion Toxicity:	Harmful if swallowed. May cause systemic poisoning.

Long-Term (Chronic) Health Effects:

Carcinogenicity:	Contains a probable or known human carcinogen.
Reproductive and Developmental Toxicity:	No data available to indicate product or any components

present at greater than 0.1% may cause birth defects.

Inhalation: Upon prolonged and/or repeated exposure, can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.Harmful! Can cause systemic damage upon prolonged and/or repeated exposure (see "Target Organs)

Skin Absorption: Upon prolonged or repeated exposure, harmful if absorbed through the skin. May cause severe irritation and systemic damage

Component Toxicological Data:

NIOSH:

Chemical Name	CAS No.	LD50/LC50
Methane, dichloro-	75-09-2	Inhalation LC50 Rat 53 mg/L 6 h

Component Carcinogenic Data:

OSHA:

Chemical Name	CAS No.	
Indeno[1,2,3-cd]pyrene	193-39-5	Present
Methylene chloride	75-09-2	25 ppm TWA (8 hr.); 125 ppm STEL (15 min.); 12.5 ppm Action Level (see 29 CFR 1910.1051); effective date for respiratory protection for certain employers to acheive the 8-hour TWA PEL is August 31, 1998; the start up date to install engineering controls is December 10, 1998.; {OSHA - 29 CFR 1910 Specifically Regulate

ACGIH:

Chemical Name	CAS No.	
Dichloromethane	75-09-2	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

NIOSH:

Chemical Name	CAS No.	
Methylene chloride	75-09-2	potential occupational carcinogen

NTP:

Chemical Name	CAS No.
No data available	

IARC:

Chemical Name	CAS No.	Group No.
Monograph 110 [in preparation]; Monograph 71 [1999]	75-09-2	Group 2A
Monograph 92 [2010]; Supplement 7 [1987]; Monograph 32 [1983]	193-39-5	Group 2B

12. ECOLOGICAL INFORMATION

Overview: Moderate ecological hazard. This product may be dangerous to plants and/or wildlife. Keep out of waterways.

Mobility: No data

Persistence: No data

Bioaccumulation: No data

Degradability: No data

Ecological Toxicity Data: No data available

13. DISPOSAL CONSIDERATIONS

Waste Description of Spent Product: Spent or discarded material is a hazardous waste.Mixing spent or discarded material with other materials may render the mixture hazardous. Perform a hazardous waste determination on mixtures.

Disposal Methods: Incinerate spent or discarded material a permitted hazardous waste facility.

Waste Disposal of Packaging: Comply with all Local, State, Federal, and Provincial

Environmental Regulations.

14. TRANSPORTATION INFORMATION

United States:
DOT Proper Shipping Name: Dichloromethane
UN Number: UN1593
Hazard Class: 6.1
Packing Group: III

International:
IATA Proper Shipping Name: Dichloromethane
UN Number: UN1593
Hazard Class: 6.1
Packing Group: III

Marine Pollutant: No

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available			

15. REGULATORY INFORMATION

United States:

Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
Dichloromethane	75-09-2	X	X	-	X
indeno (1,2,3-c,d) pyrene	193-39-5	X	X	-	X

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation
Indeno[1,2,3-cd]pyrene	193-39-5	Prop 65 Cancer
Dichloromethane Dichloromethane (Methylene chloride)	75-09-2	Prop 65 Cancer

State Right To Know Listing:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
Dichloromethane	75-09-2	X	X	X	X
indeno (1,2,3-c,d) pyrene	193-39-5	X	X	X	X

16. OTHER INFORMATION

Prior Version Date: 03/22/18
Other Information: Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.
References: No data available
Disclaimer: Restek Corporation provides the descriptions, data and information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. It is provided for your guidance only. Because many factors may affect processing or application/use, Restek Corporation recommends you perform an assessment to determine the suitability of a product for your particular purpose prior to use. No warranties of any kind, either expressed or implied, including fitness for a particular purpose, are made regarding products described, data or information set forth. In no case shall the descriptions, information, or data provided be considered a part of our terms and conditions of sale. Further, the descriptions, data and information furnished hereunder are given gratis. No obligation or liability for the description, data and information given are assumed. All such being given and accepted at your risk.

Lead

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 12/15/2014 Revision date: 12/15/2014 Version: 1.1

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Substance

CAS No : 7439-92-1

Formula : Pb

Synonyms : C.I. 77575, in massive state / elemental lead, in massive state / glover, in massive state

BIG no : 10073

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Solder
Battery: component
Construction
Electrodes

1.3. Details of the supplier of the safety data sheet

GSC International, Inc.
1747 N. Deffer Drive
Nixa,
MO 65714
United States of America

Tel: 417-374-7431
Fax: 417-374-7442
Email: info@gscinternationalinc.com

1.4. Emergency telephone number

Country	Organization/Company	Address	Emergency number
MEXICO	Servicio de Informacion Toxicologica Sintox	Tintoreto #32 Edif. a Desp. Col. Nochebuena Mixcoac México, D.F.	1 800 009 2800 +52 55 5611 2634 /+52 55 5598 9095
UNITED STATES OF AMERICA	American Association of Poison Control Centers		1-800-222-1222

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (GHS-US)

Acute Tox. 4 (Oral)	H302
Acute Tox. 4 (Inhalation)	H332
Carc. 1B	H350
Repr. 1A	H360
STOT RE 2	H373
Aquatic Acute 1	H400
Aquatic Chronic 1	H410

Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US) :



GHS07 GHS08 GHS09

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H302+H332 - Harmful if swallowed or if inhaled
H350 - May cause cancer
H360 - May damage fertility or the unborn child
H373 - May cause damage to organs through prolonged or repeated exposure

H400 - Very toxic to aquatic life
H410 - Very toxic to aquatic life with long lasting effects

Precautionary statements (GHS-US) : P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P260 - Do not breathe dust, fume
P264 - Wash hands thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P273 - Avoid release to the environment
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P308+P313 - If exposed or concerned: Get medical advice/attention
P314 - Get medical advice/attention if you feel unwell
P501 - Dispose of contents/container to a licensed hazardous-waste disposal contractor or collection site except for empty clean containers which can be disposed of as non-hazardous waste

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS-US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substance

Name	Product identifier	%	Classification (GHS-US)
Lead (Main constituent)	(CAS No) 7439-92-1	> 99,9	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation), H332 Carc. 1B, H350 Repr. 1A, H360 STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410

Full text of H-phrases: see section 16

3.2. Mixture

Not applicable

4.1. Description of first aid measures

First-aid measures general : If you feel unwell, seek medical advice. IF exposed or concerned: Get medical advice/attention. Call a poison center/doctor/physician if you feel unwell.

First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing. Not applicable. Call a poison center/doctor/physician if you feel unwell.

First-aid measures after skin contact : Not applicable. Wash skin with plenty of water.

First-aid measures after eye contact : Not applicable. Rinse eyes with water as a precaution.

First-aid measures after ingestion : Not applicable. Rinse mouth. Call a poison center/doctor/physician if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation : No effects known.

Symptoms/injuries after skin contact : No effects known.

Symptoms/injuries after eye contact : No effects known.

Symptoms/injuries after ingestion : No effects known.

Chronic symptoms : No effects known.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Adapt extinguishing media to the environment.

Unsuitable extinguishing media : No unsuitable extinguishing media known.

5.2. Special hazards arising from the substance or mixture

Fire hazard : DIRECT FIRE HAZARD. Non combustible.

Explosion hazard	:	DIRECT EXPLOSION HAZARD. No data available on direct explosion hazard. INDIRECT EXPLOSION HAZARD. No data available on indirect explosion hazard.
Reactivity	:	On burning: formation of metallic fumes. Oxidizes on exposure to air.

5.3. Advice for firefighters

Precautionary measures fire	:	Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to heat: have neighborhood close doors and windows.
Firefighting instructions	:	Dilute toxic gases with water spray. Take account of toxic fire-fighting water. Use water moderately and if possible collect or contain it.
Protection during firefighting	:	Heat/fire exposure: compressed air/oxygen apparatus. Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment	:	Gloves. Protective clothing. See "Material-Handling" to select protective clothing.
Emergency procedures	:	Mark the danger area. No naked flames.

6.1.2. For emergency responders

Protective equipment	:	Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment. Prevent soil and water pollution. Prevent spreading in sewers. Notify authorities if product enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment	:	Not applicable. Collect spillage.
Methods for cleaning up	:	Recover mechanically the product. Pick-up the material. Take collected spill to manufacturer/competent authority. Notify authorities if product enters sewers or public waters.
Other information	:	Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	:	Meet the legal requirements. Do not discharge the waste into the drain. Handle unclean empty containers as full ones. Observe strict hygiene. Measure the concentration in the atmosphere. Carry out operations in the open/under local exhaust/ventilation or with respiratory protection. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust, fume. Use only outdoors or in a well-ventilated area. Take all necessary technical measures to avoid or minimize the release of the product on the workplace. Limit quantities of product at the minimum necessary for handling and limit the number of exposed workers. Provide local exhaust or general room ventilation. Wear personal protective equipment. Floors, walls and other surfaces in the hazard area must be cleaned regularly.
Hygiene measures	:	Separate working clothes from town clothes. Launder separately. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	:	Does not require any specific or particular technical measures. Comply with applicable regulations.
Storage conditions	:	Store locked up. Store in a well-ventilated place. Keep cool.
Incompatible materials	:	Strong acids, strong bases and oxidation agents.
Heat-ignition	:	KEEP SUBSTANCE AWAY FROM: heat sources.
Prohibitions on mixed storage	:	KEEP SUBSTANCE AWAY FROM: oxidizing agents. Strong acids. Strong bases.
Storage area	:	Meet the legal requirements.
Special rules on packaging	:	SPECIAL REQUIREMENTS: closing. correctly labeled. meet the legal requirements. Secure fragile packaging in solid containers.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Lead (7439-92-1)		
ACGIH	ACGIH TWA (mg/m³)	0,05 mg/m³
ACGIH	Remark (ACGIH)	CNS & PNS impair
OSHA	Not applicable	

8.2. Exposure controls

Appropriate engineering controls : Provide adequate general and local exhaust ventilation. Ensure good ventilation of the work station.

Personal protective equipment : Protective goggles. Gloves.



Materials for protective clothing : GIVE EXCELLENT RESISTANCE: No data available. GIVE GOOD RESISTANCE: butyl rubber. PVC. GIVE LESS RESISTANCE: No data available. GIVE POOR RESISTANCE: No data available.

Hand protection : protective gloves.

Eye protection : Safety glasses.

Skin and body protection : Not required for normal conditions of use.

Respiratory protection : Wear respiratory protection.

Environmental exposure controls : Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Solid

Appearance : Metal.

Molecular mass : 207,20 g/mol

Color : White to blue-grey

Odor : Odorless

Odor threshold : No data available

pH : No data available

Relative evaporation rate (butyl acetate=1) : No data available

Melting point : 327 °C

Freezing point : No data available

Boiling point : 1740 °C

Flash point : Not applicable

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Flammability (solid, gas) : No data available

Vapor pressure : < 0,1 hPa

Relative vapor density at 20 °C : No data available

Relative density : 11,3

Specific gravity / density : 11340 kg/m³

Solubility : insoluble in water. Substance sinks in water. Soluble in nitric acid. Insoluble in organic solvents. Water: < 0,1 g/100ml

Log Pow : 0,73 (Estimated value)

Log Kow : No data available

Viscosity, kinematic	:	Not applicable
Viscosity, dynamic	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	No data available
Explosive limits	:	No data available

9.2. Other information

VOC content : Not applicable (inorganic)

SECTION 10: Stability and reactivity

10.1. Reactivity

On burning: formation of metallic fumes. Oxidizes on exposure to air.

10.2. Chemical stability

Unstable on exposure to air.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

No additional information available

10.5. Incompatible materials

Acids. Bases.

10.6. Hazardous decomposition products

Thermal decomposition generates : fume.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Oral: Harmful if swallowed. Inhalation: Harmful if inhaled.

Lead (\f)7439-92-1	
LD50 oral rat	> 2000 mg/kg body weight (Rat; Weight of evidence)
LD50 dermal rat	> 2000 mg/kg body weight (Rat; Experimental value; OECD 402: Acute Dermal Toxicity)
ATE US (oral)	500,000 mg/kg body weight
ATE US (gases)	4500,000 ppmV/4h
ATE US (vapors)	11,000 mg/l/4h
ATE US (dust, mist)	1,500 mg/l/4h
Additional information	Lead massive metal is not considered to be acutely toxic. It is not easily inhaled or ingested, and if it is accidentally ingested normally passes through the gastrointestinal system without significant absorption into the body. Lead is not easily absorbed through the skin.

Skin corrosion/irritation : Not classified
(Based on available data, the classification criteria are not met)

Serious eye damage/irritation : Not classified
(Based on available data, the classification criteria are not met)

Respiratory or skin sensitization : Not classified
(Based on available data, the classification criteria are not met)

Germ cell mutagenicity : Not classified
(Based on available data, the classification criteria are not met)

Carcinogenicity : May cause cancer.

Lead (7439-92-1)	
Additional information	There is some evidence that inorganic lead compounds may have a carcinogenic effect, and they have been classified by IARC as probably carcinogenic to humans. However, it is considered that this classification does not apply to lead in articles, given the very low bioavailability of metallic lead. Carcinogenicity studies of lead metal powder have been negative. Epidemiology studies of workers exposed to inorganic lead compounds have found a limited association with stomach cancer. IARC has concluded that lead metal is possibly carcinogenic to humans (Group aB).
IARC group	2B - Possibly carcinogenic to humans
National Toxicology Program (NTP) Status	3 - Reasonably anticipated to be Human Carcinogen

Reproductive toxicity : May damage fertility or the unborn child.

Specific target organ toxicity (single exposure) : Not classified

(Based on available data, the classification criteria are not met)

Specific target organ toxicity (repeated exposure) : May cause damage to organs through prolonged or repeated exposure.

Lead (7439-92-1)	
Additional information	Lead is a cumulative poison and may be absorbed into the body through ingestion or inhalation. Although inhalation and ingestion of lead in massive form are unlikely, poor hygiene practises may result in hand to mouth transfer which maybe significant over a prolonged period of time. Inorganic lead compounds have been documented in observational human studies to produce toxicity in multiple organ systems and body function including the haemotopoetic (blood) system, kidney function, reproductive function and the central nervous system.

Aspiration hazard : Not classified

(Based on available data, the classification criteria are not met)

Symptoms/injuries after inhalation : No effects known.

Symptoms/injuries after skin contact : No effects known.

Symptoms/injuries after eye contact : No effects known.

Symptoms/injuries after ingestion : No effects known.

Chronic symptoms : No effects known.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Dangerous for the environment. Very toxic to aquatic life with long lasting effects.

Ecology - air : Not dangerous for the ozone layer (Regulation (EC) No 1005/2009). Not included in the list of fluorinated greenhouse gases (Regulation (EC) No 842/2006). TA-Luft Klasse 5.2.2/II.

Ecology - water : No water pollutant (surface water). Maximum concentration in drinking water: 0.010 mg/l (lead) (Directive 98/83/EC). Highly toxic to aquatic organisms.

Lead (7439-92-1)	
LC50 fish 1	2,8 (0,44 - 542) mg/l (96h) Coughlan, D.J., S.P. Gloss, and J. Kubota 1986. Acute and Sub-Chronic Toxicity of Lead to the Early Life Stages of Small mouth Bass (Micropterus dolomieui). Water Air Soil Pollut. 28(3/4):265-275
EC50 Daphnia 1	4,46 (0,53 - 5,1) mg/l (48h) Govindarajan, S., C.P. Valsaraj, R. Mohan, V. Hariprasad, and R. Ramasubramanian 1993. Toxicity of Heavy Metals in Aquaculture Organisms: Penaeus indicus, Perna viridis, Artemia salina and Skeletonema costatum. Pollut.Res. 12(3):187-189

12.2. Persistence and degradability

Lead (7439-92-1)	
Persistence and degradability	Biodegradability: Not applicable. No (test)data available on mobility of the substance.
ThOD	Not applicable (inorganic)

12.3. Bioaccumulative potential

Lead (7439-92-1)	
Log Pow	0,73 (Estimated value)
Bioaccumulative potential	Low bioaccumulation potential (Log Kow < 4).

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on ozone layer :

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Reuse or recycle following decontamination. Remove to an authorized dump (Class I). Do not discharge into surface water (2000/60/EC, Council decision 2455/2001/EC, O.J. L331 of 15/12/2001).

Additional information : LWCA (the Netherlands): KGA category 05. Hazardous waste according to Directive 2008/98/EC.

SECTION 14: Transport information

In accordance with DOT

Transport document description : UN3077 Environmentally hazardous substances, solid, n.o.s. Lead(7439-92-1), 9, III

UN-No.(DOT) : UN3077

Proper Shipping Name (DOT) : Environmentally hazardous substances, solid, n.o.s.
Lead(7439-92-1)

Department of Transportation (DOT) Hazard Classes : 9 - Class 9 - Miscellaneous hazardous material 49 CFR 173.140

Hazard labels (DOT) : 9 - Class 9 (Miscellaneous dangerous materials)



DOT Symbols : G - Identifies PSN requiring a technical name

Packing group (DOT) : III - Minor Danger

DOT Special Provisions (49 CFR 172.102)	:	8 - A hazardous substance that is not a hazardous waste may be shipped under the shipping description "Other regulated substances, liquid or solid, n.o.s.", as appropriate. In addition, for solid materials, special provision B54 applies. 146 - This description may be used for a material that poses a hazard to the environment but does not meet the definition for a hazardous waste or a hazardous substance, as defined in 171.8 of this subchapter, or any hazard class as defined in Part 173 of this subchapter, if it is designated as environmentally hazardous by the Competent Authority of the country of origin, transit or destination. 335 - Mixtures of solids that are not subject to this subchapter and environmentally hazardous liquids or solids may be classified as "Environmentally hazardous substances, solid, n.o.s," UN3077 and may be transported under this entry, provided there is no free liquid visible at the time the material is loaded or at the time the packaging or transport unit is closed. Each transport unit must be leak-proof when used as bulk packaging. A112 - Notwithstanding the quantity limits shown in Column (9A) and (9B) for this entry, the following IBCs are authorized for transportation aboard passenger and cargo-only aircraft. Each IBC may not exceed a maximum net quantity of 1,000 kg: a. Metal: 11A, 11B, 11N, 21A, 21B and 21N b. Rigid plastics: 11H1, 11H2, 21H1 and 21H2 c. Composite with plastic inner receptacle: 11HZ1, 11HZ2, 21HZ1 and 21HZ2 d. Fiberboard: 11G e. Wooden: 11C, 11D and 11F (with inner liners) f. Flexible: 13H2, 13H3, 13H4, 13H5, 13L2, 13L3, 13L4, 13M1 and 13M2 (flexible IBCs must be sift-proof and water resistant or must be fitted with a sift-proof and water resistant liner). B54 - Open-top, sift-proof rail cars are also authorized. IB8 - Authorized IBCs: Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N); Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2); Fiberboard (11G); Wooden (11C, 11D and 11F); Flexible (13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 or 13M2). IP3 - Flexible IBCs must be sift-proof and water-resistant or must be fitted with a sift-proof and water-resistant liner. N20 - A 5M1 multi-wall paper bag is authorized if transported in a closed transport vehicle. T1 - 1.5 178.274(d)(2) Normal..... 178.275(d)(2) TP33 - The portable tank instruction assigned for this substance applies for granular and powdered solids and for solids which are filled and discharged at temperatures above their melting point which are cooled and transported as a solid mass. Solid substances transported or offered for transport above their melting point are authorized for transportation in portable tanks conforming to the provisions of portable tank instruction T4 for solid substances of packing group III or T7 for solid substances of packing group II, unless a tank with more stringent requirements for minimum shell thickness, maximum allowable working pressure, pressure-relief devices or bottom outlets are assigned in which case the more stringent tank instruction and special provisions shall apply. Filling limits must be in accordance with portable tank special provision TP3. Solids meeting the definition of an elevated temperature material must be transported in accordance with the applicable requirements of this subchapter.
DOT Packaging Exceptions (49 CFR 173.xxx)	:	155
DOT Packaging Non Bulk (49 CFR 173.xxx)	:	213
DOT Packaging Bulk (49 CFR 173.xxx)	:	240
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	:	No limit
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	:	No limit
DOT Vessel Stowage Location	:	A - The material may be stowed ''on deck'' or ''under deck'' on a cargo vessel and on a passenger vessel.

Additional information

Other information : No supplementary information available.

ADR

No additional information available

Transport by sea

UN-No. (IMDG)	:	3077
Proper Shipping Name (IMDG)	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Class (IMDG)	:	9 - Miscellaneous dangerous compounds
Packing group (IMDG)	:	III - substances presenting low danger

Air transport

UN-No.(IATA)	:	3077
Proper Shipping Name (IATA)	:	Environmentally hazardous substance, solid, n.o.s.
Class (IATA)	:	9 - Miscellaneous Dangerous Goods
Packing group (IATA)	:	III - Minor Danger

SECTION 15: Regulatory information

15.1. US Federal regulations

Lead (7439-92-1)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on United States SARA Section 313 Not listed on the United States SARA Section 313	
RQ (Reportable quantity, section 304 of EPA's List of Lists)	10 lb

15.2. International regulations

CANADA

No additional information available

EU-Regulations

No additional information available

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Repr. 1A	H360Df
Acute Tox. 4 (Inhalation)	H332
Acute Tox. 4 (Oral)	H302
STOT RE 2	H373
Aquatic Acute 1	H400
Aquatic Chronic 1	H410

Full text of H-phrases: see section 16

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

Repr.Cat.1; R61
Repr.Cat.3; R62
Xn; R20/22
R33
N; R50/53

Full text of R-phrases: see section 16

15.2.2. National regulations

Lead (7439-92-1)
Listed on IARC (International Agency for Research on Cancer) Listed as carcinogen on NTP (National Toxicology Program)

15.3. US State regulations

No additional information available

SECTION 16: Other information

Revision date	:	12/15/2014

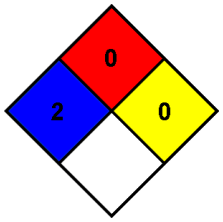
Full text of H-phrases:

Acute Tox. 4 (Inhalation)	Acute toxicity (inhalation) Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment - Chronic Hazard Category 1
Carc. 1B	Carcinogenicity Category 1B
Repr. 1A	Reproductive toxicity Category 1A
STOT RE 2	Specific target organ toxicity (repeated exposure) Category 2
H302	Harmful if swallowed
H332	Harmful if inhaled
H350	May cause cancer
H360	May damage fertility or the unborn child
H373	May cause damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects

NFPA health hazard : 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

NFPA fire hazard : 0 - Materials that will not burn.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

Health : * Chronic Hazard - Chronic (long-term) health effects may result from repeated overexposure

Flammability : 0 Minimal Hazard

Physical : 0 Minimal Hazard

Personal Protection : B

SDS US (GHS HazCom 2012)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product

SAFETY DATA SHEET

Creation Date 20-Aug-2014 **Revision Date** 17-Jan-2018 **Revision Number** 3

1. Identification

Product Name **Mercury (Certified ACS)**

Cat No. : **M141-1LB; M141-6LB**

Synonyms Colloidal mercury; Hydrargyrum; Metallic mercury

Recommended Use Laboratory chemicals.
Uses advised against Not for food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Corrosive to metals	Category 1
Acute Inhalation Toxicity - Vapors	Category 2
Reproductive Toxicity	Category 1B
Specific target organ toxicity - (repeated exposure)	Category 1
Target Organs - Central nervous system (CNS), Kidney.	

Label Elements

Signal Word
Danger

Hazard Statements
May be corrosive to metals
Fatal if inhaled
May damage the unborn child
Causes damage to organs through prolonged or repeated exposure



Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Do not get in eyes, on skin, or on clothing
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear respiratory protection
Response
IF exposed or concerned: Get medical attention/advice
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a POISON CENTER or doctor/physician
Skin
Immediately call a POISON CENTER or doctor/physician
IF ON SKIN: Gently wash with plenty of soap and water
Remove/Take off immediately all contaminated clothing
Wash contaminated clothing before reuse
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Very toxic to aquatic life with long lasting effects
WARNING. Reproductive Harm - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Mercury	7439-97-6	100

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

Skin Contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Immediate medical attention is required.

Inhalation Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

Ingestion Do not induce vomiting. Call a physician or Poison Control Center immediately.

Most important symptoms and effects No information available.

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Substance is nonflammable; use agent most appropriate to extinguish surrounding fire.

Unsuitable Extinguishing Media No information available

Flash Point No information available
Method - No information available

Autoignition Temperature No information available

Explosion Limits
Upper No data available
Lower No data available
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Very toxic. Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes. Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products
Mercury oxide Highly toxic fumes

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
4	0	0	N/A

6. Accidental release measures

Personal Precautions Wear self-contained breathing apparatus and protective suit. Evacuate personnel to safe areas. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing.

Environmental Precautions Should not be released into the environment. See Section 12 for additional ecological information.

Methods for Containment and Clean Up Wear self-contained breathing apparatus and protective suit. Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling Use only under a chemical fume hood. Wear personal protective equipment. Do not get in eyes, on skin, or on clothing. Do not breathe vapors or spray mist. Do not ingest.

Storage Keep containers tightly closed in a dry, cool and well-ventilated place. Corrosives area.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Mercury	TWA: 0.025 mg/m³ Skin	(Vacated) TWA: 0.05 mg/m³ Ceiling: 0.1 mg/m³ (Vacated) STEL: 0.03 mg/m³ Skin (Vacated) Ceiling: 0.1 mg/m³	IDLH: 10 mg/m³ TWA: 0.05 mg/m³ Ceiling: 0.1 mg/m³	TWA: 0.05 mg/m³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures Use only under a chemical fume hood. Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Silver
Odor	Odorless
Odor Threshold	No information available
pH	No information available
Melting Point/Range	-38.87 °C / -38 °F
Boiling Point/Range	356.72 °C / 674.1 °F
Flash Point	No information available
Evaporation Rate	No information available
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	0.002 mmHg @ 25 °C
Vapor Density	7.0
Specific Gravity	13.59 (H2O=1)
Solubility	Insoluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	No information available
Molecular Formula	Hg
Molecular Weight	200.59

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products. Excess heat.

Incompatible Materials Strong oxidizing agents, Ammonia, Metals, Halogens

Hazardous Decomposition Products Mercury oxide, Highly toxic fumes

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information No acute toxicity information is available for this product

Component Information

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Mercury	7439-97-6	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects May cause harm to the unborn child.

Teratogenicity No information available.

STOT - single exposure None known

STOT - repeated exposure Central nervous system (CNS) Kidney

Aspiration hazard No information available

Symptoms / effects,both acute and delayed No information available

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

This product contains the following substance(s) which are hazardous for the environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Mercury	Not listed	0.9 mg/L LC50 96h 0.18 mg/L LC50 96h 0.16 mg/L LC50 96h 0.5 mg/L LC50 96h	Not listed	EC50: = 5.0 µg/L, 96h (water flea)

Persistence and Degradability No information available

Bioaccumulation/ Accumulation No information available.

Mobility No information available.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Mercury - 7439-97-6	U151	-

14. Transport information

DOT

UN-No	UN2809
Proper Shipping Name	MERCURY
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

TDG

UN-No	UN2809
Proper Shipping Name	MERCURY
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

IATA

UN-No	UN2809
Proper Shipping Name	MERCURY
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

IMDG/IMO

UN-No	UN2809
Proper Shipping Name	MERCURY
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

15. Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Mercury	X	X	-	231-106-7	-		X	-	X	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b)

Component	TSCA 12(b)
Mercury	Section 5

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Mercury	7439-97-6	100	1.0

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Mercury	-	-	X	X

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Mercury	X		-

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Mercury	1 lb	-

California Proposition 65 This product contains the following proposition 65 chemicals

Component	CAS-No	California Prop. 65	Prop 65 NSRL	Category
Mercury	7439-97-6	Developmental	-	Developmental

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Mercury	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 20-Aug-2014
Revision Date 17-Jan-2018
Print Date 17-Jan-2018
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

SAFETY DATA SHEET

Trichloroethylene

Airgas
an Air Liquide company

Section 1. Identification

GHS product identifier : Trichloroethylene

Chemical name : trichloroethylene

Other means of identification : trichloroethene; Ethene, 1,1,2-trichloro-; Ethene, trichloro-; Trichlorethylene; Ethylene, trichloro-

Product use : Synthetic/Analytical chemistry.

Synonym : trichloroethene; Ethene, 1,1,2-trichloro-; Ethene, trichloro-; Trichlorethylene; Ethylene, trichloro-

SDS # : 001206

Supplier's details : Airgas USA, LLC and its affiliates
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

24-hour telephone : 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A
GERM CELL MUTAGENICITY - Category 2
CARCINOGENICITY - Category 1
AQUATIC HAZARD (LONG-TERM) - Category 3

GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : Causes serious eye irritation.
Causes skin irritation.
May cause cancer.
Suspected of causing genetic defects.
Harmful to aquatic life with long lasting effects.

Precautionary statements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves. Wear eye or face protection. Wear protective clothing. Avoid release to the environment. Wash hands thoroughly after handling.

Response : IF exposed or concerned: Get medical attention. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Store locked up.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Section 2. Hazards identification

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : trichloroethylene

Other means of identification : trichloroethene; Ethene, 1,1,2-trichloro-; Ethene, trichloro-; Trichlorethylene; Ethylene, trichloro-

CAS number/other identifiers

CAS number : 79-01-6

Product code : 001206

Ingredient name	%	CAS number
trichloroethylene	100	79-01-6

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : No known significant effects or critical hazards.

Skin contact : Causes skin irritation.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Ingestion : No known significant effects or critical hazards.

Section 4. First aid measures

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:, pain or irritation, watering, redness

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:, irritation, redness

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
halogenated compounds
carbonyl halides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Section 6. Accidental release measures

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

trichloroethylene

ACGIH TLV (United States, 3/2016).
STEL: 25 ppm 15 minutes.
TWA: 10 ppm 8 hours.
OSHA PEL 1989 (United States, 3/1989).
STEL: 1080 mg/m³ 15 minutes.
STEL: 200 ppm 15 minutes.
TWA: 270 mg/m³ 8 hours.
TWA: 50 ppm 8 hours.
OSHA PEL Z2 (United States, 2/2013).
AMP: 300 ppm 5 minutes.
CEIL: 200 ppm
TWA: 100 ppm 8 hours.

Section 8. Exposure controls/personal protection

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Watery liquid.]

Color : Colorless.

Molecular weight : 131.38 g/mole

Molecular formula : C2-H-Cl3

Boiling/condensation point : 86.7°C (188.1°F)

Melting/freezing point : -84.8°C (-120.6°F)

Critical temperature : Not available.

Odor : Characteristic.

Odor threshold : Not available.

pH : Not available.

Flash point : Not available.

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : 6.39 (butyl acetate = 1)

Flammability (solid, gas) : Not available.

Section 9. Physical and chemical properties

Lower and upper explosive (flammable) limits : Lower: 8%
Upper: 10.5%

Vapor pressure : 9.9 kPa (74.256033302 mm Hg) [room temperature]

Vapor density : 4.5 (Air = 1)

Specific Volume (ft ^{3}/lb) : 0.6849

Gas Density (lb/ft ^{3}) : 1.46

Relative density : 1.5

Solubility : Not available.

Solubility in water : 1.1 g/l

Partition coefficient: n-octanol/water : 2.53

Auto-ignition temperature : 410°C (770°F)

Decomposition temperature : Not available.

SADT : Not available.

Viscosity : Dynamic (room temperature): 0.58 mPa·s (0.58 cP)

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : No specific data.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
trichloroethylene	LC50 Inhalation Vapor LD50 Dermal LD50 Oral	Rat Rabbit Rat	140700 mg/m³ >20 g/kg 4920 mg/kg	1 hours - -

IDLH : 1000 ppm

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
trichloroethylene	Eyes - Moderate irritant Skin - Severe irritant	Rabbit Rabbit	- -	24 hours 20 milligrams 24 hours 2 milligrams	- -

Sensitization

Not available.

Section 11. Toxicological information

Mutagenicity

Not available.

Carcinogenicity

Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP
trichloroethylene	-	1	Reasonably anticipated to be a human carcinogen.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : No known significant effects or critical hazards.

Skin contact : Causes skin irritation.

Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:, pain or irritation, watering, redness

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:, irritation, redness

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : May cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : Suspected of causing genetic defects.

Section 11. Toxicological information

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
trichloroethylene	Acute EC50 95000 µg/l Marine water	Algae - Skeletonema costatum	96 hours
	Acute EC50 36.5 mg/l Fresh water	Algae - Chlamydomonas reinhardtii - Exponential growth phase	72 hours
	Acute LC50 20 mg/l Marine water	Crustaceans - Elminius modestus	48 hours
	Acute LC50 18 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 3100 µg/l Fresh water	Fish - Jordanella floridae - Juvenile (Fledgling, Hatchling, Weanling)	96 hours
	Chronic EC10 12.3 mg/l Fresh water	Algae - Chlamydomonas reinhardtii - Exponential growth phase	72 hours
	Chronic NOEC 10 mg/l Fresh water	Daphnia - Daphnia magna	21 days

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
trichloroethylene	2.53	17	low

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 13. Disposal considerations

United States - RCRA Toxic hazardous waste "U" List

Ingredient	CAS #	Status	Reference number
Trichloroethylene; Ethene, trichloro-	79-01-6	Listed	U228

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1710	UN1710	UN1710	UN1710	UN1710
UN proper shipping name	TRICHLOROETHYLENE	TRICHLOROETHYLENE	TRICHLOROETHYLENE	TRICHLOROETHYLENE	TRICHLOROETHYLENE
Transport hazard class(es)	6.1 	6.1 	6.1 	6.1 	6.1 
Packing group	III	III	III	III	III
Environment	No.	No.	No.	No.	No.
Additional information	**Reportable quantity** 100 lbs / 45.4 kg [8. 2147 gal / 31.096 L] Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements. **Limited quantity** Yes. **Packaging instruction** **Passenger aircraft** Quantity limitation: 60 L **Cargo aircraft** Quantity limitation: 220 L **Special provisions** IB3, N36, T4, TP1, T1	Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.26-2.36 (Class 6). **Explosive Limit and Limited Quantity Index** 5	-	-	**Passenger and Cargo Aircraft** Quantity limitation: 60 L **Cargo Aircraft Only** Quantity limitation: 220 L **Limited Quantities - Passenger Aircraft** Quantity limitation: 2 L

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 5(a)2 final significant new use rules**: trichloroethylene
TSCA 8(a) CDR Exempt/Partial exemption: Not determined
TSCA 12(b) one-time export: trichloroethylene
United States inventory (TSCA 8b): This material is listed or exempted.
Clean Water Act (CWA) 307: trichloroethylene
Clean Water Act (CWA) 311: trichloroethylene

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Immediate (acute) health hazard
Delayed (chronic) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
trichloroethylene	100	No.	No.	No.	Yes.	Yes.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	trichloroethylene	79-01-6	100
Supplier notification	trichloroethylene	79-01-6	100

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : This material is listed.

New York : This material is listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

Section 15. Regulatory information

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
trichloroethylene	Yes.	Yes.	14 µg/day (ingestion) 50 µg/day (inhalation)	No.

International regulations

International lists

National inventory

Australia : This material is listed or exempted.

Canada : This material is listed or exempted.

China : This material is listed or exempted.

Europe : This material is listed or exempted.

Japan : This material is listed or exempted.

Malaysia : This material is listed or exempted.

New Zealand : This material is listed or exempted.

Philippines : This material is listed or exempted.

Republic of Korea : This material is listed or exempted.

Taiwan : This material is listed or exempted.

Canada

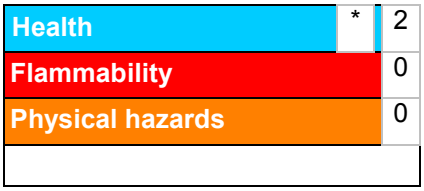
WHMIS (Canada) : Class D-1B: Material causing immediate and serious toxic effects (Toxic).
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).

CEPA Toxic substances: This material is listed.
Canadian ARET: This material is not listed.
Canadian NPRI: This material is listed.
Alberta Designated Substances: This material is not listed.
Ontario Designated Substances: This material is not listed.
Quebec Designated Substances: This material is not listed.

Section 16. Other information

Canada Label requirements : Class D-1B: Material causing immediate and serious toxic effects (Toxic).
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).

Hazardous Material Information System (U.S.A.)



Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on SDSs under 29 CFR 1910. 1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)



Section 16. Other information

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
Skin Irrit. 2, H315	Expert judgment
Eye Irrit. 2A, H319	Expert judgment
Muta. 2, H341	Expert judgment
Carc. 1, H350	Expert judgment
Aquatic Chronic 3, H412	Expert judgment

History

Date of printing : 11/21/2016

Date of issue/Date of revision : 11/21/2016

Date of previous issue : No previous validation

Version : 0.01

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References : Not available.

Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Zinc Metal Mossy, Reagent

SECTION 1: Identification of the substance/mixture and of the supplier

Product name: **Zinc Metal Mossy, Reagent**

Manufacturer/Supplier Trade name:

Manufacturer/Supplier Article number: **S25636A**

Recommended uses of the product and restrictions on use:

Manufacturer Details:

AquaPhoenix Scientific, Inc
9 Barnhart Drive, Hanover, PA 17331
(717) 632-1291

Supplier Details:

Fisher Science Education
6771 Silver Crest Road, Nazareth, PA 18064
(724)517-1954

Emergency telephone number:

Fisher Science Education
Emergency Telephone No.: 800-535-5053

SECTION 2: Hazards identification

Classification of the substance or mixture:



Corrosive
Serious eye damage, category 1



Irritant
Acute toxicity (oral, dermal, inhalation), category 4



Environmentally Damaging
Acute hazards to the aquatic environment, category 1
Chronic hazards to the aquatic environment, category 1

Eye Damage 1.
Acute Toxicity 4 (oral).
Aquatic Acute Toxicity 1.
Aquatic Chronic Toxicity 1.

Signal word: Danger

Hazard statements:

Causes serious eye damage.
Harmful if swallowed.
Very toxic to aquatic life.
Very toxic to aquatic life with long lasting effects.

Precautionary statements:

If medical advice is needed, have product container or label at hand.
Keep out of reach of children.
Read label before use.
Do not eat, drink or smoke when using this product.

Wear protective gloves/protective clothing/eye protection/face protection.
Wash skin thoroughly after handling.
Avoid release to the environment.
Rinse mouth.
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
Immediately call a POISON CENTER or doctor/physician.
Dispose of contents and container as instructed in Section 13.

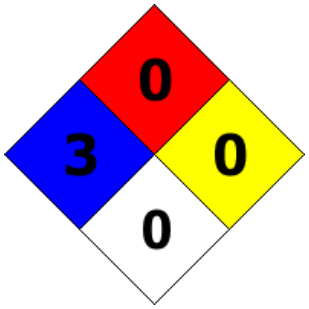
Other Non-GHS Classification:

WHMIS

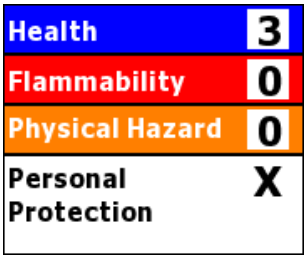
D2B



NFPA/HMIS



NFPA SCALE (0-4)



HMIS RATINGS (0-4)

SECTION 3: Composition/information on ingredients

Ingredients:		
CAS 7446-20-0	Zinc sulfate heptahydrate	100 %
		Percentages are by weight

SECTION 4: First aid measures

Description of first aid measures

After inhalation:

Loosen clothing as necessary and position individual in a comfortable position. Move exposed to fresh air. Give artificial respiration if necessary. If breathing is difficult give oxygen. Get medical assistance if cough or other symptoms appear.

After skin contact:

Rinse/flush exposed skin gently using soap and water for 15-20 minutes. Seek medical advice if discomfort or irritation persists.

After eye contact:

Protect unexposed eye. Rinse/flush exposed eye(s) gently using water for 15-20 minutes. Remove contact lens(es) if able to do so during rinsing. Seek medical attention if irritation persists or if concerned.

After swallowing:

Rinse mouth thoroughly. Do not induce vomiting. Seek medical attention if irritation, discomfort, or vomiting persists. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed:

Irritation- all routes of exposure. Inhalation of fumes may cause metal fume fever, which is characterized by flu-like symptoms with metallic taste, fever, chills, cough, weakness, chest pain, muscle pain and increased white blood cell count. Headache. Nausea. Shortness of breath. May cause bronchitis.

Indication of any immediate medical attention and special treatment needed:

If seeking medical attention provide SDS document to physician. Physician should treat symptomatically.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing agents:

Use agent most suitable for extinguishing surrounding fire. Use water spray to keep fire-exposed containers cool.

Unsuitable extinguishing agents:

None identified.

Special hazards arising from the substance or mixture:

Thermal decomposition can lead to release of irritating gases and vapors. Containers may explode in the heat of a fire.

Advice for firefighters:

Protective equipment:

Wear protective eyeware, gloves, and clothing. Refer to Section 8. Use NIOSH-approved respiratory protection/breathing apparatus.

Additional information (precautions):

Avoid inhaling gases, fumes, dust, mist, vapor, and aerosols. Avoid contact with skin, eyes, and clothing.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Ensure adequate ventilation. Ensure that air-handling systems are operational.

Environmental precautions:

Should not be released into environment. Prevent from reaching drains, sewer, or waterway.

Methods and material for containment and cleaning up:

Wear protective eyeware, gloves, and clothing. Refer to Section 8. Always obey local regulations. Containerize for disposal. Refer to Section 13. Sweep up and containerize for disposal. Avoid generating dust. If necessary use trained response staff or contractor. Evacuate personnel to safe areas. Keep in suitable closed containers for disposal.

Reference to other sections: None

SECTION 7: Handling and storage

Precautions for safe handling:

Avoid contact with skin, eyes, and clothing. Follow good hygiene procedures when handling chemical materials. Refer to Section 8. Follow proper disposal methods. Refer to Section 13. Do not eat, drink, smoke, or use personal products when handling chemical substances.

Conditions for safe storage, including any incompatibilities:

Store in a cool location. Keep away from food and beverages. Protect from freezing and physical damage.

Provide ventilation for containers. Keep container tightly sealed. Store away from incompatible materials.

SECTION 8: Exposure controls/personal protection





Control Parameters: 7446-20-0, Zinc, ACGIH TLV: NA, OSHA PEL: NA.

Appropriate Engineering controls: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor and mists below the applicable workplace exposure limits (Occupational Exposure Limits-OELs) indicated above.

Respiratory protection: Not required under normal conditions of use. Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. When necessary use NIOSH approved breathing equipment.

Protection of skin: Select glove material impermeable and resistant to the substance. Select glove material based on rates of diffusion and degradation. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Use proper glove removal technique without touching outer surface. Avoid skin contact with used gloves. Wear protective clothing.

Eye protection: Wear equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses or goggles are appropriate eye protection.

General hygienic measures: Perform routine housekeeping. Wash hands before breaks and at the end of work. Avoid contact with skin, eyes, and clothing. Before wearing wash contaminated clothing.

SECTION 9: Physical and chemical properties

Appearance (physical state, color):	Gray solid	**Explosion limit lower**: **Explosion limit upper**:	Not determined Not determined
Odor:	Odorless	**Vapor pressure at 20°C**:	1 mmHg @ 487C
Odor threshold:	Not determined	**Vapor density**:	Not determined
pH-value:	Not determined	**Relative density**:	Not determined
Melting/Freezing point:	419C	**Solubilities**:	Reacts with water.
Boiling point/Boiling range:	908C	**Partition coefficient (n-octanol/water)**:	Not determined
Flash point (closed cup):	Not determined	**Auto/Self-ignition temperature**:	460C
Evaporation rate:	Not determined	**Decomposition temperature**:	Not determined
Flammability (solid, gaseous):	Not determined	**Viscosity**:	a. Kinematic: Not determined b. Dynamic: Not determined
Density at 20°C:	7.14 g/cm3 at 20 °C **Specific Gravity: :**7.14		

SECTION 10: Stability and reactivity

Reactivity:

Nonreactive under normal conditions. Reacts with water.

Chemical stability:

Stable under normal conditions.

Possible hazardous reactions:

None under normal processing.

Conditions to avoid:

Incompatible materials. Excess heat.

Incompatible materials:

Oxidizing agents. Strong acids or bases.

Hazardous decomposition products:

Zinc oxides.

SECTION 11: Toxicological information

Acute Toxicity: No additional information.
Chronic Toxicity: No additional information.
Corrosion Irritation: No additional information.
Sensitization: No additional information.
Numerical Measures: No additional information.
Carcinogenicity:

EPA: IRIS Carcinogenicity Assessment- D (data are inadequate for an assessment of human carcinogenic potential; inadequate information to assess carcinogenic potential) Zinc

Mutagenicity: No additional information.
Reproductive Toxicity:

Reproductive effects shown in laboratory animals.

SECTION 12: Ecological information

Ecotoxicity:

Fish (acute 7440-66-6): : 96 Hr LC50 Pimephales promelas: 2.16 - 3.05 mg/L [flow-through]; 96 Hr LC50 Pimephales promelas: 0.211 - 0.269 mg/L [semi-static]; 96 Hr LC50 Pimephales promelas: 2.66 mg/L [static]; 96 Hr LC50 Cyprinus carpio: 30 mg/L; 96 Hr LC50 Cyprinus carpio: 0.45 mg/L [semi-static]; 96 Hr LC50 Cyprinus carpio: 7.8 mg/L [static]; 96 Hr LC50 Lepomis macrochirus: 3.5 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: 0.24 mg/L [flow-through]; 96 Hr LC50 Oncorhynchus mykiss: 0.59 mg/L [semi-static]; 96 Hr LC50 Oncorhynchus mykiss: 0.41 mg/L [static]

Crustacea (acute 7440-66-6): : 48 Hr EC50 Daphnia magna: 0.139 - 0.908 mg/L [Static]

Algae (acute 7440-66-6): 96 Hr EC50 Pseudokirchneriella subcapitata: 0.11 - 0.271 mg/L [static]; 72 Hr EC50 Pseudokirchneriella subcapitata: 0.09 - 0.125 mg/L [static]

Persistence and degradability: No additional information.
Bioaccumulative potential: No additional information.
Mobility in soil: No additional information.
Other adverse effects: No additional information.

SECTION 13: Disposal considerations

Waste disposal recommendations:

Contact a licensed professional waste disposal service to dispose of this material. Dispose of empty containers as unused product. Product or containers must not be disposed with household garbage. It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities (US 40CFR262.11). Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations. Ensure complete and accurate classification.

SECTION 14: Transport information

US DOT

UN Number:
ADR, ADN, DOT, IMDG, IATA — Not Regulated.

Limited Quantity Exception: None

Bulk:
RQ (if applicable): None
Proper shipping Name: Not Regulated.
Hazard Class: None
Packing Group: Not Regulated.
Marine Pollutant (if applicable): No additional information.
Comments: None

Non Bulk:
RQ (if applicable): None
Proper shipping Name: Not Regulated.
Hazard Class: None
Packing Group: Not Regulated.
Marine Pollutant (if applicable): No additional information.
Comments: None

SECTION 15: Regulatory information

United States (USA)

SARA Section 311/312 (Specific toxic chemical listings):

None of the ingredients are listed.

SARA Section 313 (Specific toxic chemical listings):

7440-66-6 Zinc Compounds (N982).

RCRA (hazardous waste code):

7440-66-6 Zinc [Phase 4 LDR Rule - Universal Treatment Standards 2.61 mg/L (wastewater); 4.3 mg/L TCLP (nonwastewater)].

TSCA (Toxic Substances Control Act):

All ingredients are listed.

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):

7440-66-6 Zinc 1000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm).

Proposition 65 (California):

Chemicals known to cause cancer:

None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for females:

None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for males:

None of the ingredients are listed.

Chemicals known to cause developmental toxicity:

None of the ingredients are listed.

Canada

Canadian Domestic Substances List (DSL):

All ingredients are listed.

Canadian NPRI Ingredient Disclosure list (limit 0.1%):

None of the ingredients are listed.

Canadian NPRI Ingredient Disclosure list (limit 1%):

None of the ingredients are listed.

SECTION 16: Other information

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations. Note. The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations applicable to this material.

GHS Full Text Phrases: None

Abbreviations and Acronyms:

IMDG International Maritime Code for Dangerous Goods.
IATA International Air Transport Association.
GHS Globally Harmonized System of Classification and Labelling of Chemicals.
ACGIH American Conference of Governmental Industrial Hygienists.
CAS Chemical Abstracts Service (division of the American Chemical Society).
NFPA National Fire Protection Association (USA).
HMIS Hazardous Materials Identification System (USA).
WHMIS Workplace Hazardous Materials Information System (Canada).
DNEL Derived No-Effect Level (REACH).
PNEC Predicted No-Effect Concentration (REACH).
CFR Code of Federal Regulations (USA).
SARA Superfund Amendments and Reauthorization Act (USA).
RCRA Resource Conservation and Recovery Act (USA).
TSCA Toxic Substances Control Act (USA).
NPRI National Pollutant Release Inventory (Canada).
DOT US Department of Transportation.

Effective date: 10.24.2014
Last updated: 06.19.2015

SAFETY DATA SHEET

Version 6.2
Revision Date 10/02/2020
Print Date 08/23/2021

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : 2-Methylphenol

Product Number : 442361
Brand : Supelco
Index-No. : 604-004-00-9
CAS-No. : 95-48-7

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 3), H301
Acute toxicity, Dermal (Category 3), H311
Skin corrosion (Category 1B), H314
Serious eye damage (Category 1), H318
Short-term (acute) aquatic hazard (Category 2), H401
Long-term (chronic) aquatic hazard (Category 2), H411

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



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Signal word	Danger
Hazard statement(s)	
H301 + H311	Toxic if swallowed or in contact with skin.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H411	Toxic to aquatic life with long lasting effects.
Precautionary statement(s)	
P260	Do not breathe dusts or mists.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P310 + P330	IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P362	Take off contaminated clothing and wash before reuse.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms	:	o-Cresol 2-Methylphenol
Formula	:	C7H8O
Molecular weight	:	108.14 g/mol
CAS-No.	:	95-48-7
EC-No.	:	202-423-8
Index-No.	:	604-004-00-9

Component	Classification	Concentration
o-cresol		
	Acute Tox. 3; Skin Corr. 1B; Eye Dam. 1; Aquatic Acute 2; Aquatic Chronic 2; H301, H311, H314, H318, H401, H411	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

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SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Consult a physician. Show this material safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.Continue rinsing eyes during transport to hospital.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
No data available

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

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6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place.

Store at room temperature. Air and light sensitive. Keep in a dry place.
Storage class (TRGS 510): 6.1B: Non-combustible, acute toxic Cat. 1 and 2 / very toxic hazardous materials

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
o-cresol	95-48-7	TWA	2.3 ppm 10 mg/m3	USA. NIOSH Recommended Exposure Limits
		TWA	5 ppm 22 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
	Remarks	Skin designation The value in mg/m3 is approximate.		
		TWA	20 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
		Upper Respiratory Tract irritation Not classifiable as a human carcinogen Danger of cutaneous absorption		

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		PEL	5 ppm 22 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		

8.2 Exposure controls

Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.4 mm
Break through time: 480 min
Material tested:Camatril® (KCL 730 / Aldrich Z677442, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.2 mm
Break through time: 30 min
Material tested:Dermatril® P (KCL 743 / Aldrich Z677388, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

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Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: powder Color: white
b)	Odor	No data available
c)	Odor Threshold	No data available
d)	pH	4.5 at 25.00000 g/l
e)	Melting point/freezing point	Melting point/range: 29 - 31 °C (84 - 88 °F) - lit.
f)	Initial boiling point and boiling range	191 °C 376 °F - lit.
g)	Flash point	81.0 °C (177.8 °F) - closed cup
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	Upper explosion limit: 58 %(V) Lower explosion limit: 1.3 %(V)
k)	Vapor pressure	3.1 hPa at 60.0 °C (140.0 °F) 1.3 hPa at 38.2 °C(100.8 °F) 0.4 hPa at 20.0 °C(68.0 °F)
l)	Vapor density	No data available
m)	Relative density	1.05 g/cm3 at 20.00 °C (68.00 °F)
n)	Water solubility	25 g/l at 20 °C (68 °F)
o)	Partition coefficient: n-octanol/water	No data available
p)	Autoignition temperature	599.0 °C (1110.2 °F)
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information
No data available

The life science business of Merck KGaA, Darmstadt, Germany
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SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No data available

10.5 Incompatible materials
Oxidizing agents

10.6 Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides
Other decomposition products - No data available
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - 121.0 mg/kg
Remarks: Behavioral:Convulsions or effect on seizure threshold. Lungs, Thorax, or Respiration:Dyspnea. Gastrointestinal:Ulceration or bleeding from stomach.
LC50 Inhalation - Rat - 1 h - > 1,220 mg/m3
Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Lacrimation. Behavioral:Somnolence (general depressed activity).
LD50 Dermal - Rabbit - 890.0 mg/kg
No data available

Skin corrosion/irritation
Skin - Rabbit
Result: Severe skin irritation - 24 h
(Draize Test)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Severe eye irritation
(Draize Test)

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity

IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

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OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Additional Information
RTECS: GO6300000

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting, Central nervous system depression, Diarrhea, Gastrointestinal disturbance
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Stomach - Irregularities - Based on Human Evidence
Stomach - Irregularities - Based on Human Evidence

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	LC50 - Leuciscus idus (Golden orfe) - 10.00 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates	Immobilization EC50 - Daphnia magna (Water flea) - 15.8 mg/l - 48 h
Toxicity to algae	EC50 - SELENASTRUM - 100.00 mg/l - 72 h

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life with long lasting effects.
No data available

The life science business of Merck KGaA, Darmstadt, Germany
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SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

DOT (US)
UN number: 3455 Class: 6.1 (8) Packing group: II
Proper shipping name: Cresols, solid
Reportable Quantity (RQ): 100 lbs
Reportable Quantity (RQ): 100 lbs
Poison Inhalation Hazard: No

IMDG
UN number: 3455 Class: 6.1 (8) Packing group: II EMS-No: F-A, S-B
Proper shipping name: CRESOLS, SOLID

IATA
UN number: 3455 Class: 6.1 (8) Packing group: II
Proper shipping name: Cresols, solid

SECTION 15: Regulatory information

SARA 302 Components
The following components are subject to reporting levels established by SARA Title III, Section 302:

	CAS-No.	Revision Date
o-cresol	95-48-7	2007-03-01

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
o-cresol	95-48-7	2007-03-01

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

Reportable Quantity : D023 lbs

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operates as MilliporeSigma in the US and Canada

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
o-cresol	95-48-7	2007-03-01

SECTION 16: Other information

Further information

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Version: 6.2 Revision Date: 10/02/2020 Print Date: 08/23/2021

The life science business of Merck KGaA, Darmstadt, Germany
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SAFETY DATA SHEET

Version 8.4
Revision Date 02/25/2021
Print Date 08/21/2021

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : 3-Methylphenol

Product Number : 442391
Brand : Supelco
Index-No. : 604-004-00-9
CAS-No. : 108-39-4

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable liquids (Category 4), H227
Acute toxicity, Oral (Category 3), H301
Acute toxicity, Dermal (Category 3), H311
Skin corrosion (Category 1B), H314
Serious eye damage (Category 1), H318
Short-term (acute) aquatic hazard (Category 2), H401
Long-term (chronic) aquatic hazard (Category 3), H412

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



The life science business of Merck KGaA, Darmstadt, Germany
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Signal word	Danger
Hazard statement(s)	
H227	Combustible liquid.
H301 + H311	Toxic if swallowed or in contact with skin.
H314	Causes severe skin burns and eye damage.
H401	Toxic to aquatic life.
H412	Harmful to aquatic life with long lasting effects.
Precautionary statement(s)	
P210	Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P310 + P330	IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P362	Take off contaminated clothing and wash before reuse.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms	:	m-Cresol 3-Methylphenol
Formula	:	C_7H_8O
Molecular weight	:	108.14 g/mol
CAS-No.	:	108-39-4
EC-No.	:	203-577-9
Index-No.	:	604-004-00-9

Component	Classification	Concentration
meta-Cresol		
	Flam. Liq. 4; Acute Tox. 3; Skin Corr. 1B; Eye Dam.	<= 100 %

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	1; Aquatic Acute 2; Aquatic Chronic 3; H227, H301, H311, H314, H318, H401, H412	

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
First aider needs to protect himself. Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. Call in physician.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

In case of eye contact
After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

If swallowed
If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible. Do not attempt to neutralise.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Foam Carbon dioxide (CO2) Dry powder

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
Carbon oxides
Combustible.
Vapors are heavier than air and may spread along floors.
Forms explosive mixtures with air on intense heating.
Development of hazardous combustion gases or vapours possible in the event of fire.

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5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information
Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition.
Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions
Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on protection against fire and explosion
Keep away from open flames, hot surfaces and sources of ignition.Take precautionary measures against static discharge.

Hygiene measures
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Tightly closed. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.
Storage class (TRGS 510): 6.1A: Combustible, acute toxic Cat. 1 and 2 / very toxic hazardous materials

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

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SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
meta-Cresol	108-39-4	TWA	2.3 ppm 10 mg/m3	USA. NIOSH Recommended Exposure Limits
		TWA	5 ppm 22 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
	Remarks	Skin designation		
		TWA	20 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
		Not classifiable as a human carcinogen Danger of cutaneous absorption		
		PEL	5 ppm 22 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		

8.2 Exposure controls

Appropriate engineering controls
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles

Skin protection
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Full contact
Material: Chloroprene
Minimum layer thickness: 0.65 mm
Break through time: 480 min
Material tested:KCL 720 Camapren®

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Splash contact
Material: Latex gloves
Minimum layer thickness: 0.6 mm
Break through time: 60 min

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Material tested:Lapren® (KCL 706 / Aldrich Z677558, Size M)

Body Protection
protective clothing

Respiratory protection
required when vapours/aerosols are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure
Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: liquid Color: colorless, light yellow
b)	Odor	phenol-like
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point/range: 8 - 10 °C (46 - 50 °F) - lit.
f)	Initial boiling point and boiling range	203 °C 397 °F - lit.
g)	Flash point	86 °C (187 °F) - closed cup
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	Upper explosion limit: 1.35 %(V) Lower explosion limit: 1.06 %(V)
k)	Vapor pressure	< 1 hPa at 20 °C (68 °F)
l)	Vapor density	3.73 - (Air = 1.0)
m)	Relative density	1.03 at 20 °C (68 °F)
n)	Water solubility	22.7 g/l at 25 °C (77 °F)
o)	Partition coefficient: n-octanol/water	log Pow: 1.96 - Bioaccumulation is not expected.
p)	Autoignition temperature	559 °C (1038 °F) at 1,013 hPa
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

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9.2 Other safety information

Dissociation constant	10.09 at 25 °C (77 °F)
Relative vapor density	3.73 - (Air = 1.0)

SECTION 10: Stability and reactivity

10.1 Reactivity
Forms explosive mixtures with air on intense heating.
A range from approx. 15 Kelvin below the flash point is to be rated as critical.

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions
Violent reactions possible with:
Strong oxidizing agents
Nitric acid
fuming sulfuric acid
chlorosulfonic acid
alkalines

10.4 Conditions to avoid
Strong heating.

10.5 Incompatible materials
bronze, brass, Iron, Lead

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - male - 242 mg/kg
(OECD Test Guideline 401)
Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.
Inhalation: No data available
Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract
Inhalation: Corrosive to respiratory system.
LD50 Dermal - Rabbit - 620 mg/kg
Remarks:
Behavioral:Somnolence (general depressed activity).
Behavioral:Tetany.
(RTECS)
No data available

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Skin corrosion/irritation
Skin - Rabbit
Result: Causes burns. - 24 h
Remarks:
(ECHA)
Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Serious eye damage/eye irritation
Causes serious eye damage.

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
Ames test
Escherichia coli/Salmonella typhimurium
Result: negative
Mutagenicity (mammal cell test): chromosome aberration.
Chinese hamster lung cells
Result: positive
In vitro mammalian cell gene mutation test
mouse lymphoma cells
Result: negative
OECD Test Guideline 475
Mouse - male and female - Bone marrow
Result: negative

Carcinogenicity

IARC:	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
NTP:	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA:	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available
Acute oral toxicity - If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.
Acute inhalation toxicity - mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

Repeated dose toxicity - Rat - male - Oral - 13 Weeks - NOAEL (No observed adverse effect level) - 50 mg/kg
RTECS: GO6125000

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Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., Cough, Shortness of breath, Headache, Nausea
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

After absorption:

Systemic effects:

Headache
Nausea
Vomiting
Dizziness
agitation, spasms
respiratory arrest
Unconsciousness

Damage to:

Central nervous system
Liver
Kidney

This substance should be handled with particular care.

Stomach - Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	static test LC50 - Salvelinus fontinalis - 7.6 mg/l - 96 h Remarks: (ECHA)
	static test LC50 - Oncorhynchus mykiss (rainbow trout) - 8.6 mg/l - 96 h Remarks: (ECHA)
	static test LC50 - Salmo trutta (brown trout) - 8.4 mg/l - 96 h Remarks: (ECHA)
Toxicity to daphnia and other aquatic invertebrates	flow-through test EC50 - Daphnia pulicaria - > 99.5 mg/l - 48 h (US-EPA)

12.2 Persistence and degradability

Biodegradability	aerobic - Exposure time 10 d Result: 96 % - Inherently biodegradable. (OECD Test Guideline 302B)

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12.3 Bioaccumulative potential

Bioaccumulation Leuciscus idus (Golden orfe) - 3 d
- 0.05 mg/l(meta-Cresol)

Bioconcentration factor (BCF): 17 - 20

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

Biological effects:
Hazard for drinking water supplies.
Change in the flavour characteristics of fish protein.
Discharge into the environment must be avoided.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

DOT (US)

UN number: 2076 Class: 6.1 (8) Packing group: II
Proper shipping name: Cresols, liquid
Reportable Quantity (RQ): 100 lbs
Reportable Quantity (RQ): 100 lbs
Poison Inhalation Hazard: No

IMDG

UN number: 2076 Class: 6.1 (8) Packing group: II EMS-No: F-A, S-B
Proper shipping name: CRESOLS, LIQUID

IATA

UN number: 2076 Class: 6.1 (8) Packing group: II
Proper shipping name: Cresols, liquid

SECTION 15: Regulatory information

SARA 302 Components

This material does not contain any components with a section 302 EHS TPQ.

SARA 313 Components

The life science business of Merck KGaA, Darmstadt, Germany
operates as MilliporeSigma in the US and Canada

The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
meta-Cresol	108-39-4	2007-03-01

SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Reportable Quantity : D024 lbs

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

SECTION 16: Other information

Further information
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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Version: 8.4 Revision Date: 02/25/2021 Print Date: 08/21/2021

The life science business of Merck KGaA, Darmstadt, Germany
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SAFETY DATA SHEET

Version 6.2
Revision Date 09/30/2020
Print Date 08/21/2021

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : 4-Methylphenol

Product Number : 442418
Brand : Supelco
Index-No. : 604-004-00-9
CAS-No. : 106-44-5

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 3), H301
Acute toxicity, Dermal (Category 3), H311
Skin corrosion (Category 1B), H314
Serious eye damage (Category 1), H318
Short-term (acute) aquatic hazard (Category 2), H401
Long-term (chronic) aquatic hazard (Category 2), H411

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



The life science business of Merck KGaA, Darmstadt, Germany
operates as MilliporeSigma in the US and Canada

Signal word	Danger
Hazard statement(s)	
H301 + H311	Toxic if swallowed or in contact with skin.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H411	Toxic to aquatic life with long lasting effects.
Precautionary statement(s)	
P260	Do not breathe dusts or mists.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P310 + P330	IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353	IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P310	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/ physician.
P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P363	Wash contaminated clothing before reuse.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms	:	p-Cresol 4-Methylphenol
Formula	:	C_7H_8O
Molecular weight	:	108.14 g/mol
CAS-No.	:	106-44-5
EC-No.	:	203-398-6
Index-No.	:	604-004-00-9

Component	Classification	Concentration
p-cresol		
	Acute Tox. 3; Skin Corr. 1B; Eye Dam. 1; Aquatic Acute 2; H301, H311, H314, H318, H401	<= 100 %

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For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Consult a physician. Show this material safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.Continue rinsing eyes during transport to hospital.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides
Combustible.

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
No data available

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

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6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols.Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.
Provide appropriate exhaust ventilation at places where dust is formed.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place.

Store at room temperature. hygroscopic Air and light sensitive. Handle and store under inert gas.
Storage class (TRGS 510): 6.1B: Non-combustible, acute toxic Cat. 1 and 2 / very toxic hazardous materials

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
p-cresol	106-44-5	TWA	2.3 ppm 10 mg/m3	USA. NIOSH Recommended Exposure Limits
		TWA	5 ppm 22 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
	Remarks	Skin designation		
		TWA	20 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
		Not classifiable as a human carcinogen Danger of cutaneous absorption		
		PEL	5 ppm 22 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		

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8.2 Exposure controls

Appropriate engineering controls

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.4 mm
Break through time: 480 min
Material tested:Camatril® (KCL 730 / Aldrich Z677442, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.2 mm
Break through time: 30 min
Material tested:Dermatril® P (KCL 743 / Aldrich Z677388, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

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SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: crystalline Color: colorless
b)	Odor	No data available
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point/range: 32 - 34 °C (90 - 93 °F) - lit.
f)	Initial boiling point and boiling range	202 °C 396 °F - lit.
g)	Flash point	85.0 °C (185.0 °F) - closed cup
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	Lower explosion limit: 1.1 %(V)
k)	Vapor pressure	1.3 hPa at 20.0 °C (68.0 °F)
l)	Vapor density	No data available
m)	Relative density	1.034 g/mL at 25 °C (77 °F)
n)	Water solubility	No data available
o)	Partition coefficient: n-octanol/water	log Pow: 1.94
p)	Autoignition temperature	559.0 °C (1038.2 °F)
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No data available

10.2 Chemical stability

Stable under recommended storage conditions.

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10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No data available

10.5 Incompatible materials
Oxidizing agents, Bases

10.6 Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides
Other decomposition products - No data available
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - male - 207.0 mg/kg
Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Olfaction:Other changes. Behavioral:Convulsions or effect on seizure threshold. Gastrointestinal:Ulceration or bleeding from stomach. (ECHA)
LC50 Inhalation - Rat - 1 h - > 710 mg/m3
Remarks: (RTECS)
LD50 Dermal - Rabbit - 301.0 mg/kg
Remarks: Behavioral:Tremor. Gastrointestinal:Changes in structure or function of salivary glands. Kidney, Ureter, Bladder:Other changes. (ECHA)
No data available

Skin corrosion/irritation
Skin - Rabbit
Result: Causes burns.
Remarks: (ECHA)

Serious eye damage/eye irritation
Causes serious eye damage.

Respiratory or skin sensitization
Draize Test - Guinea pig
Result: negative
(OECD Test Guideline 406)

Germ cell mutagenicity
Ames test
Salmonella typhimurium
Result: negative
In vitro mammalian cell gene mutation test
mouse lymphoma cells
Result: negative
Mutagenicity (mammal cell test): chromosome aberration.
Chinese hamster ovary cells
Result: positive
OECD Test Guideline 478
Mouse - male
Result: negative

Carcinogenicity

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IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available
Acute oral toxicity - If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Additional Information

Repeated dose toxicity - Rat - male and female - Oral - 13 Weeks - NOAEL (No observed adverse effect level) - 50 mg/kg
RTECS: GO6475000

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, laryngitis, Dizziness, Cardiovascular effects., Muscle cramps/spasms., Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting.
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Kidney -

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	static test LC50 - Salmo trutta (brown trout) - 4.4 mg/l - 96 h Remarks: (ECHA)
Toxicity to daphnia and other aquatic invertebrates	static test EC50 - Daphnia magna (Water flea) - 7.7 mg/l - 48 h (DIN 38412)
Toxicity to algae	static test ErC50 - Desmodesmus subspicatus (green algae) - 21 mg/l - 48 h (DIN 38412)
Toxicity to bacteria	static test EC50 - Tetrahymena pyriformis - 157 mg/l - 48 h Remarks: (ECHA)

12.2 Persistence and degradability

Biodegradability aerobic - Exposure time 10 d

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Result: 100 % - Inherently biodegradable.
(OECD Test Guideline 302B)

12.3 Bioaccumulative potential

Bioaccumulation Danio rerio (zebra fish)(p-cresol)

Bioconcentration factor (BCF): 10.7
(OECD Test Guideline 305)

Remarks: Does not bioaccumulate.

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life.
Biological effects:
Change in the flavour characteristics of fish protein.
Hazard for drinking water supplies.
Discharge into the environment must be avoided.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging

Dispose of as unused product.

SECTION 14: Transport information

DOT (US)

UN number: 3455 Class: 6.1 (8) Packing group: II
Proper shipping name: Cresols, solid
Reportable Quantity (RQ): 100 lbs
Reportable Quantity (RQ): 100 lbs
Poison Inhalation Hazard: No

IMDG

UN number: 3455 Class: 6.1 (8) Packing group: II EMS-No: F-A, S-B
Proper shipping name: CRESOLS, SOLID

IATA

UN number: 3455 Class: 6.1 (8) Packing group: II

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Proper shipping name: Cresols, solid

SECTION 15: Regulatory information

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
p-cresol	106-44-5	2007-07-01

SARA 311/312 Hazards
Acute Health Hazard

Reportable Quantity : D025 lbs

Massachusetts Right To Know Components

	CAS-No.	Revision Date
p-cresol	106-44-5	2007-07-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
p-cresol	106-44-5	2007-07-01

New Jersey Right To Know Components

	CAS-No.	Revision Date
p-cresol	106-44-5	2007-07-01

California Prop. 65 Components
This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

SECTION 16: Other information

Further information
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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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The branding on the header and/or footer of this document may temporarily not visually match the product purchased as we transition our branding. However, all of the information in the document regarding the product remains unchanged and matches the product ordered. For further information please contact mlsbranding@sial.com.

Version: 6.2 Revision Date: 09/30/2020 Print Date: 08/21/2021

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Material Safety Data Sheet

Version 5.0
Revision Date 12/18/2012
Print Date 11/20/2013

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	1,3,5-Trimethylbenzene solution
Product Number	:	41103
Brand	:	Supelco
Supplier	:	Sigma-Aldrich 3050 Spruce Street SAINT LOUIS MO 63103 USA
Telephone	:	+1 800-325-5832
Fax	:	+1 800-325-5052
Emergency Phone # (For both supplier and manufacturer)	:	(314) 776-6555
Preparation Information	:	Sigma-Aldrich Corporation Product Safety - Americas Region 1-800-521-8956

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Flammable liquid, Target Organ Effect, Toxic by inhalation., Toxic by ingestion, Toxic by skin absorption

Target Organs

Eyes, Kidney, Liver, Heart, Central nervous system

GHS Classification
Flammable liquids (Category 2)
Acute toxicity, Oral (Category 3)
Acute toxicity, Inhalation (Category 3)
Acute toxicity, Dermal (Category 3)
Skin irritation (Category 2)
Eye irritation (Category 2A)
Specific target organ toxicity - single exposure (Category 1)

GHS Label elements, including precautionary statements

Pictogram



Signal word Danger

Hazard statement(s)

H225	Highly flammable liquid and vapour.
H301 + H311	Toxic if swallowed or in contact with skin
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H331	Toxic if inhaled.
H370	Causes damage to organs.

Precautionary statement(s)

P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P260	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P280	Wear protective gloves/ protective clothing.

P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P307 + P311	IF exposed: Call a POISON CENTER or doctor/ physician.

HMIS Classification

Health hazard:	2
Chronic Health Hazard:	*
Flammability:	3
Physical hazards:	0

NFPA Rating

Health hazard:	2
Fire:	3
Reactivity Hazard:	0

Potential Health Effects

Inhalation	Toxic if inhaled. Causes respiratory tract irritation.
Skin	Toxic if absorbed through skin. Causes skin irritation.
Eyes	Causes eye irritation.
Ingestion	Toxic if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Mesitylenesolution

Component		Classification	Concentration
Methanol			
CAS-No.	67-56-1	Flam. Liq. 2; Acute Tox. 3; STOT SE 1; H225, H301 + H311 + H331, H370	90 - 100 %
EC-No.	200-659-6		
Index-No.	603-001-00-X		
Registration number	01-2119433307-44-XXXX		

For the full text of the H-Statements and R-Phrases mentioned in this Section, see Section 16

4. FIRST AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES

Conditions of flammability
Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking.

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

Further information
Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Methods and materials for containment and cleaning up
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Recommended storage temperature: 2 - 8 °C

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Basis
Methanol	67-56-1	TWA	200 ppm	USA. ACGIH Threshold Limit Values (TLV)
Remarks	Headache Eye damage Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Danger of cutaneous absorption			
		STEL	250 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Headache Eye damage Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Danger of cutaneous absorption			
		TWA	200 ppm 260 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
	Skin notation			
		STEL	250 ppm 325 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
	Skin notation			
		TWA	200 ppm 260 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
	The value in mg/m3 is approximate.			
		TWA	200 ppm 260 mg/m3	USA. NIOSH Recommended Exposure Limits

	Potential for dermal absorption			
		ST	250 ppm 325 mg/m3	USA. NIOSH Recommended Exposure Limits
	Potential for dermal absorption			

Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection
Complete suit protecting against chemicals, Flame retardant antistatic protective clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	liquid
Colour	colourless

Safety data

pH	no data available
Melting point/freezing point	Melting point/range: -98 °C (-144 °F)
Boiling point	64 - 65 °C (147 - 149 °F) at 1,013 hPa (760 mmHg)
Flash point	11 °C (52 °F) - closed cup
Ignition temperature	no data available
Auto-ignition temperature	385 °C (725 °F)
Lower explosion limit	6 %(V)
Upper explosion limit	36 %(V)
Vapour pressure	130.23 hPa (97.68 mmHg) at 20 °C (68 °F) 547 hPa (410 mmHg) at 50 °C (122 °F)
Density	0.791 g/cm3
Water solubility	completely miscible
Partition coefficient: n-octanol/water	no data available
Relative vapor density	no data available

Odour	no data available
Odour Threshold	no data available
Evaporation rate	no data available

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions

Vapours may form explosive mixture with air.

Conditions to avoid
Heat, flames and sparks. Extremes of temperature and direct sunlight.

Materials to avoid
Acids, Oxidizing agents, Alkali metals, Strong oxidizing agents, Acid chlorides, Acid anhydrides, Reducing agents

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50
Inhalation LC50
Dermal LD50
Other information on acute toxicity
no data available

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
Eyes: no data available

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity

IARC:	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP:	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

no data available

Teratogenicity

no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)
no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
no data available

Aspiration hazard
no data available

Potential health effects

Inhalation	Toxic if inhaled. Causes respiratory tract irritation.
Ingestion	Toxic if swallowed.
Skin	Toxic if absorbed through skin. Causes skin irritation.
Eyes	Causes eye irritation.

Signs and Symptoms of Exposure
Methyl alcohol may be fatal or cause blindness if swallowed., Cannot be made non-poisonous., Effects due to ingestion may include:, Nausea, Dizziness, Gastrointestinal disturbance, Weakness, Confusion., Drowsiness, Unconsciousness, May cause convulsions.

Synergistic effects
no data available

Additional Information
RTECS: Not available

12. ECOLOGICAL INFORMATION

Toxicity

no data available

Persistence and degradability
no data available

Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects

no data available

13. DISPOSAL CONSIDERATIONS

Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN number: 1230 Class: 3 Packing group: II
Proper shipping name: Methanol, solution
Marine Pollutant: No
Poison Inhalation Hazard: No

IMDG

UN number: 1230 Class: 3 (6.1) Packing group: II EMS-No: F-E, S-D
Proper shipping name: METHANOL, SOLUTION
Marine Pollutant: No

IATA
UN number: 1230 Class: 3 (6.1) Packing group: II
Proper shipping name: Methanol, solution

15. REGULATORY INFORMATION

OSHA Hazards
Flammable liquid, Target Organ Effect, Toxic by inhalation., Toxic by ingestion, Toxic by skin absorption

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
Methanol	67-56-1	2007-07-01

SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Methanol	67-56-1	2007-07-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Methanol	67-56-1	2007-07-01

New Jersey Right To Know Components

	CAS-No.	Revision Date
Methanol	67-56-1	2007-07-01

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Text of H-code(s) and R-phrase(s) mentioned in Section 3

Acute Tox.	Acute toxicity
Flam. Liq.	Flammable liquids
H225	Highly flammable liquid and vapour.
H301 + H311 + H331	Toxic if swallowed, in contact with skin or if inhaled
H370	Causes damage to organs.
STOT SE	Specific target organ toxicity - single exposure

Further information
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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

SAFETY DATA SHEET

Version 6.3
Revision Date 10/11/2020
Print Date 08/21/2021

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : 1,2,4,5-Tetramethylbenzene

Product Number : T19607
Brand : Aldrich
CAS-No. : 95-93-2

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable solids (Category 1), H228

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word Danger

Hazard statement(s)
H228 Flammable solid.

Precautionary statement(s)
P210 Keep away from heat/ sparks/ open flames/ hot surfaces. No

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	smoking.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms	:	Durene 1,2,4,5-Tetramethylbenzene
Formula	:	$C_{10}H_{14}$
Molecular weight	:	134.22 g/mol
CAS-No.	:	95-93-2
EC-No.	:	202-465-7

No components need to be disclosed according to the applicable regulations.

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Consult a physician. Show this material safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

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SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
Use water spray to cool unopened containers.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas.
For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal. Contain spillage, pick up with an electrically protected vacuum cleaner or by wet-brushing and transfer to a container for disposal according to local regulations (see section 13).

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed.Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place.
Storage class (TRGS 510): 4.1B: Flammable solid hazardous materials

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

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SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters
Contains no substances with occupational exposure limit values.

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection
Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

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Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: crystalline Color: colorless
b)	Odor	No data available
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point/range: 76 - 80 °C (169 - 176 °F) - lit.
f)	Initial boiling point and boiling range	No data available
g)	Flash point	74 °C (165 °F) - closed cup
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	The substance or mixture is a flammable solid with the category 1.
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapor pressure	No data available
l)	Vapor density	No data available
m)	Relative density	0.838 g/mL at 25 °C (77 °F)
n)	Water solubility	0.00348 g/l at 25 °C (77 °F)
o)	Partition coefficient: n-octanol/water	log Pow: 4.17
p)	Autoignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

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10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
Heat, flames and sparks. Extremes of temperature and direct sunlight.

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides
Other decomposition products - No data available
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - 6,700 mg/kg
Remarks: (RTECS)

Skin corrosion/irritation

Serious eye damage/eye irritation

Respiratory or skin sensitization

Germ cell mutagenicity

Carcinogenicity

IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity

Specific target organ toxicity - single exposure

Specific target organ toxicity - repeated exposure

Aspiration hazard

Additional Information
RTECS: DC0500000

The data available to us do not suffice to permit any industrial-toxicological assessment.
Further toxicological data:
Risk of absorption.
Other dangerous properties can not be excluded.
Further data:

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Handle in accordance with good industrial hygiene and safety practice.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	LC0 - Leuciscus idus (Golden orfe) - 10 mg/l - 48 h Remarks: (ECOTOX Database) LC50 - Leuciscus idus (Golden orfe) - 30 mg/l - 48 h Remarks: (ECOTOX Database) LC100 - Leuciscus idus (Golden orfe) - 50 mg/l - 48 h Remarks: (ECOTOX Database)
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 0.47 mg/l - 48 h Remarks: (External MSDS)

12.2 Persistence and degradability
Not readily biodegradable.

12.3 Bioaccumulative potential

12.4 Mobility in soil

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Discharge into the environment must be avoided.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

DOT (US)
UN number: 1325 Class: 4.1 Packing group: II
Proper shipping name: Flammable solids, organic, n.o.s. (1,2,4,5-tetramethylbenzene)
Reportable Quantity (RQ):
Poison Inhalation Hazard: No

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IMDG
UN number: 1325 Class: 4.1 Packing group: II EMS-No: F-A, S-G
Proper shipping name: FLAMMABLE SOLID, ORGANIC, N.O.S. (1,2,4,5-tetramethylbenzene)

IATA
UN number: 1325 Class: 4.1 Packing group: II
Proper shipping name: Flammable solid, organic, n.o.s. (1,2,4,5-tetramethylbenzene)

SECTION 15: Regulatory information

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Fire Hazard

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

1,2,4,5-tetramethylbenzene	CAS-No. 95-93-2	Revision Date

New Jersey Right To Know Components

1,2,4,5-tetramethylbenzene	CAS-No. 95-93-2	Revision Date

California Prop. 65 Components
This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

SECTION 16: Other information

Further information
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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

The branding on the header and/or footer of this document may temporarily not visually match the product purchased as we transition our branding. However, all of the

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information in the document regarding the product remains unchanged and matches the product ordered. For further information please contact mlsbranding@sial.com.

Version: 6.3 Revision Date: 10/11/2020 Print Date: 08/21/2021

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Barium Chloride Dihydrate

SECTION 1 : Identification of the substance/mixture and of the supplier

Product name : **Barium Chloride Dihydrate**

Manufacturer/Supplier Trade name:

Manufacturer/Supplier Article number: **S25187A**

Recommended uses of the product and uses restrictions on use:

Manufacturer Details:

AquaPhoenix Scientific
9 Barnhart Drive, Hanover, PA 17331

Supplier Details:

Fisher Science Education
15 Jet View Drive, Rochester, NY 14624

Emergency telephone number:

Fisher Science Education Emergency Telephone No.: 800-535-5053

SECTION 2 : Hazards identification

Classification of the substance or mixture:



Toxic
Acute toxicity (oral, dermal, inhalation), category 3



Irritant
Acute toxicity (oral, dermal, inhalation), category 4

AcTox Oral 3
AcTox Inhaln. 4

Signal word :Danger

Hazard statements:
Toxic if swallowed
Harmful if inhaled
Precautionary statements:
If medical advice is needed, have product container or label at hand
Keep out of reach of children
Read label before use
Do not eat, drink or smoke when using this product
Use only outdoors or in a well-ventilated area
Avoid breathing dust/fume/gas/mist/vapours/spray
Wash skin thoroughly after handling
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Rinse mouth
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Specific treatment (see supplemental first aid instructions on this label)
Call a POISON CENTER or doctor/physician if you feel unwell
Store locked up

Dispose of contents and container as instructed in Section 13

Other Non-GHS Classification:

WHMIS

D1B



NFPA/HMIS



NFPA SCALE (0-4)



HMIS RATINGS (0-4)

SECTION 3 : Composition/information on ingredients

Ingredients:		
CAS 10326-27-9	Barium Chloride Dihydrate	100 %
		Percentages are by weight

SECTION 4 : First aid measures

Description of first aid measures

After inhalation: Loosen clothing as necessary and position individual in a comfortable position.Remove to fresh air. Give artificial respiration if necessary. If breathing is difficult give oxygen.Seek medical attention.Do NOT use mouth - to - mouth resuscitation.

After skin contact: Wash affected area with soap and water. Rinse exposed skin with water for 20 minutes.Enter emergency shower rinsing while removing contaminated clothing and shoes.Transport victim to the hospital.

After eye contact: Protect unexposed eye. Rinse or flush exposed eye gently using water for 15-20 minutes. Occasionally lift the upper and lower eyelids while rinsing.Immediately seek medical attention.

After swallowing: Rinse mouth thoroughly. Do not induce vomiting. Do not perform mouth-to-mouth on an unconscious person.Never give anything by mouth to an unconscious person.Call Poison Control Center or a physician immediately.

Most important symptoms and effects, both acute and delayed:

Irritation.Nausea.Headache.Shortness of breath.;Eye, Skin, & Gastrointestinal irritation.Muscular stimulation

Indication of any immediate medical attention and special treatment needed:

If seeking medical attention provide SDS document to physician.

SECTION 5 : Firefighting measures

Extinguishing media

Suitable extinguishing agents: Use water, dry chemical, chemical foam, or alcohol-resistant foam.

For safety reasons unsuitable extinguishing agents:

Special hazards arising from the substance or mixture:

Substance is noncombustible; use agent most appropriate to extinguish surrounding fire.Decomposes at high temperatures, resulting in toxic and corrosive products.

Advice for firefighters:

Protective equipment: Wear protective eyeware, gloves, and clothing.

Additional information (precautions): Normal ventilation is adequate.

SECTION 6 : Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Ensure that air-handling systems are operational.Ensure adequate ventilation.

Environmental precautions:

Prevent from reaching drains, sewer, or waterway. Should not be released into environment.

Methods and material for containment and cleaning up:

Wear protective eyeware, gloves, and clothing. Refer to Section 8.Always obey local regulations.If necessary use trained response staff or contractor.Evacuate personnel to safe areas. Containerize for disposal. Refer to Section 13.Keep in suitable closed containers for disposal.

Reference to other sections:

SECTION 7 : Handling and storage

Precautions for safe handling:

Avoid contact with skin, eyes, and clothing.Follow good hygiene procedures when handling chemical materials. Refer to Section 8.Follow proper disposal methods. Refer to Section 13.Do not eat, drink, smoke, or use personal products when handling chemical substances.Avoid ingestion and inhalation.

Conditions for safe storage, including any incompatibilities:

Store in a cool location.Store in a cool location.Protect from freezing and physical damage.Provide ventilation for containers.Keep container tightly sealed. Store away from incompatible materials.

SECTION 8 : Exposure controls/personal protection





Control Parameters:	10326-27-9, Barium chloride dihydrate, TWA 0.5 mg/m3 USA. NIOSH 10326-27-9 , Barium chloride dihydrate, WA 0.5 mg/m3 USA. OSHA 10326-27-9, Barium chloride dihydrate, TWA 0.5 mg/m3 USA. ACGIH
Appropriate Engineering controls:	Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor and mists below the applicable workplace exposure limits (Occupational Exposure Limits-OELs) indicated above.
Respiratory protection:	Normal ventilation is adequate.

Protection of skin:	Select glove material impermeable and resistant to the substance.Select glove material based on rates of diffusion and degradation. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices.Use proper glove removal technique without touching outer surface. Avoid skin contact with used gloves.Wear protective clothing.
Eye protection:	Safety glasses with side shields or goggles.Wear equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
General hygienic measures:	Wash hands before breaks and at the end of work. Avoid contact with skin, eyes, and clothing.Remove contaminated clothing and shoes.Before wearing wash contaminated clothing.Perform routine housekeeping.

SECTION 9 : Physical and chemical properties

Appearance (physical state,color):	White solid	**Explosion limit lower**: **Explosion limit upper**:	Not Determined Not Determined
Odor:	Odorless	**Vapor pressure**:	Not Determined
Odor threshold:	Not Determined	**Vapor density**:	Not Determined
pH-value:	5.0 - 8.0 at 50 g/l at 25 °C	**Relative density**:	3.100 g/cm3
Melting/Freezing point:	962 °C	**Solubilities**:	Soluble in water
Boiling point/Boiling range:	1560 °C	**Partition coefficient (n-octanol/water)**:	Not Determined
Flash point (closed cup):	Not Determined	**Auto/Self-ignition temperature**:	Not Determined
Evaporation rate:	Not Determined	**Decomposition temperature**:	> 100°C
Flammability (solid,gaseous):	Not Determined	**Viscosity**:	a. Kinematic:Not Determined b. Dynamic: Not Determined
Density: Not Determined			

SECTION 10 : Stability and reactivity

Reactivity: Nonreactive under normal conditions.
Chemical stability: Stable under normal conditions.
Possible hazardous reactions: None under normal processing
Conditions to avoid: Excessive heat.Incompatible materials.Dust formation.
Incompatible materials: Oxidizing Agents
Hazardous decomposition products: Hydrogen chloride gas, chlorine.

SECTION 11 : Toxicological information

Acute Toxicity:		
Oral:	10326-27-9	LD50 oral - rat: 118 mg/kg

Chronic Toxicity: No additional information.	
Corrosion Irritation: No additional information.	
Sensitization:	Irritation: Irritating to eyes and skin
Single Target Organ (STOT):	No additional information.
Numerical Measures:	No additional information.
Carcinogenicity:	No additional information.
Mutagenicity:	No additional information.
Reproductive Toxicity:	No additional information.

SECTION 12 : Ecological information

Ecotoxicity Persistence and degradability: Readily degradable in the environment.
Bioaccumulative potential:
Mobility in soil:
Other adverse effects:

SECTION 13 : Disposal considerations

Waste disposal recommendations:

It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities (US 40CFR262.11). Product or containers must not be disposed together with household garbage. Contact a licensed professional waste disposal service to dispose of this material.Consult federal, state, provincial, and local regulations regarding the proper disposal of waste material that may incorporate some amount of this product. Dilute with water and flush to sewer.

SECTION 14 : Transport information

UN-Number

1564

UN proper shipping name

Barium Compounds, N.O.S.

Transport hazard class(es)



Class:
6.1 Toxic substances

Packing group:III
Environmental hazard:
Transport in bulk:
Special precautions for user:

SECTION 15 : Regulatory information

United States (USA)

SARA Section 311/312 (Specific toxic chemical listings):

Acute, Chronic

SARA Section 313 (Specific toxic chemical listings):

10326-27-9 Barium chloride dihydrate

RCRA (hazardous waste code):

10326-27-9, Not applicable

TSCA (Toxic Substances Control Act):

All ingredients are listed.

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):

None of the ingredients is listed

Proposition 65 (California):

Chemicals known to cause cancer:

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed

Chemicals known to cause developmental toxicity:

None of the ingredients is listed

Canada

Canadian Domestic Substances List (DSL):

All ingredients are listed.

Canadian NPRI Ingredient Disclosure list (limit 0.1%):

None of the ingredients is listed

Canadian NPRI Ingredient Disclosure list (limit 1%):

None of the ingredients is listed

SECTION 16 : Other information

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.Note:. The responsibility to provide a safe workplace remains with the user.The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment.The information contained herein is, to the best of our knowledge and belief, accurate.However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material.It is the responsibility of the user to comply with all applicable laws and regulations applicable to this material.

GHS Full Text Phrases:

Abbreviations and acronyms:

IMDG: International Maritime Code for Dangerous Goods
PNEC: Predicted No-Effect Concentration (REACH)
CFR: Code of Federal Regulations (USA)
SARA: Superfund Amendments and Reauthorization Act (USA)
RCRA: Resource Conservation and Recovery Act (USA)
TSCA: Toxic Substances Control Act (USA)

NPRI: National Pollutant Release Inventory (Canada)
DOT: US Department of Transportation
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
WHMIS: Workplace Hazardous Materials Information System (Canada)
DNEL: Derived No-Effect Level (REACH)

Effective date : 12.21.2014
Last updated : 03.23.2015

Material Safety Data Sheet
Benzene

ACC# 02610

Section 1 - Chemical Product and Company Identification

MSDS Name: Benzene
Catalog Numbers: AC167660000, AC167660010, AC167660025, AC167660250, AC167665000, AC168650250, AC295330000, AC295330010, AC295330025, AC295330250, AC296880000, AC296880010, AC296880025, AC296880250, AC610230010, AC610231000, AC611001000, B243-4, B245-4, B245-500, B411-1, B411-4, B412-1, S79920ACS
Synonyms: Benzol; Cyclohexatriene; Phenyl hydride.
Company Identification:

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410

For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
71-43-2	Benzene	> 99	200-753-7

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear colorless liquid. Flash Point: -11 deg C.
Danger! Extremely flammable liquid and vapor. Vapor may cause flash fire. Harmful if swallowed, inhaled, or absorbed through the skin. Causes eye, skin, and respiratory tract irritation. Contains benzene. Benzene can cause cancer. Aspiration hazard if swallowed. Can enter lungs and cause damage. May cause blood abnormalities. May cause central nervous system effects.
Target Organs: Blood, central nervous system, respiratory system, eyes, bone marrow, immune system, skin.

Potential Health Effects

Eye: Causes eye irritation.
Skin: Causes skin irritation. Harmful if absorbed through the skin. Prolonged and/or repeated contact may cause defatting of the skin and dermatitis.
Ingestion: May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure. May cause effects similar to those for inhalation exposure. Aspiration of material into the lungs may cause chemical pneumonitis, which may be fatal.
Inhalation: Causes respiratory tract irritation. May cause drowsiness, unconsciousness, and central nervous system depression. Exposure may lead to irreversible bone marrow injury. Exposure may lead to aplastic anemia. Potential symptoms of overexposure by inhalation are dizziness, headache, vomiting, visual disturbances, staggering gait, hilarity, fatigue, and other symptoms of CNS depression.
Chronic: May cause bone marrow abnormalities with damage to blood forming tissues. May cause anemia

and other blood cell abnormalities. Chronic exposure to benzene has been associated with an increased incidence of leukemia and multiple myeloma (tumor composed of cells of the type normally found in the bone marrow). Immunodepressive effects have been reported. This substance has caused adverse reproductive and fetal effects in laboratory animals.

Section 4 - First Aid Measures

Eyes: In case of contact, immediately flush eyes with plenty of water for a t least 15 minutes. Get medical aid.
Skin: In case of contact, flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse.
Ingestion: Potential for aspiration if swallowed. Get medical aid immediately. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, have victim lean forward.
Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Use water spray to keep fire-exposed containers cool. Extremely flammable liquid and vapor. Vapor may cause flash fire. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas. This liquid floats on water and may travel to a source of ignition and spread fire. May accumulate static electricity.
Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or appropriate foam.
Flash Point: -11 deg C (12.20 deg F)
Autoignition Temperature: 498 deg C (928.40 deg F)
Explosion Limits, Lower:1.3 vol %
Upper: 7.1 vol %
NFPA Rating: (estimated) Health: 2; Flammability: 3; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Avoid runoff into storm sewers and ditches which lead to waterways. Remove all sources of ignition. Provide ventilation. Approach spill from upwind. Use water spray to cool and disperse vapors, protect personnel, and dilute spills to form nonflammable mixtures.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Take precautionary measures against static discharges. Keep container tightly closed. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. Use only with adequate ventilation. Keep away from heat, sparks and flame. Avoid breathing vapor.

Storage: Keep away from sources of ignition. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof ventilation equipment. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. See 29CFR 1910.1028 for the regulatory requirements for the control of employee exposure to benzene.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Benzene	0.5 ppm TWA; 2.5 ppm STEL; Skin - potential significant contribution to overall exposure by the cutaneous r oute	0.1 ppm TWA 500 ppm IDLH	1 ppm TWA; 10 ppm TWA (applies to industry segments exempt from the benzene stan dard at 29 CFR 1910.1028); 25 ppm Ceiling (applies to industry segments exempt from the 1 ppm TWA and 5 ppm STEL of th e benzene standard); 0.5 ppm Action Level; 1 ppm TWA; 5 ppm STEL (Cancer hazard, Flammable - see 29 C FR 1910.1028)

OSHA Vacated PELs: Benzene: 10 ppm TWA (unless specified in 1910.1028)

Personal Protective Equipment

Eyes: Wear chemical splash goggles.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 9 - Physical and Chemical Properties

Physical State: Liquid

Appearance: clear colorless

Odor: sweetish odor - aromatic odor

pH: Not applicable.

Vapor Pressure: 75 mm Hg @ 20 deg C

Vapor Density: 2.8 (air=1)

Evaporation Rate: Not available.

Viscosity: 0.647mPa @ 20 deg C

Boiling Point: 80.1 deg C

Freezing/Melting Point:5.5 deg C

Decomposition Temperature: Not available.

Solubility: 0.180 g/100 ml @ 25°C

Specific Gravity/Density:0.8765 @ 20°C

Molecular Formula:C6H6

Molecular Weight:78.11

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Ignition sources, excess heat, confined spaces.
Incompatibilities with Other Materials: Strong oxidizing agents.
Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 71-43-2: CY1400000
LD50/LC50:
CAS# 71-43-2:
Dermal, guinea pig: LD50 = >9400 uL/kg;
Draize test, rabbit, eye: 88 mg Moderate;
Draize test, rabbit, eye: 2 mg/24H Severe;
Draize test, rabbit, skin: 20 mg/24H Moderate;
Inhalation, mouse: LC50 = 9980 ppm;
Inhalation, mouse: LC50 = 24 mL/kg/2H;
Inhalation, rat: LC50 = 10000 ppm/7H;
Inhalation, rat: LC50 = 34 mL/kg/2H;
Inhalation, rat: LC50 = 6.5 mL/kg/4H;
Oral, mouse: LD50 = 4700 mg/kg;
Oral, rat: LD50 = 930 mg/kg;
Oral, rat: LD50 = 1 mL/kg;
Oral, rat: LD50 = 1800 Benzene is considered very toxic; probable human oral lethal dose would be 50-500 mg/kg. Human inhalation of approximately 20,000 ppm (2% in air) was fatal in 5-10 minutes.While percutaneous absorption of liquid benzene through intact human skin can be limited (e.g., 0.05% of the applied dose), the absorbed dose via direct dermal contact combined with that received from body surface exposure to benzene in workplace air is such that a substantial fraction (20-40%) of the total exposure is due to skin absorption.
Carcinogenicity:
CAS# 71-43-2:

- **ACGIH:** A1 - Confirmed Human Carcinogen
- **California:** carcinogen, initial date 2/27/87
- **NTP:** Known carcinogen
- **IARC:** Group 1 carcinogen

Epidemiology: IARC has concluded that epidemiological studies have established the relationship between benzene exposure and the development of acute myelogenous leukemia, and that there is sufficient evidence that benzene is carcinogenic to humans.
Teratogenicity: Inhalation, rat: TCLO = 50 ppm/24H (female 7-14 day(s) after conception) Effects on Embryo or Fetus - extra-embryonic structures (e.g., placenta, umbilical cord) and Effects on Embryo or Fetus - fetotoxicity (except death, e.g., stunted fetus).; Inhalation,mouse: TCLo = 5 ppm (female 6-15 day(s) after conception) Effects on Embryo or Fetus - cytological changes (including somatic cell genetic material) and Specific Developmental Abnormalities - blood and lymphatic systems (including spleen and marrow).
Reproductive Effects: Inhalation, rat: TCLO = 670 mg/m3/24H (female 15 day(s) pre-mating and female 1-22 day(s) after conception) female fertility index (e.g. # females pregnant per # sperm positive females; # females pregnant per # females mated).; Oral, mouse: TDLo = 12 gm/kg (female 6-15 day(s) after conception) Fertility - post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants).
Mutagenicity: DNA Inhibition: Human, Leukocyte = 2200 umol/L.; DNA Inhibition: Human, HeLa cell = 2200 umol/L.; Mutation Test Systems - not otherwise specified: Human, Lymphocyte = 5 umol/L.; Cytogenetic Analysis: Inhalation, Human = 125 ppm/1Y.; Cytogenetic Analysis: Human, Leukocyte = 1 mmol/L/72H.; Cytogenetic Analysis: Human, Lymphocyte = 1 mg/L.

Neurotoxicity: See actual entry in RTECS for complete information.
Other Studies:

Section 12 - Ecological Information

Ecotoxicity: Fish: Mosquito Fish: TLm = 395 mg/L; 24 Hr; UnspecifiedFish: Goldfish: LC50 =46 mg/L; 24 Hr; Modified ASTM D 1345Fish: Fathead Minnow: LC50 = 15.1 mg/L; 96 Hr; Flow-through at 25°C (pH 7.9-8.0)Fish: Rainbow trout: LC50 = 5.3 mg/L; 96 Hr; Flow-through at 25°C (pH 7.9-8.0)Fish: Bluegill/Sunfish: LD50 = 20 mg/L; 24-48 Hr; Unspecified If benzene is released to soil, it will be subject to rapid volatilization near the surface and that which does not evaporate will be highly to very highly mobile in the soil and may leach to groundwater. If benzene is released to water, it will be subject to rapid volatilization. It will not be expected to significantly adsorb to sediment, bioconcentrate in aquatic organisms or hydrolyze. It may be subject to biodegradation.
Environmental: If benzene is released to the atmosphere, it will exist predominantly in the vapor phase. Gas-phase benzene will not be subject to direct photolysis but it will react with photochemically produced hydroxyl radicals with a half-life of 13.4 days. The reaction time in polluted atmospheres which contain nitrogen oxides or sulfur dioxide is accelerated with the half-life being reported as 4-6 hours. Benzene is fairly soluble in water and is removed from the atmosphere in rain.
Physical: Products of photooxidation include phenol, nitrophenols, nitrobenzene, formic acid, and peroxyacetyl nitrate.
Other: No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series:
CAS# 71-43-2: waste number U019 (Ignitable waste, Toxic waste).

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	BENZENE	BENZENE
Hazard Class:	3	3
UN Number:	UN1114	UN1114
Packing Group:	II	II
Additional Info:		FLASHPOINT -11 C

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 71-43-2 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

CAS# 71-43-2: 10 lb final RQ (received an adjusted RQ of 10 lbs based on potential carcinogeni

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 71-43-2: immediate, delayed, fire.

Section 313

This material contains Benzene (CAS# 71-43-2, > 99%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

CAS# 71-43-2 is listed as a hazardous air pollutant (HAP).

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

CAS# 71-43-2 is listed as a Hazardous Substance under the CWA. CAS# 71-43-2 is listed as a Priority Pollutant under the Clean Water Act. CAS# 71-43-2 is listed as a Toxic Pollutant under the Clean Water Act.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 71-43-2 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65

The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:

WARNING: This product contains Benzene, a chemical known to the state of California to cause cancer.
WARNING: This product contains Benzene, a chemical known to the state of California to cause male reproductive toxicity.
California No Significant Risk Level: CAS# 71-43-2: 6.4 æg/day NSRL (oral); 13 æg/day NSRL (inhalation)

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

T F

Risk Phrases:

R 11 Highly flammable.
R 36/38 Irritating to eyes and skin.
R 45 May cause cancer.
R 46 May cause heritable genetic damage.
R 48/23/24/25 Toxic : danger of serious damage to health by prolonged exposure through inhalation, contact with skin and if swallowed.
R 65 Harmful: may cause lung damage if swallowed.

Safety Phrases:

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 53 Avoid exposure - obtain special instructions before use.

WGK (Water Danger/Protection)

CAS# 71-43-2: 3

Canada - DSL/NDSL

CAS# 71-43-2 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of B2, D2A, D2B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 71-43-2 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 6/11/1999
Revision #8 Date: 9/11/2008

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

Chromium, Reagent Grade,

SECTION 1 : Identification of the substance/mixture and of the supplier

Product name : **Chromium, Reagent Grade,**

Manufacturer/Supplier Trade name:

Manufacturer/Supplier Article number: **S25249A**

Recommended uses of the product and uses restrictions on use:

Manufacturer Details:

AquaPhoenix Scientific
9 Barnhart Drive, Hanover, PA 17331

Supplier Details:

Fisher Science Education
15 Jet View Drive, Rochester, NY 14624

Emergency telephone number:

Fisher Science Education Emergency Telephone No.: 800-535-5053

SECTION 2 : Hazards identification

Classification of the substance or mixture:



Environmentally Damaging
Chronic hazards to the aquatic environment, category 1
Acute hazards to the aquatic environment, category 1

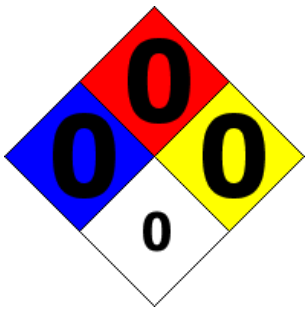
Aquatic Acute 1
Aquatic Chronic 1

Signal word :Warning

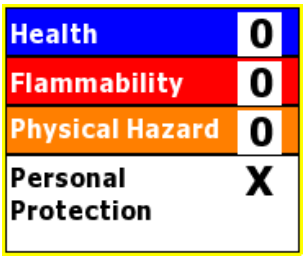
Hazard statements:
Very toxic to aquatic life with long lasting effects
Precautionary statements:
If medical advice is needed, have product container or label at hand
Keep out of reach of children
Read label before use
Do not eat, drink or smoke when using this product
Avoid release to the environment
Collect spillage
Dispose of contents and container to an approved waste disposal plant

Other Non-GHS Classification:

WHMIS
NFPA/HMIS



NFPA SCALE (0-4)



HMIS RATINGS (0-4)

SECTION 3 : Composition/information on ingredients

Ingredients:		
CAS 7440-47-3	Chromium	>98 %
		Percentages are by weight

SECTION 4 : First aid measures

Description of first aid measures

After inhalation: Loosen clothing as necessary and position individual in a comfortable position.Move exposed to fresh air. Give artificial respiration if necessary. If breathing is difficult give oxygen.Get medical assistance if cough or other symptoms appear.

After skin contact: Rinse/flush exposed skin gently using soap and water for 15-20 minutes.Seek medical advice if discomfort or irritation persists.

After eye contact: Protect unexposed eye. Rinse/flush exposed eye(s) gently using water for 15-20 minutes. Remove contact lens(es) if able to do so during rinsing. Seek medical attention if irritation persists or if concerned.

After swallowing: Rinse mouth thoroughly. Do not induce vomiting. Have exposed individual drink sips of water. Seek medical attention if irritation, discomfort or vomiting persists.Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed:

Irritation, Nausea,Headache, Shortness of breath.;

Indication of any immediate medical attention and special treatment needed:

If seeking medical attention, provide SDS document to physician.Physician should treat symptomatically.

SECTION 5 : Firefighting measures

Extinguishing media

Suitable extinguishing agents: Use appropriate fire suppression agents for adjacent combustible materials or sources of ignition. Use water, dry chemical, chemical foam, carbon dioxide, or alcohol-resistant foam.

For safety reasons unsuitable extinguishing agents:

Special hazards arising from the substance or mixture:

Combustion products may include carbon oxides or other toxic vapors.Thermal decomposition can lead to release of irritating gases and vapors.

Advice for firefighters:

Protective equipment: Use NIOSH-approved respiratory protection/breathing apparatus.

Additional information (precautions): Move product containers away from fire or keep cool with water spray as a protective measure, where feasible.Use spark-proof tools and explosion-proof equipment.Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.Avoid inhaling gases, fumes, dust, mist, vapor, and aerosols.Avoid contact with skin, eyes, and clothing.

SECTION 6 : Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Wear protective equipment. Ensure that air-handling systems are operational.Ensure adequate ventilation.

Environmental precautions:

Prevent from reaching drains, sewer or waterway. Collect contaminated soil for characterization per Section 13. Should not be released into environment.

Methods and material for containment and cleaning up:

Keep in suitable closed containers for disposal.Wear protective eyeware, gloves, and clothing. Refer to Section 8.Always obey local regulations.Evacuate personnel to safe areas.

Reference to other sections:

SECTION 7 : Handling and storage

Precautions for safe handling:

Minimize dust generation and accumulation. Follow good hygiene procedures when handling chemical materials. Refer to Section 8.Avoid release to the environment.Do not eat, drink, smoke, or use personal products when handling chemical substances. Avoid contact with eyes, skin, and clothing.

Conditions for safe storage, including any incompatibilities:

Store away from incompatible materials.Protect from freezing and physical damage.Keep away from food and beverages.Provide ventilation for containers. Store in cool, dry conditions in well sealed containers. Store with like hazards

SECTION 8 : Exposure controls/personal protection





Control Parameters:	7440-47-3, Chromium, NIOSH REL: TWA 0.5 mg/m3
Appropriate Engineering controls:	Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use/handling.Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor or dusts (total/respirable) below the applicable workplace exposure limits (Occupational Exposure Limits-OELs) indicated above.It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen deficient environment.Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment).Use under a fume hood

Respiratory protection:	Not required under normal conditions of use. Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls.When necessary use NIOSH approved breathing equipment.
Protection of skin:	Select glove material impermeable and resistant to the substance.Select glove material based on rates of diffusion and degradation.Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices.Use proper glove removal technique without touching outer surface. Avoid skin contact with used gloves.Wear protective clothing.
Eye protection:	Wear equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).Safety glasses or goggles are appropriate eye protection.
General hygienic measures:	Perform routine housekeeping.Wash hands before breaks and at the end of work.Avoid contact with skin, eyes, and clothing.Before wearing wash contaminated clothing.

SECTION 9 : Physical and chemical properties

Appearance (physical state,color):	Silver-gray solid	**Explosion limit lower**: **Explosion limit upper**:	Not determined Not determined
Odor:	Not Determined	**Vapor pressure**:	Not determined
Odor threshold:	Not determined	**Vapor density**:	Negligible
pH-value:	Not Determined	**Relative density**:	Not determined
Melting/Freezing point:	1857.2°C (3374.96°F)	**Solubilities**:	insoluble
Boiling point/Boiling range:	2642°C (4787.6°F)	**Partition coefficient (n-octanol/water)**:	Not determined
Flash point (closed cup):	Not determined	**Auto/Self-ignition temperature**:	Not determined
Evaporation rate:	Not determined	**Decomposition temperature**:	Not determined
Flammability (solid,gaseous):	Not determined	**Viscosity**:	a. Kinematic:Not determined b. Dynamic: Not determined
Density: 7.2 @ 28°C			

SECTION 10 : Stability and reactivity

Reactivity: Nonreactive under normal conditions.
Chemical stability: Stable under normal conditions.
Possible hazardous reactions: None under normal processing
Conditions to avoid: Incompatible Materials.
Incompatible materials: Strong acids.Strong bases.Oxidizing agents.
Hazardous decomposition products:

SECTION 11 : Toxicological information

Acute Toxicity: No additional information.	
Chronic Toxicity: No additional information.	
Corrosion Irritation: No additional information.	
Sensitization:	No additional information.
Single Target Organ (STOT):	No additional information.
Numerical Measures:	No additional information.
Carcinogenicity:	No additional information.
Mutagenicity:	No additional information.
Reproductive Toxicity:	No additional information.

SECTION 12 : Ecological information

Ecotoxicity

Toxicity to fish: LC50 - Cyprinus carpio (Carp) - 14.3 mg/l - 96 h

Persistence and degradability:
Bioaccumulative potential:
Mobility in soil:
Other adverse effects:

SECTION 13 : Disposal considerations

Waste disposal recommendations:

Contact a licensed professional waste disposal service to dispose of this material.Dispose of empty containers as unused product.Product or containers must not be disposed with household garbage.It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities (US 40CFR262.11).Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations. Ensure complete and accurate classification.

SECTION 14 : Transport information

UN-Number

3077

UN proper shipping name

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Chromium)

Transport hazard class(es)



Class:
9 Miscellaneous dangerous substances and articles

Packing group:Marine pollutant
Environmental hazard:
Transport in bulk:
Special precautions for user:

SECTION 15 : Regulatory information

United States (USA)

SARA Section 311/312 (Specific toxic chemical listings):

None of the ingredients is listed

SARA Section 313 (Specific toxic chemical listings):

None of the ingredients is listed

RCRA (hazardous waste code):

None of the ingredients is listed

TSCA (Toxic Substances Control Act):

All ingredients are listed.

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):

7440-47-3 Chromium: RQ 5000 LB

Proposition 65 (California):

Chemicals known to cause cancer:

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed

Chemicals known to cause developmental toxicity:

None of the ingredients is listed

Canada

Canadian Domestic Substances List (DSL):

All ingredients are listed.

Canadian NPRI Ingredient Disclosure list (limit 0.1%):

7440-47-3 Chromium

Canadian NPRI Ingredient Disclosure list (limit 1%):

None of the ingredients is listed

SECTION 16 : Other information

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.Note:. The responsibility to provide a safe workplace remains with the user.The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment.The information contained herein is, to the best of our knowledge and belief, accurate.However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material.It is the responsibility of the user to comply with all applicable laws and regulations applicable to this material.

GHS Full Text Phrases:

Abbreviations and acronyms:

IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association

GHS: Globally Harmonized System of Classification and Labelling of Chemicals
ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
WHMIS: Workplace Hazardous Materials Information System (Canada)
DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration (REACH)
CFR: Code of Federal Regulations (USA)
SARA: Superfund Amendments and Reauthorization Act (USA)
RCRA: Resource Conservation and Recovery Act (USA)
TSCA: Toxic Substances Control Act (USA)
NPRI: National Pollutant Release Inventory (Canada)
DOT: US Department of Transportation

Effective date : 10.24.2014
Last updated : 03.19.2015

Copper, Metal Foil

SECTION 1: Identification of the substance/mixture and of the supplier

Product name: **Copper, Metal Foil**

Manufacturer/Supplier Trade name:

Manufacturer/Supplier Article number: **S25267**

Recommended uses of the product and restrictions on use:

Manufacturer Details:

AquaPhoenix Scientific, Inc
9 Barnhart Drive, Hanover, PA 17331
(717) 632-1291

Supplier Details:

Fisher Science Education
6771 Silver Crest Road, Nazareth, PA 18064
(724)517-1954

Emergency telephone number:

Fisher Science Education
Emergency Telephone No.: 800-535-5053

SECTION 2: Hazards identification

Classification of the substance or mixture:



Toxic
Acute toxicity (oral, dermal, inhalation), category 2



Irritant
Eye irritation, category 2A
Skin sensitization, category 1



Health hazard
Germ cell mutagenicity, category 1A
Specific target organ toxicity following repeated exposure, category 2

Acute toxicity - Oral - Category 2: H300 Fatal if swallowed.
Acute toxicity - Inhalation - Category 2: H330 Fatal if inhaled.
Specific target organ toxicity - Repeated exposure - (Oral,Inhalation) - Category 2: H373 May cause damage to digestive system, hematopoietic system, kidneys, nose, respiratory system, and/or skin through prolonged or repeated exposure if inhaled.
Hazards Not Otherwise Classified - Combustible Dust.
Not classified for physical or health hazards under GHS.
Hazards Not Otherwise Classified - Combustible Dust.
Serious Eye Damage/Eye Irritation - Category 2: H319 Causes serious eye irritation.
Skin sensitizers - Category 1: H317 May cause allergic skin reaction.
Germ cell mutagenicity - Category 1: H340 May cause genetic defects.
Hazardous to aquatic environment - acute hazard - Category 1: H400 Very toxic to aquatic life.

Signal word: Danger

Hazard statements:

Fatal if swallowed.
Fatal if inhaled.

May cause an allergic skin reaction.
Causes serious eye irritation.
May cause genetic defects.
May cause damage to organs through prolonged or repeated exposure.
Very toxic to aquatic life.

Precautionary statements:

If medical advice is needed, have product container or label at hand.
Keep out of reach of children.
Read label before use.
If medical advice is needed, have product container or label at hand.
Keep out of reach of children.
Read label before use.
Wash skin thoroughly after handling.
Avoid release to the environment.
Do not eat, drink or smoke when using this product.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.
Avoid breathing dust/fume/gas/mist/vapours/spray.
Use only outdoors or in a well-ventilated area.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Use personal protective equipment as required.
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
Wash contaminated clothing before reuse.
IF exposed or concerned: Get medical advice/attention.
Collect spillage.
Specific treatment (see supplemental first aid instructions on this label).
Rinse mouth.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Immediately call a POISON CENTER or doctor/physician.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do.
Continue rinsing.
If eye irritation persists get medical advice/attention.
IF ON SKIN: Wash with soap and water.
If skin irritation or a rash occurs: Get medical advice/attention.
Store locked up.
Dispose of contents and container as instructed in Section 13.

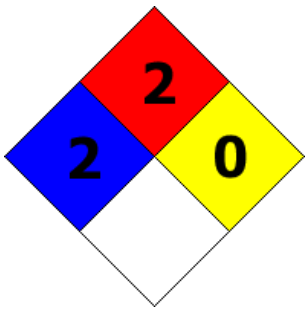
Other Non-GHS Classification:

WHMIS

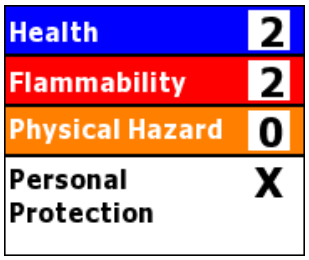
D2B 

 B4

NFPA/HMIS



NFPA SCALE (0-4)



HMIS RATINGS (0-4)

SECTION 3: Composition/information on ingredients

Ingredients:		
CAS 7440-50-8	Copper	100 %
		Percentages are by weight

SECTION 4: First aid measures

Description of first aid measures

After inhalation:

Loosen clothing as necessary and position individual in a comfortable position. Move exposed to fresh air. Give artificial respiration if necessary. If breathing is difficult give oxygen. Get medical assistance if cough or other symptoms appear.

After skin contact:

Rinse/flush exposed skin gently using soap and water for 15-20 minutes. Seek medical advice if discomfort or irritation persists.

After eye contact:

Protect unexposed eye. Rinse/flush exposed eye(s) gently using water for 15-20 minutes. Remove contact lens(es) if able to do so during rinsing. Seek medical attention if irritation persists or if concerned.

After swallowing:

Rinse mouth thoroughly. Do not induce vomiting. Have exposed individual drink sips of water. Seek medical attention if irritation, discomfort or vomiting persists. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed:

Irritation. Nausea. Headache. Shortness of breath.

Indication of any immediate medical attention and special treatment needed:

If seeking medical attention, provide SDS document to physician. Physician should treat symptomatically.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing agents:

Use appropriate fire suppression agents for adjacent combustible materials or sources of ignition. Use water, dry chemical, chemical foam, carbon dioxide, or alcohol-resistant foam.

Unsuitable extinguishing agents:

None identified.

Special hazards arising from the substance or mixture:

Oxides of copper. Combustion products may include carbon oxides or other toxic vapors. Thermal decomposition can lead to release of irritating gases and vapors. Dust can be an explosion hazard when exposed to heat or flame. Noncombustible solid in bulk form, but powdered form may ignite.

Advice for firefighters:

Protective equipment:

Use NIOSH-approved respiratory protection/breathing apparatus.

Additional information (precautions):

Move product containers away from fire or keep cool with water spray as a protective measure, where feasible. Use spark-proof tools and explosion-proof equipment. Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Avoid inhaling gases, fumes, dust, mist, vapor, and aerosols. Avoid contact with skin, eyes, and clothing.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Wear protective equipment. Use spark-proof tools and explosion-proof equipment. Ensure that air-handling systems are operational. Ensure adequate ventilation.

Environmental precautions:

Prevent from reaching drains, sewer or waterway. Collect contaminated soil for characterization per Section 13. Should not be released into environment.

Methods and material for containment and cleaning up:

Keep in suitable closed containers for disposal. Wear protective eyeware, gloves, and clothing. Refer to Section 8. Always obey local regulations. Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Collect solids in powder form using vacuum with (HEPA filter). Evacuate personnel to safe areas. Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up, then place into a suitable container for disposal. Avoid generating dusty conditions.

Reference to other sections: None

SECTION 7: Handling and storage

Precautions for safe handling:

Minimize dust generation and accumulation. Follow good hygiene procedures when handling chemical materials. Refer to Section 8. Do not eat, drink, smoke, or use personal products when handling chemical substances. Avoid contact with eyes, skin, and clothing.

Conditions for safe storage, including any incompatibilities:

Store away from incompatible materials. Protect from freezing and physical damage. Keep away from food and beverages. Provide ventilation for containers. Avoid storage near extreme heat, ignition sources or open flame. Store in cool, dry conditions in well sealed containers. Store with like hazards.

SECTION 8: Exposure controls/personal protection





Control Parameters: 7440-50-8 , Copper , OSHA PEL TWA (Total Dust) TWA 1 mg/m3.
7440-50-8, Copper, ACGIH TLV: 0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dusts and mists).
7440-50-8, Copper, OSHA PEL: 0.1 mg/m3 TWA (fume).

Appropriate Engineering controls: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use/handling. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor or dusts (total/respirable) below the applicable workplace exposure limits (Occupational Exposure Limits-OELs) indicated above. It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen deficient environment. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment). Use under a fume hood.

Respiratory protection: Not required under normal conditions of use. Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. When necessary use NIOSH approved breathing equipment.

Protection of skin: Select glove material impermeable and resistant to the substance. Select glove material based on rates of diffusion and degradation. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Use proper glove removal technique without touching outer surface. Avoid skin contact with used gloves. Wear protective clothing.

Eye protection: Wear equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses or goggles are appropriate eye protection.

General hygienic measures: Perform routine housekeeping. Wash hands before breaks and at the end of work. Avoid contact with skin, eyes, and clothing. Before wearing wash contaminated clothing.

SECTION 9: Physical and chemical properties

Appearance (physical state, color):	Red to brown solid	**Explosion limit lower**: **Explosion limit upper**:	Not determined Not determined
Odor:	Odorless	**Vapor pressure at 20°C**:	Not determined
Odor threshold:	Not determined	**Vapor density**:	Not determined
pH-value:	Not determined	**Relative density**:	Not determined
Melting/Freezing point:	1083°C (1981.4°F)	**Solubilities**:	Insoluble.
Boiling point/Boiling range:	2595°C (4703°F)	**Partition coefficient (n-octanol/water)**:	Not determined
Flash point (closed cup):	Not determined	**Auto/Self-ignition temperature**:	Not determined
Evaporation rate:	Not determined	**Decomposition temperature**:	Not determined
Flammability (solid, gaseous):	Not determined	**Viscosity**:	a. Kinematic: Not determined b. Dynamic: Not determined
Density at 20°C:	8.94 (Water = 1)		

SECTION 10: Stability and reactivity

Reactivity:

Stable at room temperature in closed containers under normal storage and handling conditions.

Chemical stability:

Stable under normal conditions.

Possible hazardous reactions:

None under normal processing.

Conditions to avoid:

Incompatible Materials. Dust formation. Moisture. Exposure to air.

Incompatible materials:

Liquid copper explodes on contact with water. Reacts violently with ammonium nitrate, bromates, iodates, chlorates, ethylene oxide, hydrazoic acid, potassium oxide, dimethyl sulfoxide Page 3 of 4 CU4500 + trichloroacetic acid, hydrogen peroxide, sodium peroxide, sodium azide, sulfuric acid, hydrogen sulfide + air, and lead azide. Ignites on contact with chlorine, fluorine (above 121C), chlorine trifluoride, and hydrazinium nitrate (above 70C). Incompatible with 1-bromo-2-propyne, potassium dioxide, and actylenic compounds.

Hazardous decomposition products:

Oxides of copper.

SECTION 11: Toxicological information

Acute Toxicity:

Oral:

7440-50-8 LD50, Rat 472mg/KG

Chronic Toxicity:

Oral:

7440-50-8 Chronic copper poisoning is typified by hepatic cirrhosis, brain damage and demyelination, kidney defects, and copper deposition in the cornea as exemplified by humans with Wilson's disease. It has also been reported that copper poisoning has led to hemolytic anemia and accelerates arteriosclerosis.

Corrosion Irritation:

Dermal:

7440-50-8 Dust is irritating to the respiratory tract. Inhalation of fumes may cause metal fume fever, which is characterized by flu-like symptoms with metallic taste, fever, chills, cough, weakness, chest pain, muscle pain and increased white blood cell count.

Sensitization: No additional information.
Numerical Measures: No additional information.
Carcinogenicity: No additional information.
Mutagenicity:

Please refer to RTECS# BO9000000 for specific informaton.

Reproductive Toxicity:

Fertility: Post-implantation mortality, oral-rat TDLo=40mg/kg.

SECTION 12: Ecological information

Ecotoxicity:

Freshwater fish: 96 Hr LC50 Pimephales promelas: 0.0068 - 0.0156 mg/L; 96 Hr LC50 Pimephales promelas: <0.3 mg/L [static]; 96 Hr LC50 Pimephales promelas: 0.2 mg/L [flow-through]; 96 Hr LC50 Oncorhynchus

mykiss: 0.052 mg/L [flow-through]; 96 Hr LC50 Lepomis macrochirus: 1.25 mg/L [static]; 96 Hr LC50 Cyprinus carpio: 0.3 mg/L [semi-static]; 96 Hr LC50 Cyprinus carpio: 0.8 mg/L [static]; 96 Hr LC50 Poecilia reticulata: 0.112 mg/L [flow-through]

Water flea: 48 Hr EC50 Daphnia magna: 0.03 mg/L [Static]

Persistence and degradability:

No information available.

Bioaccumulative potential:

No information available.

Mobility in soil: No additional information.

Other adverse effects:

No information available.

SECTION 13: Disposal considerations

Waste disposal recommendations:

Contact a licensed professional waste disposal service to dispose of this material. Dispose of empty containers as unused product. Product or containers must not be disposed with household garbage. It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities (US 40CFR262.11). Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations. Ensure complete and accurate classification.

SECTION 14: Transport information

US DOT

UN Number:
ADR, ADN, DOT, IMDG, IATA 3089

Limited Quantity Exception: None

Bulk:
RQ (if applicable): None
Proper shipping Name: Metal Powder, Flammable, NOS (Copper Sulfate).
Hazard Class: 4
Packing Group: II.
Marine Pollutant (if applicable): No additional information.
Comments: None

Non Bulk:
RQ (if applicable): None
Proper shipping Name: Metal Powder, Flammable, NOS (Copper Sulfate).
Hazard Class: 4
Packing Group: II.
Marine Pollutant (if applicable): No additional information.
Comments: None





SECTION 15: Regulatory information

United States (USA)

SARA Section 311/312 (Specific toxic chemical listings):

Acute, Chronic, Fire

SARA Section 313 (Specific toxic chemical listings):

None of the ingredients are listed.

RCRA (hazardous waste code):

None of the ingredients are listed.

TSCA (Toxic Substances Control Act):

All ingredients are listed.

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):

7440-50-8 Copper Sulfate 5000 Lbs.

Proposition 65 (California):

Chemicals known to cause cancer:

None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for females:

None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for males:

None of the ingredients are listed.

Chemicals known to cause developmental toxicity:

None of the ingredients are listed.

Canada

Canadian Domestic Substances List (DSL):

All ingredients are listed.

Canadian NPRI Ingredient Disclosure list (limit 0.1%):

None of the ingredients are listed.

Canadian NPRI Ingredient Disclosure list (limit 1%):

None of the ingredients are listed.

SECTION 16: Other information

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations. Note. The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations applicable to this material.

GHS Full Text Phrases: None

Abbreviations and Acronyms:

IMDG International Maritime Code for Dangerous Goods.
PNEC Predicted No-Effect Concentration (REACH).

CFR Code of Federal Regulations (USA).
SARA Superfund Amendments and Reauthorization Act (USA).
RCRA Resource Conservation and Recovery Act (USA).
TSCA Toxic Substances Control Act (USA).
NPRI National Pollutant Release Inventory (Canada).
DOT US Department of Transportation.
IATA International Air Transport Association.
GHS Globally Harmonized System of Classification and Labelling of Chemicals.
ACGIH American Conference of Governmental Industrial Hygienists.
CAS Chemical Abstracts Service (division of the American Chemical Society).
NFPA National Fire Protection Association (USA).
HMIS Hazardous Materials Identification System (USA).
WHMIS Workplace Hazardous Materials Information System (Canada).
DNEL Derived No-Effect Level (REACH).

Effective date: 03.02.2015
Last updated: 06.17.2015

SAFETY DATA SHEET

Version 6.2
Revision Date 10/05/2020
Print Date 08/21/2021

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Dibenzofuran

Product Number : 236373
Brand : Aldrich
CAS-No. : 132-64-9

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Not a hazardous substance or mixture.

2.2 GHS Label elements, including precautionary statements

Not a hazardous substance or mixture.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms : Diphenylene oxide

Formula : $C_{12}H_8O$

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Molecular weight	:	168.19 g/mol
CAS-No.	:	132-64-9
EC-No.	:	205-071-3

No components need to be disclosed according to the applicable regulations.

SECTION 4: First aid measures

4.1 Description of first-aid measures

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration.

In case of skin contact
Wash off with soap and plenty of water.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
No data available

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Avoid dust formation. Avoid breathing vapors, mist or gas.
For personal protection see section 8.

6.2 Environmental precautions
No special environmental precautions required.

6.3 Methods and materials for containment and cleaning up
Sweep up and shovel. Keep in suitable, closed containers for disposal.

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6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.
Provide appropriate exhaust ventilation at places where dust is formed.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place.
Storage class (TRGS 510): 11: Combustible Solids

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters
Contains no substances with occupational exposure limit values.

8.2 Exposure controls

Appropriate engineering controls
General industrial hygiene practice.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

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If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
No special environmental precautions required.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: powder, finecrystalline Color: white, beige
b)	Odor	No data available
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point/range: 80 - 82 °C (176 - 180 °F) - lit.
f)	Initial boiling point and boiling range	154 - 155 °C 309 - 311 °F at 27 hPa - lit.
g)	Flash point	130 °C (266 °F) - closed cup
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapor pressure	No data available
l)	Vapor density	No data available
m)	Relative density	1.3 g/cm3 at 20 °C (68 °F)
n)	Water solubility	insoluble
o)	Partition coefficient: n-octanol/water	log Pow: 4.12 - (Lit.), Potential bioaccumulation
p)	Autoignition temperature	No data available

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q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No data available

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides
Other decomposition products - No data available
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
No data available
Inhalation: No data available
Dermal: No data available
No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity

IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

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NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Additional Information
RTECS: Not available

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Hazardous properties cannot be excluded.
Handle in accordance with good industrial hygiene and safety practice.

SECTION 12: Ecological information

12.1 Toxicity
No data available

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
No ecological problems are to be expected when the product is handled and used with due care and attention.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company.

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Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

DOT (US)
UN number: 3077 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Dibenzofuran)
Reportable Quantity (RQ): 100 lbs
Poison Inhalation Hazard: No

IMDG
Not dangerous goods

IATA
Not dangerous goods

SECTION 15: Regulatory information

SARA 302 Components
This material does not contain any components with a section 302 EHS TPQ.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
Dibenzofuran	132-64-9	2007-07-01

SARA 311/312 Hazards
No SARA Hazards

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Dibenzofuran	132-64-9	2007-07-01

SECTION 16: Other information

Further information
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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See

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www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

The branding on the header and/or footer of this document may temporarily not visually match the product purchased as we transition our branding. However, all of the information in the document regarding the product remains unchanged and matches the product ordered. For further information please contact mlsbranding@sial.com.

Version: 6.2 Revision Date: 10/05/2020 Print Date: 08/21/2021

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Material Safety Data Sheet
Ethylbenzene

ACC# 00596

Section 1 - Chemical Product and Company Identification

MSDS Name: Ethylbenzene
Catalog Numbers: AC118080000, AC118080025, AC118080250, AC118080251, AC118085000, 11808-0010, O2751-1
Synonyms: Ethylbenzol; Phenylethane.
Company Identification:
Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410
For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
100-41-4	Ethylbenzene	>99	202-849-4

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear, colorless liquid. Flash Point: 15 deg C.
Warning! Flammable liquid and vapor. Causes eye, skin, and respiratory tract irritation. May be harmful if inhaled. Aspiration hazard if swallowed. Can enter lungs and cause damage. May cause central nervous system depression.
Target Organs: Central nervous system.

Potential Health Effects

Eye: Causes severe eye irritation. Causes redness and pain.
Skin: Causes skin irritation. Prolonged and/or repeated contact may cause irritation and/or dermatitis. May be absorbed through the skin. Causes redness and pain.
Ingestion: May cause irritation of the digestive tract. May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure. Aspiration of material into the lungs may cause chemical pneumonitis, which may be fatal.
Inhalation: Inhalation of high concentrations may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma. Causes respiratory tract irritation. Vapors may cause dizziness or suffocation.
Chronic: Chronic inhalation may cause effects similar to those of acute inhalation.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.
Skin: Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.
Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.
Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Flammable liquid and vapor. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas. This liquid floats on water and may travel to a source of ignition and spread fire. May accumulate static electricity.
Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or appropriate foam.
Flash Point: 15 deg C (59.00 deg F)
Autoignition Temperature: 432 deg C (809.60 deg F)
Explosion Limits, Lower:1.2%
Upper: 6.8%
NFPA Rating: (estimated) Health: 2; Flammability: 3; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Remove all sources of ignition. Provide ventilation. Control runoff and isolate discharged material for proper disposal. Use water spray to cool and disperse vapors and protect personnel.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Keep away from heat, sparks and flame. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. Avoid breathing vapor or mist.
Storage: Keep away from sources of ignition. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs

Ethylbenzene	100 ppm TWA; 125 ppm STEL	100 ppm TWA; 435 mg/m3 TWA 800 ppm IDLH	100 ppm TWA; 435 mg/m3 TWA

OSHA Vacated PELs: Ethylbenzene: 100 ppm TWA; 435 mg/m3 TWA
Personal Protective Equipment
Eyes: Wear chemical splash goggles.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: clear, colorless
Odor: aromatic odor
pH: Not available.
Vapor Pressure: 9.6 mm Hg @ 25 deg C
Vapor Density: 3.7 (air=1)
Evaporation Rate:<1 (butyl acetate=1)
Viscosity: 0.63 mPa s 20 C
Boiling Point: 136 deg C
Freezing/Melting Point:-95 deg C
Decomposition Temperature: Not available.
Solubility: Insoluble.
Specific Gravity/Density:0.86
Molecular Formula:C8H10
Molecular Weight:106.17

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Ignition sources, excess heat.
Incompatibilities with Other Materials: Strong oxidizing agents.
Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 100-41-4: DA0700000
LD50/LC50:
CAS# 100-41-4:
Draize test, rabbit, eye: 500 mg Severe;
Inhalation, mouse: LC50 = 35500 mg/m3/2H;
Inhalation, rat: LC50 = 55000 mg/m3/2H;
Oral, rat: LD50 = 3500 mg/kg;
Oral, rat: LD50 = 3500 mg/kg;
Skin, rabbit: LD50 = 17800 uL/kg;
.
Inhalation rat LC50: 17.2 mg/l/4H from BASF.
Carcinogenicity:
CAS# 100-41-4:

- **ACGIH:** A3 - Confirmed animal carcinogen with unknown relevance to humans
- **California:** carcinogen, initial date 6/11/04
- **NTP:** Not listed.
- **IARC:** Group 2B carcinogen

Epidemiology: No information found
Teratogenicity: No information found
Reproductive Effects: No information found
Mutagenicity: Mutation in mammalian somatic cells(Rodent,mouse) Lymphocyte = 80 mg/L.
Neurotoxicity: No information found
Other Studies:

Section 12 - Ecological Information

Ecotoxicity: Fish: Rainbow trout: LC50 = 14.0 mg/L; 96 Hr.; Static BioassayFish: Fathead Minnow: LC50 = 12.1 mg/L; 96 Hr.; Flow-through BioassayFish: Bluegill/Sunfish: LC50 = 150.0 mg/L; 96 Hr.; Static Bioassay, pH 6.5-7.9, 21-23 degrees CWater flea EC50 = 2.1 mg/L; 48 Hr.; Static BioassayWater flea EC50 = 75.0 mg/L; 48 Hr.; Static Bioassay Shrimp (mysidoposis bahia), LC50=87.6 mg/L/96hr. Sheepshead minnow LC50=275 mg/L/96hr. Fathead minnow LC50=42.3 mg/L/96hr in hard water &48.5 mg/L/96hr in softwater.
Environmental: Experimental data on the bioconcentration of ethylbenzene include a log BCF of 1.9 in goldfish and the log BCF of 0.67 for clams exposed to the water-soluble fraction of crude oil. Using its octanol/water partition coefficient (log Kow= 3.15) and using a recommended regression equation, one can calculate a log BCF in fish of 2.16 indicating that ethylbenzene should not significantly bioconcentrate in aquatic organisms. Ethylbenzene has a moderate adsorption for soil. The measured Koc for silt loam was 164
Physical: The predominant photochemical reaction of ethylbenzene in the atmosphere is with hydroxyl radicals; the tropospheric half-life for this reaction is 5.5 and 24 hr in the summer and winter, actively. Degradation is somewhat faster under photochemical smog situations. Photooxidation products which have been identified include ethylphenol, benzaldehyde, acetophenone and m- and p-ethylnitrobenzene. Ethylbenzene is resistant to hydrolysis. Ethylbenzene does not significantly absorb light above 290 nm in methanol solution.
Other: No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	ETHYLBENZENE	ETHYLBENZENE
Hazard Class:	3	3
UN Number:	UN1175	UN1175
Packing Group:	II	II
Additional Info:		FLASHPOINT 15 C

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 100-41-4 is listed on the TSCA inventory.
Health & Safety Reporting List
CAS# 100-41-4: Effective 6/19/87, Sunset 6/19/97
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
CAS# 100-41-4: 1000 lb final RQ; 454 kg final RQ
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 100-41-4: immediate, delayed, fire.
Section 313
This material contains Ethylbenzene (CAS# 100-41-4, >99%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.
Clean Air Act:
CAS# 100-41-4 is listed as a hazardous air pollutant (HAP).
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
CAS# 100-41-4 is listed as a Hazardous Substance under the CWA. CAS# 100-41-4 is listed as a Priority Pollutant under the Clean Water Act. CAS# 100-41-4 is listed as a Toxic Pollutant under the Clean Water Act.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 100-41-4 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65
The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:
WARNING: This product contains Ethylbenzene, a chemical known to the state of California to cause cancer.
California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives
Hazard Symbols:
XN F
Risk Phrases:
R 11 Highly flammable.
R 20 Harmful by inhalation.

Safety Phrases:
S 16 Keep away from sources of ignition - No smoking.
S 24/25 Avoid contact with skin and eyes.
S 29 Do not empty into drains.

WGK (Water Danger/Protection)
CAS# 100-41-4: 1
Canada - DSL/NDSL
CAS# 100-41-4 is listed on Canada's DSL List.
Canada - WHMIS

This product has a WHMIS classification of B2, D2B, D2A.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 100-41-4 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 4/28/1999
Revision #6 Date: 11/29/2007

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

Material Safety Data Sheet
Fluoranthene, 93%

MSDS# 01667

Section 1 - Chemical Product and Company Identification

MSDS Name:	Fluoranthene, 93%
Catalog Numbers:	AC345980000, AC345980010, AC345982500
Synonyms:	
Company Identification:	Acros Organics BVBA Janssen Pharmaceuticalaan 3a 2440 Geel, Belgium
Company Identification: (USA)	Acros Organics One Reagent Lane Fair Lawn, NJ 07410
For information in the US, call:	800-ACROS-01
For information in Europe, call:	+32 14 57 52 11
Emergency Number, Europe:	+32 14 57 52 99
Emergency Number US:	201-796-7100
CHEMTREC Phone Number, US:	800-424-9300
CHEMTREC Phone Number, Europe:	703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#:	206-44-0
Chemical Name:	Fluoranthene
%:	93%
EINECS#:	205-912-4

Hazard Symbols: XN



Risk Phrases: 22

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Not available Target Organs: None known.

Potential Health Effects

Eye:	May cause eye irritation.
Skin:	May cause skin irritation.
Ingestion:	Harmful if swallowed. May cause irritation of the digestive tract.
Inhalation:	May cause respiratory tract irritation.
Chronic:	

Section 4 - First Aid Measures

Eyes:	Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
Skin:	Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated

clothing and shoes.

Ingestion: Get medical aid. Wash mouth out with water.

Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician:

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

Extinguishing Media: In case of fire, use water, dry chemical, chemical foam, or alcohol-resistant foam.

Autoignition Temperature: Not available

Flash Point: > 100 deg C (> 212.00 deg F)

Explosion Limits: Lower: Not available

Explosion Limits: Upper: Not available

NFPA Rating: Not published

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container.

Section 7 - Handling and Storage

Handling: Avoid breathing dust, mist, or vapor. Avoid contact with skin and eyes.

Storage: Store in a cool, dry place. Store in a tightly closed container.

Section 8 - Exposure Controls, Personal Protection

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Fluoranthene	none listed	none listed	none listed

OSHA Vacated PELs: Fluoranthene: None listed

Engineering Controls:

Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Personal Protective Equipment

Eyes: Not available

Skin: Wear appropriate protective gloves and clothing to prevent skin exposure.

Clothing: Wear appropriate protective clothing to minimize contact with skin.

Respirators: Wear a NIOSH/MSHA or European Standard EN 149 approved full-facepiece airline respirator in the positive pressure mode with emergency escape provisions.

Section 9 - Physical and Chemical Properties

Physical State: Crystalline powder

Color: yellow

Odor: odorless

pH: Not available

Vapor Pressure: Not available

Vapor Density: Not available

Evaporation Rate: Not available

Viscosity: Not available

Boiling Point: 380 - 34.0 deg C @

Freezing/Melting Point: 109.00 - 111
Decomposition Temperature: Not available
Solubility in water: insoluble
Specific Gravity/Density:
Molecular Formula: C16H10
Molecular Weight: 202.07

Section 10 - Stability and Reactivity

Chemical Stability:	Stable under normal temperatures and pressures.
Conditions to Avoid:	Incompatible materials.
Incompatibilities with Other Materials	Not available
Hazardous Decomposition Products	Carbon monoxide, carbon dioxide.
Hazardous Polymerization	Has not been reported.

Section 11 - Toxicological Information

RTECS#: CAS# 206-44-0: LL4025000

LD50/LC50:
RTECS:
CAS# 206-44-0: Oral, rat: LD50 = 2 gm/kg;
Skin, rabbit: LD50 = 3180 mg/kg;
.

Carcinogenicity: Fluoranthene - IARC: Group 3 (not classifiable)

Other: The toxicological properties have not been fully investigated. See actual entry in RTECS for complete information.

Section 12 - Ecological Information

Other: No information available.

Section 13 - Disposal Considerations

Dispose of in a manner consistent with federal, state, and local regulations.

Section 14 - Transport Information

US DOT
Shipping Name: Please contact Fisher Scientific for shipping information
Hazard Class:
UN Number:
Packing Group:
Canada TDG
Shipping Name: Not available
Hazard Class:
UN Number:
Packing Group:

USA RQ: CAS# 206-44-0: 100 lb final RQ; 45.4 kg final RQ

Section 15 - Regulatory Information

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: XN

Risk Phrases:

R 22 Harmful if swallowed.

Safety Phrases:

WGK (Water Danger/Protection)

CAS# 206-44-0: Not available

Canada

CAS# 206-44-0 is listed on Canada's NDSL List

Canadian WHMIS Classifications: Not available

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

CAS# 206-44-0 is listed on Canada's Ingredient Disclosure List

US Federal

TSCA

CAS# 206-44-0 is listed on the TSCA Inventory.

Section 16 - Other Information

MSDS Creation Date: 10/27/1999

Revision #5 Date 7/20/2009

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantibility or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages howsoever arising, even if the company has been advised of the possibility of such damages.

Iron Powder

SECTION 1 : Identification of the substance/mixture and of the supplier

Product name : **Iron Powder**

Manufacturer/Supplier Trade name:

Manufacturer/Supplier Article number: **S25370A**

Recommended uses of the product and uses restrictions on use:

Manufacturer Details:

AquaPhoenix Scientific
9 Barnhart Drive, Hanover, PA 17331

Supplier Details:

Fisher Science Education
15 Jet View Drive, Rochester, NY 14624

Emergency telephone number:

Fisher Science Education Emergency Telephone No.: 800-535-5053

SECTION 2 : Hazards identification

Classification of the substance or mixture:



Flammable
Flammable solids, category 1
Self-heating substances and mixtures, category 1

Flam. Sol. 1
Self-heat. 1
Hazards Not Otherwise Classified - Combustible Dust

Signal word :Danger

Hazard statements:
Flammable solid
Self-heating; may catch fire
Precautionary statements:
If medical advice is needed, have product container or label at hand
Keep out of reach of children
Read label before use
Keep away from heat/sparks/open flames/hot surfaces. No smoking
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/light/equipment
Wear protective gloves/protective clothing/eye protection/face protection
Do not eat, drink or smoke when using this product

Combustible Dust Hazard: :
May form combustible dust concentrations in air (during processing).

Other Non-GHS Classification:

WHMIS

Iron Powder

B4 

D2B 

NFPA/HMIS



NFPA SCALE (0-4)



HMIS RATINGS (0-4)

SECTION 3 : Composition/information on ingredients

Ingredients:		
CAS 7439-89-6	Iron	>97 %
		Percentages are by weight

SECTION 4 : First aid measures

Description of first aid measures

After inhalation: Move exposed individual to fresh air. Loosen clothing as necessary and position individual in a comfortable position.Seek medical advice if discomfort or irritation persists.If breathing difficult, give oxygen.

After skin contact: Wash affected area with soap and water. Rinse/flush exposed skin gently using water for 15-20 minutes. Seek medical advice if discomfort or irritation persists.

After eye contact: Protect unexposed eye. Rinse/flush exposed eye(s) gently using water for 15-20 minutes. Remove contact lens(es) if able to do so during rinsing. Seek medical attention if irritation persists or if concerned.

After swallowing: Rinse mouth thoroughly. Do not induce vomiting. Have exposed individual drink sips of water. Seek medical attention if irritation, discomfort or vomiting persists.

Most important symptoms and effects, both acute and delayed:

Irritation, Nausea,Headache, Shortness of breath.;

Indication of any immediate medical attention and special treatment needed:

If seeking medical attention, provide SDS document to physician.

SECTION 5 : Firefighting measures

Extinguishing media

Suitable extinguishing agents: If in laboratory setting, follow laboratory fire suppression procedures. Use appropriate fire suppression agents for adjacent combustible materials or sources of ignition

For safety reasons unsuitable extinguishing agents:

Special hazards arising from the substance or mixture:

Combustion products may include carbon oxides or other toxic vapors.Thermal decomposition can lead to release of irritating gases and vapors.Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

Advice for firefighters:

Protective equipment: Use NIOSH-approved respiratory protection/breathing apparatus.

Additional information (precautions): Move product containers away from fire or keep cool with water spray as a protective measure, where feasible.Use spark-proof tools and explosion-proof equipment.

SECTION 6 : Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Wear protective equipment. Transfer to a disposal or recovery container.Use spark-proof tools and explosion-proof equipment.Use respiratory protective device against the effects of fumes/dust/aerosol. Keep unprotected persons away. Ensure adequate ventilation.Keep away from ignition sources. Protect from heat.Stop the spill, if possible. Contain spilled material by diking or using inert absorbent.

Environmental precautions:

Prevent from reaching drains, sewer or waterway. Collect contaminated soil for characterization per Section 13

Methods and material for containment and cleaning up:

If in a laboratory setting, follow Chemical Hygiene Plan procedures.Place into properly labeled containers for recovery or disposal. If necessary, use trained response staff/contractor.Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Collect solids in powder form using vacuum with (HEPA filter)

Reference to other sections:

SECTION 7 : Handling and storage

Precautions for safe handling:

Minimize dust generation and accumulation. Wash hands after handling. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Follow good hygiene procedures when handling chemical materials. Use only in well ventilated areas.Avoid contact with eyes, skin, and clothing.

Conditions for safe storage, including any incompatibilities:

Provide ventilation for containers. Avoid storage near extreme heat, ignition sources or open flame. Store away from foodstuffs. Store away from oxidizing agents.Store in cool, dry conditions in well sealed containers. Store with like hazards

SECTION 8 : Exposure controls/personal protection





Control Parameters: , , OSHA PEL TWA (Total Dust) 15 mg/m3 (50 mppcf*)
, , ACGIH TLV TWA (inhalable particles) 10 mg/m3

Appropriate Engineering controls: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use/handling.Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor or dusts (total/respirable) below the applicable workplace exposure limits (Occupational Exposure Limits-OELs) indicated above.Use under a fume hood. It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen deficient environment.Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment).

Respiratory protection: Not required under normal conditions of use. Use suitable respiratory protective device when high concentrations are present. Use suitable respiratory protective device when aerosol or mist is formed. For spills, respiratory protection may be advisable.

Protection of skin: The glove material has to be impermeable and resistant to the product/ the substance/ the preparation being used/handled.Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.

Eye protection: Safety glasses with side shields or goggles.

General hygienic measures: The usual precautionary measures are to be adhered to when handling chemicals. Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Do not inhale gases/fumes/dust/mist/vapor/aerosols. Avoid contact with the eyes and skin.

SECTION 9 : Physical and chemical properties

Appearance (physical state,color):	Black to gray solid	**Explosion limit lower**: **Explosion limit upper**:	Not Determined Not Determined
Odor:	Odorless	**Vapor pressure**:	1 mm Hg @ 1787C
Odor threshold:	Not Determined	**Vapor density**:	Not Determined
pH-value:	Not Determined	**Relative density**:	7.86 @ 20C
Melting/Freezing point:	1535C	**Solubilities**:	Insoluble in water.
Boiling point/Boiling range:	2750C	**Partition coefficient (n-octanol/water)**:	Not Determined
Flash point (closed cup):	Not Determined	**Auto/Self-ignition temperature**:	Not Determined
Evaporation rate:	Not Determined	**Decomposition temperature**:	Not Determined
Flammability (solid,gaseous):	Not Determined	**Viscosity**:	a. Kinematic:Not Determined b. Dynamic: Not Determined
Density: Not Determined **Iron:**Molecular Weight: 55.847			

SECTION 10 : Stability and reactivity

Reactivity:
Chemical stability: Decomposes when heated. Oxidizes when exposed to air.
Possible hazardous reactions:
Conditions to avoid: Store away from oxidizing agents, strong acids or bases.Incompatible materials, moisture, exposure to air, excess heat.
Incompatible materials: Strong acids.Strong bases.
Hazardous decomposition products: Oxides of iron

SECTION 11 : Toxicological information

Acute Toxicity:		
Oral:	30 mg/kg	LD50 orl - rat
Chronic Toxicity: No additional information.		
Corrosion Irritation: No additional information.		
Sensitization:		No additional information.
Single Target Organ (STOT):		No additional information.
Numerical Measures:		No additional information.
Carcinogenicity:		No additional information.
Mutagenicity:		No additional information.
Reproductive Toxicity:		No additional information.

SECTION 12 : Ecological information

Ecotoxicity Persistence and degradability: Readily degradable in the environment.
Bioaccumulative potential:
Mobility in soil:
Other adverse effects:

SECTION 13 : Disposal considerations

Waste disposal recommendations:

Product/containers must not be disposed together with household garbage. Do not allow product to reach sewage system or open water.It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities (US 40CFR262.11). Consult federal state/ provincial and local regulations regarding the proper disposal of waste material that may incorporate some amount of this product.

SECTION 14 : Transport information

UN-Number

3089

UN proper shipping name

METAL POWDERS, FLAMM ABLE, N.O.S.

Transport hazard class(es)



Class:
4.1 Flammable solids, self-reactive substances and solid desensitized explosives

Packing group:II
Environmental hazard:
Transport in bulk:
Special precautions for user:

SECTION 15 : Regulatory information

United States (USA)

SARA Section 311/312 (Specific toxic chemical listings):

None of the ingredients is listed

SARA Section 313 (Specific toxic chemical listings):

None of the ingredients is listed

RCRA (hazardous waste code):

None of the ingredients is listed

TSCA (Toxic Substances Control Act):

All ingredients are listed.

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):

None of the ingredients is listed

Proposition 65 (California):

Chemicals known to cause cancer:

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed

Chemicals known to cause developmental toxicity:

None of the ingredients is listed

Canada

Canadian Domestic Substances List (DSL):

All ingredients are listed.

Canadian NPRI Ingredient Disclosure list (limit 0.1%):

None of the ingredients is listed

Canadian NPRI Ingredient Disclosure list (limit 1%):

None of the ingredients is listed

SECTION 16 : Other information

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.Note:. The responsibility to provide a safe workplace remains with the user.The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct

employees and develop work practice procedures for a safe work environment.The information contained herein is, to the best of our knowledge and belief, accurate.However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material.It is the responsibility of the user to comply with all applicable laws and regulations applicable to this material.

GHS Full Text Phrases:

Abbreviations and acronyms:
IMDG: International Maritime Code for Dangerous Goods
PNEC: Predicted No-Effect Concentration (REACH)
CFR: Code of Federal Regulations (USA)
SARA: Superfund Amendments and Reauthorization Act (USA)
RCRA: Resource Conservation and Recovery Act (USA)
TSCA: Toxic Substances Control Act (USA)
NPRI: National Pollutant Release Inventory (Canada)
DOT: US Department of Transportation
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
WHMIS: Workplace Hazardous Materials Information System (Canada)
DNEL: Derived No-Effect Level (REACH)

Effective date : 01.23.2015
Last updated : 03.19.2015

SAFETY DATA SHEET

Creation Date 16-Apr-2012 **Revision Date** 19-Jan-2018 **Revision Number** 3

1. Identification

Product Name **Cumene**

Cat No. : **AC329730000; AC329730025; AC329730050; AC329735000**

CAS-No 98-82-8
Synonyms Isopropylbenzene

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company

Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 3
Acute oral toxicity	Category 4
Skin Corrosion/Irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Carcinogenicity	Category 2
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system.	
Aspiration Toxicity	Category 1

Label Elements

Signal Word
Danger

Hazard Statements
Flammable liquid and vapor

Harmful if swallowed
Causes skin irritation
Causes eye irritation
Suspected of causing cancer
May cause respiratory irritation
May be fatal if swallowed and enters airways



Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Wear protective gloves/protective clothing/eye protection/face protection
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Response
Call a POISON CENTER or doctor/physician if you feel unwell
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
Take off contaminated clothing and wash before reuse
IF ON SKIN: Wash with plenty of soap and water
If skin irritation occurs: Get medical advice/attention
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
Ingestion
Rinse mouth
Do NOT induce vomiting
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Fire
Fight fire with normal precautions from a reasonable distance
Evacuate area
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Toxic to aquatic life with long lasting effects
WARNING. Cancer - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS-No	Weight %

Cumene	98-82-8	>95

4. First-aid measures

General Advice If symptoms persist, call a physician.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Get medical attention.

Inhalation Remove to fresh air. Get medical attention. If not breathing, give artificial respiration. Risk of serious damage to the lungs (by aspiration).

Ingestion Do NOT induce vomiting. Get medical attention. Call a physician or poison control center immediately. If vomiting occurs naturally, have victim lean forward.

Most important symptoms and effects Difficulty in breathing. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Water spray, carbon dioxide (CO2), dry chemical, alcohol-resistant foam. Water mist may be used to cool closed containers.

Unsuitable Extinguishing Media Do not use a solid water stream as it may scatter and spread fire

Flash Point 31 °C / 87 °F

Method - No information available

Autoignition Temperature 424 °C / 795 °F

Explosion Limits

Upper No data available
Lower No data available
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Flammable. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Containers may explode when heated. Vapors may form explosive mixtures with air.

Hazardous Combustion Products
Carbon monoxide (CO). Carbon dioxide (CO_2).
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
3	2	0	N/A

6. Accidental release measures

Personal Precautions Use personal protective equipment as required. Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges.

Environmental Precautions Do not flush into surface water or sanitary sewer system.

Methods for Containment and Clean Up Keep in suitable, closed containers for disposal. Soak up with inert absorbent material. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Take precautionary measures against static discharges.

7. Handling and storage

Handling Wear personal protective equipment/face protection. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. Take precautionary measures against static discharges. Use spark-proof tools and explosion-proof equipment.

Storage Keep container tightly closed in a dry and well-ventilated place. Keep away from heat, sparks and flame. Flammables area.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Cumene	TWA: 50 ppm	(Vacated) TWA: 50 ppm (Vacated) TWA: 245 mg/m^3 Skin TWA: 50 ppm TWA: 245 mg/m^3	IDLH: 900 ppm TWA: 50 ppm TWA: 245 mg/m^3	TWA: 50 ppm

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: NIOSH - National Institute for Occupational Safety and Health

Engineering Measures Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas. Use explosion-proof electrical/ventilating/lighting/equipment.

Personal Protective Equipment

Eye/face Protection Tight sealing safety goggles. Face protection shield.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	No information available
Odor Threshold	No information available
pH	No information available
Melting Point/Range	-96 °C / -141 °F
Boiling Point/Range	152 - 154 °C / 306 - 309 °F
Flash Point	31 °C / 87 °F
Evaporation Rate	No information available
Flammability (solid,gas)	Not applicable

Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	5.3 hPa @ 20 °C
Vapor Density	No information available
Specific Gravity	0.862
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	424 °C / 795 °F
Decomposition Temperature	No information available
Viscosity	0.79 mPa.s at 20 °C
Molecular Formula	C9 H12
Molecular Weight	120.19

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Excess heat. Incompatible products. Keep away from open flames, hot surfaces and sources of ignition.

Incompatible Materials Strong oxidizing agents

Hazardous Decomposition Products Carbon monoxide (CO), Carbon dioxide (CO_2)

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Cumene	1400 mg/kg (Rat) 2700 mg/kg (Rat)	LD50 = 12300 µL/kg (Rabbit)	LC50 > 3577 ppm (Rat) 6 h LC50 = 39000 mg/m³ (Rat) 4 h

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Irritating to eyes, respiratory system and skin

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Cumene	98-82-8	Group 2B	Reasonably Anticipated	Not listed	X	Not listed

IARC (International Agency for Research on Cancer)

IARC (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
Group 2A - Probably Carcinogenic to Humans
Group 2B - Possibly Carcinogenic to Humans

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Respiratory system
STOT - repeated exposure None known

Aspiration hazard Category 1

Symptoms / effects,both acute and delayed Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

The product contains following substances which are hazardous for the environment. Contains a substance which is:. Very toxic to aquatic organisms.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Cumene	EC50: = 2.6 mg/L, 72h (Pseudokirchneriella subcapitata)	LC50: = 2.7 mg/L, 96h semi-static (Oncorhynchus mykiss) LC50: = 4.8 mg/L, 96h flow-through (Oncorhynchus mykiss) LC50: 6.04 - 6.61 mg/L, 96h flow-through (Pimephales promelas) LC50: = 5.1 mg/L, 96h semi-static (Poecilia reticulata)	EC50 = 0.89 mg/L 5 min EC50 = 1.10 mg/L 15 min EC50 = 1.48 mg/L 30 min EC50 = 172 mg/L 24 h	EC50: 7.9 - 14.1 mg/L, 48h Static (Daphnia magna) EC50: = 0.6 mg/L, 48h (Daphnia magna)

Persistence and Degradability Persistence is unlikely

Bioaccumulation/ Accumulation No information available.

Mobility . Is not likely mobile in the environment due its low water solubility.

Component	log Pow
Cumene	3.7

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Cumene - 98-82-8	U055	-

14. Transport information

DOT

UN-No UN1918
Proper Shipping Name ISOPROPYLBENZENE
Hazard Class 3
Packing Group III

TDG

UN-No UN1918
Proper Shipping Name ISOPROPYLBENZENE
Hazard Class 3
Packing Group III

IATA

UN-No UN1918
Proper Shipping Name ISOPROPYLBENZENE
Hazard Class 3
Packing Group III

IMDG/IMO

UN-No UN1918
Proper Shipping Name ISOPROPYLBENZENE
Hazard Class 3
Packing Group III

15. Regulatory information

United States of America Inventory

Component	CAS-No	TSCA	TSCA Inventory notification - Active/Inactive	TSCA - EPA Regulatory Flags
Cumene	98-82-8	X	ACTIVE	-

Legend:
TSCA - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA 12(b) - Notices of Export Not applicable

International Inventories
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Australia (AICS), China (IECSC), Korea (ECL).

Component	CAS-No	DSL	NDSL	EINECS	PICCS	ENCS	AICS	IECSC	KECL
Cumene	98-82-8	X	-	202-704-5	X	X	X	X	KE-23957

U.S. Federal Regulations

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Cumene	98-82-8	>95	1.0

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act) Not applicable

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Cumene	X		-

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Cumene	5000 lb	-

California Proposition 65 This product contains the following Proposition 65 chemicals.

Component	CAS-No	California Prop. 65	Prop 65 NSRL	Category
Cumene	98-82-8	Carcinogen	-	Carcinogen

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Cumene	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade Serious risk, Grade 3

16. Other information

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 16-Apr-2012
Revision Date 19-Jan-2018
Print Date 19-Jan-2018
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

Material Safety Data Sheet
Magnesium, turnings and ribbons

ACC# 13290

Section 1 - Chemical Product and Company Identification

MSDS Name: Magnesium, turnings and ribbons
Catalog Numbers: AC191080000, AC191080025, AC191085000, S72223D, S72233D, S75532, S75551, S755511, S755512, M11-500, M8-1OZ, M8-212, NC9327500
Synonyms: Magnesium metal (ribbons/turnings)
Company Identification:

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410

For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
7439-95-4	Magnesium	>99	231-104-6

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: silver white solid.
Warning! Flammable solid. Water-reactive. Contact with water liberates extremely flammable gases. May cause eye and skin irritation. May cause respiratory tract irritation. Inhalation of fumes may cause metal-fume fever. Air sensitive.
Target Organs: None.

Potential Health Effects

Eye: Dust may cause mechanical irritation.
Skin: Dust may cause mechanical irritation. May be harmful if absorbed through the skin. Particles embedded in the skin may cause "chemical gas gangrene" with symptoms of persistent lesions, inflammation and gas bubbles under the skin.
Ingestion: May cause irritation of the digestive tract. Low hazard for usual industrial handling.
Inhalation: May cause respiratory tract irritation. Inhalation of fumes may cause metal fume fever, which is characterized by flu-like symptoms with metallic taste, fever, chills, cough, weakness, chest pain, muscle pain and increased white blood cell count. May be harmful if inhaled.
Chronic: No information found.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin: Get medical aid. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Ingestion: If victim is conscious and alert, give 2-4 cupfuls of milk or water. Get medical aid immediately.
Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician: The use of calcium gluconate as antidotal treatment for magnesium over dose should be determined only by qualified medical personnel (Medical Toxicology, 1988).
Antidote: The use of Dimercaprol or BAL (British Anti-Lewisite) as a chelating agent should be determined by qualified medical personnel.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Water reactive. Material will react with water and may release a flammable and/or toxic gas. This material in sufficient quantity and reduced particle size is capable of creating a dust explosion. Flammable solid. May react with acids or moisture to form explosive hydrogen gas.
Extinguishing Media: Use approved class D extinguishing agents or smother with dry sand, clay, or sodium bicarbonate. Do NOT use water, carbon dioxide, or foam.
Flash Point: Not applicable.
Autoignition Temperature: 472.8 deg C (883.04 deg F)
Explosion Limits, Lower: Not available.
Upper: Not available.
NFPA Rating: (estimated) Health: 0; Flammability: 1; Instability: 1

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Scoop up with a nonsparking tool, then place into a suitable container for disposal. Avoid generating dusty conditions. Remove all sources of ignition. Place under an inert atmosphere.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Avoid ingestion and inhalation. Store protected from air. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.
Storage: Keep away from sources of ignition. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Water free area.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Magnesium	none listed	none listed	none listed

OSHA Vacated PELs: Magnesium: No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment
Eyes: Wear chemical splash goggles and face shield.
Skin: Wear impervious gloves.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Solid
Appearance: silver white
Odor: none reported
pH: >7 (water solution)
Vapor Pressure: Negligible.
Vapor Density: Negligible.
Evaporation Rate: Negligible.
Viscosity: Not available.
Boiling Point: 1107.2 deg C
Freezing/Melting Point:650 deg C
Decomposition Temperature: Not available.
Solubility: Insoluble in water.
Specific Gravity/Density:1.74
Molecular Formula: Mg
Molecular Weight:24.3

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures. Air sensitive. Reacts with water.
Conditions to Avoid: Ignition sources, exposure to air, contact with water.
Incompatibilities with Other Materials: Strong oxidizing agents, acids, acid chlorides, chlorinated solvents, halogens.
Hazardous Decomposition Products: Oxides of magnesium.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 7439-95-4: FW6475100
LD50/LC50:
Not available.

Carcinogenicity:
CAS# 7439-95-4: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No data available.
Teratogenicity: No data available.
Reproductive Effects: No data available.
Mutagenicity: No data available.
Neurotoxicity: No data available.
Other Studies:

Section 12 - Ecological Information

Ecotoxicity: No data available. No information available.
Environmental: No information avialable.
Physical: No information available.
Other: None.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	MAGNESIUM	MAGNESIUM
Hazard Class:	4.1	4.1
UN Number:	UN1869	UN1869
Packing Group:	III	III

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 7439-95-4 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
None of the chemicals in this material have an RQ.
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 7439-95-4: immediate, fire, reactive.
Section 313 No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 7439-95-4 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Massachusetts.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

F

Risk Phrases:

R 11 Highly flammable.
R 15 Contact with water liberates extremely flammable gases.

Safety Phrases:

S 7/8 Keep container tightly closed and dry.
S 43A In case of fire, use dry chemical (never use water).

WGK (Water Danger/Protection)

CAS# 7439-95-4: No information available.

Canada - DSL/NDSL

CAS# 7439-95-4 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of B4.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information

MSDS Creation Date: 12/12/1997
Revision #7 Date: 11/05/2007

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

SAFETY DATA SHEET

Creation Date 24-Nov-2010 **Revision Date** 19-Jan-2018 **Revision Number** 3

1. Identification

Product Name **Manganese, powder, -325 mesh**

Cat No. : **AC317440000; AC317440010; AC317442500**

CAS-No 7439-96-5
Synonyms No information available

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company

Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable solids	Category 2
Serious Eye Damage/Eye Irritation	Category 2

Label Elements

Signal Word
Warning

Hazard Statements
Flammable solid
Causes serious eye irritation



Precautionary Statements
Prevention
Wash face, hands and any exposed skin thoroughly after handling
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/equipment
Wear protective gloves/protective clothing/eye protection/face protection
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
Fire
In case of fire: Use CO2, dry chemical, or foam for extinction
Hazards not otherwise classified (HNOC)
None identified

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Manganese	7439-96-5	>95

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention.

Inhalation Remove from exposure, lie down. Remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

Ingestion Clean mouth with water. Get medical attention.

Most important symptoms and effects No information available.

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Dry chemical.

Unsuitable Extinguishing Media No information available

Flash Point No information available
Method - No information available

Autoignition Temperature No information available
Explosion Limits

Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Combustible material.

Hazardous Combustion Products
None known.
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
2	2	0	N/A

6. Accidental release measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment as required.
Environmental Precautions	See Section 12 for additional Ecological Information.
Methods for Containment and Clean Up	Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Sweep up and shovel into suitable containers for disposal.

7. Handling and storage

Handling	Avoid contact with skin and eyes. Do not breathe dust. Use spark-proof tools and explosion-proof equipment. Use only non-sparking tools.
Storage	Keep in a dry, cool and well-ventilated place. Refer product specification and/or product label for specific storage temperature requirement. Keep container tightly closed. Keep away from heat, sparks and flame. Keep under nitrogen.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Manganese	TWA: 0.02 mg/m³ TWA: 0.1 mg/m³	(Vacated) TWA: 1 mg/m³ Ceiling: 5 mg/m³ (Vacated) STEL: 3 mg/m³ (Vacated) Ceiling: 5 mg/m³	IDLH: 500 mg/m³ TWA: 1 mg/m³ STEL: 3 mg/m³	TWA: 0.2 mg/m³ TWA: 1 mg/m³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: NIOSH - National Institute for Occupational Safety and Health

Engineering Measures Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection No protective equipment is needed under normal use conditions.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Powder Solid
Appearance	Dark brown
Odor	No information available
Odor Threshold	No information available
pH	No information available
Melting Point/Range	1260 °C / 2300 °F
Boiling Point/Range	1900 °C / 3452 °F
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	Not applicable
Specific Gravity	No information available
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	Mn
Molecular Weight	54.94

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Moisture sensitive.

Conditions to Avoid Incompatible products. Exposure to moisture.

Incompatible Materials Acids, Bases, Halogens

Hazardous Decomposition Products None under normal use conditions

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Manganese	LD50 = 9 g/kg (Rat)	Not listed	Not listed

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Manganese	7439-96-5	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed No information available

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated. See actual entry in RTECS for complete information.

12. Ecological information

Ecotoxicity
Do not empty into drains.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Manganese	Not listed	LC50: > 3.6 mg/L, 96h semi-static (Oncorhynchus mykiss)	Not listed	Not listed

Persistence and Degradability Insoluble in water

Bioaccumulation/ Accumulation No information available.

Mobility Is not likely mobile in the environment due its low water solubility.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT
UN-No UN3089
Proper Shipping Name Metal powder, flammable, n.o.s.
Technical Name Manganese
Hazard Class 4.1
Packing Group III

TDG
UN-No UN3089
Proper Shipping Name Metal powder, flammable, n.o.s.
Hazard Class 4.1
Packing Group III

IATA

UN-No	UN3089
Proper Shipping Name	Metal powder, flammable, n.o.s.
Hazard Class	4.1
Packing Group	III

IMDG/IMO

UN-No	UN3089
Proper Shipping Name	Metal powder, flammable, n.o.s.
Hazard Class	4.1
Packing Group	III

15. Regulatory information

United States of America Inventory

Component	CAS-No	TSCA	TSCA Inventory notification - Active/Inactive	TSCA - EPA Regulatory Flags
Manganese	7439-96-5	X	ACTIVE	-

Legend:
TSCA - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA 12(b) - Notices of Export Not applicable

International Inventories
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Australia (AICS), China (IECSC), Korea (ECL).

Component	CAS-No	DSL	NDSL	EINECS	PICCS	ENCS	AICS	IECSC	KECL
Manganese	7439-96-5	X	-	231-105-1	X	X	X	X	KE-22999

U.S. Federal Regulations

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Manganese	7439-96-5	>95	1.0

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act) Not applicable

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Manganese	X		-

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA Not applicable

California Proposition 65 This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Manganese	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ):	N
DOT Marine Pollutant	N
DOT Severe Marine Pollutant	N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date	24-Nov-2010
Revision Date	19-Jan-2018
Print Date	19-Jan-2018
Revision Summary	This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

SAFETY DATA SHEET

Revision Date 19-Jan-2018 **Revision Number** 3

1. Identification

Product Name **Naphthalene-d8**

Cat No. : **AC174960000; AC174960010; AC174960050**

Synonyms (2H8)Naphthalene

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company

Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute oral toxicity	Category 4
Acute dermal toxicity	Category 4
Acute Inhalation Toxicity - Dusts and Mists	Category 4
Combustible dust	Yes

Label Elements

Signal Word
Warning

Hazard Statements
May form combustible dust concentrations in air
Harmful if swallowed, in contact with skin or if inhaled



Precautionary Statements
Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Wear protective gloves/protective clothing/eye protection/face protection
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician if you feel unwell
Skin
IF ON SKIN: Wash with plenty of soap and water
Call a POISON CENTER or doctor/physician if you feel unwell
Wash contaminated clothing before reuse
Ingestion
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth
Storage
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
None identified

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
(2H8)Naphthalene	1146-65-2	100

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. In the case of skin irritation or allergic reactions see a physician.

Inhalation Remove from exposure, lie down. Remove to fresh air. If symptoms persist, call a physician. If not breathing, give artificial respiration.

Ingestion Never give anything by mouth to an unconscious person. Drink plenty of water. Call a physician immediately. If possible drink milk afterwards.

Most important symptoms and effects No information available.

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Water mist may be used to cool closed containers. Carbon dioxide (CO_2). Dry chemical.

Unsuitable Extinguishing Media No information available

Flash Point 78 °C / 172.4 °F

Method - No information available

Autoignition Temperature 526.1 °C / 979 °F

Explosion Limits

Upper	5.9%
Lower	0.9%
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Flammable. Dust can form an explosive mixture with air. Combustible material. Fine dust dispersed in air may ignite. Combustible material. Containers may explode when heated.

Hazardous Combustion Products
Carbon monoxide (CO). Carbon dioxide (CO_2).
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
2	1	1	N/A

6. Accidental release measures

Personal Precautions Remove all sources of ignition. Take precautionary measures against static discharges.
Environmental Precautions See Section 12 for additional Ecological Information.

Methods for Containment and Clean Up Sweep up and shovel into suitable containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

7. Handling and storage

Handling Do not get in eyes, on skin, or on clothing. Take precautionary measures against static discharges. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Avoid breathing vapors or mists. Do not ingest. If swallowed then seek immediate medical assistance. Handle product only in closed system or provide appropriate exhaust ventilation. Wash thoroughly after handling. Use spark-proof tools and explosion-proof equipment. Use only non-sparking tools. Use only in well-ventilated areas. Keep away from open flames, hot surfaces and sources of ignition.

Storage Keep in a dry, cool and well-ventilated place. Refer product specification and/or product label for specific storage temperature requirement. Keep away from heat, sparks and flame. Keep containers tightly closed in a dry, cool and well-ventilated place.

8. Exposure controls / personal protection

Exposure Guidelines This product does not contain any hazardous materials with occupational exposure limitsestablished by the region specific regulatory bodies.

Engineering Measures Ensure adequate ventilation, especially in confined areas. Use explosion-proof

electrical/ventilating/lighting/equipment.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Solid
Appearance	White
Odor	Odorless
Odor Threshold	No information available
pH	No information available
Melting Point/Range	81 - 83 °C / 177.8 - 181.4 °F
Boiling Point/Range	No information available
Flash Point	78 °C / 172.4 °F
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	5.9%
Lower	0.9%
Vapor Pressure	0.3 mmHg @ 25 °C
Vapor Density	Not applicable
Specific Gravity	No information available
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	526.1 °C / 979 °F
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	C10 D8
Molecular Weight	136.22

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under recommended storage conditions. Hygroscopic.

Conditions to Avoid Keep away from open flames, hot surfaces and sources of ignition. Incompatible products. Exposure to moist air or water.

Incompatible Materials Strong oxidizing agents

Hazardous Decomposition Products Carbon monoxide (CO), Carbon dioxide (CO_2)

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information
Component Information
Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
(2H8)Naphthalene	1146-65-2	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed No information available

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity
Do not empty into drains.

Persistence and Degradability No information available

Bioaccumulation/ Accumulation No information available.

Mobility No information available.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT Not regulated
TDG Not regulated
IATA
- **UN-No** UN1334
- **Proper Shipping Name** NAPHTHALENE, CRUDE
- **Hazard Class** 4.1
- **Packing Group** III

IMDG/IMO

UN-No	UN1334
Proper Shipping Name	NAPHTHALENE, CRUDE
Hazard Class	4.1
Packing Group	III

15. Regulatory information

United States of America Inventory

Component	CAS-No	TSCA	TSCA Inventory notification - Active/Inactive	TSCA - EPA Regulatory Flags
(2H8)Naphthalene	1146-65-2	-	-	-

Legend:
TSCA - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA 12(b) - Notices of Export Not applicable

International Inventories
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Australia (AICS), China (IECSC), Korea (ECL).

Component	CAS-No	DSL	NDSL	EINECS	PICCS	ENCS	AICS	IECSC	KECL
(2H8)Naphthalene	1146-65-2	-	-	214-552-7	-	-	-	-	-

U.S. Federal Regulations

SARA 313 Not applicable

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act) Not applicable

Clean Air Act Not applicable

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA Not applicable

California Proposition 65 This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations Not applicable

U.S. Department of Transportation

Reportable Quantity (RQ):	N
DOT Marine Pollutant	N
DOT Severe Marine Pollutant	N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By	Regulatory Affairs Thermo Fisher Scientific Email: EMSDS.RA@thermofisher.com
Revision Date	19-Jan-2018
Print Date	19-Jan-2018
Revision Summary	This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

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End of SDS

Nickel Metal Shot,

SECTION 1: Identification of the substance/mixture and of the supplier

Product name: **Nickel Metal Shot,**

Manufacturer/Supplier Trade name:

Manufacturer/Supplier Article number: **S25444A**

Recommended uses of the product and restrictions on use:

Manufacturer Details:

AquaPhoenix Scientific, Inc
9 Barnhart Drive, Hanover, PA 17331
(717) 632-1291

Supplier Details:

Fisher Science Education
6771 Silver Crest Road, Nazareth, PA 18064
(724)517-1954

Emergency telephone number:

Fisher Science Education
Emergency Telephone No.: 800-535-5053

SECTION 2: Hazards identification

Classification of the substance or mixture:



Irritant

Residual powder can cause irritation to eyes and skin sensitization.

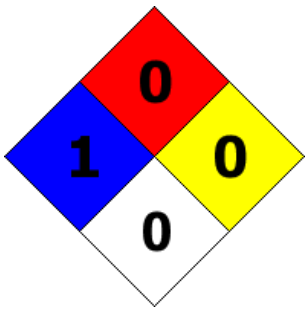
Signal word: Warning

Hazard statements:
Causes eye irritation.

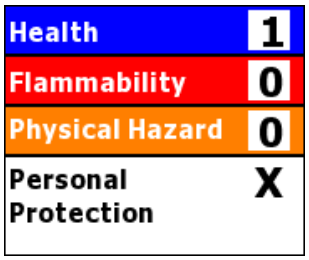
Precautionary statements:
If medical advice is needed, have product container or label at hand.
Do not eat, drink or smoke when using this product.
If on skin: Wash with soap and water.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
Store in a well ventilated place.
Dispose of contents and container as instructed in Section 13.

Other Non-GHS Classification:

WHMIS
None
NFPA/HMIS



NFPA SCALE (0-4)



HMIS RATINGS (0-4)

SECTION 3: Composition/information on ingredients

Ingredients:		
CAS 7440-02-0	Nickel Metal	100 %
		Percentages are by weight

SECTION 4: First aid measures

Description of first aid measures

After inhalation:

If inhaled, remove to fresh air.

After skin contact:

Wash affected areas with soap and water.

After eye contact:

Seek medical attention. Protect unexposed eye. Flush exposed eye gently using water for 15-20 minutes. Remove contact lenses while rinsing.

After swallowing:

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed: None

Indication of any immediate medical attention and special treatment needed:

If seeking medical attention provide SDS document to physician. Physician should treat symptomatically.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing agents:

Use water, dry chemical, chemical foam, carbon dioxide, or alcohol-resistant foam. Use water spray to cool unopened containers.

Unsuitable extinguishing agents:

No information available.

Special hazards arising from the substance or mixture: None

Advice for firefighters:

Protective equipment:

Wear protective eyeware, gloves, and clothing. Refer to Section 8.

Additional information (precautions):

Avoid inhaling gases, fumes, dust, mist, vapor, and aerosols. Avoid contact with skin, eyes, and clothing. Avoid dust generation.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Ensure adequate ventilation. Ensure that air-handling systems are operational.

Environmental precautions: None

Methods and material for containment and cleaning up: None

Reference to other sections: None

SECTION 7: Handling and storage

Precautions for safe handling:

Avoid contact with skin, eyes, and clothing. Do not eat, drink, smoke, or use personal products when handling chemical substances.

Conditions for safe storage, including any incompatibilities:

Provide ventilation for containers.

SECTION 8: Exposure controls/personal protection





Control Parameters:	7440-02-0, Nickel , TWA 1.5 mg/m3 USA. ACGIH. 7440-02-0, Nickel, TWA 1.000000 mg/m3 USA. OSHA. 7440-02-0 , Nickel, TWA 0.015000 mg/m3 USA. NIOSH.
Appropriate Engineering controls:	Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor and mists below the applicable workplace exposure limits (Occupational Exposure Limits-OELs) indicated above.
Respiratory protection:	Not required under normal conditions of use.
Protection of skin:	Select glove material impermeable and resistant to the substance. Select glove material based on rates of diffusion and degradation. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Use proper glove removal technique without touching outer surface. Avoid skin contact with used gloves. Wear protective clothing.
Eye protection:	Wear equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
General hygienic measures:	Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes, and clothing.

SECTION 9: Physical and chemical properties

Appearance (physical state, color):	Gray solid	**Explosion limit lower**: **Explosion limit upper**:	Not Determined Not Determined
Odor:	Odorless	**Vapor pressure at 20°C**:	1 mm Hg @ 1810°C
Odor threshold:	Not Determined	**Vapor density**:	Not Determined
pH-value:	9 - 11 at 20 °C	**Relative density**:	Not Determined

Melting/Freezing point:	1455°C	**Solubilities**:	Insoluble.
Boiling point/Boiling range:	2730°C	**Partition coefficient (n-octanol/water)**:	Not Determined
Flash point (closed cup):	Not Determined	**Auto/Self-ignition temperature**:	87 °C
Evaporation rate:	Not Determined	**Decomposition temperature**:	Not Determined
Flammability (solid, gaseous):	Flammable	**Viscosity**:	a. Kinematic: Not Determined b. Dynamic: Not Determined
Density at 20°C:	Not Determined		

SECTION 10: Stability and reactivity

Reactivity:

Nonreactive under normal conditions.

Chemical stability:

Stable under normal conditions.

Possible hazardous reactions:

None under normal processing.

Conditions to avoid:

Incompatible materials. Dust generation. Excessive heat.

Incompatible materials:

Reactive with oxidizing agents, combustible materials, metals, acids.

Hazardous decomposition products:

Nickel oxides.

SECTION 11: Toxicological information

Acute Toxicity:

Oral:

7440-02-0 LD50 oral-rat: 105mg/kg

Chronic Toxicity: No additional information.
Corrosion Irritation: No additional information.
Sensitization:

Irritating to skin and gastrointestinal tract.

Numerical Measures: No additional information.
Carcinogenicity:

7440-02-0 : IARC: 2B - Group 2B: Possibly carcinogenic to humans (Nickel) NTP: Reasonably anticipated to be a human carcinogen (Nickel)

Mutagenicity: No additional information.
Reproductive Toxicity: No additional information.

SECTION 12: Ecological information

Ecotoxicity: No additional information.
Persistence and degradability: No additional information.

Bioaccumulative potential: No additional information.
Mobility in soil: No additional information.
Other adverse effects: No additional information.

SECTION 13: Disposal considerations

Waste disposal recommendations:

Dispose of empty containers as unused product. It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities (US 40CFR262.11).

SECTION 14: Transport information

US DOT

UN Number:
ADR, ADN, DOT, IMDG, IATA N/A

Limited Quantity Exception: None

Bulk:
RQ (if applicable): None
Proper shipping Name: Not Classified.
Hazard Class: None
Packing Group: Not Classified.
Marine Pollutant (if applicable): No additional information.
Comments: None

Non Bulk:
RQ (if applicable): None
Proper shipping Name: Not Classified.
Hazard Class: None
Packing Group: Not Classified.
Marine Pollutant (if applicable): No additional information.
Comments: None

SECTION 15: Regulatory information

United States (USA)

SARA Section 311/312 (Specific toxic chemical listings):

Chronic

SARA Section 313 (Specific toxic chemical listings):

7440-02-0 Nickel.

RCRA (hazardous waste code):

None of the ingredients are listed.

TSCA (Toxic Substances Control Act):

All ingredients are listed.

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):

7440-02-0 Nickel 100 lbs.

Proposition 65 (California):

Chemicals known to cause cancer:

None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for females:

None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for males:

None of the ingredients are listed.

Chemicals known to cause developmental toxicity:

None of the ingredients are listed.

Canada

Canadian Domestic Substances List (DSL):

All ingredients are listed.

Canadian NPRI Ingredient Disclosure list (limit 0.1%):

7440-02-0 Nickel.

Canadian NPRI Ingredient Disclosure list (limit 1%):

None of the ingredients are listed.

SECTION 16: Other information

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations. Note. The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations applicable to this material.

GHS Full Text Phrases: None

Abbreviations and Acronyms: None

Effective date: 02.11.2015
Last updated: 06.24.2015

SAFETY DATA SHEET

Creation Date 26-Sep-2009 **Revision Date** 24-Jan-2018 **Revision Number** 4

1. Identification

Product Name **Propylbenzene**

Cat No. : **AC418430000; AC418430250; AC418431000; AC418435000**

CAS-No 103-65-1
Synonyms 1-Phenyl Propane.

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company

Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 3
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system.	
Aspiration Toxicity	Category 1

Label Elements

Signal Word
Danger

Hazard Statements
Flammable liquid and vapor
May be fatal if swallowed and enters airways
May cause respiratory irritation



Precautionary Statements
Prevention
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Wear protective gloves/protective clothing/eye protection/face protection
Keep cool
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician if you feel unwell
Skin
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Ingestion
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Do NOT induce vomiting
Fire
In case of fire: Use CO2, dry chemical, or foam for extinction
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Toxic to aquatic life with long lasting effects

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Propyl benzene	103-65-1	>95

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Get medical attention.

Inhalation Remove to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Get medical attention. Risk of serious damage to the lungs (by aspiration).

Ingestion Do NOT induce vomiting. Call a physician or poison control center immediately. If vomiting occurs naturally, have victim lean forward.

Most important symptoms and effects	Difficulty in breathing. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	Water spray. Carbon dioxide (CO_2). Dry chemical. Water mist may be used to cool closed containers. Chemical foam. Water mist may be used to cool closed containers.
Unsuitable Extinguishing Media	No information available
Flash Point	47 °C / 116.6 °F
Method -	No information available
Autoignition Temperature	450 °C / 842 °F

Explosion Limits

Upper	6.00%
Lower	.80%
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Flammable. Vapors may travel to source of ignition and flash back. Containers may explode when heated. Vapors may form explosive mixtures with air.

Hazardous Combustion Products
Carbon monoxide (CO). Carbon dioxide (CO_2).
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
3	2	0	N/A

6. Accidental release measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment as required. Remove all sources of ignition. Take precautionary measures against static discharges.
Environmental Precautions	Do not flush into surface water or sanitary sewer system.
Methods for Containment and Clean Up	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

7. Handling and storage

Handling	Ensure adequate ventilation. Wear personal protective equipment/face protection. Avoid contact with skin and eyes. Do not breathe mist/vapors/spray. Use spark-proof tools and explosion-proof equipment. Use only non-sparking tools. Wash hands before breaks and immediately after handling the product. Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges.
Storage	Keep away from heat, sparks and flame. Flammables area. Keep container tightly closed in a dry and well-ventilated place.

8. Exposure controls / personal protection

Exposure Guidelines This product does not contain any hazardous materials with occupational exposure limitsestablished by the region specific regulatory bodies.

Engineering Measures Ensure adequate ventilation, especially in confined areas. Use explosion-proof electrical/ventilating/lighting/equipment.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection No protective equipment is needed under normal use conditions.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Light yellow
Odor	aromatic
Odor Threshold	No information available
pH	No information available
Melting Point/Range	-99 °C / -146.2 °F
Boiling Point/Range	158 °C / 316.4 °F @ 760 mmHg
Flash Point	47 °C / 116.6 °F
Evaporation Rate	No information available
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	6.00%
Lower	.80%
Vapor Pressure	No information available
Vapor Density	4.1
Specific Gravity	0.860
Solubility	Insoluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	450 °C / 842 °F
Decomposition Temperature	No information available
Viscosity	No information available
Molecular Formula	C9 H12
Molecular Weight	120.19

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability No information available.

Conditions to Avoid Keep away from open flames, hot surfaces and sources of ignition. Incompatible products.

Incompatible Materials Strong oxidizing agents

Hazardous Decomposition Products Carbon monoxide (CO), Carbon dioxide (CO_2)

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information
Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Propyl benzene	LD50 = 6040 mg/kg (Rat)	Not listed	LC50 = 65000 ppm (Rat) 2 h

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation May cause irritation of respiratory tract

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Propyl benzene	103-65-1	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Respiratory system
STOT - repeated exposure None known

Aspiration hazard Category 1

Symptoms / effects,both acute and delayed Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity
Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment.

Persistence and Degradability Persistence is unlikely

Bioaccumulation/ Accumulation No information available.

Mobility Is not likely mobile in the environment due its low water solubility.

Component	log Pow
Propyl benzene	3.68

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No	UN2364
Proper Shipping Name	N-PROPYL BENZENE
Hazard Class	3
Packing Group	III

TDG

UN-No	UN2364
Proper Shipping Name	N-PROPYL BENZENE
Hazard Class	3
Packing Group	III

IATA

UN-No	UN2364
Proper Shipping Name	n-PROPYLBENZENE
Hazard Class	3
Packing Group	III

IMDG/IMO

UN-No	UN2364
Proper Shipping Name	PROPYLBENZENE
Hazard Class	3
Packing Group	III

15. Regulatory information

United States of America Inventory

Component	CAS-No	TSCA	TSCA Inventory notification - Active/Inactive	TSCA - EPA Regulatory Flags
Propyl benzene	103-65-1	X	ACTIVE	-

Legend:
TSCA - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA 12(b) - Notices of Export Not applicable

International Inventories
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Australia (AICS), China (IECSC), Korea (ECL).

Component	CAS-No	DSL	NDSL	EINECS	PICCS	ENCS	AICS	IECSC	KECL
Propyl benzene	103-65-1	X	-	203-132-9	X	X	X	X	KE-29781

U.S. Federal Regulations

SARA 313 Not applicable

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act) Not applicable

Clean Air Act Not applicable

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA Not applicable

California Proposition 65 This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Propyl benzene	X	X	X	-	-

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 26-Sep-2009
Revision Date 24-Jan-2018
Print Date 24-Jan-2018
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH)

1,2,4-trimethylbenzene

Version number: GHS 2.0
Replaces version of: 25.02.2016 (GHS 1)

Revision: 13.10.2017

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Identification of the substance	**1,2,4-trimethylbenzene**
Registration number (REACH)	01-2119472135-42-xxxx
EC number	202-436-9
Index No	-
CAS number	95-63-6
Additional relevant and available information	Pseudocumene

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	industrial use (SCC)

1.3 Details of the supplier of the safety data sheet

DHC Solvent Chemie GmbH
Timmerhellstraße 28
D-45478 Mülheim an der Ruhr
Germany

Telephone: +49 (208) 9940-0
Telefax: +49 (208) 9940-150

Competent person responsible for the safety data sheet	Vanessa Manz
e-mail (competent person)	productsafety@dhc-solvent.de

1.4 Emergency telephone number

Emergency information service

Poison centre	
Country	**Telephone**
United Kingdom	+44 1235 239670

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP)

Hazard class	Category	Hazard class and category	Hazard statement
flammable liquid	Cat. 3	(Flam. Liq. 3)	H226
acute toxicity (inhal.)	Cat. 4	(Acute Tox. 4)	H332
skin corrosion/irritation	Cat. 2	(Skin Irrit. 2)	H315
serious eye damage/eye irritation	Cat. 2	(Eye Irrit. 2)	H319
specific target organ toxicity - single exposure (respiratory tract irritation)	Cat. 3	(STOT SE 3)	H335
aspiration hazard	Cat. 1	(Asp. Tox. 1)	H304
hazardous to the aquatic environment - chronic hazard	Cat. 2	(Aquatic Chronic 2)	H411

Remarks

For full text of H-phrases: see SECTION 16.
Substance with a community indicative occupational exposure limit value.

The most important adverse physicochemical, human health and environmental effects

May be fatal if swallowed and enters airways.
The product is combustible and can be ignited by potential ignition sources.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 (CLP)

Signal word **Danger**

Pictograms

GHS02, GHS07, GHS08, GHS09



Hazard statements

H226	Flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H411	Toxic to aquatic life with long lasting effects.

Precautionary statements

Precautionary statements - prevention

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P243	Take action to prevent static discharges.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statements - response

P301+P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor/physician.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P331	Do NOT induce vomiting.
P370+P378	In case of fire: Use sand, carbon dioxide or powder extinguisher to extinguish.

Precautionary statements - storage

P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P403+P235	Store in a well-ventilated place. Keep cool.

Precautionary statements - disposal

P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3 Other hazards

According to the results of its assessment, this substance is not a PBT or a vPvB.
Vapour heavier than air, may form an explosive mixture in air: it may be ignited at some distance away from the spill resulting in flashbacks. Flowing product can create electrostatic charge, resulting sparks may ignite or cause an explosion.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Name of substance	1,2,4-trimethylbenzene
Registration number (REACH)	01-2119472135-42-xxxx
EC number	202-436-9
CAS number	95-63-6
Index No	-
Molecular formula	C9H12

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General notes

Do not leave affected person unattended. Remove victim out of the danger area. Keep affected person warm, still and covered. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness place person in the recovery position. Never give anything by mouth.

Following inhalation

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. Provide fresh air.

Following skin contact

Wash with plenty of soap and water.

Following eye contact

Irrigate copiously with clean, fresh water, holding the eyelids apart. Remove contact lenses, if present and easy to do. Continue rinsing. In all cases of doubt, or when symptoms persist, seek medical advice.

Following ingestion

Do NOT induce vomiting. Rinse mouth with water (only if the person is conscious).

4.2 Most important symptoms and effects, both acute and delayed

Choking and suffocation risks. Deficits in perception and coordination, reaction time, or sleepiness.

4.3 Indication of any immediate medical attention and special treatment needed

none

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

carbon dioxide (CO2), BC-powder, foam, alcohol resistant foam, water mist

Unsuitable extinguishing media

water jet

5.2 Special hazards arising from the substance or mixture

Solvent vapours are heavier than air and may spread along floors. In case of insufficient ventilation and/or in use, may form flammable/explosive vapour-air mixture. May produce toxic fumes of carbon monoxide if burning.

Hazardous combustion products

carbon monoxide (CO), carbon dioxide (CO2)

5.3 Advice for firefighters

Wear breathing apparatus if exposed to vapours/dust/spray/gases. Co-ordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance. Keep containers cool with water spray.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Remove persons to safety. Avoid inhaling sprayed product. Wearing of suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing. Remove/take off immediately all contaminated clothing and wash it before reuse.

For emergency responders

Wear breathing apparatus if exposed to vapours/dust/spray/gases.

6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it. If substance has entered a water course or sewer, inform the responsible authority.

6.3 Methods and material for containment and cleaning up

Advices on how to contain a spill

Covering of drains.

Advices on how to clean up a spill

Wipe up with absorbent material (e.g. cloth, fleece). Collect spillage (sawdust. , kieselgur (diatomite), sand, universal binder).

Appropriate containment techniques

Use of adsorbent materials. - covering of drains

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Recommendations

• Measures to prevent fire as well as aerosol and dust generation

Use only in well-ventilated areas. Use local and general ventilation. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools.

• Warning

Vapours are heavier than air, spread along floors and form explosive mixtures with air.

Advice on general occupational hygiene

Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities

Managing of associated risks

• Explosive atmospheres

Keep container tightly closed and in a well-ventilated place. Use local and general ventilation. Keep cool. Protect from sunlight.

• Flammability hazards

Keep away from sources of ignition - No smoking. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharge. Protect from sunlight.

Incompatible substances or mixtures

Observe hints for combined storage.

Consideration of other advice

• Ventilation requirements

Keep any substance that emits harmful vapours or gases in a place that allows these to be permanently extracted. Use local and general ventilation. Ground/bond container and receiving equipment.

• Packaging compatibilities

Only packagings which are approved (e.g. acc. to ADR) may be used.
Suitable materials and coatings for container/equipment: Carbon Steel, Stainless Steel, Polyester, Polytetrafluoroethylene (PTFE), Polyvinyl Alcohol (PVA)
Unsuitable Materials and Coatings for container/equipment: Butyl Rubber, Natural Rubber, Ethylene-propylene-diene monomer (EPDM), Polystyrene, Polyethylene, Polyacrylonetrile.

7.3 Specific end use(s)

See attached exposure scenarios

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

National limit values

Occupational exposure limit values (Workplace Exposure Limits)

Country	Name of agent	CAS No	Identifier	TWA [ppm]	TWA [mg/m³]	STEL [ppm]	STEL [mg/m³]	Source
DE	1,2,4-trimethylbenzene	95-63-6	AGW	20	100	40	200	TRGS 900
EU	1,2,4-trimethylbenzene	95-63-6	IOELV	20	100			2017/164/EU
GB	aromatics	95-63-6	WEL		500			EH40/2005
IE	1,2,4-trimethylbenzene	95-63-6	OELV	20	100			S.I. No. 619 of 2001

Notation

STEL	Short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period unless otherwise specified.
TWA	Time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average.

Relevant DNELs/DMELs/PNECs and other threshold levels

• human health values

Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
DNEL	100 mg/m³	human, inhalatory	worker (industry)	acute - local effects
DNEL	100 mg/m³	human, inhalatory	worker (industry)	acute - systemic effects
DNEL	100 mg/m³	human, inhalatory	worker (industry)	chronic - local effects
DNEL	16,171 mg/kg	human, dermal	worker (industry)	chronic - systemic effects
DNEL	100 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
DNEL	29.4 mg/m³	human, inhalatory	consumer (private households)	acute - systemic effects
DNEL	29.4 mg/m³	human, inhalatory	consumer (private households)	chronic - local effects
DNEL	15 mg/kg	human, oral	consumer (private households)	chronic - systemic effects
DNEL	9,512 mg/kg	human, dermal	consumer (private households)	chronic - systemic effects
DNEL	29.4 mg/m³	human, inhalatory	consumer (private households)	chronic - systemic effects

• environmental values

End-point	Threshold level	Organism	Environmental compart-ment	Exposure time
PNEC	0.12 mg/l	aquatic organisms	freshwater	short-term (single instance)
PNEC	0.12 mg/l	aquatic organisms	marine water	short-term (single instance)
PNEC	2.41 mg/l	microorganisms	sewage treatment plant (STP)	short-term (single instance)
PNEC	13.56 mg/kg	benthic organisms	sediments	short-term (single instance)
PNEC	13.56 mg/kg	pelagic organisms	sediments	short-term (single instance)
PNEC	2.34 mg/kg	terrestrial organisms	soil	short-term (single instance)
PNEC	0.12 mg/l	aquatic organisms	water	intermittent release

8.2 Exposure controls

Appropriate engineering controls

Technical measures and the appliance of appropriate working methods take priority over the use of personal protective equipment.
Safety and necessary control measures vary according to exposure conditions. Appropriate measures are:
Open windows, door, to allow sufficient ventilation. If this is not possible employ a fan to increase air exchange (see attached exposure scenarios).

Individual protection measures (personal protective equipment)

Eye/face protection

Use safety goggle with side protection.

Skin protection

• hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374.
Short-term contact with the skin: Disposable gloves
Long-term contact with the skin: Gloves with long cuffs
Check leak-tightness/impermeability prior to use.

- **type of material**

NBR: acrylonitrile-butadiene rubber, FKM: fluoro-elastomer

- **material thickness**

0,40 mm.

- **breakthrough times of the glove material**

>480 minutes (permeation: level 6)

- **other protection measures**

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended. Wash hands thoroughly after handling.
Body protection:
Suitable protective clothing: Flame resistant clothing
Suitable safety shoes: Anti static safety shoes according to EN 345 S3

Respiratory protection

For activities in enclosed areas at elevated temperatures of the substance, local extraction or explosion protected ventilation equipment is recommended. In case this is not sufficient for the intended use, then apply a suitable respiratory protection according to EN 140 type A or better (see exposure scenarios). .

Environmental exposure controls

Do not empty into drains.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	
Physical state	liquid
Colour	colourless
Odour	characteristic
Other physical and chemical parameters	
pH (value)	not determined
Melting point/freezing point	-43.77 °C
Initial boiling point and boiling range	169.4 °C at 101.3 kPa
Flash point	44 °C at 101.3 kPa
Explosive limits	
• lower explosion limit (LEL)	0.9 vol%
• upper explosion limit (UEL)	6.4 vol%
Vapour pressure	0.3 kPa at 25 °C
Density	0.88 $^{g}/_{cm^3}$ at 20 °C
Solubility(ies)	
Water solubility	57 $^{mg}/_{l}$ at 25 °C
Partition coefficient	
n-octanol/water (log KOW)	This information is not available.
Auto-ignition temperature	500 °C
Viscosity	
• kinematic viscosity	0.843 $^{mm^2}/_{s}$ at 20 °C

Explosive properties

in use, may form flammable/explosive vapour-air mixture

Oxidising properties none

9.2 Other information

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

risk of ignition

• if heated

risk of ignition

10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure (see below "Conditions to avoid").

10.3 Possibility of hazardous reactions

No known hazardous reactions.

10.4 Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Hints to prevent fire or explosion

Use only non-sparking tools.

10.5 Incompatible materials

oxidisers

10.6 Hazardous decomposition products

No known hazardous decomposition products.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Classification according to GHS (1272/2008/EC, CLP)

Acute toxicity

Harmful if inhaled.

• Acute toxicity estimate (ATE)

inhalation: vapour 11 $^{mg}/_{l}$/4h

Exposure route	Endpoint	Value	Species
oral	LD50	6,000 $^{mg}/_{kg}$	rat

Skin corrosion/irritation

Causes skin irritation.

Serious eye damage/eye irritation

Causes serious eye irritation.

Respiratory or skin sensitisation

Shall not be classified as a respiratory or skin sensitiser.

Summary of evaluation of the CMR properties

Shall not be classified as germ cell mutagenic, carcinogenic nor as a reproductive toxicant.

Specific target organ toxicity (STOT)

• Specific target organ toxicity - single exposure

May cause respiratory irritation.

• Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard

May be fatal if swallowed and enters airways.

Information on likely routes of exposure

If on skin. If inhaled.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity (acute)

Endpoint	Value	Species	Exposure time
LC50	7.72 $^{mg}/_{l}$	fish	96 h
EC50	2.356 $^{mg}/_{l}$	algae	96 h

Aquatic toxicity (chronic)

May cause long-term adverse effects in the aquatic environment.

12.2 Persistence and degradability

Data are not available.

12.3 Bioaccumulative potential

Data are not available.

BCF 243

12.4 Mobility in soil

Data are not available.

12.5 Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

12.6 Other adverse effects

Data are not available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste treatment-relevant information

Solvent reclamation/regeneration.

Sewage disposal-relevant information

Do not empty into drains.

Waste treatment of containers/packagings

Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately re-conditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

List of wastes

Proposed waste code(s) for the used product:
07 01 04x Other organic solvents, washing liquids and mother liquors

Remarks

Please consider the relevant national or regional provisions. Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities.

SECTION 14: TRANSPORT INFORMATION

14.1	UN number	**1993**
14.2	UN proper shipping name	**FLAMMABLE LIQUID, N.O.S.**
	Technical name	1,2,4-trimethylbenzene
14.3	Transport hazard class(es)	
	Class	3 (flammable liquids)
14.4	Packing group	III (substance presenting low danger)
14.5	Environmental hazards	hazardous to the aquatic environment

14.6 Special precautions for user

Provisions for dangerous goods (ADR) should be complied within the premises.

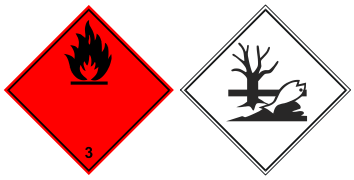
14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code

The cargo is not intended to be carried in bulk.

Information for each of the UN Model Regulations

• Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN)

UN number	1993
Proper shipping name	FLAMMABLE LIQUID, N.O.S.
Technical name (hazardous constituents)	1,2,4-trimethylbenzene
Class	3
Classification code	F1
Packing group	III
Danger label(s)	3 + "fish and tree"

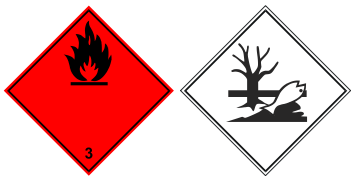


Environmental hazards	yes (hazardous to the aquatic environment)
Special provisions (SP)	274, 601
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L
Transport category (TC)	3
Tunnel restriction code (TRC)	D/E
Hazard identification No	30
Emergency Action Code	3YE

• International Maritime Dangerous Goods Code (IMDG)

UN number	1993
Proper shipping name	FLAMMABLE LIQUID, N.O.S.
Particulars in the shipper's declaration	UN1993, FLAMMABLE LIQUID, N.O.S., (1,2,4-trimethylbenzene), 3, III, 44 °C c.c., MARINE POLLUTANT
Class	3

Marine pollutant	yes (hazardous to the aquatic environment)
Packing group	III
Danger label(s)	3 + "fish and tree"



Special provisions (SP)	223, 274, 955
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L
EmS	F-E, S-E
Stowage category	A

• International Civil Aviation Organization (ICAO-IATA/DGR)

UN number	1993
Proper shipping name	Flammable liquid, n.o.s.
Class	3
Environmental hazards	yes (hazardous to the aquatic environment)
Packing group	III
Danger label(s)	3



Special provisions (SP)	A3
Excepted quantities (EQ)	E1
Limited quantities (LQ)	10 L

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Relevant provisions of the European Union (EU)

• Restrictions according to REACH, Annex XVII

Name of substance	CAS No	Wt%	Type of registration	No
1,2,4-trimethylbenzene		100	1907/2006/EC annex XVII	3
1,2,4-trimethylbenzene		100	1907/2006/EC annex XVII	40

• List of substances subject to authorisation (REACH, Annex XIV)

not listed

• 2012/18/EU (Seveso III)

No	Dangerous substance/hazard categories	Qualifying quantity (tonnes) for the application of lower and upper-tier requirements		Notes
E2	environmental hazards (hazardous to the aquatic environment, cat. 2)	200	500	57)

Notation

57) Hazardous to the Aquatic Environment in category Chronic 2.

• Limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products (2004/42/EC, Deco-Paint Directive)

VOC content 100 %

• Directive on industrial emissions (VOCs, 2010/75/EU)

VOC content 100 %

• Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) - Annex II

not listed

• Regulation 166/2006/EC concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)

not listed

• Directive 2000/60/EC establishing a framework for Community action in the field of water policy (WFD)

not listed

National inventories

Country	Inventory	Status
AU	AICS	substance is listed
CA	DSL	substance is listed
CN	IECSC	substance is listed
EU	ECSI	substance is listed
EU	REACH Reg.	substance is listed
JP	CSCL-ENCS	substance is listed
KR	KECI	substance is listed
MX	INSQ	substance is listed
NZ	NZIoC	substance is listed
PH	PICCS	substance is listed
TR	CICR	substance is listed
TW	TCSI	substance is listed
US	TSCA	substance is listed

Legend

AICS	Australian Inventory of Chemical Substances.
CICR	Chemical Inventory and Control Regulation.
CSCL-ENCS	List of Existing and New Chemical Substances (CSCL-ENCS).
DSL	Domestic Substances List (DSL).
ECSI	EC Substance Inventory (EINECS, ELINCS, NLP).
IECSC	Inventory of Existing Chemical Substances Produced or Imported in China.
INSQ	National Inventory of Chemical Substances.
KECI	Korea Existing Chemicals Inventory.
NZIoC	New Zealand Inventory of Chemicals.
PICCS	Philippine Inventory of Chemicals and Chemical Substances.
REACH Reg.	REACH registered substances.
TCSI	Taiwan Chemical Substance Inventory.
TSCA	Toxic Substance Control Act.

15.2 Chemical Safety Assessment

For this substance a chemical safety assessment has been carried out.

SECTION 16: OTHER INFORMATION

16.1 Indication of changes (revised safety data sheet)

Section	Former entry (text/value)	Actual entry (text/value)
1.3	Competent person responsible for the safety data sheet: Christian Knappe	Competent person responsible for the safety data sheet: Vanessa Manz
1.4		Poison centre: change in the listing (table)
2.2		Precautionary statements - prevention: change in the listing (table)
2.2		Precautionary statements - disposal: change in the listing (table)
6.2	Environmental precautions: Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.	Environmental precautions: Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it. If substance has entered a water course or sewer, inform the responsible authority.
8.1		Occupational exposure limit values (Workplace Exposure Limits): change in the listing (table)
11.1		Information on likely routes of exposure: If on skin. If inhaled.
15.1		• Restrictions according to REACH, Annex XVII: change in the listing (table)
15.1		National inventories: change in the listing (table)
16		Abbreviations and acronyms: change in the listing (table)
16	Key literature references and sources for data: - Regulation (EC) No. 1907/2006 (REACH), amended by 2015/830/EU - Regulation (EC) No. 1272/2008 (CLP, EU GHS) - See attached exposure scenarios http://www.dhc-solvent.de/dhc_sdbreach.html http://www.dhc-solvent.de/en/dhc_sdbreach.html Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN). International Maritime Dangerous Goods Code (IMDG). International Air Transport Association (IATA).	Key literature references and sources for data: - Regulation (EC) No. 1907/2006 (REACH), amended by 2015/830/EU - Regulation (EC) No. 1272/2008 (CLP, EU GHS) - The exposure scenarios are available at www.dhc-solvent.de in the Service section. Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN). International Maritime Dangerous Goods Code (IMDG). International Air Transport Association (IATA).
16		Disclaimer: This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product. The information concerning legal regulations can lay no claim to completeness. In addition to this, other provisions may also apply to the product.

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
2017/164/EU	Comission Directive establishing a fourth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC, and amending Commission Directives 91/322/EEC, 2000/39/EC and 2009/161/EU
ADN	Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)
ADR	Accord européen relatif au transport international des marchandises dangereuses par route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
AGW	Workplace exposure limit

Abbr.	Descriptions of used abbreviations
BCF	Bioconcentration factor
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
CMR	Carcinogenic, Mutagenic or toxic for Reproduction
DGR	Dangerous Goods Regulations (see IATA/DGR)
DMEL	Derived Minimal Effect Level
DNEL	Derived No-Effect Level
EH40/2005	EH40/2005 Workplace exposure limits (http://www.nationalarchives.gov.uk/doc/open-government-licence/)
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EmS	Emergency Schedule
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
index No	The Index number is the identification code given to the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008
IOELV	Indicative occupational exposure limit value
MARPOL	International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant")
NLP	No-Longer Polymer
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
ppm	Parts per million
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)
S.I. No. 619 of 2001	Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001
STEL	Short-term exposure limit
TRGS 900	Arbeitsplatzgrenzwerte (TRGS 900)
TWA	Time-weighted average
VOC	Volatile Organic Compounds
vPvB	Very Persistent and very Bioaccumulative
WEL	Workplace exposure limit

Key literature references and sources for data

- Regulation (EC) No. 1907/2006 (REACH), amended by 2015/830/EU
- Regulation (EC) No. 1272/2008 (CLP, EU GHS)
- The exposure scenarios are available at www.dhc-solvent.de in the Service section.

Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN).
International Maritime Dangerous Goods Code (IMDG).
International Air Transport Association (IATA).

List of relevant phrases (code and full text as stated in chapter 2 and 3)

Code	Text
H226	Flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H411	Toxic to aquatic life with long lasting effects.

Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product. The information concerning legal regulations can lay no claim to completeness. In addition to this, other provisions may also apply to the product.

SAFETY DATA SHEET

Revision Date 18-Jan-2018 **Revision Number** 3

1. Identification

Product Name **Sodium Metal**

Cat No. : **S135-1LB; S206-1LB**

Synonyms Natrium.

Recommended Use Laboratory chemicals.
Uses advised against Not for food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Substances/mixtures which, in contact with water, emit flammable gases	Category 1
Skin Corrosion/irritation	Category 1 B
Serious Eye Damage/Eye Irritation	Category 1

Label Elements

Signal Word
Danger

Hazard Statements
In contact with water releases flammable gases which may ignite spontaneously
Causes severe skin burns and eye damage



Precautionary Statements

Prevention
Do not breathe dust/fume/gas/mist/vapors/spray
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
Keep away from any possible contact with water, because of violent reaction and possible flash fire
Handle under inert gas. Protect from moisture
Response
Immediately call a POISON CENTER or doctor/physician
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
Brush off loose particles from skin. Immerse in cool water/wrap with wet bandages
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Ingestion
IF SWALLOWED: Rinse mouth. DO NOT induce vomiting
Fire
In case of fire: Use CO2, dry chemical, or foam for extinction
Storage
Store locked up
Store in a dry place. Store in a closed container
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Reacts violently with water

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Sodium	7440-23-5	100

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes.

Inhalation Move to fresh air.

Ingestion Do not induce vomiting.

Most important symptoms and effects Causes burns by all exposure routes. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Unsuitable Extinguishing Media No information available

Flash Point
Method - No information available

Autoignition Temperature 115 °C
Explosion Limits

Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products
None known
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
3	3	2	W

6. Accidental release measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment.
Environmental Precautions	See Section 12 for additional ecological information.
Methods for Containment and Clean Up	No information available.

7. Handling and storage

Handling	Ensure adequate ventilation.
Storage	Keep containers tightly closed in a dry, cool and well-ventilated place.

8. Exposure controls / personal protection

Exposure Guidelines	This product does not contain any hazardous materials with occupational exposure limitsestablished by the region specific regulatory bodies.
Engineering Measures	Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure.
Respiratory Protection	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Solid
Appearance	Light grey
Odor	Odorless
Odor Threshold	No information available

pH	
Melting Point/Range	98 °C
Boiling Point/Range	°C
Flash Point	
Evaporation Rate	No information available
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	1 mmHg @ 440 °C
Vapor Density	No information available
Specific Gravity	0.9684 @ 20°C
Solubility	Insoluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	115 °C
Decomposition Temperature	No information available
Viscosity	No information available
Molecular Formula	Na
Molecular Weight	22.99

10. Stability and reactivity

Reactive Hazard Yes

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products.

Incompatible Materials Strong oxidizing agents

Hazardous Decomposition Products None under normal use conditions

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Component Information

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Sodium	7440-23-5	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity
Do not empty into drains.

Persistence and Degradability No information available

Bioaccumulation/ Accumulation No information available.

Mobility No information available.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT
- **UN-No** UN1428
- **Proper Shipping Name** SODIUM
- **Hazard Class** 4.3
- **Packing Group** I

TDG
- **UN-No** UN1428
- **Proper Shipping Name** SODIUM
- **Hazard Class** 4.3
- **Packing Group** I

IATA
- **UN-No** UN1428
- **Proper Shipping Name** SODIUM
- **Hazard Class** 4.3
- **Packing Group** I

IMDG/IMO
- **UN-No** UN1428
- **Proper Shipping Name** SODIUM
- **Hazard Class** 4.3
- **Packing Group** I

15. Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Sodium	X	X	-	231-132-9	-		X	X	X	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.

F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313 Not applicable

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act) Not applicable

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Sodium	X	10 lb	-	-

Clean Air Act Not applicable

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA Not applicable

Component	Hazardous Substances RQs	CERCLA EHS RQs
Sodium	10 lb	-

California Proposition 65 This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations Not applicable

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Sodium	X	X	X	-	X

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Revision Date 18-Jan-2018

Print Date	18-Jan-2018
Revision Summary	This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

SAFETY DATA SHEET

Creation Date 05-Oct-2010 **Revision Date** 19-Jan-2018 **Revision Number** 3

1. Identification

Product Name **Thallium(I) nitrate**

Cat No. : **AC194240000; AC194240100**

CAS-No 10102-45-1
Synonyms Thallous Nitrate

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company

Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Oxidizing solids	Category 3
Acute oral toxicity	Category 2
Acute Inhalation Toxicity - Dusts and Mists	Category 2
Specific target organ toxicity - (repeated exposure)	Category 2
Target Organs - Kidney, Liver.	

Label Elements

Signal Word
Danger

Hazard Statements
May intensify fire; oxidizer
Fatal if inhaled
Fatal if swallowed
May cause damage to organs through prolonged or repeated exposure



Precautionary Statements
Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear respiratory protection
Keep/Store away from clothing/ other combustible materials
Take any precaution to avoid mixing with combustibles
Wear protective gloves/protective clothing/eye protection/face protection
Response
Get medical attention/advice if you feel unwell
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a POISON CENTER or doctor/physician
Ingestion
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Rinse mouth
Fire
In case of fire: Use CO2, dry chemical, or foam for extinction
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Toxic to aquatic life with long lasting effects

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Thallium(I) nitrate	10102-45-1	>95

4. First-aid measures

General Advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Eye Contact In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation Remove to fresh air. If not breathing, give artificial respiration. Immediate medical attention

	is required. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
Ingestion	Do NOT induce vomiting. Call a physician or poison control center immediately.
Most important symptoms and effects	None reasonably foreseeable.
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable Extinguishing Media	No information available
Flash Point	No information available
Method -	No information available
Autoignition Temperature	No information available
Explosion Limits	
Upper	No data available
Lower	No data available
Oxidizing Properties	Oxidizer
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Oxidizer: Contact with combustible/organic material may cause fire. May ignite combustibles (wood paper, oil, clothing, etc.).

Hazardous Combustion Products
Nitrogen oxides (NOx).
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health	Flammability	Instability	Physical hazards
4	1	2	OX

6. Accidental release measures

Personal Precautions	Use personal protective equipment as required. Ensure adequate ventilation. Avoid dust formation. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.
Environmental Precautions	Should not be released into the environment.
Methods for Containment and Clean Up	Sweep up and shovel into suitable containers for disposal. Avoid dust formation.

7. Handling and storage

Handling	Wear personal protective equipment/face protection. Avoid dust formation. Do not get in eyes, on skin, or on clothing. Do not breathe (dust, vapor, mist, gas). Do not ingest. If swallowed then seek immediate medical assistance. Use only under a chemical fume hood.
Storage	Keep containers tightly closed in a dry, cool and well-ventilated place. Do not store near combustible materials. Store under an inert atmosphere. Protect from moisture. Keep

container tightly closed in a dry and well-ventilated place.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Thallium(I) nitrate	TWA: 0.02 mg/m³ Skin	Skin	IDLH: 15 mg/m³ TWA: 0.1 mg/m³	TWA: 0.1 mg/m³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: NIOSH - National Institute for Occupational Safety and Health

Engineering Measures Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Solid
Appearance	White
Odor	Odorless
Odor Threshold	No information available
pH	No information available
Melting Point/Range	206 °C / 402.8 °F
Boiling Point/Range	433 °C / 811.4 °F @ 760 mmHg
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	Not applicable
Specific Gravity	No information available
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	450 °C
Viscosity	Not applicable
Molecular Formula	N O3 Tl
Molecular Weight	266.38

10. Stability and reactivity

Reactive Hazard Yes

Stability Oxidizer: Contact with combustible/organic material may cause fire. Hygroscopic.

Conditions to Avoid Incompatible products. Excess heat. Combustible material. Avoid dust formation. Exposure to moist air or water.

Incompatible Materials Strong oxidizing agents, Reducing Agent, Strong acids, Strong reducing agents, Combustible material

Hazardous Decomposition Products Nitrogen oxides (NOx)

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information
Component Information
Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Thallium(I) nitrate	10102-45-1	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known
STOT - repeated exposure Kidney Liver

Aspiration hazard No information available

Symptoms / effects,both acute and delayed No information available

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity
Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment.

Persistence and Degradability Soluble in water Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its water solubility.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Thallium(I) nitrate - 10102-45-1	U217	-

14. Transport information

DOT

UN-No	UN2727
Proper Shipping Name	THALLIUM NITRATE
Hazard Class	6.1
Subsidiary Hazard Class	5.1
Packing Group	II

TDG

UN-No	UN2727
Proper Shipping Name	THALLIUM NITRATE
Hazard Class	6.1
Subsidiary Hazard Class	5.1
Packing Group	II

IATA

UN-No	UN2727
Proper Shipping Name	THALLIUM NITRATE
Hazard Class	6.1
Subsidiary Hazard Class	5.1
Packing Group	II

IMDG/IMO

UN-No	UN2727
Proper Shipping Name	THALLIUM NITRATE
Hazard Class	6.1
Subsidiary Hazard Class	5.1
Packing Group	II

15. Regulatory information

United States of America Inventory

Component	CAS-No	TSCA	TSCA Inventory notification - Active/Inactive	TSCA - EPA Regulatory Flags
Thallium(I) nitrate	10102-45-1	X	ACTIVE	-

Legend:
TSCA - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA 12(b) - Notices of Export Not applicable

International Inventories
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Australia (AICS), China (IECSC), Korea (ECL).

Component	CAS-No	DSL	NDSL	EINECS	PICCS	ENCS	AICS	IECSC	KECL
Thallium(I) nitrate	10102-45-1	-	X	233-273-1	X	X	X	X	X

U.S. Federal Regulations

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Thallium(I) nitrate	10102-45-1	>95	1.0

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Thallium(I) nitrate	-	-	X	-

Clean Air Act Not applicable

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Thallium(I) nitrate	100 lb	-

California Proposition 65 This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Thallium(I) nitrate	X	X	X	X	-

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 05-Oct-2010
Revision Date 19-Jan-2018
Print Date 19-Jan-2018
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

Material Safety Data Sheet
Toluene

ACC# 23590

Section 1 - Chemical Product and Company Identification

MSDS Name: Toluene
Catalog Numbers: AC167900000, AC167900025, AC176850000, AC176850025, AC176850050, AC176850051, AC176850250, AC176855000, AC177160000, AC177160025, AC177160050, AC177160100, AC177160250, AC268370000, AC268370010, AC326980000, AC326980010, AC326981000, AC326982500, AC332070000, AC332070010, AC332070025, AC364410000, AC364410010, AC364410025, AC364411000, AC364415000, AC379140010, AC379140025, AC386760000, AC386760050, AC421160000, AC421160010, AC421160040, AC421170000, AC424550000, AC424550250, AC610590190, AC610590500, AC610591150, AC610592000, AC610790190, AC610790500, AC610791150, AC610792000, 16790-0010, 17685-0010, 17716-0010, 26837-0025, 42117-0040, 42117-5000, 42455-0010, 42455-5000, 61011-0040, 61046-0010, 61046-1000, 61095-1000, BP2625100, S80229HPLC, T288-1, T288RS-19, T290-1, T290-1LC, T290-4, T290N-219, T290RS-19, T290RS-200, T290RS-28, T290SK-1, T290SK-4, T290SS-115, T290SS-200, T290SS-28, T290SS-50, T291-4, T291-4LC, T291RS-200, T291SK-4, T291SK4, T291SS19, T313-4, T313SK-4, T323-20, T323-4, T324-1, T324-20, T324-200, T324-200LC, T324-20LC, T324-4, T324-500, T324CU1300, T324FB-115, T324FB-19, T324FB-200, T324FB-50, T324J-500, T324POP-200, T324POPB-200, T324RB-115, T324RB-19, T324RB-200, T324RS-115, T324RS-19, T324RS-200, T324RS-28, T324RS-50, T324S-4, T324SK-4, T324SS-115, T324SS-200, T324SS-28, T324SS-50, T326F-1GAL, T326P-4, T326S-20, T326S20LC, T330-4
Synonyms: Methylbenzene; Methylbenzol; Phenylmethane; Toluol.
Company Identification:

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410

For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
108-88-3	Toluene	>99	203-625-9

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: colorless liquid. Flash Point: 4 deg C.
Warning! **Flammable liquid and vapor.** Causes eye, skin, and respiratory tract irritation. Breathing vapors may cause drowsiness and dizziness. May be absorbed through intact skin. Aspiration hazard if swallowed. Can enter lungs and cause damage. Possible risk of harm to the unborn child. May cause central nervous system depression. May cause liver and kidney damage.
Target Organs: Kidneys, central nervous system, liver, respiratory system, eyes, skin.

Potential Health Effects

Eye: Causes eye irritation. Vapors may cause eye irritation.
Skin: Causes skin irritation. May be absorbed through the skin. Repeated or prolonged exposure may cause

drying and cracking of the skin. Not expected to cause an allergic skin reaction.
Ingestion: May cause effects similar to those for inhalation exposure. Aspiration of material into the lungs may cause chemical pneumonitis, which may be fatal. May cause central nervous system depression.
Inhalation: Causes respiratory tract irritation. Inhalation of high concentrations (>200 ppm) of toluene are clearly associated with CNS encephalopathy, headache, depression, lassitude (weakness, exhaustion), impaired coordination, transient memory loss, and impaired reaction time.
Chronic: Prolonged or repeated skin contact may cause defatting and dermatitis. Repeated exposure in combination with constant, loud noise can produce hearing loss and dizziness. Chronic hydrocarbon abuse (for example, sniffing glue or light hydrocarbons such as contained in this material) has been associated with irregular heart rhythms and potential cardiac arrest. Toluene abuse has been linked with kidney disease, as evidenced by blood, protein, & pus in the urine, accompanied by elevated serum creatinine, decreased urinary output, & metabolic & renal tubular acidosis. Although kidney toxicity has not been common in cases of occupational toluene exposure, there has been at least one report of renal toxicity following a 40-year occupational toluene exposure. Toluene does not cause the severe injury to the bone marrow that is characteristic of benzene poisoning. Intentional abuse of toluene vapors has been linked to damage of the brain, liver, kidney and to death. Repeated inhalation exposure of toluene to animals causes histological changes in the brain, degeneration of the heart tissue, and possible immune

Section 4 - First Aid Measures

Eyes: In case of contact, immediately flush eyes with plenty of water for a t least 15 minutes. Get medical aid.
Skin: In case of contact, flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse.
Ingestion: Potential for aspiration if swallowed. Get medical aid immediately. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, have victim lean forward.
Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician: Causes cardiac sensitization to endogenous catelcholamines which may lead to cardiac arrhythmias. Do NOT use adrenergic agents such as epinephrine or pseudoepinephrine.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Water runoff can cause environmental damage. Dike and collect water used to fight fire. Use water spray to keep fire-exposed containers cool. Water may be ineffective. Material is lighter than water and a fire may be spread by the use of water. Flammable liquid and vapor. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas. This liquid floats on water and may travel to a source of ignition and spread fire. May accumulate static electricity.
Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or appropriate foam. Solid streams of water may be ineffective and spread material.
Flash Point: 4 deg C (39.20 deg F)
Autoignition Temperature: 480 deg C (896.00 deg F)
Explosion Limits, Lower:1.1 vol%
Upper: 7.1 vol%
NFPA Rating: (estimated) Health: 2; Flammability: 3; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Remove all sources of ignition. Provide ventilation. Use only non-sparking tools and equipment.

Control runoff and isolate discharged material for proper disposal. Use water spray to cool and disperse vapors and protect personnel.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. Use only with adequate ventilation. Keep away from heat, sparks and flame. Avoid breathing vapor or mist.
Storage: Keep away from sources of ignition. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Separate from oxidizing materials.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits. Ventilation fans and other electrical service must be non-sparking and have an explosion-proof design.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Toluene	20 ppm TWA	100 ppm TWA; 375 mg/m3 TWA 500 ppm IDLH	200 ppm TWA; 300 ppm Ceiling

OSHA Vacated PELs: Toluene: 100 ppm TWA; 375 mg/m3 TWA
Personal Protective Equipment
Eyes: Wear chemical splash goggles.
Skin: Wear appropriate gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: colorless
Odor: sweetish odor - pleasant odor - benzene-like
pH: Not applicable.
Vapor Pressure: 28.4 mm Hg @ 25 deg C
Vapor Density: 3.1 (Air=1)
Evaporation Rate:2.4 (Butyl acetate=1)
Viscosity: 0.59 cps @ 20 deg C
Boiling Point: 110.6 deg C
Freezing/Melting Point:-95 deg C
Decomposition Temperature: Not available.
Solubility: Insoluble.
Specific Gravity/Density:0.86 (Water=1)
Molecular Formula:C6H5CH3
Molecular Weight:92.14

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Ignition sources, excess heat, confined spaces.
Incompatibilities with Other Materials: Strong oxidizing agents, nitric acid, sulfuric acid.
Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 108-88-3: XS5250000
LD50/LC50:
CAS# 108-88-3:
Draize test, rabbit, eye: 870 ug Mild;
Draize test, rabbit, eye: 2 mg/24H Severe;
Draize test, rabbit, skin: 435 mg Mild;
Draize test, rabbit, skin: 500 mg Moderate;
Draize test, rabbit, skin: 20 mg/24H Moderate;
Inhalation, mouse: LC50 = 400 ppm/24H;
Inhalation, mouse: LC50 = 30000 mg/m3/2H;
Inhalation, mouse: LC50 = 19900 mg/m3/7H;
Inhalation, mouse: LC50 = 10000 mg/m3;
Inhalation, rat: LC50 = 49 gm/m3/4H;
Oral, rat: LD50 = 636 mg/kg;
Skin, rabbit: LD50 = 14100
Carcinogenicity:
CAS# 108-88-3: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information available.
Teratogenicity: In an epidemiologic study of toluene and pregnancy, occupational exposures to toluene were said to be associated with an increased incidence of renal, urinary, gastrointestinal, and cardiac anomalies.Fetotoxicity (reduced fetal weight), behavioural effects (effects on learning and memory) and hearing loss (in males) were observed in the offspring of rats exposed by inhalation to toluene, in the absence of maternal toxicity.
Reproductive Effects: Many reports of reproductive effects of toluene abuse or heavy occupational exposure are confounded by mixed solvent exposure or fetal alcohol syndrome. Women exposed to toluene in lab work had a 4.7-fold increased risk of spontaneous abortions.
Mutagenicity: No information available.
Neurotoxicity: No information available.
Other Studies:

Section 12 - Ecological Information

Ecotoxicity: No data available. Bluegill LC50=17 mg/L/24H Shrimp LC50=4.3 ppm/96HFathead minnow LC50=36.2 mg/L/96HSunfish (fresh water) TLm=1180 mg/L/96H
Environmental: From soil, substance evaporates and is microbially biodegraded. In water, substance volatilizes and biodegrades.
Physical: Photochemically produced hydroxyl radicals degrade substance.
Other: No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series:
CAS# 108-88-3: waste number U220.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	TOLUENE	TOLUENE
Hazard Class:	3	3
UN Number:	UN1294	UN1294
Packing Group:	II	II
Additional Info:		FLASHPOINT 4 C

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 108-88-3 is listed on the TSCA inventory.
Health & Safety Reporting List
CAS# 108-88-3: Effective 10/4/82, Sunset 10/4/92
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
CAS# 108-88-3: 1000 lb final RQ; 454 kg final RQ
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 108-88-3: immediate, fire.
Section 313
This material contains Toluene (CAS# 108-88-3, >99%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.
Clean Air Act:
CAS# 108-88-3 is listed as a hazardous air pollutant (HAP).
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
CAS# 108-88-3 is listed as a Hazardous Substance under the CWA. CAS# 108-88-3 is listed as a Priority Pollutant under the Clean Water Act. CAS# 108-88-3 is listed as a Toxic Pollutant under the Clean Water Act.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 108-88-3 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65

WARNING: This product contains Toluene, a chemical known to the state of California to cause developmental reproductive toxicity.
California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

XN F

Risk Phrases:

R 11 Highly flammable.
R 38 Irritating to skin.
R 48/20 Harmful : danger of serious damage to health by prolonged exposure through inhalation.
R 63 Possible risk of harm to the unborn child.
R 65 Harmful: may cause lung damage if swallowed.
R 67 Vapours may cause drowsiness and dizziness.

Safety Phrases:

S 36/37 Wear suitable protective clothing and gloves.
S 46 If swallowed, seek medical advice immediately and show this con tainer or label.
S 62 If swallowed, do not induce vomiting: seek medical advice immed iately and show this container or label.

WGK (Water Danger/Protection)

CAS# 108-88-3: 2

Canada - DSL/NDSL

CAS# 108-88-3 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of B2, D2A, D2B.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 108-88-3 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 6/01/1999
Revision #10 Date: 2/13/2008

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

SAFETY DATA SHEET

Creation Date 15-Jun-2010 **Revision Date** 31-Jul-2019 **Revision Number** 7

1. Identification

Product Name **o-Xylene**

Cat No. : **O5081-4; O5081-4LC; O5081-500; O5081FB-200; DO5081-500**

CAS-No 95-47-6
Synonyms 1,2-Dimethylbenzene (Certified)

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
CHEMTREC®, Inside the USA:
800-424-9300
CHEMTREC®, Outside the USA:
001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 3
Acute dermal toxicity	Category 4
Acute Inhalation Toxicity - Vapors	Category 4
Skin Corrosion/irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system, Central nervous system (CNS).	
Specific target organ toxicity - (repeated exposure)	Category 2
Target Organs - Liver.	
Aspiration Toxicity	Category 1

Label Elements

Signal Word
Danger

Hazard Statements
Flammable liquid and vapor
May be fatal if swallowed and enters airways
Harmful in contact with skin
Causes skin irritation
Causes serious eye irritation
Harmful if inhaled
May cause respiratory irritation
May cause drowsiness or dizziness
May cause damage to organs through prolonged or repeated exposure



Precautionary Statements
Prevention
Wear protective gloves/protective clothing/eye protection/face protection
Use only outdoors or in a well-ventilated area
Wash face, hands and any exposed skin thoroughly after handling
Do not breathe dust/fume/gas/mist/vapors/spray
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Keep cool
Response
Get medical attention/advice if you feel unwell
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician if you feel unwell
Skin
Call a POISON CENTER or doctor/physician if you feel unwell
If skin irritation occurs: Get medical advice/attention
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
Ingestion
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Do NOT induce vomiting
Fire
In case of fire: Use CO2, dry chemical, or foam for extinction
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Harmful to aquatic life with long lasting effects

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
o-Xylene	95-47-6	>95

4. First-aid measures

General Advice If symptoms persist, call a physician.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.

Inhalation Move to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur. Risk of serious damage to the lungs.

Ingestion Clean mouth with water and drink afterwards plenty of water. Do not induce vomiting. Call a physician or Poison Control Center immediately. If vomiting occurs naturally, have victim lean forward.

Most important symptoms and effects Breathing difficulties. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Cool closed containers exposed to fire with water spray.

Unsuitable Extinguishing Media Do not use a solid water stream as it may scatter and spread fire

Flash Point 31 °C / 87.8 °F

Method - No information available

Autoignition Temperature 465 °C / 869 °F

Explosion Limits

Upper 6.7 vol %

Lower 0.9 vol %

Sensitivity to Mechanical Impact No information available

Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical

Flammable. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back.

Hazardous Combustion Products

Carbon monoxide (CO) Carbon dioxide (CO_2)

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
3	3	0	N/A

6. Accidental release measures

Personal Precautions Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges.

Environmental Precautions Should not be released into the environment. See Section 12 for additional ecological information. Avoid release to the environment. Collect spillage. Do not flush into surface water or sanitary sewer system.

Methods for Containment and Clean Up Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

7. Handling and storage

Handling Wear personal protective equipment. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. Ensure adequate ventilation. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. Take precautionary measures against static discharges.

Storage Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition. Flammables area.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
o-Xylene	TWA: 100 ppm STEL: 150 ppm		IDLH: 900 ppm TWA: 100 ppm TWA: 435 mg/m^3 STEL: 150 ppm STEL: 655 mg/m^3	TWA: 100 ppm STEL: 150 ppm

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas. Use explosion-proof electrical/ventilating/lighting/equipment.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Long sleeved clothing.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	aromatic
Odor Threshold	No information available

pH	Not applicable
Melting Point/Range	-25 °C / -13 °F
Boiling Point/Range	143 - 145 °C / 289.4 - 293 °F
Flash Point	31 °C / 87.8 °F
Evaporation Rate	0.7
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	6.7 vol %
Lower	0.9 vol %
Vapor Pressure	882 Pa @ 25 °C
Vapor Density	3.7
Specific Gravity	0.884
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	465 °C / 869 °F
Decomposition Temperature	No information available
Viscosity	No information available
Molecular Formula	C8 H10
Molecular Weight	106.17

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products. Excess heat. Keep away from open flames, hot surfaces and sources of ignition.

Incompatible Materials Strong oxidizing agents, Strong acids

Hazardous Decomposition Products Carbon monoxide (CO), Carbon dioxide (CO_2)

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
o-Xylene	LD50 = 3608 mg/kg (Rat)	14100 mg/kg (Rabbit)	LC50 = 4330 ppm (Rat) 6 h

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Irritating to eyes and skin

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
o-Xylene	95-47-6	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Respiratory system Central nervous system (CNS)
STOT - repeated exposure Liver

Aspiration hazard Category 1

Symptoms / effects,both acute and delayed Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Do not empty into drains. The product contains following substances which are hazardous for the environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
o-Xylene	EC50: = 4.2 mg/L, 192h (Pseudokirchneriella subcapitata) EC50: = 4.7 mg/L, 72h static (Pseudokirchneriella subcapitata)	LC50: 16.1 mg/L/96h (Lepomis macrochirus) LC50: 13 mg/L/24h (Carassius auratus)	EC50 = 0.0084 mg/L 24 h	EC50: 2.61 - 5.59 mg/L, 48h Flow through (Daphnia magna) EC50: 0.78 - 2.51 mg/L, 48h Static (Daphnia magna) EC50: = 3.2 mg/L, 48h (Daphnia magna)

Persistence and Degradability Insoluble in water Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its volatility.

Component	log Pow
o-Xylene	3.12

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No UN1307
Proper Shipping Name XYLENES
Hazard Class 3
Packing Group III

TDG

UN-No UN1307
Proper Shipping Name XYLENES
Hazard Class 3
Packing Group III

IATA

UN-No UN1307
Proper Shipping Name Xylenes
Hazard Class 3

Packing Group III

IMDG/IMO

UN-No UN1307
Proper Shipping Name Xylenes
Hazard Class 3
Packing Group III

15. Regulatory information

United States of America Inventory

Component	CAS-No	TSCA	TSCA Inventory notification - Active/Inactive	TSCA - EPA Regulatory Flags
o-Xylene	95-47-6	X	ACTIVE	-

Legend:
TSCA - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA 12(b) - Notices of Export Not applicable

International Inventories
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Australia (AICS), China (IECSC), Korea (ECL).

Component	CAS-No	DSL	NDSL	EINECS	PICCS	ENCS	AICS	IECSC	KECL
o-Xylene	95-47-6	X	-	202-422-2	X	X	X	X	KE-35429

U.S. Federal Regulations

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
o-Xylene	95-47-6	>95	1.0

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
o-Xylene	X	-	-	-

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
o-Xylene	X		-

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
o-Xylene	1000 lb	-

California Proposition 65 This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island

o-Xylene	X	X	X	X	-

U.S. Department of Transportation
Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 15-Jun-2010
Revision Date 31-Jul-2019
Print Date 31-Jul-2019
Revision Summary SDS sections updated. 11. 16.

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

SAFETY DATA SHEET

Version 8.1
Revision Date 10/21/2020
Print Date 09/14/2021

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : 4,4'-DDD

Product Number : 49009
Brand : Supelco
CAS-No. : 72-54-8

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 3), H301
Acute toxicity, Dermal (Category 4), H312
Carcinogenicity (Category 2), H351
Short-term (acute) aquatic hazard (Category 1), H400
Long-term (chronic) aquatic hazard (Category 1), H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word Danger

The life science business of Merck KGaA, Darmstadt, Germany
operates as MilliporeSigma in the US and Canada

Hazard statement(s)

H301	Toxic if swallowed.
H312	Harmful in contact with skin.
H351	Suspected of causing cancer.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing.
P281	Use personal protective equipment as required.
P301 + P310 + P330	IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
P302 + P352 + P312	IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or doctor/ physician if you feel unwell.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P363	Wash contaminated clothing before reuse.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms	:	1,1-Dichloro-2,2-bis(4-chlorophenyl)ethane
Formula	:	$C_{14}H_{10}Cl_4$
Molecular weight	:	320.04 g/mol
CAS-No.	:	72-54-8
EC-No.	:	200-783-0

Component	Classification	Concentration
2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane		
	Acute Tox. 3; Acute Tox. 4; Carc. 2; Aquatic Acute 1; Aquatic Chronic 1; H301, H312, H351, H400, H410 M-Factor - Aquatic Acute: 100	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

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SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Consult a physician. Show this material safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides, Hydrogen chloride gas

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
No data available

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

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6.3 Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols.Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.
Provide appropriate exhaust ventilation at places where dust is formed.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place.
Storage class (TRGS 510): 6.1D: Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters
Contains no substances with occupational exposure limit values.

8.2 Exposure controls

Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

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Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: solid
b)	Odor	No data available
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	94.0 - 96.0 °C (201.2 - 204.8 °F)
f)	Initial boiling point and boiling range	193.0 °C 379.4 °F at 1.3 hPa
g)	Flash point	()No data available
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapor pressure	< 0.000 hPa at 25.0 °C (77.0 °F)
l)	Vapor density	No data available
m)	Relative density	1.38 g/cm3
n)	Water solubility	No data available
o)	Partition coefficient: n-octanol/water	log Pow: 6.02
p)	Autoignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information
No data available

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SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No data available

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
Other decomposition products - No data available
Hazardous decomposition products formed under fire conditions. - Carbon oxides, Hydrogen chloride gas
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Hamster - > 5,000 mg/kg
TDLo Oral - Human - 428.5 mg/kg
Remarks: Endocrine:Adrenal cortex hypoplasia.
TDLo Oral - Rat - 6,000 mg/kg
Remarks: Cardiac:Other changes. Gastrointestinal:Other changes. Kidney, Ureter, Bladder:Changes in both tubules and glomeruli.
TDLo Oral - Rat - 14 mg/kg
Remarks: Liver:Changes in liver weight. Endocrine:Estrogenic. Musculoskeletal:Other changes.
TDLo Oral - Rat - 2,100 mg/kg
Remarks: Behavioral:Altered sleep time (including change in righting reflex).
Inhalation: No data available
LD50 Dermal - Rabbit - 1,200 mg/kg
Remarks: Behavioral:Excitement. Behavioral:Convulsions or effect on seizure threshold.
Skin irritation
No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitization
No data available
No data available

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Germ cell mutagenicity
No data available

Carcinogenicity
This product is or contains a component that has been reported to be possibly carcinogenic based on its IARC, ACGIH, NTP, or EPA classification.
Limited evidence of carcinogenicity in animal studies

IARC:	2A - Group 2A: Probably carcinogenic to humans (2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane)
ACGIH:	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP:	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA:	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Additional Information
RTECS: KI0700000

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	LC50 - other fish - 1.18 - 9 mg/l - 96.0 h
	LC50 - Lepomis macrochirus (Bluegill) - 0.04 - 0.05 mg/l - 96.0 h
	LC50 - Oncorhynchus mykiss (rainbow trout) - 0.06 - 0.09 mg/l - 96.0 h
	LC50 - Pimephales promelas (fathead minnow) - 3.47 - 5.58 mg/l - 96.0 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia pulex (Water flea) - 0.01 mg/l - 48 h

12.2 Persistence and degradability
No data available

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12.3 Bioaccumulative potential
Indication of bioaccumulation.

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

DOT (US)
UN number: 2811 Class: 6.1 Packing group: III
Proper shipping name: Toxic solids, organic, n.o.s. (2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane)
Reportable Quantity (RQ): 1 lbs
Poison Inhalation Hazard: No

IMDG
UN number: 2811 Class: 6.1 Packing group: III EMS-No: F-A, S-A
Proper shipping name: TOXIC SOLID, ORGANIC, N.O.S. (2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane)
Marine pollutant : yes

IATA
UN number: 2811 Class: 6.1 Packing group: III
Proper shipping name: Toxic solid, organic, n.o.s. (2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane)

SECTION 15: Regulatory information

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

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SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane	72-54-8	1993-02-16

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane	72-54-8	1993-02-16

New Jersey Right To Know Components

	CAS-No.	Revision Date
2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane	72-54-8	1993-02-16

California Prop. 65 Components

	CAS-No.	Revision Date
WARNING! This product contains a chemical known in the State of California to cause cancer.2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane	72-54-8	2007-09-28

SECTION 16: Other information

Further information
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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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Version: 8.1 Revision Date: 10/21/2020 Print Date: 09/14/2021

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SAFETY DATA SHEET

Version 6.2
Revision Date 04/18/2021
Print Date 09/11/2021

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : 4,4'-DDE

Product Number : 35487
Brand : Sigma-Aldrich
CAS-No. : 72-55-9

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 3), H301
Carcinogenicity (Category 2), H351
Specific target organ toxicity - repeated exposure, Oral (Category 1), H372
Short-term (acute) aquatic hazard (Category 1), H400
Long-term (chronic) aquatic hazard (Category 1), H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word Danger

The life science business of Merck KGaA, Darmstadt, Germany
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Hazard statement(s)

H301	Toxic if swallowed.
H351	Suspected of causing cancer.
H372	Causes damage to organs through prolonged or repeated exposure if swallowed.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P310 + P330	IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms	:	1,1-Dichloro-2,2-bis(4-chlorophenyl)ethene
Formula	:	$C_{14}H_8Cl_4$
Molecular weight	:	318.03 g/mol
CAS-No.	:	72-55-9
EC-No.	:	200-784-6

Component	Classification	Concentration
2,2-bis(p-Chlorophenyl)-1,1-dichloroethylene		
	Acute Tox. 3; Carc. 2; STOT RE 1; Aquatic Acute 1; Aquatic Chronic 1; H301, H351, H372, H400, H410 M-Factor - Aquatic Acute: 100	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

The life science business of Merck KGaA, Darmstadt, Germany
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SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Consult a physician. Show this material safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides
Hydrogen chloride gas
Combustible.

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
No data available

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

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6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols.**Advice on safe handling**
Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.

Advice on protection against fire and explosion
Provide appropriate exhaust ventilation at places where dust is formed.

Hygiene measures
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Keep container tightly closed in a dry and well-ventilated place.
Storage class (TRGS 510): 6.1C: Combustible, acute toxic Cat.3 / toxic compounds or compounds which causing chronic effects

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters
Contains no substances with occupational exposure limit values.

8.2 Exposure controls

Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

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Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: solid
b)	Odor	No data available
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point/range: 88.0 - 90.0 °C (190.4 - 194.0 °F)
f)	Initial boiling point and boiling range	No data available
g)	Flash point	()No data available
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapor pressure	< 0.000 hPa
l)	Vapor density	No data available
m)	Relative density	No data available

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n)	Water solubility	No data available
o)	Partition coefficient: n-octanol/water	log Pow: 6.51
p)	Autoignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No data available

10.5 Incompatible materials
Strong oxidizing agents, Strong bases

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - 87.0 mg/kg
Remarks: The value is given in analogy to the following substances: 1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane

Inhalation: No data available

Dermal: No data available
No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

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Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity
This product is or contains a component that has been reported to be possibly carcinogenic based on its IARC, ACGIH, NTP, or EPA classification.
Limited evidence of carcinogenicity in animal studies

IARC: 2A - Group 2A: Probably carcinogenic to humans (2,2-bis(p-Chlorophenyl)-1,1-dichloroethylene)

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure

Remarks:
No data available
The value is given in analogy to the following substances: 1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane
Ingestion - Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard
No data available

11.2 Additional Information
Not available

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	LC50 - Pimephales promelas (fathead minnow) - 0.01 mg/l - 96 h Remarks: The value is given in analogy to the following substances: 1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane

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LC50 - Lepomis macrochirus (Bluegill sunfish) - 0.01 mg/l - 96 h
Remarks: The value is given in analogy to the following substances: 1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane

LC50 - Oncorhynchus mykiss (rainbow trout) - 0.003400 mg/l - 96 h
Remarks: The value is given in analogy to the following substances: 1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane

Toxicity to daphnia and other aquatic invertebrates: Immobilization EC50 - Daphnia magna (Water flea) - 0.00108 mg/l - 48 h
Remarks: The value is given in analogy to the following substances: 1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
Bioaccumulation: Gambusia affinis (Mosquito fish) - 33 d
- 3.84 µg/l(2,2-bis(p-Chlorophenyl)-1,1-dichloroethylene)

Bioconcentration factor (BCF): 12,037

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life with long lasting effects.
No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

DOT (US)
UN number: 2811 Class: 6.1 Packing group: III

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Proper shipping name: Toxic solids, organic, n.o.s. (2,2-bis(p-Chlorophenyl)-1,1-dichloroethylene)
Reportable Quantity (RQ): 1 lbs
1) Marine pollutant: yesPoison Inhalation Hazard: No

IMDG
UN number: 2811 Class: 6.1 Packing group: III EMS-No: F-A, S-A
Proper shipping name: TOXIC SOLID, ORGANIC, N.O.S. (2,2-bis(p-Chlorophenyl)-1,1-dichloroethylene)
Marine pollutant : yes

IATA
UN number: 2811 Class: 6.1 Packing group: III
Proper shipping name: Toxic solid, organic, n.o.s. (2,2-bis(p-Chlorophenyl)-1,1-dichloroethylene)

SECTION 15: Regulatory information

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

2,2-bis(p-Chlorophenyl)-1,1-dichloroethylene	CAS-No. 72-55-9	Revision Date 1993-02-16
2,2-bis(p-Chlorophenyl)-1,1-dichloroethylene	CAS-No. 72-55-9	Revision Date 1993-02-16

New Jersey Right To Know Components

2,2-bis(p-Chlorophenyl)-1,1-dichloroethylene	CAS-No. 72-55-9	Revision Date 1993-02-16

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SECTION 16: Other information

Further information

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Version: 6.2 Revision Date: 04/18/2021 Print Date: 09/11/2021

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SAFETY DATA SHEET

Version 6.3
Revision Date 04/18/2021
Print Date 09/11/2021

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : 4,4′-DDT

Product Number : 386340
Brand : Aldrich
Index-No. : 602-045-00-7
CAS-No. : 50-29-3

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 3), H301
Acute toxicity, Dermal (Category 3), H311
Carcinogenicity (Category 2), H351
Specific target organ toxicity - repeated exposure, Oral (Category 1), H372
Short-term (acute) aquatic hazard (Category 1), H400
Long-term (chronic) aquatic hazard (Category 1), H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



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Signal word	Danger
Hazard statement(s)	
H301 + H311	Toxic if swallowed or in contact with skin.
H351	Suspected of causing cancer.
H372	Causes damage to organs through prolonged or repeated exposure if swallowed.
H410	Very toxic to aquatic life with long lasting effects.
Precautionary statement(s)	
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P310 + P330	IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
P302 + P352 + P312	IF ON SKIN: Wash with plenty of water.Call a POISON CENTER/ doctor if you feel unwell.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms	:	1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane 1,1-Bis(4-chlorophenyl)-2,2,2-trichloroethane
Formula	:	$C_{14}H_9Cl_5$
Molecular weight	:	354.49 g/mol
CAS-No.	:	50-29-3
EC-No.	:	200-024-3
Index-No.	:	602-045-00-7

Component	Classification	Concentration
1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane		
	Acute Tox. 3; Carc. 2; STOT RE 1; Aquatic Acute 1; Aquatic Chronic 1; H301, H311, H351, H372, H400, H410 M-Factor - Aquatic Acute: 100 M-Factor - Aquatic	<= 100 %

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	Chronic: 100	

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Consult a physician. Show this material safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Carbon oxides
Hydrogen chloride gas

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information

No data available

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SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.
For personal protection see section 8.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols.**Advice on safe handling**
Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.

Advice on protection against fire and explosion
Provide appropriate exhaust ventilation at places where dust is formed.

Hygiene measures
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Keep container tightly closed in a dry and well-ventilated place.
Storage class (TRGS 510): 6.1D: Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

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Component	CAS-No.	Value	Control parameters	Basis
1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane	50-29-3	TWA	1 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Confirmed animal carcinogen with unknown relevance to humans		
		TWA	0.5 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential Occupational Carcinogen		
		TWA	1 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		Skin designation		
		TWA	1 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		Skin notation		
		PEL	1 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		

8.2 Exposure controls

Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

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data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: solid
b)	Odor	No data available
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point/range: 107 - 110 °C (225 - 230 °F) - lit.
f)	Initial boiling point and boiling range	260.0 °C 500.0 °F
g)	Flash point	72.0 - 77.0 °C (161.6 - 170.6 °F)
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapor pressure	0.000 hPa at 20.0 °C (68.0 °F)
l)	Vapor density	No data available
m)	Relative density	No data available
n)	Water solubility	No data available
o)	Partition coefficient:	log Pow: 6.91

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n-octanol/water

p)	Autoignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No data available

10.5 Incompatible materials
Oxidizing agents, Iron and iron salts.

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - 87.0 mg/kg
Remarks: (RTECS)
Inhalation: No data available

LD50 Dermal - Rabbit - 300.0 mg/kg
Remarks: Behavioral:Tremor.
Behavioral:Muscle weakness.
Behavioral:Ataxia.
(RTECS)
No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

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Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity
Limited evidence of carcinogenicity in animal studies

IARC: 2A - Group 2A: Probably carcinogenic to humans (1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane)

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
Ingestion - Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard
No data available

11.2 Additional Information

RTECS: KJ3325000

CNS stimulation., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Pancreas. -

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	LC50 - Oncorhynchus mykiss (rainbow trout) - 0.003400 mg/l - 96.0 h Remarks: (ECOTOX Database) (Regulation (EC) No 1272/2008, Annex VI)
Toxicity to daphnia and other aquatic invertebrates	Immobilization EC50 - Daphnia magna (Water flea) - 0.00108 mg/l - 48 h Remarks: (ECOTOX Database) (Regulation (EC) No 1272/2008, Annex VI)

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12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
Bioaccumulation Oncorhynchus mykiss (rainbow trout) - 20 d
- 0.001 mg/l(1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane)

Bioconcentration factor (BCF): 46,670

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life with long lasting effects.
No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

DOT (US)
UN number: 2811 Class: 6.1 Packing group: III
Proper shipping name: Toxic solids, organic, n.o.s. (1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane)
Reportable Quantity (RQ): 1 lbs
1) Marine pollutant: yesPoison Inhalation Hazard: No

IMDG
UN number: 2811 Class: 6.1 Packing group: III EMS-No: F-A, S-A
Proper shipping name: TOXIC SOLID, ORGANIC, N.O.S. (1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane)
Marine pollutant : yes

IATA
UN number: 2811 Class: 6.1 Packing group: III
Proper shipping name: Toxic solid, organic, n.o.s. (1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane)

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SAFETY DATA SHEET

1. Identification

Product identifier	**Aldrin (TM) (13C12, 99%) Solution**	
Other means of identification		
Item	S-FC89S	
Recommended use	For Laboratory Use Only	
Recommended restrictions	None known.	
Manufacturer/Importer/Supplier/Distributor information		
Manufacturer		
Company name	Chem Service, Inc.	
Address	660 Tower Lane West Chester, PA 19380 United States	
Telephone	Toll Free	800-452-9994
	Direct	610-692-3026
Website	www.chemservice.com	
E-mail	info@chemservice.com	
Emergency phone number	Chemtrec US	800-424-9300
	Chemtrec outside US	+1 703-527-3887

2. Hazard(s) identification

Physical hazards	Flammable liquids	Category 3
Health hazards	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2
	Specific target organ toxicity, single exposure	Category 3 narcotic effects
	Aspiration hazard	Category 1
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 1
	Hazardous to the aquatic environment, long-term hazard	Category 1
OSHA defined hazards	Not classified.	

Label elements



Signal word	Danger
Hazard statement	Flammable liquid and vapor. May be fatal if swallowed and enters airways. Causes skin irritation. Causes serious eye irritation. May cause drowsiness or dizziness. Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.
Precautionary statement	
Prevention	Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Avoid breathing mist or vapor. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/eye protection/face protection.

Response	If swallowed: Immediately call a poison center/doctor. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a poison center/doctor if you feel unwell. If skin irritation occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. Take off contaminated clothing and wash before reuse. In case of fire: Use appropriate media to extinguish. Collect spillage.
Storage	Keep cool. Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
n-Nonane		111-84-2	90 - 100
Aldrin (C1312)		Unknown	0.01

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
Skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Most important symptoms/effects, acute and delayed	Aspiration may cause pulmonary edema and pneumonitis. May cause drowsiness and dizziness. Headache. Nausea, vomiting. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.
General information	Take off all contaminated clothing immediately. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Carbon dioxide (CO2). Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only. Alcohol resistant foam.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Vapors may form explosive mixtures with air. Vapors may travel considerable distance to a source of ignition and flash back. This product is a poor conductor of electricity and can become electrostatically charged. If sufficient charge is accumulated, ignition of flammable mixtures can occur. To reduce potential for static discharge, use proper bonding and grounding procedures. This liquid may accumulate static electricity when filling properly grounded containers. Static electricity accumulation may be significantly increased by the presence of small quantities of water or other contaminants. Material will float and may ignite on surface of water. During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	Flammable liquid and vapor.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Avoid breathing mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Use appropriate containment to avoid environmental contamination. Transfer by mechanical means such as vacuum truck to a salvage tank or other suitable container for recovery or safe disposal. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.Avoid dust formation.

Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Take precautionary measures against static discharge. Use only non-sparking tools. Prevent product from entering drains.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water.

Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground. Use appropriate containment to avoid environmental contamination.

7. Handling and storage

Precautions for safe handling

Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. When using do not smoke. Explosion-proof general and local exhaust ventilation. Minimize fire risks from flammable and combustible materials (including combustible dust and static accumulating liquids) or dangerous reactions with incompatible materials. Handling operations that can promote accumulation of static charges include but are not limited to: mixing, filtering, pumping at high flow rates, splash filling, creating mists or sprays, tank and container filling, tank cleaning, sampling, gauging, switch loading, vacuum truck operations. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Avoid breathing mist or vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Observe good industrial hygiene practices.

For additional information on equipment bonding and grounding, refer to the Canadian Electrical Code in Canada, (CSA C22.1), or the American Petroleum Institute (API) Recommended Practice 2003, "Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents" or National Fire Protection Association (NFPA) 77, "Recommended Practice on Static Electricity" or National Fire Protection Association (NFPA) 70, "National Electrical Code".

Conditions for safe storage, including any incompatibilities

Store locked up. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Eliminate sources of ignition. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Store in a cool, dry place out of direct sunlight. Store in original tightly closed container. Store in a well-ventilated place. Keep in an area equipped with sprinklers. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

US. ACGIH Threshold Limit Values

Components	Type	Value
n-Nonane (CAS 111-84-2)	TWA	200 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
n-Nonane (CAS 111-84-2)	TWA	1050 mg/m3 200 ppm

Biological limit values No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls Explosion-proof general and local exhaust ventilation. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station. Eye wash fountain and emergency showers are recommended.

Individual protection measures, such as personal protective equipment

Eye/face protection Chemical respirator with organic vapor cartridge and full facepiece.

Skin protection

Hand protection Wear appropriate chemical resistant gloves.

Other Wear appropriate chemical resistant clothing.

Respiratory protection Chemical respirator with organic vapor cartridge and full facepiece.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations When using do not smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state Liquid.

Form Liquid.

Color Not available.

Odor Not available.

Odor threshold Not available.

pH Not available.

Melting point/freezing point -63.4 °F (-53 °C) lit. / -64.3 °F (-53.5 °C) estimated

Initial boiling point and boiling range 303.8 °F (151 °C) lit.

Flash point 87.8 °F (31.0 °C) Closed Cup

Evaporation rate Not available.

Flammability (solid, gas) Not applicable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) Not available.

Flammability limit - upper (%) Not available.

Explosive limit - lower (%) Not available.

Explosive limit - upper (%) Not available.

Vapor pressure 5.93 hPa estimated

Vapor density Not available.

Relative density Not available.

Solubility(ies)

Solubility (water) Not available.

Partition coefficient (n-octanol/water) Not available.

Auto-ignition temperature 401 °F (205 °C) Cambridge

Decomposition temperature Not available.

Viscosity Not available.

Other information

Explosive properties	Not explosive.
Flammability class	Flammable IC estimated
Molecular weight	128.3 g/mol
Oxidizing properties	Not oxidizing.
Specific gravity	0.72 estimated

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents. Nitrates. Peroxides.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause drowsiness and dizziness. Headache. Nausea, vomiting. Prolonged inhalation may be harmful.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye irritation.
Ingestion	Droplets of the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia.
Symptoms related to the physical, chemical and toxicological characteristics	Aspiration may cause pulmonary edema and pneumonitis. May cause drowsiness and dizziness. Headache. Nausea, vomiting. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain.

Information on toxicological effects

Acute toxicity May be fatal if swallowed and enters airways.

Components	Species	Test Results
n-Nonane (CAS 111-84-2)		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg, 24 Hours
Inhalation		
Vapor		
LC50	Rat	17 mg/l, 4 Hours

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/eye irritation	Causes serious eye irritation.

Respiratory or skin sensitization

Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Not classifiable as to carcinogenicity to humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure May cause drowsiness and dizziness.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard May be fatal if swallowed and enters airways.

Chronic effects Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity Very toxic to aquatic life with long lasting effects.

Persistence and degradability

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)

n-Nonane	5.46

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number	UN1920
UN proper shipping name	Nonanes
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Label(s)	3
Packing group	III
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	B1, IB3, T2, TP1
Packaging exceptions	150
Packaging non bulk	203
Packaging bulk	242

IATA

UN number	UN1920
UN proper shipping name	Nonanes
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Packing group	III
Environmental hazards	No.
ERG Code	3L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Other information

Passenger and cargo aircraft	Allowed with restrictions.
Cargo aircraft only	Allowed with restrictions.

IMDG

UN number	UN1920
UN proper shipping name	NONANES
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Packing group	III
Environmental hazards	
Marine pollutant	No.
EmS	F-E, S-E
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not established.

DOT



IATA; IMDG



15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

n-Nonane (CAS 111-84-2)	1.0 % One-Time Export Notification only.

CERCLA Hazardous Substance List (40 CFR 302.4)

n-Nonane (CAS 111-84-2)	Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - No Fire Hazard - Yes Pressure Hazard - No Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	No
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	No

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 07-11-2014

Revision date 06-05-2018

Version # 03

NFPA ratings Health: 2
Flammability: 3
Instability: 0

Disclaimer

The above information is believed to be correct on the date it was last revised and must not be considered all inclusive. The information has been obtained only by a search of available literature and is only a guide for handling the chemicals. OSHA regulations require that if other hazards become evident, an upgraded SDS must be made available to the employee within three months. RESPONSIBILITY for updates lies with the employer and not with CHEM SERVICE, Inc.

Persons not specifically and properly trained should not handle this chemical or its container. This product is furnished FOR LABORATORY USE ONLY! Our products may NOT BE USED as drugs, cosmetics, agricultural or pesticide products, food additives or as household chemicals.

This Safety Data Sheet (SDS) is intended only for use with Chem Service, Inc. products and should not be relied on for use with materials from any other supplier even if the chemical name(s) on the product are identical! Whenever using an SDS for a solution or mixture the user should refer to the SDS for every component of the solution or mixture. Chem Service warrants that this SDS is based upon the most current information available to Chem Service at the time it was last revised. THIS WARRANTY IS EXCLUSIVE, AND CHEM SERVICE, INC. MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. This SDS is provided gratis and CHEM SERVICE, INC. SHALL NOT BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR CONTINGENT DAMAGES.

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This product is furnished FOR LABORATORY USE ONLY.

Revision information

This document has undergone significant changes and should be reviewed in its entirety.

SECTION 15: Regulatory information

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane	50-29-3	1993-02-16

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane	50-29-3	1993-02-16

	CAS-No.	Revision Date
1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane	50-29-3	1993-02-16

New Jersey Right To Know Components

	CAS-No.	Revision Date
1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane	50-29-3	1993-02-16

SECTION 16: Other information

Further information
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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

The branding on the header and/or footer of this document may temporarily not visually match the product purchased as we transition our branding. However, all of the

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information in the document regarding the product remains unchanged and matches the product ordered. For further information please contact mlsbranding@sial.com.

Version: 6.3 Revision Date: 04/18/2021 Print Date: 09/11/2021

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SAFETY DATA SHEET

Version 8.1
Revision Date 04/17/2021
Print Date 09/14/2021

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : α-BHC

Product Number : 48493
Brand : Supelco
Index-No. : 602-042-00-0
CAS-No. : 319-84-6

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 3), H301
Acute toxicity, Dermal (Category 4), H312
Carcinogenicity (Category 2), H351
Short-term (acute) aquatic hazard (Category 1), H400
Long-term (chronic) aquatic hazard (Category 1), H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word Danger

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Hazard statement(s)

H301	Toxic if swallowed.
H312	Harmful in contact with skin.
H351	Suspected of causing cancer.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing.
P281	Use personal protective equipment as required.
P301 + P310 + P330	IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
P302 + P352 + P312	IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or doctor/ physician if you feel unwell.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P363	Wash contaminated clothing before reuse.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms	:	α-1,2,3,4,5,6-Hexachlorocyclohexane
Formula	:	C6H6Cl6
Molecular weight	:	290.83 g/mol
CAS-No.	:	319-84-6
EC-No.	:	206-270-8
Index-No.	:	602-042-00-0

Component	Classification	Concentration
(1α,2α,3β,4α,5β,6β)-1,2,3,4,5,6-Hexachlorocyclohexane		
	Acute Tox. 3; Acute Tox. 4; Carc. 2; Aquatic Acute 1; Aquatic Chronic 1; H301, H312, H351, H400, H410 M-Factor - Aquatic Acute: 10	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

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SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Consult a physician. Show this material safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides
Hydrogen chloride gas

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
No data available

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

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6.3 Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols.**Advice on safe handling**

Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.

Advice on protection against fire and explosion

Provide appropriate exhaust ventilation at places where dust is formed.

Hygiene measures

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Keep container tightly closed in a dry and well-ventilated place.
Storage class (TRGS 510): 6.1D: Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Contains no substances with occupational exposure limit values.

8.2 Exposure controls

Appropriate engineering controls

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

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Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: solid
b)	Odor	No data available
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	156.0 - 161.0 °C (312.8 - 321.8 °F)
f)	Initial boiling point and boiling range	No data available
g)	Flash point	()No data available
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapor pressure	No data available
l)	Vapor density	No data available
m)	Relative density	No data available
n)	Water solubility	No data available
o)	Partition coefficient: n-octanol/water	log Pow: 3.80
p)	Autoignition temperature	No data available

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q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No data available

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - 177.0 mg/kg

Inhalation: No data available

Dermal: No data available
No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity

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This product is or contains a component that has been reported to be possibly carcinogenic based on its IARC, ACGIH, NTP, or EPA classification.
Limited evidence of carcinogenicity in animal studies

IARC: 2B - Group 2B: Possibly carcinogenic to humans ((1α,2α,3β,4α,5β,6β)-1,2,3,4,5,6-Hexachlorocyclohexane)

IARC: 2B - Group 2B: Possibly carcinogenic to humans ((1α,2α,3β,4α,5β,6β)-1,2,3,4,5,6-Hexachlorocyclohexane)

ACGIH: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: RAHC - Reasonably anticipated to be a human carcinogen ((1α,2α,3β,4α,5β,6β)-1,2,3,4,5,6-Hexachlorocyclohexane)

NTP: RAHC - Reasonably anticipated to be a human carcinogen ((1α,2α,3β,4α,5β,6β)-1,2,3,4,5,6-Hexachlorocyclohexane)

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information
RTECS: GV3500000

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	LC50 - Carassius auratus (goldfish) - 0.12 mg/l - 48.0 h
	LC50 - Cyprinus carpio (Carp) - 0.2 mg/l - 48.0 h
	LC50 - other fish - 1.49 mg/l - 96.0 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 0.20 - 1.70 mg/l - 48 h

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Toxicity to algae EC50 - No information available. - > 100.00 mg/l - 48 h

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
Bioaccumulation other fish - 96 h
- 0.8 mg/l((1α,2α,3β,4α,5β,6β)-1,2,3,4,5,6-Hexachlorocyclohexane)

Bioconcentration factor (BCF): 250

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

DOT (US)
UN number: 2811 Class: 6.1 Packing group: III
Proper shipping name: Toxic solids, organic, n.o.s. ((1α,2α,3β,4α,5β,6β)-1,2,3,4,5,6-Hexachlorocyclohexane)
Reportable Quantity (RQ): 10 lbs
1) Marine pollutant: yesPoison Inhalation Hazard: No

IMDG
UN number: 2811 Class: 6.1 Packing group: III EMS-No: F-A, S-A
Proper shipping name: TOXIC SOLID, ORGANIC, N.O.S. ((1α,2α,3β,4α,5β,6β)-1,2,3,4,5,6-Hexachlorocyclohexane)

IATA
UN number: 2811 Class: 6.1 Packing group: III
Proper shipping name: Toxic solid, organic, n.o.s. ((1α,2α,3β,4α,5β,6β)-1,2,3,4,5,6-Hexachlorocyclohexane)

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SECTION 15: Regulatory information

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
(1α,2α,3β,4α,5β,6β)-1,2,3,4,5,6-Hexachlorocyclohexane	319-84-6	2007-07-01

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
(1α,2α,3β,4α,5β,6β)-1,2,3,4,5,6-Hexachlorocyclohexane	319-84-6	2007-07-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
(1α,2α,3β,4α,5β,6β)-1,2,3,4,5,6-Hexachlorocyclohexane	319-84-6	2007-07-01

California Prop. 65 Components

, which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.(1α,2α,3β,4α,5β,6β)-1,2,3,4,5,6-Hexachlorocyclohexane	CAS-No. 319-84-6	Revision Date 2009-02-01
WARNING! This product contains a chemical known in the State of California to cause cancer.(1α,2α,3β,4α,5β,6β)-1,2,3,4,5,6-Hexachlorocyclohexane	CAS-No. 319-84-6	Revision Date 2009-02-01

SECTION 16: Other information

Further information
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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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The branding on the header and/or footer of this document may temporarily not visually match the product purchased as we transition our branding. However, all of the information in the document regarding the product remains unchanged and matches the product ordered. For further information please contact mlsbranding@sial.com.

Version: 8.1 Revision Date: 04/17/2021 Print Date: 09/14/2021

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SAFETY DATA SHEET

1. Identification

Product identifier	**cis-Chlordane**
Other means of identification	
Product code	N-11480
Synonym(s)	alpha Chlordane
Recommended use	For Laboratory Use Only
Recommended restrictions	None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name	Chem Service, Inc.	
Address	660 Tower Lane West Chester, PA 19380 United States	
Telephone	Toll Free	800-452-9994
	Direct	610-692-3026
Website	www.chemservice.com	
E-mail	info@chemservice.com	
Emergency phone number	Chemtrec US	800-424-9300
	Chemtrec outside US	+1 703-527-3887

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Acute toxicity, oral	Category 3
	Acute toxicity, dermal	Category 3
	Acute toxicity, inhalation	Category 2
	Carcinogenicity	Category 2
	Reproductive toxicity	Category 2
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 1
	Hazardous to the aquatic environment, long-term hazard	Category 1
OSHA defined hazards	Not classified.	

Label elements



Signal word	Danger
Hazard statement	Toxic if swallowed. Toxic in contact with skin. Fatal if inhaled. Suspected of causing cancer. Suspected of damaging fertility or the unborn child. Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.
Precautionary statement	
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area. Do not breathe dust/fume. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection. Wear respiratory protection.
Response	If swallowed: Immediately call a poison center/doctor. If on skin: Wash with plenty of water. If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center/doctor. Specific treatment is urgent (see this label). Rinse mouth. Take off immediately all contaminated clothing and wash it before reuse. Collect spillage.
Storage	Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.

Supplemental information Not applicable.

3. Composition/information on ingredients

Substances

Chemical name	Common name and synonyms	CAS number	%
cis-Chlordane	alpha Chlordane	5103-71-9	100

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician or poison control center immediately.

Skin contact Take off immediately all contaminated clothing. Wash off with soap and plenty of water. Call a POISON CENTER or doctor/physician if you feel unwell. Get medical attention if irritation develops and persists.

Eye contact Do not rub eyes. Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Ingestion Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Most important symptoms/effects, acute and delayed Direct contact with eyes may cause temporary irritation.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General information Take off immediately all contaminated clothing. IF exposed or concerned: Get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media Alcohol resistant foam. Water fog. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire-fighting equipment/instructions Use water spray to cool unopened containers.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Immediately evacuate personnel to safe areas. Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during clean-up. Do not breathe dust. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). This material is classified as a water pollutant under the Clean Water Act and should be prevented from contaminating soil or from entering sewage and drainage systems which lead to waterways. Stop the flow of material, if this is without risk. Collect spillage.

Large Spills: Wet down with water and dike for later disposal. Following product recovery, flush area with water.

Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Minimize dust generation and accumulation. Do not breathe dust. Do not taste or swallow. Avoid contact with skin. Avoid contact with eyes. Avoid contact during pregnancy/while nursing. Avoid prolonged exposure. Avoid contact with clothing. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Wash contaminated clothing before reuse. Avoid release to the environment. Do not empty into drains.

Conditions for safe storage, including any incompatibilities Store locked up. Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Material	Type	Value
cis-Chlordane (CAS 5103-71-9)	PEL	0.5 mg/m3

US. ACGIH Threshold Limit Values

Material	Type	Value
cis-Chlordane (CAS 5103-71-9)	TWA	0.5 mg/m3

US. NIOSH: Pocket Guide to Chemical Hazards

Material	Type	Value
cis-Chlordane (CAS 5103-71-9)	TWA	0.5 mg/m3

Biological limit values No biological exposure limits noted for the ingredient(s).

Exposure guidelines

US - California OELs: Skin designation

cis-Chlordane (CAS 5103-71-9) Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies

cis-Chlordane (CAS 5103-71-9) Skin designation applies.

US - Tennesse OELs: Skin designation

cis-Chlordane (CAS 5103-71-9) Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

cis-Chlordane (CAS 5103-71-9) Can be absorbed through the skin.

US NIOSH Pocket Guide to Chemical Hazards: Skin designation

cis-Chlordane (CAS 5103-71-9) Can be absorbed through the skin.

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

cis-Chlordane (CAS 5103-71-9) Can be absorbed through the skin.

Appropriate engineering controls Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear eye/face protection. Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection Wear protective gloves.

Other Wear appropriate chemical resistant clothing.

Respiratory protection Wear positive pressure self-contained breathing apparatus (SCBA).

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state	Solid.
Form	Solid. Crystalline Solid
Color	White
Odor	Not available.
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	222.8 - 224.6 °F (106 - 107 °C)
Initial boiling point and boiling range	347 °F (175 °C) 0.133322 kPa
Flash point	225.0 °F (107.2 °C) Open Cup
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	0 kPa at 25 °C
Vapor density	14
Relative density	Not available.
Solubility(ies)	
Solubility (water)	0 g/l
Partition coefficient (n-octanol/water)	5.2
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	1.59 g/ml
Flammability class	Combustible IIIB estimated
Molecular formula	C10-H6-Cl8
Molecular weight	409.8 g/mol
Specific gravity	1.59 - 1.63 at 25 °C

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Ingestion	Toxic if swallowed.
Inhalation	Fatal if inhaled.
Skin contact	Toxic in contact with skin.
Eye contact	Direct contact with eyes may cause temporary irritation.
Symptoms related to the physical, chemical and toxicological characteristics	Direct contact with eyes may cause temporary irritation.

Information on toxicological effects

Acute toxicity Fatal if inhaled. Toxic if swallowed. Toxic in contact with skin.

Product	Species	Test Results
cis-Chlordane (CAS 5103-71-9)		
Acute		
Dermal		
LD50	Rat	590 - 840 mg/kg
Inhalation		
LC50	Cat	0.1 mg/l, 4 Hours
Oral		
LD50	Mouse	430 mg/kg
	Rabbit	300 mg/kg
	Rat	590 mg/kg
TD	Rat	25 mg/kg
Other		
LD50	Rat	343 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation Prolonged skin contact may cause temporary irritation.

Serious eye damage/eye irritation Direct contact with eyes may cause temporary irritation.

Respiratory or skin sensitization

Respiratory sensitization Not available.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity Suspected of causing cancer.

IARC Monographs. Overall Evaluation of Carcinogenicity

cis-Chlordane (CAS 5103-71-9) 2B Possibly carcinogenic to humans.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity Suspected of damaging fertility or the unborn child.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not available.

Chronic effects Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects.

12. Ecological information

Ecotoxicity Very toxic to aquatic life with long lasting effects. Accumulation in aquatic organisms is expected.

Product		Species	Test Results
cis-Chlordane (CAS 5103-71-9)			
Aquatic			
Fish	LC50	Bluegill (Lepomis macrochirus)	0.0043 - 0.0118 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential Not available.

Partition coefficient n-octanol / water (log Kow)

5.16

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

US RCRA Hazardous Waste U List: Reference

cis-Chlordane (CAS 5103-71-9) U036

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

UN number	UN2811
UN proper shipping name	Toxic solids, organic, n.o.s. (cis-Chlordane), MARINE POLLUTANT
Transport hazard class(es)	
Class	6.1(PGIII)
Subsidiary risk	-
Label(s)	6.1
Packing group	III
Environmental hazards	
Marine pollutant	Yes
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	IB8, IP3, T1, TP33
Packaging exceptions	153
Packaging non bulk	213
Packaging bulk	240

IATA

UN number	UN2811
UN proper shipping name	Toxic solid, organic, n.o.s. (cis-Chlordane)
Transport hazard class(es)	
Class	6.1(PGIII)
Subsidiary risk	-
Packing group	III
Environmental hazards	No.
ERG Code	6L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed.
Cargo aircraft only	Allowed.

IMDG

UN number	UN2811
UN proper shipping name	TOXIC SOLID, ORGANIC, N.O.S. (cis-Chlordane), MARINE POLLUTANT
Transport hazard class(es)	
Class	6.1(PGIII)
Subsidiary risk	-
Packing group	III
Environmental hazards	
Marine pollutant	Yes
EmS	F-A, S-A
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

SAFETY DATA SHEET

1. Identification

Product identifier	**cis-Chlordane**
Other means of identification	
Product code	N-11480
Synonym(s)	alpha Chlordane
Recommended use	For Laboratory Use Only
Recommended restrictions	None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name	Chem Service, Inc.	
Address	660 Tower Lane West Chester, PA 19380 United States	
Telephone	Toll Free	800-452-9994
	Direct	610-692-3026
Website	www.chemservice.com	
E-mail	info@chemservice.com	
Emergency phone number	Chemtrec US	800-424-9300
	Chemtrec outside US	+1 703-527-3887

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Acute toxicity, oral	Category 3
	Acute toxicity, dermal	Category 3
	Acute toxicity, inhalation	Category 2
	Carcinogenicity	Category 2
	Reproductive toxicity	Category 2
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 1
	Hazardous to the aquatic environment, long-term hazard	Category 1
OSHA defined hazards	Not classified.	

Label elements



Signal word	Danger
Hazard statement	Toxic if swallowed. Toxic in contact with skin. Fatal if inhaled. Suspected of causing cancer. Suspected of damaging fertility or the unborn child. Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.
Precautionary statement	
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area. Do not breathe dust/fume. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection. Wear respiratory protection.
Response	If swallowed: Immediately call a poison center/doctor. If on skin: Wash with plenty of water. If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center/doctor. Specific treatment is urgent (see this label). Rinse mouth. Take off immediately all contaminated clothing and wash it before reuse. Collect spillage.
Storage	Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.

Supplemental information Not applicable.

3. Composition/information on ingredients

Substances

Chemical name	Common name and synonyms	CAS number	%
cis-Chlordane	alpha Chlordane	5103-71-9	100

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician or poison control center immediately.

Skin contact Take off immediately all contaminated clothing. Wash off with soap and plenty of water. Call a POISON CENTER or doctor/physician if you feel unwell. Get medical attention if irritation develops and persists.

Eye contact Do not rub eyes. Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Ingestion Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Most important symptoms/effects, acute and delayed Direct contact with eyes may cause temporary irritation.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General information Take off immediately all contaminated clothing. IF exposed or concerned: Get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media Alcohol resistant foam. Water fog. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire-fighting equipment/instructions Use water spray to cool unopened containers.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Immediately evacuate personnel to safe areas. Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during clean-up. Do not breathe dust. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). This material is classified as a water pollutant under the Clean Water Act and should be prevented from contaminating soil or from entering sewage and drainage systems which lead to waterways. Stop the flow of material, if this is without risk. Collect spillage.

Large Spills: Wet down with water and dike for later disposal. Following product recovery, flush area with water.

Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Minimize dust generation and accumulation. Do not breathe dust. Do not taste or swallow. Avoid contact with skin. Avoid contact with eyes. Avoid contact during pregnancy/while nursing. Avoid prolonged exposure. Avoid contact with clothing. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Wash contaminated clothing before reuse. Avoid release to the environment. Do not empty into drains.

Conditions for safe storage, including any incompatibilities Store locked up. Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Material	Type	Value
cis-Chlordane (CAS 5103-71-9)	PEL	0.5 mg/m3

US. ACGIH Threshold Limit Values

Material	Type	Value
cis-Chlordane (CAS 5103-71-9)	TWA	0.5 mg/m3

US. NIOSH: Pocket Guide to Chemical Hazards

Material	Type	Value
cis-Chlordane (CAS 5103-71-9)	TWA	0.5 mg/m3

Biological limit values No biological exposure limits noted for the ingredient(s).

Exposure guidelines

US - California OELs: Skin designation

cis-Chlordane (CAS 5103-71-9) Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies

cis-Chlordane (CAS 5103-71-9) Skin designation applies.

US - Tennesse OELs: Skin designation

cis-Chlordane (CAS 5103-71-9) Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

cis-Chlordane (CAS 5103-71-9) Can be absorbed through the skin.

US NIOSH Pocket Guide to Chemical Hazards: Skin designation

cis-Chlordane (CAS 5103-71-9) Can be absorbed through the skin.

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

cis-Chlordane (CAS 5103-71-9) Can be absorbed through the skin.

Appropriate engineering controls Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear eye/face protection. Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection Wear protective gloves.

Other Wear appropriate chemical resistant clothing.

Respiratory protection Wear positive pressure self-contained breathing apparatus (SCBA).

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state	Solid.
Form	Solid. Crystalline Solid
Color	White
Odor	Not available.
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	222.8 - 224.6 °F (106 - 107 °C)
Initial boiling point and boiling range	347 °F (175 °C) 0.133322 kPa
Flash point	225.0 °F (107.2 °C) Open Cup
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	0 kPa at 25 °C
Vapor density	14
Relative density	Not available.
Solubility(ies)	
Solubility (water)	0 g/l
Partition coefficient (n-octanol/water)	5.2
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	1.59 g/ml
Flammability class	Combustible IIIB estimated
Molecular formula	C10-H6-Cl8
Molecular weight	409.8 g/mol
Specific gravity	1.59 - 1.63 at 25 °C

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Ingestion	Toxic if swallowed.
Inhalation	Fatal if inhaled.
Skin contact	Toxic in contact with skin.
Eye contact	Direct contact with eyes may cause temporary irritation.
Symptoms related to the physical, chemical and toxicological characteristics	Direct contact with eyes may cause temporary irritation.

Information on toxicological effects

Acute toxicity Fatal if inhaled. Toxic if swallowed. Toxic in contact with skin.

Product	Species	Test Results
cis-Chlordane (CAS 5103-71-9)		
Acute		
Dermal		
LD50	Rat	590 - 840 mg/kg
Inhalation		
LC50	Cat	0.1 mg/l, 4 Hours
Oral		
LD50	Mouse	430 mg/kg
	Rabbit	300 mg/kg
	Rat	590 mg/kg
TD	Rat	25 mg/kg
Other		
LD50	Rat	343 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation Prolonged skin contact may cause temporary irritation.

Serious eye damage/eye irritation Direct contact with eyes may cause temporary irritation.

Respiratory or skin sensitization

Respiratory sensitization Not available.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity Suspected of causing cancer.

IARC Monographs. Overall Evaluation of Carcinogenicity

cis-Chlordane (CAS 5103-71-9) 2B Possibly carcinogenic to humans.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity Suspected of damaging fertility or the unborn child.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not available.

Chronic effects Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects.

12. Ecological information

Ecotoxicity Very toxic to aquatic life with long lasting effects. Accumulation in aquatic organisms is expected.

Product		Species	Test Results
cis-Chlordane (CAS 5103-71-9)			
Aquatic			
Fish	LC50	Bluegill (Lepomis macrochirus)	0.0043 - 0.0118 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential Not available.

Partition coefficient n-octanol / water (log Kow)

5.16

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

US RCRA Hazardous Waste U List: Reference

cis-Chlordane (CAS 5103-71-9) U036

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

UN number	UN2811
UN proper shipping name	Toxic solids, organic, n.o.s. (cis-Chlordane), MARINE POLLUTANT
Transport hazard class(es)	
Class	6.1(PGIII)
Subsidiary risk	-
Label(s)	6.1
Packing group	III
Environmental hazards	
Marine pollutant	Yes
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	IB8, IP3, T1, TP33
Packaging exceptions	153
Packaging non bulk	213
Packaging bulk	240

IATA

UN number	UN2811
UN proper shipping name	Toxic solid, organic, n.o.s. (cis-Chlordane)
Transport hazard class(es)	
Class	6.1(PGIII)
Subsidiary risk	-
Packing group	III
Environmental hazards	No.
ERG Code	6L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed.
Cargo aircraft only	Allowed.

IMDG

UN number	UN2811
UN proper shipping name	TOXIC SOLID, ORGANIC, N.O.S. (cis-Chlordane), MARINE POLLUTANT
Transport hazard class(es)	
Class	6.1(PGIII)
Subsidiary risk	-
Packing group	III
Environmental hazards	
Marine pollutant	Yes
EmS	F-A, S-A
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

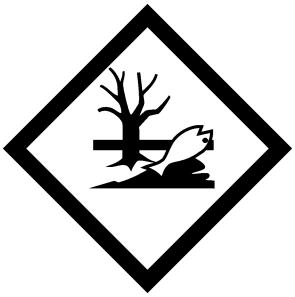
DOT



IATA; IMDG



Marine pollutant



15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
One or more components are not listed on TSCA.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

cis-Chlordane (CAS 5103-71-9) Listed.

SARA 304 Emergency release notification

cis-Chlordane (CAS 5103-71-9) 1 LBS

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Chemical name	CAS number	Reportable quantity	Threshold planning quantity	Threshold planning quantity, lower value	Threshold planning quantity, upper value
cis-Chlordane	5103-71-9	1	1000 lbs		

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
cis-Chlordane	5103-71-9	100

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

cis-Chlordane (CAS 5103-71-9)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Clean Water Act (CWA) Section 112(r) (40 CFR 68.130)	Hazardous substance
Safe Drinking Water Act (SDWA)	0 mg/l 0.002 mg/l

US state regulations

US. Massachusetts RTK - Substance List

cis-Chlordane (CAS 5103-71-9)

US. New Jersey Worker and Community Right-to-Know Act

cis-Chlordane (CAS 5103-71-9)	500 LBS

US. Pennsylvania RTK - Hazardous Substances

cis-Chlordane (CAS 5103-71-9)

US. Rhode Island RTK

Not regulated.

US. California Proposition 65

WARNING: This product contains a chemical known to the State of California to cause cancer.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

cis-Chlordane (CAS 5103-71-9)	Listed: July 1, 1988

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	No

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	06-12-2014
Version #	01
NFPA ratings	Health: 2 Flammability: 1 Instability: 0

Disclaimer

The above information is believed to be correct on the date it was last revised and must not be considered all inclusive. The information has been obtained only by a search of available literature and is only a guide for handling the chemicals. OSHA regulations require that if other hazards become evident, an upgraded SDS must be made available to the employee within three months. RESPONSIBILITY for updates lies with the employer and not with CHEM SERVICE, Inc.

Persons not specifically and properly trained should not handle this chemical or its container. This product is furnished FOR LABORATORY USE ONLY! Our products may NOT BE USED as drugs, cosmetics, agricultural or pesticide products, food additives or as household chemicals.

This Safety Data Sheet (SDS) is intended only for use with Chem Service, Inc. products and should not be relied on for use with materials from any other supplier even if the chemical name(s) on the product are identical! Whenever using an SDS for a solution or mixture the user should refer to the SDS for every component of the solution or mixture. Chem Service warrants that this SDS is based upon the most current information available to Chem Service at the time it was last revised. THIS WARRANTY IS EXCLUSIVE, AND CHEM SERVICE, INC. MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. This SDS is provided gratis and CHEM SERVICE, INC. SHALL NOT BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR CONTINGENT DAMAGES.

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This product is furnished FOR LABORATORY USE ONLY.

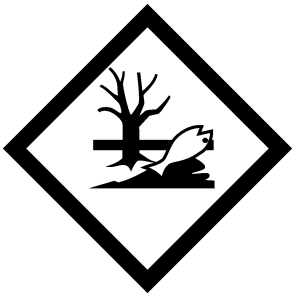
DOT



IATA; IMDG



Marine pollutant



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Pressure Hazard - No
Reactivity Hazard - No

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Chemical name	CAS number	Reportable quantity	Threshold planning quantity	Threshold planning quantity, lower value	Threshold planning quantity, upper value
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US. Rhode Island RTK

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US. California Proposition 65

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US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

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Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	No

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
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16. Other information, including date of preparation or last revision

Issue date	06-12-2014
Version #	01
NFPA ratings	Health: 2 Flammability: 1 Instability: 0

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Persons not specifically and properly trained should not handle this chemical or its container. This product is furnished FOR LABORATORY USE ONLY! Our products may NOT BE USED as drugs, cosmetics, agricultural or pesticide products, food additives or as household chemicals.

This Safety Data Sheet (SDS) is intended only for use with Chem Service, Inc. products and should not be relied on for use with materials from any other supplier even if the chemical name(s) on the product are identical! Whenever using an SDS for a solution or mixture the user should refer to the SDS for every component of the solution or mixture. Chem Service warrants that this SDS is based upon the most current information available to Chem Service at the time it was last revised. THIS WARRANTY IS EXCLUSIVE, AND CHEM SERVICE, INC. MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. This SDS is provided gratis and CHEM SERVICE, INC. SHALL NOT BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR CONTINGENT DAMAGES.

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SAFETY DATA SHEET

Version 6.3
Revision Date 04/17/2021
Print Date 09/11/2021

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : δ-BHC

Product Number : 48495
Brand : Supelco
Index-No. : 602-042-00-0
CAS-No. : 319-86-8

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 3), H301
Acute toxicity, Dermal (Category 4), H312
Carcinogenicity (Category 2), H351
Short-term (acute) aquatic hazard (Category 1), H400
Long-term (chronic) aquatic hazard (Category 1), H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word Danger

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Hazard statement(s)

H301	Toxic if swallowed.
H312	Harmful in contact with skin.
H351	Suspected of causing cancer.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P310 + P330	IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
P302 + P352 + P312	IF ON SKIN: Wash with plenty of water.Call a POISON CENTER/ doctor if you feel unwell.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P363	Wash contaminated clothing before reuse.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms	:	δ-1,2,3,4,5,6-Hexachlorocyclohexane
Formula	:	C6H6Cl6
Molecular weight	:	290.8 g/mol
CAS-No.	:	319-86-8
EC-No.	:	206-272-9
Index-No.	:	602-042-00-0

Component	Classification	Concentration
1α,2α,3α,4β,5α,6β)-1,2,3,4,5,6-Hexachlorocyclohexane		
	Acute Tox. 3; Acute Tox. 4; Carc. 2; Aquatic Acute 1; Aquatic Chronic 1; H301, H312, H351, H400, H410 M-Factor - Aquatic Acute: 10 - Aquatic Chronic: 10	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

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operates as MilliporeSigma in the US and Canada

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Consult a physician. Show this material safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides
Hydrogen chloride gas

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
No data available

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

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operates as MilliporeSigma in the US and Canada

6.3 Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols.**Advice on safe handling**

Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.

Advice on protection against fire and explosion

Provide appropriate exhaust ventilation at places where dust is formed.

Hygiene measures

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Keep container tightly closed in a dry and well-ventilated place.

Store at room temperature.
Storage class (TRGS 510): 6.1D: Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Contains no substances with occupational exposure limit values.
Hazardous components without workplace control parameters

8.2 Exposure controls

Appropriate engineering controls

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

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operates as MilliporeSigma in the US and Canada

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: solid
b)	Odor	No data available
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	No data available
f)	Initial boiling point and boiling range	No data available

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g)	Flash point	()No data available
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapor pressure	No data available
l)	Vapor density	No data available
m)	Relative density	No data available
n)	Water solubility	No data available
o)	Partition coefficient: n-octanol/water	No data available
p)	Autoignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No data available

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
In the event of fire: see section 5

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SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - 1,000 mg/kg
Remarks: (RTECS)
Inhalation: No data available

Acute toxicity estimate Dermal - Expert judgment - 1,100.1 mg/kg
Remarks: (in analogy to similar products)
The value is given in analogy to the following substances: 1,2,3,4,5,6-hexachlorcyclohexanes with the exception of gamma-HCH
Acute toxicity estimate Dermal - 1,100.1 mg/kg
(Expert judgment)
No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity
Suspected of causing cancer.

IARC: 2B - Group 2B: Possibly carcinogenic to humans (1α,2α,3α,4β,5α,6β)-1,2,3,4,5,6-Hexachlorocyclohexane)

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information
RTECS: GV4550000

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To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Central nervous system -

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	LC50 - Oncorhynchus mykiss (rainbow trout) - 0.02 mg/l - 96 h Remarks: (ECOTOX Database) (in analogy to similar products) The value is given in analogy to the following substances: 1,2,3,4,5,6-hexachlorcyclohexanes with the exception of gamma-HCH
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia pulex (Water flea) - 0.68 mg/l - 48 h Remarks: (ECOTOX Database) (in analogy to similar products) The value is given in analogy to the following substances: 1,2,3,4,5,6-hexachlorcyclohexanes with the exception of gamma-HCH

12.2 Persistence and degradability

No data available

12.3 Bioaccumulative potential

Bioaccumulation	other fish - 33 d - 0.955 mg/l(1α,2α,3α,4β,5α,6β)-1,2,3,4,5,6-Hexachlorocyclohexane) Bioconcentration factor (BCF): 326

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life with long lasting effects.
No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix

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the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

DOT (US)
UN number: 3077 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (1α,2α,3α,4β,5α,6β)-1,2,3,4,5,6-Hexachlorocyclohexane)
Reportable Quantity (RQ): 1 lbs
Poison Inhalation Hazard: No

IMDG
UN number: 3077 Class: 9 Packing group: III EMS-No: F-A, S-F
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (1α,2α,3α,4β,5α,6β)-1,2,3,4,5,6-Hexachlorocyclohexane)
Marine pollutant : yes

IATA
UN number: 3077 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (1α,2α,3α,4β,5α,6β)-1,2,3,4,5,6-Hexachlorocyclohexane)
Further information
EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids.

SECTION 15: Regulatory information

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

1α,2α,3α,4β,5α,6β)-1,2,3,4,5,6-Hexachlorocyclohexane	CAS-No. 319-86-8	Revision Date 1993-02-16

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SECTION 16: Other information

Further information

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Version: 6.3 Revision Date: 04/17/2021 Print Date: 09/11/2021

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SAFETY DATA SHEET

Version 6.3
Revision Date 09/14/2021
Print Date 09/14/2021

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Dieldrin

Product Number : 291218
Brand : Aldrich
Index-No. : 602-049-00-9
CAS-No. : 60-57-1

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 2), H300
Acute toxicity, Dermal (Category 1), H310
Carcinogenicity (Category 2), H351
Specific target organ toxicity - repeated exposure, Oral (Category 1), H372
Short-term (acute) aquatic hazard (Category 1), H400
Long-term (chronic) aquatic hazard (Category 1), H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



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Signal word	Danger
Hazard statement(s)	
H300 + H310	Fatal if swallowed or in contact with skin.
H351	Suspected of causing cancer.
H372	Causes damage to organs through prolonged or repeated exposure if swallowed.
H410	Very toxic to aquatic life with long lasting effects.
Precautionary statement(s)	
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P262	Do not get in eyes, on skin, or on clothing.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P310 + P330	IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
P302 + P350 + P310	IF ON SKIN: Gently wash with plenty of soap and water. Immediately call a POISON CENTER or doctor/ physician.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms	:	1,2,3,4,10,10-Hexachloro-1,4,4a,5,6,7,8,8a-octahydro-6,7-epoxy-1,4:5,8-dimethanonaphthalene
Formula	:	$C_{12}H_8Cl_6O$
Molecular weight	:	380.91 g/mol
CAS-No.	:	60-57-1
EC-No.	:	200-484-5
Index-No.	:	602-049-00-9

Component	Classification	Concentration
Dieldrin		
	Acute Tox. 2; Acute Tox. 1; Carc. 2; STOT RE 1; Aquatic Acute 1; Aquatic Chronic 1; H300, H310, H351, H372, H400, H410 M-Factor - Aquatic Acute: 100	<= 100 %

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	M-Factor - Aquatic Chronic: 100	

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Consult a physician. Show this material safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Carbon oxides
Hydrogen chloride gas

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information

No data available

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SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols.**Advice on safe handling**

Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.

Advice on protection against fire and explosion

Provide appropriate exhaust ventilation at places where dust is formed.

Hygiene measures

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Keep container tightly closed in a dry and well-ventilated place.

Storage class

Storage class (TRGS 510): 6.1B: Non-combustible, acute toxic Cat. 1 and 2 / very toxic hazardous materials

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

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Component	CAS-No.	Value	Control parameters	Basis
Dieldrin	60-57-1	TWA	0.1 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Confirmed animal carcinogen with unknown relevance to humans Danger of cutaneous absorption		
		TWA	0.25 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential Occupational Carcinogen Potential for dermal absorption		
		TWA	0.25 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		Skin designation		
		TWA	0.25 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		Skin notation		
		PEL	0.25 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		

8.2 Exposure controls

Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

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If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: solid
b)	Odor	No data available
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point/range: 143 - 144 °C (289 - 291 °F)
f)	Initial boiling point and boiling range	No data available
g)	Flash point	()No data available
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapor pressure	No data available
l)	Vapor density	No data available
m)	Density	No data available
	Relative density	No data available
n)	Water solubility	No data available
o)	Partition coefficient: n-octanol/water	No data available

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p)	Autoignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No data available

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - 38.3 mg/kg
Inhalation: No data available
Dermal: No data available
LD50 Dermal - 5 mg/kg
No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity

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This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.
Limited evidence of carcinogenicity in animal studies

IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
Ingestion - Causes damage to organs through prolonged or repeated exposure.**Aspiration hazard**
No data available

11.2 Additional Information

RTECS: IO1750000
Discomfort, Headache, Nausea, Vomiting, Dizziness, Tremors, tonic convulsions, clonic spasms, Coma., respiratory failure, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Blood - Irregularities - Based on Human Evidence

Blood - Irregularities - Based on Human Evidence

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	mortality LC50 - Carassius auratus (goldfish) - 1.6 µg/l - 96.0 h
Toxicity to daphnia and other aquatic invertebrates	Immobilization EC50 - Daphnia magna (Water flea) - 79.5 µg/l - 48 h

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

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12.6 Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

DOT (US)
UN number: 2811 Class: 6.1 Packing group: I
Proper shipping name: Toxic solids, organic, n.o.s. (Dieldrin)
Reportable Quantity (RQ): 1 lbs
1) Marine pollutant: yesPoison Inhalation Hazard: No

IMDG
UN number: 2811 Class: 6.1 Packing group: I EMS-No: F-A, S-A
Proper shipping name: TOXIC SOLID, ORGANIC, N.O.S. (Dieldrin)
Marine pollutant : yes

IATA
UN number: 2811 Class: 6.1 Packing group: I
Proper shipping name: Toxic solid, organic, n.o.s. (Dieldrin)
IATA Passenger: Not permitted for transport

SECTION 15: Regulatory information

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

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SECTION 16: Other information

Further information

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Version: 6.3 Revision Date: 09/14/2021 Print Date: 09/14/2021

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SAFETY DATA SHEET

Version 6.5
Revision Date 04/18/2021
Print Date 09/11/2021

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Endrin

Product Number : 32014
Brand : Sigma-Aldrich
Index-No. : 602-051-00-X
CAS-No. : 72-20-8

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 1), H300
Acute toxicity, Dermal (Category 1), H310
Short-term (acute) aquatic hazard (Category 1), H400
Long-term (chronic) aquatic hazard (Category 1), H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word Danger

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Hazard statement(s)

H300 + H310	Fatal if swallowed or in contact with skin.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)

P262	Do not get in eyes, on skin, or on clothing.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing.
P301 + P310 + P330	IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
P302 + P350 + P310	IF ON SKIN: Gently wash with plenty of soap and water. Immediately call a POISON CENTER or doctor/ physician.
P362	Take off contaminated clothing and wash before reuse.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Formula	:	$C_{12}H_8Cl_6O$
Molecular weight	:	380.91 g/mol
CAS-No.	:	72-20-8
EC-No.	:	200-775-7
Index-No.	:	602-051-00-X

Component	Classification	Concentration
Endrin		
	Acute Tox. 1; Aquatic Acute 1; Aquatic Chronic 1; H300, H310, H400, H410 M-Factor - Aquatic Acute: 100 - Aquatic Chronic: 100	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air.

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In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

In case of eye contact
After eye contact: rinse out with plenty of water. Remove contact lenses.

If swallowed
If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Foam Carbon dioxide (CO2) Dry powder

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
Carbon oxides
Hydrogen chloride gas
Combustible.
Development of hazardous combustion gases or vapours possible in the event of fire.

5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information
Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Avoid generation and inhalation of dusts in all circumstances. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions
Do not let product enter drains.

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6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.
Storage class (TRGS 510): 6.1A: Combustible, acute toxic Cat. 1 and 2 / very toxic hazardous materials

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Endrin	72-20-8	TWA	0.1 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Not classifiable as a human carcinogen Danger of cutaneous absorption		
		TWA	0.1 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential for dermal absorption		
		TWA	0.1 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		Skin designation		
		TWA	0.1 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		Skin notation		
		PEL	0.1 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		

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8.2 Exposure controls

Appropriate engineering controls
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection
Handle with impervious gloves.

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:KCL 741 Dermatril® L

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:KCL 741 Dermatril® L

Body Protection
protective clothing

Respiratory protection
required when dusts are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure
Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: solid Color: colorless
b)	Odor	No data available
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	No data available
f)	Initial boiling point	No data available

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	and boiling range	
g)	Flash point	()No data available
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapor pressure	No data available
l)	Vapor density	No data available
m)	Relative density	No data available
n)	Water solubility	insoluble
o)	Partition coefficient: n-octanol/water	log Pow: 5.20
p)	Autoignition temperature	No data available
q)	Decomposition temperature	226.0 °C (438.8 °F) -
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
no information available

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
In the event of fire: see section 5

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SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - 3.0 mg/kg

Inhalation: No data available

LD50 Dermal - Rat - 12.0 mg/kg
No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity
This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

RTECS: IO1575000

Central nervous system -

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SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	LC50 - Oncorhynchus mykiss (rainbow trout) - < 0.001 mg/l - 96.0 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia pulex (Water flea) - 0.02 mg/l - 48 h
	Immobilization EC50 - Daphnia magna (Water flea) - 0.0042 mg/l - 48 h

12.2 Persistence and degradability

No data available

12.3 Bioaccumulative potential

Bioaccumulation	Pimephales promelas (fathead minnow) - 56 d - 0.63 mg/l(Endrin)
	Bioconcentration factor (BCF): 13,000

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

DOT (US)

UN number: 2811 Class: 6.1 Packing group: I
Proper shipping name: Toxic solids, organic, n.o.s. (Endrin)
Reportable Quantity (RQ): 1 lbs
Reportable Quantity (RQ): 1 lbs
1) Marine pollutant: yesPoison Inhalation Hazard: No

IMDG

UN number: 2811 Class: 6.1 Packing group: I EMS-No: F-A, S-A
Proper shipping name: TOXIC SOLID, ORGANIC, N.O.S. (Endrin)
Marine pollutant : yes

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IATA
UN number: 2811 Class: 6.1 Packing group: I
Proper shipping name: Toxic solid, organic, n.o.s. (Endrin)

SECTION 15: Regulatory information

SARA 302 Components

	CAS-No.	Revision Date
Endrin	72-20-8	2007-07-01

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Acute Health Hazard

Reportable Quantity : D012 lbs

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

SECTION 16: Other information

Further information
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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Version: 6.5 Revision Date: 04/18/2021 Print Date: 09/11/2021

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SAFETY DATA SHEET

Version 8.0
Revision Date 09/13/2021
Print Date 09/14/2021

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Heptachlor

Product Number : PS78
Brand : Supelco
Index-No. : 602-046-00-2
CAS-No. : 76-44-8

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 3), H301
Acute toxicity, Dermal (Category 3), H311
Carcinogenicity (Category 2), H351
Specific target organ toxicity - repeated exposure (Category 2), H373
Short-term (acute) aquatic hazard (Category 1), H400
Long-term (chronic) aquatic hazard (Category 1), H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



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Signal word	Danger
Hazard statement(s)	
H301 + H311	Toxic if swallowed or in contact with skin.
H351	Suspected of causing cancer.
H373	May cause damage to organs through prolonged or repeated exposure.
H410	Very toxic to aquatic life with long lasting effects.
Precautionary statement(s)	
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P310 + P330	IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
P302 + P352 + P312	IF ON SKIN: Wash with plenty of water.Call a POISON CENTER/ doctor if you feel unwell.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms	:	1,4,5,6,7,8,8-Heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene
Molecular weight	:	373.32 g/mol
CAS-No.	:	76-44-8
EC-No.	:	200-962-3
Index-No.	:	602-046-00-2

Component	Classification	Concentration
Heptachlor		
	Acute Tox. 3; Carc. 2; STOT RE 2; Aquatic Acute 1; Aquatic Chronic 1; H301, H311, H351, H373, H400, H410 M-Factor - Aquatic Acute: 100 M-Factor - Aquatic	<= 100 %

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	Chronic: 100	

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. Call in physician.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

In case of eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

If swallowed
If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Foam Carbon dioxide (CO2) Dry powder

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
Carbon oxides
Hydrogen chloride gas
Combustible.
Development of hazardous combustion gases or vapours possible in the event of fire.

5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

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5.4 Further information

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid generation and inhalation of dusts in all circumstances. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Work under hood. Do not inhale substance/mixture.

Hygiene measures
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Storage class
Storage class (TRGS 510): 6.1A: Combustible, acute toxic Cat. 1 and 2 / very toxic hazardous materials

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

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Component	CAS-No.	Value	Control parameters	Basis
Heptachlor	76-44-8	TWA	0.5 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
	Remarks	Skin designation		
		TWA	0.5 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential Occupational Carcinogen Potential for dermal absorption		
		PEL	0.05 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		

8.2 Exposure controls

Appropriate engineering controls
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
protective clothing

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Respiratory protection
required when dusts are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure
Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: solid
b)	Odor	No data available
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point: 95 - 96 °C (203 - 205 °F)
f)	Initial boiling point and boiling range	145 °C 293 °F at 199.99 hPa
g)	Flash point	()Not applicable
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapor pressure	No data available
l)	Vapor density	No data available
m)	Density	1.57 g/cm3 at 9 °C (48 °F)
	Relative density	No data available
n)	Water solubility	No data available
o)	Partition coefficient: n-octanol/water	No data available
p)	Autoignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information
No data available

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SECTION 10: Stability and reactivity

10.1 Reactivity
The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
no information available

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Mouse - 68.0 mg/kg
Remarks: (RTECS)
Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)
Inhalation: No data available
LD50 Dermal - Rabbit - 500.0 mg/kg
Remarks: (RTECS)
Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)
No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity
Suspected of causing cancer.

IARC: 2B - Group 2B: Possibly carcinogenic to humans (Heptachlor)

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is

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on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
May cause damage to organs through prolonged or repeated exposure.Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Aspiration hazard
No data available

11.2 Additional Information

RTECS: PC0700000
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	LC50 - Oncorhynchus mykiss (rainbow trout) - 0.007 mg/l - 96.0 h Remarks: (ECOTOX Database)
Toxicity to daphnia and other aquatic invertebrates	LC50 - Daphnia magna (Water flea) - 0.078 mg/l - 48 h Remarks: (ECOTOX Database)

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential

Bioaccumulation	Pimephales promelas (fathead minnow) - 276 d - 0.00043 mg/l(Heptachlor) Bioconcentration factor (BCF): 23,814

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
No data available

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SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

DOT (US)
UN number: 2811 Class: 6.1 Packing group: II
Proper shipping name: Toxic solids, organic, n.o.s. (Heptachlor)
Reportable Quantity (RQ): 1 lbs
Reportable Quantity (RQ): 1 lbs
1) Marine pollutant: yesPoison Inhalation Hazard: No

IMDG
UN number: 2811 Class: 6.1 Packing group: II EMS-No: F-A, S-A
Proper shipping name: TOXIC SOLID, ORGANIC, N.O.S. (Heptachlor)
Marine pollutant : yes

IATA
UN number: 2811 Class: 6.1 Packing group: II
Proper shipping name: Toxic solid, organic, n.o.s. (Heptachlor)

SECTION 15: Regulatory information

SARA 302 Components
This material does not contain any components with a section 302 EHS TPQ.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
Heptachlor	76-44-8	2007-03-01

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

Reportable Quantity : D031 lbs

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

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SECTION 16: Other information

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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Version: 8.0 Revision Date: 09/13/2021 Print Date: 09/14/2021

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SAFETY DATA SHEET

Version 8.0
Revision Date 09/13/2021
Print Date 09/14/2021

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Heptachlor

Product Number : PS78
Brand : Supelco
Index-No. : 602-046-00-2
CAS-No. : 76-44-8

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 3), H301
Acute toxicity, Dermal (Category 3), H311
Carcinogenicity (Category 2), H351
Specific target organ toxicity - repeated exposure (Category 2), H373
Short-term (acute) aquatic hazard (Category 1), H400
Long-term (chronic) aquatic hazard (Category 1), H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



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Signal word	Danger
Hazard statement(s)	
H301 + H311	Toxic if swallowed or in contact with skin.
H351	Suspected of causing cancer.
H373	May cause damage to organs through prolonged or repeated exposure.
H410	Very toxic to aquatic life with long lasting effects.
Precautionary statement(s)	
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P310 + P330	IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
P302 + P352 + P312	IF ON SKIN: Wash with plenty of water.Call a POISON CENTER/ doctor if you feel unwell.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms	:	1,4,5,6,7,8,8-Heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene
Molecular weight	:	373.32 g/mol
CAS-No.	:	76-44-8
EC-No.	:	200-962-3
Index-No.	:	602-046-00-2

Component	Classification	Concentration
Heptachlor		
	Acute Tox. 3; Carc. 2; STOT RE 2; Aquatic Acute 1; Aquatic Chronic 1; H301, H311, H351, H373, H400, H410 M-Factor - Aquatic Acute: 100 M-Factor - Aquatic	<= 100 %

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	Chronic: 100	

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. Call in physician.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

In case of eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

If swallowed
If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Foam Carbon dioxide (CO2) Dry powder

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
Carbon oxides
Hydrogen chloride gas
Combustible.
Development of hazardous combustion gases or vapours possible in the event of fire.

5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

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5.4 Further information

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid generation and inhalation of dusts in all circumstances. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Work under hood. Do not inhale substance/mixture.

Hygiene measures
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Storage class
Storage class (TRGS 510): 6.1A: Combustible, acute toxic Cat. 1 and 2 / very toxic hazardous materials

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

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Component	CAS-No.	Value	Control parameters	Basis
Heptachlor	76-44-8	TWA	0.5 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
	Remarks	Skin designation		
		TWA	0.5 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential Occupational Carcinogen Potential for dermal absorption		
		PEL	0.05 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		

8.2 Exposure controls

Appropriate engineering controls
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
protective clothing

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Respiratory protection
required when dusts are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure
Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: solid
b)	Odor	No data available
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point: 95 - 96 °C (203 - 205 °F)
f)	Initial boiling point and boiling range	145 °C 293 °F at 199.99 hPa
g)	Flash point	()Not applicable
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapor pressure	No data available
l)	Vapor density	No data available
m)	Density	1.57 g/cm3 at 9 °C (48 °F)
	Relative density	No data available
n)	Water solubility	No data available
o)	Partition coefficient: n-octanol/water	No data available
p)	Autoignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information
No data available

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SECTION 10: Stability and reactivity

10.1 Reactivity
The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
no information available

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Mouse - 68.0 mg/kg
Remarks: (RTECS)
Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)
Inhalation: No data available
LD50 Dermal - Rabbit - 500.0 mg/kg
Remarks: (RTECS)
Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)
No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity
Suspected of causing cancer.

IARC: 2B - Group 2B: Possibly carcinogenic to humans (Heptachlor)

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is

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on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
May cause damage to organs through prolonged or repeated exposure.Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Aspiration hazard
No data available

11.2 Additional Information

RTECS: PC0700000
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	LC50 - Oncorhynchus mykiss (rainbow trout) - 0.007 mg/l - 96.0 h Remarks: (ECOTOX Database)
Toxicity to daphnia and other aquatic invertebrates	LC50 - Daphnia magna (Water flea) - 0.078 mg/l - 48 h Remarks: (ECOTOX Database)

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential

Bioaccumulation	Pimephales promelas (fathead minnow) - 276 d - 0.00043 mg/l(Heptachlor) Bioconcentration factor (BCF): 23,814

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
No data available

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SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

DOT (US)
UN number: 2811 Class: 6.1 Packing group: II
Proper shipping name: Toxic solids, organic, n.o.s. (Heptachlor)
Reportable Quantity (RQ): 1 lbs
Reportable Quantity (RQ): 1 lbs
1) Marine pollutant: yesPoison Inhalation Hazard: No

IMDG
UN number: 2811 Class: 6.1 Packing group: II EMS-No: F-A, S-A
Proper shipping name: TOXIC SOLID, ORGANIC, N.O.S. (Heptachlor)
Marine pollutant : yes

IATA
UN number: 2811 Class: 6.1 Packing group: II
Proper shipping name: Toxic solid, organic, n.o.s. (Heptachlor)

SECTION 15: Regulatory information

SARA 302 Components
This material does not contain any components with a section 302 EHS TPQ.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
Heptachlor	76-44-8	2007-03-01

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

Reportable Quantity : D031 lbs

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

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SECTION 16: Other information

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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The branding on the header and/or footer of this document may temporarily not visually match the product purchased as we transition our branding. However, all of the information in the document regarding the product remains unchanged and matches the product ordered. For further information please contact mlsbranding@sial.com.

Version: 8.0 Revision Date: 09/13/2021 Print Date: 09/14/2021

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SAFETY DATA SHEET

Version 6.4
Revision Date 09/09/2021
Print Date 09/11/2021

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Lindane

Product Number : 233390
Brand : Aldrich
Index-No. : 602-043-00-6
CAS-No. : 58-89-9

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 3), H301
Acute toxicity, Inhalation (Category 4), H332
Acute toxicity, Dermal (Category 4), H312
Carcinogenicity (Category 1A), H350
Effects on or via lactation, H362
Specific target organ toxicity - repeated exposure (Category 2), H373
Short-term (acute) aquatic hazard (Category 1), H400
Long-term (chronic) aquatic hazard (Category 1), H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

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Pictogram	
Signal word	Danger

Hazard statement(s)

H301	Toxic if swallowed.
H312 + H332	Harmful in contact with skin or if inhaled.
H350	May cause cancer.
H362	May cause harm to breast-fed children.
H373	May cause damage to organs through prolonged or repeated exposure.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P263	Avoid contact during pregnancy/ while nursing.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P310 + P330	IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
P302 + P352 + P312	IF ON SKIN: Wash with plenty of water.Call a POISON CENTER/ doctor if you feel unwell.
P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P363	Wash contaminated clothing before reuse.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms	:	1α,2α,3β,4α,5α,6β-Hexachlorocyclohexane γ-BHC
Formula	:	$C_6H_6Cl_6$
Molecular weight	:	290.83 g/mol
CAS-No.	:	58-89-9
EC-No.	:	200-401-2
Index-No.	:	602-043-00-6

Component	Classification	Concentration

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Gammaxene		
	Acute Tox. 3; Acute Tox. 4; Carc. 1A; Lact. ; STOT RE 2; Aquatic Acute 1; Aquatic Chronic 1; H301, H332, H312, H350, H362, H373, H400, H410 M-Factor - Aquatic Acute: 1 - Aquatic Chronic: 1	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. Call in physician.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

In case of eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

If swallowed
If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Foam Carbon dioxide (CO2) Dry powder

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

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5.2 Special hazards arising from the substance or mixture

Carbon oxides
Hydrogen chloride gas
Combustible.
Development of hazardous combustion gases or vapours possible in the event of fire.

5.3 Advice for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Work under hood. Do not inhale substance/mixture.

Hygiene measures
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Storage class
Storage class (TRGS 510): 6.1C: Combustible, acute toxic Cat.3 / toxic compounds or compounds which causing chronic effects

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

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SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Gammaxene	58-89-9	TWA	0.5 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Confirmed animal carcinogen with unknown relevance to humans Danger of cutaneous absorption		
		TWA	0.5 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential for dermal absorption		
		TWA	0.5 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		Skin designation		
		PEL	0.5 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		

8.2 Exposure controls

Appropriate engineering controls
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection
Handle with impervious gloves.

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:KCL 741 Dermatril® L

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min

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Material tested:KCL 741 Dermatril® L

Body Protection
protective clothing

Respiratory protection
required when dusts are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure
Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: solid
b)	Odor	No data available
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point/range: 113 - 115 °C (235 - 239 °F) - lit.
f)	Initial boiling point and boiling range	323.4 °C 614.1 °F at 1,013.25 hPa
g)	Flash point	No data available
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapor pressure	No data available
l)	Vapor density	No data available
m)	Density	1.85 g/cm3
	Relative density	No data available
n)	Water solubility	8.35 g/l at 25 °C (77 °F)
o)	Partition coefficient: n-octanol/water	Pow: 3.5 at 22 °C (72 °F) - Bioaccumulation is not expected.
p)	Autoignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	none

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9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
no information available

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - 88.0 mg/kg
Remarks: (IUCLID)
LC50 Inhalation - Rat - 4 h - 1,560 mg/m3
Dermal: No data available
No data available

Skin corrosion/irritation
Skin - Rabbit
Result: No skin irritation
(OECD Test Guideline 404)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: No eye irritation
Remarks: (IUCLID)

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity

IARC: 1 - Group 1: Carcinogenic to humans (Gammaxene)

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

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OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
Studies indicating a hazard to babies during the lactation period

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
May cause damage to organs through prolonged or repeated exposure.Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Aspiration hazard
No data available

11.2 Additional Information

RTECS: GV4900000
Neurotoxic effects., Cyanosis, Headache, Nausea, Incoordination., Tremors, Vomiting, Dizziness, Seizures., Unconsciousness
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Reproductive system. - Irregularities - Based on Human Evidence

Reproductive system. - Irregularities - Based on Human Evidence

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	LC50 - Cyprinus carpio (Carp) - 0.2 mg/l - 96.0 h Remarks: (ECOTOX Database)
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 0.80 - 6.50 mg/l - 48 h Remarks: (ECOTOX Database)
	LOEC - Daphnia - 0.021 mg/l - 7 d Remarks: (ECOTOX Database)
Toxicity to algae	EC50 - Algae - 4.00 mg/l - 72 h Remarks: (ECOTOX Database)

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential

Bioaccumulation	Pimephales promelas (fathead minnow) - 304 d - 0.0091 mg/l(Gammaxene)
	Bioconcentration factor (BCF): 674

12.4 Mobility in soil
No data available

The life science business of Merck KGaA, Darmstadt, Germany
operates as MilliporeSigma in the US and Canada

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

DOT (US)

UN number: 2811 Class: 6.1 Packing group: III
Proper shipping name: Toxic solids, organic, n.o.s. (Gammaxene)
Reportable Quantity (RQ): 1 lbs
Reportable Quantity (RQ): 1 lbs
1) Marine pollutant: yesPoison Inhalation Hazard: No

IMDG

UN number: 2811 Class: 6.1 Packing group: III EMS-No: F-A, S-A
Proper shipping name: TOXIC SOLID, ORGANIC, N.O.S. (Gammaxene)
Marine pollutant : yes

IATA

UN number: 2811 Class: 6.1 Packing group: III
Proper shipping name: Toxic solid, organic, n.o.s. (Gammaxene)

SECTION 15: Regulatory information

SARA 302 Components

	CAS-No.	Revision Date
Gammaxene	58-89-9	2007-07-01

SARA 313 Components

The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
Gammaxene	58-89-9	2007-07-01

SARA 311/312 Hazards

Acute Health Hazard, Chronic Health Hazard
:

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operates as MilliporeSigma in the US and Canada

Reportable Quantity D013 lbs

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Gammaxene	58-89-9	2007-07-01

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Gammaxene	58-89-9	2007-07-01

New Jersey Right To Know Components

	CAS-No.	Revision Date
Gammaxene	58-89-9	2007-07-01

SECTION 16: Other information

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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Version: 6.4 Revision Date: 09/09/2021 Print Date: 09/11/2021

The life science business of Merck KGaA, Darmstadt, Germany
operates as MilliporeSigma in the US and Canada

SAFETY DATA SHEET: PERCHLOROETHYLENE

IN CASE OF TRANSPORTATION EMERGENCY CONTACT:
CHEMTREC:(800) 424-9300

ALL OTHER INQUIRIES:
(770) 904-7042 // www.ciscochem.com
266 Rue Cezzan Lavonia, GA 30553



1. IDENTIFICATION
SUBSTANCE: TETRACHLOROETHYLENE

TRADE NAMES/SYNONYMS:
PERCHLOROETHYLENE; 1,1,2,2-TETRACHLOROETHYLENE; ETHYLENE TETRACHLORIDE; PERC; TETRACHLORETHYLENE; PERCHLORETHYLENE; TETRACHLOROETHENE

CHEMICAL FAMILY: halogenated, aliphatic

2. HAZARDS IDENTIFICATION
NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=0 REACTIVITY=0

EMERGENCY OVERVIEW:
COLOR: colorless
PHYSICAL FORM: volatile liquid
ODOR: faint odor, sweet odor
MAJOR HEALTH HAZARDS: respiratory tract irritation, skin irritation, eye irritation, central nervous system depression, cancer hazard (in humans)

POTENTIAL HEALTH EFFECTS:
INHALATION:
SHORT TERM EXPOSURE: irritation, nausea, vomiting, chest pain, difficulty breathing, irregular heartbeat, headache, drowsiness, dizziness, disorientation, mood swings, loss of coordination, blurred vision, lung congestion, kidney damage, liver damage
LONG TERM EXPOSURE: irritation, nausea, stomach pain, loss of appetite, headache, drowsiness, dizziness, disorientation, sleep disturbances, pain in extremities, loss of coordination, blurred vision, hormonal disorders, internal bleeding, heart damage, liver damage, birth defects, brain damage, tumors, cancer
SKIN CONTACT:
SHORT TERM EXPOSURE: irritation (possibly severe)
LONG TERM EXPOSURE: irritation
EYE CONTACT:
SHORT TERM EXPOSURE: irritation
LONG TERM EXPOSURE: irritation
INGESTION:
SHORT TERM EXPOSURE: same as effects reported in short term inhalation
LONG TERM EXPOSURE: same as effects reported in long term inhalation

3. COMPOSITION
COMPONENT: TETRACHLOROETHYLENE
CAS NUMBER: 127-18-4
PERCENTAGE: 100.0

Hazardous: YES

4. FIRST AID MEASURES

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion:
Aspiration hazard. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact:
Wash skin with soap or mild detergent and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Call a physician.

Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Note to Physician:
Do not administer adrenaline or epinephrine to a victim of chlorinated solvent poisoning.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Negligible fire hazard.

EXTINGUISHING MEDIA: carbon dioxide, regular dry chemical
Large fires: Use regular foam or flood with fine water spray.

FIRE FIGHTING: Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For tank, rail car or tank truck, evacuation radius: 800 meters (1/2 mile).

FLASH POINT: No data available.

Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode

6. ACCIDENTAL RELEASE MEASURES

SOIL RELEASE:
Dig holding area such as lagoon, pond or pit for containment. Dike for later disposal. Absorb with sand or other non-combustible material.

WATER RELEASE:
Absorb with activated carbon. Remove trapped material with suction hoses. Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). Keep out of water supplies and sewers.

OCCUPATIONAL RELEASE:
Avoid heat, flames, sparks and other sources of ignition. Stop leak if possible without personal risk. Small liquid spills: Absorb with sand or other non-combustible material. Large spills: Dike for later disposal. Remove sources of ignition. Keep unnecessary people away, isolate hazard area and deny entry. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

7. HANDLING AND STORAGE

Store in a cool, dry, ventilated area away from sources of heat or ignition. Isolate from flammable materials. Protect from direct sunlight. Wear special protective equipment (Sec. 8) for maintenance break-in or where exposures may exceed established exposure levels. Wash hands, face, forearms and neck when exiting restricted areas. Shower, dispose of outer clothing, change to clean garments at the end of the day. Avoid cross-contamination of street clothes. Wash hands before eating and do not eat, drink, or

smoke in workplace. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. EXPOSURE CONTROLS AND PERSONAL PROECTION

Airborne Exposure Limits:
-OSHA Permissible Exposure Limit (PEL): 100 ppm (TWA), 200 ppm (ceiling),
300 ppm/5min/3-hour (max)
-ACGIH Threshold Limit Value (TLV):
25 ppm (TWA), 100 ppm (STEL); listed as A3, animal carcinogen

Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, Industrial Ventilation, A Manual of Recommended Practices, most recent edition, for details.

Personal Respirators (NIOSH Approved):
If the exposure limit is exceeded, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus.

Skin Protection:
Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:
Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

CLOTHING: Wear appropriate chemical resistant clothing. GLOVES: Wear appropriate chemical resistant gloves.

RESPIRATOR: The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.

At any detectable concentration -
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive- pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure- demand or other positive-pressure mode.

Escape -
Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted organic vapor canister.
Any appropriate escape-type, self-contained breathing apparatus.

For Unknown Concentrations or Immediately Dangerous to Life or Health -
Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive- pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure- demand or other positive-pressure mode.
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: liquid
APPEARANCE: clear
COLOR: colorless
PHYSICAL FORM: volatile liquid
ODOR: faint odor, sweet odor
MOLECULAR WEIGHT: 165.83
MOLECULAR FORMULA: Cl2-C-C-Cl2
BOILING POINT: 250 F (121 C)
FREEZING POINT: -2 F (-19 C)
VAPOR PRESSURE: 14 mmHg @ 20 C

VAPOR DENSITY (air=1): 5.83
SPECIFIC GRAVITY (water=1): 1.6227
WATER SOLUBILITY: 0.015%
PH: Not available
VOLATILITY: Not available
ODOR THRESHOLD: 50 ppm
EVAPORATION RATE: 2.8 (butyl acetate=1)
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available
SOLVENT SOLUBILITY:
Soluble: alcohol, ether, benzene, chloroform, oils

10. STABILITY AND REACTIVITY

Stability:
Stable under ordinary conditions of use and storage. Slowly decomposed by light. Deteriorates rapidly in warm, moist climates.

Hazardous Decomposition Products:
Carbon dioxide and carbon monoxide may form when heated to decomposition. Hydrogen chloride gas and phosgene gas may be formed upon heating. Decomposes with moisture to yield trichloroacetic acid and hydrochloric acid.

Hazardous Polymerization:
Will not occur.

Incompatibilities:
Strong acids, strong oxidizers, strong alkalis, especially NaOH, KOH; finely divided metals, especially zinc, barium, lithium. Slowly corrodes aluminum, iron and zinc.

Conditions to Avoid:
Moisture, light, heat and incompatibles.

11. TOXICOLOGICAL INFORMATION

TETRACHLOROETHYLENE:
IRRITATION DATA: 810 mg/24 hour(s) skin-rabbit severe; 500 mg/24 hour(s) skin-rabbit mild; 162 mg eyes-rabbit mild; 500 mg/24 hour(s) eyes-rabbit mild

TOXICITY DATA: 4100 ppm/6 hour(s) inhalation-rat LC50; >10000 mg/kg skin-rabbit LD50 (Dow); 2629 mg/kg oral-rat LD50

CARCINOGEN STATUS: NTP: Anticipated Human Carcinogen; IARC: Human Limited Evidence, Animal Sufficient Evidence, Group 2A; ACGIH: A3 -Confirmed Animal Carcinogen; EC: Category 2

LOCAL EFFECTS:
Irritant: inhalation, skin, eye

ACUTE TOXICITY LEVEL:
Moderately Toxic: ingestion
Slightly Toxic: inhalation

TARGET ORGANS: central nervous system

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: eye disorders, heart or cardiovascular disorders, kidney disorders, liver disorders, nervous system disorders, skin disorders and allergies

TUMORIGENIC DATA: Available.

MUTAGENIC DATA: Available.

REPRODUCTIVE EFFECTS DATA: Available.

ADDITIONAL DATA: May be excreted in breast milk. Alcohol may enhance the toxic effects. Stimulants such as epinephrine may induce ventricular fibrillation.

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:

FISH TOXICITY: 8430 ug/L 96 hour(s) LC50 (Mortality) Flagfish (Jordanella floridae)

INVERTEBRATE TOXICITY: 7500 ug/L 48 hour(s) EC50 (Immobilization) Water flea (Daphnia magna)

ALGAL TOXICITY: 509000 ug/L 96 hour(s) EC50 (Photosynthesis) Diatom (Skeletonema costatum)

FATE AND TRANSPORT:

BIOCONCENTRATION: 49 ug/L 1-21 hour(s) BCF (Residue) Bluegill (Lepomis macrochirus) 3.43 ug/L

Environmental Fate:
When released into the soil, this material is expected to quickly evaporate. When released into the soil, this material may leach into groundwater. When released into the soil, this material may biodegrade to a moderate extent. When released to water, this material is expected to quickly evaporate. When released into water, this material is not expected to biodegrade. This material is not expected to significantly bioaccumulate. When released into the air, this material may be moderately degraded by reaction with photochemically produced hydroxyl radicals.

Environmental Toxicity:
The LC50/96-hour values for fish are between 1 and 10 mg/l. The LC50/96-hour values for fish are between 10 and 100 mg/l. This material is expected to be toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. TRANSPORT INFORMATION

Domestic (Land, D.O.T.)

Proper Shipping Name: TETRACHLOROETHYLENE Hazard Class: 6.1
UN/NA: UN1897
Packing Group: III
Information reported for product/size: 20L
International (Water, I.M.O.)

Proper Shipping Name: TETRACHLOROETHYLENE Hazard Class: 6.1
UN/NA: UN1897
Packing Group: III
Information reported for product/size: 20L

Proper shipping paperwork:

UN 1897, Tetrachoroethylene, 6.1, PG III

Marine Pollutant

15. REGULATORY INFORMATION

U.S. REGULATIONS:
CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4): TETRACHLOROETHYLENE (PERCHLOROETHYLENE): 100 LBS RQ

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES

(40 CFR 355 Subpart B): Not regulated.

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES
(40 CFR 355 Subpart C): Not regulated.

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370 Subparts B and C):
ACUTE: Yes
CHRONIC: Yes
FIRE: No
REACTIVE: No
SUDDEN RELEASE: No

SARA TITLE III SECTION 313 (40 CFR 372.65): TETRACHLOROETHYLENE (PERCHLOROETHYLENE)

OSHA PROCESS SAFETY (29 CFR 1910.119): Not regulated.
STATE REGULATIONS:
California Proposition 65:
Known to the state of California to cause the following: TETRACHLOROETHYLENE (PERCHLOROETHYLENE) Cancer (Apr 01, 1988)

CANADIAN REGULATIONS: WHMIS CLASSIFICATION: D2

NATIONAL INVENTORY STATUS:
U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed. CANADA INVENTORY (DSL/NDSL): Not determined.

16. OTHER INFORMATION

NFPA Ratings: Health: 2 Flammability: 0 Reactivity: 0

Label Hazard Warning:
WARNING! HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEYS. SUSPECT CANCER HAZARD. MAY CAUSE CANCER. Risk of cancer depends
on level and duration of exposure.

Label Precautions:
Do not get in eyes, on skin, or on clothing.
Do not breathe vapor or mist.
Keep container closed.
Use only with adequate ventilation.
Wash thoroughly after handling.

Label First Aid:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. In all cases call a physician.

Product Use:
Laboratory Reagent.

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Date Created: 5/18/2015
Date Updated: 6/11/2015

SAFETY DATA SHEET

Creation Date 02-Jun-2010 **Revision Date** 18-Jan-2018 **Revision Number** 3

1. Identification

Product Name **Zinc Metal Powder**

Cat No. : **Z5-500; Z46-3**

CAS-No 7440-66-6
Synonyms Zinc Dust (Certified/Technical)

Recommended Use Laboratory chemicals.
Uses advised against Not for food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Substances/mixtures which, in contact with water, emit flammable gases	Category 1
Pyrophoric solids	Category 1
Combustible dust	Yes

Label Elements

Signal Word
Danger

Hazard Statements
May form combustible dust concentrations in air
In contact with water releases flammable gases which may ignite spontaneously
Catches fire spontaneously if exposed to air



Precautionary Statements
Prevention
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Do not allow contact with air
Wear protective gloves/protective clothing/eye protection/face protection
Keep away from any possible contact with water, because of violent reaction and possible flash fire
Handle under inert gas. Protect from moisture
Skin
Brush off loose particles from skin. Immerse in cool water/wrap with wet bandages
Fire
In case of fire: Use CO2, dry chemical, or foam for extinction
Storage
Store under an inert atmosphere
Store in a dry place. Store in a closed container
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Very toxic to aquatic life with long lasting effects

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Zinc powder - zinc dust (pyrophoric)	7440-66-6	100

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Get medical attention if symptoms occur.

Inhalation Move to fresh air. If breathing is difficult, give oxygen. Get medical attention if symptoms occur.

Ingestion Do not induce vomiting. Obtain medical attention.

Most important symptoms and effects No information available.

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Dry sand, clay, approved class D extinguishers.

Unsuitable Extinguishing Media DO NOT USE WATER, Carbon dioxide (CO2), Dry chemical, Foam

Flash Point No information available

Method -	No information available
Autoignition Temperature	460 °C / 860 °F

Explosion Limits

Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Flammable. Fine dust dispersed in air may ignite. Pyrophoric: Spontaneously flammable in air. Water reactive. Contact with water liberates extremely flammable gases. Thermal decomposition can lead to release of irritating gases and vapors. Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products
Hydrogen
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
1	4	3	W

6. Accidental release measures

Personal Precautions	Use personal protective equipment. Remove all sources of ignition. Avoid dust formation. Take precautionary measures against static discharges. Do not get in eyes, on skin, or on clothing.
Environmental Precautions	Should not be released into the environment. See Section 12 for additional ecological information.
Methods for Containment and Clean Up	Remove all sources of ignition. Do not expose spill to water. Sweep up or vacuum up spillage and collect in suitable container for disposal. Use spark-proof tools and explosion-proof equipment. Avoid dust formation.

7. Handling and storage

Handling	Use only under a chemical fume hood. Wear personal protective equipment. Avoid dust formation. Avoid contact with skin, eyes and clothing. Avoid ingestion and inhalation. Handle under an inert atmosphere. Do not allow contact with air. Do not allow contact with water. Keep away from open flames, hot surfaces and sources of ignition. Use spark-proof tools and explosion-proof equipment. Take precautionary measures against static discharges.
Storage	Keep containers tightly closed in a dry, cool and well-ventilated place. Store under an inert atmosphere. Keep away from heat and sources of ignition. Keep away from water.

8. Exposure controls / personal protection

Exposure Guidelines	This product does not contain any hazardous materials with occupational exposure limitsestablished by the region specific regulatory bodies.
Engineering Measures	Use only under a chemical fume hood. Use explosion-proof electrical/ventilating/lighting/equipment. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure.
Respiratory Protection	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Solid
Appearance	Light blue
Odor	Odorless
Odor Threshold	No information available
pH	No information available
Melting Point/Range	419 °C / 786.2 °F
Boiling Point/Range	908 °C / 1666.4 °F
Flash Point	No information available
Evaporation Rate	No information available
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	1 mmHg @ 487 °C
Vapor Density	No information available
Specific Gravity	7.14
Solubility	Insoluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	460 °C / 860 °F
Decomposition Temperature	No information available
Viscosity	No information available
Molecular Formula	Zn
Molecular Weight	65.37

10. Stability and reactivity

Reactive Hazard	Yes
Stability	Water reactive. Moisture sensitive. Air sensitive. Pyrophoric: Spontaneously flammable in air.
Conditions to Avoid	Avoid dust formation. Incompatible products. Exposure to air. Exposure to moist air or water. Keep away from open flames, hot surfaces and sources of ignition.
Incompatible Materials	Strong oxidizing agents, Strong acids, Strong bases, Amines
Hazardous Decomposition Products	Hydrogen
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	Contact with water liberates extremely flammable gases. Pyrophoric: Spontaneously flammable in air.

11. Toxicological information

Acute Toxicity

Product Information No acute toxicity information is available for this product

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Zinc powder - zinc dust (pyrophoric)	LD50 = 630 mg/kg (Rat)	Not listed	Not listed

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Zinc powder - zinc dust (pyrophoric)	7440-66-6	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known

STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed No information available

Endocrine Disruptor Information No information available

Other Adverse Effects Tumorigenic effects have been reported in experimental animals. See actual entry in RTECS for complete information.

12. Ecological information

Ecotoxicity

This product contains the following substance(s) which are hazardous for the environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Zinc powder - zinc dust (pyrophoric)	EC50: 0.09 - 0.125 mg/L, 72h static (Pseudokirchneriella subcapitata) EC50: 0.11 - 0.271 mg/L, 96h static (Pseudokirchneriella subcapitata)	LC50: 0.211 - 0.269 mg/L, 96h semi-static (Pimephales promelas) LC50: = 2.66 mg/L, 96h static (Pimephales promelas) LC50: = 30 mg/L, 96h (Cyprinus carpio) LC50: = 0.45 mg/L, 96h semi-static (Cyprinus carpio) LC50: = 7.8 mg/L, 96h static (Cyprinus carpio) LC50: = 3.5 mg/L, 96h static (Lepomis macrochirus) LC50: = 0.24 mg/L, 96h flow-through (Oncorhynchus mykiss)	Not listed	EC50: 0.139 - 0.908 mg/L, 48h Static (Daphnia magna)

		LC50: = 0.59 mg/L, 96h semi-static (Oncorhynchus mykiss) LC50: 2.16 - 3.05 mg/L, 96h flow-through (Pimephales promelas) LC50: = 0.41 mg/L, 96h static (Oncorhynchus mykiss)		

Persistence and Degradability No information available

Bioaccumulation/ Accumulation No information available.

Mobility No information available.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No	UN1436
Proper Shipping Name	ZINC POWDER
Hazard Class	4.3
Subsidiary Hazard Class	4.2
Packing Group	II

TDG

UN-No	UN1436
Proper Shipping Name	ZINC POWDER
Hazard Class	4.3
Subsidiary Hazard Class	4.2
Packing Group	II

IATA

UN-No	UN1436
Proper Shipping Name	ZINC POWDER
Hazard Class	4.3
Subsidiary Hazard Class	4.2
Packing Group	II

IMDG/IMO

UN-No	UN1436
Proper Shipping Name	ZINC POWDER
Hazard Class	4.3
Subsidiary Hazard Class	4.2
Packing Group	II

15. Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Zinc powder - zinc dust (pyrophoric)	X	X	-	231-175-3	-		X	-	X	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance

R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Zinc powder - zinc dust (pyrophoric)	7440-66-6	100	1.0

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Zinc powder - zinc dust (pyrophoric)	-	-	X	X

Clean Air Act Not applicable

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Zinc powder - zinc dust (pyrophoric)	1000 lb	-

California Proposition 65 This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Zinc powder - zinc dust (pyrophoric)	X	X	X	-	X

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific

Email: EMSDS.RA@thermofisher.com

Creation Date	02-Jun-2010
Revision Date	18-Jan-2018
Print Date	18-Jan-2018
Revision Summary	This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

Appendix F: Accident Report Form

Employee Accident Report

EMPLOYEE

Name_____ SS#_____ Emp ID#_____

Home Address_____
Street city zip code phone

Sex: M F Birth Date_____ Age:___ Employment Status: Full time___ Pm1 lime___ %__

Job Title _____ Time in Present Position _____ Yrs __ Months

Department _____ Work Address----------,------,--,---,-,----------,----------
building/room # phone

Super'isor_____
name building/room# phone

Accident Dale_____ Time____ am/pm localion..,---,-----,-,-----,--,-------::-----:-:-----,--------,----------
What were you doing and using (tools, chemicals, equipment, etc.) when the accident occurred? Describe what happened.

Was this part of your nonnaljob duty? __ Yes __ No
Parts of body affected or injured_____

Witnesses:_____ /_____
name phone name phone
Report prepared by (if different f'om the injured employee),_____ ___,_____
name phone

I understand that it is my right to apply/or Workers' Compensation benefits and that I have two years from the date o,(lhis accident to do so. For more il!for11lation regarding workers' compensation, call the Nell' York State Depar1111el11 of labor. I also authorize release of medical il!formation regarding Ihis accide/11 lo /he Prime Conlraclors claim adminislrators.

EMPLOYEE SIGNATURE:_____ DATE:_____

SUPERVISOR/CHARGE PERSON

This accident was reported lo me on _____ at_____ Cost Center/Dept# _____
(date) (time)

JS FURTHER INVESTIGATION REQUIRED?_Yes _No _____
Supervisor/Charge Person Signature Date

HEALTH CARE PROVIDER

Treated by:----------,---------- _____
print name signature

Address_____
name of facility street city slate zip code phone

Hospitalized overnight as inpatient? -- ·csv ____ no (if emergency room only mark no)

Diagnosis/Assessment_____

Parts of body affected_____

Rcaggravation of previous work injury? ___ yes ___ no Date of initial injury_____

Appendix G:
OSHA Form 200-Occupational Injuries & Illnesses

Log and Summary of Occupational Injuries and illnesses

NOTE: This form is required by Public Law 91-596 and must be kept in the establishment for 5 years. Failure to maintain and post can result in issuance of citations and assessment of penalties. (*See posting requirements on the other side of form*)

RECORDABLE CASES: You are required to record information about every occupational death; every nonfatal occupational illness; and those nonfatal occupational injuries which involve one or more of the following: loss of conciousness, restriction of work or motion, transfer to another job, or medical treatment (other than first aid) (*See definitions on the other side of form*)

Case or File Number	Date of Injury or Onset of Illness	Employee's Name	Occupation	Department	Description of Injury or Illness
Enter a nonduplicating number which will facilitate comparisons with supplementary records.	Enter Mo/Day	Enter first name or initial, middle initial, last name	Enter regular job title, not activity employee was performing when injury occurred or at onset of illness. In the absence of a formal title, enter a brief description of the employee's duties.	Enter department in which the employee is regularly employed or a description of normal workplace to which employee is assigned, even though temporarily working in another department at the time of injury or illness.	Enter a brief description of the injury or illness and indicate the part or parts of the body affected. Typical entries for this column might be: Amputation of 1st joint right forefinger; Strain of lower back; Contact dermatitis on both hands; Electrocution - body.
(A)	(B)	(C)	(D)	(E)	(F)
					PREVIOUS PAGE TOTALS =>
					TOTALS (Instructions on other side of form) =>

OSHA No. 200

U.S. Department of Labor

For Calendar Year _____ Page: _____ of _____

Company Name

Establishment Name

Establishment Address

Form Approved
O.M.B. No. 1218-0176
See OMB Disclosure Statement on reverse.

Extent of and Outcome of Injury						Type, Extent of, and Outcome of Illness												
Fatalities	Nonfatal Injuries					Type of Illness							Fatalities	Nonfatal Illnesses				
	Injuries with Lost Workdays				Injuries Without Lost Workdays	CHECK Only One Column for Each Illness (See other side of form for terminations or permanent transfers)								Illnesses with Lost Workdays				
Injury Related													Illness Related					Illnesses without Lost Workdays
Enter Date of death. mm/dd/yy	Enter a Check if injury involves DAYS away from work or restricted work activity or both.	Enter a Check if injury involves DAYS away from work.	Enter number of DAYS away from work	Enter number of DAYS of restricted work activity	Enter a Check if no entry was made in column 1 or 2 but the injury is recordable as defined above.	Occupational Skin Disorder or Disease	Dust Disease of the lungs	Respiratory Conditions due to toxic agents	Poisoning (systemic effects of toxic materials)	Disorders due to physical agents	Disorders associated with repeated trauma	All other occupational illnesses	Enter DATE of death, mm/dd/yy	Enter a CHECK if Illness involves DAYS away from work, or DAYS of restricted work activity or both.	Enter a CHECK if Illness involves DAYS away from work.	Enter number of DAYS away from work.	Enter number of DAYS of restricted work activity	Enter a CHECK if no entry was made in columns 8 or 9
						(7)												
(1)	(2)	(3)	(4)	(5)	(6)	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(8)	(9)	(10)	(11)	(12)	(13)

Certification of Annual Summary Totals by: _____ Title: _____ Date: _____

OSHA 200

POST ONLY THIS PORTION OF THE LAST PAGE NO LATER THAN FEBRUARY 1

OMB DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to vary from 4 to 30 (time in minutes) per response with an average of 15 (time in minutes) per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments regarding this estimate or any other aspect of this information collection, including suggestions for reducing this burden, please send them to the OSHA Office of Statistics, Room N-3644, 200 Constitution Avenue, N.W. Washington, D.C. 20210

Instructions for OSHA No. 200

I. Log and Summary of Occupational Injuries and Illnesses

Each employer who is subject to the recordkeeping requirements of the Occupational Safety and Health Act of 1970 must maintain for each establishment, a log of all recordable occupational injuries and illnesses. This form (OSHA No. 200) may be used for that purpose. A substitute for the OSHA No. 200 is acceptable if it is as detailed, easily readable, and understandable as the OSHA No. 200.

Enter each recordable case on the log within six (6) workdays after learning of its occurrence. Although other records must be maintained at the establishment to which they refer, it is possible to prepare and maintain the log at another location, using data processing equipment if desired. If the log is prepared elsewhere, a copy updated to within 45 calendar days must be present at all times in the establishment.

Logs must be maintained and retained for five (5) years following the end of the calendar year to which they relate. Logs must be available (normally at the establishment) for inspection and copying by representatives of the Department of Labor, or the Department of Health and Human Services, or States accorded jurisdiction under the Act. Access to the log is also provided to employees, former employees and their representatives.

II. Changes in Extent of or Outcome of Injury or Illness

If, during the 5-year period the log must be retained, there is a change in an extent and outcome of an injury or illness which affects entries in columns 1, 2, 6, 8, 9, or 13, the first entry should be lined out and a new entry made. For example, if an injured employee at first required only medical treatment but later lost workdays away from work, the check in column 6 should be lined out and checks entered in columns 2 and 3 and the number of lost workdays entered in column 4.

In another example, if an employee with an occupational illness lost wordays, returned to work, and then died of the illness, any entries in columns 9 through 12 would be lined out and the date of death entered in column 8.

The entire entry for an injury or illness should be lined out if later found to be nonrecordable. For example, an injury which is later determined not to be work related, or which was initially thought to involve medical treatement but later was determined to have involved only first aid.

III. Posting Requirements

A copy of the totals and information following the total line of the last page for the year, must be posted at each establishment in the place or places where notices to employees are customarily posted. This copy must be posted no later than February 1 and must remain in place until March 1. Even though there were no injuries or illnessed during the year, zeros must be entered on the totals line, and the form posted.

The person responsible for the annual summary totals shall certify that the totals are true and complete by signing at the bottom of the form.

IV. Instructions for Completing Log and Summary of Occupational injuries and illnesses

Column A - CASE OR FILE NUMBER. Self Expanatory

Column B - DATE OF INJURY OR ONSET OF ILLNESS

For occupational injuries, enter the date of the work accident which resulted in the injury. For occupational illnesses, enter the date of initial diagnosis of illness, or, if absence from work occurred before diagnosis, enter the first day of the absence attributable to the illness which was later diagnosed or recognized.

Columns C through F - Self Explanatory

Columns 1 and 8 - INJURY OR ILLNESS-RELATED DEATHS - Self Explanatory

Columns 2 and 9 - INJURIES OR ILLNESSES WITH LOST WORKDAYS - Self Explanatory

Any injury which involves days away from work, or days of restricted work activitiy, or both, must be recorded since it always involves one or more of the criteria for recordability.

Columns 3 and 10 - INJURIES OR ILLNESSES INVOLVING DAYS AWAY FROM WORK - Self Explanatory

Columns 4 and 11 - LOST WORKDAYS -- DAYS AWAY FROM WORK.
Enter the number of workdays (consecutive or not) on which the employee would have worked but could not because of occupational injury or illness. The number of lost workdays should not include the day of injury or onset of illness or any days on which the employee would not have worked even though able to work. NOTE: For employees not having a regularly scheduled shift, such as certain truck drivers, construction workers, farm labor, casual labor, part-time employees, etc., it may be necessary to estimate the number of lost workdays. Estimates of lost workdays shall be based on prior work history of the employee AND days worked by employees, not ill or injured, working in the department and/or occupation of the ill or injured employee.

Columns 5 and 12 - LOST WORKDAYS -- DAYS OF RESTRICTED WORK ACTIVITY.
Enter the number of workdays (consecutive or not) on which because of injury or illness:
(1) the employee was assigned to another job on a temporary basis, or
(2) the employee worked at a permanent job less than full time, or
(3) the employee worked at a permanently assigned job but could not perform all duties normally connected with it.

The number of lost workdays should not include the day of injury or onset of illness or any days on which the employee would not have worked even though able to work.

Columns 6 and 13 - INJURIES OR ILLNESSES WITHOUT LOST WORKDAYS - Self Explanatory

Columns 7a through 7g - TYPE OF ILLNESS. Enter a check in only *one* column for each illness.
TERMINATION OR PERMANENT TRANSFER - Place an asterisk to the right of the entry in columns 7a through 7g (type of illness) which represented a termination of employment or permanent transfer.

V. Totals
Add number of entries in columns 1 and 8.
Add number of checks in columns 2, 3, 6, 7, 9, 10 and 13.
Add number of days in columns 4, 5, 11 and 12.
Yearly totals for each column (1-13) are required for posting. Running or page totals may be generated at the discretion of the employer.

In an employee's loss of workdays is continuing at the time the totals are summarized, estimate the number of future workdays the employee will lose and add that estimate to the workdays already lost and include this figure in the annual totals. No further entries are to be made with respect to such cases in the next year's log.

VI. Definitions
OCCUPATIONAL INJURY is any injury such as a cut, fracture, sprain, amputation, etc. which results from a work accident or from an exposure involving a single incident in the work environment. NOTE: Conditions resulting from animal bites, such as insect or snake bites or from one-time exposure to chemicals, are considered to be injuries.

OCCUPATIONAL ILLNESS of an amployee is any abnormal condition or disorder, other than one resulting from an occupational injury, caused by exposure to environmental factors associated with employment. It includes acute and chronic illnesses or diseases which may be caused by inhalation, absorption, ingestion, or direct contact.

The following listing gives the categories of occupational illnesses and disorders that will be utilized for the purpose of classifying recordable illnesses. For porposes of information, examples of each category are given. These are typical examples, however, and are not to be considered the complete listing of the types of illnesses and disorders that are to be counted under each category.

7a. Occupational Skin Diseases or Disorders. Examples: Contact dermatitis, eczema, or rash caused by primary irritants and sensitizers or poisonous plants; oil acne; chrome ulcers; chemical burns or inflamation, etc.

7b. Dust Diseases of the Lungs (Pneumaconioses). Examples: Silicosis, asbestosis and other asbestos-related diseases, coal worker's pneumaconioses, byssinosis, siderosis, and other pneumaconioses.

7c. Respiratory Conditions Due to Toxic Agents. Examples: Pneumonitis, pharyngitis, rhinitis or acute congestion due to chemicals, dusts, gases, or fumes; farmer's lung; etc.

7d. Poisoning (Systemic Effects of Toxic Materials). Examples: Poisoning by lead, mercury, cadmium, arsenic, or other metals; poisoning by

carbon monoxide, hydrogen sulfide, or other gases; poisoning by benzol, carbon tetrachloride, or other organic solvents; poisoning by insecticide sprays such as parathion, lead arsenate; poisoning by other chemicals such as formaldehyde, plastics, and resins; etc.

7e. Disorders Due to Physical Agents (Other than Toxic Materials). Examples: Heatstroke, sunstroke, heat exhaustion, and other effects of environmental heat, freezing, frostbite, and effects of exposure to low temperatures; caisson disease; effects of ionizing radiation (isotopes, X-rays, radium); effects of nonionizing radiation (welding flash, ultraviolet rays, microwaves, sunburn); etc.

7f. Disorders Associated with Repeated Trauma. Examples: Noise-induced hearing loss; synovitis, tenosynovitis, and bursitis. Raynaud's phenomena; and other conditions due to repeated motion, vibration, or pressure.

7g. All Other Occupational Illnesses. Examples: Anthrax, brucellosis, infectious hepatitis, malignant and benign tumors, food poisoning, histoplasmosis, coccidioidomycosis, etc.

MEDICAL TREATMENT includes treatment (other than first aid) administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does NOT include first aid treatment (one-time treatment and subsequent observation of minor scratches, cuts, burns, splinters, and so forth, which do not ordinarily require medical care) even though provided by a physician or registered professional personnel.

ESTABLISHMENT: A single physical location where business is conducted or where services or industrial operations are performed (for example: a factory, mill, store, hotel, resturant, movie theater, farm, ranch, bank, sales office, warehouse, or central administrative office). Where distinctly separate activities are performed at a single physicial location, such as construction activities operated from the same physical locations as a lumber yard, each activity shall be treated as a separate establishment.

For firms engaged in activities which may be physically dispersed, such as agriculture; construction; transportation; communications and electric, gas, and sanitary services, records may be maintained at a place to which employees report each day.

Records for personnel who do not primarily report or work at a single establishment, such as traveling salesmen, technicians, engineers, etc., shall be maintained at the location from which they are paid or the base from which personnel operate to carry out their activities.

WORK ENVIRONMENT is comprised of the physical location, equipment, materials processed or used, and the kinds of operations performed in the course of an employee's work, wether on or off the employer's premisis.

Appendix H

Quality Assurance Project Plan (QAPP)

Remedial Action Work Plan
318 Nevins Street, Brooklyn, NY
NYSDEC BCP #C224350

Impact Environmental Engineering and Geology PLLC
170 KEYLAND COURT, BOHEMIA, NEW YORK 11716
TEL (631) 269-8800 ▪ FAX (631) 269-1599

QUALITY ASSURANCE PROJECT PLAN

May 10, 2022

Submitted for:

318 Nevins Street
300-344 Nevins Streeet (also known as 318 Nevins Street)
Brooklyn, New York
County Tax Map Designation: *Block 439; Lot 1*

Submitted to:

New York State Department of Envrionmental Remediation, Region 2
Division of Environmental Remediation
625 Broadway
Albany, New York 12233-7016

Report user:

Gowanus 300 Nevins Street LLC
19 West 24th Street, 12th Floor
New York, NY, 10010

Project Number:
15977

IMPACT ENVIRONMENTAL | 170 Keyland Court | Bohemia | New York | 11716 | 631.269.8800

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1 INTRODUCTION

Impact Environmental Closures, Inc. (IEC) was retained by Gowanus 300 Nevins Street LLC to prepare a Remedial Investigation Work Plan (RIWP) as part of the Brownfield Cleanup Program (BCP) for Site C224350, located at 300-344 Nevins Street (also known as 318 Nevins Street), Brooklyn, New York in accordance with the provisions of the New York State Department of Environmental Conservation's (NYSDEC) Subpart 375-3.

This Quality Assurance Project Plan (QAPP) provides an outline of the field and laboratory procedures that will be used during the Remedial Investigation (RI) activities proposed for the Site. The QAPP is used to ensure the data it collects and analyzes meets project requirements.

The QAPP will assure the accuracy and precision of data collection during the Site characterization and data interpretation periods. The QAPP identifies procedures for sample collection to mitigate the potential for cross-contamination, as well as analytical requirements necessary to allow for independent data validation. A Sampling and Analysis Plan (SAP) identifying methods for sample collection, decontamination, handling and shipping, is provided in the following sections.

This QAPP has been prepared in accordance with USEPA's Requirements for Quality Assurance Project Plans for Environmental Data Operations; the EPA Region II CERCLA Quality Assurance Manual, and NYSDEC's DER-10 Technical Guidance for Site Investigation and Remediation (May 2010).

1.1 Scope and Goals

This QAPP has been prepared to support the remedial investigation activities planned for the Site. The goals of the RI are to document the nature and extent of soil, soil vapor and groundwater contamination, update the current Conceptual Site Model (CSM) including potential exposure pathways, and collect data to support determination of a remedy(ies). This QAPP was prepared to provide quality assurance (QA) guidelines to be implemented during the RI activities to fulfill the RI goals for the Site. This document may be modified for subsequent phases of investigative work, as necessary. The QAPP provides:

- A means to communicate to the individuals executing the various activities exactly what is to be done, by whom, and when.
- A culmination to the planning process that ensures that the program includes provisions for obtaining quality data (e.g., suitable methods of field operations).
- A historical record that documents the investigation in terms of the methods used, calibration standards and frequencies planned, and auditing planned.
- A document that can be used by the Project Manager's and QA Officer to assess if the ac-

tivities planned are being implemented and their importance for accomplishing the goal of quality data.

- A plan to document and track project data and results.
- Detailed descriptions of the data documentation materials and procedures, project files, and tabular and graphical reports.

The QAPP is primarily concerned with the quality assurance (QA) and quality control (QC) aspects of the procedures involved in the collection, preservation, packaging, and transportation of samples; field testing; record keeping; data management; chain-of-custody procedures; laboratory analyses; and other necessary matters to assure that the investigation activities, once completed, will yield data whose integrity can be defended.

QA refers to the conduct of all planned and systematic actions necessary to perform satisfactorily all task-specific activities and to provide information and data confidence as a result of such activities. The QA for task-specific activities includes the development of procedures, auditing, monitoring and surveillance of the performance.

QC refers to the activity performed to determine if the work activities conform to the requirements. This includes activities such as inspections of the work activities in the field (e.g., verification that the items and materials installed conform to applicable codes and design specifications). QA is an overview monitoring of the performance of QC activities through audits rather than first time inspections.

1.2 Cleanup Criteria and Laboratory Reporting Limits

The following cleanup criteria for soil and groundwater that will be used for evaluation of the full TAL/TCL sampling analytical data collected as part of the RI are as follows:

Soil:	6 NYCRR Part 375 Restricted-Residential Soil Cleanup Objectives (SCOs) listed in Table 375-6.8(a), Protection of Public Health Restricted Use SCOs and the Protection of Groundwater SCOs listed in Table 375-6.8(b).
Groundwater:	6 NYCRR Part 703 Groundwater Quality Standards and the NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values.

The following criteria will be used for evaluation of the soil vapor sample analytical data collected as part of the RI are as follows:

Soil Vapor:	NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York and Subsequent Final Guidance Updates Air Guidance Values and Matrices.

For the emerging contaminants 1,4-Dioxane, and Per/Polyfluoroalkyl substances (PFAS), the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH), in accordance to the recommendation of the New York State Drinking Water Council, are adopting drinking water

maximum contaminant levels (MCLs) of 10 parts per trillion (ppt) for PFAS Substances and 1 part per billion (ppb) for 1,4-Dioxane (effective December 18, 2018). No soil cleanup standards have been established in New York State. Soil vapor sampling for 1,4-Dioxane and PFAS is not required.

The environmental analytical laboratory selected for this RI must have reporting limits that are low enough to meet the above referenced cleanup standards. As part of project planning and throughout the project life cycle, the environmental consultant will maintain close communications with the contracted laboratory to convey the necessity for establishing and achieving data reporting goals. Additional information regarding the contracted lab and reporting limits are provided in Section 4.6.

2 QAPP ORGANIZATION AND RESPONSIBILITY

The principal organizations involved in verifying achievement of data collection goals for the Site include: the NYSDEC, NYSDOH, Applicant, Consultant, drilling subcontractor(s), independent environmental laboratory and the independent third party data validator. Roles, responsibilities, and required qualifications of these organizations are discussed in the following subsections.

2.1 NYSDEC and NYSDOH

It is the responsibility of the NYSDEC, in conjunction with NYSDOH, to review the RIWP and supporting documents, for completeness and conformance with the site-specific cleanup objectives and to make a decision to accept or reject these documents based on this review. The NYSDEC also has the responsibility and authority to review and approve all QA documentation collected during brownfield cleanup construction and to confirm that the QA Plan was followed.

2.2 Applicant

Gowanus 300 Nevins Street LLC (“Applicant”) will be responsible for complying with the QA requirements as specified herein and for monitoring and controlling the quality of the Brownfield cleanup construction either directly or through their designated environmental consultant and/or legal counsel. The Applicant will also have the authority to a select Remedial Action Contractor(s) to assist them in fulfilling these responsibilities. The designated Project Manager is responsible for implementing the project, and has the authority to commit the resources necessary to meet project objectives and requirements.

2.3 Environmental Consultant

IEC is the prime consultant on this project and is responsible for the performance of the services required to implement each phase of the RI Work Plan, including, but not limited to, field operations, laboratory testing, data management, data analysis and reporting. Any one member of IEC's staff may fill more than one of the identified project positions (e.g., field team leader and site safety and health officer). The various quality assurance, field, laboratory and management responsibilities of key project personnel are defined below and the resumes are provided in **Appendix A**.

IEC Project Manager (PM): Kevin Kleaka

The IEC PM has the responsibility for ensuring that the project meets the Work Plan objectives. The PM will report directly to the Gowanus 300 Nevins Street LLC's Project Coordinator and the NYSDEC/NYSDOH Project Coordinators and is responsible for technical and project oversight. The PM will:

- Define project objectives and develop a detailed work plan schedule.
- Establish project policy and procedures to address the specific needs of the project as a whole, as well as the objectives of each task.
- Acquire and apply technical and corporate resources as needed to assure performance within budget and schedule constraints.
- Develop and meet ongoing project and/or task staffing requirements, including mechanisms to review and evaluate each task product.
- Review the work performed on each task to assure its quality, responsiveness, and timeliness.
- Review and analyze overall task performance with respect to planned requirements and authorizations.
- Review and approve all deliverables before their submission to NYSDEC.
- Develop and meet ongoing project and/or task staffing requirements, including mechanisms to review and evaluate each task product.
- Ultimately be responsible for the preparation and quality of interim and final reports.
- Represent the project team at meetings.

IEC Field Team Leader (FTL): Alex Keenan

The Field Team Leader (FTL) has the responsibility for implementation of specific project tasks identified at the Site, and is responsible for the supervision of project field personnel, subconsultants, and subcontractors. The FTL reports directly to the Project Manager. The FTL will:

- Define daily work activities.
- Orient field staff concerning the project's special considerations.
- Monitor and direct subcontractor personnel.
- Review the work performed on each task to ensure its quality, responsiveness, and timeliness.
- Assure that field activities, including sample collection and handling, are carried out in accordance with this QAPP.

For this project the FTL will also serve as the Site Safety and Health Officer (SSHO). As such, he is responsible for implementing the procedures and required components of the Site Health and Safety Plan (HASP), determining levels of protection needed during field tasks, controlling site entry/exit, briefing the field team and subcontractors on site-specific health and safety issues, and all other responsibilities as identified in the HASP.

IEC Field Personnel (FS):

The field personnel hold a minimum of a bachelor's degree in a relevant natural or physical science or engineering. The field personnel will complete the collection of environmental samples from the Site in accordance with the requirements of the remedial investigation work plan and the QAPP, and oversee subcontractor work. The field personnel will:

- Implement sample collection protocols in accordance with applicable procedures for soil, soil vapor and groundwater sample collection.
- Ensure quality control procedures are being implemented.
- Ensure adherence to and successful completion of RIWP tasks.
- Oversee subcontractors to ensure field work is completed in accordance with the RAWP and QAPP.
- Record field notes and provide daily updates on work progress.

2.4 Quality Assurance (QA) Responsibilities

The QA Officer will have direct access to corporate executive staff as necessary, to resolve any QA dispute, and is responsible for auditing the implementation of the QA program in conformance with the demands of specific investigations and IEC policies, and NYSDEC requirements. The QA Officer has sufficient authority to stop work on the investigation as deemed necessary in the event of serious QA issues. The resume for the QA Officer is provided in **Appendix B**.

IEC Project QA Officer: Diana Posten

Specific function and duties include:

- Performing QA audits on various phases of the field operations
- Reviewing and approving QA plans and procedures

- Providing QA technical assistance to project staff
- Reporting on the adequacy, status, and effectiveness of the QA program on a regular basis to the Project Manager for technical operations
- Responsible for assuring third party data review of all sample results from the analytical laboratory

2.5 Field Responsibilities

IEC field staff for this project is drawn from a pool of qualified resources. The Project Manager will use staff to gather and analyze data, and to prepare various task reports and support materials. The designated technical team members are experienced professionals who possess the degree of specialization and technical competence required to effectively and efficiently perform the required work. The resumes for field personnel is provided in **Appendix C**.

3 QUALITY ASSURANCE OBJECTIVES FOR MEASUREMENT DATA

The overall objectives and criteria for assuring quality for this effort are discussed below. This QAPP addresses how the acquisition and handling of samples and the review and reporting of data will be documented. The objectives of this QAPP are to address the following:

- The procedures to be used to collect, preserve, package, and transport groundwater samples.
- Field data collection.
- Record keeping.
- Data management
- Chain-of-custody procedures.
- Precision, accuracy, completeness, representativeness, decision rules, comparability and level of quality control effort conformance for sample analysis and data management by Alpha Analytical under EPA analytical methods.

3.1 Level of QC Effort for Sample Parameters

Field blank, method blank, trip blank, field duplicate, laboratory duplicate, laboratory control, standard reference materials (SRM) and matrix spike samples will be analyzed to assess the quality of the data resulting from the field sampling and analytical programs. QC samples are discussed below.

- Field and trip blanks consisting of distilled water will be submitted to the analytical laboratories to provide the means to assess the quality of the data resulting from the field-sampling program. Field (equipment) blank samples are analyzed to check for procedural

chemical constituents at the facility that may cause sample contamination. Trip blanks are used to assess the potential for contamination of samples due to contaminant migration during sample shipment and storage.

- Method blank samples are generated within the laboratory and used to assess contamination resulting from laboratory procedures.
- Duplicate samples are analyzed to check for sampling and analytical reproducibility.
- MS/MSD and MS/Duplicate samples provide information about the effect of the sample matrix on the digestion and measurement methodology. Depending on site-specific circumstances, one MS/MSD or MS/Duplicate should be collected for every 20 or fewer investigative samples to be analyzed for organic and inorganic chemicals of a given matrix.

The general level of QC effort will be one field (blind) duplicate and one field blank (when non-dedicated equipment is used) for every 20 or fewer investigative samples of a given matrix. Additional sample volume will also be provided to the laboratory to allow site-specific MS/MSD or MS/Duplicate for every 20 or fewer investigative samples of a given matrix. One trip blank consisting of distilled, deionized water will be included along with each sample delivery group of aqueous VOC samples.

4 SAMPLING AND ANALYSIS PLAN

The selection and rationale for the RI sampling program is discussed in the RIWP. Methods and protocol to be used to collect environmental samples (i.e., soil vapor, soil and groundwater) for this investigation are described in the IEC Field Operating Procedures (FOPs) presented in **Appendix D**.

The number and types of environmental samples to be collected are summarized in **Table 1.** Sample parameter lists, holding times and sample container requirements are summarized in **Table 2.** The sampling program and related site activities are discussed below. To the extent allowed by existing physical conditions at the facility, sample collection efforts will adhere to the specific methods presented herein. If alternative sampling locations or procedures are implemented in response to facility specific constraints, each will be selected on the basis of meeting data objectives. Such alternatives will be approved by NYSDEC before implementation and subsequently documented for inclusion in the project file.

4.1 Custody Procedures

Sample custody is controlled and maintained through the chain-of-custody procedures. Chain of custody is the means by which the possession and handling of samples will be tracked from the source (field) to their final dispo-

sition, the laboratory. A sample is considered to be in a person's custody if it is in the person's possession or it is in the person's view after being in his or her possession or it was in that person's possession and that person has locked it in a vehicle or room. Sample containers will be cleaned and preserved at the laboratory before shipment to the Site. The following section and FOPs for Sampling, Labeling, Storage, and Shipment, located in Appendix B, describe procedures for maintaining sample custody from the time samples are collected to the time they are received by the analytical laboratory.

4.2 Sample Storage

Samples are stored in secure limited-access areas. Walk-in coolers or refrigerators are maintained at 4°C, 2°C, or as required by the applicable regulatory program. The temperatures of all refrigerated storage areas are monitored and recorded a minimum of once per day. Deviations of temperature from the applicable range require corrective action, including moving samples to another storage location if necessary.

4.3 Sample Custody

Sample custody is defined by this document as when any of the following occur:

- It is in someone's actual possession.
- It is in someone's view after being in his or her physical possession.
- It was in someone's possession and then locked, sealed or secured in a manner that prevents unsuspected tampering.
- It is placed in a designated and secured area.

Samples are removed from storage areas by the sample custodian or analysts and transported to secure laboratory areas for analysis. Access to the laboratory and sample storage areas is restricted to laboratory personnel and escorted visitors only; all areas of the laboratory are therefore considered secure. If required by the applicable regulatory program, internal chain-of-custody is documented in a log by the person moving the samples between laboratory and storage areas.

Laboratory documentation used to establish COC and sample identification may include the following:

- Field COC forms or other paperwork that arrives with the sample.
- The laboratory COC.
- Sample labels or tags are attached to each sample container.
- Sample custody seals.
- Sample preparation logs (i.e., extraction and digestion information) recorded in hardbound laboratory books that are filled out in legible handwriting, and signed and dated by the chemist.

- Sample analysis logs (e.g., metals, GC/MS, etc.) information recorded in hardbound laboratory books that are filled out in legible handwriting, and signed and dated by the chemist.
- Sample storage log (same as the laboratory COC).
- Sample disposition log, which documents sample disposal by a contracted waste disposal company.

4.4 Sample Tracking

All samples are maintained in the appropriate coolers prior to and after analysis. The analysts remove and return their samples as needed. Samples that require internal COC are relinquished to the analysts by the sample custodians. The analyst and sample custodian must sign the original COC relinquishing custody of the samples from the sample custodian to the analyst. When the samples are returned, the analyst will sign the original COC returning sample custody to the sample custodian. Sample extracts are relinquished to the instrumentation analysts by the preparatory analysts. Each preparation department tracks internal COC through their logbooks/spreadsheets. Any change in the sample during the time of custody will be noted on the COC (e.g., sample breakage or depletion).

4.5 Field Instrument Calibration

This section describes the calibration procedures and the frequency at which these procedures will be performed for instruments.

4.5.1 Instrument Calibration and Tuning

Calibration of instrumentation is required to ensure that the analytical system is operating correctly and functioning at the proper sensitivity to meet established reporting limits. Each instrument is calibrated with standard solutions appropriate to the type of instrument and the linear range established for the analytical method. The frequency of calibration and the concentration of calibration standards is determined by the manufacturer's guidelines, the analytical method, and/or laboratory's internal Quality Assurance Plan.

4.5.2 Field Instrument Calibration

Calibration of the field instruments will be completed prior to each day's use in accordance with the manufacturer's instructions. The field equipment will be maintained, calibrated and operated in a manner consistent with the manufacturer's guidelines and standard use methods. Quantitative field measurements will be limited to organic vapor readings (Photoionization Detector); pH, conductivity, turbidity, specific conductance, temperature, dissolved oxygen (Horiba); and depth to water (interface probe). The calibration procedures will be conducted at a minimum frequency of once per day with the exception of the interface probe which does not require calibration. Records of calibration, repair or replacement will be filed and maintained by the Field Team Leader.

4.6 Analytical Procedures

A single laboratory will be utilized for analysis of the soil, soil vapor and groundwater samples collected during the RI field sampling activities. The selected analytical laboratory for this project is Alpha Analytical of Westborough, Massachusetts. Alpha is certified by the NYSDOH Environmental Laboratory Approval Program (ELAP) Number 11148. The laboratory analyses will be in accordance with the most recent version of the NYSDEC Analytical Services Protocol (ASP) and the laboratory's internal Quality Assurance Plan. The lab will provide a Category B data deliverable.

The analytical methods Alpha will use for samples collected to delineate contaminants during this RI include:

Analytical Methods for Soil Samples	
USEPA Method 8260C/5035	Target Compound List (TCL) Volatile Organic Compounds (VOCs) + Tentatively Identified Compounds (TICs)
USEPA Method 8270D	TCL Semi Volatile Organic Compounds (SVOCs)+ TICs
USEPA Method 537 (M) – Isotope Dilution	NY List PFAS
USEPA 8270D-SIM	1,4-Dioxane
USEPA 8082A	TCL Polychlorinated biphenyls (PCBs)
USEPA 80818	TCL Pesticides
7196A	Hexavalent Chromium
9010C/9012B	Total Cyanide
6010D	TAL Metals
7471B	Total Mercury

Analytical Methods for Soil Vapor Samples	
TO-15	VOCs

Analytical Methods for Groundwater/Aqueous Samples	
USEPA Method 8260C	TCL VOCs + TICs
USEPA Method 8270D	TCL SVOCs + TICs
USEPA Method 537 (M) – Isotope Dilution	NY List PFAS
USEPA 8270D-SIM	1,4-Dioxane

Analytical Methods for Groundwater/Aqueous Samples	
USEPA 8082A (LVI)	TCL PCBs
USEPA 8082B	TCL Pesticides
7196A	Hexavalent Chromium
9010C/9012B	Total Cyanide
6020B	TAL Metals
7470A	Total Mercury

All other reporting and deliverables (i.e. waste characterization samples, geochemistry data for remedial action evaluation) will be in accordance with Standard Laboratory Procedure.

Alpha has provided a series of tables that contain the analytical parameters for soil, soil vapor and ground water, with the applicable reporting limits, method detection limits, containers and hold times. The Alpha tables are provided in **Appendix E**. Alpha has also provided the SOP for the PFAS analysis which is provided in **Appendix F**.

4.7 Data Usability Evaluation

The analytical laboratory data package will be validated by Linda Wright with Environmental Data Validation, Inc. of Pittsburgh, PA (EDV, Inc.), an independent/third-party data validator subcontractor, in accordance with the NYSDEC Division of Environmental Remediation DER-10, Appendix 2B(b) DEC Analytical Services Protocol Category B Data Deliverable. Refer to **Appendix G** for resume of the third-party data validator.

4.7.1 Procedures Used to Evaluate Data Usability

The sample analytical data for each sample matrix shall be evaluated and include, but are not limited to:

- Lab Report Narrative Review
- Data Package Completeness and COC records
- Sample Preservation and Holding Times
- Initial and Continuing Calibration
- QC Blanks
- Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)
- Matrix Spike/Matrix Spike Duplicates (MS/MSD)
- Surrogate Spikes
- Internal Standard Response and Retention Times
- Laboratory Duplicates
- Field Duplicates
- Raw Data (chromatograms), Calculation Checks and Transcription Verifications
- Reporting Limits

4.7.2 Data Usability Summary Report (DUSR)

The DUSR will provide an evaluation of the analytical data to determine whether the data meets the criteria of a NYSDEC ASP Category B data deliverable and meets the data quality objectives for the project.

Table 1: Summary of the Proposed Samples and Analyses

Table 1. Remedial Investigation Analytical Program Summary
318 Nevins Street, Brooklyn, New York

Sample Media	Number of Samples and QA/QC Blanks					Analyses
	Estimated Field Samples	Duplicates	MS/MSD Samples	Field Blanks	Trip Blanks	
Soil Vapor	5	1	0	0	0	VOCs USEPA Method TO-15
Shallow Soil Samples	11	1/20 samples	1/20 samples	1/day minimum, 1/20 samples	1/Cooler Containing Volatiles	TCL VOCs plus TICs, TCL SVOCs plus TICs, TCL PCBs, TCL Pesticides, TAL Metals, Total Cyanide, Hexavalent Chromium, NYSDEC PFAS Analyte List and 1,4-dioxane
Deep Soil Samples	11	1/20 samples	1/20 samples	1/day minimum, 1/20 samples	1/Cooler Containing Volatiles	TCL VOCs
Groundwater Samples Permanent Wells	8	1/20 samples	1/20 samples	1/day minimum, 1/20 samples	1/Cooler Containing Volatiles	TCL VOCs plus TICs, TCL SVOCs plus TICs, TCL PCBs, TCL Pesticides, TAL Metals, Total Cyanide, Hexavalent Chromium, NYSDEC PFAS Analyte List and 1,4-dioxane

NOTES:

MS = Matrix Spike
MSD = Matrix Spike Duplicate
TAL = Target Analyte List
TCL = Target Compound List
VOCs = Volatile Organic Compounds
SVOCs = Semi Volatile Organic Compounds
TICs - Tentatively Identified Compounds
PCBs - Polychlorinated Biphenyls
PFAS - Per and Polyfluoroalkyl Substances

Table 2: Summary of Sample Parameters, Holding Times and Sample Container Requirements

Table 2. Summary of Sample Parameters, Holding Times and Sample Container Requirements
318 Nevins Street, Brooklyn, New York

Sample Matrix	Test Method	Parameters	Containers	Preservation	Holding Times
Soil - Gas (air) Analysis	USEPA Compendium TO-15	VOCs	6-Liter Summa Canister	Summa - NA	15 Days
Soil	USEPA SW846 Method 5035A/8260C	TCL VOC+TICs	Terra Core	Water, 4 °C	48 Hours/14 Days*
	USEPA SW846 Method 5035A/8260C	CP-51 List VOCs	Terra Core	Water, 4 °C	48 Hours/14 Days*
	USEPA SW846 Method 8270D	TCL SVOCs+TICs	4oz glass jar	4 °C	14 Days (extraction)
	USEPA SW846 Method 8270D	CP-51 List SVOCs	4oz glass jar	4 °C	14 Days (extraction)
	USEPA SW846 Method 8082A	TCL PCBs	4oz glass jar	4 °C	14 Days (extraction)
	USEPA SW846 Method 8081B	TCL Organochlorine Pesticides	4oz glass jar	4 °C	14 Days (to extraction)
	USEPA Method 6010D	TAL Metals	4oz glass jar	4 °C	180 Days
	USEPA Method 7471B	TAL Metal - Mercury	4oz glass jar	4 °C	28 Days
	USEPA Method 7196A	Hexavelent Chromium	4oz glass jar	4 °C	30 Days
	USEPA Method 9010C	Total Cyanide	4oz glass jar	4 °C	14 Days
	Modified USEPA Method 537	PFAS	8oz HDPE Container	4 °C	14 days to Extraction, and 40 days After Extraction
	USEPA Method 8270 SIM	1,4-Dioxane	4oz glass jar	4 °C	14 Days (extraction)
	ISCO Treatment Supplier Bench Test	Soil Oxidant Demand	500 gram HPDE	4 °C	48 hours

* The holding time for VOCs is soil is 48-hours, until the sample is aliquoted and extruded into two (2) sealed vials with DI water and frozen to -7°C and one (1) sealed vial with methanol, then the hole time is extended to 14 days.

Table 2. Summary of Sample Parameters, Holding Times and Sample Container Requirements
318 Nevins Street, Brooklyn, New York

Sample Matrix	Test Method	Parameters	Containers	Preservation	Holding Times
Groundwater	USEPA SW846 Method 8260C	TCL VOC+TICs	3 - 40ml VOA Vials	HCL, pH<2, 4 °C	14 days
	USEPA SW846 Method 8270D	TCL SVOCs+TICs	2 - 1000 ml glass	4 °C	7 Days (extraction)
	USEPA SW846 Method 8082A	TCL PCBs	2 - 1000 ml glass	4 °C	7 Days (extraction)
	USEPA SW846 Method 8081B	TCL Pesticides	2 - 500 ml glass	4 °C	7 Days (extraction)
	USEPA Method 6010D	Total TAL Metals	500 ml plastic	HNO3, pH<2, 4 °C	180 Days
	USEPA Method 7471B	TAL Metal - Total Mercury	500 ml plastic	HNO_3, pH<2, 4 °C	28 Days
	Lab Sample Filtration	TAL Dissolved Metals	-	-	Filtration in Lab within 24 hours
	USEPA Method 3015A	Acid Digestion for Filtered TAL Metals	-	-	After Filtration
	USEPA Method 6010D	Dissolved TAL Metals	500 ml plastic	4 °C	180 Days after digestion
	USEPA Method 7471B	TAL Metal - Dissolved Mercury	500 ml plastic	4 °C	28 Days after digestion
	USEPA Method 7196A	Hexavelent Chromium	500 ml plastic	4 °C	24 Hours
	USEPA Method 9010C	Total Cyanide	250 ml plastic	NaOH, pH>12, 4 °C	14 Days
	Modified USEPA Method 537	PFAS	2 - 250 ml HDPE	Trizma, 4 °C	14 Days (extraction)
	USEPA Method 8270D-SIM w/Isotope Dilution	1,4-Dioxane	2 - 1000 ml glass	4 °C	7 Days (extraction)

Table 2. Summary of Sample Parameters, Holding Times and Sample Container Requirements
318 Nevins Street, Brooklyn, New York

Sample Matrix	Test Method	Parameters	Containers	Preservation	Holding Times
Groundwater	USEPA Method SM5210B	Biological Oxygen Demand	500 ml plastic	4 °C	48 Hours
	USEPA Method SM5220D	Chemical Oxygen Demand	250 ml plastic	H_2SO_4, pH<2, '4 °C	28 Days
	USEPA Method SM4500CO2-D	Carbon Dioxide	150 ml plastic, no head space	4 °C	48 Hours
	USEPA Method 353.2 / SM 4500NO3-F	Nitrate	250 ml plastic	4 °C	48 Hours
	USEPA Method 300.0 / SM4500SO4 -E	Sulfate	250 ml plastic	4 °C	28 Days
	USEPA Method 9060A	Total Organic Carbon	Two 40 ml amber glass VOA Vials	H_2SO_4, pH<2, '4 °C	28 Days
	USEPA Method SM2320B	Alkalinity	250 ml plastic, no headspace	4 °C	14 Days
	USEPA Method SM2540C	Total Dissolved Solids	500 ml plastic	4 °C	7 Days

Appendix A:
Key Project Personnel Resumes

KEVIN KLEAKA, P.G.

Executive Vice President/Senior Environmental Scientist

23 years EXPERIENCE

EDUCATION

State University of New York at Plattsburg,
Bachelor of Science in Environmental Science, 1995 Applied Environmental Science Program

EXPERIENCE

(1997-Present) **– IMPACT ENVIRONMENTAL CLOSURES Inc.,**
Executive Vice President, Senior Environmental Scientist

- Principally responsible for managing environmental assessment, investigation, construction and remediation projects in commercial and industrial markets for lenders, real estate investment/development firms, construction firms and government agencies.
- Manage Phase I and II Environmental Site Assessments, State Spill Investigation and Remediation, County and Federal Underground Injection Control Programs, State & City Voluntary/Brownfield Cleanup Programs, State & Federal Superfund Sites, Brownfield Environmental Restoration Programs, Federal RCRA Closure, City E-Designation Projects.
- Responsible for environmental compliance of construction projects for waste management.
- Quality control of work products and deliverables.
- Supervise staff of geologists, hydrogeologists, engineers, environmental scientists, and environmental technicians to develop and implement sampling and analysis plans, quality assurance programs, remedial action plans.
- Provide expert witness testimony/fact statements and support in litigation cases involving soil, air and/or groundwater pollution.

(1995-1997) – **WYETH AYERST LABORATORIES**, Chemist worked in chromatographic separations division performing quality assurance analysis.

- Performed laboratory procedures and analyses in accordance with USFDA analytical test methods by liquid, gas, and thin layer chromatography.

KEY PROJECTS

- East Side Access MTA LIRR
- Melody Cleaners
- ExxonMobil Spill- Valley Stream, NY
- Spartan Petroleum
- JFK 1020, Runway 13R-31L
- Rheingold Brewery Redevelopment Project
- WTC Greenwich Street Corridor Reconstruction
- Yankee Stadium Macomb's Park

ORGANIZATIONS

- New York City Brownfield Partnership
- New Partners for Community Revitalization
- ASTM Committee
- National Groundwater Association
- Environmental Bankers Association
- Vapor Intrusion Network
- Long Island Geologist Association
- Environmental Consulting Professionals
- Environmental Insurance Professionals

CERTIFICATIONS/ ACHIEVEMENTS

- Licensed Profession Geologist (NYS# 000735)
- Gold Certified Brownfield Professional 2012
- Advanced Tools for In-Situ Remediation Workshop
- ASTM Technical & Professional Training for Assessment of Vapor Intrusion into Structures of Property & New York State Department of Health, Vapor Intrusion Training
- New York Precision Equipment Global Survey Positioning Training
- MTBE & TBA Comprehensive Site Assessment and Successful Groundwater Remediation
- Environmental Data Resources, Due Diligence Workshop
- Advanced Technologies for Accelerated Natural Attenuation
- Eophysical Survey Systems, Theory and Practice of Applying Subsurface Interface Radar in Engineering and Geophysical Investigation.
- 40-Hour Occupational Safety & Health Administration

Appendix B:
Project QA Officer Resume

DIANA POSTEN

PROJECT MANAGER

EDUCATION

Bachelor of Science, Environmental Science and Management University of Rhode Island (2008)

EXPERIENCE

IMPACT ENVIRONMENTAL - 2017-Present, *Project Manager*

- Prepares Phase I and Phase II Environmental Assessments (ESAs) in general conformation with ASTM Practice.
- Oversees logistics of small to moderate scale remediation projects, including communication with disposal facilities, subcontractors, Clients and regulatory agencies, as applicable.
- Conducts various methods of soil, soil vapor and groundwater sampling and monitoring.

ELM GROUP, LLC - 2014-2017, *Junior Project Manager/Environmental Specialist*

- Completed state permit forms to ensure that land use/redevelopment/site remediation project designs complied with all applicable regulations (various sites throughout NJ)
- Executed a variety of field sampling programs in accordance with NJDEP QA/QC protocols (Field Sampling Procedures Manual), and project-specific Quality Assurance Project Plans (QAPP)s which covered Remedial Action projects and Remedial Investigation projects.
- Authored technical reports; ASTM Phase I, Preliminary Assessment Reports, Remedial Investigation Reports and Remedial Action Reports

CLOUGH HARBOUR & ASSOCIALTES LLP - 2009- 2014
Environmental specialist/Assistant Engineering Designer

- Support Utility-based clients with power system and circuit design. Work included circuit voltage conversions, MAOP calculations, configuration and design of new feeders from substations, distribution improvement projects, feeder hardening, and storm restoration work during hurricane Sandy.

KEY PROJECTS

- 3210 Park Ave NY, NY for Xenolith Partners
- 100 Charles Lindbergh Blvd Uniondale, NY for Poplar Health Care

CERTIFICATIONS/ ACHIEVEMENTS

- NSCS National honor society chapter at University of Rhode Island
- OSHA – Health and Safety for Hazardous Waste Site Investigation Personnel Certification, 40 Hours
- OSHA – Construction Safety Curse, 10 Hours
- Certification of Completion for Scientific and Technical Writing
- Certificate for Operation of Olympus Innov-X XRF X-Ray Analyzer Instrumentation
- NGA Natural Gas Distribution Systems Certification
- Rutgers' Office of Continued Professional Education courses in; Hydrology, Geology and Chemistry, Regulatory Training on Underground Storage Tanks, Effective Environmental Field Sampling and Data Collection, and Practical Applications in Hydrology

Appendix C:
Project Personnel Resumes

KEVIN KLEAKA, P.G.

Executive Vice President/Senior Environmental Scientist

23 years EXPERIENCE

EDUCATION

State University of New York at Plattsburg,
Bachelor of Science in Environmental Science, 1995 Applied Environmental Science Program

EXPERIENCE

(1997-Present) **– IMPACT ENVIRONMENTAL CLOSURES Inc.,**
Executive Vice President, Senior Environmental Scientist

- Principally responsible for managing environmental assessment, investigation, construction and remediation projects in commercial and industrial markets for lenders, real estate investment/development firms, construction firms and government agencies.
- Manage Phase I and II Environmental Site Assessments, State Spill Investigation and Remediation, County and Federal Underground Injection Control Programs, State & City Voluntary/Brownfield Cleanup Programs, State & Federal Superfund Sites, Brownfield Environmental Restoration Programs, Federal RCRA Closure, City E-Designation Projects.
- Responsible for environmental compliance of construction projects for waste management.
- Quality control of work products and deliverables.
- Supervise staff of geologists, hydrogeologists, engineers, environmental scientists, and environmental technicians to develop and implement sampling and analysis plans, quality assurance programs, remedial action plans.
- Provide expert witness testimony/fact statements and support in litigation cases involving soil, air and/or groundwater pollution.

(1995-1997) – **WYETH AYERST LABORATORIES**, Chemist worked in chromatographic separations division performing quality assurance analysis.

- Performed laboratory procedures and analyses in accordance with USFDA analytical test methods by liquid, gas, and thin layer chromatography.

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- Melody Cleaners
- ExxonMobil Spill- Valley Stream, NY
- Spartan Petroleum
- JFK 1020, Runway 13R-31L
- Rheingold Brewery Redevelopment Project
- WTC Greenwich Street Corridor Reconstruction
- Yankee Stadium Macomb's Park

ORGANIZATIONS

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- New Partners for Community Revitalization
- ASTM Committee
- National Groundwater Association
- Environmental Bankers Association
- Vapor Intrusion Network
- Long Island Geologist Association
- Environmental Consulting Professionals
- Environmental Insurance Professionals

CERTIFICATIONS/ ACHIEVEMENTS

- Licensed Profession Geologist (NYS# 000735)
- Gold Certified Brownfield Professional 2012
- Advanced Tools for In-Situ Remediation Workshop
- ASTM Technical & Professional Training for Assessment of Vapor Intrusion into Structures of Property & New York State Department of Health, Vapor Intrusion Training
- New York Precision Equipment Global Survey Positioning Training
- MTBE & TBA Comprehensive Site Assessment and Successful Groundwater Remediation
- Environmental Data Resources, Due Diligence Workshop
- Advanced Technologies for Accelerated Natural Attenuation
- Eophysical Survey Systems, Theory and Practice of Applying Subsurface Interface Radar in Engineering and Geophysical Investigation.
- 40-Hour Occupational Safety & Health Administration

XIN YUAN, P.E.

Quality Control Manager

EDUCATION

Masters of Science, Civil Engineering, UMass Amherst (2010)
Bachelor of Science, Environmental Engineering. Tsinghua University, Beijing, China (2008)

EXPERIENCE

2010-Present **IMPACT ENVIRONMENTAL** *Quality Control Manager/Environmental Analyst*

- Quality control of all waste management/brownfield redevelopment projects;
- Management of site remediation/waste management projects;
- Environmental compliance & permitting of waste management facilities
- Achieve and maintain appropriate and consistent application of environmental compliance for waste disposal/beneficial use facilities
- Achieve and maintain appropriate and consistent application of environmental compliance at the regional Levels for waste management projects
- Review & evaluate site investigation/waste characterization results for waste management projects and provide technical recommendations to project manager
- Authored a multitude of BUD petitions for various other solid waste related projects in NY,NJ &PA, including projects such as The East Side Access, The Air Rail Project and JFK International Jet Blue Terminal 5
- Design and perform waste characterization investigations for waste management projects

KEY PROJECTS

- Columbia University Manhattanville Development Project
- LIRR 3rd Track Expansion Project
- Atlas Quarry Reclamation Project
- Former New Jersey Zinc Company-West Plant Remediation Project
- Morris Blanchard Redevelopment Project
- Brooklyn Bridge Park Pier 1 Redevelopment Project
- Southwest Brooklyn Marine Transfer Station Redevelopment Project
- Doremus Avenue Redevelopment Project

CERTIFICATIONS/ ACHIEVEMENTS

- Long Island Association of Professional Geologists
- American Chinese Real Estate Society

CERTIFICATIONS/ ACHIEVEMENTS

- US EPA 40hr Hazardous Materials Response for First Responders Training
- Professional Engineer in MA, PA, NJ & NY

Alex Keenan

Project Geologist I

5 years EXPERIENCE

EDUCATION

Bachelor of Science, Geology, Virginia Polytechnic and State University (2014)

EXPERIENCE

IMPACT ENVIRONMENTAL, 2019-Present, *Env. Geologist II*

- Prepare Phase I & II Environmental Assessments (ESAs) in general conformation with ASTM Practice E-1527-05 and USEPA ALL Appropriate Inquiries (AAI).
- Perform various aspects of Phase II scopes of work for commercial properties.
- Prepare RIR reports for various NYSDEC OER projects.

PREFERRED ENVIRONMENTAL SERVICES, 2017-2019, *Geologist II*

- Prepared Cause & Origin Investigation reports for insurance claim determinations.
- Performed various aspects of Phase II scopes of work for residential and commercial properties.
- Oversight of residential spill remediations with NYSDEC oversight.

6 years

ADVANCED CLEANUP TECHNOLOGIES, 2016-2017, *Env. Scientist*

- Prepared Phase I & II Environmental Assessments (ESAs) in general conformation with ASTM Practice E-1527-05 and USEPA ALL Appropriate Inquiries (AAI).
- Prepared RIR reports for various NYSDEC OER projects.
- Performed various aspects of Phase II scopes of work for commercial properties.

SUNBURST CONSULTING, 2014-2015, *Wellsite Geologist and Geosteering Consultant*

- ND/MT based wellsite geologist responsible for geosteering Middle Bakken and Three Forks (1st and 2nd Bench) wells using TerraVu and excel programs.
- Gas Chromatography

KEY PROJECTS

- LIRR/MTA 3rd Rail Project
- MTA Bus Depot Sludge Sampling – 5 boroughs

CERTIFICATIONS/ ACHIEVEMENTS

- OSHA 40-hour HAZWOPER Training
- OSHA 8-hour Refresher (2016-to-present)
- OSHA 30-hour Construction Training (2019)
- Staten Island & LIRR Roadway Safety Training (2019)

DIANA POSTEN

PROJECT MANAGER

EDUCATION

Bachelor of Science, Environmental Science and Management University of Rhode Island (2008)

EXPERIENCE

IMPACT ENVIRONMENTAL - 2017-Present, *Project Manager*

- Prepares Phase I and Phase II Environmental Assessments (ESAs) in general conformation with ASTM Practice.
- Oversees logistics of small to moderate scale remediation projects, including communication with disposal facilities, subcontractors, Clients and regulatory agencies, as applicable.
- Conducts various methods of soil, soil vapor and groundwater sampling and monitoring.

ELM GROUP, LLC - 2014-2017, *Junior Project Manager/Environmental Specialist*

- Completed state permit forms to ensure that land use/redevelopment/site remediation project designs complied with all applicable regulations (various sites throughout NJ)
- Executed a variety of field sampling programs in accordance with NJDEP QA/QC protocols (Field Sampling Procedures Manual), and project-specific Quality Assurance Project Plans (QAPP)s which covered Remedial Action projects and Remedial Investigation projects.
- Authored technical reports; ASTM Phase I, Preliminary Assessment Reports, Remedial Investigation Reports and Remedial Action Reports

CLOUGH HARBOUR & ASSOCIALTES LLP - 2009- 2014
Environmental specialist/Assistant Engineering Designer

- Support Utility-based clients with power system and circuit design. Work included circuit voltage conversions, MAOP calculations, configuration and design of new feeders from substations, distribution improvement projects, feeder hardening, and storm restoration work during hurricane Sandy.

KEY PROJECTS

- 3210 Park Ave NY, NY for Xenolith Partners
- 100 Charles Lindbergh Blvd Uniondale, NY for Poplar Health Care

CERTIFICATIONS/ ACHIEVEMENTS

- NSCS National honor society chapter at University of Rhode Island
- OSHA – Health and Safety for Hazardous Waste Site Investigation Personnel Certification, 40 Hours
- OSHA – Construction Safety Curse, 10 Hours
- Certification of Completion for Scientific and Technical Writing
- Certificate for Operation of Olympus Innov-X XRF X-Ray Analyzer Instrumentation
- NGA Natural Gas Distribution Systems Certification
- Rutgers' Office of Continued Professional Education courses in; Hydrology, Geology and Chemistry, Regulatory Training on Underground Storage Tanks, Effective Environmental Field Sampling and Data Collection, and Practical Applications in Hydrology

Appendix D:
Field Operating Procedures

FIELD OPERATING PROCEDURES

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B.1 FIELD SAMPLING PROCEDURES

B.1.1 Sampling Personnel

The activities associated with the remedial investigation will be performed by or under the auspices of a Quality Assurance Officer. The sample staff (samplers) will possess a minimum of a BA Degree in the Earth, Space or Biological Sciences or a BS Degree in Engineering. Samplers will have a minimum of one (1) year experience in environmental/geological fieldwork. Additionally, all samplers will have received mandatory forty-hour Occupational Safety and Health Administration (OSHA) training on working with potentially hazardous materials and appropriate Hazard Communication Program and "Right-To-Know" training.

B.1.2 Geophysical Survey

A geophysical survey will be performed over target portions of the planimetric surface of the subject property utilizing a GSSI model SIR-2 ground penetrating radar (GPR) system equipped with a 400MHz antenna. The survey will be performed to identify the presence of any abandoned and/or active underground injection wells associated with the on-site sanitary systems on the Site.

A GPR system consists of a radar control unit, control cable and a transducer (antenna). The control unit transmits a trigger pulse at a normal repetition rate of 50 KHz. The trigger pulse is sent to the transmitter electronics in the transducer via the control cable. The transmitter electronics amplify the trigger pulses into bipolar pulses that are radiated to the subsurface. The transformed pulses vary in shape and frequency according to the transducer used. In the subsurface, variations of the signal occur at boundaries where there is a dielectric contrast (void, steel, soil type, etc.). Signal reflections travel back to the control unit represented as color graphic images for interpolation. This system is capable of transmitting electromagnetic energy in the frequency range of 16MHz to 2000MHz.

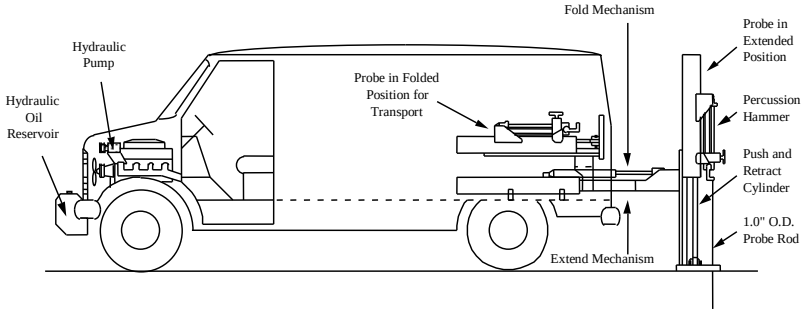
A qualified Impact Environmental Consulting, Inc. technician will specify a coordinate system on the planimetric surface of the site to map any subsurface dielectric anomalies detected on the premises. The operator will use knowledge of the subsurface soil composition to calibrate the SIR-2 system to site-specific conditions. Factor settings such as range, gain, number of gain points, and scans per unit, may be modified to yield the most accurate data to describe the subsurface conditions.

Upon finding a dielectric anomaly, a more spatially specific coordinate system may be designed over the area to determine size, shape and orientation. The data collected during the survey will be reviewed by the operator and compared against past experience, technical judgment and prior site knowledge to classify any detected anomalies.

B.1.3 Subsurface Vapor Probe and Soil Boring Installation/Soil Sampling

Subsurface probes will be installed using a *Geoprobe* hydraulically powered probing tool. Mechanized, vehicle mounted probe systems apply both static force and hydraulically powered percussion hammers for tool placement (static down forces up to 18,000 pounds combined with percussion hammers of eight horsepower continuous output). Recovery of large sample volumes will be facilitated with a probe-driven sampler. The probe-driven sampler consists of a hollow probe, which opens via a remote-control mechanism at the selected sampling depth in the soil profile to allow soil to enter as it was advanced. Discrete media samples will be secured at the desired depths and contained within a non-reactive transparent plastic sleeve that lined the hollow probe. The plastic sleeves will be removed for subsequent inspection and sample aliquot acquisition.

Geoprobe Operating System



B.1.4 Sample Characterization

A visual inspection of all soil samples recovered for the hydrogeological study will be conducted to classify the sample media. Color classifications will be made in accordance with the Munsell Classification System. Gradation classifications will be made in accordance with the Unified Soil Classification System.

B.1.5 Field Headspace Analysis

Headspace analysis will be performed on each of the acquired soil samples utilizing a portable photo ionization detection meter to measure what, if any, hydrocarbon concentrations were present in isolated portions of the secured samples. Calibration of the PID will be conducted prior to sampling using a span gas of known concentration. Headspace analysis will be conducted by partially filling a wide-mouth glass container with sample aliquot and sealing the top with aluminum foil, thereby creating a void. This void is referred to as the sample headspace. To facilitate the detection of any hydrocarbons contained within the headspace, the container will be agitated for a period of thirty (30) seconds. The probe of the vapor analyzer will then be injected through the foil into the headspace to measure the hydrocarbon concentrations present. A Photovac Micro-Tip, photo ionization detection meter (PID) will be the organic vapor analyzer selected for the headspace analysis. A PID utilizes the principle of photo ionization for detection and measurement of hydrocarbon compounds. A PID does not respond to all compounds similarly; rather, each compound has its own response factor relative to its calibration. For this investigation, the PID will be calibrated to isobutylene. Hydrocarbon relative response factors for a PID calibrated to isobutylene are published by the manufacturer.

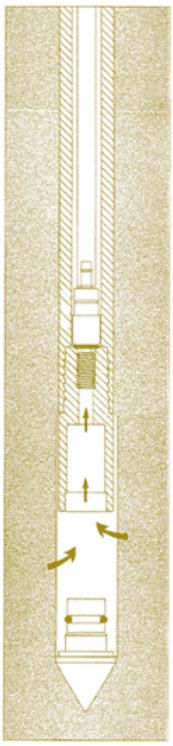
B.1.6 Soil Gas Survey – Photoionization Detector

The concrete slab will be cored at the sampling points using an electric powered core drill. Subsurface probes will be installed using *Geoprobe* manual probing tools. The probes will be equipped with retractable points that allow for soil gas to be measured at discrete depths. Each soil gas sample will be collected from the retractable point utilizing 3/8-inch in diameter disposable tubing. The soil gas will be drawn (purged) for approximately 15 seconds using a portable vacuum pump. The photo ionization detector will then be attached to the tubing to secure a soil gas reading.

B.1.7 Soil Gas Survey –Laboratory Analysis

Subsurface probes will be installed using a Geoprobe operating system. The probes will be equipped with a port run tubing system that allows for soil gas to be measured at discrete depths (see diagram below). This soil-gas sampling device uses a vacuum tight seal that isolates the sample acquisition to the specified depth. This device will assure quality control of the multi-depth soil-gas samples and eliminate the potential for inaccurate data. Each soil gas sample will be collected from the port run tubing system-utilizing 3/8-inch in diameter disposable Teflon tubing. The soil gas will be drawn (purged) for approximately 30 seconds using a portable vacuum pump. The soil gas will be pumped into a decontaminated portable pump and collected within a tedlar bag for preservation. Purging and sample collection flow rates will not exceed 0.2 liters per minute.

Geoprobe Port Run Tubing System



Tracer gas field testing, using helium gas, will be performed on all implants prior to sampling, to verify the integrity of each implant seal and to limit the possibility of sample dilution from surface air. The tracer gas field test will consist of sealing the area surrounding the implant with plastic sheeting and then introduce the tracer gas underneath the sheeting, so that the area where the probe intersects the ground is immersed in the tracer gas. A Model MGD-2002 Multi-Gas Leak Locator or equivalently approved helium detector will be connected to the soil vapor implant and sub-slab vapor implant, in accordance with Section 2.7.5 of the *October 2006, Guidance for Evaluating Soil Vapor Intrusion in the State of New York* NYSDOH guidance document, and tracer gas concentrations in the well will be recorded in the sampling log sheet. This procedure will be duplicated at each implant, prior to sample collection. The laboratory will confirm the field tracer gas tests by first analyzing approximately 85 to 90% of each sample canister for VOC's via USEPA method TO-15 and then use a helium detector to analyze the remaining contents in the Summa Canisters.

The sampling logs with the recorded field tracer gas test measurements and the tracer gas measurements reported by the laboratory will be submitted to NYSDEC with the initial sampling round report. NYSDEC will review the field and laboratory tracer gas test results to determine if the bentonite/cement grout seal

for each implant will require repairs and/or replacement to reduce the infiltration of ambient air and if additional tracer gas field/laboratory testing is required in the subsequent soil vapor sampling round.

B.1.8 Permanent Well Installation

Permanent monitoring wells are installed to provide repeated access to groundwater for collecting samples, as well as for obtaining water-level and other field data. Because monitoring wells are used to collect samples, it is important that construction materials not interfere with sample quality either by contributing contaminants or by sorbing contaminants already present. Further, construction materials must be compatible with (i.e., not degraded by) contaminants present in soils or groundwater.

Monitoring wells are potential contaminant migration routes between aquifers or from the surface to the subsurface. Construction procedures and standards must ensure that neither passive nor active introduction of contaminants can occur. Properly installed hydraulic seals and locking well covers reduce the potential for cross-contamination of monitoring wells.

Equipment needed:

- Drilling or auguring equipment appropriate to site conditions, drilling depth, and other project requirements.
- Drill bits appropriate for the expected soil and rock type(s) to be encountered.
- Sufficient threaded flush-joint riser pipe of an approved material [stainless steel, polyvinyl chloride (PVC)] in convenient lengths. *(NOTE: No glues are permitted.)*
- Sufficient threaded flush-joint slotted screen of an approved material (stainless steel, PVC) to meet design criteria. *(NOTE: No glues are permitted.)*
- Properly sized and washed filter pack material (quartz sand) in sufficient volume to meet well design criteria.
- Powdered bentonite.
- Photoionization detector.
- Steel surface casing (if required).
- Steel protective casing with locking cap.
- Tremie pump and pipe.
- Protective clothing, as required.
- Weighted measuring tape.

The following steps will be followed when installing monitor wells:

1. Advance the borehole to the required depth using a bit or auger flight of a diameter sufficient to allow for insertion of the tremie pipe when the casing is centered. It is preferred that the borehole be at least 2 inches in diameter larger than the casing diameter. The borehole should be drilled slightly deeper than required for the combined length of casing and screen. The final completion depth should be sounded with a decontaminated, weighted tape before continuance of well placement.

2. Make up the screen for installation. The casing and screen must be decontaminated. Tighten joints.
3. Withdraw the drill rods and bit through the auger flights. Check the borehole depth with a weighted surveyor's tape.
4. Lower the casing string into the drill casing.
5. Install the filter pack. Six inches or more of filter pack material should be spotted at the bottom of the hole, under the screen. Filter pack will be installed to 2 - 3 feet above the top of the screen.
6. Check the depth to the top of the filter pack with a weighted tape.
7. Tremie, or for shallow wells (<35 feet), gravity feed bentonite onto the top of the filter pack.
8. Pure bentonite grout (or equivalent) will be used as the annular seal, grout will be mechanically mixed with the appropriate amount of water. For shallow wells (<35 feet) granular bentonite may be substituted for grout.
9. Tremie the grout into the annulus using a tremie. Slowly withdraw the tremie pipe as the annulus fills. Grout the well to within 1 foot of the surface. Compare actual volume of grout placed with calculated volume. Both should be annotated in the field logbook.
10. After installing grout, dismantle and clean tremie equipment.
11. Finish the concrete pad so that it slopes away from the wellhead in all directions with a minimum thickness of 4 inches. If weather conditions warrant, cover the concrete until cured. Lock the well cover.
12. If the well design specified guard posts, dig the holes and set the guard posts in concrete separate from the concrete pad. Posts and concrete must extend to a depth of 2 feet.
13. Record the appropriate construction/completion information in the field logbook and on the appropriate monitoring well installation.
14. If a form was used for the concrete pad, return to the well site after the concrete has cured for at least 24 hours and remove the form. Backfill around the pad with native soil. Drill a weep hole for protective casing and just above the concrete pad.
15. The well identification should be marked on the protective casing and PVC cap. Paint the well cover and posts, if required.

B.1.9 Well Development

Monitor wells are developed to remove fines from the filter pack. Wells should not be developed for 24 hours after completion when a bentonite grout is used to seal the annular space. However, wells may be developed before grouting if conditions warrant. Wells are purged immediately before groundwater sampling to remove stagnant water and a sample representative of groundwater conditions. Wells should be sampled within 3 hours of purging (optimum) to 24 hours after purging (maximum, for low recharge conditions).

Equipment needed:

- Pump, pump tubing, or bailer and rope or wire line
- Water-level meter
- Temperature, conductivity and pH meters
- Personnel protective equipment as specified in the site-specific HASP
- Decontamination supplies
- Disposal drums, if required
- Photoionization Detector

Procedures.

The following steps will be followed when developing wells:

1. Put on personnel protective clothing and equipment as specified in the site-specific HASP.
2. Open and check the condition of the wellhead, including the condition of the surveyed reference mark, if any. Use photoionization detector at wellhead to determine the presence of VOCs (if applicable).
3. Determine the depth to static water level and depth to bottom of the casing.
4. Prepare the necessary equipment for developing the well. There are a number of techniques that can be used to develop a well. Some of the more common methods are bailing, surging and purge, and over pumping.
5. Continue well development until produced water is clear and free of suspended solids.
6. Remove the pump assembly or bailers from the well, decontaminate, and cleanup the site.
7. Lock the well cover before leaving. Dispose of produced water as required by the project work plan.

B.1.10 Monitoring Well Sampling

Monitoring well sampling is conducted with the goal of collecting data representative of groundwater conditions in the subsurface. The data obtained from a sampling event is typically very important for decision making, as it may be used to identify the presence of constituents of concern in groundwater, monitor the performance of a remedial measure, or evaluate the risks to potential receptors.

A written site specific monitoring or sampling plan is typically available that identifies the frequency of sampling, the wells to be monitored, equipment to be used, required laboratory analytical methods and parameters, sampling procedures, equipment decontamination procedures, sample quality

assurance/quality control (QA/QC) measures and data reporting requirements. Each monitoring or sampling plan will vary from one site to the next and should be reviewed when planning for a monitoring well sampling event.

Equipment:

The following is a list of standard equipment needed to conduct monitoring well sampling. Additional equipment may be required based on the sampling techniques and site conditions.

- Health and Safety Plan (HASP)
- Field Book
- Personal Protective Equipment
- Decontamination Equipment
- Traffic Control Devices
- Polyethylene Sheeting
- Bailers
- String
- Pumps
- Power Source to Operate Pumps
- Water Level Meter
- Tubing
- Buckets
- Sample Bottles
- Cooler
- Ice
- Bubble Wrap
- Calculator
- Disposable gloves

Procedures

Monitoring Well Gauging

Monitoring wells are typically gauged before sampling. Gauging includes measuring the depth to water (and/or non-aqueous phase liquids) and depth to bottom in the monitoring well with an electronic water level meter (WLM) or electronic interface probe (EIP). An EIP is used to gauge a well that contains non-aqueous phase liquids (NAPL-floating product). If wells do not contain NAPL, then a WLM is sufficient. The list of monitoring wells to be gauged should be provided in the monitoring or sampling plan and listed on the PTA. The entire network of monitoring wells should be gauged before sampling begins.

Sample Bottles

Groundwater samples are collected into laboratory supplied bottles. Bottles are typically ordered from the laboratory in advance of the sampling event. The size, bottle material (glass, plastic), and number of

bottles required for each sample will depend on the constituents being analyzed for and the analytical methods. Bottles delivered from the laboratory may contain a small amount of preservative. The preservative is to remain in the bottle. Overfilling the bottle may result in dilution of the preservative and should be avoided. When sampling for volatile compounds, no air (bubbles) may be present in the sample bottle.

Sampling Techniques

Many different techniques exist for sampling monitoring wells. The techniques vary depending on the constituents of concern, depth to groundwater, diameter of monitoring well and regulatory requirements. The technique appropriate for a specific site should be identified in the monitoring and sampling plan

Purging

Many of the sampling techniques include purging the monitoring well prior to sample collection. Purging is indented to remove stagnant water from the monitoring well after which a representative sample of the groundwater from the subsurface can be collected. During purging, three to five volumes of standing water in the well are removed. The volume of water in a monitoring can be calculated using the following equation:

Feet of standing water in well * Conversion factor = 1 well volume

Example:
10' * 0.65 = 6.5 gallons (1 well volume)

Well Diameter (in inches)	Conversion Factor
½	0.01
1	0.04
2	0.16
3	0.37
4	0.65
6	1.50

Purge water must be managed in accordance with the monitoring or sampling plan and local regulations.

Field Monitoring

Monitor indicator parameters (main indicator parameter for VOCs is DO) during purging, monitor and record the field indicator parameters (turbidity, temperature, specific conductance, pH, Eh and DO) at three to five-minute intervals. The well is considered stabilized and ready for sample collection when the indicator parameters have stabilized for three consecutive readings as follows:

1. 50 NTUs for turbidity

+/-0.1 for pH

2. +/-3% for conductance
3. +/-10 mv for redox potential
4. +/-10% for DO and turbidity

Sample Chain of Custody

The chain of custody (COC) form is used to record the inventory of samples to be delivered to the laboratory and document the transfer of custody from the sampler to the laboratory. All samples, including QA/QC samples, to be delivered to the laboratory must be listed on the COC along with requested analytical methods and parameters. The COC is to remain with the samples from the time of collection until receipt at the laboratory.

Sample Handling, Storage and Shipment Samples should be stored in laboratory-supplied coolers immediately after sampling. The cooler must contain ice in order to bring the temperature of the sample to 4 degrees Celsius. Samples must remain on ice until received by the laboratory. Care must be exercised to ensure that bottles do not break during handling of the cooler. Glass-on-glass contact often leads to breakage and should be avoided by wrapping each bottle in bubble wrap material.

Samples are to be delivered to the laboratory in coolers as soon as possible after collection. Each laboratory analytical method has a unique holding time, which is defined as the maximum time between sample collection and analysis by the laboratory. Samples analyzed after the hold time are usually considered invalid. Hold times may vary from one day to 6 months depending on the laboratory analytical methods. Holding time information can be obtained from the laboratory. It is the responsibility of the sampler to confirm that the delivery method will ensure receipt of the samples by the laboratory within the allotted holding time.

Sample delivery options include: shipment by common courier, personal delivery to the laboratory and delivery by the laboratory's courier service. Each laboratory may have a preferred sample delivery process. Coolers must be packed with sufficient amounts of ice and bubble wrap material to ensure the samples will be received by the laboratory intact and at an acceptable temperature. A custody seal, provided by the laboratory, should be placed over the opening between the lid and the base of the cooler, and the seal ID number recorded on the chain of custody form. The custody seal provides a means of alerting the laboratory if the cooler has been opened, and potentially tampered with, between the time it was sealed by the sampler and received by the laboratory. Guidance on cooler packing may be obtained from the laboratory.

Decontamination

Decontamination is necessary to avoid cross-contaminating samples. Sampling equipment that is not dedicated to a specific well must be decontaminated before sampling and after each sample is collected. Decontamination procedures may be specific to the site's monitoring or sampling plan. Typical equipment decontamination procedures may include rinses in the following sequence:

1) Tap water rinse
2) Alconox rinse
3) Tap Water Rinse
4) Deionized water rinse

When possible, samples should be collected from the least contaminated wells first and progress onto the more contaminated wells in order to reduce chances of sample cross-contamination.

Documenting a Monitoring Well Sampling Event

Information from the monitoring well sampling event must be documented on a field data form or recorded in the site-specific field book. Information to be recorded includes weather conditions, well integrity issues, well gauging information, purge volumes, sampling equipment and supplies used, sample identifications, sample collection times and the presence of any conditions that may compromise the integrity of the samples.

B.1.11 Low Flow Well Purging and Sampling

Purpose

The purpose of the low flow (low formation stress) purging and sampling procedure is to collect groundwater samples from monitoring wells that are representative of ground water conditions in a particular geological formation. This is accomplished by setting the intake velocity of the sampling pump to a flow rate, which limits drawdown inside the well casing. The placement of the intake of the sampling pump should be midway within the most permeable zone of the formation.

Equipment

- Pump system (adjustable rate, positive displacement groundwater sampling pump e.g., bladder or centrifugal pump)
- Control box (with or without a built-in compressor)
- Compressed Nitrogen tank (if necessary)
- Indicator parameter monitoring device(s)

- Flow measurement device (Flow cell)
- Personal Protection Equipment (PPE)
- Field Book
- Health and Safety Plan (HASP)
- Tools to access monitoring wells
- Disposable gloves
- Kevlar gloves
- Safety cones
- Sample containers (provided by laboratory)
- Chains of Custody (provided by laboratory)
- Blank or Pre-printed labels
- Glassware with appropriate preservative (provided by the laboratory)
- Ice
- Calculator
- Adsorbent pads
- Electronic interface probe
- Decontamination equipment
- String
- Appropriate size bailers
- Tubing (preferably Teflon for organics)

Procedure

Remove the gripper cap at all well locations and allow the water table to equilibrate, take care to secure all wells by closing the flush mount covers. Start sampling at the well-known or believed to have the least contamination and systematically to the most contaminated well, remembering to conduct proper decon procedure. During gauging and sampling activities equipment should not come into direct contact with the ground surface, plastic sheeting may be utilized as a clean and disposable working surface.

Slowly lower the pump to the depth specified for that well, the pump intake should never be set within two feet of the bottom of any well. This prevents disturbance and resuspension of any sediment. Record the depth of the pump intake. Re-measure the water level and begin purging, keeping the purge rate within 200-500 millimeters per minute (ml/min). Water level should be measured and recorded at three to five-minute intervals. Ideally, a steady flow rate should be maintained that results in a stabilized water level (drawdown of 0.3 ft or less is desired). Monitor indicator parameters (main indicator parameter for VOCs is DO) during purging, monitor and record the field indicator parameters (turbidity, temperature,

specific conductance, pH, Eh and DO) at three to five-minute intervals. The well is considered stabilized and ready for sample collection when the indicator parameters have stabilized for three consecutive readings as follows:

1. 50 NTUs for turbidity
2. +/-0.1 for pH
3. +/-3% for conductance
4. +/-10 mv for redox potential
5. +/-10% for DO

Collect sample from dedicated or disposable tubing. Remove any non-dedicated equipment from the well. Secure all wells. Fill out the chain of custody. At the end of the sampling day, coolers will be taped shut with the custodian's initials placed on custody seals at points of entry. Samples will be shipped via lab courier to the contract laboratory for morning delivery, picked up by courier or delivered directly to the laboratory by the field personnel at the end of the sampling day.

Contact with the laboratory will be made within 24 hours after each sampling event to ensure that samples arrived safely and with proper integrity preserved.

B.1.12 Grouting Bore Holes

Subsequent to the completion of each soil and groundwater probe installed during the remedial investigation, bottom-up grouting of the borehole will be conducted to grade. The grouting system was designed specifically for direct push applications. With powerful reciprocating (piston) pumps, the Geoprobe Grout Machines will deliver standard ASTM grout materials through 1.25-inch diameter Geoprobe probe rods or through 3/8-inch (1/4-inch inside diameter) polyethylene tubing. The pump is rated at 1000 psi with flow rates from 0.9 to 2.3 gpm.

B.1.13 Emerging Contaminant PFAS

The NYSDEC requires analysis for Per- and Polyfluoroalkyl Substances (PFAS) for new remedial program Sites as part of the investigation of potentially affected media, including soil, groundwater, surface water and sediment as an addition to the standard TAL/TCL sampling. Soil vapor sampling for PFAS is not required.

The following is the list of the 21 PFAS compounds identified by the NYSDEC for investigation:

- Perfluorobutanoic Acid
- Perfluoropentanoic acid
- Perfluorohexanoic acid
- Perfluoroheptanoic acid
- Perfluorooctanoic acid (PFOA)
- Perfluorononanoic acid
- Perfluorodecanoic acid
- Perfluoroundecanoic acid
- Perfluorododecanoic acid
- Perfluoro-n-tridecanoic acid
- Perfluorotetradecanoic acid
- Perfluorobutane sulfonic acid
- Perfluorohexane sulfonic acid
- Perfluoroheptane sulfonic acid
- Perfluorooctane sulfonic acid (PFOS)
- Perfluorodecane sulfonic acid
- 6:2 Fluorotelomersulfonic acid
- 8:2 Fluorotelomersulfonic acid
- Perfluorooctanesulfonamide
- N-methyl perfluoro-1-octanesulfonamidoacetic acid
- N-ethyl perfluoro-1-octanesulfonamidoacetic acid

PFAS Sampling Protocol:

Since the probability of false positives is relatively high during PFAS sample collection, due to the potential for many sources of cross-contamination combined with the low laboratory detection limits, guidance is needed for staff who will perform subsurface investigation activities (i.e., soil borings, monitoring well installation) and for staff collecting and/or handling PFAS environmental samples.

There are many products/materials/supplies that contain PFAS which pose a greater risk for introducing PFAS contamination into a sample during the sample collection process. These sources include the water used during drilling or decontamination, materials used within the sampling environment, sampling equipment, field clothing and personal protective equipment, sun and biological protection products, personal hygiene and personal care products, food packaging and the environment itself.

Field Clothing and Personal Protective Equipment (PPE)

Due to the extensive use of PFAS in many industries and products, clothing and PPE are likely to contain PFAS. Personnel completing field investigation work that will include the collection of samples for PFAS

analysis will need to address the physical, chemical and biological hazards associated with the Site. Field planning is essential to mitigate the potential for PFAS cross-contamination and to maintain personal safety.

- No clothing or boots with protective coatings can be worn (e.g., waterproof, water-repellent, fire-repellant or stain-resistant clothing or footwear). No Gore-Tex® or Tyvek material clothing/boots.
- Clothing worn during the collection of samples for PFAS analysis should be made of natural fibers (preferable cotton) and must have been previously washed a minimum of 5 times (i.e. no new clothing), without fabric softener and not with other clothing that may contain coatings.
- Use disposable, coating-free polyethylene coveralls and boot as applicable.
- Do not use personal care products on the day of sample collection:
    - Use PFAS-free soap and shampoo when scheduled for sample collection.
    - Limit toothpaste, mouthwash and dental floss to fluoride free options.
    - Do not use lotions, moisturizers, cosmetics, sunscreen or insect repellents prior to sampling.
- Use disposable, nitrile gloves.
- Do not use aluminum foil, prepackaged food, fast food wrappers or containers.

<u>Field Sampling Equipment/Materials</u>:

Because of the potential presence of PFAS in equipment typically used for drilling and to collect soil, groundwater, surface water, sediment, and drinking water samples, as well as the need for very low reporting limits, special handling and care must be taken when collecting samples for PFAS analysis to avoid sample contamination. The following guidance should be considered when using field sampling equipment.

- A screening of the equipment and materials that will be used during field sampling activities must be completed to identify equipment/materials that may be potential PFAS sources.
- Identify and use a PFAS free water source for drilling and decontamination of equipment.
- Use high density polyethylene [HDPE] water holding tanks.
- Use HDPE or silicone tubing materials.
- Use HDPE or polypropylene containers with HDPE or polypropylene caps.
- Use regular ice and Ziploc bags where there is no direct contact with the sample.
- Use loose plain paper, metal clipboard, ballpoint pens.
- When feasible, utilize single-use, disposable polyethylene or silicone materials (tubing, bailers, etc.) for monitoring well purging and sampling.

- Consumable core liners and catchers must be PVC.
- When using positive displacement/submersible pumps, familiarize yourself with the sampling pump/accessory equipment specifications to confirm that the device components do not contain Teflon® or Polytetrafluoroethylene (PTFE). Do not use pumps and tubing that contain Teflon™ and other fluoropolymer-containing materials.
- Do not use waterproof/treated paper or field books, plastic clipboards, water proof markers, Post-its and other adhesive paper products.
- Do not use passive diffusion bags for groundwater sampling.
- Do not use low density polyethylene (LDPE) sampling equipment/materials.
- Do not use drill casing thread lubricants that contain PFAS. Verify with supplier.
- Do not use LDPE or glass bottles with Teflon™-lined caps.
- Do not use chemical ice packs (i.e., Blue ice®).
- Do not handle any packaged food or drinks, aluminum foil, adhesive labels, etc. at or around sampling site.

Equipment Prep and Decontamination Procedures

The following procedure should be used to decontaminate HPDE, polypropylene or stainless-steel equipment used to collect samples for PFAS analysis. Because of the extremely low detection and reporting levels required for PFAS analysis, precaution should be taken to ensure decontamination materials (e.g., soap, tap water, deionized water) are not contaminated with PFAS prior to use. Traditional best practice techniques and procedures shall be subject to modification to prevent the introduction of non-site-derived contaminants including PFAS. Sample containers will be new and used only once for each sample and disposable equipment (e.g., gloves, tubing, etc.) will not be reused, therefore; these items will not require decontamination. All non-dedicated or non-disposable sampling equipment (i.e., the stainless-steel compositing vessel(s), flow-through cell, etc.) will be decontaminated between sample locations. The following guidance should be considered when preparing equipment and decontamination of equipment.

- An equipment decontamination area with a decon pad should be set up in the field to accommodate the sampling and drilling equipment.
- General Sampling Equipment Decon:
    - Rinse equipment with PFAS free – municipal PFAS free water to remove solids.
    - Use a polyethylene or poly vinyl chloride (PVC) brush and a low-phosphate lab detergent (i.e., Alconox) to scrub the equipment to remove residue and particulates.
    - Triple rinse clean equipment with PFAS Free deionized water and let air dry.

- Decontaminate sampling equipment after sampling at each location, or at the end of the field work day.
- The decontamination water should be changed between equipment cleanings.
- Clean, decontaminated equipment will be placed on clean polyethylene plastic or HPDE sheets to air dry. Direct contact with the ground will be avoided.

- Drilling Equipment Decon:
  - Drilling equipment, including rig, tooling, augers, bits, samplers, tremie pipes, etc. will be cleaned with a hot water pressure washer within a decon pad constructed of on clean polyethylene plastic or HPDE sheets and barriers to contain liquid generated.
  - The clean drilling equipment will be rinsed with PFAS Free deionized water and let air dry on clean polyethylene plastic or HPDE sheets.
  - Drilling equipment must be cleaned before beginning work (when applicable), in-between/following completion of borings, wells, and at the end of the field work day.
  - Tools, drill rods, and augers will be placed on polyethylene plastic or HPDE sheets following pressure washing. Direct contact with the ground will be avoided.
  - Decon water will be temporarily collected in 55-gallon drums and transported to a waste accumulation area for later disposal.
- Well Development Equipment Decon:
  - Prior to well development, non-dedicated equipment (e.g., bailers, PFOS-free pumps, etc.) will be washed with potable water and a PFC/phosphate-free detergent (i.e., Alconox®).
  - The sampling equipment will then be rinsed with potable water followed by a triple rinse with PFAS Free deionized water.
  - The clean/decontaminated equipment will be placed on polyethylene plastic or HPDE sheets to air dry. At no time, will washed equipment be placed directly on the ground.
  - Decon water will be temporarily collected in 55-gallon drums and transported to a waste accumulation area for later disposal.

Sample Collection

PFAS are ubiquitous in consumer products and the pervasive presence of these chemicals coupled with very sensitive analytical methods makes contamination of samples both in the lab and the field a significant concern from sources extraneous of the environmental media being sampled. The following guidance should be considered when undertaking collection of samples for PFAS analysis.

- Transport of sample collection supplies and equipment have the potential to come into contact with carpets and fabric in vehicles which have likely been treated with stain-resistant/water proofing containing PFAS. Steps should be taken to minimize this contact by packaging supplies

and equipment in the designated coolers and/or using polyethylene plastic or HPDE sheets as a barrier.

- Sample container labels should be prepared to the extent possible using a ball-point pen only before arrival at the sampling site and completed at the Site with a ball point pen; do not use sharpie or other permanent markers. No waterproof logbooks or plastic clipboards are to be used.
- Keep materials/equipment that may contain PFAS away from the sampling area and avoid physical contact with anything likely to contain PFAS (e.g., food, clothing, personal care products, etc.) during the sample collection process.
- Maintain an inventory of items used/maintained in the sampling area.
- If other sampling is to be performed, ALWAYS collect PFAS samples first. This avoids contact with any other type of sample container, bottles or package materials
- All sample containers use for PFAS sampling must come from the laboratory that will also be performing the PFAS analysis. Recommended sampling containers should be HDPE bottles fitted with unlined (no Teflon) polyethylene screw caps.
- Sample containers must be stored in a PFAS free container prior to sampling.
- For all environmental media, hands should be washed well before sampling.
- Wear disposable, powder free nitrile gloves to handle sampling equipment and sample containers. Clean nitrile gloves should be used when collecting the sample.
- Take precautions not to touch any surfaces prior to sample collection.
- As with all other samples, do not place the sample bottle cap on any surface when collecting the sample, and avoid all contact with the inside of the sample bottle or its cap.
- Sample directly into the provided HDPE bottle seal with cap. Place the bottles into individual sealed plastic bag (e.g. Ziploc®) separate from other samples in a clean, dedicated cooler for PFAS samples only.
- Use bagged ice (PFAS free) in the dedicated PFAS sample cooler; NO chemical ice packs in this cooler.
- No samples collected for other parameters can be stored with the PFAS samples.

PFAS Analysis and Reporting

The designated analytical laboratory must provide a full category B deliverable, and a DUSR will be prepared by an independent 3rd party data validator. QA/QC samples will be collected as required in DER-10, Section 2.3(c).

Modified EPA Method 537 is the preferred method to use for environmental samples due to its ability to achieve very low detection limits. Reporting limits for PFAS in groundwater and soil are to be 2 ng/L (ppt) and 1 ug/kg (ppb), respectively. If contract labs or work plans submitted by responsible parties indicate that they are not able to achieve these reporting limits for the entire list of 21 PFAS, site specific decisions will need to be made by the NYSDEC project manager in consultation with the NYSDEC remedial program chemist. Note: Reporting limits for PFOA and PFOS in groundwater should not exceed 2 ng/L.

The NYSDEC has developed a PFAS Analyte List for remedial programs. If lab and/or matrix specific issues are encountered for any compounds, the NYSDEC PM, in consul with the NYSDEC Remedial Program Chemist, will make case-by-case decisions as to whether certain analytes may be temporarily or permanently discontinued from analysis at each Site.

Summary of Prohibited and Acceptable Items for PFAS Sampling

Prohibited	Acceptable
Field Equipment	
Teflon/Silicone containing materials	HDPE, stainless steel, polypropylene materials
LDPE materials	Acetate liners
Waterproof field books/paper/bottle labels	Loose non-waterproof paper, and non-waterproof sample labels
Plastic Clipboards/binders/hard cover notebooks	Aluminum field clipboards or with Masonite
Waterproof markers/sharpies	Pens
Post-it-notes	Wet-ice
Chemical ice packs	
Field clothing and PPE	
New cotton clothing or synthetic water resistant, waterproof, or stain-treated clothing, clothing treated with Gore-Tex	Well laundered clothing made of natural fibers (preferably cotton)
Clothing laundered with fabric softener	No fabric softener
Boots containing Gore-Tex or treated with water resistant spray	Boots made with polyurethane and PVC
Tyvek	Laundered cotton clothing
Cosmetics, moisturizers, hand cream etc. as part of personal cleaning/showering routine, or non-natural toxic containing sunscreens and insecticides	Natural, non-toxic, and natural sunscreens/insect repellents.
Sample Containers	
LDPE or glass containers	HDPE or polypropylene
Teflon-lined caps	Unlined polypropylene caps
Rain events	
Waterproof or resistant rain gear	Wet weather gear made from polyurethane and PVC only
Equipment Decontamination	
Decon 90 Liquinox Water from onsite well	Alconox 7th Generation Free & Clear Dish Soap
Food considerations	
All food and drink with the exceptions of those noted on the right	Bottled water with hydration fluids (i.e. Gatorade and Powerade) to be brought and consumed only in staging areas
Vehicle Considerations	
Vehicle fabrics, carpets and mats may contain PFAAs	Avoid utilizing areas inside vehicles as sample/staging areas

B.1.14 Emerging Contaminant 1,4-Dioxane

The NYSDEC requires analysis for 1-4 Dioxane for new remedial program Sites as part of the investigation of potentially affected media, including soil, groundwater, surface water and sediment as an addition to the standard TAL/TCL sampling. Soil vapor sampling for 1,4-Dioxane is not required. 1,4-Dioxane is used as a stabilizer and inhibitor in chlorinated solvents, and used for a wide variety of other industrial processes. It is present in adhesives, sealants, cosmetics, pharmaceuticals, rubber chemicals and surface coatings.

The NYSDEC reporting limit for 1,4-dioxane in groundwater should be no higher than 0.35 µg/L (ppb) and no higher than 0.1 mg/kg (ppm) in soil. Materials used in environmental sampling can be a source of 1,4-dioxane contamination. 1,4-Dioxane also might be present in detergents used to decontaminate environmental sampling equipment.

Because of the potential presence of 1,4-dioxane in equipment typically used to collect environmental samples, as well as the need for very low reporting limits, special handling and care must be taken when collecting samples to avoid sample contamination. The best practice techniques and procedures provided in Section B.1.13 entitled *Emerging Contaminant PFAS* should be implemented when collecting samples for 1,4-dioxane analysis.

Although ELAP offers certification for both EPA Method 8260 SIM and EPA Method 8270 SIM in waters, the NYSDEC DER is advising the use of Method 8270 SIM because it provides a more robust extraction procedure, uses a larger sample volume, and is less vulnerable to interference from chlorinated solvents. The analysis currently performed for SVOCs in soil is adequate for evaluation of 1,4-dioxane in soil, which already has an established SCO.

B.2 QA/QC FIELD PROCEDURES

B.2.1 Decontamination Procedures

Prior to arrival on the Site and between sample locations, the probes will be decontaminated by steam cleaning, Alconox wash, and rinsing with distilled water. This will be followed by air drying as per project requirements. All sampling apparatus will be dedicated or disposable. A clean, new liner will be used for each sample. Parts will be inspected for wear and damage before each use.

B.2.2 Field Blanks

A field blank is a sample of analyte-free water transferred, at the project site, into an appropriate container for the purpose of distinguishing ambient air contamination from in-situ sample contamination. Field blanks are used to indicate potential cross contamination from sampling equipment as quality control of decontamination procedures. With regards to field sampling, one field blank will be collected for every work day. The procedures for obtaining a field blank sample are as follows:

- Collect two sets of sample vessels. One vessel shall contain analyte free water and the other is empty.
- Run the analyte free water through the decontaminated sampling equipment into the empty vessel. Analye the water of this collecting vessel for target analytes.

B.2.3 Trip Blanks

A trip blank is used to identify the presence of volatile compound contamination attributable to transfer across a sample container septum during shipping and storage of samples. A trip blank is a sample of analyte-free matrix that is transported from the laboratory to the sampling site with the sample containers. The trip blank is stored on-site with the sample containers and field samples and then transported back to the laboratory with the samples for analysis. The trip blank is received and processed as a sample by the laboratory. One trip blank shall be submitted per pickup from laboratory personnel.

B.2.4 Duplicate Samples

Duplicate sample collection will apply to groundwater, soil, soil vapor and ambient air samples collected at this Site. A duplicate (replicate) sample is collected to control the general sampling methodology that is being employed. This sample ensures that a representative sample is being collected. Duplicate samples may also be submitted to verify the accuracy of analytical results.

B.2.5 Matrix Spike/Matrix Spike Duplicate Samples

Matrix Spike/Matrix Spike Duplicate sample collection will apply to groundwater samples collected at this Site. A Matrix Spike and Spike Duplicate (MS/MSD) sample(s) are representative but randomly chosen client samples that have known concentrations of analytes of interest added to the samples prior to sample preparation and analysis. They are processed along with the same un-spiked sample. The purpose of the MS/MSD is to document the accuracy and precision of the method for that specific sample.

B.3 RECORD KEEPING AND DOCUMENTATION PROCEDURES

B.3.1 Sampling Documentation

The sample team or individual performing an activity shall be required to keep a weatherproof Site field notebook. The Site field notebook will be used on-site to record notes pertaining to the field sampling plan. Field notebooks are intended to provide sufficient data and observations to enable participants to reconstruct events that occurred during projects and to refresh the memory of the field personnel if called upon to give testimony during legal proceedings. In a legal proceeding, notes, if referred to, are subject to cross-examination and are admissible as evidence. The field notebook entries should be factual, detailed, and objective. All entries are to be signed and dated. All members of the field investigation team are to use this notebook, which shall be kept as a permanent record. The field notebook shall be filled out at the location of sample collection immediately after sampling. It shall contain sample descriptions including: sample number, sample collection time, sample location, sample description, sampling method used, daily weather conditions, field measurements, name of sampler, and other site-specific observations. The field notebook shall contain any deviations from the protocol contained herein, visitor's names, and community contacts made during sampling, and geologic and other site-specific information that may be noteworthy.

B.3.2 Sample Containers and Analytical Requirements

All sample vessels will be "level A" certified decontaminated containers supplied by a New York State Certified Commercial Laboratory. Samples analyzed for hydrocarbons will be placed in containers with Teflon lined caps. All samples will be preserved by cooling them to a temperature of approximately four degrees Celsius. If glass bottles are used, extra glass bottles will be obtained from the laboratory to allow for accidental breakage that may occur. Necessary preservatives will be placed in the sample bottles by the laboratory. The sample bottles will be handled carefully so that preservatives and glassware are not inadvertently spilled. All liquid samples will be put into 40-ml glass vials with Teflon liners.

B.3.3 Sample Tracking System

In order to provide for proper identification in the field, and proper tracking in the laboratory, all samples must be labeled clear and in a consistent fashion using the procedures and protocols described below and with the following subsections.

Sample labels will be waterproof and have a pre-assigned, unique number that is indelible.

Field personnel must maintain a field notebook. This notebook must be water resistant with sequentially numbered pages. Field activities shall be sequentially recorded at a later time. The notebook, along with the chain of custody form, must contain sufficient information to allow reconstruction of the sample collection and handling procedure at a later time. Each sample shall have a corresponding notebook entry that includes:

- Sample ID number
- Well location and number
- Date and time
- Analysis for which sample was collected
- Additional comments as necessary
- Sampler's name

Each sample must have a corresponding notebook entry on a chain-of-custody form. The manifest entry for sampling at any one location is to be completed before sampling is initiated by the same sampling team at any other location. In cases where the samples leave the immediate control of the sampling team, the samples must be sealed.

B.3.4 Sample Identification System

Each sample collected shall be designated by an alphanumeric code that shall identify the type of sampling location, the specific location, the matrix sampled, and a specific sample designation. Site specific procedures are described below.

Sample identifications shall contain a sequential code consisting of three segments. The first segment shall designate the project number. The second segment shall identify the location type. Location types shall be identified by a two-letter code. For example, MW will be used for monitoring well and GP for geoprobe. The third segment shall identify the specific sample location. The specific sampling location shall be identified using a three-digit number.

The fourth segment shall identify the matrix type and sample designation or identifier that identifies the sample depth, the sample event number, or other designation depending on the sample type. The matrix type shall be designated by a two-letter code. For example: GW will be used for groundwater. The sample identifier shall be represented by a two digit numeric code. Sampling events or rounds, such as for groundwater sampling shall be numbered in sequence beginning with "01" that corresponds to the round of sampling.

The following shall be a general guide for sample identification:

First Segment	Second Segment	Third Segment	Fourth Segment
NNN	AA	NNN	AANN
Project #	Location Type	Specific Type	Matrix Sample Identifier
455	GP	1	GW01

Symbol Definitions:	Location Type:	Matrix Type:
A = Alphabetic	MW = Monitoring Well	S = Soil
N = Numeric	GP = Geoprobe	GW = Groundwater

B.3.5 Sample Transfer

Samples shall be containerized and immediately transferred within a cooler to the mobile laboratory with minimal disturbance. Chain-of-custody forms will be completed at the time of sample collection and will accompany the samples inside a cooler for transfer from sample team to mobile laboratory representatives.

B.3.6 Chain-of-Custody Protocol

The primary objective of the sample custody procedures is to create an accurate written record that can be used to trace the possession and handling of all samples from the moment of their collection, through analysis, until their final disposition. Sample custody for samples collected during the investigation will be maintained by the field personnel collecting the samples. Field personnel are responsible for documenting each sample transfer and maintaining custody of all samples until they are transferred to the mobile laboratory.

Appendix E:

Alpha Analytical Parameters

Summary Tables

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1,4 Dioxane via EPA 8270D-SIM (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
1,4-Dioxane	123-91-1	8	2.04	ug/kg	40-140	30	40-140	30	30			
1,4-Dioxane-d8	*17647-74-4*									*15-110*		
1,4-Dioxane-d8 (IS)	17647-74-4			ug/kg								

Please Note that the RL information provided in this table is calculated using a 100% Solids factor. (Soil/Solids only)
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METALS by 6010D (SOIL)

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria	Holding Time	Container/Sample Preservation
Aluminum, Total	7429-90-5	4	1.08	mg/kg	48-151		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Antimony, Total	7440-36-0	2	0.152	mg/kg	1-208		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Arsenic, Total	7440-38-2	0.4	0.0832	mg/kg	79-121		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Barium, Total	7440-39-3	0.4	0.0696	mg/kg	83-117		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Beryllium, Total	7440-41-7	0.2	0.0132	mg/kg	83-117		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Cadmium, Total	7440-43-9	0.4	0.0392	mg/kg	83-117		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Calcium, Total	7440-70-2	4	1.4	mg/kg	81-119		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Chromium, Total	7440-47-3	0.4	0.0384	mg/kg	80-120		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Cobalt, Total	7440-48-4	0.8	0.0664	mg/kg	84-115		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Copper, Total	7440-50-8	0.4	0.1032	mg/kg	81-118		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Iron, Total	7439-89-6	2	0.3612	mg/kg	45-155		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Lead, Total	7439-92-1	2	0.1072	mg/kg	81-117		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Magnesium, Total	7439-95-4	4	0.616	mg/kg	76-124		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Manganese, Total	7439-96-5	0.4	0.0636	mg/kg	81-117		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Nickel, Total	7440-02-0	1	0.0968	mg/kg	83-117		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Potassium, Total	7440-09-7	100	5.76	mg/kg	71-129		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Selenium, Total	7782-49-2	0.8	0.1032	mg/kg	78-122		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Silver, Total	7440-22-4	0.4	0.1132	mg/kg	75-124		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Sodium, Total	7440-23-5	80	1.26	mg/kg	72-127		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Thallium, Total	7440-28-0	0.8	0.126	mg/kg	80-120		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Vanadium, Total	7440-62-2	0.4	0.0812	mg/kg	78-122		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Zinc, Total	7440-66-6	2	0.1172	mg/kg	82-118		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved

Please Note that the RL information provided in this table is calculated using a 100% Solids factor. (Soil/Solids only)
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METALS by 7471B (SOIL)

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria	Holding Time	Container/Sample Preservation
Mercury, Total	7439-97-6	0.08	0.016896	mg/kg	72-128		80-120	20	20		28 days	1 - Metals Only-Glass 60mL/2oz unpreserved

Please Note that the RL information provided in this table is calculated using a 100% Solids factor. (Soil/Solids only)
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TCL Pesticides - EPA 8081B (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Delta-BHC	319-86-8	0.0016008	0.00031349	mg/kg	30-150	30	30-150	50	50			
Lindane	58-89-9	0.000667	0.000298149	mg/kg	30-150	30	30-150	50	50			
Alpha-BHC	319-84-6	0.000667	0.000189428	mg/kg	30-150	30	30-150	50	50			
Beta-BHC	319-85-7	0.0016008	0.00060697	mg/kg	30-150	30	30-150	50	50			
Heptachlor	76-44-8	0.0008004	0.000358846	mg/kg	30-150	30	30-150	50	50			
Aldrin	309-00-2	0.0016008	0.000563615	mg/kg	30-150	30	30-150	50	50			
Heptachlor epoxide	1024-57-3	0.0030015	0.00090045	mg/kg	30-150	30	30-150	50	50			
Endrin	72-20-8	0.000667	0.00027347	mg/kg	30-150	30	30-150	50	50			
Endrin aldehyde	7421-93-4	0.002001	0.00070035	mg/kg	30-150	30	30-150	50	50			
Endrin ketone	53494-70-5	0.0016008	0.000412206	mg/kg	30-150	30	30-150	50	50			
Dieldrin	60-57-1	0.0010005	0.00050025	mg/kg	30-150	30	30-150	50	50			
4,4'-DDE	72-55-9	0.0016008	0.000370185	mg/kg	30-150	30	30-150	50	50			
4,4'-DDD	72-54-8	0.0016008	0.000570952	mg/kg	30-150	30	30-150	50	50			
4,4'-DDT	50-29-3	0.0030015	0.00128731	mg/kg	30-150	30	30-150	50	50			
Endosulfan I	959-98-8	0.0016008	0.000378189	mg/kg	30-150	30	30-150	50	50			
Endosulfan II	33213-65-9	0.0016008	0.000534934	mg/kg	30-150	30	30-150	50	50			
Endosulfan sulfate	1031-07-8	0.000667	0.000317492	mg/kg	30-150	30	30-150	50	50			
Methoxychlor	72-43-5	0.0030015	0.0009338	mg/kg	30-150	30	30-150	50	50			
Toxaphene	8001-35-2	0.030015	0.0084042	mg/kg	30-150	30	30-150	50	50			
cis-Chlordane	5103-71-9	0.002001	0.000557612	mg/kg	30-150	30	30-150	50	50			
trans-Chlordane	5103-74-2	0.002001	0.000528264	mg/kg	30-150	30	30-150	50	50			
Chlordane	57-74-9	0.0130065	0.00530265	mg/kg	30-150	30	30-150	50	50			
2,4,5,6-Tetrachloro-m-xylene	*877-09-8*									*30-150*		
Decachlorobiphenyl	*2051-24-3*									*30-150*		

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TCL Volatiles - EPA 8260C/5035 High&Low (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - 1 Vial MeOH/2 Vial Water

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Methylene chloride	75-09-2	5	2.29	ug/kg	70-130	30	70-130	30	30			
1,1-Dichloroethane	75-34-3	1	0.145	ug/kg	70-130	30	70-130	30	30			
Chloroform	67-66-3	1.5	0.14	ug/kg	70-130	30	70-130	30	30			
Carbon tetrachloride	56-23-5	1	0.23	ug/kg	70-130	30	70-130	30	30			
1,2-Dichloropropane	78-87-5	1	0.125	ug/kg	70-130	30	70-130	30	30			
Dibromochloromethane	124-48-1	1	0.14	ug/kg	70-130	30	70-130	30	30			
1,1,2-Trichloroethane	79-00-5	1	0.267	ug/kg	70-130	30	70-130	30	30			
Tetrachloroethene	127-18-4	0.5	0.196	ug/kg	70-130	30	70-130	30	30			
Chlorobenzene	108-90-7	0.5	0.127	ug/kg	70-130	30	70-130	30	30			
Trichlorofluoromethane	75-69-4	4	0.695	ug/kg	70-139	30	70-139	30	30			
1,2-Dichloroethane	107-06-2	1	0.257	ug/kg	70-130	30	70-130	30	30			
1,1,1-Trichloroethane	71-55-6	0.5	0.167	ug/kg	70-130	30	70-130	30	30			
Bromodichloromethane	75-27-4	0.5	0.109	ug/kg	70-130	30	70-130	30	30			
trans-1,3-Dichloropropene	10061-02-6	1	0.273	ug/kg	70-130	30	70-130	30	30			
cis-1,3-Dichloropropene	10061-01-5	0.5	0.158	ug/kg	70-130	30	70-130	30	30			
1,3-Dichloropropene, Total	542-75-6	0.5	0.158	ug/kg				30	30			
1,1-Dichloropropene	563-58-6	0.5	0.159	ug/kg	70-130	30	70-130	30	30			
Bromoform	75-25-2	4	0.246	ug/kg	70-130	30	70-130	30	30			
1,1,2,2-Tetrachloroethane	79-34-5	0.5	0.166	ug/kg	70-130	30	70-130	30	30			
Benzene	71-43-2	0.5	0.166	ug/kg	70-130	30	70-130	30	30			
Toluene	108-88-3	1	0.543	ug/kg	70-130	30	70-130	30	30			
Ethylbenzene	100-41-4	1	0.141	ug/kg	70-130	30	70-130	30	30			
Chloromethane	74-87-3	4	0.932	ug/kg	52-130	30	52-130	30	30			
Bromomethane	74-83-9	2	0.581	ug/kg	57-147	30	57-147	30	30			
Vinyl chloride	75-01-4	1	0.335	ug/kg	67-130	30	67-130	30	30			
Chloroethane	75-00-3	2	0.452	ug/kg	50-151	30	50-151	30	30			
1,1-Dichloroethene	75-35-4	1	0.238	ug/kg	65-135	30	65-135	30	30			
trans-1,2-Dichloroethene	156-60-5	1.5	0.137	ug/kg	70-130	30	70-130	30	30			
Trichloroethene	79-01-6	0.5	0.137	ug/kg	70-130	30	70-130	30	30			
1,2-Dichlorobenzene	95-50-1	2	0.144	ug/kg	70-130	30	70-130	30	30			
1,3-Dichlorobenzene	541-73-1	2	0.148	ug/kg	70-130	30	70-130	30	30			
1,4-Dichlorobenzene	106-46-7	2	0.171	ug/kg	70-130	30	70-130	30	30			
Methyl tert butyl ether	1634-04-4	2	0.201	ug/kg	66-130	30	66-130	30	30			
p/m-Xylene	179601-23-1	2	0.56	ug/kg	70-130	30	70-130	30	30			
o-Xylene	95-47-6	1	0.291	ug/kg	70-130	30	70-130	30	30			
Xylene (Total)	1330-20-7	1	0.291	ug/kg				30	30			
cis-1,2-Dichloroethene	156-59-2	1	0.175	ug/kg	70-130	30	70-130	30	30			
1,2-Dichloroethene (total)	540-59-0	1	0.137	ug/kg				30	30			
Dibromomethane	74-95-3	2	0.238	ug/kg	70-130	30	70-130	30	30			
Styrene	100-42-5	1	0.196	ug/kg	70-130	30	70-130	30	30			
Dichlorodifluoromethane	75-71-8	10	0.915	ug/kg	30-146	30	30-146	30	30			
Acetone	67-64-1	10	4.811	ug/kg	54-140	30	54-140	30	30			

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TCL Volatiles - EPA 8260C/5035 High&Low (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - 1 Vial MeOH/2 Vial Water

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Carbon disulfide	75-15-0	10	4.55	ug/kg	59-130	30	59-130	30	30			
2-Butanone	78-93-3	10	2.22	ug/kg	70-130	30	70-130	30	30			
Vinyl acetate	108-05-4	10	2.15	ug/kg	70-130	30	70-130	30	30			
4-Methyl-2-pentanone	108-10-1	10	1.28	ug/kg	70-130	30	70-130	30	30			
1,2,3-Trichloropropane	96-18-4	2	0.127	ug/kg	68-130	30	68-130	30	30			
2-Hexanone	591-78-6	10	1.18	ug/kg	70-130	30	70-130	30	30			
Bromochloromethane	74-97-5	2	0.205	ug/kg	70-130	30	70-130	30	30			
2,2-Dichloropropane	594-20-7	2	0.202	ug/kg	70-130	30	70-130	30	30			
1,2-Dibromoethane	106-93-4	1	0.279	ug/kg	70-130	30	70-130	30	30			
1,3-Dichloropropane	142-28-9	2	0.167	ug/kg	69-130	30	69-130	30	30			
1,1,1,2-Tetrachloroethane	630-20-6	0.5	0.132	ug/kg	70-130	30	70-130	30	30			
Bromobenzene	108-86-1	2	0.145	ug/kg	70-130	30	70-130	30	30			
n-Butylbenzene	104-51-8	1	0.167	ug/kg	70-130	30	70-130	30	30			
sec-Butylbenzene	135-98-8	1	0.146	ug/kg	70-130	30	70-130	30	30			
tert-Butylbenzene	98-06-6	2	0.118	ug/kg	70-130	30	70-130	30	30			
o-Chlorotoluene	95-49-8	2	0.191	ug/kg	70-130	30	70-130	30	30			
p-Chlorotoluene	106-43-4	2	0.108	ug/kg	70-130	30	70-130	30	30			
1,2-Dibromo-3-chloropropane	96-12-8	3	0.998	ug/kg	68-130	30	68-130	30	30			
Hexachlorobutadiene	87-68-3	4	0.169	ug/kg	67-130	30	67-130	30	30			
Isopropylbenzene	98-82-8	1	0.109	ug/kg	70-130	30	70-130	30	30			
p-Isopropyltoluene	99-87-6	1	0.109	ug/kg	70-130	30	70-130	30	30			
Naphthalene	91-20-3	4	0.65	ug/kg	70-130	30	70-130	30	30			
Acrylonitrile	107-13-1	4	1.15	ug/kg	70-130	30	70-130	30	30			
n-Propylbenzene	103-65-1	1	0.171	ug/kg	70-130	30	70-130	30	30			
1,2,3-Trichlorobenzene	87-61-6	2	0.322	ug/kg	70-130	30	70-130	30	30			
1,2,4-Trichlorobenzene	120-82-1	2	0.272	ug/kg	70-130	30	70-130	30	30			
1,3,5-Trimethylbenzene	108-67-8	2	0.193	ug/kg	70-130	30	70-130	30	30			
1,2,4-Trimethylbenzene	95-63-6	2	0.334	ug/kg	70-130	30	70-130	30	30			
1,4-Dioxane	123-91-1	80	35.1	ug/kg	65-136	30	65-136	30	30			
1,4-Diethylbenzene	105-05-5	2	0.177	ug/kg	70-130	30	70-130	30	30			
4-Ethyltoluene	622-96-8	2	0.384	ug/kg	70-130	30	70-130	30	30			
1,2,4,5-Tetramethylbenzene	95-93-2	2	0.191	ug/kg	70-130	30	70-130	30	30			
Ethyl ether	60-29-7	2	0.341	ug/kg	67-130	30	67-130	30	30			
trans-1,4-Dichloro-2-butene	110-57-6	5	1.42	ug/kg	70-130	30	70-130	30	30			
1,2-Dichloroethane-d4	*17060-07-0*									*70-130*		
2-Chloroethoxyethane												
Toluene-d8	*2037-26-5*									*70-130*		
4-Bromofluorobenzene	*460-00-4*									*70-130*		
Dibromofluoromethane	*1868-53-7*									*70-130*		

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NYTCL Semivolatiles - EPA 8270D (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Acenaphthene	83-32-9	133.6	17.3012	ug/kg	31-137	50	31-137	50	50			
1,2,4-Trichlorobenzene	120-82-1	167	19.1048	ug/kg	38-107	50	38-107	50	50			
Hexachlorobenzene	118-74-1	100.2	18.704	ug/kg	40-140	50	40-140	50	50			
Bis(2-chloroethyl)ether	111-44-4	150.3	22.6452	ug/kg	40-140	50	40-140	50	50			
2-Chloronaphthalene	91-58-7	167	16.5664	ug/kg	40-140	50	40-140	50	50			
1,2-Dichlorobenzene	95-50-1	167	29.9932	ug/kg	40-140	50	40-140	50	50			
1,3-Dichlorobenzene	541-73-1	167	28.724	ug/kg	40-140	50	40-140	50	50			
1,4-Dichlorobenzene	106-46-7	167	29.1582	ug/kg	28-104	50	28-104	50	50			
3,3'-Dichlorobenzidine	91-94-1	167	44.422	ug/kg	40-140	50	40-140	50	50			
2,4-Dinitrotoluene	121-14-2	167	33.4	ug/kg	40-132	50	40-132	50	50			
2,6-Dinitrotoluene	606-20-2	167	28.6572	ug/kg	40-140	50	40-140	50	50			
Fluoranthene	206-44-0	100.2	19.1716	ug/kg	40-140	50	40-140	50	50			
4-Chlorophenyl phenyl ether	7005-72-3	167	17.869	ug/kg	40-140	50	40-140	50	50			
4-Bromophenyl phenyl ether	101-55-3	167	25.4842	ug/kg	40-140	50	40-140	50	50			
Bis(2-chloroisopropyl)ether	108-60-1	200.4	28.5236	ug/kg	40-140	50	40-140	50	50			
Bis(2-chloroethoxy)methane	111-91-1	180.36	16.7334	ug/kg	40-117	50	40-117	50	50			
Hexachlorobutadiene	87-68-3	167	24.4488	ug/kg	40-140	50	40-140	50	50			
Hexachlorocyclopentadiene	77-47-4	477.62	151.302	ug/kg	40-140	50	40-140	50	50			
Hexachloroethane	67-72-1	133.6	27.0206	ug/kg	40-140	50	40-140	50	50			
Isophorone	78-59-1	150.3	21.6766	ug/kg	40-140	50	40-140	50	50			
Naphthalene	91-20-3	167	20.3406	ug/kg	40-140	50	40-140	50	50			
Nitrobenzene	98-95-3	150.3	24.716	ug/kg	40-140	50	40-140	50	50			
NitrosoDiPhenylAmine(NDPA)/DPA	86-30-6	133.6	19.0046	ug/kg	36-157	50	36-157	50	50			
n-Nitrosodi-n-propylamine	621-64-7	167	25.7848	ug/kg	32-121	50	32-121	50	50			
Bis(2-Ethylhexyl)phthalate	117-81-7	167	57.782	ug/kg	40-140	50	40-140	50	50			
Butyl benzyl phthalate	85-68-7	167	42.084	ug/kg	40-140	50	40-140	50	50			
Di-n-butylphthalate	84-74-2	167	31.6632	ug/kg	40-140	50	40-140	50	50			
Di-n-octylphthalate	117-84-0	167	56.78	ug/kg	40-140	50	40-140	50	50			
Diethyl phthalate	84-66-2	167	15.4642	ug/kg	40-140	50	40-140	50	50			
Dimethyl phthalate	131-11-3	167	35.07	ug/kg	40-140	50	40-140	50	50			
Benzo(a)anthracene	56-55-3	100.2	18.8042	ug/kg	40-140	50	40-140	50	50			
Benzo(a)pyrene	50-32-8	133.6	40.748	ug/kg	40-140	50	40-140	50	50			
Benzo(b)fluoranthene	205-99-2	100.2	28.1228	ug/kg	40-140	50	40-140	50	50			
Benzo(k)fluoranthene	207-08-9	100.2	26.72	ug/kg	40-140	50	40-140	50	50			
Chrysene	218-01-9	100.2	17.368	ug/kg	40-140	50	40-140	50	50			
Acenaphthylene	208-96-8	133.6	25.7848	ug/kg	40-140	50	40-140	50	50			
Anthracene	120-12-7	100.2	32.565	ug/kg	40-140	50	40-140	50	50			
Benzo(ghi)perylene	191-24-2	133.6	19.6392	ug/kg	40-140	50	40-140	50	50			
Fluorene	86-73-7	167	16.2324	ug/kg	40-140	50	40-140	50	50			
Phenanthrene	85-01-8	100.2	20.3072	ug/kg	40-140	50	40-140	50	50			
Dibenzo(a,h)anthracene	53-70-3	100.2	19.3052	ug/kg	40-140	50	40-140	50	50			
Indeno(1,2,3-cd)Pyrene	193-39-5	133.6	23.2798	ug/kg	40-140	50	40-140	50	50			

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NYTCL Semivolatiles - EPA 8270D (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Pyrene	129-00-0	100.2	16.5998	ug/kg	35-142	50	35-142	50	50			
Biphenyl	92-52-4	380.76	38.744	ug/kg	54-104	50	54-104	50	50			
4-Chloroaniline	106-47-8	167	30.394	ug/kg	40-140	50	40-140	50	50			
2-Nitroaniline	88-74-4	167	32.1976	ug/kg	47-134	50	47-134	50	50			
3-Nitroaniline	99-09-2	167	31.4962	ug/kg	26-129	50	26-129	50	50			
4-Nitroaniline	100-01-6	167	69.138	ug/kg	41-125	50	41-125	50	50			
Dibenzofuran	132-64-9	167	15.7982	ug/kg	40-140	50	40-140	50	50			
2-Methylnaphthalene	91-57-6	200.4	20.1736	ug/kg	40-140	50	40-140	50	50			
Acetophenone	98-86-2	167	20.6746	ug/kg	14-144	50	14-144	50	50			
2,4,6-Trichlorophenol	88-06-2	100.2	31.6632	ug/kg	30-130	50	30-130	50	50			
P-Chloro-M-Cresol	59-50-7	167	24.883	ug/kg	26-103	50	26-103	50	50			
2-Chlorophenol	95-57-8	167	19.7394	ug/kg	25-102	50	25-102	50	50			
2,4-Dichlorophenol	120-83-2	150.3	26.8536	ug/kg	30-130	50	30-130	50	50			
2,4-Dimethylphenol	105-67-9	167	55.11	ug/kg	30-130	50	30-130	50	50			
2-Nitrophenol	88-75-5	360.72	62.792	ug/kg	30-130	50	30-130	50	50			
4-Nitrophenol	100-02-7	233.8	68.136	ug/kg	11-114	50	11-114	50	50			
2,4-Dinitrophenol	51-28-5	801.6	77.822	ug/kg	4-130	50	4-130	50	50			
4,6-Dinitro-o-cresol	534-52-1	434.2	80.16	ug/kg	10-130	50	10-130	50	50			
Pentachlorophenol	87-86-5	133.6	36.74	ug/kg	17-109	50	17-109	50	50			
Phenol	108-95-2	167	25.217	ug/kg	26-90	50	26-90	50	50			
2-Methylphenol	95-48-7	167	25.885	ug/kg	30-130.	50	30-130.	50	50			
3-Methylphenol/4-Methylphenol	108-39-4/106-44-5	240.48	26.1522	ug/kg	30-130	50	30-130	50	50			
2,4,5-Trichlorophenol	95-95-4	167	31.9972	ug/kg	30-130	50	30-130	50	50			
Benzoic Acid	65-85-0	541.08	169.004	ug/kg	10-110	50	10-110	50	50			
Benzyl Alcohol	100-51-6	167	51.102	ug/kg	40-140	50	40-140	50	50			
Carbazole	86-74-8	167	16.2324	ug/kg	54-128	50	54-128	50	50			
2-Fluorophenol	*367-12-4*									*25-120*		
Phenol-d6	*13127-88-3*									*10-120*		
Nitrobenzene-d5	*4165-60-0*									*23-120*		
2-Fluorobiphenyl	*321-60-8*									*30-120*		
2,4,6-Tribromophenol	*118-79-6*									*10-136*		
4-Terphenyl-d14	*1718-51-0*									*18-120*		

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NY PFAAs via EPA 537(M)-Isotope Dilution (SOIL)

Holding Time: 28 days
Container/Sample Preservation: 1 - Plastic 8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Perfluorobutanoic Acid (PFBA)	375-22-4	1	0.0213	ng/g	71-135	30	71-135	30	30			
Perfluoropentanoic Acid (PFPeA)	2706-90-3	1	0.01035	ng/g	69-132	30	69-132	30	30			
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	1	0.0635	ng/g	72-128	30	72-128	30	30			
Perfluorohexanoic Acid (PFHxA)	307-24-4	1	0.064	ng/g	70-132	30	70-132	30	30			
Perfluoroheptanoic Acid (PFHpA)	375-85-9	1	0.064	ng/g	71-131	30	71-131	30	30			
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	1	0.057	ng/g	67-130	30	67-130	30	30			
Perfluorooctanoic Acid (PFOA)	335-67-1	1	0.04105	ng/g	69-133	30	69-133	30	30			
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	1	0.198	ng/g	64-140	30	64-140	30	30			
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	1	0.136	ng/g	70-132	30	70-132	30	30			
Perfluorononanoic Acid (PFNA)	375-95-1	1	0.083	ng/g	72-129	30	72-129	30	30			
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	1	0.1205	ng/g	68-136	30	68-136	30	30			
Perfluorodecanoic Acid (PFDA)	335-76-2	1	0.072	ng/g	69-133	30	69-133	30	30			
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	1	0.275	ng/g	65-137	30	65-137	30	30			
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSA	2355-31-9	1	0.103	ng/g	63-144	30	63-144	30	30			
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	1	0.056	ng/g	64-136	30	64-136	30	30			
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	1	0.097	ng/g	59-134	30	59-134	30	30			
Perfluorooctanesulfonamide (FOSA)	754-91-6	1	0.1025	ng/g	67-137	30	67-137	30	30			
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	1	0.09	ng/g	61-139	30	61-139	30	30			
Perfluorododecanoic Acid (PFDoA)	307-55-1	1	0.086	ng/g	69-135	30	69-135	30	30			
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	1	0.062	ng/g	66-139	30	66-139	30	30			
Perfluorotetradecanoic Acid (PFTA)	376-06-7	1	0.07	ng/g	69-133	30	69-133	30	30			
PFOA/PFOS, Total		1	0.04105	ng/g				30	30			
Perfluoro[13C4]Butanoic Acid (MPFBA)	*NONE*									*60-153*		
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	*NONE*									*65-182*		
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	*NONE*									*70-151*		
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	*NONE*									*61-147*		
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	*NONE*									*62-149*		
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	*NONE*									*63-166*		
Perfluoro[13C8]Octanoic Acid (M8PFOA)	*NONE*									*62-152*		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6	*NONE*									*32-182*		
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	*NONE*									*61-154*		
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	*NONE*									*65-151*		
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	*NONE*									*65-150*		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8	*NONE*									*25-186*		
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid	*NONE*									*45-137*		
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	*NONE*									*64-158*		
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	*NONE*									*1-125*		
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d	*NONE*									*42-136*		
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	*NONE*									*56-148*		
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	*NONE*									*26-160*		

Please Note that the RL information provided in this table is calculated using a 100% Solids factor. ***(Soil/Solids only)***
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TCL PCBs - EPA 8082A (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Aroclor 1016	12674-11-2	33.5	2.9748	ug/kg	40-140	50	40-140	50	50			
Aroclor 1221	11104-28-2	33.5	3.3567	ug/kg	40-140	50	40-140	50	50			
Aroclor 1232	11141-16-5	33.5	7.102	ug/kg	40-140	50	40-140	50	50			
Aroclor 1242	53469-21-9	33.5	4.5158	ug/kg	40-140	50	40-140	50	50			
Aroclor 1248	12672-29-6	33.5	5.025	ug/kg	40-140	50	40-140	50	50			
Aroclor 1254	11097-69-1	33.5	3.6649	ug/kg	40-140	50	40-140	50	50			
Aroclor 1260	11096-82-5	33.5	6.1908	ug/kg	40-140	50	40-140	50	50			
Aroclor 1262	37324-23-5	33.5	4.2545	ug/kg	40-140	50	40-140	50	50			
Aroclor 1268	11100-14-4	33.5	3.4706	ug/kg	40-140	50	40-140	50	50			
PCBs, Total	1336-36-3	33.5	2.9748	ug/kg				50	50			
2,4,5,6-Tetrachloro-m-xylene	*877-09-8*									*30-150*		
Decachlorobiphenyl	*2051-24-3*									*30-150*		

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WETCHEM (SOIL)

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Method	Holding Time	Container/Sample Preservation
Chromium, Hexavalent	18540-29-9	0.8	0.16	mg/kg	80-120	20	75-125	20	20	7196A	30 days	1 - Glass 120ml/4oz unpreserved
Cyanide, Total	57-12-5	1	0.212	mg/kg	80-120	35	75-125	35	35	9010C/9012B	14 days	1 - Glass 250ml/8oz unpreserved

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Volatile Organics in Air: TO-15 (SOIL_VAPOR)

Holding Time: 30 days
Container/Sample Preservation: 1 - Canister - 2.7 Liter

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
1,1,1-Trichloroethane	71-55-6	0.2	0.0554	ppbV	70-130			25	25			
1,1,2,2-Tetrachloroethane	79-34-5	0.2	0.0611	ppbV	70-130			25	25			
1,1,2-Trichloroethane	79-00-5	0.2	0.0694	ppbV	70-130			25	25			
1,1-Dichloroethane	75-34-3	0.2	0.0628	ppbV	70-130			25	25			
1,1-Dichloroethene	75-35-4	0.2	0.0613	ppbV	70-130			25	25			
1,2,3-Trimethylbenzene	526-73-8	0.2	0.0636	ppbV	70-130			25	25			
1,2,4-Trichlorobenzene	120-82-1	0.2	0.0759	ppbV	70-130			25	25			
1,2,4-Trimethylbenzene	95-63-6	0.2	0.0416	ppbV	70-130			25	25			
1,2,4,5-Tetramethylbenzene	95-93-2	0.2	0.068	ppbV	70-130			25	25			
1,2-Dibromoethane	106-93-4	0.2	0.0577	ppbV	70-130			25	25			
1,2-Dichlorobenzene	95-50-1	0.2	0.0653	ppbV	70-130			25	25			
1,2-Dichloroethane	107-06-2	0.2	0.0634	ppbV	70-130			25	25			
1,2-Dichloropropane	78-87-5	0.2	0.062	ppbV	70-130			25	25			
1,3,5-Trimethylbenzene	108-67-8	0.2	0.0737	ppbV	70-130			25	25			
1,3-Butadiene	106-99-0	0.2	0.063	ppbV	70-130			25	25			
1,3-Dichlorobenzene	541-73-1	0.2	0.0658	ppbV	70-130			25	25			
1,4-Dichlorobenzene	106-46-7	0.2	0.0681	ppbV	70-130			25	25			
1,4-Dioxane	123-91-1	0.2	0.0903	ppbV	70-130			25	25			
2,2,4-Trimethylpentane	540-84-1	0.2	0.0391	ppbV	70-130			25	25			
2-Butanone	78-93-3	0.5	0.0476	ppbV	70-130			25	25			
2-Hexanone	591-78-6	0.2	0.0662	ppbV	70-130			25	25			
2-Methylthiophene	554-14-3	0.2	0.0577	ppbV	70-130			25	25			
3-Methylthiophene	616-44-4	0.2	0.0577	ppbV	70-130			25	25			
3-Chloropropene	107-05-1	0.2	0.0517	ppbV	70-130			25	25			
2-Ethylthiophene	872-55-9	0.2	0.0455	ppbV	70-130			25	25			
4-Ethyltoluene	622-96-8	0.2	0.041	ppbV	70-130			25	25			
Acetone	67-64-1	1	0.544	ppbV	40-160			25	25			
Benzene	71-43-2	0.2	0.0494	ppbV	70-130			25	25			
Benzyl chloride	100-44-7	0.2	0.0545	ppbV	70-130			25	25			
Benzothiophene	95-15-8	0.5	0.0863	ppbV	70-130			25	25			
Bromodichloromethane	75-27-4	0.2	0.0534	ppbV	70-130			25	25			
Bromoform	75-25-2	0.2	0.0711	ppbV	70-130			25	25			
Bromomethane	74-83-9	0.2	0.0713	ppbV	70-130			25	25			
Carbon disulfide	75-15-0	0.2	0.0552	ppbV	70-130			25	25			
Carbon tetrachloride	56-23-5	0.2	0.0561	ppbV	70-130			25	25			
Chlorobenzene	108-90-7	0.2	0.0634	ppbV	70-130			25	25			
Chloroethane	75-00-3	0.2	0.0785	ppbV	70-130			25	25			
Chloroform	67-66-3	0.2	0.0632	ppbV	70-130			25	25			
Chloromethane	74-87-3	0.2	0.0735	ppbV	70-130			25	25			
cis-1,2-Dichloroethene	156-59-2	0.2	0.12	ppbV	70-130			25	25			
cis-1,3-Dichloropropene	10061-01-5	0.2	0.0461	ppbV	70-130			25	25			
Cyclohexane	110-82-7	0.2	0.0389	ppbV	70-130			25	25			

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Volatile Organics in Air: TO-15 (SOIL_VAPOR)

Holding Time: 30 days
Container/Sample Preservation: 1 - Canister - 2.7 Liter

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Dibromochloromethane	124-48-1	0.2	0.0671	ppbV	70-130			25	25			
Dichlorodifluoromethane	75-71-8	0.2	0.0599	ppbV	70-130			25	25			
Ethyl Alcohol	64-17-5	5	0.788	ppbV	40-160			25	25			
Ethyl Acetate	141-78-6	0.5	0.137	ppbV	70-130			25	25			
Ethylbenzene	100-41-4	0.2	0.0467	ppbV	70-130			25	25			
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	0.2	0.0649	ppbV	70-130			25	25			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	76-14-2	0.2	0.0609	ppbV	70-130			25	25			
Hexachlorobutadiene	87-68-3	0.2	0.0555	ppbV	70-130			25	25			
iso-Propyl Alcohol	67-63-0	0.5	0.348	ppbV	40-160			25	25			
Methylene chloride	75-09-2	0.5	0.07	ppbV	70-130			25	25			
4-Methyl-2-pentanone	108-10-1	0.5	0.0464	ppbV	70-130			25	25			
Methyl tert butyl ether	1634-04-4	0.2	0.0571	ppbV	70-130			25	25			
Methyl Methacrylate	80-62-6	0.5	0.06	ppbV	40-160			25	25			
p/m-Xylene	179601-23-1	0.4	0.101	ppbV	70-130			25	25			
o-Xylene	95-47-6	0.2	0.051	ppbV	70-130			25	25			
Xylene (Total)	1330-20-7	0.2	0.051	ppbV				25	25			
Heptane	142-82-5	0.2	0.0529	ppbV	70-130			25	25			
n-Heptane	142-82-5	0.2	0.0529	ppbV	70-130			25	25			
n-Hexane	110-54-3	0.2	0.0364	ppbV	70-130			25	25			
Propylene	115-07-1	0.5	0.0669	ppbV	70-130			25	25			
Styrene	100-42-5	0.2	0.0476	ppbV	70-130			25	25			
Tetrachloroethene	127-18-4	0.2	0.0673	ppbV	70-130			25	25			
Thiophene	110-02-1	0.2	0.0428	ppbV	70-130			25	25			
Tetrahydrofuran	109-99-9	0.5	0.0634	ppbV	70-130			25	25			
Toluene	108-88-3	0.2	0.0545	ppbV	70-130			25	25			
trans-1,2-Dichloroethene	156-60-5	0.2	0.0645	ppbV	70-130			25	25			
1,2-Dichloroethene (total)	540-59-0	0.2	0.0645	ppbV				25	25			
trans-1,3-Dichloropropene	10061-02-6	0.2	0.0491	ppbV	70-130			25	25			
1,3-Dichloropropene, Total	542-75-6	0.2	0.0461	ppbV				25	25			
Trichloroethene	79-01-6	0.2	0.0512	ppbV	70-130			25	25			
Trichlorofluoromethane	75-69-4	0.2	0.0755	ppbV	70-130			25	25			
Vinyl acetate	108-05-4	1	0.0508	ppbV	70-130			25	25			
Vinyl bromide	593-60-2	0.2	0.0696	ppbV	70-130			25	25			
Vinyl chloride	75-01-4	0.2	0.0598	ppbV	70-130			25	25			
Naphthalene	91-20-3	0.2	0.0984	ppbV	70-130			25	25			
Total HC As Hexane	NONE	10	0.0364	ppbV	70-130			25	25			
Total VOCs As Toluene	NONE	10	0.0545	ppbV	70-130			25	25			
Propane	74-98-6	0.5	0.149	ppbV	70-130			25	25			
Acrylonitrile	107-13-1	0.5	0.0544	ppbV	70-130			25	25			
Acrolein	107-02-8	0.5	0.0545	ppbV	70-130			25	25			
1,1,1,2-Tetrachloroethane	630-20-6	0.2	0.0591	ppbV	70-130			25	25			
Isopropylbenzene	98-82-8	0.2	0.0516	ppbV	70-130			25	25			

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Volatile Organics in Air: TO-15 (SOIL_VAPOR)

Holding Time: 30 days
Container/Sample Preservation: 1 - Canister - 2.7 Liter

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
1,2,3-Trichloropropane	96-18-4	0.2	0.0592	ppbV	70-130			25	25			
Acetonitrile	75-05-8	0.2	0.0745	ppbV	70-130			25	25			
Bromobenzene	108-86-1	0.2	0.064	ppbV	70-130			25	25			
Chlorodifluoromethane	75-45-6	0.2	0.0599	ppbV	70-130			25	25			
Dichlorofluoromethane	75-43-4	0.2	0.0835	ppbV	70-130			25	25			
Dibromomethane	74-95-3	0.2	0.0597	ppbV	70-130			25	25			
Pentane	109-66-0	0.2	0.0656	ppbV	70-130			25	25			
Octane	111-65-9	0.2	0.0495	ppbV	70-130			25	25			
Tertiary-Amyl Methyl Ether	994-05-8	0.2	0.0532	ppbV	70-130			25	25			
o-Chlorotoluene	95-49-8	0.2	0.0517	ppbV	70-130			25	25			
p-Chlorotoluene	106-43-4	0.2	0.0574	ppbV	70-130			25	25			
2,2-Dichloropropane	594-20-7	0.2	0.0514	ppbV	70-130			25	25			
1,1-Dichloropropene	563-58-6	0.2	0.0512	ppbV	70-130			25	25			
Isopropyl Ether	108-20-3	0.2	0.0978	ppbV	70-130			25	25			
Ethyl-Tert-Butyl-Ether	637-92-3	0.2	0.0656	ppbV	70-130			25	25			
1,2,3-Trichlorobenzene	87-61-6	0.2	0.0756	ppbV	70-130			25	25			
Ethyl ether	60-29-7	0.2	0.0795	ppbV	70-130			25	25			
n-Butylbenzene	104-51-8	0.2	0.049	ppbV	70-130			25	25			
sec-Butylbenzene	135-98-8	0.2	0.0469	ppbV	70-130			25	25			
tert-Butylbenzene	98-06-6	0.2	0.0464	ppbV	70-130			25	25			
1,2-Dibromo-3-chloropropane	96-12-8	0.2	0.0557	ppbV	70-130			25	25			
p-Isopropyltoluene	99-87-6	0.2	0.058	ppbV	70-130			25	25			
n-Propylbenzene	103-65-1	0.2	0.0462	ppbV	70-130			25	25			
1,3-Dichloropropane	142-28-9	0.2	0.0601	ppbV	70-130			25	25			
Methanol	67-56-1	5	0.616	ppbV	70-130			25	25			
Acetaldehyde	75-07-0	2.5	0.499	ppbV	70-130			25	25			
Butane	106-97-8	0.2	0.0659	ppbV	70-130			25	25			
Nonane (C9)	111-84-2	0.2	0.0523	ppbV	70-130			25	25			
Decane (C10)	124-18-5	0.2	0.0448	ppbV	70-130			25	25			
Undecane	1120-21-4	0.2	0.0478	ppbV	70-130			25	25			
Indane	496-11-7	0.2	0.0534	ppbV	70-130			25	25			
Indene	95-13-6	0.2	0.0474	ppbV	70-130			25	25			
1-Methylnaphthalene	90-12-0	1	0.518	ppbV	70-130			25	25			
Dodecane (C12)	112-40-3	0.2	0.0719	ppbV	70-130			25	25			
Butyl Acetate	123-86-4	0.5	0.127	ppbV	70-130			25	25			
tert-Butyl Alcohol	75-65-0	0.5	0.0446	ppbV	70-130			25	25			
2-Methylnaphthalene	91-57-6	1	0.428	ppbV	70-130			25	25			
1,2-Dichloroethane-d4	*17060-07-0*									*70-130*		
Toluene-d8	*2037-26-5*									*70-130*		
Bromofluorobenzene	*460-00-4*									*70-130*		

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TCL Volatiles - EPA 8260C (WATER)

Holding Time: 14 days
Container/Sample Preservation: 3 - Vial HCl preserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Methylene chloride	75-09-2	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,1-Dichloroethane	75-34-3	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Chloroform	67-66-3	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Carbon tetrachloride	56-23-5	0.5	0.134	ug/l	63-132	20	63-132	20	20			
1,2-Dichloropropane	78-87-5	1	0.133	ug/l	70-130	20	70-130	20	20			
Dibromochloromethane	124-48-1	0.5	0.149	ug/l	63-130	20	63-130	20	20			
1,1,2-Trichloroethane	79-00-5	1.5	0.5	ug/l	70-130	20	70-130	20	20			
Tetrachloroethene	127-18-4	0.5	0.181	ug/l	70-130	20	70-130	20	20			
Chlorobenzene	108-90-7	2.5	0.7	ug/l	75-130	20	75-130	20	20			
Trichlorofluoromethane	75-69-4	2.5	0.7	ug/l	62-150	20	62-150	20	20			
1,2-Dichloroethane	107-06-2	0.5	0.132	ug/l	70-130	20	70-130	20	20			
1,1,1-Trichloroethane	71-55-6	2.5	0.7	ug/l	67-130	20	67-130	20	20			
Bromodichloromethane	75-27-4	0.5	0.192	ug/l	67-130	20	67-130	20	20			
trans-1,3-Dichloropropene	10061-02-6	0.5	0.164	ug/l	70-130	20	70-130	20	20			
cis-1,3-Dichloropropene	10061-01-5	0.5	0.144	ug/l	70-130	20	70-130	20	20			
1,3-Dichloropropene, Total	542-75-6	0.5	0.144	ug/l				20	20			
1,1-Dichloropropene	563-58-6	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Bromoform	75-25-2	2	0.65	ug/l	54-136	20	54-136	20	20			
1,1,2,2-Tetrachloroethane	79-34-5	0.5	0.144	ug/l	67-130	20	67-130	20	20			
Benzene	71-43-2	0.5	0.159	ug/l	70-130	20	70-130	20	20			
Toluene	108-88-3	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Ethylbenzene	100-41-4	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Chloromethane	74-87-3	2.5	0.7	ug/l	64-130	20	64-130	20	20			
Bromomethane	74-83-9	2.5	0.7	ug/l	39-139	20	39-139	20	20			
Vinyl chloride	75-01-4	1	0.0699	ug/l	55-140	20	55-140	20	20			
Chloroethane	75-00-3	2.5	0.7	ug/l	55-138	20	55-138	20	20			
1,1-Dichloroethene	75-35-4	0.5	0.142	ug/l	61-145	20	61-145	20	20			
trans-1,2-Dichloroethene	156-60-5	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Trichloroethene	79-01-6	0.5	0.175	ug/l	70-130	20	70-130	20	20			
1,2-Dichlorobenzene	95-50-1	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,3-Dichlorobenzene	541-73-1	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,4-Dichlorobenzene	106-46-7	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Methyl tert butyl ether	1634-04-4	2.5	0.7	ug/l	63-130	20	63-130	20	20			
p/m-Xylene	179601-23-1	2.5	0.7	ug/l	70-130	20	70-130	20	20			
o-Xylene	95-47-6	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Xylene (Total)	1330-20-7	2.5	0.7	ug/l				20	20			
cis-1,2-Dichloroethene	156-59-2	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,2-Dichloroethene (total)	540-59-0	2.5	0.7	ug/l				20	20			
Dibromomethane	74-95-3	5	1	ug/l	70-130	20	70-130	20	20			
1,2,3-Trichloropropane	96-18-4	2.5	0.7	ug/l	64-130	20	64-130	20	20			
Acrylonitrile	107-13-1	5	1.5	ug/l	70-130	20	70-130	20	20			
Styrene	100-42-5	2.5	0.7	ug/l	70-130	20	70-130	20	20			

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TCL Volatiles - EPA 8260C (WATER)

Holding Time: 14 days
Container/Sample Preservation: 3 - Vial HCl preserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Dichlorodifluoromethane	75-71-8	5	1	ug/l	36-147	20	36-147	20	20			
Acetone	67-64-1	5	1.46	ug/l	58-148	20	58-148	20	20			
Carbon disulfide	75-15-0	5	1	ug/l	51-130	20	51-130	20	20			
2-Butanone	78-93-3	5	1.94	ug/l	63-138	20	63-138	20	20			
Vinyl acetate	108-05-4	5	1	ug/l	70-130	20	70-130	20	20			
4-Methyl-2-pentanone	108-10-1	5	1	ug/l	59-130	20	59-130	20	20			
2-Hexanone	591-78-6	5	1	ug/l	57-130	20	57-130	20	20			
Bromochloromethane	74-97-5	2.5	0.7	ug/l	70-130	20	70-130	20	20			
2,2-Dichloropropane	594-20-7	2.5	0.7	ug/l	63-133	20	63-133	20	20			
1,2-Dibromoethane	106-93-4	2	0.65	ug/l	70-130	20	70-130	20	20			
1,3-Dichloropropane	142-28-9	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,1,1,2-Tetrachloroethane	630-20-6	2.5	0.7	ug/l	64-130	20	64-130	20	20			
Bromobenzene	108-86-1	2.5	0.7	ug/l	70-130	20	70-130	20	20			
n-Butylbenzene	104-51-8	2.5	0.7	ug/l	53-136	20	53-136	20	20			
sec-Butylbenzene	135-98-8	2.5	0.7	ug/l	70-130	20	70-130	20	20			
tert-Butylbenzene	98-06-6	2.5	0.7	ug/l	70-130	20	70-130	20	20			
o-Chlorotoluene	95-49-8	2.5	0.7	ug/l	70-130	20	70-130	20	20			
p-Chlorotoluene	106-43-4	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,2-Dibromo-3-chloropropane	96-12-8	2.5	0.7	ug/l	41-144	20	41-144	20	20			
Hexachlorobutadiene	87-68-3	2.5	0.7	ug/l	63-130	20	63-130	20	20			
Isopropylbenzene	98-82-8	2.5	0.7	ug/l	70-130	20	70-130	20	20			
p-Isopropyltoluene	99-87-6	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Naphthalene	91-20-3	2.5	0.7	ug/l	70-130	20	70-130	20	20			
n-Propylbenzene	103-65-1	2.5	0.7	ug/l	69-130	20	69-130	20	20			
1,2,3-Trichlorobenzene	87-61-6	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,2,4-Trichlorobenzene	120-82-1	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,3,5-Trimethylbenzene	108-67-8	2.5	0.7	ug/l	64-130	20	64-130	20	20			
1,2,4-Trimethylbenzene	95-63-6	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,4-Dioxane	123-91-1	250	41.1	ug/l	56-162	20	56-162	20	20			
1,4-Diethylbenzene	105-05-5	2	0.7	ug/l	70-130	20	70-130	20	20			
4-Ethyltoluene	622-96-8	2	0.7	ug/l	70-130	20	70-130	20	20			
1,2,4,5-Tetramethylbenzene	95-93-2	2	0.65	ug/l	70-130	20	70-130	20	20			
Ethyl ether	60-29-7	2.5	0.7	ug/l	59-134	20	59-134	20	20			
trans-1,4-Dichloro-2-butene	110-57-6	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,2-Dichloroethane-d4	*17060-07-0*									*70-130*		
Toluene-d8	*2037-26-5*									*70-130*		
4-Bromofluorobenzene	*460-00-4*									*70-130*		
Dibromofluoromethane	*1868-53-7*									*70-130*		

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1,4 Dioxane via EPA 8270D-SIM (WATER)

Holding Time: 7 days
Container/Sample Preservation: 2 - Amber 250ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
1,4-Dioxane	123-91-1	150	33.9	ng/l	40-140	30	40-140	30	30			
1,4-Dioxane-d8	*17647-74-4*									*15-110*		
1,4-Dioxane-d8 (IS)	17647-74-4			ng/l								

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TCL PCBs - EPA 8082A (LVI) (WATER)

Holding Time: 7 days
Container/Sample Preservation: 2 - Amber 120ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Aroclor 1016	12674-11-2	0.082824	0.0344148	ug/l	40-140	50	40-140	50	50			
Aroclor 1221	11104-28-2	0.082824	0.0664734	ug/l	40-140	50	40-140	50	50			
Aroclor 1232	11141-16-5	0.082824	0.0455532	ug/l	40-140	50	40-140	50	50			
Aroclor 1242	53469-21-9	0.082824	0.0387702	ug/l	40-140	50	40-140	50	50			
Aroclor 1248	12672-29-6	0.082824	0.048909	ug/l	40-140	50	40-140	50	50			
Aroclor 1254	11097-69-1	0.082824	0.0390558	ug/l	40-140	50	40-140	50	50			
Aroclor 1260	11096-82-5	0.082824	0.0320586	ug/l	40-140	50	40-140	50	50			
Aroclor 1262	37324-23-5	0.082824	0.0347718	ug/l	40-140	50	40-140	50	50			
Aroclor 1268	11100-14-4	0.082824	0.0334866	ug/l	40-140	50	40-140	50	50			
PCBs, Total	1336-36-3	0.082824	0.0320586	ug/l				50	50			
2,4,5,6-Tetrachloro-m-xylene	*877-09-8*									*30-150*		
Decachlorobiphenyl	*2051-24-3*									*30-150*		

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METALS by 6020B (WATER)

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria	Holding Time	Container/Sample Preservation
Aluminum, Total	7429-90-5	0.01	0.00327	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Antimony, Total	7440-36-0	0.004	0.000429	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Arsenic, Total	7440-38-2	0.0005	0.000165	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Barium, Total	7440-39-3	0.0005	0.000173	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Beryllium, Total	7440-41-7	0.0005	0.000107	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Cadmium, Total	7440-43-9	0.0002	0.0000599	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Calcium, Total	7440-70-2	0.1	0.0394	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Chromium, Total	7440-47-3	0.001	0.000178	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Cobalt, Total	7440-48-4	0.0005	0.000163	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Copper, Total	7440-50-8	0.001	0.000384	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Iron, Total	7439-89-6	0.05	0.0191	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Lead, Total	7439-92-1	0.001	0.000343	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Magnesium, Total	7439-95-4	0.07	0.0242	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Manganese, Total	7439-96-5	0.001	0.00044	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Nickel, Total	7440-02-0	0.002	0.000556	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Potassium, Total	7440-09-7	0.1	0.0309	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Selenium, Total	7782-49-2	0.005	0.00173	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Silver, Total	7440-22-4	0.0004	0.000163	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Sodium, Total	7440-23-5	0.1	0.0293	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Thallium, Total	7440-28-0	0.0005	0.000143	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Vanadium, Total	7440-62-2	0.005	0.00157	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Zinc, Total	7440-66-6	0.01	0.00341	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved

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METALS by 7470A (WATER)

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria	Holding Time	Container/Sample Preservation
Mercury, Total	7439-97-6	0.0002	0.0000915	mg/l	80-120		75-125	20	20		28 days	1 - Plastic 500ml HNO3 preserved

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TCL Pesticides - EPA 8081B (WATER)

Holding Time: 7 days
Container/Sample Preservation: 2 - Amber 120ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Delta-BHC	319-86-8	0.02	0.00467	ug/l	30-150	20	30-150	30	30			
Lindane	58-89-9	0.02	0.00434	ug/l	30-150	20	30-150	30	30			
Alpha-BHC	319-84-6	0.02	0.00439	ug/l	30-150	20	30-150	30	30			
Beta-BHC	319-85-7	0.02	0.0056	ug/l	30-150	20	30-150	30	30			
Heptachlor	76-44-8	0.02	0.0031	ug/l	30-150	20	30-150	30	30			
Aldrin	309-00-2	0.02	0.00216	ug/l	30-150	20	30-150	30	30			
Heptachlor epoxide	1024-57-3	0.02	0.00415	ug/l	30-150	20	30-150	30	30			
Endrin	72-20-8	0.04	0.00429	ug/l	30-150	20	30-150	30	30			
Endrin aldehyde	7421-93-4	0.04	0.0081	ug/l	30-150	20	30-150	30	30			
Endrin ketone	53494-70-5	0.04	0.00477	ug/l	30-150	20	30-150	30	30			
Dieldrin	60-57-1	0.04	0.00429	ug/l	30-150	20	30-150	30	30			
4,4'-DDE	72-55-9	0.04	0.00381	ug/l	30-150	20	30-150	30	30			
4,4'-DDD	72-54-8	0.04	0.00464	ug/l	30-150	20	30-150	30	30			
4,4'-DDT	50-29-3	0.04	0.00432	ug/l	30-150	20	30-150	30	30			
Endosulfan I	959-98-8	0.02	0.00345	ug/l	30-150	20	30-150	30	30			
Endosulfan II	33213-65-9	0.04	0.00519	ug/l	30-150	20	30-150	30	30			
Endosulfan sulfate	1031-07-8	0.04	0.00481	ug/l	30-150	20	30-150	30	30			
Methoxychlor	72-43-5	0.2	0.00684	ug/l	30-150	20	30-150	30	30			
Toxaphene	8001-35-2	0.2	0.0627	ug/l	30-150	20	30-150	30	30			
cis-Chlordane	5103-71-9	0.02	0.00666	ug/l	30-150	20	30-150	30	30			
trans-Chlordane	5103-74-2	0.02	0.00627	ug/l	30-150	20	30-150	30	30			
Chlordane	57-74-9	0.2	0.0463	ug/l	30-150	20	30-150	30	30			
2,4,5,6-Tetrachloro-m-xylene	*877-09-8*									*30-150*		
Decachlorobiphenyl	*2051-24-3*									*30-150*		

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NYTCL Semivolatiles -EPA 8270D-SIM (LVI) (WATER)

Holding Time: 7 days
Container/Sample Preservation: 2 - Amber 250ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Acenaphthene	83-32-9	0.1001	0.01442168	ug/l	40-140	40	40-140	40	40			
2-Chloronaphthalene	91-58-7	0.2002	0.01804712	ug/l	40-140	40	40-140	40	40			
Fluoranthene	206-44-0	0.1001	0.02054052	ug/l	40-140	40	40-140	40	40			
Hexachlorobutadiene	87-68-3	0.5005	0.04674852	ug/l	40-140	40	40-140	40	40			
Naphthalene	91-20-3	0.1001	0.04882696	ug/l	40-140	40	40-140	40	40			
Benzo(a)anthracene	56-55-3	0.1001	0.0198198	ug/l	40-140	40	40-140	40	40			
Benzo(a)pyrene	50-32-8	0.1001	0.01493856	ug/l	40-140	40	40-140	40	40			
Benzo(b)fluoranthene	205-99-2	0.1001	0.01156792	ug/l	40-140	40	40-140	40	40			
Benzo(k)fluoranthene	207-08-9	0.1001	0.00889616	ug/l	40-140	40	40-140	40	40			
Chrysene	218-01-9	0.1001	0.01198288	ug/l	40-140	40	40-140	40	40			
Acenaphthylene	208-96-8	0.1001	0.01222676	ug/l	40-140	40	40-140	40	40			
Anthracene	120-12-7	0.1001	0.01450176	ug/l	40-140	40	40-140	40	40			
Benzo(ghi)perylene	191-24-2	0.1001	0.01365	ug/l	40-140	40	40-140	40	40			
Fluorene	86-73-7	0.1001	0.01456364	ug/l	40-140	40	40-140	40	40			
Phenanthrene	85-01-8	0.1001	0.02333604	ug/l	40-140	40	40-140	40	40			
Dibenzo(a,h)anthracene	53-70-3	0.1001	0.0127218	ug/l	40-140	40	40-140	40	40			
Indeno(1,2,3-cd)Pyrene	193-39-5	0.1001	0.01217216	ug/l	40-140	40	40-140	40	40			
Pyrene	129-00-0	0.1001	0.01902264	ug/l	40-140	40	40-140	40	40			
2-Methylnaphthalene	91-57-6	0.1001	0.02192372	ug/l	40-140	40	40-140	40	40			
Pentachlorophenol	87-86-5	0.8008	0.0143416	ug/l	40-140	40	40-140	40	40			
Hexachlorobenzene	118-74-1	0.8008	0.00938028	ug/l	40-140	40	40-140	40	40			
Hexachloroethane	67-72-1	0.8008	0.06320132	ug/l	40-140	40	40-140	40	40			
2-Fluorophenol	*367-12-4*									*21-120*		
Phenol-d6	*13127-88-3*									*10-120*		
Nitrobenzene-d5	*4165-60-0*									*23-120*		
2-Fluorobiphenyl	*321-60-8*									*15-120*		
2,4,6-Tribromophenol	*118-79-6*									*10-120*		
4-Terphenyl-d14	*1718-51-0*									*41-149*		

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NY PFAAs via EPA 537(M)-Isotope Dilution (WATER)

Holding Time: 14 days
Container/Sample Preservation: 1 - 2 Plastic/1 Plastic/1 H20 Plastic

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Perfluorobutanoic Acid (PFBA)	375-22-4	2	0.3732	ng/l	67-148	30	67-148	30	30			
Perfluoropentanoic Acid (PFPeA)	2706-90-3	2	0.464	ng/l	63-161	30	63-161	30	30			
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	2	0.38	ng/l	65-157	30	65-157	30	30			
Perfluorohexanoic Acid (PFHxA)	307-24-4	2	0.492	ng/l	69-168	30	69-168	30	30			
Perfluoroheptanoic Acid (PFHpA)	375-85-9	2	0.372	ng/l	58-159	30	58-159	30	30			
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	2	0.436	ng/l	69-177	30	69-177	30	30			
Perfluorooctanoic Acid (PFOA)	335-67-1	2	0.46	ng/l	63-159	30	63-159	30	30			
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	2	0.194	ng/l	49-187	30	49-187	30	30			
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	2	0.52	ng/l	61-179	30	61-179	30	30			
Perfluorononanoic Acid (PFNA)	375-95-1	2	0.436	ng/l	68-171	30	68-171	30	30			
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	2	0.56	ng/l	52-151	30	52-151	30	30			
Perfluorodecanoic Acid (PFDA)	335-76-2	2	0.62	ng/l	63-171	30	63-171	30	30			
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	2	0.2908	ng/l	56-173	30	56-173	30	30			
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSA	2355-31-9	2	0.2504	ng/l	60-166	30	60-166	30	30			
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	2	0.424	ng/l	60-153	30	60-153	30	30			
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	2	0.386	ng/l	38-156	30	38-156	30	30			
Perfluorooctanesulfonamide (FOSA)	754-91-6	2	0.556	ng/l	46-170	30	46-170	30	30			
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	2	0.3728	ng/l	45-170	30	45-170	30	30			
Perfluorododecanoic Acid (PFDoA)	307-55-1	2	0.592	ng/l	67-153	30	67-153	30	30			
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	2	0.314	ng/l	48-158	30	48-158	30	30			
Perfluorotetradecanoic Acid (PFTA)	376-06-7	2	0.988	ng/l	59-182	30	59-182	30	30			
PFOA/PFOS, Total		2	0.46	ng/l				30	30			
Perfluoro[13C4]Butanoic Acid (MPFBA)	*NONE*									*2-156*		
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	*NONE*									*16-173*		
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	*NONE*									*31-159*		
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	*NONE*									*21-145*		
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	*NONE*									*30-139*		
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	*NONE*									*47-153*		
Perfluoro[13C8]Octanoic Acid (M8PFOA)	*NONE*									*36-149*		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6	*NONE*									*1-244*		
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	*NONE*									*34-146*		
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	*NONE*									*42-146*		
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	*NONE*									*38-144*		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8	*NONE*									*7-170*		
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid	*NONE*									*1-181*		
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	*NONE*									*40-144*		
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	*NONE*									*1-87*		
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d	*NONE*									*23-146*		
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	*NONE*									*24-161*		
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	*NONE*									*33-143*		

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WETCHEM (WATER)

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Method	Holding Time	Container/Sample Preservation
Chromium, Hexavalent	18540-29-9	0.01	0.003	mg/l	85-115	20	85-115	20	20	7196A	24 hours	1 - Plastic 500ml unpreserved
Cyanide, Total	57-12-5	0.005	0.0018	mg/l	85-115	20	80-120	20	20	9010C/9012B	14 days	1 - Plastic 250ml NaOH preserved

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NYTCL Semivolatiles - EPA 8270D (LVI) (WATER)

Holding Time: 7 days
Container/Sample Preservation: 2 - Amber 250ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Acenaphthene	83-32-9	2.002	0.44408	ug/l	37-111	30	37-111	30	30			
1,2,4-Trichlorobenzene	120-82-1	5.0232	0.49868	ug/l	39-98	30	39-98	30	30			
Hexachlorobenzene	118-74-1	2.002	0.46592	ug/l	40-140	30	40-140	30	30			
Bis(2-chloroethyl)ether	111-44-4	2.002	0.50596	ug/l	40-140	30	40-140	30	30			
2-Chloronaphthalene	91-58-7	2.002	0.4368	ug/l	40-140	30	40-140	30	30			
1,2-Dichlorobenzene	95-50-1	2.002	0.455	ug/l	40-140	30	40-140	30	30			
1,3-Dichlorobenzene	541-73-1	2.002	0.40404	ug/l	40-140	30	40-140	30	30			
1,4-Dichlorobenzene	106-46-7	2.002	0.43316	ug/l	36-97	30	36-97	30	30			
3,3'-Dichlorobenzidine	91-94-1	5.0232	1.62344	ug/l	40-140	30	40-140	30	30			
2,4-Dinitrotoluene	121-14-2	5.0232	1.1648	ug/l	48-143	30	48-143	30	30			
2,6-Dinitrotoluene	606-20-2	5.0232	0.93184	ug/l	40-140	30	40-140	30	30			
Fluoranthene	206-44-0	2.002	0.257348	ug/l	40-140	30	40-140	30	30			
4-Chlorophenyl phenyl ether	7005-72-3	2.002	0.48776	ug/l	40-140	30	40-140	30	30			
4-Bromophenyl phenyl ether	101-55-3	2.002	0.37856	ug/l	40-140	30	40-140	30	30			
Bis(2-chloroisopropyl)ether	108-60-1	2.002	0.5278	ug/l	40-140	30	40-140	30	30			
Bis(2-chloroethoxy)methane	111-91-1	5.0232	0.50232	ug/l	40-140	30	40-140	30	30			
Hexachlorobutadiene	87-68-3	2.002	0.65884	ug/l	40-140	30	40-140	30	30			
Hexachlorocyclopentadiene	77-47-4	20.02	0.68796	ug/l	40-140	30	40-140	30	30			
Hexachloroethane	67-72-1	2.002	0.58604	ug/l	40-140	30	40-140	30	30			
Isophorone	78-59-1	5.0232	1.20484	ug/l	40-140	30	40-140	30	30			
Naphthalene	91-20-3	2.002	0.46592	ug/l	40-140	30	40-140	30	30			
Nitrobenzene	98-95-3	2.002	0.77168	ug/l	40-140	30	40-140	30	30			
NitrosoDiPhenylAmine(NDPA)/DPA	86-30-6	2.002	0.4186	ug/l	40-140	30	40-140	30	30			
n-Nitrosodi-n-propylamine	621-64-7	5.0232	0.64428	ug/l	29-132	30	29-132	30	30			
Bis(2-Ethylhexyl)phthalate	117-81-7	3.003	1.53608	ug/l	40-140	30	40-140	30	30			
Butyl benzyl phthalate	85-68-7	5.0232	1.17208	ug/l	40-140	30	40-140	30	30			
Di-n-butylphthalate	84-74-2	5.0232	0.38948	ug/l	40-140	30	40-140	30	30			
Di-n-octylphthalate	117-84-0	5.0232	1.274	ug/l	40-140	30	40-140	30	30			
Diethyl phthalate	84-66-2	5.0232	0.3822	ug/l	40-140	30	40-140	30	30			
Dimethyl phthalate	131-11-3	5.0232	1.82	ug/l	40-140	30	40-140	30	30			
Benzo(a)anthracene	56-55-3	2.002	0.32578	ug/l	40-140	30	40-140	30	30			
Benzo(a)pyrene	50-32-8	2.002	0.40768	ug/l	40-140	30	40-140	30	30			
Benzo(b)fluoranthene	205-99-2	2.002	0.355264	ug/l	40-140	30	40-140	30	30			
Benzo(k)fluoranthene	207-08-9	2.002	0.37492	ug/l	40-140	30	40-140	30	30			
Chrysene	218-01-9	2.002	0.341068	ug/l	40-140	30	40-140	30	30			
Acenaphthylene	208-96-8	2.002	0.46592	ug/l	45-123	30	45-123	30	30			
Anthracene	120-12-7	2.002	0.32942	ug/l	40-140	30	40-140	30	30			
Benzo(ghi)perylene	191-24-2	2.002	0.296296	ug/l	40-140	30	40-140	30	30			
Fluorene	86-73-7	2.002	0.41496	ug/l	40-140	30	40-140	30	30			
Phenanthrene	85-01-8	2.002	0.33124	ug/l	40-140	30	40-140	30	30			
Dibenzo(a,h)anthracene	53-70-3	2.002	0.323232	ug/l	40-140	30	40-140	30	30			
Indeno(1,2,3-cd)Pyrene	193-39-5	2.002	0.39676	ug/l	40-140	30	40-140	30	30			

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NYTCL Semivolatiles - EPA 8270D (LVI) (WATER)

Holding Time: 7 days
Container/Sample Preservation: 2 - Amber 250ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Pyrene	129-00-0	2.002	0.279552	ug/l	26-127	30	26-127	30	30			
Biphenyl	92-52-4	2.002	0.45864	ug/l	40-140	30	40-140	30	30			
4-Chloroaniline	106-47-8	5.0232	1.07016	ug/l	40-140	30	40-140	30	30			
2-Nitroaniline	88-74-4	5.0232	0.49868	ug/l	52-143	30	52-143	30	30			
3-Nitroaniline	99-09-2	5.0232	0.81536	ug/l	25-145	30	25-145	30	30			
4-Nitroaniline	100-01-6	5.0232	0.8008	ug/l	51-143	30	51-143	30	30			
Dibenzofuran	132-64-9	2.002	0.49868	ug/l	40-140	30	40-140	30	30			
2-Methylnaphthalene	91-57-6	2.002	0.455	ug/l	40-140	30	40-140	30	30			
Acetophenone	98-86-2	5.0232	0.5278	ug/l	39-129	30	39-129	30	30			
2,4,6-Trichlorophenol	88-06-2	5.0232	0.61152	ug/l	30-130	30	30-130	30	30			
P-Chloro-M-Cresol	59-50-7	2.002	0.35126	ug/l	23-97	30	23-97	30	30			
2-Chlorophenol	95-57-8	2.002	0.48048	ug/l	27-123	30	27-123	30	30			
2,4-Dichlorophenol	120-83-2	5.0232	0.41132	ug/l	30-130	30	30-130	30	30			
2,4-Dimethylphenol	105-67-9	5.0232	1.77996	ug/l	30-130	30	30-130	30	30			
2-Nitrophenol	88-75-5	10.01	0.84812	ug/l	30-130	30	30-130	30	30			
4-Nitrophenol	100-02-7	10.01	0.6734	ug/l	10-80	30	10-80	30	30			
2,4-Dinitrophenol	51-28-5	20.02	6.6612	ug/l	20-130	30	20-130	30	30			
4,6-Dinitro-o-cresol	534-52-1	10.01	1.81636	ug/l	20-164	30	20-164	30	30			
Pentachlorophenol	87-86-5	10.01	1.79452	ug/l	9-103	30	9-103	30	30			
Phenol	108-95-2	5.0232	0.56784	ug/l	12-110	30	12-110	30	30			
2-Methylphenol	95-48-7	5.0232	0.4914	ug/l	30-130	30	30-130	30	30			
3-Methylphenol/4-Methylphenol	108-39-4/106-44-5	5.0232	0.48048	ug/l	30-130	30	30-130	30	30			
2,4,5-Trichlorophenol	95-95-4	5.0232	0.77532	ug/l	30-130	30	30-130	30	30			
Benzoic Acid	65-85-0	50.232	2.66084	ug/l	10-164	30	10-164	30	30			
Benzyl Alcohol	100-51-6	2.002	0.58968	ug/l	26-116	30	26-116	30	30			
Carbazole	86-74-8	2.002	0.4914	ug/l	55-144	30	55-144	30	30			
2-Fluorophenol	*367-12-4*									*21-120*		
Phenol-d6	*13127-88-3*									*10-120*		
Nitrobenzene-d5	*4165-60-0*									*23-120*		
2-Fluorobiphenyl	*321-60-8*									*15-120*		
2,4,6-Tribromophenol	*118-79-6*									*10-120*		
4-Terphenyl-d14	*1718-51-0*									*41-149*		

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Appendix F:
Alpha Analytical SOP for PFAS Analysis

Determination of Selected Perfluorinated Alkyl Substances by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry Isotope Dilution (LC/MS/MS)

Reference: EPA Method 537, Version 1.1, September 2009, EPA Document #: EPA/600/R-08/09

EPA Method 537.1, Version 1, November 2018, EPA Document #: EPA/600/R-18/352

Department of Defense, Quality Systems Manual for Environmental Laboratories, Version 5.2, .2019

1. Scope and Application

Matrices: Drinking water, Non-potable Water, and Soil Matrices

Definitions: Refer to Alpha Analytical Quality Manual.

1.1 This is a liquid chromatography/tandem mass spectrometry (LC/MS/MS) method for the determination of selected perfluorinated alkyl substances (PFAS) in Non-Drinking Water and soil Matrices. Accuracy and precision data have been generated in reagent water, and finished ground and surface waters for the compounds listed in Table 1.

1.2 The data report packages present the documentation of any method modification related to the samples tested. Depending upon the nature of the modification and the extent of intended use, the laboratory may be required to demonstrate that the modifications will produce equivalent results for the matrix. Approval of all method modifications is by one or more of the following laboratory personnel before performing the modification: Area Supervisor, Department Supervisor, Laboratory Director, or Quality Assurance Officer.

1.3 This method is restricted to use by or under the supervision of analysts experienced in the operation of the LC/MS/MS and in the interpretation of LC/MS/MS data. Each analyst must demonstrate the ability to generate acceptable results with this method by performing an initial demonstration of capability.

2. Summary of Method

2.1 A 250-mL water sample is fortified with extracted internal standards (EIS) and passed through a solid phase extraction (WAX) cartridge containing a mixed mode, Weak Anion Exchange, reversed phase, water-wettable polymer to extract the method analytes and isotopically-labeled compounds. The compounds are eluted from the solid phase in two fractions with methanol followed by a small amount of 2% ammonium hydroxide in methanol solution. The extract is concentrated with nitrogen in a heated water bath, and then adjusted to a 1-mL volume with 80:20% (vol/vol) methanol:water. A 3 µl injection is made into an LC equipped with a C18 column that is interfaced to an MS/MS. The analytes are separated and identified by comparing the acquired mass spectra and retention times to reference spectra and retention times for calibration standards acquired under identical LC/MS/MS conditions. The concentration of each analyte is determined by using the isotope dilution technique. Extracted Internal Standards (EIS) analytes are used to monitor the extraction efficiency of the method analytes.

2.2 Method Modifications from Reference

None.

Table 1

Parameter	Acronym	CAS
PERFLUOROALKYL ETHER CARBOXYLIC ACIDS (PFECAs)		
Tetrafluoro-2-(heptafluoropropoxy)propanoic acid	HFPO-DA	62037-80-3
4,8-dioxa-3H-perfluorononanoic acid	ADONA	919005-14-4
PERFLUOROALKYLCARBOXILIC ACIDS (PFCAs)		
Perfluorobutanoic acid	PFBA	375-22-4
Perfluoropentanoic acid	PFPeA	2706-90-3
Perfluorohexanoic acid	PFHxA *	307-24-4
Perfluoroheptanoic acid	PFHpA *	375-85-9
Perfluorooctanoic acid	PFOA *	335-67-1
Perfluorononanoic acid	PFNA *	375-95-1
Perfluorodecanoic acid	PFDA *	335-76-2
Perfluoroundecanoic acid	PFUnA *	2058-94-8
Perfluorododecanoic acid	PFDoA *	307-55-1
Perfluorotridecanoic acid	PFTrDA *	72629-94-8
Perfluorotetradecanoic acid	PFTA *	376-06-7
Perfluorohexadecanoic acid	PFHxDA	67905-19-5
Perfluorooctadecanoic acid	PFODA	16517-11-6
PERFLUOROALKYLSULFONATES (PFASs)		
Perfluorobutanesulfonic acid	PFBS *	375-73-5
Perfluoropentanesulfonic acid	PFPeS	2706-91-4
Perfluorohexanesulfonic acid	PFHxS *	355-46-4
Perfluoroheptanesulfonic acid	PFHpS	375-92-8
Perfluorooctanesulfonic acid	PFOS *	1763-23-1
Perfluorononanesulfonic acid	PFNS	68259-12-1
Perfluorodecanesulfonic acid	PFDS	335-77-3
Perfluorododecanesulfonic acid	PFDoS	79780-39-5

*** also reportable via the standard 537 method**

Table 1 Cont.

Parameter	Acronym	CAS
CHLORO-PERFLUOROALKYLSULFONATE		
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS	763051-92-9
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS	756426-58-1
PERFLUOROOCTANESULFONAMIDES (FOSAs)		
Perfluorooctanesulfonamide	PFOSA	754-91-6
N-methylperfluoro-1-octanesulfonamide	NMeFOSA	31506-32-8
N-ethylperfluoro-1-octanesulfonamide	NEtFOSA	4151-50-2
TELOMER SULFONATES		
1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	4:2FTS	27619-93-8
1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	6:2FTS	27619-97-2
1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	8:2FTS	39108-34-4
1H,1H,2H,2H-perfluorododecane sulfonate (10:2)	10:2FTS	120226-60-0
PERFLUOROOCTANESULFONAMIDOACETIC ACIDS		
N-methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA *	2355-31-9
N-ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA *	2991-50-6
NATIVE PERFLUOROOCTANESULFONAMIDOETHANOLS (FOSEs)		
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	NMeFOSE	24448-09-7
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	NEtFOSE	1691-99-2

*** also reportable via the standard 537 method**

3. Reporting Limits

The reporting limit for PFAS's is 2 ng/L for aqueous samples (20 ng/L for HFPO-DA) and 1 ng/g (10 ng/g for HFPO-DA) for soil samples.

4. Interferences

4.1 PFAS standards, extracts and samples should not come in contact with any glass containers or pipettes as these analytes can potentially adsorb to glass surfaces. PFAS analyte and EIS standards commercially purchased in glass ampoules are acceptable; however, all subsequent transfers or dilutions performed by the analyst must be prepared and stored in polypropylene containers.

4.2 Method interferences may be caused by contaminants in solvents, reagents (including reagent water), sample bottles and caps, and other sample processing hardware that lead to discrete artifacts and/or elevated baselines in the chromatograms. The method analytes in this method can also be found in many common laboratory supplies and equipment, such

as PTFE (polytetrafluoroethylene) products, LC solvent lines, methanol, aluminum foil, SPE sample transfer lines, etc. All items such as these must be routinely demonstrated to be free from interferences (less than 1/3 the RL for each method analyte) under the conditions of the analysis by analyzing laboratory reagent blanks as described in Section 9.2. **Subtracting blank values from sample results is not permitted.**

4.3 Matrix interferences may be caused by contaminants that are co-extracted from the sample. The extent of matrix interferences will vary considerably from source to source, depending upon the nature of the water. Humic and/or fulvic material can be co-extracted during SPE and high levels can cause enhancement and/or suppression in the electrospray ionization source or low recoveries on the SPE sorbent. Total organic carbon (TOC) is a good indicator of humic content of the sample.

4.4 SPE cartridges can be a source of interferences. The analysis of field and laboratory reagent blanks can provide important information regarding the presence or absence of such interferences. Brands and lots of SPE devices should be tested to ensure that contamination does not preclude analyte identification and quantitation.

5. Health and Safety

5.1 The toxicity or carcinogenicity of each reagent and standard used in this method is not fully established; however, each chemical compound should be treated as a potential health hazard. From this viewpoint, exposure to these chemicals must be reduced to the lowest possible level by whatever means available. A reference file of material safety data sheets is available to all personnel involved in the chemical analysis. Additional references to laboratory safety are available in the Chemical Hygiene Plan.

5.2 All personnel handling environmental samples known to contain or to have been in contact with municipal waste must follow safety practices for handling known disease causative agents.

5.3 PFOA has been described as "likely to be carcinogenic to humans." Pure standard materials and stock standard solutions of these method analytes should be handled with suitable protection to skin and eyes, and care should be taken not to breathe the vapors or ingest the materials.

6. Sample Collection, Preservation, Shipping and Handling

6.1 Sample Collection for Aqueous Samples

6.1.1 Samples must be collected in two (2) 250-mL high density polyethylene (HDPE) container with an unlined plastic screw cap.

6.1.2 The sample handler must wash their hands before sampling and wear nitrile gloves while filling and sealing the sample bottles. PFAS contamination during sampling can occur from a number of common sources, such as food packaging and certain foods and beverages. Proper hand washing and wearing nitrile gloves will aid in minimizing this type of accidental contamination of the samples.

6.1.3 Open the tap and allow the system to flush until the water temperature has stabilized (approximately 3 to 5 min). Collect samples from the flowing system.

6.1.4 Fill sample bottles. Samples do not need to be collected headspace free.

6.1.5 After collecting the sample and cap the bottle. Keep the sample sealed from time of collection until extraction.

6.1.6 Field Reagent Blank (FRB)

6.1.6.1 A FRB must be handled along with each sample set. The sample set is composed of samples collected from the same sample site and at the same time. At the laboratory, fill the field blank sample bottle with reagent water and preservatives, seal, and ship to the sampling site along with the sample bottles. For each FRB shipped, an empty sample bottle (no preservatives) must also be shipped. At the sampling site, the sampler must open the shipped FRB and pour the reagent water into the empty shipped sample bottle, seal and label this bottle as the FRB. The FRB is shipped back to the laboratory along with the samples and analyzed to ensure that PFAS's were not introduced into the sample during sample collection/handling.

The reagent water used for the FRBs must be initially analyzed for method analytes as a MB and must meet the MB criteria in Section 9.2.1 prior to use. This requirement will ensure samples are not being discarded due to contaminated reagent water rather than contamination during sampling.

6.2 Sample Collection for Soil and Sediment samples.

Grab samples are collected in polypropylene containers. Sample containers and contact surfaces containing PTFE shall be avoided.

6.3 Sample Preservation

Not applicable.

6.4 Sample Shipping

Samples must be chilled during shipment and must not exceed 10 °C during the first 48 hours after collection. Sample temperature must be confirmed to be at or below 10 °C when the samples are received at the laboratory. Samples stored in the lab must be held at or below 6 °C until extraction, but should not be frozen.

NOTE: Samples that are significantly above 10° C, at the time of collection, may need to be iced or refrigerated for a period of time, in order to chill them prior to shipping. This will allow them to be shipped with sufficient ice to meet the above requirements.

6.5 Sample Handling

6.5.1 Holding Times

6.5.1.1 Water samples should be extracted as soon as possible but must be extracted within 14 days. Soil samples should be extracted within 28 days. Extracts are stored at < 10 ° C and analyzed within 28 days after extraction.

7. Equipment and Supplies

7.1 SAMPLE CONTAINERS – 250-mL high density polyethylene (HDPE) bottles fitted with unlined screw caps. Sample bottles must be discarded after use.

7.2 POLYPROPYLENE BOTTLES – 4-mL narrow-mouth polypropylene bottles.

7.3 CENTRIFUGE TUBES – 50-mL conical polypropylene tubes with polypropylene screw caps for storing standard solutions and for collection of the extracts.

7.4 AUTOSAMPLER VIALS – Polypropylene 0.7-mL autosampler vials with polypropylene caps.

7.4.1 NOTE: Polypropylene vials and caps are necessary to prevent contamination of the sample from PTFE coated septa. However, polypropylene caps do not reseal, so evaporation occurs after injection. Thus, multiple injections from the same vial are not possible.

7.5 POLYPROPYLENE GRADUATED CYLINDERS – Suggested sizes include 25, 50, 100 and 1000-mL cylinders.

7.6 Auto Pipets – Suggested sizes include 5, 10, 25, 50, 100, 250, 500, 1000, 5000 and 10,000-µls.

7.7 PLASTIC PIPETS – Polypropylene or polyethylene disposable pipets.

7.8 ANALYTICAL BALANCE – Capable of weighing to the nearest 0.0001 g.

7.9 SOLID PHASE EXTRACTION (SPE) APPARATUS FOR USING CARTRIDGES

7.9.1 SPE CARTRIDGES – 0.5 g SPE cartridges containing a reverse phase copolymer characterized by a weak anion exchanger (WAX) sorbent phase.

7.9.2 VACUUM EXTRACTION MANIFOLD – A manual vacuum manifold with large volume sampler for cartridge extractions, or an automatic/robotic sample preparation system designed for use with SPE cartridges, may be used if all QC requirements discussed in Section 9 are met. Extraction and/or elution steps may not be changed or omitted to accommodate the use of an automated system. Care must be taken with automated SPE systems to ensure the PTFE commonly used in these systems does not contribute to unacceptable analyte concentrations in the MB (Sect. 9.2.1).

7.9.3 SAMPLE DELIVERY SYSTEM – Use of a polypropylene transfer tube system, which transfers the sample directly from the sample container to the SPE cartridge, is recommended, but not mandatory. Standard extraction manifolds come equipped with PTFE transfer tube systems. These can be replaced with 1/8" O.D. x 1/16" I.D. polypropylene or polyethylene tubing cut to an appropriate length to ensure no sample contamination from the sample transfer lines. Other types of non-PTFE tubing may be used provided it meets the MB (Sect. 9.2.1) and LCS (Sect. 9.3) QC requirements. The PTFE transfer tubes may be used, but an MB must be run on each PFTE transfer tube and the QC requirements in Section 13.2.2 must be met. In the case of automated SPE, the removal of PTFE lines may not be feasible; therefore, MBs will need to be rotated among the ports and must meet the QC requirements of Sections 13.2.2 and 9.2.1.

7.10 Extract Clean-up Cartridge – 250 mg 6ml SPE Cartridge containing graphitized polymer carbon

7.11 EXTRACT CONCENTRATION SYSTEM – Extracts are concentrated by evaporation with nitrogen using a water bath set no higher than 65 °C.

7.12 LABORATORY OR ASPIRATOR VACUUM SYSTEM – Sufficient capacity to maintain a vacuum of approximately 10 to 15 inches of mercury for extraction cartridges.

7.13 LIQUID CHROMATOGRAPHY (LC)/TANDEM MASS SPECTROMETER (MS/MS) WITH DATA SYSTEM

7.13.1 LC SYSTEM – Instrument capable of reproducibly injecting up to 10-µL aliquots, and performing binary linear gradients at a constant flow rate near the flow rate used for development of this method (0.4 mL/min). The LC must be capable of pumping the water/methanol mobile phase without the use of a degasser which pulls vacuum on the mobile phase bottle (other types of degassers are acceptable). Degassers which pull vacuum on the mobile phase bottle will volatilize the ammonium acetate mobile phase causing the analyte peaks to shift to earlier retention times over the course of the analysis batch. The usage of a column heater is optional.

NOTE: During the course of method development, it was discovered that while idle for more than one day, PFAS's built up in the PTFE solvent transfer lines. To prevent long delays in purging high levels of PFAS's from the LC solvent lines, they were replaced with PEEK tubing and the PTFE solvent frits were replaced with stainless steel frits. It is not possible to remove all PFAS background contamination, but these measures help to minimize their background levels.

7.13.2 LC/TANDEM MASS SPECTROMETER – The LC/MS/MS must be capable of negative ion electrospray ionization (ESI) near the suggested LC flow rate of 0.4 mL/min. The system must be capable of performing MS/MS to produce unique product ions for the method analytes within specified retention time segments. A minimum of 10 scans across the chromatographic peak is required to ensure adequate precision.

7.13.3 DATA SYSTEM – An interfaced data system is required to acquire, store, reduce, and output mass spectral data. The computer software should have the capability of processing stored LC/MS/MS data by recognizing an LC peak within any given retention time window. The software must allow integration of the ion abundance of any specific ion within specified time or scan number limits. The software must be able to calculate relative response factors, construct linear regressions or quadratic calibration curves, and calculate analyte concentrations.

7.13.4 ANALYTICAL COLUMN – An LC BEH C_{18} column (2.1 x 50 mm) packed with 1.7 µm d_p C_{18} solid phase particles was used. Any column that provides adequate resolution, peak shape, capacity, accuracy, and precision (Sect. 9) may be used.

8. Reagents and Standards

8.1 GASES, REAGENTS, AND SOLVENTS – Reagent grade or better chemicals should be used.

8.1.1 REAGENT WATER – Purified water which does not contain any measurable quantities of any method analytes or interfering compounds greater than 1/3 the RL for each method analyte of interest. Prior to daily use, at least 3 L of reagent water should be flushed from the purification system to rinse out any build-up of analytes in the system's tubing.

8.1.2 METHANOL (CH_3OH, CAS#: 67-56-1) – High purity, demonstrated to be free of analytes and interferences.

8.1.3 AMMONIUM ACETATE ($NH_4C_2H_3O_2$, CAS#: 631-61-8) – High purity, demonstrated to be free of analytes and interferences.

8.1.4 ACETIC ACID (H_3CCOOH, CAS#: 64-19-7) - High purity, demonstrated to be free of analytes and interferences.

8.1.5 1M AMMONIUM ACETATE/REAGENT WATER – High purity, demonstrated to be free of analytes and interferences.

8.1.6 2mM AMMONIUM ACETATE/METHANOL:WATER (5:95) – To prepare, mix 2 ml of 1M AMMONIUM ACETATE,1 ml ACETIC ACID and 50 ml METHANOL into I Liter of REAGENT WATER.

8.1.7 Methanol/Water (80:20) – To prepare a 1 Liter bottle, mix 200 ml of REAGENT WATER with 800 ml of METHANOL.

8.1.8 AMMONIUM HYDROXIDE (NH_3, CAS#: 1336-21-6) – High purity, demonstrated to be free of analytes and interferences.

8.1.9 Sodium Acetate ($NaOOCCH_3$, CAS#: 127-09-3) – High purity, demonstrated to be free of analytes and interferences.

8.1.10 25 mM Sodium Acetate Buffer – To prepare 250mls, dissolve .625 grams of sodium acetate into 100 mls of reagent water. Add 4 mls Acetic Acid and adjust the final volume to 250 mls with reagent water.

8.1.11 NITROGEN – Used for the following purposes: Nitrogen aids in aerosol generation of the ESI liquid spray and is used as collision gas in some MS/MS instruments. The nitrogen used should meet or exceed instrument manufacturer's specifications. In addition, Nitrogen is used to concentrate sample extracts (Ultra High Purity or equivalent).

8.1.12 ARGON – Used as collision gas in MS/MS instruments. Argon should meet or exceed instrument manufacturer's specifications. Nitrogen gas may be used as the collision gas provided sufficient sensitivity (product ion formation) is achieved.

8.2 STANDARD SOLUTIONS – When a compound purity is assayed to be 96% or greater, the weight can be used without correction to calculate the concentration of the stock standard. PFAS analyte and IS standards commercially purchased in glass ampoules are acceptable; however, all subsequent transfers or dilutions performed by the analyst must be prepared and stored in polypropylene containers. Standards for sample fortification generally should be prepared in the smallest volume that can be accurately measured to minimize the addition of excess organic solvent to aqueous samples.

NOTE: Stock standards and diluted stock standards are stored at ≤4 °C.

8.2.1 ISOTOPE DILUTION Extracted Internal Standard (ID EIS) STOCK SOLUTIONS - ID EIS stock standard solutions are stable for at least 6 months when stored at 4 °C. The stock solution is purchased at a concentration of 1000 ng/mL.

8.2.2 ISOTOPE DILUTION Extracted Internal Standard PRIMARY DILUTION STANDARD (ID EIS PDS) – Prepare the ID EIS PDS at a concentration of 500 ng/mL. The ID PDS is prepared in 80:20% (vol/vol) methanol:water. The ID PDS is stable for 6 months when stored at ≤4 °C.

Table 2

Isotope Labeled Standard	Conc. of EIS Stock (ng/mL)	Vol. of EIS Stock (mL)	Final Vol. of EIS PDS (mL)	Final Conc. of EIS PDS (ng/mL)
M4PFBA	1000	1.0	2.0	500
M5PFPeA	1000	1.0	2.0	500
M5PFHxA	1000	1.0	2.0	500
M4PFHpA	1000	1.0	2.0	500
M8PFOA	1000	1.0	2.0	500
M9PFNA	1000	1.0	2.0	500
M6PFDA	1000	1.0	2.0	500
M7PFUdA	1000	1.0	2.0	500
MPFDoA	1000	1.0	2.0	500
M2PFTeDA	1000	1.0	2.0	500
M2PFHxDA	50,000	.02	2.0	500
d3-N-MeFOSA	50,000	.02	2.0	500
d5-N-EtFOSA	50,000	.02	2.0	500
d7-N-MeFOSE	50,000	.02	2.0	500
d9-N-EtFOSE	50,000	.02	2.0	500
M8FOSA	1000	1.0	2.0	500
d3-N-MeFOSAA	1000	1.0	2.0	500
d5-N-EtFOSAA	1000	1.0	2.0	500
M3PFBS	929	1.0	2.0	464.5
M3PFHxS	946	1.0	2.0	473
M8PFOS	957	1.0	2.0	478.5
M2-4:2FTS	935	1.0	2.0	467.5
M2-6:2FTS	949	1.0	2.0	474.5
M2-8:2FTS	958	1.0	2.0	479
M3HFPO-DA	50,000	.4	2.0	10,000

8.2.3 ANALYTE STOCK STANDARD SOLUTION – Analyte stock standards are stable for at least 6 months when stored at 4 °C. When using these stock standards to prepare a PDS, care must be taken to ensure that these standards are at room temperature and adequately vortexed.

8.2.4 Analyte Secondary Spiking Standard Prepare the spiking solution of additional add on components for project specific requirements only. ANALYTE PRIMARY SPIKING STANDARD – Prepare the spiking standard at a concentration of 500 ng/mL in methanol. The spiking standard is stable for at least two months when stored in polypropylene centrifuge tubes at room temperature.

Table 3

Analyte	Conc. of IS Stock (ng/mL)	Vol. of IS Stock (mL)	Final Vol. of IS PDS (mL)	Final Conc. of IS PDS (ng/mL)
PFBA	2000	1	4	500
PFPeA	2000	1	4	500
PFHxA	2000	1	4	500
PFHpA	2000	1	4	500
PFOA	2000	1	4	500
PFNA	2000	1	4	500
PFDA	2000	1	4	500
PFUdA	2000	1	4	500
PFDoA	2000	1	4	500
PFTrDA	2000	1	4	500
PFTeDA	2000	1	4	500
FOSA	2000	1	4	500
N-MeFOSAA	2000	1	4	500
N-EtFOSAA	2000	1	4	500
L-PFBS	1770	1	4	442.5
L-PFPeS	1880	1	4	470
L-PFHxSK	1480	1	4	370
Br-PFHxSK	344	1	4	86
L-PFHpS	1900	1	4	475
L-PFOSK	1460	1	4	365
Br-PFOSK	391	1	4	97.75
L-PFNS	1920	1	4	480
L-PFDS	1930	1	4	482.5
4:2FTS	1870	1	4	467.5
6:2FTS	1900	1	4	475
8:2FTS	1920	1	4	480

8.2.5 Analyte Secondary Spiking Standard Prepare the spiking solution of additional add on components for project specific requirements only.

Table 4

Analyte	Conc. of IS Stock (ng/mL)	Vol. of IS Stock (mL)	Final Vol. of IS PDS (mL)	Final Conc. of IS PDS (ng/mL)
ADONA	2000	1	4	500
PFHxDA	2000	1	4	500
PFODA	2000	1	4	500
HFPO-DA	100,000	.4	4	10,000
9ClPF3ONS	50,000	0.04	4	500
11ClPF3OUdS	50,000	0.04	4	500

8.2.6 LOW, MEDIUM AND HIGH LEVEL LCS – The LCS's will be prepared at the following concentrations and rotated per batch; 2 ng/L, 40 ng/L, 500 ng/l for drinking waters. The analyte PDS contains all the method analytes of interest at various concentrations in methanol. The analyte PDS has been shown to be stable for six months when stored at ≤4 °C.

8.2.7 Isotope Dilution Labeled Recovery Stock Solutions (ID REC) – ID REC Stock solutions are stable for at least 6 months when stored at 4 °C. The stock solution is purchased at a concentration of 1000 ng/mL.

8.2.8 Isotope Dilution Labeled Recovery Primary Dilution Standard (ID REC PDS) - Prepare the ID REC PDS at a concentration of 500 ng/mL. The ID REC PDS is prepared in 80:20% (vol/vol) methanol:water. The ID REC PDS is stable for at least six months when stored in polypropylene centrifuge tubes at ≤4 °C.

Table 5

Analyte	Conc. of REC Stock (ng/mL)	Vol. of REC Stock (mL)	Final Vol. of REC PDS (mL)	Final Conc. of REC PDS (ng/mL)
M2PFOA	2000	1	4	500
M2PFDA	2000	1	4	500
M3PFBA	2000	1	4	500
M4PFOS	2000	1	4	500

8.2.9 CALIBRATION STANDARDS (CAL) –

Current Concentrations (ng/mL): 0.5, 1.0, 5.0, 10.0, 50.0, 125, 150, 250, 500

Prepare the CAL standards over the concentration range of interest from dilutions of the analyte PDS in methanol containing 20% reagent water. 20 µl of the EIS PDS and REC PDS are added to the CAL standards to give a constant concentration of 10 ng/ml. The lowest concentration CAL standard must be at or below the RL (2 ng/L), which may depend on system sensitivity. The CAL standards may also be used as CCVs (Sect. 9.8). To make calibration stock standards:

Table 6

Calibration Standard Concentration	Final Aqueous Cal STD Level Concentration	Final Soil Cal STD Level Concentration	24 compound stock added (ul)	PFHxDA Stock added (ul)	500 ng/ml PFHxDA dilution added (ul)	PFODA Stock added (ul)	500 ng/ml PFODA dilution added (ul)	ADONA, HFPO-DA, 11Cl-PF3OUdS, 9Cl-PF3ONS Stock added (ul)	500 ng/ml ADONA dilution added (ul)	Final Volume in MeOH/H_2O (82:20)
.5 ng/ml	2 ng/L	.25 ng/g	6.25		25		25		25	25 mls
1 ng/ml	4 ng/L	.5 ng/g	5		20		20		20	10 mls
5 ng/ml	20 ng/L	1 ng/g	25		100		100		100	10 mls
10 ng/ml	40 ng/L	5 ng/g	125	5		5		5		25 mls

50 ng/ml	200 ng/L	25 ng/g	250	10		10		10		10 mls
125 ng/ml	500 ng/L	62.5 ng/g	625	25		25		25		10 mls
150 ng/ml	600 ng/L	75 ng/g	750	30		30		30		10 mls
250 ng/ml	1000 ng/L	125 ng/g	625							5 mls
500 ng/ml	2000 ng/L	250 ng/g	1250							5 mls

9. Quality Control

The laboratory must maintain records to document the quality of data that is generated. Ongoing data quality checks are compared with established performance criteria to determine if the results of analyses meet the performance characteristics of the method.

9.1 MINIMUM REPORTING LIMIT (MRL) CONFIRMATION

9.1.1 Fortify, extract, and analyze seven replicate LCSs at 2 ng/l. Calculate the mean measured concentration (*Mean*) and standard deviation for these replicates. Determine the Half Range for the prediction interval of results (HR_{PIR}) using the equation below

$$HR_{PIR} = 3.963s$$

Where:

s = the standard deviation
3.963 = a constant value for seven replicates.

9.1.2 Confirm that the upper and lower limits for the Prediction Interval of Result ($PIR = Mean \pm HR_{PIR}$) meet the upper and lower recovery limits as shown below

The Upper PIR Limit must be ≤150% recovery.

$$\frac{Mean + HR_{PIR}}{Fortified\ Concentration} \times 100\% \leq 150\%$$

The Lower PIR Limit must be ≥ 50% recovery.

$$\frac{Mean - HR_{PIR}}{Fortified\ Concentration} \times 100\% \geq 50\%$$

9.1.3 The RL is validated if both the Upper and Lower PIR Limits meet the criteria described above. If these criteria are not met, the RL has been set too low and must be determined again at a higher concentration.

9.2 Blank(s)

9.2.1 **METHOD BLANK (MB)** - A Method Blank (MB) is required with each extraction batch to confirm that potential background contaminants are not interfering with the identification or quantitation of method analytes. Prep and analyze a MB for every 20 samples. If the MB produces a peak within the retention time window of any analyte that would prevent the determination of that analyte, determine the source of contamination and eliminate the interference before processing samples. Background contamination must be reduced to an acceptable level before proceeding. Background from method analytes or other contaminants that

interfere with the measurement of method analytes must be below the RL. If the method analytes are detected in the MB at concentrations equal to or greater than this level, then all data for the problem analyte(s) must be considered invalid for all samples in the extraction batch. Because background contamination is a significant problem for several method analytes, it is highly recommended that the analyst maintain a historical record of MB data.

9.2.2 **FIELD REAGENT BLANK (FRB)** - The purpose of the FRB is to ensure that PFAS's measured in the Field Samples were not inadvertently introduced into the sample during sample collection/handling. Analysis of the FRB is required only if a Field Sample contains a method analyte or analytes at or above the RL. The FRB is processed, extracted and analyzed in exactly the same manner as a Field Sample.

9.3 Laboratory Control Sample (LCS) and Laboratory Control Sample Duplicates (LCSD)

9.3.1 An LCS is required with each extraction batch. The fortified concentration of the LCS may be rotated between low, medium, and high concentrations from batch to batch. Default limits of 50-150% of the true value may be used for analytes until sufficient replicates have been analyzed to generate proper control limits. Calculate the percent recovery (%*R*) for each analyte using the equation

$$\%R = \frac{A \times 100}{B}$$

Where:

A = measured concentration in the fortified sample
B =fortification concentration.

9.3.2 Where applicable, LCSD's are to be extracted and analyzed. The concentration and analyte recovery criteria for the LCSD must be the same as the batch LCS The RSD's must fall within ≤30% of the true value for medium and high level replicates, and ≤50% for low level replicates. Calculate the relative percent difference (RPD) for duplicate MSs (MS and MSD) using the equation

$$RPD = \frac{|LCS - LCSD|}{(LCS + LCSD) / 2} \times 100$$

9.3.3 **If the LCS and or LCSD results do not meet these criteria for method analytes, then all data for the problem analyte(s) must be considered invalid for all samples in the extraction batch.**

9.4 Labeled Recovery Standards (REC)

The analyst must monitor the peak areas of the REC(s) in all injections during each analysis day.

9.5 Extracted Internal Standards (EIS)

9.5.1 The EIS standard is fortified into all samples, CCVs, MBs, LCSs, MSs, MSDs, FD, and FRB prior to extraction. It is also added to the CAL standards. The EIS is a means of assessing method performance from extraction to final

chromatographic measurement. Calculate the recovery (%R) for the EIS using the following equation

$$\%R = (A / B) \times 100$$

Where:

A = calculated EIS concentration for the QC or Field Sample
B = fortified concentration of the EIS.

9.5.2 Default limits of 50-150% may be used for analytes until sufficient replicates have been analyzed to generate proper control limits. A low or high percent recovery for a sample, blank, or CCV does not require discarding the analytical data but it may indicate a potential problem with future analytical data. When EIS recovery from a sample, blank, or CCV are outside control limits, check 1) calculations to locate possible errors, 2) standard solutions for degradation, 3) contamination, and 4) instrument performance. For CCVs and QC elements spiked with all target analytes, if the recovery of the corresponding target analytes meet the acceptance criteria for the EIS in question, the data can be used but all potential biases in the recovery of the EIS must be documented in the sample report. If the associated target analytes do not meet the acceptance criteria,the data must be reanalyzed.

9.6 Matrix Spike (MS)

9.6.1 Analysis of an MS is required in each extraction batch and is used to determine that the sample matrix does not adversely affect method accuracy. Assessment of method precision is accomplished by analysis of a Field Duplicate (FD) (Sect. 9.6); however, infrequent occurrence of method analytes would hinder this assessment. If the occurrence of method analytes in the samples is infrequent, or if historical trends are unavailable, a second MS, or MSD, must be prepared, extracted, and analyzed from a duplicate of the Field Sample. Extraction batches that contain MSDs will not require the extraction of a field sample duplicate. If a variety of different sample matrices are analyzed regularly, for example, drinking water from groundwater and surface water sources, method performance should be established for each. Over time, MS data should be documented by the laboratory for all routine sample sources.

9.6.2 Within each extraction batch, a minimum of one Field Sample is fortified as an MS for every 20 Field Samples analyzed. The MS is prepared by spiking a sample with an appropriate amount of the Analyte Stock Standard (Sect. 8.2.3). Use historical data and rotate through the low, mid and high concentrations when selecting a fortifying concentration. Calculate the percent recovery (%*R*) for each analyte using the equation

$$\%R = \frac{(A - B)}{C} \times 100$$

Where:

A = measured concentration in the fortified sample
B = measured concentration in the unfortified sample
C = fortification concentration.

9.6.3 Analyte recoveries may exhibit matrix bias. For samples fortified at or above their native concentration, recoveries should range between 50-150%. If the accuracy of any analyte falls outside the designated range, and the laboratory performance for that analyte is shown to be in control in the LCS, the recovery is judged to be

matrix biased. The result for that analyte in the unfortified sample is labeled suspect/matrix to inform the data user that the results are suspect due to matrix effects.

9.7 Laboratory Duplicate

9.7.1 FIELD DUPLICATE OR LABORATORY FORTIFIED SAMPLE MATRIX DUPLICATE (FD or MSD) – Within each extraction batch (not to exceed 20 Field Samples), a minimum of one FD or MSD must be analyzed. Duplicates check the precision associated with sample collection, preservation, storage, and laboratory procedures. If method analytes are not routinely observed in Field Samples, an MSD should be analyzed rather than an FD.

9.7.2 Calculate the relative percent difference (*RPD*) for duplicate measurements (*FD1* and *FD2*) using the equation

$$RPD = \frac{|FD1 - FD2|}{(FD1 + FD2) / 2} \times 100$$

9.7.3 RPDs for FDs should be ≤30%. Greater variability may be observed when FDs have analyte concentrations that are within a factor of 2 of the RL. At these concentrations, FDs should have RPDs that are ≤50%. If the RPD of any analyte falls outside the designated range, and the laboratory performance for that analyte is shown to be in control in the CCV, the recovery is judged to be matrix biased. The result for that analyte in the unfortified sample is labeled suspect/matrix to inform the data user that the results are suspect due to matrix effects.

9.7.4 If an MSD is analyzed instead of a FD, calculate the relative percent difference (RPD) for duplicate MSs (MS and MSD) using the equation

$$RPD = \frac{|MS - MSD|}{(MS + MSD) / 2} \times 100$$

9.7.5 RPDs for duplicate MSs should be ≤30% for samples fortified at or above their native concentration. Greater variability may be observed when MSs are fortified at analyte concentrations that are within a factor of 2 of the RL. MSs fortified at these concentrations should have RPDs that are ≤50% for samples fortified at or above their native concentration. If the RPD of any analyte falls outside the designated range, and the laboratory performance for that analyte is shown to be in control in the LCSD where applicable, the result is judged to be matrix biased. If no LCSD is present, the associated MS and MSD are to be re-analyzed to determine if any analytical has occurred. If the resulting RPDs are still outside control limits, the result for that analyte in the unfortified sample is labeled suspect/matrix to inform the data user that the results are suspect due to matrix effects.

9.8 Initial Calibration Verification (ICV)

9.8.1 As part of the IDC (Sect. 13.2), and after each ICAL, analyze a QCS sample from a source different from the source of the CAL standards. If a second vendor is not available, then a different lot of the standard should be used. The QCS should be prepared and analyzed just like a CCV. Acceptance criteria for the QCS are identical to the CCVs; the calculated amount for each analyte must be ±

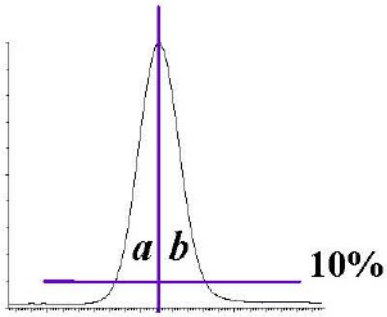
30% of the expected value. If measured analyte concentrations are not of acceptable accuracy, check the entire analytical procedureto locate and correct the problem.

9.9 Continuing Calibration Verification (CCV)

9.9.1 CCV Standards are analyzed at the beginning of each analysis batch, after every 10 Field Samples, and at the end of the analysis batch. See Section 10.7 for concentration requirements and acceptance criteria.

9.10 Method-specific Quality Control Samples

9.10.1 PEAK ASYMMETRY FACTOR – A peak asymmetry factor must be calculated using the equation below during the IDL and every time a calibration curve is generated. The peak asymmetry factor for the first two eluting peaks in a midlevel CAL standard (if only two analytes are being analyzed, both must be evaluated) must fall in the range of 0.8 to 1.5. Modifying the standard or extract composition to more aqueous content to prevent poor shape is not permitted. See guidance in Section 10.6.4.1 if the calculated peak asymmetry factors do not meet the criteria.



$$A_s = b / a$$

Where:

A_s = peak asymmetry factor
b = width of the back half of the peak measured (at 10% peak height) from the trailing edge of the peak to a line dropped perpendicularly from the peak apex
a = the width of the front half of the peak measured (at 10% peak height) from the leading edge of the peak to a line dropped perpendicularly from the apex.

9.11 Method Sequence

- CCV-LOW
- MB
- LCS
- LCSD
- MS
- Duplicate or MSD
- Field Samples (1-10)
- CCV-MID
- Field Samples (11-20)
- CCV-LOW

10. Procedure

10.1 Equipment Set-up

10.1.1 This procedure may be performed manually or in an automated mode using a robotic or automatic sample preparation device. If an automated system is used to prepare samples, follow the manufacturer's operating instructions, but all extraction and elution steps must be the same as in the manual procedure. Extraction and/or elution steps may not be changed or omitted to accommodate the use of an automated system. If an automated system is used, the MBs should be rotated among the ports to ensure that all the valves and tubing meet the MB requirements (Sect. 9.2).

10.1.2 Some of the PFAS's adsorb to surfaces, including polypropylene. Therefore, the aqueous sample bottles must be rinsed with the elution solvent (Sect 10.3.4) whether extractions are performed manually or by automation. The bottle rinse is passed through the cartridge to elute the method analytes and is then collected (Sect. 10.3.4).

10.1.3 **NOTE:** The SPE cartridges and sample bottles described in this section are designed as single use items and should be discarded after use. They may not be refurbished for reuse in subsequent analyses.

10.2 Sample Preparation and Extraction of Aqueous Samples

10.2.1 Samples are preserved, collected and stored as presented in Section 6.

The entire sample that is received must be sent through the SPE cartridge. In addition, the bottle must be solvent rinsed and this rinse must be sent through the SPE cartridge as well. The method blank (MB) and laboratory control sample (LCS) must be extracted in exactly the same manner (i.e., must include the bottle solvent rinse). It should be noted that a water rinse alone is not sufficient. This does not apply to samples with high concentrations of PFAS that are prepared using serial dilution and not SPE.

10.2.2 Determine sample volume. Weigh all samples to the nearest 1g. If visible sediment is present, centrifuge and decant into a new 250mL HDPE bottle and record the weight of the new container.

NOTE: Some of the PFAS's adsorb to surfaces, thus the sample volume may **NOT** be transferred to a graduated cylinder for volume measurement.

10.2.3 The MB, LCS and FRB may be prepared by measuring 250 mL of reagent water with a polypropylene graduated cylinder or filling a 250-mL sample bottle to near the top.

10.2.4 Adjust the QC and sample pH to 3 by adding acetic acid in water dropwise

10.2.5 Add 20 µL of the EIS PDS (Sect. 8.2.2) to each sample and QC, cap and invert to mix.

10.2.6 If the sample is an LCS, LCSD, MS, or MSD, add the necessary amount of analyte PDS (Sect. 8.2.3). Cap and invert each sample to mix.

10.3 Cartridge SPE Procedure

10.3.1 CARTRIDGE CLEAN-UP AND CONDITIONING – DO NOT allow cartridge packing material to go dry during any of the conditioning steps. Rinse each cartridge with 3 X 5 mL of 2% ammonium hydroxide in methanol, followed by 5mls of methanol. Next, rinse each cartridge with 5 mls of the 25 mM acetate buffer, followed by 15 mL of reagent water, without allowing the water to drop below the top edge of the packing. If the cartridge goes dry during the conditioning phase, the conditioning must be started over. Add 4-5 mL of reagent water to each cartridge, attach the sample transfer tubes (Sect. 7.9.3), turn on the vacuum, and begin adding sample to the cartridge.

10.3.2 SAMPLE EXTRACTON – Adjust the vacuum so that the approximate flow rate is approximately 4 mL/min. Do not allow the cartridge to go dry before all the sample has passed through.

10.3.3 SAMPLE BOTTLE AND CARTRIDGE RINSE – After the entire sample has passed through the cartridge, rinse the sample bottles with 4 ml reagent water followed by 4 ml 25 mM acetate buffer at pH 4 and draw the aliquot through the sample transfer tubes and the cartridges. Draw air or nitrogen through the cartridge for 5-10 min at high vacuum (10-15 in. Hg). **NOTE: If empty plastic reservoirs are used in place of the sample transfer tubes to pass the samples through the cartridges, these reservoirs must be treated like the transfer tubes. After the entire sample has passed through the cartridge, the reservoirs must be rinsed to waste with reagent water.**

10.3.4 SAMPLE BOTTLE AND CARTRIDGE ELUTION, Fraction 1 – Turn off and release the vacuum. Lift the extraction manifold top and insert a rack with collection tubes into the extraction tank to collect the extracts as they are eluted from the cartridges. Rinse the sample bottles with 12 mls of methanol and draw the aliquot through the sample transfer tubes and cartridges. Use a low vacuum such that the solvent exits the cartridge in a dropwise fashion.

SAMPLE BOTTLE AND CARTRIDGE ELUTION, Fraction 2 In a separate collection vial, rinse the sample bottles with 12 mL of 2% ammonium hydroxide in methanol and elute the analytes from the cartridges by pulling the 4 mL of methanol through the sample transfer tubes and the cartridges. Use a low vacuum such that the solvent exits the cartridge in a dropwise fashion. To the final extract, add 50 ul of acetic acid.

NOTE: If empty plastic reservoirs are used in place of the sample transfer tubes to pass the samples through the cartridges, these reservoirs must be treated like the transfer tubes. After the reservoirs have been rinsed in Section 10.3.3, the elution solvent used to rinse the sample bottles must be swirled down the sides of the reservoirs while eluting the cartridge to ensure that any method analytes on the surface of the reservoirs are transferred to the extract.

CLEAN-UP CARTRIDGE ELUTION, Elute the clean-up cartridge with 8 additional mls of methanol and draw the aliquot through the cartridge. Use a low vacuum such that the solvent exits the cartridge in a dropwise fashion.

10.3.5 Fractions 1 and 2 are to be combined during the concentration stage (section10.6)

10.4 Sample Prep and Extraction Protocol for Soils

10.4.1 Homogenize and weigh 2 grams of sample (measured to the nearest hundredth of a gram) intoa 50 ml polypropylene centrifuge tube. For laboratory control blanks and spikes, 2 grams of clean sand is used.

10.4.2 Add 20 µL of the EIS PDS (Sect. 8.2.2) to each sample and QC.

10.4.3 If the sample is an LCS, LCSD, MS, or MSD, add the necessary amount of analyte PDS (Sect. 8.2.3). Cap and invert each sample to mix.

10.4.4 To all samples, add 10 mls of methanol, cap, vortex for 25 seconds at 3000RPM and mix for 30 minutes using a shaker table of tumbler at 120RPM.

10.4.5 Following mixing, sonicate each sample for 30 minutes and let samples sit overnight (at least 2 hours is required for RUSH samples).

10.4.6 Centrifuge each sample at 3500RPM for 10 minutes.

10.4.7 Remove supernatant, and reserve for clean-up.

10.5 Extract Clean-up

10.5.1 CARTRIDGE CLEAN-UP AND CONDITIONING –. Rinse each cartridge with 15 mL of methanol and discard. If the cartridge goes dry during the conditioning phase, the conditioning must be started over. Attach the sample transfer tubes (Sect. 7.9.3), turn on the vacuum, and begin adding sample to the cartridge.

10.5.2 Adjust the vacuum so that the approximate flow rate is 1-2 mL/min. Do not allow the cartridge to go dry before all the sample has passed through.

10.5.3 SAMPLE BOTTLE AND CARTRIDGE RINSE – After the entire sample has passed through the cartridge, rinse the sample collection vial with two 1-mL aliquots of methanol and draw each aliquot through the cartridges. Draw air or nitrogen through the cartridge for 5 min at high vacuum (10-15 in. Hg).

10.5.4 If extracts are not to be immediately evaporated, cover collection tubes and store at ambient temperature till concentration.

10.6 Extract Concentration

10.6.1 Concentrate the extract to dryness under a gentle stream of nitrogen in a heated water bath (60-65 °C) to remove all the water/methanol mix. Add the appropriate amount of 80:20% (vol/vol) methanol:water solution and 20 µl of the ID REC PDS (Sect. 8.2.7) to the collection vial to bring the volume to 1 mL and vortex. Transfer two aliquots with a plastic pipet (Sect. 7.6) into 2 polypropylene autosampler vials.

NOTE: It is recommended that the entire 1-mL aliquot not be transferred to the autosampler vial because the polypropylene autosampler caps do not reseal after injection. Therefore, do not store the extracts in the autosampler vials as evaporation losses can occur occasionally in these autosampler vials. Extracts can be split between 2 X 700 µl vials (Sect. 7.4).

10.7 Sample Volume Determination

10.7.1 If the level of the sample was marked on the sample bottle, use a graduated cylinder to measure the volume of water required to fill the original sample bottle to the mark made prior to extraction. Determine to the nearest 10 mL.

10.7.2 If using weight to determine volume, weigh the empty bottle to the nearest 10 g and determine the sample weight by subtraction of the empty bottle weight from the original sample weight (Sect. 10.2.2). Assume a sample density of 1.0 g/mL. In either case, the sample volume will be used in the final calculations of the analyte concentration (Sect. 11.2).

10.8 Initial Calibration - Demonstration and documentation of acceptable initial calibration is required before any samples are analyzed. After the initial calibration is successful, a CCV is required at the beginning and end of each period in which analyses are performed, and after every tenth Field Sample.

10.8.1 ESI-MS/MS TUNE

10.8.1.1 Calibrate the mass scale of the MS with the calibration compounds and procedures prescribed by the manufacturer.

10.8.1.2 Optimize the [M-H]- for each method analyte by infusing approximately 0.5-1.0 µg/mL of each analyte (prepared in the initial mobile phase conditions) directly into the MS at the chosen LC mobile phase flow rate (approximately 0.4 mL/min). This tune can be done on a mix of the method analytes. The MS parameters (voltages, temperatures, gas flows, etc.) are varied until optimal analyte responses are determined. The method analytes may have different optima requiring some compromise between the optima.

10.8.1.3 Optimize the product ion for each analyte by infusing approximately 0.5-1.0 µg/mL of each analyte (prepared in the initial mobile phase conditions) directly into the MS at the chosen LC mobile phase flow rate (approximately 0.4 mL/min). This tune can be done on a mix of the method analytes. The MS/MS parameters (collision gas pressure, collision energy, etc.) are varied until optimal analyte responses are determined. Typically, the carboxylic acids have very similar MS/MS conditions and the sulfonic acids have similar MS/MS conditions.

10.8.2 Establish LC operating parameters that optimize resolution and peak shape. Modifying the standard or extract composition to more aqueous content to prevent poor shape is not permitted.

Cautions: LC system components, as well as the mobile phase constituents, contain many of the method analytes in this method. Thus, these PFAS's will build up on the head of the LC column during mobile phase equilibration. To minimize the background PFAS peaks and to keep background levels constant, the time the LC column sits at initial conditions must be kept constant and as short as possible (while ensuring reproducible retention times). In addition, prior to daily use, flush the column with 100% methanol for at least 20 min before initiating a sequence. It may be necessary on some systems to flush other LC components such as wash syringes, sample needles or any other system components before daily use.

10.8.3 Inject a mid-level CAL standard under LC/MS conditions to obtain the retention times of each method analyte. If analyzing for PFTA, ensure that the LC

conditions are adequate to prevent co-elution of PFTA and the mobile phase interferants. These interferants have the same precursor and products ions as PFTA, and under faster LC conditions may co-elute with PFTA. Divide the chromatogram into retention time windows each of which contains one or more chromatographic peaks. During MS/MS analysis, fragment a small number of selected precursor ions ([M-H]-) for the analytes in each window and choose the most abundant product ion. For maximum sensitivity, small mass windows of ±0.5 daltons around the product ion mass were used for quantitation.

10.8.4 Inject a mid-level CAL standard under optimized LC/MS/MS conditions to ensure that each method analyte is observed in its MS/MS window and that there are at least 10 scans across the peak for optimum precision.

10.8.4.1 If broad, split or fronting peaks are observed for the first two eluting chromatographic peaks (if only two analytes are being analyzed, both must be evaluated), change the initial mobile phase conditions to higher aqueous content until the peak asymmetry ratio for each peak is 0.8 – 1.5. The peak asymmetry factor is calculated as described in Section 9.9.1 on a mid-level CAL standard. The peak asymmetry factor must meet the above criteria for the first two eluting peaks during the IDL and every time a new calibration curve is generated. Modifying the standard or extract composition to more aqueous content to prevent poor shape is not permitted.

NOTE: PFHxS, PFOS, NMeFOSAA, and NEtFOSAA have multiple chromatographic peaks using the LC conditions in Table 5 due to chromatographic resolution of the linear and branched isomers of these compounds. Most PFAS's are produced by two different processes. One process gives rise to linear PFAS's only while the other process produces both linear and branched isomers. Thus, both branched and linear PFAS's can potentially be found in the environment. For the aforementioned compounds that give rise to more than one peak, all the chromatographic peaks observed in the standard must be integrated and the areas totaled. Chromatographic peaks in a sample must be integrated in the same way as the CAL standard.

10.8.5 Prepare a set of CAL standards as described in Section 8.2.5. The lowest concentration CAL standard must be at or below the RL (2 ng/L), which may depend on system sensitivity.

10.8.6 The LC/MS/MS system is calibrated using the IS technique. Use the LC/MS/MS data system software to generate a linear regression or quadratic calibration curve for each of the analytes. This curve **must always** be forced through zero and may be concentration weighted, if necessary. Forcing zero allows for a better estimate of the background levels of method analytes. A minimum of 5 levels are required for a linear calibration model and a minimum of 6 levels are required for a quadratic calibration model.

10.8.7 CALIBRATION ACCEPTANCE CRITERIA – A linear fit is acceptable if the coefficient of determination (r^2) is greater than 0.99. When quantitated using the initial calibration curve, each calibration point, except the lowest point, for each analyte should calculate to be within 70-130% of its true value. The lowest CAL point should calculate to be within 50-150% of its true value. If these criteria cannot be met, the analyst will have difficulty meeting ongoing QC criteria. It is

recommended that corrective action is taken to reanalyze the CAL standards, restrict the range of calibration, or select an alternate method of calibration (forcing the curve through zero is still required).

10.8.7.1 CAUTION: When acquiring MS/MS data, LC operating conditions must be carefully reproduced for each analysis to provide reproducible retention times. If this is not done, the correct ions will not be monitored at the appropriate times. As a precautionary measure, the chromatographic peaks in each window must not elute too close to the edge of the segment time window.

10.9 CONTINUING CALIBRATION CHECK (CCV) – Minimum daily calibration verification is as follows. Verify the initial calibration at the beginning and end of each group of analyses, and after every tenth sample during analyses. In this context, a "sample" is considered to be a Field Sample. MBs, CCVs, LCSs, MSs, FDs FRBs and MSDs are not counted as samples. The beginning CCV of each analysis batch must be at or below the RL in order to verify instrument sensitivity prior to any analyses. If standards have been prepared such that all low CAL points are not in the same CAL solution, it may be necessary to analyze two CAL standards to meet this requirement. Alternatively, the analyte concentrations in the analyte PDS may be customized to meet these criteria. Subsequent CCVs should alternate between a medium and Low concentration CAL standard.

10.9.1 Inject an aliquot of the appropriate concentration CAL standard and analyze with the same conditions used during the initial calibration.

10.9.2 Calculate the concentration of each analyte and EIS in the CCV. The calculated amount for each analyte for medium level CCVs must be within ± 30% of the true value with an allowance of 10% of the reported analytes to be greater than 30%, but less than 40%. The calculated amount for each EIS must be within ± 50% of the true value. The calculated amount for the lowest calibration point for each analyte must be within ± 50%. If these conditions do not exist, then all data for the problem analyte must be considered invalid, and remedial action should be taken (Sect. 10.7.4) which may require recalibration. Any Field or QC Samples that have been analyzed since the last acceptable calibration verification should be reanalyzed after adequate calibration has been restored, with the following exception. **If the CCV fails because the calculated concentration is greater than 130% (150% for the low-level CCV) for a particular method analyte, and Field Sample extracts show no detection for that method analyte, non-detects may be reported without re-analysis.**

10.9.3 REMEDIAL ACTION – Failure to meet CCV QC performance criteria may require remedial action. Major maintenance, such as cleaning the electrospray probe, atmospheric pressure ionization source, cleaning the mass analyzer, replacing the LC column, etc., requires recalibration (Sect 10.6) and verification of sensitivity by analyzing a CCV at or below the RL (Sect 10.7).

10.10 EXTRACT ANALYSIS

10.10.1 Establish operating conditions equivalent to those summarized in Tables 6-8 of Section 16. Instrument conditions and columns should be optimized prior to the initiation of the IDC.

10.10.2 Establish an appropriate retention time window for each analyte. This should be based on measurements of actual retention time variation for each method analyte in CAL standard solutions analyzed on the LC over the course of time. A value of plus or minus three times the standard deviation of the retention time obtained for each method analyte while establishing the initial calibration and completing the IDC can be used to calculate a suggested window size. However, the experience of the analyst should weigh heavily on the determination of the appropriate retention window size.

10.10.3 Calibrate the system by either the analysis of a calibration curve (Sect. 10.6) or by confirming the initial calibration is still valid by analyzing a CCV as described in Section 10.7. If establishing an initial calibration, complete the IDC as described in Section 13.2.

10.10.4 Begin analyzing Field Samples, including QC samples, at their appropriate frequency by injecting the same size aliquots under the same conditions used to analyze the CAL standards.

10.10.5 At the conclusion of data acquisition, use the same software that was used in the calibration procedure to identify peaks of interest in predetermined retention time windows. Use the data system software to examine the ion abundances of the peaks in the chromatogram. Identify an analyte by comparison of its retention time with that of the corresponding method analyte peak in a reference standard.

10.10.6 The analyst must not extrapolate beyond the established calibration range. If an analyte peak area exceeds the range of the initial calibration curve, the sample should be re-extracted with a reduced sample volume in order to bring the out of range target analytes into the calibration range. If a smaller sample size would not be representative of the entire sample, the following options are recommended. Re-extract an additional aliquot of sufficient size to insure that it is representative of the entire sample. Spike it with a higher concentration of internal standard. Prior to LC/MS analysis, dilute the sample so that it has a concentration of internal standard equivalent to that present in the calibration standard. Then, analyze the diluted extract.

11. Data Evaluation, Calculations and Reporting

11.1 Complete chromatographic resolution is not necessary for accurate and precise measurements of analyte concentrations using MS/MS. In validating this method, concentrations were calculated by measuring the product ions listed in Table 7.

11.2 Calculate analyte concentrations using the multipoint calibration established in Section 10.6. Do not use daily calibration verification data to quantitate analytes in samples. Adjust final analyte concentrations to reflect the actual sample volume determined in Section 10.6 where:

C_{ex} = (Area of target analyte * Concentration of Labeled analog) / (area of labeled analog * CF)

C_s = (C_{ex} / sample volume in ml) * 1000

C_{ex} = The concentration of the analyte in the extract
CF = calibration factor from calibration.

11.3 Prior to reporting the data, the chromatogram should be reviewed for any incorrect peak identification or poor integration.

11.4 PFHxS, PFOS, PFOA, NMeFOSAA, and NEtFOSAA have multiple chromatographic peaks using the LC conditions in Table 5 due to the linear and branch isomers of these compounds (Sect. 10.6.4.1). The areas of all the linear and branched isomer peaks observed in the CAL standards for each of these analytes must be summed and the concentrations reported as a total for each of these analytes.

11.5 Calculations must utilize all available digits of precision, but final reported concentrations should be rounded to an appropriate number of significant figures (one digit of uncertainty), typically two, and not more than three significant figures.

12. Contingencies for Handling Out-of-Control Data or Unacceptable Data

12.1 Section 9.0 outlines sample batch QC acceptance criteria. If non-compliant organic compound results are to be reported, the Organic Section Head and/or the Laboratory Director, and the Operations Manager must approve the reporting of these results. The laboratory Project Manager shall be notified, and may choose to relay the non-compliance to the client, for approval, or other corrective action, such as re-sampling and re-analysis. The analyst, Data Reviewer, or Department Supervisor performing the secondary review initiates the project narrative, and the narrative must clearly document the non-compliance and provide a reason for acceptance of these results.

12.2 All results for the organic compounds of interest are reportable without qualification if extraction and analytical holding times are met, preservation requirements (including cooler temperatures) are met, all QC criteria are met, and matrix interference is not suspected during extraction or analysis of the samples. If any of the below QC parameters are not met, all associated samples must be evaluated for re-extraction and/or re-analysis.

13. Method Performance

13.1 Detection Limit Study (DL) / Limit of Detection Study (LOD) / Limit of Quantitation (LOQ)

13.1.1 The laboratory follows the procedure to determine the DL, LOD, and/or LOQ as outlined in Alpha SOP ID 1732. These studies performed by the laboratory are maintained on file for review.

13.2 Demonstration of Capability Studies

13.2.1 The IDC must be successfully performed prior to analyzing any Field Samples. Prior to conducting the IDC, the analyst must first generate an acceptable Initial Calibration following the procedure outlined in Section 10.6.

13.2.2 INITIAL DEMONSTRATION OF LOW SYSTEM BACKGROUND – Any time a new lot of SPE cartridges, solvents, centrifuge tubes, disposable pipets, and autosampler vials are used, it must be demonstrated that an MB is reasonably free of contamination and that the criteria in Section 9.2.1 are met. If an automated extraction system is used, an MB should be extracted on each port to ensure that all the valves and tubing are free from potential PFAS contamination.

13.2.3 INITIAL DEMONSTRATION OF PRECISION (IDP) – Prepare, extract, and analyze four to seven replicate LCSs fortified near the midrange of the initial calibration curve according to the procedure described in Section 10. Sample preservatives as described in Section 6.2.1 must be added to these samples. The relative standard deviation (RSD) of the results of the replicate analyses must be less than 20%.

13.2.4 INITIAL DEMONSTRATION OF ACCURACY (IDA) – Using the same set of replicate data generated for Section 13.2.3, calculate average recovery. The average recovery of the replicate values must be within ± 30% of the true value.

13.2.5 INITIAL DEMONSTRATION OF PEAK ASYMMETRY FACTOR – Peak asymmetry factors must be calculated using the equation in Section 9.10.1 for the first two eluting peaks (if only two analytes are being analyzed, both must be evaluated) in a mid-level CAL standard. The peak asymmetry factors must fall in the range of 0.8 to 1.5. See guidance in Section 10.6.4.1 if the calculated peak asymmetry factors do not meet the criteria.

13.2.6 Refer to Alpha SOP ID 1739 for further information regarding IDC/DOC Generation.

13.2.7 The analyst must make a continuing, annual, demonstration of the ability to generate acceptable accuracy and precision with this method.

14. Pollution Prevention and Waste Management

14.1 Refer to Alpha's Chemical Hygiene Plan and Hazardous Waste Management and Disposal SOP for further pollution prevention and waste management information.

14.2 This method utilizes SPE to extract analytes from water. It requires the use of very small volumes of organic solvent and very small quantities of pure analytes, thereby minimizing the potential hazards to both the analyst and the environment as compared to the use of large volumes of organic solvents in conventional liquid-liquid extractions.

14.3 The analytical procedures described in this method generate relatively small amounts of waste since only small amounts of reagents and solvents are used. The matrices of concern are finished drinking water or source water. However, laboratory waste management practices must be conducted consistent with all applicable rules and regulations, and that laboratories protect the air, water, and land by minimizing and controlling all releases from fume hoods and bench operations. Also, compliance is required with any sewage discharge permits and regulations, particularly the hazardous waste identification rules and land disposal restrictions.

15. Referenced Documents

Chemical Hygiene Plan – ID 2124

SOP ID 1732 Detection Limit (DL), Limit of Detection (LOD) & Limit of Quantitation (LOQ) SOP

SOP ID 1739 Demonstration of Capability (DOC) Generation SOP

SOP ID 1728 Hazardous Waste Management and Disposal SOP

16. Attachments

Table 7: LC Method Conditions

Time (min)	2 mM Ammonium Acetate (5:95 MeOH/H_2O)	100% Methanol
Initial	100.0	0.0
1.0	100.0	0.0
2.2	85.0	15.0
11	20.0	80.0
11.4	0.0	100.0
12.4	100.0	00.0
15.5	100.0	0.0
Waters Aquity UPLC ® BEHC_{18} 2.1 x 50 mm packed with 1.7 µm BEH C_{18} stationary phase Flow rate of 0.4 mL/min 2-5 µL injection		

Table 8: ESI-MS Method Conditions

ESI Conditions	
Polarity	Negative ion
Capillary needle voltage	.5 kV
Cone Gas Flow	25 L/hr
Nitrogen desolvation gas	1000 L/hr
Desolvation gas temp.	500 °C

Table 9: Method Analyte Source, Retention Times (RTs), and EIS References

#	Analyte	Transition	RT	IS	Type
1	M3PBA	216>171	2.65		REC
2	PFBA	213 > 169	2.65	2: M4PFBA	
3	M4PFBA	217 > 172	2.65	1: M3PBA	EIS
4	PFPeA	263 > 219	5.67	4: M5PFPEA	
5	M5PFPEA	268 > 223	5.66	1: M3PBA	EIS
6	PFBS	299 > 80	6.35	6: M3PFBS	
7	M3PFBS	302 > 80	6.35	29:M4PFOS	EIS
8	FtS 4:2	327 > 307	7.47	9: M2-4:2FTS	

#	Analyte	Transition	RT	IS	Type
9	M2-4:2FTS	329 > 81	7.47	29:M4PFOS	EIS
10	PFHxA	303 > 269	7.57	10: M5PFHxA	
11	M5PFHxA	318 > 273	7.57	19:M2PFOA	EIS
12	PFPeS	349 > 80	7.88	18: M3PFHxS	
13	PFHpA	363 > 319	8.80	14: M4PFHpA	
14	M4PFHpA	367 > 322	8.80	19:M2PFOA	EIS
15	L-PFHxS	399 > 80	8.94	18: M3PFHxS	
16	br-PFHxS	399 > 80	8.72	18: M3PFHxS	
17	PFHxS Total	399 > 80	8.94	18: M3PFHxS	
18	M3PFHxS	402 > 80	8.94	29:M4PFOS	EIS
19	MPFOA	415 > 370	9.7		REC
20	PFOA	413 > 369	9.7	23: M8PFOA	
21	br-PFOA	413 > 369	9.48	23: M8PFOA	
22	PFOA Total	413 > 369	9.7	23: M8PFOA	
23	M8PFOA	421 > 376	9.7	19: M2PFOA	EIS
24	FtS 6:2	427 > 407	9.66	25: M2-6:2FTS	
25	M2-6:2FTS	429 > 409	9.66	29:M4PFOS	EIS
26	PFHpS	449 > 80	9.78	33: M8PFOS	
27	PFNA	463 > 419	10.41	33: M8PFOS	
28	M9PFNA	472 > 427	10.41	19: M2PFOA	EIS
29	M4PFOS	501 > 80	10.45		REC
30	PFOS	499 > 80	10.45	33: M8PFOS	
31	br-PFOS	499 > 80	10.27	33: M8PFOS	
32	PFOS Total	499 > 80	10.45	33: M8PFOS	
33	M8PFOS	507 > 80	10.45	29: M4PFOS	EIS
34	FtS 8:2	527 > 507	10.99	38: M2-8:2FTS	
35	M2-8:2FTS	529 > 509	10.99	29:M4PFOS	EIS
36	M2PFDA	515 > 470	11.00		REC
37	PFDA	513 > 469	11.00	38: M6PFDA	
38	M6PFDA	519 > 474	11.00	36: M2PFDA	EIS
39	PFNS	549 > 80	11.02	33:M8PFOS	
40	NMeFOSAA	570 > 419	11.41	41: D3-NMeFOSAA	
41	d3-NMeFOSAA	573 > 419	11.41	36: M2PFDA	EIS
42	PFOSA	498 > 78	11.48	29: M8FOSA	
43	M8FOSA	506 > 78	11.48	19: M2PFOA	EIS
44	PFUnDA	563 > 519	11.51	41: M7-PFUDA	
45	M7-PFUDA	570 > 525	11.51	36: M2PFDA	EIS
46	PFDS	599 > 80	11.51	33:M8PFOS	
47	NEtFOSAA	584 > 419	11.68	48: d5-NEtFOSAA	

#	Analyte	Transition	RT	IS	Type
48	d5-NEtFOSAA	589 > 419	11.68	36: M2PFDA	EIS
49	PFDoA	613 > 569	11.96	50: MPFDOA	
50	MPFDOA	615 > 570	11.96	36: M2PFDA	EIS
51	PFTriA	663 > 619	12.34	50: MPFDOA	
52	PFTeA	713 > 669	12.6	53: M2PFTEDA	
53	M2PFTEDA	715 > 670	12.6	36: M2PFDA	EIS
54	M3HFPO-DA	329>285	7.97	19: M2PFOA	EIS
55	HFPO-DA	332>287	7.97	54: M3HFPO-DA	
56	ADONA	377>251	8.00	23: M8PFOA	
57	PFHxDA	813>769	13.20	59: M2PFHxDA	
58	PFODA	913>869	13.50	59: M2PFHxDA	
59	M2PFHxDA	815>770	13.20	36:M2PFDA	EIS
60	NEtFOSA	526>169	11.00	61: NMeFOSA	
61	NMeFOSA	512>169	10.50	63: d3-NMeFOSA	
62	d3-NMeFOSA	515>169	10.50	29: M4PFOS	EIS
63	d5-NEtFOSA	531>169	11.00	29: M4PFOS	EIS
64	NMeFOSE	556>122	11.25	66: d7-NMeFOSE	
65	NEtFOSE	570>136	10.75	67: d9-NEtFOSE	
66	d7-NMeFOSE	563>126	11.25	29: M4PFOS	EIS
67	d9-NEtFOSE	579>142	10.75	29: M4PFOS	EIS
68	FtS 10:2	627>607	11.50	25: M2-6:2FTS	
69	PFDoS	699>99	12.50	33: M8PFOS	

Appendix G:
Third Party Data Validator

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760/827-1100 Fax: 760/827-1099

RESUME
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1996

Analytical Technologies, Inc.
GC/MS VOA Group Leader
1992 to 1996

Analytical Technologies, Inc.
GC/MS Chemist
1991 to 1992

Natural Products Research, UP
Research Assistant
1990 to 1991

REPRESENTATIVE EXPERIENCE

Ms. Cuenco has over 27 years combined environmental laboratory and data validation experience. Her experience includes performance of data validation in the GC and GC/MS areas for major Federal projects. She has performed large validation projects under Boeing, Navy Southwest, Northwest and Pacific Division, EPA Region IX ESAT, USACE and AFCEE/AFCEC programs. Her laboratory experience includes hands-on CLP and EPA analysis of GC and GC/MS volatile organic compounds.

Specifically, Ms. Cuenco has over 22 years organic data validation experience using USEPA (including Region III) functional guidelines and other applicable documents.

- As senior chemist with LDC, Ms. Cuenco specializes in the data validation and contract compliance screening of gas chromatography-mass spectrometry analyses as well as gas chromatography analyses. She has a thorough knowledge and understanding of gas chromatography and gas chromatography-mass spectrometry (GCMS) and high resolution GCMS methods referenced in EPA CLP, SW-846, EPA 500, 600 and 1600 series documents. She has performed large data validation under Boeing, Navy Southwest and Pacific Divisions and EPA Region IX ESAT, USACE and AFCEE/AFCEC projects.

Ms. Cuenco has over 5 years experience in an environmental laboratory performing the analysis of organic parameters.

- As GC/MS chemist at Ceimic Corporation, a full service environmental analytical chemistry facility, Ms. Cuenco performed GC and GC/MS volatile analyses. She was responsible for the final reporting of analytical data for this section.

- As GC/MS VOA Group Leader at Analytical Technologies Inc., a full service environmental analytical chemistry facility, Ms. Cuenco was responsible for all GC/MS functions which included overseeing daily operations, training staff, final reporting of analytical data, and compliance with method requirements.

- As research assistant at Natural Products Research, UP, Ms. Cuenco researched chemical literature for plants with known medicinal properties as well as performed microbiological and pharmacological tests on plant extracts.

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RESUME
PEI GENG

EDUCATION

M.S. Organic Chemistry, 1989
Sam Houston State University

B.S. Environmental Chemistry, 1983
Nankai University

PROFESSIONAL HISTORY

Laboratory Data Consultants, Inc.
Senior Chemist
1997 to present

Ceimic Corporation
GC/MS and GC Chemist
1996 to 1997

PACE Analytical Service Inc.
GC/MS and GC Chemist
1990 to 1996

REPRESENTATIVE EXPERIENCE

Ms. Geng has over 28 years combined environmental laboratory and data validation experience. Her experience includes performance of data validation in the GC and GC/MS areas for major Federal projects. She has performed large validation projects under Boeing, Navy Southwest, Northwest and Pacific Division, EPA Region IX ESAT, USACE and AFCEE/AFCEC programs. Her laboratory experience includes hands-on CLP and EPA analysis of GC and GC/MS volatile organic compounds.

Specifically, Ms. Geng has over 21 years organic data validation experience using USEPA CLP (including Region III) functional guidelines and other applicable documents.

- As chemist with LDC, Ms. Geng specializes in the data validation and contract compliance screening of gas chromatography-mass spectrometry analyses as well as gas chromatography analyses. She has a thorough knowledge and understanding of gas chromatography and gas chromatography-mass spectrometry (GCMS) and high resolution GCMS methods referenced in EPA CLP, SW-846, EPA 500, 600 and 1600 series documents. She has performed large data validation under Boeing, Navy Southwest and Pacific Divisions and EPA Region IX ESAT, USACE and AFCEE/AFCEC projects.

Ms. Geng has over 7 years of experience in an environmental laboratory performing the analysis of organic parameters.

- As both a GC and GC/MS chemist at Ceimic Corporation, a full service environmental analytical chemistry facility, Ms. Geng performed GC and GC/MS volatile and semivolatile analyses.

- As both a GC and GC/MS chemist at PACE Analytical Service Inc., a full service environmental analytical chemistry facility, Ms. Geng performed GC and GC/MS volatile and semivolatile analyses as well as overseeing the final reporting of analytical data, and compliance with method requirements.

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RESUME
RICHARD M. AMANO

EDUCATION

B.S. Biochemistry
University of California, Los Angeles, 1979

A.A. Chemistry
El Camino College, 1977

PROFESSIONAL HISTORY

Laboratory Data Consultants, Inc.
Program Manager/Principal Scientist
2011-present
President/Principal Chemist,
1991 to 2011

Analytical Technologies, Inc
Laboratory Director
1986 to 1991

Brown & Caldwell
Laboratory Supervisor
1983 to 1986

West Coast Technical Service
Senior Chemist
1980 to 1983

University of California, Los Angeles
Laboratory Technician
1979 to 1980

REPRESENTATIVE EXPERIENCE

Mr. Amano has over 38 years of combined environmental laboratory, QA/QC, laboratory auditing, data management, environmental software development, and data validation experience. Prior to founding LDC in 1991, he directed to two major laboratories, Analytical Technologies, Inc. (San Diego) and Brown and Caldwell. His experience includes oversight and direction of major QA/QC and data validation efforts for confidential petroleum spill projects, Boeing sites, Superfund sites, DoE sites, Navy RI/FS projects, Army Corps of Engineers investigations, and AFCEE/AFCEC projects. He has also overseen several laboratory audits for major analytical testing programs and large scale environmental software development for the US Army Corps of Engineers (USACE).

Specifically, Mr. Amano has over 26 years of experience with validation of organic, inorganic, and radiochemical analyses using USEPA, Navy, USACE, DoD, AFCEE/AFCEC, and other applicable guidance documents.

- As program manager/principal scientist with LDC, Mr. Amano provides management and technical support to the data validation, data quality, and software group. He oversees and directs all environmental software projects developed for the USACE. Additionally, he acts as the primary LDC/USACE contract manager for software development projects. He is the primary author of the nationally distributed Automated Data Review (ADR) software used by the USACE, Navy, DTSC, and commercial clients.

- As President/principal chemist with LDC, Mr. Amano provided management and technical support to the data validation, data quality, and software group. He provided technical support in the organic, inorganic, and radiochemical areas. Under several major QA/QC and data validation programs, he provided, as needed, a final review of data validation and assessment reports. Mr. Amano specializes in the evaluation, validation, and interpretation of environmental testing data. Additional responsibilities include laboratory QA/QC and NELAC audits, implementation and support of QA/QC programs and data management support for engineering firms, environmental lab training, consultation on LIMS data base designs for environmental laboratories, and expert witness litigation support. Mr. Amano has managed and directed several major data validation and QA/QC projects for Army Corps, Navy, Air Force, and commercial contracts. Industrial projects include major petroleum oil spill related data validation and assessment of hydrocarbon analyses. The DoD projects include Southwest Division CLEAN 1 (Jacobs Engineering/IT Corporation/CH2M Hill), Southwest Division CLEAN 2 (Bechtel National), Pacific Northwest Division CLEAN (URS Greiner), Southern Division CLEAN (ABB Environmental), Atlantic Division CLEAN (EA Engineering), Southwest Division RAC (OHM Remediation), Pacific Division CLEAN (Earth Tech), AFCEE/AFCEC Mather AFB (Montgomery Watson), AFCEE/AFCEC Pease AFB (Bechtel Environmental), AFCEE/AFCEC England AFB (Law Environmental), Army Corps Travis AFB (CH2M Hill), Army Corps Hawthorne Army Depot (Tetra Tech), Nevada Test Site (IT Corp), and Army Corps Fort Ord (Harding Lawson). He provided oversight and direction for major USACE environmental software development including Automated Data Review (ADR), FUDSFORUM, MRSPP, and FUDSCHEM. He has a thorough knowledge and understanding of EPA CLP, SW-846, EPA 500, EPA 900, and EPA 600 series methods. He additionally has supported attorneys as an expert witness and has taught data integrity and lab ethics courses for several organizations.

Mr. Amano has over 12 years environmental laboratory experience in commercial laboratories supervising or performing the analyses of organic, inorganic, and radiochemical parameters.

- As laboratory director and technical director of Analytical Technologies, Inc, a full service environmental analytical chemistry facility, Mr. Amano was responsible for all facets of operations. These responsibilities include direct technical input for GC, GC/MS, and inorganic operations, personnel selection, assisting in method development, and selection of non-routine analysis. In addition, Mr. Amano was responsible for supervision of the 80 scientists employed at ATI's San Diego laboratory with all group supervisors, quality assurance and safety coordinators reporting directly to him. Mr. Amano has managed numerous analytical testing programs including the North Island Navy Confirmation Study, Miramar Air Force Base Confirmation Study, and investigations at several of the EPA Superfund sites. His environmental expertise focuses on the chemical testing related to hazardous waste investigations, site remediation, and groundwater monitoring programs.

- While at Brown & Caldwell, Mr. Amano's responsibilities encompassed supervision of daily operations of the laboratory, personnel staffing, technical advisor for operation of the gas chromatograph/mass spectrometer (GC/MS) section, maintenance of QA/QC programs, and coordination between engineers, clients, and laboratory analysts. Additionally, he supervised the daily operation of all radiochemistry activities which included alpha, beta, and radium analyses.

- At West Coast Technical Service, Mr. Amano was responsible for daily operation and quality control of the GC/MS group. Mr. Amano was highly involved with the USEPA hazardous waste contracts. Some special projects included dioxin selected ion monitoring analysis, EPA method 624 and 625 validation studies, and low level drinking water evaluations.

TECHNICAL PRESENTATIONS

"Understanding the Workings of an Environmental Laboratory"
Southern California Department of Health Services, 1984
Hargis & Associates, Inc, La Jolla, CA, 1987
Hargis & Associates, Inc, Tucson, AZ, 1987
Westec Services, San Diego, CA, 1987
Applied Hydrogeologic, Inc, San Diego, CA 1989

"Data Validation, QA/QC, and Environmental Analysis"
Van, Waters, and Rogers, Seattle, WA, 1990
ERC Environmental, Honolulu, HI, 1991
Harding Lawson Associates, Honolulu, HI, 1991
Pacific Division Naval Engineering Group, Honolulu, HI, 1991
OHM, Irvine, CA, 1996
Southwest Division Naval Engineering Group, San Diego, CA, 1996
Navy Public Works Center, San Diego, CA 1996

"GC versus GC/MS"
J.H. Kleinfelder & Associates, Artesia, CA 1986
Hargis & Associates, Inc, La Jolla, CA 1987

"Analytical Methods and QA/QC Procedures for Environmental Analysis"
County of San Diego Department of Health Services, San Diego, CA 1989
Regional Water Quality Control Board, San Diego, CA 1990
ERC Environmental, San Diego, CA 1990
Mittlehauser Corporation, Laguna Hills, CA 1991

"Hydrocarbon Testing Related to Underground Storage Tanks (UST)"
San Diego County DOHS, San Diego, CA, 1986
J.H. Kleinfelder & Associates, Artesia, CA 1986
Woodward Clyde Consultants, San Diego, CA 1987

Engineering Enterprises, Long Beach, CA 1987

"Quality Control/Quality Assurance in Laboratories"
Assoc of Hazardous Materials Professionals, Anaheim, CA 1986
R.L. Stollar & Associates, Santa Ana, CA 1989

"The Influence of Sample Matrix on Environmental Analysis"
Assoc of Hazardous Materials Professionals, San Diego, CA 1990

"Comparison of Air Sampling Media"
Assoc of Hazardous Materials Professionals, Anaheim, CA 1991

"Building a Second Generation LIMS for Commercial Laboratory Operations"
Pittsburgh Conference, New York, NY, 1990 (Invited Speaker)

"Employment Outlook in Environmental Laboratories"
Southern California American Chemical Society, 1985

"Opportunities in the Environmental Lab in the 1990's"
American Chemical Society, 1990

"Data Validation of Radiochemical Analyses"
Hargis + Associates, La Jolla, CA 1991

"Detection Limits - MDL, PQL, RDL, LOD ?"
Analytical Technologies, Inc., 1991

"Poor QA/QC or Laboratory Fraud: Have labs crossed the fine line?"
Environmental Professionals Organization, Newport Beach, CA 1996

"Electronic Data Deliverables and Automated Data Review/Validation"
Army Corps of Engineers, Sacramento District, Sacramento, CA 1996

"Navy Environmental Data Transfer Standards"
Kleinfelder, San Diego, CA 1997

"Laboratory QA/QC Update for DoD Programs"
ACTLabs, Long Beach, CA 1997

LECTURING AND TEACHING

"Instrumental Analysis of Hazardous Materials"
University of California, San Diego 1988 - 1995

"Field Monitoring & Laboratory Analysis of Hazardous Materials"

University of California, San Diego 1995 - 1998

California State Fullerton, Guest Lecturer, 1985 & 1990

San Diego State University, Hydrology Department, Guest Lecturer, 1988

"EPA Level 4 Data Validation" Workshop
Applied Geotechnology, Inc., Bellevue, WA, 1993

"Environmental Analyses in the 90's"

National University, Guest Lecturer, 1993

"Data Quality Objectives for Federal Environmental Programs"
University of California, San Diego 1993

"Data Integrity and Data Management for Federal Environmental Programs"
University of California, San Diego 1994

"Laboratory QA/QC and Electronic Data Requirements for DoD Programs"
University of California, San Diego 1995

"Application and Utilization of Department of Defense (DoD) Guidance Documents"
University of California, San Diego 1996

"Laboratory Quality Assurance for Department of Defense Programs"
University of California, San Diego 1997

PUBLICATIONS

"Managing an Environmental Chemistry Laboratory for Profit",
John H. Taylor, Jr and Richard M. Amano,
Journal of Chromatographic Science, 1987

MEMBERSHIPS AND AFFILIATIONS

American Chemical Society
Association of Hazardous Materials Professionals, (Steering Committee 1988-1994)
Association of California Testing Laboratories, (Board Member 1989-1991)
County of San Diego, Site Assessment and Mitigation Technical Forum (Steering Committee 1990-2000)
American Society Quality Control (1992-2005)

FOUNDATIONS

Golf for Autistic Children in America (GACA), Founder/President (2011)

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RESUME
ERLINDA T. RAUTO

EDUCATION

B.S. Chemical Engineering 1967
Feati University - Manila, Philippines

PROFESSIONAL HISTORY

Laboratory Data Consultants, Inc.
Senior Chemist/Validation Group Manager
1993 to present

Appropriate Technologies, Inc.
Chemist II
1992 to 1993

AECOS Inc.
Laboratory Supervisor
1989 to 1992

PWCSA #4 County Complex
Laboratory Analyst
1986 to 1989

Kalama Specialty Chemical
Chemist
1980 to 1982

REPRESENTATIVE EXPERIENCE

Ms. Rauto has over 38 years combined environmental laboratory, QA/QC, and data validation experience. Her experience includes performance of data validation in the GC, trace metals, and wet chemistry areas for major Federal projects. Her laboratory experience includes hands-on CLP and EPA ICP/GFAA analysis, pesticide/PCBs and wet chemistry analysis.

Specifically, Ms. Rauto has over 25 years of experience with organic data validation and assessment using USEPA (including Region III) functional guidelines and other applicable documents.

- As a Principal chemist with LDC, Ms. Rauto provides management and technical support to the data validation group. She specializes in the data validation and compliance screening of gas chromatography organic analyses. This validation includes EPA CLP, SW-846, and EPA Water and Wastewater methods. Over the past 16 years, Ms. Rauto has performed USEPA Level 3 and Level 4 (including NFESC Level C and D) validation for projects including Boeing SSFL, Southwest Division CLEAN 1 (Jacobs Engineering/IT Corporation/CH2M Hill), Southwest Division CLEAN 2 (Bechtel National), Pacific Northwest Division CLEAN (URS Greiner), Southern Division CLEAN (ABB Environmental), Atlantic Division CLEAN (EA Engineering), Southwest Division RAC (OHM Remediation), Pacific Division CLEAN (Earth Tech), DoE Atomic City (Jacobs

Engineering Group), Army Corps of Engineers, Travis AFB (CH2M Hill), Army Corps of Engineers, Camp Navajo (Tetra Tech), AFCEE/AFCEC Mather AFB (Montgomery Watson), AFCEE/AFCEC Pease AFB (Bechtel Environmental), AFCEE/AFCEC England AFB (Law Environmental), Army Corps of Engineers, Hawthorne Army Depot (Tetra Tech), Army Corps of Engineers, Fort Ord (Harding Lawson), Nevada Test Site (IT Corp), and AFCEE/AFCEC Beale AFB (Law/Crandall, Inc.).

Ms. Rauto has organic laboratory experience with over 13 years of experience in an environmental laboratory supervising or performing the analyses of organic parameters.

- As a chemist II at Appropriate Technologies, Inc., a hazardous waste disposal facility, Ms. Rauto was responsible for the operation of the gas chromatographs. Organochlorine pesticides and PCBs analysis was the primary method performed. In addition, Ms. Rauto performed ICP analyses for trace metals, as well as, supported engineers in developing waste treatment processes.

- As the laboratory supervisor at AECOS Inc., Ms. Rauto supervised and directed operation of gas chromatography, atomic absorption, and wet chemistry instrumentation. She interfaced with state and federal agencies to maintain certification and developed a written QA/QC plan for the laboratory.

- As chemist at Kalama Specialty Chemical, Ms. Rauto performed gas chromatography analysis on raw materials and finished products. She worked on the research and development of new chemicals.

Additionally, Ms. Rauto has 2 years inorganic/conventional analytical experience.

- While employed at the Prince William County laboratory, Ms. Rauto was involved in the analysis of water and wastewater for metals and wet chemistry parameters. This included BOD, COD, nitrate, nitrite, sulfate, chloride, fluoride, TDS, conductivity, pH, cyanide, and phenols analyses. She maintained the QA/QC program to assure compliance with EPA guidelines.

AFFILIATIONS
American Society for Quality Control

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RESUME
CHRISTINA RINK-ASHDOWN

EDUCATION

BS Biology, 2006
University of California, San Diego

PROFESSIONAL HISTORY

Laboratory Data Consultants, Inc.
Inorganic Chemist
2009 to present

Enviromatrix Analytical, Inc.
Metals Chemist
2007 to 2009

REPRESENTATIVE EXPERIENCE

Ms. Rink-Ashdown has over 11 years combined environmental laboratory and data validation experience. Her experience includes performance of data validation in the trace metals, radiochemistry, and wet chemistry areas for major Federal and commercial projects. Her laboratory experience includes hands-on CLP and SW-846 ICP/CVAA analysis and overall technical review of data deliverables. Specifically, Ms. Rink-Ashdown has over 6 years inorganic and radiochemistry data validation experience using USEPA (including Region III) functional guidelines and other applicable documents.

As chemist with LDC, Ms. Rink-Ashdown specializes in the data validation of trace metals, wet chemistry, methyl mercury and radiochemistry analyses using USEPA functional guidelines or equivalent protocol. She has worked under various CERCLA and EPA data validation guidelines for the various CERCLA, Navy, Army Corps, AFCEE/AFCEC and commercial projects. She is certified as a “Radiometric Data Validation Specialist” through course work and testing by the Radiochemistry Society. **Ms. Rink-Ashdown has validated over 2,000 samples for various isotopes in the last two years.**

Ms. Rink-Ashdown has over 2 years of environmental laboratory experience in a laboratory performing the analyses of inorganic parameters.

As lead inorganic chemist at Enviromatrix Analytical, Inc., Ms. Rink-Ashdown managed the inorganic chemistry section which performed techniques such as atomic absorption and inductively coupled argon plasma spectrometry. These analyses were performed from methods referenced in EPA CLP, SW-846, and Standard Methods documents.

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RESUME
SHAUNA McKELLAR

EDUCATION

B.S. Environmental Toxicology, 2006
University of California at Davis

PROFESSIONAL HISTORY

Laboratory Data Consultants, Inc.
Project Manager / Chemist
May 2010 to present

D-Max Engineering, Inc.
Assistant Project Scientist
January 2007 to May 2010

University of California at Davis
Undergraduate Researcher
March 2005 to June 2006

REPRESENTATIVE EXPERIENCE

Ms. McKellar has over 14 years combined consulting, field sampling, database management, data validation, and automated data review experience. Her experience includes performance of automated data validation for major Navy Southwest Division, US Army Corps of Engineers, and Alaska DEC projects as well as data management for commercial and litigation projects. Her field sampling experience includes surface water sampling in both wet and dry weather conditions, and her laboratory experience includes preparation and analysis of samples utilizing HPLC and UV-vis spectrometry, instrument maintenance, and data evaluation.

Specifically, Ms. McKellar has over 6 years of inorganic and organic data validation experience using USEPA functional guidelines, Navy procedures, QAPP, ADEC checklists, and other applicable documents, in addition to more than 3 years of experience working in the environmental compliance field, and over one year working in a research laboratory.

- As chemist with LDC, Ms. McKellar specializes in the data validation and contract compliance screening using LDC's Automated Data Review (ADR) software, and is familiar with a variety of different Electronic Data Deliverable formats, including SEDD and NEDD. She has supervised large data validation projects under the USACE and Navy Southwest Division RAC contracts.

- As an assistant project scientist with D-Max Engineering, Ms. McKellar performed wet and dry weather surface water sampling related to compliance with Regional Water Quality Control Board NPDES Permits. She also maintained large project databases related to stormwater inspection and monitoring programs for various municipalities.

- As an undergraduate researcher at the University of California at Davis, Ms. McKellar conducted an independent atmospheric chemistry research project utilizing HPLC and UV-Vis spectroscopy. She was responsible for the instrument calibration, verifying sample analyses, and routine instrument maintenance.

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RESUME
LINDA TA

EDUCATION

B.S. Geology, 2012
California State University Long Beach

PROFESSIONAL HISTORY

Laboratory Data Consultants, Inc.
Chemist and Project Manager
July 2018 to present

Eurofins Calscience
Project Manager Assistant
02/2014-07/2018

Eurofins Calscience
Chemist
10/2013-02/2014

REPRESENTATIVE EXPERIENCE

Although Ms. Ta has less than one year of experience at LDC, she is proficient in data validation for GC and GCMS methods for Level II and III.

- As a project manager with LDC, Ms. Ta assists the other project managers through project set-up, validation, report review, and writing project data quality assessment reports. Ms. Ta is also in training to perform ADR validation and ERPIMS database tasks. She is also the administrative support specialist for LDC Advantage secure data sharing portal where she assists with project and client set-up.

Ms. Ta has 5 years of experience in an environmental laboratory performing the analysis of organic parameters.

- As a GC/MS chemist at Eurofins Calscience, a full service environmental analytical chemistry facility, Ms. Ta performed GC/MS volatile analyses using various EPA Methods in accordance with standard operating procedures. Ms. Ta utilized Agilent Chemstation and Laboratory Information Management Systems (LIMS) to analyze and report data.

- As a Project Manager Assistant at Eurofins Calscience, Ms. Ta assisted multiple Project Managers to oversee all laboratory functions for various projects. In addition, she managed several minor projects for various Environmental consultants. She served as the secondary point of contact for clients, ensured that Chain of Custodies are accurate and analyses are logged in correctly, directed preparation of bottle orders, scheduled pickups and deliveries, coordinated subcontracted analyses, provided quality control review of project-related documents and compliance to project criteria, worked closely with lab group supervisors and executive managers in planning new projects and managed ongoing analytical work. Ms. Ta evaluated analytical data, prepared project

case narratives and summaries, compiled laboratory reports for external validation, and worked closely with chemists and lab group supervisors in resolving quality assurance and quality control issues. She prepared detailed project billing and generated multiple Electronic Data Deliverables. She was also responsible for training new Project Manager Assistants on various PM tasks, data review and compilation of laboratory Level III/IV QC Data Deliverables.

Below is a partial listing of clients and projects which Ms. Ta has assisted:

-Department of Defense Sites
- Edwards AFB
- George AFB
- Vandenberg AFB

-SSFL NASA
-BP/ARCO
-Aerospace Company

Below is a listing of various database management software which Ms. Ta has extensive training on:

-ERPIMS
-EQUIS
-Envirodata
-NEDD
-ADR
-Geotracker

Relevant Project Experience

LDC has performed data validation and Quality Assurance services for contaminated sites overseen by AFCEE/AFCEC, Navy Southwest Division, DoE, DoD, EPA Superfund projects overseen by EPA Regions II, III, IV, IX, X, USACE projects reviewed by the Alaska, Baltimore, Louisville, Albuquerque, Seattle, Philadelphia, and Sacramento Districts, and Navy projects reviewed by NFESC.

LDC is the software developer and expert in the use of the Automated Data Review (ADR) software. LDC has been using the ADR.NET version for over 2 years and has the current Version in full implementation. LDC has performed over 1000 ADR projects in the past 10 years' worth over $2,000,000 in revenue. ADR clients include, but are not limited to: Tetra Tech EC, Sealaska, AMEC, EPA, California DTSC, MWH, Trevet, Brown & Caldwell, AECOM, Shaw, ITSI, CDM, Weston Solutions and the San Gabriel Watermaster.

LDC has validated over 1,000,000 samples for analyses such as volatile organics (CLP, EPA Method 8240/8260), semivolatile organics (CLP, EPA Method 8270), organochlorine pesticides/PCBs (CLP, EPA Method 8081/8082), chlorinated herbicides (EPA Method 8151), purgeable halocarbons and aromatics (EPA Method 8021), trace metals (CLP, EPA Method 6010/6020/7000), PAHs by EPA 8310 and 8270,TOC analyses, hexavalent chromium, total petroleum hydrocarbons (EPA Method 8015/CDOHS LUFT), radiochemical constituents including gross alpha/beta, alpha spec, gamma spec, tritium, and uranium, and general minerals.

LDC has met their contractual turnaround time and quality requirements on over 99% of the projects completed.

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Project References/Experience

Name and Address, Contact Person, Telephone	Work Description and Location	Requested Deliverables	Number of samples/ Matrix	Value ($)	Start/Stop
Washington State Department of Transportation Environmental Services Office P.O. Box 47332 Olympia, WA 98504 ATTN: Mr. Brad Archbold ArchboB@wsdot.wa.gov 360-570-6636	WSDOT NPDES Stormwater Monitoring LDC performed Stage2A, 2B and 4 data validation for a full suite of analyses including GCMS, GC, Metals, and Wet Chemistry analyses.	Stage 2A, 2B, and 4 data validation reports. Work conducted under Washington State Department of Transportation Stormwater Monitoring	>3,800 Soil and Water	$48,332	04/2013-07/2016
Leighton Consulting, Inc. 17781 Cowan Irvine, CA 92614 ATTN: Mr. Mark Withrow mwithrow@leightongroup.com cell: 949-394-2194 office: 949-681-4211	San Onofre Nuclear Generating Station (SONGS) Mesa Facility LDC performed EPA Level III and IV equivalent data validation for a full suite of analyses. Analyses included GCMS, GC, Metals, and Wet Chemistry analyses.	EPA Level III and IV data validation reports. Work conducted under USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG).	>3,600 Soil, Water, and Air	$66,225	09/2015-present
Leighton Consulting, Inc. 17781 Cowan Irvine, CA 92614 ATTN: Ms. Julie Harriman jharriman@leightongroup.com Direct : (949) 681-4264 Cell: (949) 572-8129	Aliso Canyon LDC performed EPA Level II equivalent data validation. Analyses included VOA, SVOA, Total Hydrocarbons, Isopropyl Alcohol, Total Dust, and Sulfur Compounds.	EPA Level II data validation reports and PARCC summary report. Work conducted under USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG).	>1,200 Air, Wipe, and Disk	$15,749	07/2016-08/2016
Tetra Tech, EM Inc. 1999 Harrison Street, Suite 500 Oakland, CA 94612 ATTN: Ms. Sara Woolley Sara.Woolley@tetratech.com Direct: 510.302.6311 Main: 510.302.6300	Subcontract 161408 For Various project sites including: EAGLE NEST INVESTIGATION FORT IRWIN GOLD BEACH MILL HPNS MARE ISLAND MOTCO LITIGATION NAF EL CENTRO NWS CONCORD LDC performed Cursory and Full data validation for a full suite of analyses using specified EPA Guidelines, DoD QSM Version 4.2, and Tetra Tech EMI, Inc. validation documents.	TTEMI Format data validation reports and EDD using Tetra Tech's validate program.	>3000 Soil and Water	$39,785	10/2011 – 10/2013

Name and Address, Contact Person, Telephone	Work Description and Location	Requested Deliverables	Number of samples/ Matrix	Value ($)	Start/Stop
GEI Consultants, Inc. 455 Winding Brook Drive Glastonbury, CT 06033 (860) 368-5342 direct (860) 368-5300 main Jaimie Wargo JWargo@geiconsultants.com	Various NYSDEC sites LDC performed Category B equivalent data validation Analyses included: VOC, SVOC, Pesticide, PCB, Herbicide, Steroids, Metals, Wet Chemistry	Category B data validation and NYSDEC DUSR reports	>1,700 Soil and Water	$72,000	2010-present
TetraTech EC 17885 Von Karman Ave, Suite 500 Irvine, CA 92614 Attn: Lisa Bienkowski (949) 809-5028 Lisa.Bienkowski@tetratech.com	Tetra Tech Hunter's Point CA LDC performed EPA Level III and IV equivalent data validation for a full suite of analyses on more than 50,000 soil and water samples. Analyses included tritium, isotopic thorium, uranium and plutonium, and gross alpha/beta. Expedited turnaround times were included (5 day TAT)	EPA Level III and IV data validation reports. Work conducted under US Navy RAC program, Southwest Div.	>50,000 Soil and Water	$645,733	02/2001-present
AECOM (Earth Tech) 700 Bishop Street Honolulu, HI 96813 Contact: Scott Lewis (808) 523-8874 Scott.Lewis@aecom.com	Data validation per EPA level "3/C" and "4/D" guidelines for volatile organic, semivolatile organic, pesticides/PCBs, herbicides, phenols, phosphorus pesticides, dioxin, radiochemical, and trace metal analyses in soil, water, and tissue matrices. (Navy PACDIV CLEAN, Honolulu, HI)	LDC worksheets and validation reports	>10,000 samples Water/Soil/Air	$750,000	4/98-present
CBI (formerly Shaw E&I) 3347 Michelson Drive, Ste 200 Irvine, CA 92612 Contact: Mr. Dwayne Ishida Phone: (949) 660-7561 Dwayne.Ishida@CBIFederalServices.com	Data validation per EPA level "3" and "4" and AFCEE/AFCEC guidelines for volatile organic, semivolatile organic, pesticides/PCBs, herbicides, phenols, phosphorus pesticides, dioxin, radiochemical, and trace metal analyses in soil, water, and tissue matrices. (Navy Southwest Division RAC, San Diego, CA and various AFCEE/AFCEC projects)	LDC worksheets and validation reports	>5000 samples Water/Soil/Air	$350,000	6/06-present

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2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760/827-1100 Fax: 760/827-1099

Name and Address, Contact Person, Telephone	Work Description and Location	Requested Deliverables	Number of samples/ Matrix	Value ($)	Start/Stop
Santa Clara Pueblo Office of Environmental Affairs 578 Kee Street Espanola, New Mexico, 87532 Ms. Ernestine Naranjo 505-692-6270 phone 505-747-2728 fax enaranjo@santaclarapueblo.org	Data validation per EPA level "III" SCP-OEA-DEPO, Data Validation using ADR For full suite of Organic, Inorganic, and Radiochemical analyses. Radiochemical analyses including Gross alpha & beta, Gamma Spectroscopy, Iodine, Radium-226/228, Strontium-90, Isotopic Pu, Th, and U, Tritium, and Americium by various EPA and GA methods.	Level III validation using ADR	>750 Soil, Water, and Air	$11,987.05	12/2015 - present
Anchor Environmental, LLC 720 Olive Way, Suite 1900 Seattle, WA 98101 Ms. Joy Dunay 206.287.9130, jdunay@anchorqea.com	Data validation per Level “C” Newtown Creek Phase 2: Third Party Data Validation of laboratory results, EDD population, and Data Quality Assessment Reports (DQAR) for various methods Subcontractor	LDC worksheets and validation reports	>63,000 Soil and Water	$743,793.88	6/14-1/16
Tradebe Environmental Services, LLC. 628 South Saratoga Street Cohoes, NY 12047 Attn: Accounts Payable Mr. Tom VanVranken (518) 235-0401 tom.vanvranken@tradebe.com	Norlite MACT Project LDC performed Category B equivalent data validation Analyses included: Metals, Mercury, Heat Content, Ash Content, Chlorine, Density, and Dioxins	Category B data validation and NYSDEC DUSR reports	11 Soil, Air and Water	$2,000.00	9/2013
P.W.Grosser Consulting2015 630 Johnson Ave, Suite 7 Bohemia, NY 11716 Attn: Mr. Derek Ersbak w. 631.589.6353 f. 631.589.8705 dereke@pwgrosser.com	Former Arkansas Chemical Co.Site and Former Ronkonkoma Wallpaper Site 203 Jay St. LDC performed Category B equivalent data validation Analyses included: VOC, SVOC, Pesticide, PCB, Metals, Wet Chemistry	Category B data validation and NYSDEC DUSR reports	>200 Soil and Water	$3,024.00	11/2014-present

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760/827-1100 Fax: 760/827-1099

Name and Address, Contact Person, Telephone	Work Description and Location	Requested Deliverables	Number of samples/ Matrix	Value ($)	Start/Stop
Amec Foster Wheeler Environment and Infrastructure, Inc. 9210 Sky Park Court, Suite 200 San Diego, CA 92123 Attn: Mr. Rolf Schottle rolf.schottle@amecfw.com Tel +1 (858) 300 4300, Fax +1 (858) 300 4301, Direct +1 (858) 300 4323	Regional Harbor Monitoring Program (RHMP), San Diego, California Third party validation of LDC performed EPA Level III and IV equivalent data validation for a full suite of analyses.	LDC worksheets and validation reports	>200 Water	$9,011.40	3/15–6/16

Note: All above projects were 100% self-performed by LDC

Appendix I

Resumes of Key Personnel

Remedial Action Work Plan
318 Nevins Street, Brooklyn, NY
NYSDEC BCP #C224350

Impact Environmental Engineering and Geology PLLC
170 KEYLAND COURT, BOHEMIA, NEW YORK 11716
TEL (631) 269-8800 ▪ FAX (631) 269-1599

DIANA POSTEN

ASSOCIATE PROJECT MANAGER

11 years EXPERIENCE

EDUCATION

Bachelor of Science, Environmental Science and Management University of Rhode Island (2008)

EXPERIENCE

April 2017-Present **Impact Environmental** Associate Project Manager

- Prepares Phase I and Phase II Environmental Assessments (ESAs) in general conformation with ASTM Practice.
- Oversees logistics of small to moderate scale remediation projects, including communication with disposal facilities, subcontractors, Clients and regulatory agencies, as applicable.
- Conducts various methods of soil, soil vapor and groundwater sampling and monitoring.

January 2014-March 2017- **The ELM Group, LLC** Junior Project Manager/Environmental Specialist

- Completed state permit forms to ensure that land use/redevelopment/site remediation project designs complied with all applicable regulations (various sites throughout NJ)
- Executed a variety of field sampling programs in accordance with NJDEP QA/QC protocols (Field Sampling Procedures Manual), and project-specific Quality Assurance Project Plans (QAPP)s which covered Remedial Action projects and Remedial Investigation projects.
- Authored technical reports; ASTM Phase I, Preliminary Assessment Reports, Remedial Investigation Reports and Remedial Action Reports

March 2009- December 2014- **Clough Harbour & Associates LLP** Environmental specialist/Assistant Engineering Designer

- Support Utility-based clients with power system and circuit design. Work included circuit voltage conversions, MAOP calculations, configuration and design of new feeders from substations, distribution improvement projects, feeder hardening, and storm restoration work during hurricane Sandy.

KEY PROJECTS

- 3210 Park Ave NY, NY for Xenolith Partners
- 100 Charles Lindbergh Blvd Uniondale, NY for Poplar Health Care

CERTIFICATIONS/ ACHIEVEMENTS

- NSCS National honor society chapter at University of Rhode Island
- OSHA – Health and Safety for Hazardous Waste Site Investigation Personnel Certification, 40 Hours
- OSHA – Construction Safety Curse, 10 Hours
- Certification of Completion for Scientific and Technical Writing
- Certificate for Operation of Olympus Innov-X XRF X-Ray Analyzer Instrumentation
- NGA Natural Gas Distribution Systems Certification
- Rutgers' Office of Continued Professional Education courses in; Hydrology, Geology and Chemistry, Regulatory Training on Underground Storage Tanks, Effective Environmental Field Sampling and Data Collection, and Practical Applications in Hydrology

JULIANA DE LA FUENTE, P.G.

SENIOR PROJECT MANAGER

30 years EXPERIENCE

EDUCATION

Bachelor of Science, Environmental Science- Geology Concentration Long Island University, Southampton College (1985)

EXPERIENCE

IMPACT ENVIRONMENTAL, 2013-Present, *Senior Project Manager*

- Manage a portfolio of remediation projects in the metropolitan New York City and Long Island regions.
- Responsible for managing Phase I and II Environmental Site Assessments, Site characterization and remedial investigations, soil vapor investigation, construction and remediation projects in commercial and industrial markets for financial intuitions, retail gasoline property owners, attorneys, real estate investment and development firms, and construction firms.
- Also, manage underground storage tanks removals, State Spill Investigation and Remediation Sites, County and Federal Underground Injection Control Program Sites, New York City Voluntary/Brownfield Cleanup Program Sites, NYSDEC Brownfield Environmental Restoration Program Sites, NYSDEC RCRA Closure Sites, New York City E-Designation Projects.
- Supervise staff of geologists, hydrogeologists, engineers, environmental scientists, and environmental technicians to develop and implement sampling and analysis plans, quality assurance programs, remedial action plans.

Kleinfelder East, Inc., 2006-2013, *Project Manager*

- Effectively execute environmental investigation and remediation work in support of a multi-million-dollar national contract with focus on risk management for activities such as drilling, construction associated with remediation system installation, demolition, trenching and excavation, underground storage tank removal, sheeting/shoring installation, dewatering systems, mobile crane work activities and waste management.
- Policy and procedure implementation in accordance with client's operation integrity management system and Loss Prevention System (LPS) requirements.
- Established strong and sustainable relationships with regulatory agency representatives and reached milestones negotiated on behalf of the client with the regulator that have resulted in no further action and site closures.
- Team leader with direct reports responsible for the implementation of health and safety/LPS and technical training, mentorship, goal setting and performance evaluations, and team building.

1991-2006 **Experience as a Project Manager within the South and Eastern US.**

KEY PROJECTS

- Bill Wolf Petroleum
- Spartan Petroleum
- Atlantis Management Group
- Gateway Development Group
- Extell Development Company
- Xenolith Partners
- Lab Corp
- AutoZone

ORGANIZATIONS

- National Groundwater Association
- Long Island Geologist Association

CERTIFICATIONS/ ACHIEVEMENTS

- New York City Office of Environmental Remediation – Certified Brownfield Professional (Gold Certification)
- ISO 14001:2004 8 Hour Training Certification
- Loss Prevention System™ Training
- 40-Hour Hazardous Waste Site Worker Course/Refresher
- CPR and First Aid certification
- RCRA and DOT Training
- The Ninth Annual Indoor Air Pollution Conference Seminars
- U.S. EPA and ASHRAE Orientation to Indoor Air Quality
- Licensed Profession Geologist (NYS# 000790)

KEVIN KLEAKA, P.G.

Executive Vice President/Senior Environmental Scientist

EDUCATION

State University of New York at Plattsburg,
Bachelor of Science in Environmental Science, 1995 Applied Environmental Science Program

EXPERIENCE

IMPACT ENVIRONMENTAL CLOSURES Inc., 1997-Present),
Executive Vice President, Senior Environmental Scientist

- Principally responsible for managing environmental assessment, investigation, construction and remediation projects in commercial and industrial markets for lenders, real estate investment/development firms, construction firms and government agencies.
- Manage Phase I and II Environmental Site Assessments, State Spill Investigation and Remediation, County and Federal Underground Injection Control Programs, State & City Voluntary/Brownfield Cleanup Programs, State & Federal Superfund Sites, Brownfield Environmental Restoration Programs, Federal RCRA Closure, City E-Designation Projects.
- Responsible for environmental compliance of construction projects for waste management.
- Quality control of work products and deliverables.
- Supervise staff of geologists, hydrogeologists, engineers, environmental scientists, and environmental technicians to develop and implement sampling and analysis plans, quality assurance programs, remedial action plans.
- Provide expert witness testimony/fact statements and support in litigation cases involving soil, air and/or groundwater pollution.

WYETH AYERST LABORATORIES, (1995-1997), Chemist worked in chromatographic separations division performing quality assurance analysis.

- Performed laboratory procedures and analyses in accordance with USFDA analytical test methods by liquid, gas, and thin layer chromatography.

KEY PROJECTS

- East Side Access MTA LIRR
- Melody Cleaners
- ExxonMobil Spill- Valley Stream, NY
- Spartan Petroleum
- JFK 1020, Runway 13R-31L
- Rheingold Brewery Redevelopment Project
- WTC Greenwich Street Corridor Reconstruction
- Yankee Stadium Macomb's Park

ORGANIZATIONS

- New York City Brownfield Partnership
- New Partners for Community Revitalization
- ASTM Committee
- National Groundwater Association
- Environmental Bankers Association
- Vapor Intrusion Network
- Long Island Geologist Association
- Environmental Consulting Professionals
- Environmental Insurance Professionals

CERTIFICATIONS/ ACHIEVEMENTS

- Licensed Profession Geologist (NYS# 000735)
- Gold Certified Brownfield Professional 2012
- Advanced Tools for In-Situ Remediation Workshop
- ASTM Technical & Professional Training for Assessment of Vapor Intrusion into Structures of Property & New York State Department of Health, Vapor Intrusion Training
- New York Precision Equipment Global Survey Positioning Training
- MTBE & TBA Comprehensive Site Assessment and Successful Groundwater Remediation
- Environmental Data Resources, Due Diligence Workshop
- Advanced Technologies for Accelerated Natural Attenuation
- Eophysical Survey Systems, Theory and Practice of Applying Subsurface Interface Radar in Engineering and Geophysical Investigation.
- 40-Hour Occupational Safety & Health Administration

XIN YUAN, P.E.

Quality Control Manager

EDUCATION

Masters of Science, Civil Engineering, UMass Amherst (2010)
Bachelor of Science, Environmental Engineering. Tsinghua University, Beijing, China (2008)

EXPERIENCE

2010-Present **IMPACT ENVIRONMENTAL** *Quality Control Manager/Environmental Analyst*

- Quality control of all waste management/brownfield redevelopment projects;
- Management of site remediation/waste management projects;
- Environmental compliance & permitting of waste management facilities
- Achieve and maintain appropriate and consistent application of environmental compliance for waste disposal/beneficial use facilities
- Achieve and maintain appropriate and consistent application of environmental compliance at the regional Levels for waste management projects
- Review & evaluate site investigation/waste characterization results for waste management projects and provide technical recommendations to project manager
- Authored a multitude of BUD petitions for various other solid waste related projects in NY,NJ &PA, including projects such as The East Side Access, The Air Rail Project and JFK International Jet Blue Terminal 5
- Design and perform waste characterization investigations for waste management projects

KEY PROJECTS

- Columbia University Manhattanville Development Project
- LIRR 3rd Track Expansion Project
- Atlas Quarry Reclamation Project
- Former New Jersey Zinc Company-West Plant Remediation Project
- Morris Blanchard Redevelopment Project
- Brooklyn Bridge Park Pier 1 Redevelopment Project
- Southwest Brooklyn Marine Transfer Station Redevelopment Project
- Doremus Avenue Redevelopment Project

CERTIFICATIONS/ ACHIEVEMENTS

- Long Island Association of Professional Geologists
- American Chinese Real Estate Society

CERTIFICATIONS/ ACHIEVEMENTS

- US EPA 40hr Hazardous Materials Response for First Responders Training
- Professional Engineer in MA, PA, NJ & NY

Appendix J

Community Air Monitoring Plan (CAMP)

Remedial Action Work Plan
318 Nevins Street, Brooklyn, NY
NYSDEC BCP #C224350

Impact Environmental Engineering and Geology PLLC
170 KEYLAND COURT, BOHEMIA, NEW YORK 11716
TEL (631) 269-8800 ▪ FAX (631) 269-1599

NYSDEC BROWNFIELD CLEANUP PROGRAM

Community Air Monitoring Plan – BCP # C224350

June 28, 2023

conducted at:

300-344 Nevins Streeet (aka 318 Nevins Street)
Brooklyn, New York
County Tax Map Designation: *Block 439; Lot 1*

Submitted to:

Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway
Albany, New York, 12233-7020

Prepared For:

Gowanus 300 Nevins Street LLC
19 West 24th Street, 12th Floor
New York, NY, 10010

IEC Project # 15977

IMPACT ENVIRONMENTAL ENGINEERING AND GEOLOGY, PLLC
170 Keyland Court | Bohemia | New York | 11716 | 631.269.8800

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LIST OF ACRONYMS

Acronym	Definition
DER	Division of Environmental Remediation
CAMP	Community Air Monitoring Unit
Mcg/m3	Micrograms Per Cubic Meter
NYS DEC	New York State Department of Environmental Conservation
NYS DOH	New York State Department of Health
PID	Photoionization Detector
PM-10	Particulate Matter Less Than 10 Micrometers in Size
PPM	Parts Per Million
VOC	Volatile Organic Compound

CERTIFICATION

I, Xin Yuan am a Professional Engineer (PE) as defined in **§**43-140. I have primary direct responsibility for implementation of the Community Air Management Plan (CAMP) for the (318 Nevins Street, Brooklyn, NY) Site (DEC Site # C224350).

I certify that the CAMP has a plan for handling the prevention of exposure to the public from potential contaminant releases resulting from on-site investigative or remedial activities.

Xin Yuan, P.E.
Name

Signature: Xin Yuan

Date: 6-28-2023



1 INTRODUCTION

Impact Environmental prepared this Community Air Monitoring Plan (CAMP) to protect the community from any potential airborne releases that could result from field activities associated with construction activities for development (foundation installations, support of excavation, etc.) or remediation activities (remedial investigations or remedial action) at the property located at 251 Douglass Street, Brooklyn, New York, herein referred to as the "Site". This work is being performed under the auspices of the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program, DEC Project # C224367. This document has been prepared in accordance with the NYSDEC Program Policy Division of Environmental Remediation (DER)-10/Technical Guidance for Site Investigation and Remediation, dated May 3, 2010.

The CAMP is intended to protect off-site receptors and those not directly involved with remedial activities from potential airborne contaminant releases that result directly from investigative or remedial activities.

1.1 Objectives

The overall objectives of this document are as follows:

- Prevent exposure to the public from potential contaminant releases resulting from on-site investigative or remedial activities;
- Specify monitoring and documentation requirements; and
- Provide contingency details.

2 MONITORING

2.1 Community Air Monitoring Plan

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring, or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH. Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas. Exceedances of action levels observed during performance of the CAMP will be reported to the DEC Project Manager and included in the Daily Report.

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. APeriodic@ monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

2.2 VOC Monitoring, Response Levels, and Actions

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

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppmover background for the 15-minute average.

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

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

2.3 Particulate Monitoring, Response Levels, and Actions

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

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

2.3.1 Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals

Special Requirements CAMP is required when ground intrusive or soil handling is occurring within 20 feet of potentially exposed individuals or structures, as follows:

1. When work areas are within 20 feet of potentially exposed populations or occupied structures, the continuous monitoring locations for VOCs and particulates must reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. The use of engineering controls such as vapor/dust barriers, temporary negative-pressure enclosures, or special ventilation devices should be considered to prevent exposures related to the work activities and to control dust and odors. Consideration should be given to implementing the planned activities when potentially exposed populations are at a minimum, such as during weekends or evening hours in non-residential settings.

2. If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed 1 ppm, monitoring should occur within the occupied structure(s). Depending upon the nature of contamination, chemical-specific colorimetric tubes of sufficient sensitivity may be necessary for comparing the exposure point concentrations with appropriate pre-determined response levels (response actions should also be predetermined). Background readings in the occupied spaces must be taken prior to commencement of the planned work. Any unusual background readings should be discussed with NYSDOH prior to commencement of the work.

3. If total particulate concentrations opposite the walls of occupied structures or next to intake vents exceed 150 mcg/m3, work activities should be suspended until controls are implemented

and are successful in reducing the total particulate concentration to 150mcg/m3 or less at the monitoring point.

2.4 Meteorological Monitoring

Meteorological monitoring will take place on a daily basis. It will consist of temperature, wind direction, and general atmospheric conditions (i.e. rain, snow, etc.). These parameters will be evaluated each morning and recorded in the field notebook. Wind direction should be monitored throughout the day so that upwind and downwind sampling locations can be adjusted if necessary. All readings will be recorded and be available for DEC personnel to review.

3 DOCUMENTATION

During the implementation of the CAMP, the following information will be recorded and maintained:

- Climatological conditions including temperature wind direction, and other atmospheric conditions along with the date and time of observations;
- Calibration of field instruments;
- CAMP monitoring locations;
- VOC 15-min readings as well as instantaneous readings, if necessary; All particulate readings; and
- Any exceedances to the response levels and the respective corrective actions.

VOC 1-min readings will be available for review by the State (NEYDEC and NYSDOH) if requested and included in each *Daily Field Report*. Additionally, the DEC will be notified immediately of any exceedances.

APPENDICES

318 Nevins Street, Brooklyn, New York

APPENDIX A
CAMP Daily Status Report Sheet

318 Nevins Street, Brooklyn, New York

IMPACT ENVIRONMENTAL | 170 Keyland Court | Bohemia | New York | 11716 | 631.269.8800

DAILY STATUS REPORT

Prepared by: _____

WEATHER	Snow		Rain		Overcast		Partly Cloudy		Bright Sun	
TEMP.	< 32		32-50		50-70		70-85		> 85	

DEC Project. No.		DEC Site No.		Date:	
Project Name:					

Environmental Consultant: Impact Environmental Closures, Inc 170 Keyland Court Bohemia, NY 11716.	**Environmental Safety Officer:**
General Contractor:	**Site Manager/ Supervisor:**
Work Activities Performed (Since Last Report)	
Working In Area:	

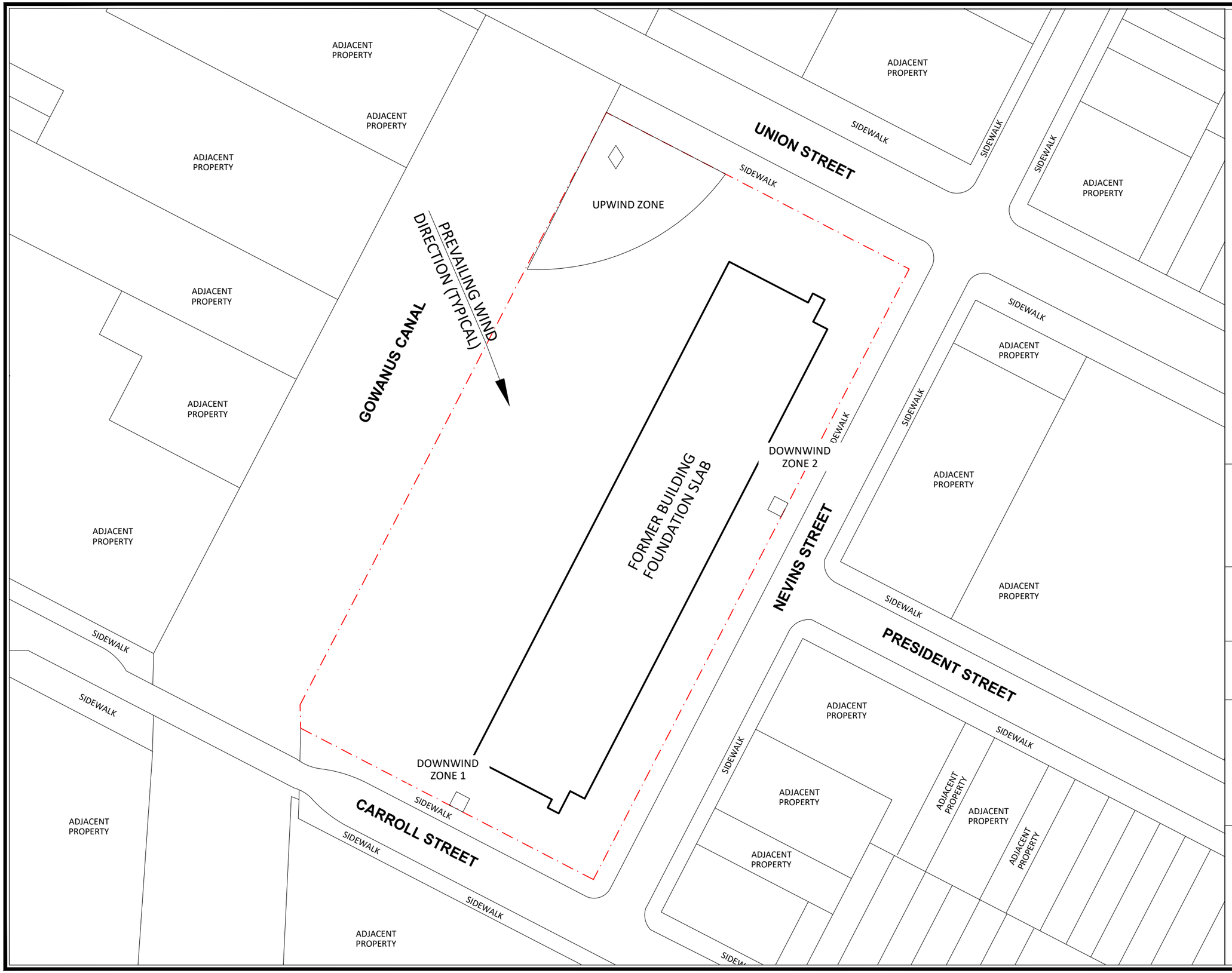
Samples Collected (Since Last Report):
Air Monitoring (Since Last Report): Prestart Conditions – PID = ___0.0__ppm, Dust = _____ mg/m^3@ High Conditions – PID = __0.0__ ppm @ Dust = __mg/m^3 @
Problems Encountered:
Planned Activities for the Next Day/ Week:

SOIL DISPOSAL INFORMATION

Facility #: **Name/ Location:** **Type of Waste:**	Facility:		Facility:		Facility:	
(# of Trucks, # of Cu.Yds.)	Trucks	Cu. Yds.	Trucks	Cu. Yds.	Trucks	Cu. Yds.
Today						
Weekly Total						
Total to Date						

SOIL IMPORTED INFORMATION

Facility #: **Name/ Location:** **Type of Import:**	Facility:		Facility:		Facility:	
(# of Trucks, # of Cu.Yds.)	Trucks	Cu. Yds.	Trucks	Cu. Yds.	Trucks	Cu. Yds.
Today						
Weekly Total						
Total to Date						



NOTES:

CAMP ZONE MAP

318 Nevins Street
Brooklyn, New York

Figure

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	JDF
DATE:	05/02/2023
SCALE:	1" = 60'

REVISIONS

IMPACT ENVIRONMENTAL ENGINEERING AND GEOLOGY PLLC
170 KEYLAND COURT
BOHEMIA, NEW YORK 11716
TEL (631) 269-8800
FAX (631) 269-1599

Site Grid Map

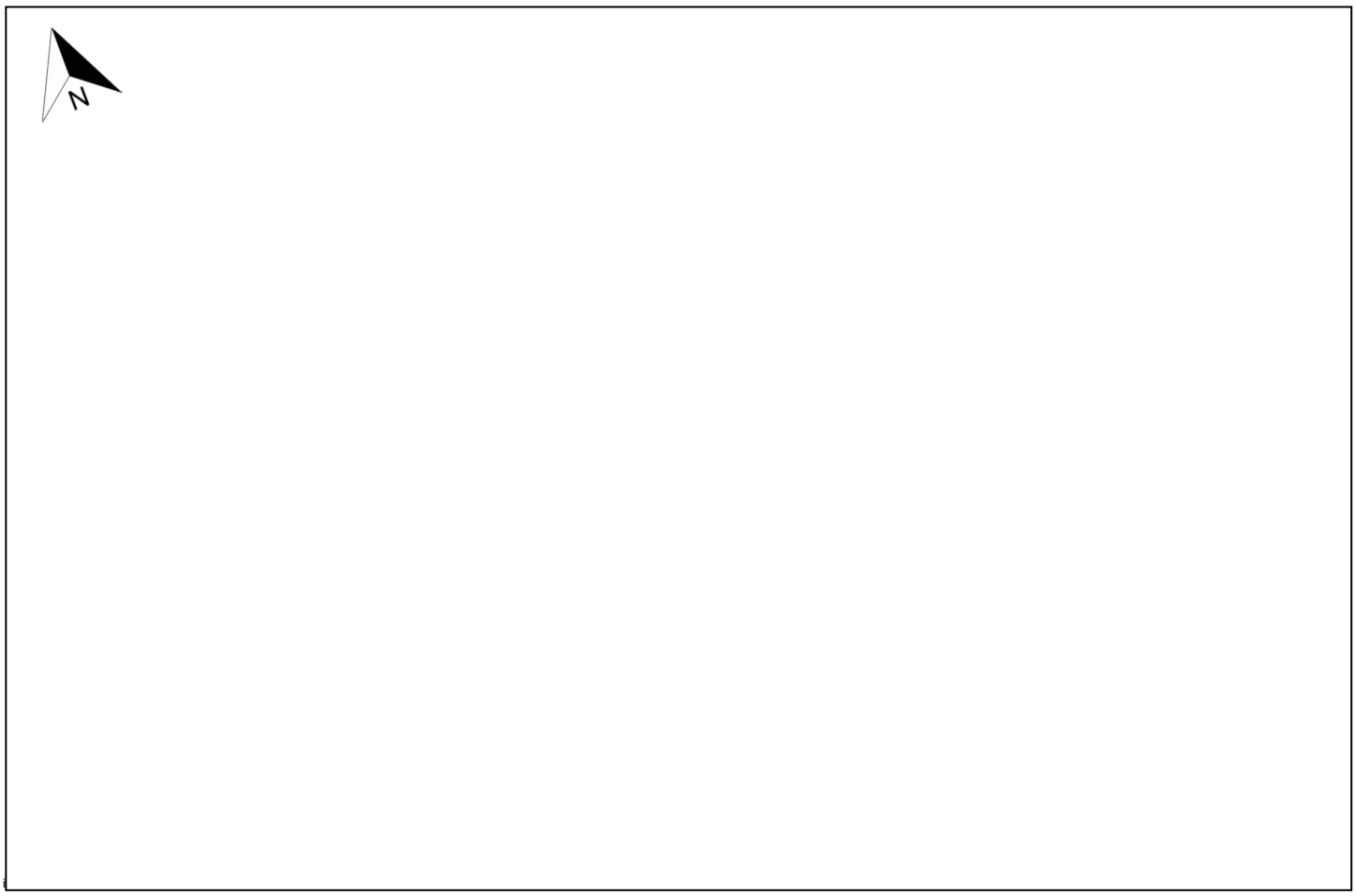


Photo Log

Photo 1 –	
Photo 2-	

Photo 3 –	

APPENDIX B
On-site Dust and Volatile Organic Vapor Monitoring Log

318 Nevins Street, Brooklyn, New York

On- Site Dust and Volatile Organic Vapor Monitoring

Project: _____ Job No.: _____

Location: _____ On-site Personnel: _____

Day & Date: _____ Weather: _____

	AM	PM	Sample Interval: 15 minutes
Wind Direction			Background Reading (particulates) **mg/m^3**
Temperature Range:		°F	Background Reading (organic vapors) **ppm**

Calibration Dates: Particulate Meters: Photoionization Detector:

Action Level/Response: Organic vapors: > 5ppm above background levels/ 15 minute readings

Particulates: 0.100 mg/m^3 above up wind reading/15 minute period

Time	Particulate levels:		ORGANIC VAPOR LEVELS	NOTES
	UPWIND (mg/m^3)	DOWNWIND (mg/m^3)	(ppm)	
0700				
0715				
0730				
0745				
0800				
0815				
0830				
0845				
0900				
0915				
0930				
0945				
1000				
1015				
1030				
1045				
1100				
1115				
1130				
1145				
1200				

Project: _____ Job No.: _____

Location: _____ Day & Date: _____

Time	Particulate levels:		ORGANIC VAPOR LEVELS	NOTES
	UPWIND (mg/m^3)	DOWNWIND (mg/m^3)	(ppm)	
1215				
1230				
1245				
1300				
1315				
1330				
1345				
1400				
1415				
1430				
1445				
1500				
1515				
1530				
1545				
1600				
1615				
1630				
1645				
1700				

Appendix K

Site Exterior Hardscape and Landscape Plans

Remedial Action Work Plan
318 Nevins Street, Brooklyn, NY
NYSDEC BCP #C224350

Impact Environmental Engineering and Geology PLLC
170 KEYLAND COURT, BOHEMIA, NEW YORK 11716
TEL (631) 269-8800 ▪ FAX (631) 269-1599

JAMES
CORNER
FIELD
OPERATIONS

300 NEVINS STREET WATERFRONT

300 NEVINS STREET, BROOKLYN, NY

DRAWING INDEX

T-001.00 TITLE SHEET

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B 439-1-TO SURVEY

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300 NEVINS ST.
BROOKLYN, NY 11215

OWNERSHIP

CHARNEY COMPANIES
5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

LANDSCAPE ARCHITECT

JAMES
CORNER
FIELD
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4 Bryant Park, 11th Floor, New York, NY 10018

FOR REFERENCE:

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TEL 212.929.5656

MARINE ENGINEER

MCLAREN ENGINEERING GROUP
131 WEST 35TH STREET4TH FLOOR
NEW YORK, NY 10001
TEL 201.775.6000

KEY PLAN

SEAL

NOT FOR CONSTRUCTION

ISSUANCE

NO.	DESCRIPTION	DATE
1	DLUA 1 SUBMISSION	8/5/2022
2	DLUA 2 SUBMISSION	10/21/2022

PROJECT NAME:
300 NEVINS STREET
300 NEVINS ST.
BROOKLYN, NY 11217

JOYO PROJ.#
2119

PROJECT PHASE:
WPAA

DESIGNED BY: JW
DRAWN BY: JW
CHECKED BY: KT, BH

SCALE NORTH

VERT: N/A
HORZ: NTS

SHEET STYLE
COVER

SHEET NUMBER
T-001.00

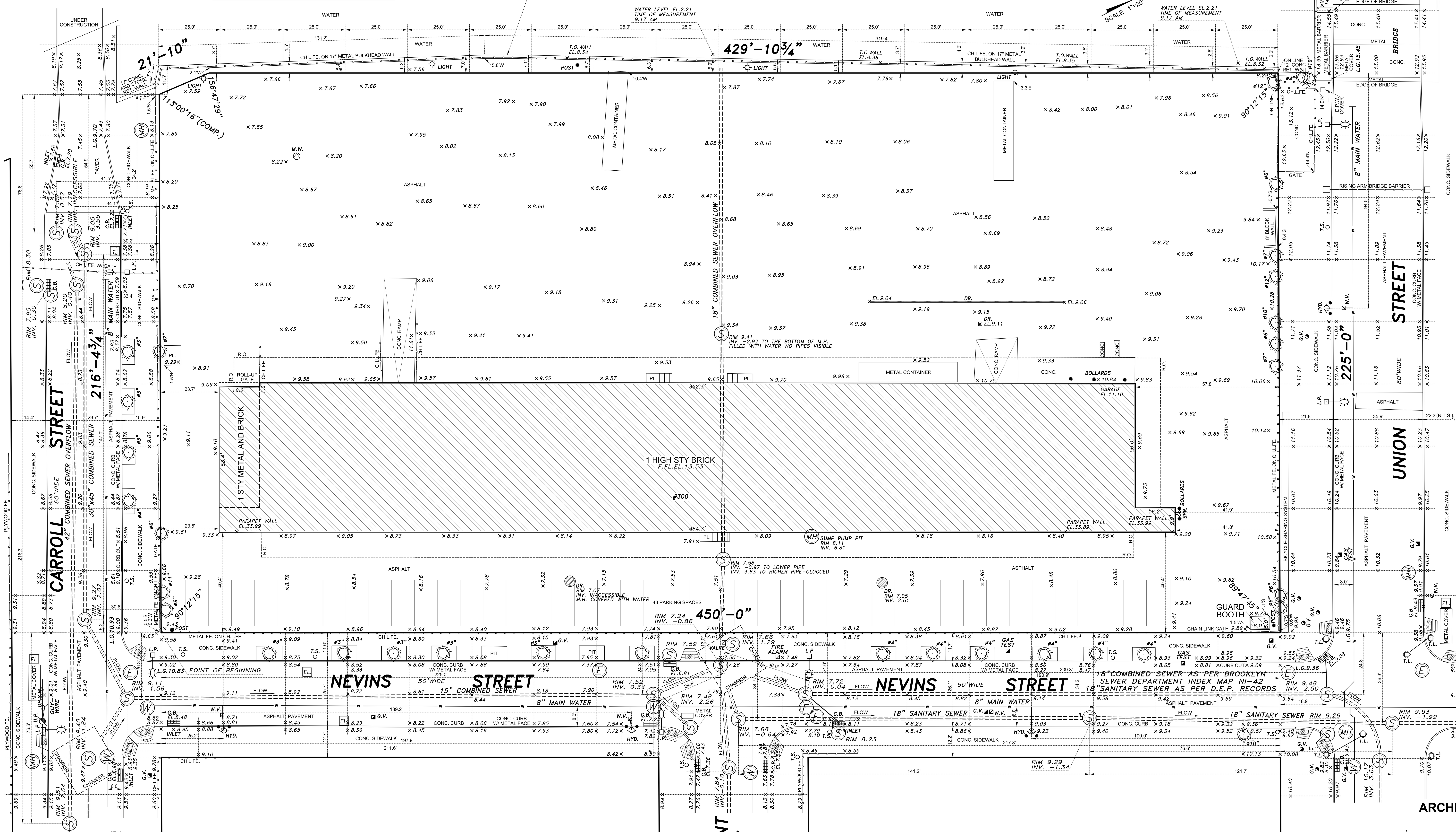
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JOB NO. B 439-1-TO

SURVEYED ON: AUGUST 21, 2021

FLOOD NOTE

BY GRAPHIC PLOTTING ONLY, SUBJECT PROPERTY IS LOCATED IN
ZONE AE (EL. 10 - NGVD 1929, EL. 8.92 - NAVD 1988, EL. 7.45 - BROOKLYN DATUM)
AS SHOWN ON THE FLOOD INSURANCE RATE MAP FOR COMMUNITY PANEL NUMBER
360 497 0211 F WHICH BEARS AN EFFECTIVE DATE OF SEPTEMBER 5, 2007.
ZONE AE (EL.10 - NAVD 1988, EL. 11.1 - NGVD 1929, EL. 8.55 - BROOKLYN DATUM)
AS SHOWN ON THE PRELIMINARY FEMA MAP PANEL NUMBER
360 497 0211 G REVISED ON JANUARY 30, 2015.



PRESIDENT STREET 60'WIDE

LOT AREA	
Area of Lot 1	101163.35 sq.ft.
Area between bulkhead and property line	2288.35 sq.ft.
Total area of "zoning lot" per note No. 9	103451.70 sq.ft.

LOT AREA = 101163.35 sq.ft. = 2.3224 acre

GRAPHIC SCALE

ALL WRITTEN MEASUREMENTS AND OFFSETS NOTED ON THIS SURVEY SUPERSEDE MEASUREMENTS SCALED OF THIS PLOT.

SCALE 1:20

0 5 10 15 20 25 30 35 40 45 50 100

GENERAL NOTES

1. SUBSURFACE UTILITIES ARE NOT GUARANTEED BY SURVEYOR. HIGH CAUTION RECOMMENDED AND VERIFICATION WITH PROPER CITY AGENCIES, IS MANDATORY BEFORE COMMENCING ALL NEW WORK.

2. ALL SUBSURFACE AND OVERHEAD UTILITIES (AS TO SIZE , TYPE AND DEPTH) SHOWN ON THIS SURVEY ARE TAKEN FROM RECORDS OF GOVERNMENTAL AGENCIES AND UTILITY COMPANIES, UNLESS OTHERWISE NOTED AND SHOWN.

3. COVER OR DEPTH OF UTILITIES WHICH DERIVED FROM FIELD MEASUREMENTS SHOWN ON THIS SURVEY SHOULD BE VERIFIED WITH PROPER AGENCY PRIOR TO CONSTRUCTION OF PROJECT. INVERT ELEVATIONS ARE DERIVED FROM CITY AGENCY RECORDS WHEN NOT AVAILABLE BY FIELD SURVEY AND NOTED AS "PER RECORD" ON THE SURVEY.

4. ALL SUBSURFACE UTILITY AS TO LOCATION AND DEPTH, SHOULD BE RECHECKED AND LEGAL GRADES SHOULD BE VERIFIED WITH THE TOPOGRAPHICAL BUREAU, PREFERABLY IN WRITING BEFORE COMMENCING CONSTRUCTION.

5. THIS IS TO CERTIFY THAT THERE ARE NO STREAMS OR NATURAL WATER COURSES ON THE SURVEYED PROPERTY EXCEPT AS SHOWN AND/OR DESCRIBED ON THIS SURVEY.

6. ALL OPERATIONS OF UNDERGROUND FACILITIES AND ALL EXCAVATORS ARE OBLIGATED TO COMPLY WITH ARTICLE 36 OF THE GENERAL BUSINESS LAW AND WITH PROVISIONS OF INDUSTRIAL CODE PART (RULE NO.35) BEFORE ANY EXCAVATION OR DEMOLITION IS COMMENCED. EVERY EXCAVATOR IS REQUIRED BY THESE LAWS TO GIVE ADVANCE NOTICE TO EVERY OPERATOR OF UNDERGROUND FACILITIES OF HIS INTENT TO PERFORM EXCAVATION OR DEMOLITION WORK IN THE SPECIFIED AREA.

7. ALL ELEVATIONS SHOWN REFER TO THE NAVD 1988 DATUM. TO OBTAIN:
- NGVD 1929 DATUM - ADD 1.098 FEET
- BROOKLYN BOROUGH DATUM - SUBTRACT 1.447 FEET

8. EASEMENTS IF ANY ARE NOT SHOWN ON THIS SURVEY. NO INFORMATION PROVIDED TO SURVEYOR AT THIS TIME.

9. AREA OF ZONING LOT IS LISTED FOR ZONING PURPOSES ONLY IN ACCORDANCE WITH SECTIONS 139-021, 139-224, AND 139-51(f) OF THE NYC ZONING RESOLUTION.

GUARANTEED TO:			
COUNTY: KINGS		CITY: BROOKLYN	
SECTION:	BLOCK: 439	LOT(S): 1	
PROPERTY ADDRESS: 300 NEVINS STREET			

SYMBOLS AND ABBREVIATIONS

FENCE	CH.L.FE. / WOOD FE.
UTILITY POLE	U.P.
PARKING METER	P.M.
OIL FILL	O.F.
MONITORING WELL	M.W.
TRAFFIC LIGHT	T.L.
LIGHT	
STREET LIGHT	L.P. / L.P.
FIRE HYDRANT	HYD.
SIAMESE CONNECTION	SPR.
SHUT OFF VALVE	G.V. / G.V. / W.V. / W.V.
HANDICAPPED PARKING	
EXISTING TREE	ø12"
DRAINS	DR. / DR.
ROOF OVER	R.O.
EXISTING ELEVATIONS	×43.15 TOP OF CURB ×42.93 BOTTOM OF CURB / ×43.78
CITY ESTABLISHED GRADES	L.G.7.52
CURB AND CURB CUT	C.C.
OVERHEAD SERVICE	OH.S.W.
CABLE TV MANHOLE	CTV
MANHOLES	MH E T W S RIM EL. INV.EL.
CATCH BASIN	C.B. / C.B.
FIRE ESCAPE	F.E.
PLATFORM	PL. or PLTF.
BASEMENT ENTRANCE	B.E.
CELLAR ENTRANCE	C.E.
AIR WAY	A.W.
BAY WINDOW	B.W.
CONCRETE	CONC.
OVERHANG	O.H.
AIR CONDITION	AC
METAL	MET.
NORTH OF PROPERTY LINE	N
SOUTH OF PROPERTY LINE	S
EAST OF PROPERTY LINE	E
WEST OF PROPERTY LINE	W

UNAUTHORIZED ALTERATION OR ADDITION TO THIS SURVEY IS A VIOLATION OF SECTION 7209 OF **THE NEW YORK STATE EDUCATION LAW.** COPIES OF THIS SURVEY MAP NOT BEARING THE LAND SURVEYOR'S INKED SEAL OR EMBOSSED SEAL SHALL NOT BE CONSIDERED TO BE A VALID COPY. GUARANTEES OR CERTIFICATIONS INDICATED HEREON SHALL RUN ONLY TO THE PERSON FOR WHOM THE SURVEY IS PREPARED AND ON HIS BEHALF TO THE TITLE COMPANY, GOVERNMENTAL AGENCY AND LENDING INSTITUTION LISTED HEREON, AND TO THE ASSIGNEES OF THE LENDING INSTITUTION. GUARANTEES OR CERTIFICATIONS ARE NOT TRANSFERABLE TO ADDITIONAL INSTITUTIONS OR SUBSEQUENT OWNERS.

UNDERGROUND UTILITIES NOTES

UNDERGROUND, OVERHEAD AND GROUND LEVEL UTILITIES ARE NOT GUARANTEED AS TO ACCURACY, EXACT LOCATION, TYPE OR USE, ACTIVE OR INACTIVE. VERIFICATION IS MANDATORY WITH MUNICIPAL AGENCIES, PUBLIC AND PRIVATE UTILITY COMPANIES PRIOR TO TAKING TITLE AND OR DESIGN WORK. BOUNDARIES ARE NOT GUARANTEED UNLESS SO NOTED.

ALL OPERATIONS OF UNDERGROUND FACILITIES AND ALL EXCAVATORS ARE OBLIGATED TO COMPLY WITH ARTICLE 36 OF THE GENERAL BUSINESS LAW AND WITH PROVISIONS OF INDUSTRIAL CODE PART (RULE NO. 35) BEFORE ANY EXCAVATION OR DEMOLITION IS COMMENCED. EVERY EXCAVATOR IS REQUIRED BY THESE LAWS TO GIVE ADVANCE NOTICE TO EVERY OPERATOR OF UNDERGROUND FACILITIES OF HIS INTENT TO PERFORM EXCAVATION OR DEMOLITION WORK IN THE SPECIFIED AREA

ARCHITECTURAL SURVEY

PREPARED BY

PERFECT POINT
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DATE: AUGUST 21, 2021

N.Y.S. L.L.S. 049844

300 NEVINS WATERFRONT PUBLIC ACCESS AREA
Waterfront Zoning Regulations

WPAA ZONING ACTIONS

Waterfront Certification, Pursuant to ZR §62-811(b) Certification for waterfront public access & visual corridors.

Block/Lot	Brooklyn Block 439, Lot 1
Zoning District	M1-4/R7-2
Special District	Special Gowanus Mixed-Use District, Subdistrict C
WAP Designation	Parcel 5
Zoning Lot Area per ZR 139-021, 139-224, 139-51(f):	103,451.70 sf
Calculation of Zoning Lot Area:	- Lot area within property line: 101,163.34 sf - Area of bulkhead between 2,288.35 sf
Maximum floor area permitted per 139-211 & 139-212:	103,451.70 sf x 5.0 = 517,258.50 sf
	Provided
WPAA Area	20,953 sf
SPW Area	13,503 sf
Upland Connection Area	7,450 sf
PAA Area	634 sf

ZR SECTION(S)	ITEM	REQUIRED	PROVIDED	COMPLIANCE WAIVER	DRAWING REFERENCE
WATERFRONT YARDS					
62-332					
139-224	Waterfront yard	A waterfront yard shall be provided in accordance with the provisions of Section 62-332 (Rear yards and waterfront yards) on all waterfront zoning lots, as that term is defined in Section 62-11, regardless of use. The depth of the waterfront yard shall be measured from the zoning lot line adjoining the Gowanus Canal, or where the provisions of paragraph (f) of Section 139-51 (Area-wide Modifications) are utilized, from the bulkhead. The depth of the waterfront yard may be reduced as set forth in Section 62-332.	Project Site is a waterfront zoning lot and a waterfront yard is provided along the entire length of the bulkhead line adjoining the Gowanus Canal pursuant to the provisions of paragraph (f) of Section 139-51.	Complies	See L-011
62-332 (a) **139-224** **139-521**	Depth of the waterfront yard	On Parcel 5 where a shore public walkway is required, such shore public walkway shall have a minimum width of 30 feet. The required minimum depth of a waterfront yard shall be 30 feet. The depth of the waterfront yard shall be measured from the zoning lot line adjoining the Gowanus Canal, or where the provisions of paragraph (f) of Section 139-51 (Area-wide Modifications) are utilized, from the bulkhead. The depth of the waterfront yard may be reduced as set forth in Section 62-332.	Project site is on Parcel 5. Waterfront yard is 30 feet deep measured from the bulkhead line adjoining the Gowanus Canal pursuant to the provisions of paragraph (f) of Section 139-51.	Complies	See L-011
62-332 (b)	Level of waterfront yard	The level of the waterfront yard is established by the elevation at the top of the adjoining existing bulkhead. (2) For zoning lots with a required WPAA which adjoins a street, the level of the waterfront yards may be raised to a higher elevation, except at the following locations: i. Within 15 feet of the street line, the level of the waterfront yard must be within three feet above the level of the adjoining street or WPAA; and at the street line, the width of the required circulation path must be wider than 10 feet. The elevation of the required circulation path shall be no higher than the grade of the adjacent street, public park, or zoning lot at the lot line. Union Street elevation at +12.63'. Waterfront yard within 15 feet shall not exceed elevation +15.63'. Carroll Street elevation at +8.13'. Waterfront yard within 15 feetshall not exceed elevation +11.13'.	Level of the waterfront yard within 15' of Union Street does not exceed +15.63'. At the Union Street street line, the width of the required circulation path is wider than 10 feet. Level of the waterfront yard within 15' of Carroll Street does not exceed +11.13'. At the Carroll Street street line, the width of the required circulation path is wider than 10 feet.	Complies	See L-140
62-332 (c)	Permitted obstructions	No building or other structure shall be erected above the lowest level of a waterfront yard. Permitted obstructions in waterfront yards in all districts shall include permitted obstructions as listed in Sections 23-44 (Permitted Obstructions in Required Yards or Rear Yard Equivalents) and 62-611, except that enclosed accessory off-street parking spaces and walls exceeding four feet in height shall not be permitted. Where any power systems, including, but not limited to, generators, solar energy systems, fuel cells, batteries and other energy storage systems, are located in a front yard, the entire width of the portion of such equipment facing a street, whether open or enclosed, shall be fully screened by vegetation.	No buildings or structures, power systems, generators, solar energy systems, fuel cells, batteries and other energy storage systems are proposed in the waterfront yard area. Obstructions in the WPAA are limited to permitted obstructions listed in ZR Sections 23-44 and 62-611.	Complies	See L-110
62-332(c) **139-51(a)**		In addition, the following rear yard obstructions shall not be permitted except when accessory to single or two-family residences in detached, semi-detached or zero lot line buildings: Greenhouses, non-commercial, accessory; Parking spaces, off-street, open or enclosed, accessory; Swimming pools, accessory; Terraces or porches, open	No greenhouses, non-commercial, accessory parking spaces, off-street, open or enclosed, accessory; Swimming pools, Terraces or porches are proposed within the waterfront yard area.	Complies	See L-110
LOCATIONS OF VISUAL CORRIDORS					
62-511					
62-511 (a)	Visual Corridor methodology	Mapped street lines which extend seaward from the first upland street (Nevins Street) shall be designaged as a visual corridor if the prolonged street lines intersect the shoreline at an angle of 45 degrees or more and there are no existing obstructions blocking 50 percent or more of the width of the visual corridor. Mapped streets terminating at the first upland street (Nevins Street) shall be designated as a visual corridor unless there is an existing mapped street extending to the water within 400 feet and its elimination does not result in a condition whereby visual corridors through the zoning lot or to either side of the zoning lot are more than 600 feet apart.	Two visual corridors are provided - One at Union Street and a second at Carroll Street. Union Street and Carroll Street are less than 450 ft apart.	Complies	See L-011 and Visual Corridor Diagram
62-512	Dimensions of Visual Corridor	The width of the visual corridor shall be determined by the width of the street, minimum 50' wide	Union Street VC is 80' wide Carroll Street VC is 60' wide	Complies	See L-011
139-53	Level of Visual Corridor	The lowest level of a visual corridor shall be determined by establishing a plane connecting the two points along the street lines from which the visual corridor emanates at an elevation five feet above curb level with the two points where the prolonged street lines intersect the shoreline, stabilized natural shore, bulkhead, upland edge of a waterfront yard raised pursuant to the provisions of paragraph (b) of Section 62-332, or the base plane of a pier or platform, whichever intersection occurs first. Such plane shall then continue horizontally seaward from the line of intersection.	Both existing Carroll and Union Streets are mapped streets. Level of each VC to remain at existing elevation of Carroll and Union Streets unless otherwise altered by DOT.	Complies	See L-011
62-513	Permitted Obstructions in Visual Corridor	No building or other structure shall be erected within the width of a visual corridor above its lowest level, as established pursuant to Section 62-512 (Dimensions of visual corridors), except for: (a) No shade trees within 15' of center line of VC; (b) Permitted obstructions listed in Section 23-44; (c) Boats, ships or other vessels, and floating structures permitted by paragraph (a) of Section 62-25; (d) Any moving or parked vehicles; (e) Street furniture, including but not limited to, carts and open display booths; (f) Swimming pools	No building or other structure in VC other than permitted obstructions set forth in 62-513	Complies	See L-011
APPLICABILITY OF WATERFRONT PUBLIC ACCESS REQUIREMENTS					
62-52		Waterfront public access shall be provided for all waterfront zoning lots with a lot area of at least 10,000 square feet and a shoreline of at least 100 feet that are developed	Project site is a waterfront zoning lot with a lot area of 103,451.70 sf and shoreline length of approximately 450 feet.	Complies	See L-011
REQUIREMENTS FOR SHORE PUBLIC WALKWAY					
62-53					
62-53(a) **Gowanus WAP - Appendix B, Map 2**	Shore Public walkway	(a) All waterfront zoning lots meeting the criteria set forth in Section 62-52 (Applicability of Waterfront Public Access Area Requirements) shall provide a shore public walkway, which shall comply with the following requirements:	Shore Public Walkway is provided along the bulkhead line adjoining the Gowanus Canal	Complies	See L- 011
62-53(a)(1)	Contiguous edge	(1) Such shore public walkway shall have a seaward edge contiguous with the seaward edge of the waterfront yard as established in Section 62-332 (Rear yards and waterfront yards), as modified by 139-224, with a minimum width measured from such edge as set forth in paragraph (a)(2) of this Section, or for floating structures, as set forth in Section 62-55, unless relocation or modification of width is permitted pursuant to this Section;	Shore Public Walkway is contiguous with seaward edge of the waterfront yard	Complies	See L- 011
139-521	Width	On Parcel 5, where a shore public walkway is required, such shore public walkway shall have a minimum width of 30 feet.	The project site is on Parcel 5. Shore Public Walkway is 30' wide.	Complies	See L- 011
62-53(a)(3)(i)	Shallow lots	(i) on shallow portions of zoning lots that are less than 150 feet in depth, the minimum width of a shore public walkway may be reduced by one foot for every two feet that the lot dimension, measured from such edge, is less than 150 feet.	Lot depth is greater than 150'	NA	
62-53(a)(3)(ii)	Narrow platforms	(ii) on narrow portions of platforms that are less than 150 feet in depth between the water edges located perpendicular to the landward edge of such platform, the minimum width of such shore public walkway along each opposite edge may be reduced by one foot for every two feet that the platform dimension is less than 150 feet.	NA	NA	
62-53(a)(3)(iii)	Wetlands	On zoning lots where a tidal wetland area is provided, the width of the shore public walkway may be reduced by a foot for every foot of tidal wetland area along the seaward edge of the waterfront yard up to seven feet. Such reduction in depth shall not extend along more than 30 percent of the shoreline of the waterfront zoning lot.	no tidal wetland provided	NA	
62-53(b)(1)	Wetlands	(1) further landward within the designated wetlands or its adjacent regulated area in accordance with an approval from the New York State Department of Environmental Conservation, in which case its width and design shall be determined by such agency; or	NA	NA	
62-53(b)(2)		(2) immediately adjacent and contiguous to the landward boundary of the wetlands area and any State-regulated adjacent area at the same elevation, in which case its width shall be measured from the seaward edge, as relocated.	NA	NA	
62-53(c)	Connection	(c) Shore public walkways shall be accessible from a public sidewalk within a street, public park or other accessible open public place, according to the provisions of Section 62-56 (Requirements for Upland Connections). Shore public walkways shall connect with shore public walkways on adjoining zoning lots.	Shore Public Walkway is accessible from public streets and is connected to Union and Carroll Streets	Complies	See L-011 & L-110
62-53(d)	Zoning lot divided by a boundary between districts	(d) Whenever a zoning lot is divided by a boundary between districts, each portion of the shore public walkway shall be governed by the width requirement specified for the district in which it is located. However, the total area of required shore public walkway, in square feet, may be distributed anywhere in the waterfront yard, provided that the shore public walkway is at no point narrower than the lesser of the widths required by each district.	NA	NA	
REQUIREMENTS FOR PUBLIC ACCESS ON PIERS					
62-54(a)	Public access on piers	(a) All developments on zoning lots containing piers shall provide waterfront public access areas that meet the provisions of this Section.	NA	NA	
REQUIREMENTS FOR PUBLIC ACCESS ON FLOATING STRUCTURES					
62-55	Floating Structures	All developments on floating structures permitted as-of-right, pursuant to Section 62-25, shall provide waterfront public access areas in accordance with the provisions of this Section.	NA	NA	

ZR SECTION(S)	ITEM	REQUIRED	PROVIDED	COMPLIANCE WAIVER	DRAWING REFERENCE
REQUIREMENTS FOR UPLAND CONNECTION					
62-56 **Gowanus WAP - Appendix B, Map 2**	Upland Connection	All public access areas shall be accessible from open street, public park, or other public place at intervals along the shore public walkway not to exceed 600'. The Gowanus WAP requires an upland connection at the prolongation of President Street.	An upland connection is provided at the prolongation of President Street per the Gowanus WAP. All public access areas are accessible from open street, public park, or other public place at intervals along the shore public walkway not exceeding 600'.	Complies	See L-011
62-561	Types of Upland Connections	Upland connections shall be provided as a single pedestrian walkway (Type 1) or as two pedestrian walkways (Type 2).	Type 1 Upland Connection is provided as a prolongation of President Street.	Complies	See L-011
62-561 (a)	Single Pedestrain Walkway Type 1 Upland Connection	The minimum width of an upland connection provided in the form of a single pedestrian walkway shall be 30'	Minimum 30' wide Type 1 Upland Connection is provided.	Complies	See L-011
62-561 (a)(1)	Type 1 UC - entry area	Within 15 feet of entry area, the minimum width of the Type 1 UC must be 50 feet. Beyond the entry area, the minimum width of the Type 1 UC must be 30 feet.	50' wide UC provided within 15' of entry area. Minimum 30' wide UC provided beyond the entry area.	Complies	See L-011
62-561 (a)(2)	Type 1 UC- open area	Where an upland connection does not coincide with a visual corridor, a 20 foot wide open area shall be required seaward of the entry area, and shall extend along the entire remaining length of the upland connection but need not be publicly accessible. This open area may be located on either side of the upland connection or aggregated in any combination, so that the total width of the open area, at any point along the upland connection, is 20 feet. Such increased widths may be modified in accordance with the reduced minimum width provisions in paragraph (a)(1) of this Section.	20' wide open areas are provided seaward of the entry area.	Complies	See L-011
62-561 (a)(3)	Type 1 UC - weighted average	Where an upland connection traverses portions of a zoning lot located in districts in which different width requirements apply, the width of the upland connection shall be computed as the weighted average based on the length of the upland connection in each district.	NA	NA	
62-561 (b)	Two Pedestrain Walkway Type 2 Upland Connection	Minimum width of an Upland Connection provided in the form of two paths shall be 13 feet each side. Where it abuts a turnaround, walkway shall be 10 feet.	No upland connection Type 2 provided.	NA	
REQUIREMENTS FOR SUPPLEMENTAL PUBLIC ACCESS AREA					
62-57					
62-57(a)	Supplemental Public Access Area	(a) If the aggregate area of the required shore public walkways, upland connections, public access areas on piers, and public access areas in conjunction with floating structures on the zoning lot, is less by 750 square feet or more than the amount of waterfront public access area required by the table in this Section, then supplemental public access areas shall be provided in order to meet the total amount of waterfront public access area required by the table. However, when a zoning lot is developed predominantly as a playground or publicly accessible private park, the requirements of this Section shall be deemed to be satisfied by such use.	SPAA is not required	Complies	See L-011
139-51(c)(1)	Area-wide modifications - Minimum required WPAA	The provisions of Section 62-57 (Requirements for Supplemental Public Access Areas) are modified so that, in mixed use districts, a total waterfront public access area equivalent to 20 percent of the lot area is required. Total area of zoning lot per 139-021, 139-224, 139-51(f): 103,451.70 sf Required minimum area of WPAA: 103,451.70 sf x 20% = 20,690.34 sf	Provided WPAA area is 20,953 sf (20.3%) Provided SPW : 13,503 sf Provided UC : 7,450 sf Total provided WPAA : 13,503 sf + 7,450 sf = 20,953 sf (20.3%)	Complies	See L-011
139-51(f)	Area-wide modifications - Bulkheads	Wherever the United States Environmental Protection Agency requires the installation of a bulkhead in a location seaward of the zoning lot line, the area located between the lot line and bulkhead may be utilized for the purposes of satisfying the waterfront public access area requirements of the zoning lot. Where the provisions of this paragraph (f) are utilized, the location of the bulkhead shall be considered the shoreline for the purposes of providing the required waterfront public access areas.	The area between the zoning lot line and the bulkhead will be utilized for the purposes of satisfying the WPAA requirements.	Complies	See L-011
139-51(c)(3)	Area-wide modifications - Comfort stations	Where a publicly accessible comfort station is provided as part of a development, the amount of supplemental public access area may be reduced by an amount equal to the size of the comfort station, provided that: (i) the comfort station has an entrance fronting upon a waterfront public access area; and (ii) a restrictive declaration, acceptable to the Department of City Planning and Department of Parks and Recreation, shall be executed and recorded, binding the owners, successors and assigns to provide and maintain such comfort station for the life of the development.	No comfort stations are provided.	NA	
62-57(b)	NYSDEC	(b) Where supplemental public access areas are required within New York State-designated wetlands or adjacent State-regulated areas, the area requirements and the design standards for such supplemental public access areas may be reduced or modified by the New York State Department of Environmental Conservation.	SPAA is not required	NA	
62-57(c)	Different district with different thresholds	(c) Whenever a zoning lot is divided by a boundary between districts in which different thresholds apply pursuant to the table in this Section, the waterfront public access area requirement shall be met for the entire zoning lot, provided that: (1) the lot area or length of shoreline in either district is less than the minimum threshold for which there is a total waterfront public access area requirement; and (2) the total lot area or length of shoreline for the entire zoning lot is greater than the lowest threshold in either district for which there is a total waterfront public access area requirement. Each portion of the zoning lot shall generate a total waterfront public access area requirement based on the percentage required in the table for the district in which it is located.	NA	NA	
GENERAL PROVISIONS APPLYING TO WATERFRONT PUBLIC ACCESS AREAS					
62-61					
62-61(a)	Obstruction	(a) All waterfront public access areas shall be unobstructed from their lowest level to the sky, except as set forth in Section 62- 611 (Permitted obstructions).	There are no obstruction from lowest level to the sky except as allowed under ZR 62-611	Complies	See L-011 & L-110
	Elevation	The lowest level of any portion of a waterfront public access area shall be determined by the elevation of the adjoining portion on the same or an adjoining zoning lot or the public sidewalk to which it connects. Reference elevations shall be established from the public sidewalks, waterfront yard levels and the elevations previously established by adjoining zoning lots at lot line intersections of a waterfront public access network, as applicable.	The Waterfront Public Access Area elevation is connected to public sidewalks of Union and Carroll Streets.	Complies	See L-140
62-61(b)	Circulation connection	(b) The minimum required circulation path shall be connected and continuous through all waterfront public access areas on adjacent zoning lots.	Circulation path is connected to adjacent streets, and street ends along the waterfront	Complies	See L-011 & L-110
62-61(c)	Accessibility	(c) Waterfront public access areas shall be accessible to persons with physical disabilities in accordance with the Americans with Disabilities Act and the American National Standards Institute (ANSI) design guidelines.	Waterfront is accessible	Complies	See L-140
62-61(d)(1)(i)	Grading - cross slope	(d) All waterfront public access areas improved for public access shall meet the following regulations for site grading: (1) In required circulation paths: (i) for cross-sectional grading regulations (perpendicular to the general direction of pedestrian movement), the minimum slope of a required circulation path shall be 1.5% to allow for positive drainage and the maximum slope shall be 3%. Steps and stairways accommodating a cross-sectional grade change are only permitted outside of the required circulation path(s).	Cross slope on circulation paths range from 1.5% to 2%. Steps in WPAA do not have a cross-sectional grade change.	Complies	See L-140
62-61(d)(1)(ii)	Longitudinal grading / steps and ramps	(ii) for longitudinal grading controls (parallel to the general direction of pedestrian movement), grade changes shall be permitted along the length of a required circulation path by means of steps or ramps in compliance with the requirements for handicapped accessibility.	Steps and ramps are ADA compliant. Required circulation paths are ADA compliant	Complies	See L-140
139-51(b)(4)	Grade change	In required planting areas, including screening buffers: Within five feet of the edge of any planting area, the grade level of such planting area shall be no more than 36 inches higher or lower than the adjoining level of the pedestrian circulation path.	Planted areas within 5ft from it's edge are 0'-3' above adjacent paths	Complies	See L-140
62-61(e)	Vehicular access	(e) Vehicle and emergency access Vehicular access is prohibited within waterfront public access areas except for emergency and maintenance vehicular access. Parking areas, passenger drop-offs, driveways, loading berths and building trash storage facilities are not permitted within, or allowed to be accessed or serviced through, a waterfront public access area, except for vehicular access to drop-offs and other required services accessory to docking facilities or to development on a pier or floating structure. Such vehicular ways shall be used only to provide access across the shore public walkway.	No vehicular access permitted except for emergency and maintenance vehicles.	Complies	See L-011 & L-110
	(e) Driveway width and material	No single driveway shall exceed a width of 25 feet. Bollards shall be installed in accordance with Section 62-651.	There are no driveway in the WPAA	NA	

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BROOKLYN, NY 11215

OWNERSHIP

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KEY PLAN

REAL

NOT FOR CONSTRUCTION

ISSUANCE

NO.	DESCRIPTION	DATE
1	DLUA 1 SUBMISSION	8/5/2022
2	DLUA 2 SUBMISSION	10/21/2022

PROJECT NAME
300 NEVINS STREET
300 NEVINS ST.
BROOKLYN, NY 11217

JCFO PROJ.#
2119

PROJECT PHASE:
WPAA

DESIGNED BY: JW
DRAWN BY: JW
CHECKED BY: KT, BH

SCALE NORTH

VERT: N/A
HORZ: N/A

SHEET TITLE
ZONING CALCULATION CHART 01

SHEET NUMBER
L-001.00

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ZR SECTION(S)	ITEM	REQUIRED	PROVIDED	COMPLIANCE WAIVER	DRAWING REFERENCE
PERMITTED OBSTRUCTIONS					
62-611					
62-611(a)	Permitted obstructions in all area except in circulation paths	Waterfront public access areas shall be unobstructed from their lowest level to the sky except that the obstructions listed in this Section shall be permitted, as applicable. However, no obstructions of any kind shall be permitted within a required circulation path., except as specifically set forth herein. (a) In all areas (1) Trees and other plant materials, including grasses, vines, shrubs and flowers, watering equipment, arbors, trellises, observation decks, retaining walls; (2) Seating, litter receptacles, drinking fountains, other outdoor furniture; (3) Fountains, reflecting pools, waterfalls, sculptures and other works of art, temporary exhibitions; (4) Guardrails, bollards, gates and other protective barriers, in accordance with Section 62-651; (5) Lights and lighting stanchions, flag poles, exercise and other recreational equipment; (6) Kiosks and open air cafes	WPAA is unobstructed from the lowest level to the sky except for obstructions listed in Section 62-611 and 139-51(a)	Complies	See L-011 & L-110
		(7) Structural landscaped berms and associated flood gates, including emergency egress systems that are assembled prior to a storm and removed thereafter, provided the height of such berm does not exceed the flood-resistant construction elevation required on the zoning lot or five feet above the lowest adjoining grade of the waterfront yard established pursuant to Section 62-332 (Rear yards and waterfront yards), whichever is higher; (8) Temporary flood control devices and associated permanent fixtures, including emergency egress systems that are assembled prior to a storm and removed thereafter. Permanent fixtures for self-standing flood control devices shall be flush to-grade, and shall be permitted obstructions within a required circulation path.	WPAA is unobstructed from the lowest level to the sky except for obstructions listed in Section 62-611 and 139-51(a)	Complies	See L-011 & L-110
139-51(a)	Permitted obstructions in all WPAA - Area-wide modifications	(1) Balconies Balconies complying with the provisions of Section 23-132 (Balconies in R6 through R10 Districts) shall be permitted obstructions in waterfront public access areas, provided the depth of obstruction is limited to four feet, and provided they are located at or above the floor level of the third story above grade of the building. (2) Sun control devices Awnings and other sun control devices shall be permitted obstructions in waterfront public access areas. However, when located at a level higher than the first story, excluding a basement, all such devices: (i) shall be limited to a maximum projection from a building wall of 2 feet, 6 inches; and (ii) shall have solid surfaces that, in aggregate, cover an area no more than 30 percent of the area of the building wall (as viewed in elevation) from which they project.	WPAA is unobstructed from the lowest level to the sky except for obstructions listed in Section 62-611 and 139-51(a)	Complies	See L-011 & L-110
		(3) Kiosks Where a supplemental public access area exceeds 15,000 square feet, a kiosk shall be a permitted obstruction in such supplemental public access area with an area up to 400 square feet, including roofed areas.	WPAA is unobstructed from the lowest level to the sky except for obstructions listed in Section 62-611 and 139-51(a)	Complies	See L-011 & L-110
Section 62-611(b)	Permitted obstruction in screening buffers:	(1) Paved entrances to buildings fronting upon a screening buffer, including awnings and canopies over such entrances, seating located within 42 inches of an adjacent paved area, bicycle racks within six feet of the sidewalk of an open accessible street or within 10 feet of an upland connection; (2) Service equipment necessary for maintenance of waterfront public access areas or the functioning of adjacent structures such as watering equipment, sheds for tool storage, electrical transformers or other mechanical or electrical service devices, provided all such equipment covers no more than 100 square feet in any location and has a maximum height of 10 feet. Such obstructions shall be screened in accordance with Section 62-655 (Planting and trees); (3) Exhaust vents located on building walls fronting on the screening buffer, only if the bottom of such vent is a minimum of 10 feet above the adjacent ground level and projects no more than four inches from the building wall.	WPAA is unobstructed from the lowest level to the sky except for obstructions listed in Section 62-611 and 139-51(a)	Complies	See L-011 & L-110
Section 62-611(c)	Permitted obstruction beyond 20 ft of the shoreline:	(c) Beyond 20 feet of the shoreline Tot-lots, playgrounds, dog runs, public telephones, toilets, bicycle racks.	No tot lot, playgrounds, dog runs, public telephones and toilets are provided.	Complies	See L-011,L-110 & L 130
Section 62-611(d)	CB1 Area	In CB1 area - Any amenity accessory to docking facilities for ferries or water taxis shall be considered a permitted obstruction only where such amenity is certified by the Chairperson of the City Planning Commission in conjunction with the docking facility, pursuant to Section 62-813 (Docking facilities for ferries or water taxis in certain waterfront areas).	NA	NA	
DESIGN REQUIREMENTS FOR SHORE PUBLIC WALKWAYS AND SUPPLEMENTAL PUBLIC ACCESS AREAS					
62-62					
62-62(a)(1) **139-51(b)(1)**	Circulation and access Primary circulation path	10 ft clear primary circulation path	10' wide circulation path is provided	Complies	See L-011 & L-110
		primary circulation path located within 10 feet of the shoreline for at least 20% of the shoreline length. Shoreline length is 450' linear feet. 450' x 20% =90 linear feet required within 10' of the waterfront	110 linear feet is within 10' of the waterfront	Complies	See L-110.00
	Secondary Circulation path - optional	Min. 4.5 ft clear secondary circulation path if provided.	NA - no secdonary circulation path provided.	NA	
		When two circulations paths are parallel to each other, such paths must connect to other paths or an accessible lawn at intervals of 200 feet or less.	NA	NA	
139-51(b)(2)	Level of required circulation path	At least 80% of the length of the required circulation path must be located at a level not less than 6 ft above the shoreline. Circulation path is 484' linear feet. 484' x 80% =387 linear feet shall be located not less than 6 ft above the shoreline. Shoreline elevation (Mean Highwater Line) is +2.00'. Required circulation path elevation to be not less than +8.00'.	100% of the primary path is not less than 6 ft above the shoreline (Assuming shoreline = MHW). Primary path elevation range from +8.00' to +14.00'.	Complies	See 110 & L-140
		However, up to 40 percent of such required circulation path may be provided below such level when providing access to a "get-down" located no more than two feet above the level of the shoreline.	NA	NA	
62-62(a)(1) **139-51(b)(3)**	Access to circulation paths	In order to facilitate the future connection of pedestrian circulation paths, where a shore public walkway is on a zoning lot that is adjacent to a zoning lot without a shore public walkway, the portion of the circulation path that terminates at the common zoning lot line shall be located within 40 feet of the shoreline. In addition, for zoning lots adjoining streets containing bridge structures, the required connection of circulation paths to such a street may be waived by certification by the Department of Transportation, pursuant to Section 139-44 (Bridge Connection Requirements).	SPW connects to Union and Carroll Streets. Both streets contain bridge structures.	Complies	See L-110
62-62(a)(2)	Circulation and access - Supplemental Public Access Area	A supplemental public access area shall provide at least one circulation path with a minimum clear width of six feet that provides access throughout the supplemental public access area.	NA	NA	
62-62(b)	Seating	One linear foot for every 75 square feet of shore public walkway . 13,503sf / 75 =180 linear feet of seating required	180 linear feet of seating is provided in the SPW	Complies	See L-130
	Seating location	Up to 25 percent of required seating may be located seaward of the shore public walkway 180 lf x 25% = 45 lf may be seaward of the shore public walkway.	There are no seats seaward of the Shore Public Walkway	NA	
62-62(c)(1) **139-544(a)**	Planting areas	At least 35% (13,503 x 35%= 4,726 sf) of the area of the SPW must be planted in the form of trees, planting beds, terraced planting areas, berms, lawns, or screening buffer. Such planting area may be reduced to 30% (13,503 x 30% = 4,051 sf) if an amenity is provided in accordance with the following: Reduction per feature (in square feet): Picnic tables: 22 square feet per feature Public art pieces: 100 sq. ft per feature One picnic table is provided along the SPW: 1 x 22 sf = 22 sf reduction Five art pieces are provided along the SPW: 5 x 100 sf = 500 sf reduction 4,726 SF - 522 sf (reduction) = 4,204 SF required minimum	4,222 sf of planting area is provided in the SPW.	Complies	See L-150
		in addition the following shall apply			
139-51(c)(2)	Lawn area - supplemental public access area	A lawn shall only be required where a supplemental public access area is greater than 15,000 square feet. Where required, a lawn may be substituted for an athletic field of equivalent size, which may be unplanted, and shall be suitable for active recreational use.	No SPAA is provided	NA	
62-62(c)(1)(ii)	Seaward planting area	Up to 15 percent of the required planting area may be provided as tidal wetland area. 4,726 x15% = 709 sf of planting may be located seaward of the SPW	no tital wetlands are provided	NA	
62-62(c)(1)(iii)	Bike path	When a dedicated bicycle path is provided within a supplemental public access area, a planting area with a width of at least five feet shall be provided between the bicycle path and any paved area for pedestrian use.	Dedicated bike path is not provided	NA	
62-62 (c)(2)(i)	Screening buffer	A screening buffer shall be provided within the shore public walkway or the supplemental public access area, running along the entire upland boundary of such area where it abuts non-publicly accessible areas of the zoning lot, except as waived pursuant to paragraph (c)(2)(iii) of this Section. Any screening buffer provided pursuant to this Section may be used to meet the planting requirements of paragraph (c)(1) of this Section.	No screening buffers are required.	Complies	See L-110 & L-150
62-62(c)(2)(iii) **139-51(d)**	Screening buffer - exemption	No screening buffer shall be required: (a) adjacent to a private drive, a street or at the entrances to buildings; or (b) for a commercial or community facility use within a distance of 15 feet from the sidewalk or waterfront public access area, that is glazed with windows, transoms or glazed portions of doors in accordance with the provisions of Section 37-34 (Minimum Transparency Requirements); In addition, no screening buffer shall be required along the upland boundary, or portion thereof, which is adjacent to an unenclosed seating area accessory to a Gowanus retail and entertainment use. Where a screening buffer is so waived, design features shall be utilized to demarcate the shore public walkway or supplemental public access area from the non-publicly accessible area, which may include, but shall not be limited to, railings, fences, planting boxes, and distinct paving materials.	No screening buffers are required. Upland boundary of SPW is adjacent to commercial uses within a distance of less than 15 feet and glazed per Section 37-34.	Complies	See L-110 & L-150
62-62 (c)(3)(i)	Trees	One canopy tree shall be provided for every 2,000 square feet of SPW. In no event may a shore public walkway have less than two canopy trees for every 100 feet of shoreline. 13,503 sf / 2,000 = 7 canopy trees are required. Shoreline length: 450 linear feet 450 LF / 100 = 4.5 x 2 = 9 trees minimum along shoreline	9 canopy trees are provided within the SPW. Not less than two canopy trees provided for every 100 feet of shoreline.	Complies	See L-150
62-62 (c)(3)(ii)	Additional planting	For every 1,250 sf of SPW, must provide either: - an additional tree - 60 sf of additional planting beds; or - 110 sf of additional accessible lawn. 13,503sf / 1,250 = 11 additional trees; or 648 sf of planting beds; or 1,188 sf of accessible lawn.	additional 16 trees are provided within the SPW	Complies	See L-150
139-544(b)	Shade tree substitution	Where shade trees are required, no more than one required shade tree may be substituted by a shading element covering at least 450 square feet, when viewed in plan.	NA	NA	
62-62 (c)(4)(i)	Reduction in planted area	planting may be reduced by 10 square feet for every linear foot of: (i) shoreline improved for boat launching or mooring or designed with architectural features to facilitate direct access to the water, such as steps or other forms of "get-downs,"	NA	NA	
62-62 (c)(4)(ii)	Reduction in planted area	WE uses with frontage adjoining, and having a public entrance on, the shore public walkway	NA	NA	
62-62 (d)	Bicycle Parking + Additional bicycle parking	A minimum of four bicycle parking spaces are required. When SPW is greater than 8,000 square feet, 2 additional bicycle parking spaces shall be provided for every additional 2,000 square feet of SPW. Bicycle racks shall be adjacent to a circulation path and at least 20 feet from the shoreline. 13,503 - 8,000 =5,503; 5,503/2000=3; 2x3=6 (4+6=10) Total required - 10	10 bike parking spaces are provided in the public sidewalk adjacent to the zoning lot.	Complies	See L-130
	Bicycle Parking location	Bicycle racks shall be adjacent to a circulation path and at least 20 feet from the shoreline. Such bicycle racks may be located in public sidewalks adjacent to the zoning lot. All bicycle racks shall comply with the standards of Section 62-657.	Bicycle parking are located in the public sidewalks	Complies	See L-130

ZR SECTION(S)	ITEM	REQUIRED	PROVIDED	COMPLIANCE WAIVER	DRAWING REFERENCE
62-62 (e)	Trash receptacle	One trash receptacle shall be provided for every 4,000 square feet of shore public walkway 13,503sf / 4,000 = 3; 3 trash receptacles required.	6 receptacles provided (3 trash receptacles and 3 recycling receptacles)	Complies	See L-130
	Trash receptacle location	all trash receptacles shall be located in visible and convenient locations. All trash receptacles shall comply with the standards of Section 62-658.	Trash receptacles are located in visible and convenient locations	Complies	See L-130
DESIGN REQUIREMENT FOR UPLAND CONNECTION					
62-64	Upland Connection				
62-64(a)(1)	Type 1 Circulation and access; in accordance with 62-651	Type 1 at least one circulation path linking an open street, public park or other public place with a shore public walkway.	One type 1 upland connection is provided	Complies	See L-011
		Such path shall have a minimum clear width of 12'. Any secondary paths shall have a minimum clear width of 6 feet	12' wide clear path provided	Complies	See L-011
62-64(b)(1)	Type 1 - Paving	at least 40 percent but not more than 65 percent of the entry area shall be paved. Entry Area: 750 SF 750 SF x 40% = 300 SF minimum 750 SF x 65% = 487.5 SF maximum	460 sf (61%) of the entry area is paved. Entry area is 750 sf. Paved area within the entry area is 460 sf. 460 / 750 x100 = 61%	Complies	See L-120
		Such paving shall include a five foot wide area along at least 70 percent of the frontage adjoining a public sidewalk. UC frontage on Nevins Street sidewalk: 50 ft 50 ft x 70% = 35 ft	At least 35 feet (70%) of frontage adjoining Nevins Street sidewalk is paved to a depth of at least five feet.	Complies	See L-120
62-64(c)(1)	Type 1 - Planting in accordance with 62-655	At least 40% shall be planted Type 1 UC provided: 7,450 sf 7,450 x 40% = 2,980 sf	3,001 SF (40.3%) of UC Type 1 is planted	Complies	See L-150
62-64(c)(1)(i)	In addition:	Where upland connections do not abut open parking lots or private driveways, 6" caliper ornamental trees or their equivalent in multi-stemmed plants shall be required for every 100' of upland connection. UC length: 201 feet 201 ft / 100 = 2; minimum two 6" caliper ornamental trees required	Total 11 trees are provided. Two of them are 6" caliper trees.	Complies	See L-150
62-64(c)(1)(ii)	Type 1 - screening parking	Where upland connection Type 1 abuts open parking - screening shall be provided	Type 1 does not abut open parking	NA	
62-64(c)(1)(iii)	Type 1 - trees along driveway	Where Upland Connections abut a private driveway, a continuous tree pit shall be provided within the upland connection along the curb of the driveway. One tree for every 25 feet of private driveway frontage.	NA	NA	
62-64(c)(1)(iv)	Upland Connection not coinciding with VC	Where such Upland Connections do not coincide with a visual corridor, at least 30 percent of the required open area along the length of the upland connection shall be planted, and the requirements of Section 62-513 (Permitted obstructions in visual corridors) shall apply within such open areas. Open areas provided: 2,586 sf 2,586 x 30% = 776 sf	776 SF (30%) is planted	Complies	See L-150
62-64(d)	Seating	12 linear feet shall be provided for every 100 linear feet of upland connection. Excluding entries and transition areas and the first 50' of type 2 UC Type 1 UC is 186 feet in length (excluding the 15' of entry area): 186/100 = 1.86 1.86 x 12= 22 linear feet	39 linear feet of seating provided	Complies	See L-130
	Seating - Excluded areas	Excluded areas shall have at least 24 linear feet of seating.	24 linear feet of seating provided at the Entry area	Complies	See L-130
62-64(e)	Trash Receptacles	One trash receptacle shall be provided within 15 feet of a street, public park or other public place.	two trash receptacles (one trash receptacle and one recycling receptacle) provided within 15 feet of Nevins street	Complies	See L-130
		Trash receptacle shall be provided where the Upland Connection adjoins a Shore Public Walkway or Supplemental Public Access Area,	two trash receptacles (one trash receptacle and one recycling receptacle) provided where the UC adjoins a SPW	Complies	See L-130
PUBLIC ACCESS DESIGN REFERENCE STANDARDS					
62-65	Hollow plastic material	Hollow plastic materials such as PVC or similar shall not be permitted on guardrails, fences, seating, trash receptacles or other similar furniture.	No hollow plastic is used	NA	
	High density polyethylene	High density polyethylene is permitted.	No high density polyethylene is used	NA	
GUARDRAILS AND GATES					
Section 62-651					
62-651(a)	Guardrail height	"guardrail" shall refer only to fencing or similar structures provided along a bulkhead with maximum height of 42 inches measured from the adjoining grade level, and shall be at least 70 percent open. Guardrails may be mounted on a solid curb not higher than six inches.	Guardrails are 42" height and at least 70 percent open.	Complies	See L-546
139-541	Special Design Standards for Guardrails	In addition to the provisions of paragraph (a) of Section 62-651 (Guardrails, gates and other protective barriers), guardrails shall comply with the illustrations provided in either paragraph (a) or (b) of this Section, or shall be of a comparable design which is the minimum modification needed. Where modification is sought, it shall be deemed suitable by the Chair of the City Planning Commission in consultation with the NYC Department of Parks and Recreation (DPR). Option 1: vertical bar guardrail Option 2: mesh guardrail All guardrail components and hardware shall be in unpainted stainless steel and shall conform to any additional standards set forth by DPR.	Guardrails (Option 1 or 2) per Gowanus WAP provided	Complies	See L-546
62-651(b)(1)	Bollard location	Bollards shall be limited to the following locations: (i) along the bulkhead, stabilized shore or the water edges of a pier or platform; (ii) along a zoning lot line adjacent to, and limiting access from an upland street; and (iii) along the boundaries of a roadway within an upland connection.	NA	NA	
62-651(b)(2)	Bollard configuration	Bollards shall not exceed 30 inches in height and shall be between six and 15 inches in width. The top of bollards shall not consist of any sharp edges. The minimum clearance between two bollards shall be five feet.	NA	NA	
62-651(c)(1)	Fence and wall location	Fences and walls (1) Fences and walls, when provided, shall be limited to the following locations: (i) along the boundary of a waterfront public access area and an adjoining private area on the zoning lot; (ii) around the perimeter of a playground, tot-lot or dogrun; (iii) adjoining WD uses; (iv) within a visual corridor; and (v) along any grade level change of 30 inches or greater.	No fences or walls proposed	NA	
62-651(c)(2)	Fence configuration	Fences shall have a maximum height of 36 inches measured from the adjoining grade level, and be at least 70 percent open. Fences may be mounted on a solid curb not higher than six inches.	NA	NA	
62-651(c)(3)	Walls	Walls shall not exceed a height of 21 inches, and may be fully opaque.	NA	NA	
62-651(c)(4)	Chain link fencing or barb wire	Chain link fencing or barbed or razor wire shall not be permitted.	No chain link provided	NA	
62-651(d)	Gate location	gates shall be permitted only at the boundaries of waterfront public access areas and such adjacent publicly accessible areas, except that in Type 1 upland connections gates may be located at the seaward boundary of the entry area. Gates shall not intrude into any planting area. Gates may be closed only pursuant to Section 62-71 (Operational Requirements).	No gates proposed	NA	
	Gate height	The maximum height of a gate shall be four feet above the adjoining grade level	NA	NA	
	Gate opacity	Gates shall be no more than 30 percent opaque.	NA	NA	
62-651(d)(1)	Gate obstruction	When opened for access, 70 percent of the total width, in aggregate, of the waterfront public access area shall be free of obstructions associated with the gate, and there shall be a minimum clear distance of at least 16 feet between any two obstructions of the gate. In addition, in its open position, the gate and its support structures shall not obstruct: (1) any circulation path; (2) 25 percent of the width of the entry area of an upland connection along each side of the centerline of such entry area; and (3) at least 50 percent of the width of the shore public walkway closest to the shoreline.	NA	NA	
SEATING					
62-652					
62-652(a)	Seating with backs	At least 50 percent of the required seating shall have backs. Walls located adjacent to a seating surface shall not count as seat backs. 180 x 50% =90 linear feet of seating to have backs (SPW) 22 x 50% = 11 linear feet of seating to have backs (UC - beyond entry area) 24 x 50% = 12 linear feet of seating to have backs (UC - entry area)	94 linear feet of required seating have backs (SPW) 39 linear feet of required seating have backs (UC - beyond entry area) 24 linear feet of required seating have backs (UC - entry area)	Complies	See L-130
	Seating with back orientation	At least 50 percent of such seating shall face in the general direction of the water. 90 x 50% = 45 linear feet of seating with backs to face water (SPW) 11 x 50% = 6 linear feet of seating with backs to face water (UC - beyond entry area)	45 linear feet of required seating with backs face the water (SPW) 24 linear feet of required seating with backs face the water (UC - beyond entry area)	Complies	See L-130
	Seat back height	Seat backs shall be at least 14 inches high.	Min 14 inches seat back heights provided	Complies	See L-541, L-542
	Seat back angle	All seat backs must either be contoured in form for comfort or shall be reclined from the vertical between 10 to15 degrees.	Recline is between 10 to 15 degrees	Complies	See L-541, L-542
62-652(b) **139-542 (b)**	Seat depth for single seating	Seating with or without backs shall have a depth of not less than 16 inches, and for seating with backs, such depth shall not be greater than 20 inches.	Seating with and without backs have a minimum depth of 16". For seating with backs, depth ranges between 16"-20"	Complies	See L-541, L-542
	Seat depth for double seating	Seating with a depth of at least 36 inches, and accessible from both sides, may be credited as double seating.	No double sided seating provided	NA	
	Seat depth for planter edge	When seating is provided on a planter ledge, such ledge must have a minimum depth of 22 inches.	There are no seating on planter edges	NA	
62-652(c)	Seat height	At least 75 percent of the required seating shall have a height not less than 16 inches nor greater than 20 inches above the level of the adjacent grade. 180 x 25% = 45 linear feet of seating may be other than 16"-20" high (SPW) 22 x 50% = 12 linear feet of seating may be other than 16"-20" high (UC - beyond entry area)	136 lf of required seating have a height between 16 inches and 20 inches above the level of the adjacent grade. (SPW) 39 lf of required seating have a height between 16 inches and 20 inches above the level of the adjacent grade. (UC - beyond entry area)	Complies	See L-541, L-542
		Higher than 36 in. or lower than 12 in. does not count for seating requirement.	There are no seating higher than 36" or lower than 12"	NA	
		Seating may be mounted on a solid curb not higher than 6 inches.	There are no seating mounted to curbs	NA	
62-652(d)	Seating clearance and location	Seating shall be located a minimum of 22 inches from any circulation path or permitted obstruction along the accessible side of such seating, except that seating without backs may be as close to a guardrail as 12 inches.	Seating is 22" away from paths. Seating without backs at Carroll Street entry are 12 inches from guardrails.	Complies	see L-130.00
62-652(e)	Seat types	In shore public walkways and supplemental public access areas, at least two of the following types of seating are required: moveable seating, fixed individual seats, fixed benches with backs, fixed benches without backs, lounging chairs and design feature seating.	4 seating types are provided - fixed benches with backs, fixed benches without backs, moveable seating and design feature seating.	Complies	see L-130.00 see L-541 TO L-543 for details
62-652(e)(1) **139-542 (a)**	Design feature seating	(a) Design feature seating Planter ledges, seating walls, and seating steps may be provided, and shall be limited to 50 percent of the required seating. Walls and planter ledges shall be flat and smooth with at least one inch radius rounded edges. 180 lf x 50%= 90 linear feet of seating is the max. for design feature seating. (SPW)	71 linear feet of seating steps are provided.	Complies	See L-130
		Walls and planter ledges shall be flat and smooth with at least one inch radius rounded edges.	No walls and planter edges are used for seating	NA	

300 NEVINS ST.

BROOKLYN, NY 11215

OWNERSHIP

CHARNEY COMPANIES
5-26 46TH AVENUE, SUITE 2A
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KEY PLAN

SEAL

NOT FOR CONSTRUCTION

ISSUANCE

NO.	DESCRIPTION	DATE
1	DLUA 1 SUBMISSION	8/5/2022
2	DLUA 2 SUBMISSION	10/21/2022

PROJECT NAME

300 NEVINS STREET
300 NEVINS ST.
BROOKLYN, NY 11217

JCFO PROJ.#
2119

PROJECT PHASE:
WPAA

DESIGNED BY: JW
DRAWN BY: JW
CHECKED BY: KT, BH

SCALE NORTH

VERT: N/A
HORZ: N/A

SHEET TITLE

ZONING CALCULATION CHART 02

SHEET NUMBER

L-002.00

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ORIGINAL SHEET SIZE: 36" X 48"

ZR SECTION(S)	ITEM	REQUIRED	PROVIDED	COMPLIANCE WAIVER	DRAWING REFERENCE
62-652(e)(2)	Moveable chairs	Moveable chairs, excluding those in open air cafes, may be credited as 18 inches of linear seating per chair; however, not more than 50 percent of required linear seating may be in moveable chairs. Moveable chairs may be placed in storage outside of the required hours of operation, pursuant to Section 62-71, paragraph (a). All moveable chairs must have backs. Moveable chairs shall not be chained, fixed, or otherwise secured while the waterfront public access area is open to the public 180 X 50%=90 linear feet of seating may be movable seating (SPW)	24 movable chairs are provided 24 x 1.5 linear feet = 36 linear feet	Complies	see L-130.00
62-652(e)(3)	Seating steps	Seating steps shall not include any steps intended for circulation and must have a height not less than 12 inches nor greater than 30 inches and a depth not less than 18 inches.	Seating steps are provided with a height not less than 12 inches and not more than 30 inches and a depth not less than 18 inches.	Complies	see L-130.00
62-652(e)(4)	Lounge chairs	Lounge chairs shall allow for a reclined position supporting the back as well as the legs. Lounge chairs may be credited as 36 inches of linear seating per chair.	No lounge seating proposed	NA	
62-652(f)	Social seating	At least 25 percent of required seating shall be social seating, consisting of seats that are placed in close proximity and at angles to one another or in facing configurations that facilitate social interaction. 180 x 25%= 45 linear feet of social seating is required (SPW) 22(excluding entry area) x 25% = 5.5 linear feet social seating required (UC)	47 linear feet of the required social seating is provided (SPW) 15 linear feet of social seatings are provided (UC)	Complies	See L-130
	Tables	A minimum of two square feet of tables shall be required for every three linear feet of social seating. However, any requirement for tables that, in total, is less than 10 square feet shall be waived, and no more than 150 square feet of tables shall be required in any site. 45 / 3 =15; 15 x 2 = 30 sf of tables required (SPW) 5.5 / 3=1.8; 1.8 x 2= 3.6 sf of tables required (UC)	46 sf of tables are provided (SPW) 15 sf of tables are provided (UC)	Complies	See L-130
62-652(g)	Shaded seating	At least 20 percent of required seating shall be shaded. Seating shall be considered shaded if it is located under a canopy tree or shade structure, or on the eastern side and within 45 feet of the trunk of a canopy tree or of a shade structure. 180 x 20%=36 linear feet of seating to be shaded (SPW) 22(excluding entry area) x 20% = 4.4 linear feet of seating to be shaded (UC)	85 linear feet of required seating is in shaded area (SPW) 23 linear feet seatings are provided (UC)	Complies	See L-130
62-652(h)	Seaward seating	Up to 25 percent of required seating may be located seaward of the shore public walkway provided it is designed as:	No seaward seating is provided	NA	
62-652(h)(1)	Seaward seating requirement	(1) a generally smooth and flat surface within a stabilized natural shoreline, in the form of rock, stone, wood or other solid material that measures at least 15 inches in width and depth and is between 12 and 30 inches high measured from the adjoining accessible surface; or	No seaward seating is provided	NA	
62-652(h)(2)	Seaward seating steps	(2) steps, with a depth and height between 12 and 30 inches, that facilitate access to the water. Seaward seating shall not be subject to the provisions of paragraphs (a) through (g) of this Section. Seating in open air cafes or stairs shall not qualify towards seating requirements.	No seaward seating is provided	NA	
	Seating within planted area	All seating located within a planting area shall be on permeable pavement and secured for stability	Seating within planted areas is on permeable pavers and secured for stability	Complies	See L-130
LIGHTING					
62-653					
139-543	Min. average on walkable areas	An average maintained level of illumination of not less than 0.5 horizontal foot candle (lumens per foot) throughout all walkable areas,	Min. Average illumination of 0.5 fc on walkable areas	Complies	See LTG-101/102
62-653	Min. illumination of other areas	a minimum level of illumination of not less than 0.2 horizontal foot candles (lumens per foot) throughout all other areas, shall be required.	Minimum horizontal illumination of 0.2 fc	Complies	See LTG-101/102
62-653	Illumination schedule	Such level of illumination shall be maintained from one-half hour before sunset to one-half hour after sunrise.	Lighting will be maintained from 30 minutes before sunset to 30 minutes after sunrise	Complies	See LTG-101
139-543	Average illumination to min. foot-candle uniformity ratio	The average illumination to minimum foot candle uniformity ratio shall be no greater than 6:1 within a waterfront public access area.	Average illumination to minimum fc uniformity ratio no greater than 6:1 within WPAA	Complies	See LTG-101/102
62-653	Glare control	Glare shall be controlled to a semi-cutoff standard (not more than five percent of peak foot candle intensity radiating above 90 degrees and 20 percent of peak intensity above 80 degrees).	Fixture is per WAP Standards	Complies	See LTG-101
62-653	Color temperature range	The luminaire shall be equipped with lamps with a color temperature range of 3000 K to 4100 K with a minimum color rendering index of 65.	Provided LED -3000K	Complies	See LTG-101
62-653	Lens and globes	All lenses and globes shall be polycarbonate or equivalent	Polycarbonate or equivalent	Complies	See LTG-101
62-653	Lighting sources mounted on adjacent buildings per WAP	In addition, all lighting within the waterfront public access area shall be shielded to minimize any adverse effect on surrounding buildings containing residences.	Fixture is per WAP Standards	Complies	See LTG-101
139-543	Special design standards for lighting	Fixtures providing the required lighting along any public access area shall comply with the lightpost illustration in this Section, or shall be of a comparable design which is the minimum modification needed. Where modification is sought, it shall be deemed suitable by the Chair of the City Planning Commission in consultation with the by the New York City Department of Transportation (DOT). Fixtures providing supplemental lighting beyond the requirements of this Section need not comply with this illustration. The lightpost shall conform to the street lighting standard drawings for a 17 foot "TBTA" short pole with "Tear Drop Luminare" set forth by the DOT.	WAP light post is used.	Complies	See LTG-101
SIGNAGE					
62-654					
	Location	The provisions of this Section shall apply to signs required in waterfront public access areas. All such signs shall be located in directly visible locations, without any obstruction at any time.	Signage located in directly visible locations	Complies	See L-130
	Materials	Such signs shall be fully opaque, non-reflective and constructed of permanent, highly durable materials, such as metal or stone	Signages are fully opaque, non-reflective and constructed of permanent, highly durable materials	Complies	See L-545
	Font	All lettering shall be in a clear, sans-serif, non-narrow font such as Arial, Helvetica, or Verdana	Font is sans serif	Complies	See L-545
	Lettering	solid in color with a minimum height of one-quarter inch, unless otherwise specified in this Section, and shall highly contrast with the background color.	Font color contrast background lettering height is 1/4 inch	Complies	See L-545
62-654(a)	Entry signage general and dimensions	All waterfront public access areas shall contain an entry sign mounted on a permanent structure.	3 Entry signs are proposed, one at each entry. Entry signs are mounted to paving, knee wall or curb	Complies	See L-545
		Such sign shall be located within five feet of the boundary of the entrance from a street, public park or other public way.	3 Entry signs are within five feet of the boundary of the entrance from Nevins, Union and Carroll street	Complies	See L-130
62-654(a)(1)-(10)	Entry sign design	Required signage shall contain (1) the New York City waterfront symbol, 12 inches square in dimension, as provided in the Required Signage Symbols file at the Department of City Planning website and the "The New York Waterfront Symbol Standards and Specifications" (published by the Department of City Planning, April 1989, and as modified from time to time); (2) lettering at least one-and one-half inches in height, stating "OPEN TO PUBLIC" in bold type; (3) lettering at least one-half inch in height stating the approved hours of operation as required pursuant to Section 62-71 (Operational Requirements), paragraph (a); (4) lettering at least one-half inch in height stating "Do not enter outside of hours of operation"; (5) the International Symbol of Access for persons with physical disabilities, at least three inches square, or the statement: "This public access area is accessible to persons with physical disabilities"; (6) the address of the property where the waterfront public access area is located; (7) the name of the current owner and the name, phone number and email address of the person designated to maintain the waterfront public access area; (8) the statement: "For complaints or questions: call 311"; (9) the statement: "For more information go to http://nyc.gov/planning"; and (10) rules of conduct as specified in Section 62-71, paragraph (b).	(1) New York City waterfront symbol - 1x1 sf (2) Lettering 1-1/2" in high stating Open to Public in bold type (3) Lettering 1/2" in high stating hours of operation (4) Lettering includes Do not enter outside of hours of operation (5) International symbol of access for the physically handicapped at 3 in square size or statement This public access area is accessible to persons with physical disabilities (6) Address (7) Name of owner, phone number and email address of the person designated to maintain the area (8) The statement For complaints or questions: call 311 (9) The statement For more information go to http://nyc.gov/planning (10) Rules of conduct.	Complies	See L-545
	Waterfront symbol location	Information in paragraphs (a)(1) and (a)(2) may be inscribed in pavement or on any permitted appropriate amenity, such as a seating wall or sculpture	Waterfront symbol is on the sign	Complies	See L-544
		All information required in this paragraph, (a), shall be included on signs with a maximum dimension in one direction of 16 inches. The maximum height of a sign above the adjoining grade shall be three feet for a horizontal sign and five feet for a vertical sign. The bottom of all signs shall be at least eighteen inches above adjoining grade, except for signs angled 45 degrees or less as measured from adjacent grade.	Entrance signs are provided, each is 16"x5'	Complies	See L-544
62-654(b)	Signage at zoning lot line	A sign shall be required to be located within five feet of any zoning lot line adjacent to another zoning lot within a shore public walkway and at a distance no greater than five feet from the required circulation path. All information required in paragraph (a) of this Section shall be included on signs with a maximum dimension in one direction of 16 inches. The maximum height of a sign above adjoining grade shall be three feet. The bottom of all signs shall be at least 18 inches above adjoining grade, except for signs angled 45 degrees or less, as measured from adjacent grade. However, the waterfront symbol required pursuant to paragraph (a)(1) of this Section need not be included in such signage if such symbol is inscribed nearby in pavement or any appropriate amenity, such as a seating wall or sculpture. However, the waterfront symbol required pursuant to paragraph (a)(1) shall be no larger than four inches square, or 12 inches square if inscribed in pavement or any appropriate amenity, and the information required in paragraph (a)(2) of this Section shall be one inch high. The information required in paragraphs (a)(1) and (a)(2) may be inscribed in pavement or on any permitted appropriate amenity	NA. Project site is adjacent to Carrol, Union and Nevins Streets	Complies	See L-011
62-654(c)	Other signage	Seating areas within waterfront public access areas allowed pursuant to paragraph (b) of Section 62-62 (Design Requirements for Shore Public Walkways and Supplemental Public Access Areas) shall be identified by a sign with the words "SEATING OPEN TO PUBLIC" in lettering at least one inch high. Such sign shall be clearly visible from the waterfront public access area. In addition, such sign shall be no greater than 60 square inches, no higher than 18 inches above adjacent grade, and angled for visibility. The required sign may be freestanding or attached to a permitted amenity within the waterfront public access area. No advertising signs may be located within a waterfront public access area.	1 "SEATING OPEN TO PUBLIC" is provided next to seating areas in the WPAA. Lettering is 1" high and is clearly visible.	Complies	See L-130
139-55	Special Signage Regulations	Any accessory sign that is provided adjacent to any waterfront public access area shall be limited to a single non-illuminated sign, indicating only the name or address of the building or commercial establishment to which it is accessory, not exceeding 16 inches in height.	Accessory signage will comply	Complies	

ZR SECTION(S)	ITEM	REQUIRED	PROVIDED	COMPLIANCE WAIVER	DRAWING REFERENCE
PLANTING					
62-655					
	General	Detailed landscape plan prepared by a registered landscape architect shall be submitted to the Department of Parks and Recreation prior to seeking certification by the City Planning Commission. Drawing shall include species emphasis on diversity, native, species that are tolerant of salt, sediment, high seasonal water flow, and high winds, as applicable to the location and the facilitation of sustainable wildlife habitats. No species banned by Department of Park and Recreation shall be included.	Landscape plan prepared by registered landscape architect submitted to DPR	Complies	NA
	Irrigation	All landscaped areas shall contain a built-in irrigation system or contain hose bibs within 100 feet of all planting areas.	All landscape areas shall have automatic irrigation systems and controls	Complies	NA
62-655(a)	Curb along planting beds	A curb with a maximum height of six inches is permitted along the perimeter of any planting area. Any edging higher than six inches above adjacent grade shall be considered a retaining wall.	Curbs are up to 6" high. Any edging higher than 6" above adjacent grade considered a retaining wall.	Complies	See L-140
	Retaining walls	Retaining walls shall not exceed a maximum height of of three feet as measured from the level of the adjoining grade or planted area below such wall so that no more than three feet of such retaining wall is visible from the waterfront public access areas.	Retaining walls height are up to 36"	Complies	See L-140
62-655(a)(1)	Single tree pits	A single tree pit shall have a minimum dimension of five feet with a minimum area of 30 square feet and a minimum depth of 3 feet, 6 inches. Only tree pits planted with ground cover shall count towards meeting a minimum planting area requirement.	All tree pits are minimum 5' wide; min. area of 30 sf, min. depth of 3.5' in some instances below grade.	Complies	See L-551
62-655(a)(2)	Continuous tree pits	A continuous tree pit is a planting area containing two or more trees. Continuous tree pits shall have a minimum width of five feet and a minimum depth of 3 feet, 6 inches, and a length as required to meet a minimum of five feet from the trunk of the tree to the end of the tree pit.	Continuous tree pits with two or more trees are min. 5 feet wide, min. 3.5 feet deep. Min. length from trunk to edge of pit 5 ft.	Complies	See L-551
62-655(a)(3)	Planting bed size for turf grass or groundcovers	Planting beds for turf grass or groundcovers shall have minimum dimensions of two feet in any direction and a minimum depth of two feet.	Planting bed for ground cover is larger than 2.0 feet in each direction.	Complies	See L-551, L-150
	Planting bed size for shrub	Planting beds for shrubs shall have minimum dimensions of three feet by three feet for each shrub and a minimum depth of 2 feet, 6 inches.	Planting beds for shrubs are larger than 3ftx3ft and are 2.5' deep	Complies	See L-551, L-150
	Planting bed size for tree	Planting beds containing trees shall have a minimum dimension of five feet and a minimum area of 30 square feet for each tree, with a minimum depth of 3 feet, 6 inches.	All planting beds for trees are minimum 5', depth 3.5' and have minmum area of 30 sf	Complies	See L-551, L-150
62-655(a)(4)	Terraced planting bed	A "terraced planting area" is a planting area with two or more planting beds incorporating retaining walls on a slope with a grade change greater than or equal to three feet. A terraced planting area shall comply with the dimensional standards for a planting bed except that the average depth of the individual planting beds between the two retaining walls shall not be less than three feet, as measured perpendicular to the edge of the retaining wall. In addition, for retaining walls between two or more planting beds, their height may exceed three feet, provided that the front of such retaining walls is screened by plant material.	Terraced planting provided along the UC. The grade change is greater than or equal to three feet. Each retaining wall height does not exceed three feet.	Complies	See L-130, L-501
62-655(a)(5)	Berms	A "berm" is a planting area with sloped grade stabilized primarily by plant materials rather than retaining walls or other similar built structures. A berm shall comply with the dimensional standards for a planting bed except that the height from the adjacent grade to the top of the berm shall not exceed the flood-resistant construction elevation on the zoning lot, or five feet above the lowest adjoining grade of the waterfront yard established pursuant to Section 62-332 (Rear yards and waterfront yards), whichever is higher.	No berms are provided	NA	
62-655(a)(6)	Lawns	A "lawn" is an area planted with turf grass having a minimum soil depth of 2 feet, 6 inches.	No lawns are provided	NA	
		Along at least 60 percent of the perimeter, a lawn shall have a grade level within six inches of the adjacent grade providing unobstructed pedestrian access. Any required lawn shall have a minimum area of 500 square feet and no dimension less than 18 feet. Longest contiguous planting area perimeter is 176' (Lawn) 176' x 60% =106' continuous linear feet to be within six inches of the adjacent grade	No lawns are provided	NA	
62-655(a)(7)(i) **139-51 (d)**	Screening species	Wherever a screening buffer is required to be provided, the minimum width of such buffer shall be four feet. Screening buffers required pursuant to paragraph (c)(2) of Section 62-62 shall consist of densely planted shrubs or multi-stemmed screening plants, with at least 50 percent being evergreen species. Shrubs shall have a height of at least four feet at the time of planting.	No screening buffers are required	NA	
62-655(a)(7)(ii)	Screening buffer, blank walls and service yards	Blank wall higher than 4 feet with a combination of evergreen trees, vines or espaliered trees or shrubs, and an architectural treatment such as pergola, stone rustication, grills or sculptural frames. South side may be defined as blank wall.	No blank walls are proposed	NA	
62-655(a)(7)(iii)	Screening buffer parking garage	Open parking areas on any zoning lot fronting on an upland connection or street on any waterfront block, notwithstanding the use on such lot, shall require screening pursuant to Section 37-921 (Perimeter landscaping). Screening required pursuant to Section 62-453 shall consist of a planting strip at least four feet wide. Plants shall be at least four feet high at the time of planting and 50 percent of them shall be evergreen shrubs. All required screening may be interrupted by vehicular or pedestrian entrances.	No open parking is provided	NA	
62-655(a)(8)	Tidal wetland area	A tidal wetland area may satisfy up to 30 percent of the required planting area for waterfront public access areas.	No tidal wetland provided	NA	
62-655(b)(1)	Tree caliper	At time of planting, canopy trees shall be a minimum of three inches caliper and ornamental trees shall be a minimum of two inches caliper.	Shade tree canopies are minimum 3" caliper Ornamental tree canopies are minimum 2" caliper	Complies	See L-150
62-655(b)(2)	Trees in single tree pit	One of the procedures in this paragraph, (b)(2), shall be employed to protect trees planted at grade: (i) granite or cast concrete block pavers with a minimum four inch depth shall be installed in accordance with New York City Department of Parks and Recreation (DPR) standards for street trees; (ii) a grate shall be installed over the root zone, supported at its edges and set flush with the adjacent pavement for pedestrian safety, in accordance with DPR standards for street trees for grate size; or (iii) the root zone shall be surrounded with barrier hedge planting.	Trees in single tree pit to follow the procedure either (i) or (ii) depends on the locations and adjacent paving materials.	Complies	See L-150
PAVING					
62-656					
62-656(a)(1)	Locational requirements Within required circulation paths	All paving material for a required circulation path shall be permanent, durable, accessible to persons with physical disabilities, and shall consist of one or a combination of the following: (i) Unit pavers of stone, concrete, granite, asphalt or mix of these materials with other aggregates; (ii) Concrete, prefabricated, poured or permeable; (iii) Wood planks (tropical wood not permitted); (iv) Solid plastic such as "plastic lumber", high density polyethylene, wood composite plastic or fiber-reinforced plastic.	All paving material is permanent, durable, accessible to persons with physical disabilities. Paving material is granite pavers, prefabricated unit pavers and wood planks (non-tropical wood). Plastic lumber, precast concrete planks, high density polyethylene, wood composite plastic, fiber-reinforced plastic, poured in place concrete, permeable pavers, unit paver and stone pavers are alternate to wood planks based on the availability.	Complies	See L-501
62-656(a)(2)	Locational requirements Other than within required circulation paths	In addition to the permitted paving materials of paragraph (a)(1) of this Section, the following materials shall be permitted: (i) Blocks such as Belgian blocks, cobble stones, concrete cobbles or euro cobble (ii) Gravel, loose installed over a solid surface or glue with resin (iii) Wood chips (iv) Metal grating (limited to locations that require drainage for platforms) (v) Asphalt, impermeable or porous, imprinted with thermoplastic patterns.	Paving material is granite pavers, prefabricated unit pavers and wood planks (non-tropical wood). Plastic lumber, precast concrete planks, high density polyethylene, wood composite plastic, fiber-reinforced plastic, poured in place concrete, permeable pavers, unit paver and stone pavers are alternate to wood planks based on the availability. Additional paving materials are cobble stones, gravel, wood chips and metal grating.	Complies	See L-501
62-656(a)(3)	Locational requirements Special regulations for Type 2 upland connections	Paving for driveways and pedestrian paths shall be subject to the standards of the New York City Department of Transportation for roadbeds and sidewalks.	Proposed UC is Type 1	NA	
139-545	Special design standards for paving	The design reference standards of Section 62-656 (Paving) shall be modified as follows:			
	(b) Dimensional requirements	The maximum sizes for unit pavers or concrete slabs shall not apply.	NA	NA	
62-656(b)(2)	Dimensional requirements Wood plank or plastic lumber size	Wood planks or plastic lumber for boardwalk or decking shall be a minimum of three inches thick (nominal dimension). The direction of planks shall not be parallel to the direction of traffic.	Wood planks or plastic lumber for decking is minimum of three inches thick (nominal). The direction of planks are not parallel to the direction of traffic.	Complies	See L-501
BICYCLE RACKS					
62-657	Both side parking	Each bicycle rack shall allow for the bicycle frame and one wheel to be locked to the rack. If bicycles can be locked to each side of the rack, each side may be counted as a required space.	Racks are configured to allow for bicycles frames to be locked	Complies	See L-545
	Spacing between parallel racks	Thirty inches of maneuverable space shall be provided between parallel bicycle racks and an eight foot wide aisle shall be provided between bicycle rack areas.	Spacing between racks is 36" Eight foot aisle is provided on sidewalk	Complies	See L-545
TRASH RECEPTACLES					
62-658					
	Location	Trash receptacles shall be placed within 50 feet of a seating area,	Trash receptacles are within 50' of seating	Complies	See L-140
	Capacity	Minimum capacity of 25 gallons	Trash receptacles have a minimum capacity of 25 gallons	Complies	See L-545
	Opening size	top openings that measure at least 12 inches wide or side openings that inscribe a rectangle measuring at least 12 inches wide and six inches high	Side opening is min 12" wide	Complies	See L-545
	Trash bags	Trash receptacles shall be able to use standard bags used to collect trash.	Fits standard trash bag	Complies	See L-545

300 NEVINS ST.

BROOKLYN, NY 11215

OWNERSHIP

CHARNEY COMPANIES
5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

LANDSCAPE ARCHITECT

JAMES CORNER FIELD OPERATIONS
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KEY PLAN

SEAL

NOT FOR CONSTRUCTION

ISSUANCE

NO.	DESCRIPTION	DATE
1	DLUA 1 SUBMISSION	8/5/2022
2	DLUA 2 SUBMISSION	10/21/2022

PROJECT NAME

300 NEVINS STREET
300 NEVINS ST.
BROOKLYN, NY 11217

JCFO PROJ.#
2119

PROJECT PHASE:
WPAA

DESIGNED BY: JW
DRAWN BY: JW
CHECKED BY: KT, BH

SCALE NORTH

VERT: N/A
HORZ: N/A

SHEET TITLE

ZONING CALCULATION CHART 03

SHEET NUMBER

L-003.00

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GENERAL LEGEND

- PARCEL 5 BOUNDARY
- ZONING LOT LINE
- SHORELINE / MHW LINE
- VISUAL CORRIDOR
- US BULKHEAD LINE
- SPW 10' & UC 12' CLEAR PATH
- UPLAND CONNECTION (7,450 SF)
- SHORE PUBLIC WALKWAY (13,503 SF)
- OPEN AREA (2,586 SF)
- PUBLIC ACCESS AREA (634 SF)

WPAA	WATERFRONT PUBLIC ACCESS AREA
SPW	SHORE PUBLIC WALKWAY
UC	UPLAND CONNECTION
PAA	PUBLIC ACCESS AREA
V.C.	VISUAL CORRIDOR

- DOT STORAGE AREA (SUBJECT TO CHANGE PER COORDINATION WITH FDNY AND DOT)
- COMPANION SEATING
- PLANTING
- TREES
- PROPOSED STREET TREES
- EXISTING STREET TREES

GENERAL NOTES:

1.APPLICANT'S STAMP AND SEAL CORRESPOND TO THE INFORMATION REGARDING THE WATERFRONT PUBLIC ACCESS AREA ON THE ZONING LOT. INFORMATION REGARDING THE SURROUNDING PROPERTIES AND AREAS OUTSIDE WPAA AND PAA IS FOR ILLUSTRATIVE PURPOSES ONLY.

2.BUILDINGS AND SITE AREAS ADJACENT TO WPAA AND PAA SHOWN FOR ILLUSTRATIVE PURPOSES ONLY.

3.SECTIONS SHOWING RELATIONSHIP BETWEEN ELEMENTS FOR ILLUSTRATIVE PURPOSES ONLY.

4.CARROLL STREET CROSSWALK SUBJECT TO COORDINATION WITH DOT.

5.QUANTITY AND LOCATION OF STREET TREES IN ACCORDANCE WITH ZR 139-42 AND 26-41 AND SUBJECT TO CHANGE PER DPR APPROVAL.

6.PAVING MATERIALS LISTED IN ZR 62-655 PERMITTED AS AN ALTERNATIVE.

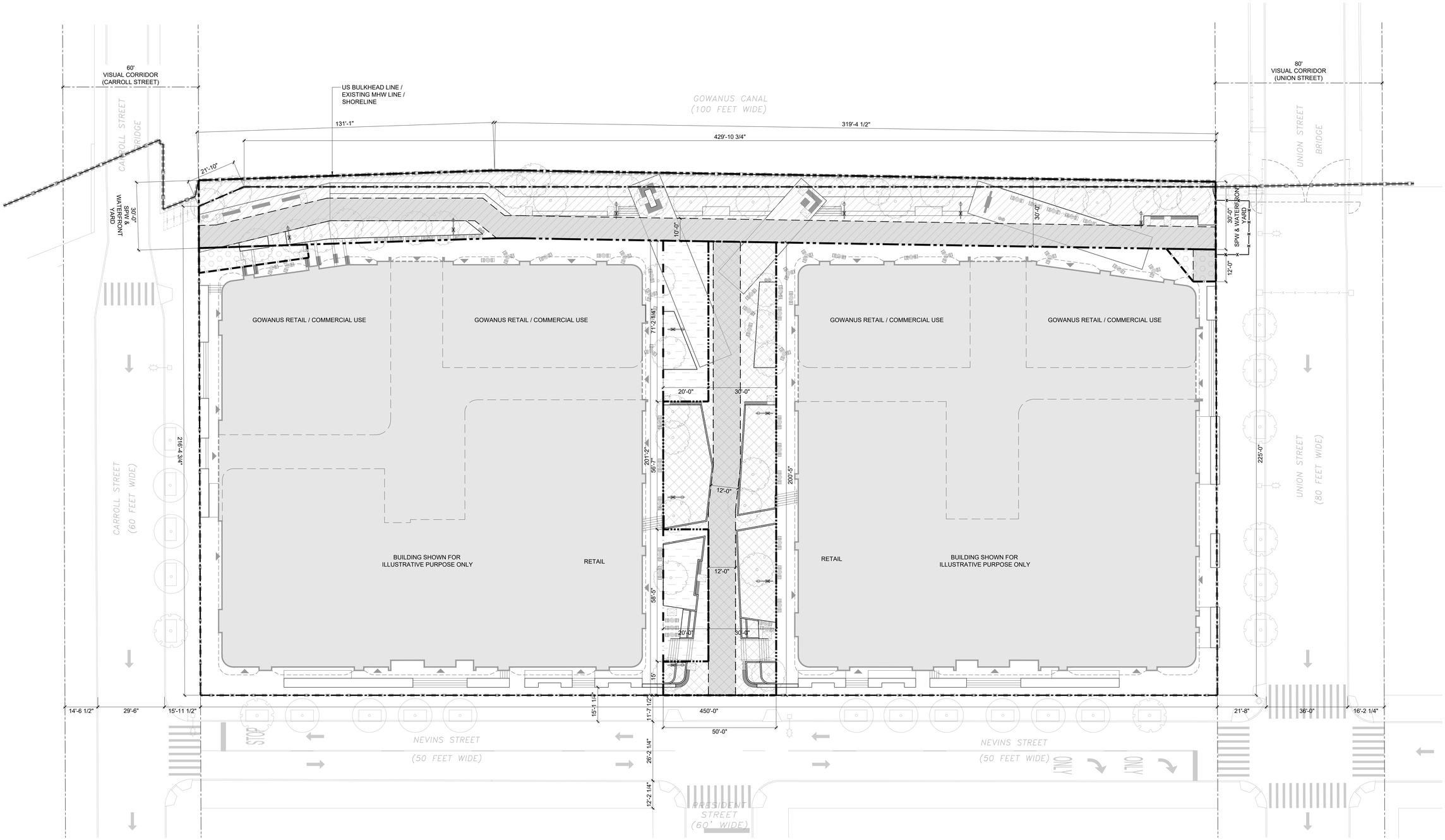
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300 NEVINS ST.

BROOKLYN, NY 11215

OWNERSHIP

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5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
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NEW YORK, NY 10010

LANDSCAPE ARCHITECT

JAMES CORNER FIELD OPERATIONS
4 Bryant Park, 11th Floor, New York, NY 10018

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TEL 201.775.6000

KEY PLAN

SEAL

NOT FOR CONSTRUCTION

ISSUANCE

NO.	DESCRIPTION	DATE
1	DLUA 1 SUBMISSION	8/5/2022
2	DLUA 2 SUBMISSION	10/21/2022

PROJECT NAME
300 NEVINS STREET
300 NEVINS ST.
BROOKLYN, NY 11217

JCFO PROJ.#
2119

PROJECT PHASE:
WPAA

DESIGNED BY: JW
DRAWN BY: JW
CHECKED BY: KT, BH

SCALE
NORTH
VERT: N/A
HORZ: 1"= 15'
0 7.5' 15' 30'

SHEET TITLE
WPAA SITE PLAN

SHEET NUMBER
L-011.00

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GENERAL LEGEND

- PARCEL 5 BOUNDARY
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- SHORELINE / MHW LINE
- VISUAL CORRIDOR
- US BULKHEAD LINE
- SPW 10' & UC 12' CLEAR PATH
- UPLAND CONNECTION (7,450 SF)
- SHORE PUBLIC WALKWAY (13,503 SF)
- OPEN AREA (2,586 SF)
- PUBLIC ACCESS AREA (634 SF)

WPAA	WATERFRONT PUBLIC ACCESS AREA
SPW	SHORE PUBLIC WALKWAY
UC	UPLAND CONNECTION
PAA	PUBLIC ACCESS AREA
V.C.	VISUAL CORRIDOR

- DOT STORAGE AREA (SUBJECT TO CHANGE PER COORDINATION WITH FDNY AND DOT)
- PLANTING
- LIGHT POLE
- TRASH RECEPTACLE
- BIKE RACKS
- SIGNAGE
- BOULDER
- ART PIECE
- GUARDRAILS
- HANDRAILS
- TREES
- PROPOSED STREET TREES
- EXISTING STREET TREES

SEATING LEGEND

- SEATING BAND
- ALCOVE SEATING
- FAMILY SWING
- UC ENTRY BENCH
- BENCH W/ OR W/O BACK
- MOVABLE TABLE AND CHAIR
- COMPANION SEATING
- SEATING STEP
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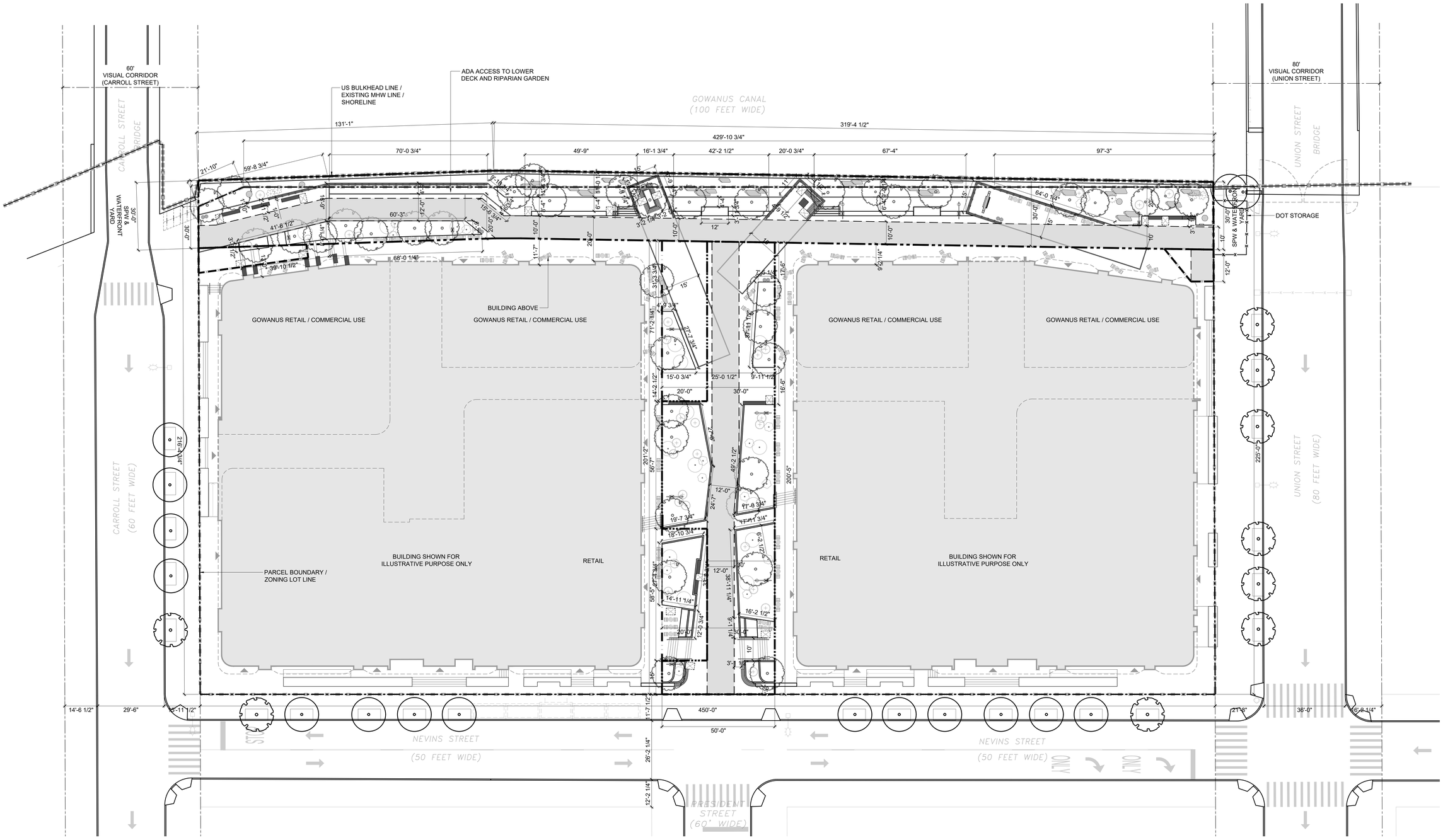
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JCFO PROJ.#
2119

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DRAWN BY: SL
CHECKED BY: KT, BH

SCALE
NORTH
VERT: N/A
HORZ: 1"= 15'
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SHEET TITLE
SITE LAYOUT PLAN

SHEET NUMBER
L-110.00

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MATERIAL SCHEDULE

SYMBOL		DESCRIPTION	DETAIL
	P-101	UNIT PAVER @ UC	01/ L-501
	P-201	STONE PAVER	02/ L-501
	P-202	STONE STAIRS	03/ L-501
	P-501	WOOD DECKING	04/ L-501
	PB-101	RAISED PLANTER IN SPW & UC	02/ L-551
	PB-102	RIPARIAN PLANTING	00/ L-000
	PB-103	RIPARIAN PLANTING BETWEEN PROPERTY LINE & BULKHEAD	00/ L-000
	ER-101	3" WIDE WEATHERED STEEL FLUSH EDGING	05/ L-501
	ER-102	4" WIDE RAISED KICK RAIL	08/ L-501
	W-401	WEATHERED STEEL RAISED PLANTER EDGE	06/ L-501
	W-101	RAISED PLANTER WALL	07/ L-501

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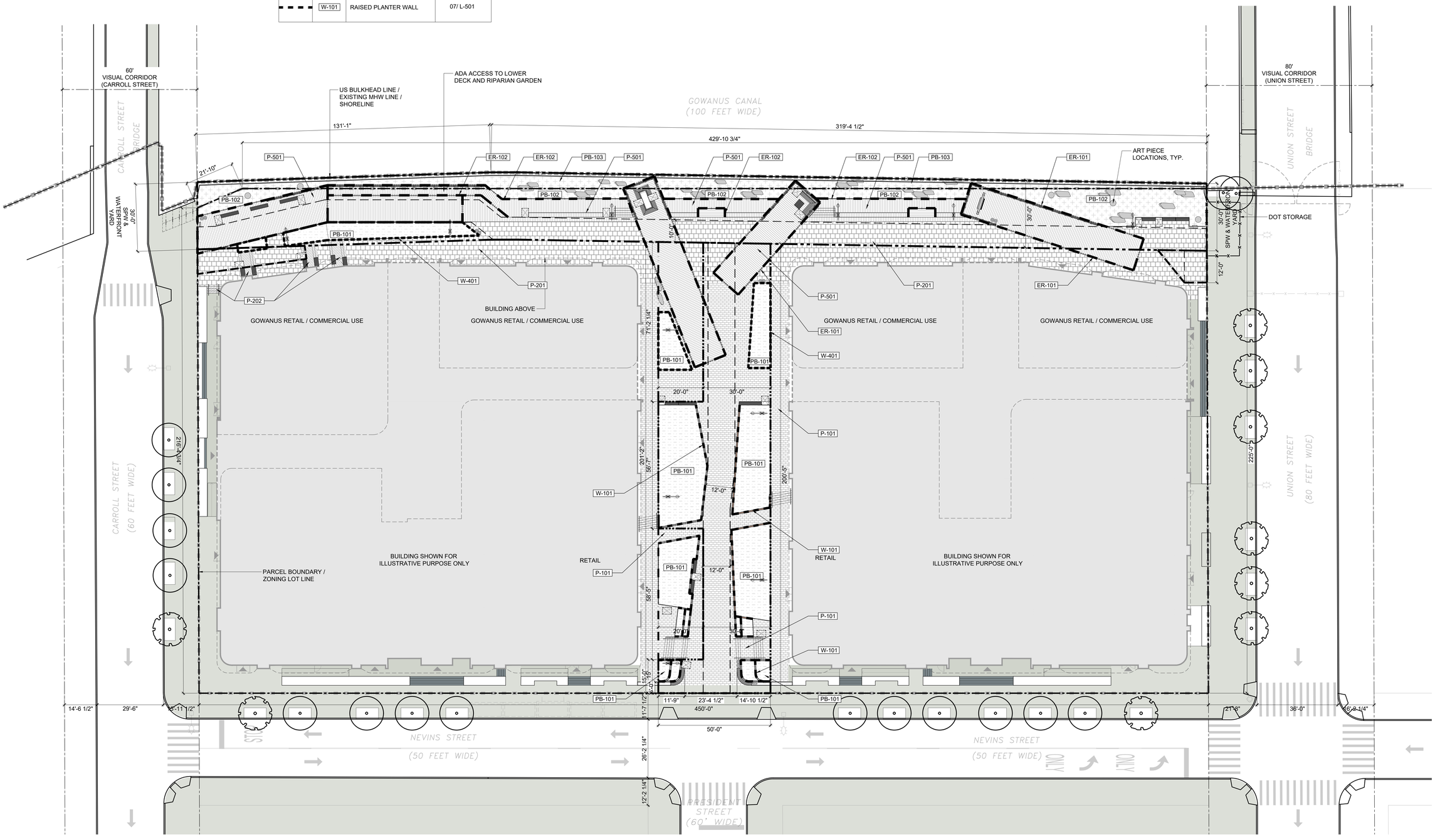
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300 NEVINS ST.
BROOKLYN, NY 11217

JCFO PROJ.#
2119

PROJECT PHASE:
WPAA

DESIGNED BY: JW
DRAWN BY: JW
CHECKED BY: KT, BH

SCALE
VERT: N/A
HORZ: 1"= 15'
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NORTH

SHEET TITLE
MATERIAL PLAN

SHEET NUMBER
L-120.00

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DOT STORAGE AREA (SUBJECT TO CHANGE PER COORDINATION WITH FDNY AND DOT)

SEATING LEGEND

- SEATING BAND
- ALCOVE SEATING
- FAMILY SWING
- UC ENTRY BENCH
- BENCH W/ OR W/O BACK
- MOVABLE TABLE AND CHAIR
- COMPANION SEATING
- SEATING STEP
- LIGHTING POLE

SPW SEATING SCHEDULE

ID / SYMBOL	TYPE	QTY	DESCRIPTION	NOTES
B1	BENCH TYPE 1	3	8 LF W/O BACK	SEE 01 / L-541
B4	BENCH TYPE 4	3	6 LF W/ BACK	SEE 03 / L-541
SW	FAMILY SWING	1	5 LF W/ BACK BENCH SWING SET	SEE 01 / L-543
CP	COMPANION SEATING	10	3' BY 4' COMPANION SEATS	
M1	MOVABLE: TABLES	12	MOVABLE FURNISHING: TABLES	SEE 03 / L-545
M2	MOVABLE: CHAIRS	24	MOVABLE FURNISHING: CHAIRS	SEE 03 / L-545
AS	ALCOVE SEATING	1	11 LF W/ BACK	SEE 05 / L-544
SS	SEATING STEPS (DESIGN FEATURE SEATING)		71 LF SEATING STEPS	SEE 05 / L-541
SB	SEATING BAND	2	12 LF W/ BACK	SEE 01 / L-544

SPW FURNISHING SCHEDULE

ID / SYMBOL	TYPE	QTY	DESCRIPTION	NOTES
AT	ALCOVE TABLE	1	10 SF TABLE	SEE 05 / L-544
TR	TRASH RECEPTACLES	6	TRASH & RECYCLE RECEPTACLES	SEE 02 / L-545
GR	WAP GUARDRAILS		WAP REQUIRED GUARDRAIL	SEE 01 / L-546
HR	HANDRAILS			SEE 07 / L-546
RK	RAISED KICK RAIL		3" BY 3" RAIL	SEE 08 / L-501
ES	WPAA ENTRY SIGN	2	WAP REQUIRED SIGNAGE @ ENTRANCE	SEE 05 / L-545
PS	SEATING OPEN TO PUBLIC SIGN	1	WAP REQUIRED SIGNAGE @ SEATING AREA	SEE 04 / L-545
BR	BIKE RACKS	5	10 PARKING SPACES NOTE: LOCATED IN PUBLIC SIDEWALK	SEE 01 / L-545

UC SEATING SCHEDULE

ID / SYMBOL	TYPE	QTY	DESCRIPTION	NOTES
B2	BENCH TYPE 2	1	8 LF W/ BACK	SEE 01 / L-542
B4	BENCH TYPE 4	1	6 LF W/ BACK	SEE 03 / L-541
B5	BENCH TYPE 5	1	10 LF W/ BACK	SEE 01 / L-541
B6	BENCH TYPE 6	1	UC ENTRY BENCH W/O BACK	SEE 05 / L-542
B7	BENCH TYPE 7	1	UC ENTRY BENCH W/O BACK	SEE 05 / L-542
CP	COMPANION SEATING	3	3' BY 4' COMPANION SEATS	
M1	MOVABLE: TABLES	5	MOVABLE FURNISHING: TABLES	SEE 03 / L-545
M2	MOVABLE: CHAIRS	10	MOVABLE FURNISHING: CHAIRS	SEE 03 / L-545

UC FURNISHING SCHEDULE

ID / SYMBOL	TYPE	QTY	DESCRIPTION	NOTES
TR	TRASH RECEPTACLES	4	TRASH & RECYCLE RECEPTACLES	SEE 02 / L-545
ES	WPAA ENTRY SIGN	1	WAP REQUIRED SIGNAGE @ ENTRANCE	SEE 05 / L-545
HR	HANDRAILS			SEE 07 / L-546

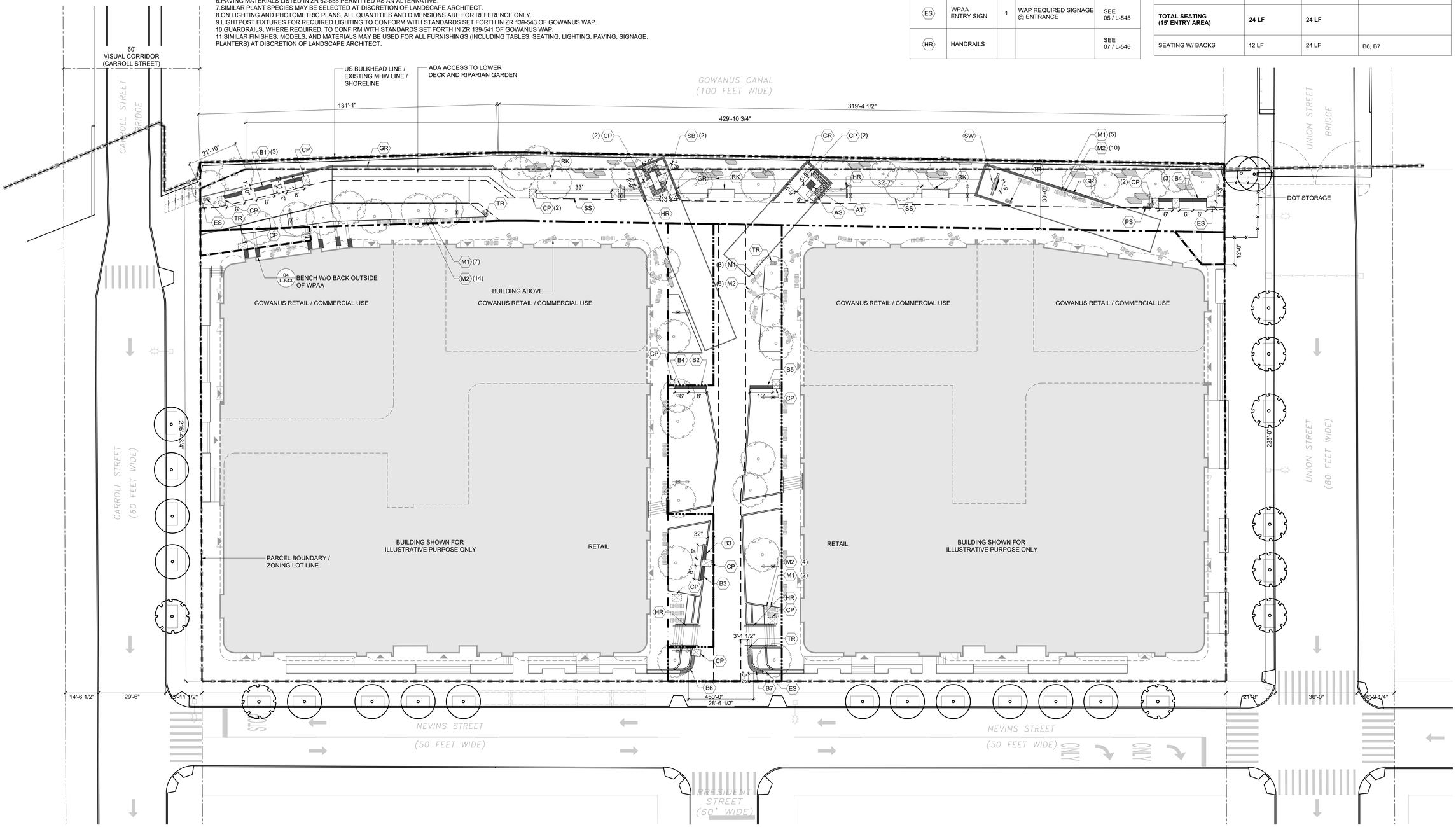
SPW SEATING REQUIRMENTS

SEATING REQUIREMENTS	REQUIRED/ ALLOWED	PROVIDED	TYPES / NOTES
TOTAL SEATING	**180 LF**	**180 LF**	**PROVIDED INCLUDING MOVABLE SEATING AND DESIGN FEATURE SEATING**
SEATING W/ BACKS	90 LF	94 LF	SB, AS, SW, B4, M2
ORIENTATION FACING WATER	45 LF	45 LF	B1, SB, AS, SW, B4
SOCIAL SEATING	45 LF	47 LF	AS, M2
TABLES	30 SF	46 SF	M1, AT
SHADED SEATING	36 LF	85 LF	M2, SB, AS, SW, B4
MOVABLE SEATING	90 LF	36 LF	M2
DESIGN FEATURE SEATING	45 LF	71 LF	SS

UC SEATING REQUIRMENTS

SEATING REQUIREMENTS	REQUIRED/ ALLOWED	PROVIDED	TYPES
TOTAL SEATING (EXCLUDING 15' ENTRY AREA)	**22 LF**	**39 LF**	**PROVIDED INCLUDING MOVABLE SEATING**
SEATING W/ BACKS	11 LF	39 LF	B2, B4, B5, M2
ORIENTATION FACING WATER	6 SF	24 SF	B2,B4,B5
TABLES	4 SF	15 SF	M1
SHADED SEATING	4 LF	23 LF	B6, B7, M2
TOTAL SEATING (15' ENTRY AREA)	**24 LF**	**24 LF**	
SEATING W/ BACKS	12 LF	24 LF	B6, B7

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SHEET TITLE
SEATING & FURNISHING PLAN

SHEET NUMBER
L-130.00

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- [XX.XX] + EXISTING SPOT EL
- XX.XX / XX.XX + PROPOSED SPOT EL
- X.XX% → PROPOSED SLOPE

BC	BOTTOM OF CURB
TC	TOP OF CURB
BS	BOTTOM OF STEP
TS	TOP OF STEP
BW	BOTTOM OF WALL
TW	TOP OF WALL

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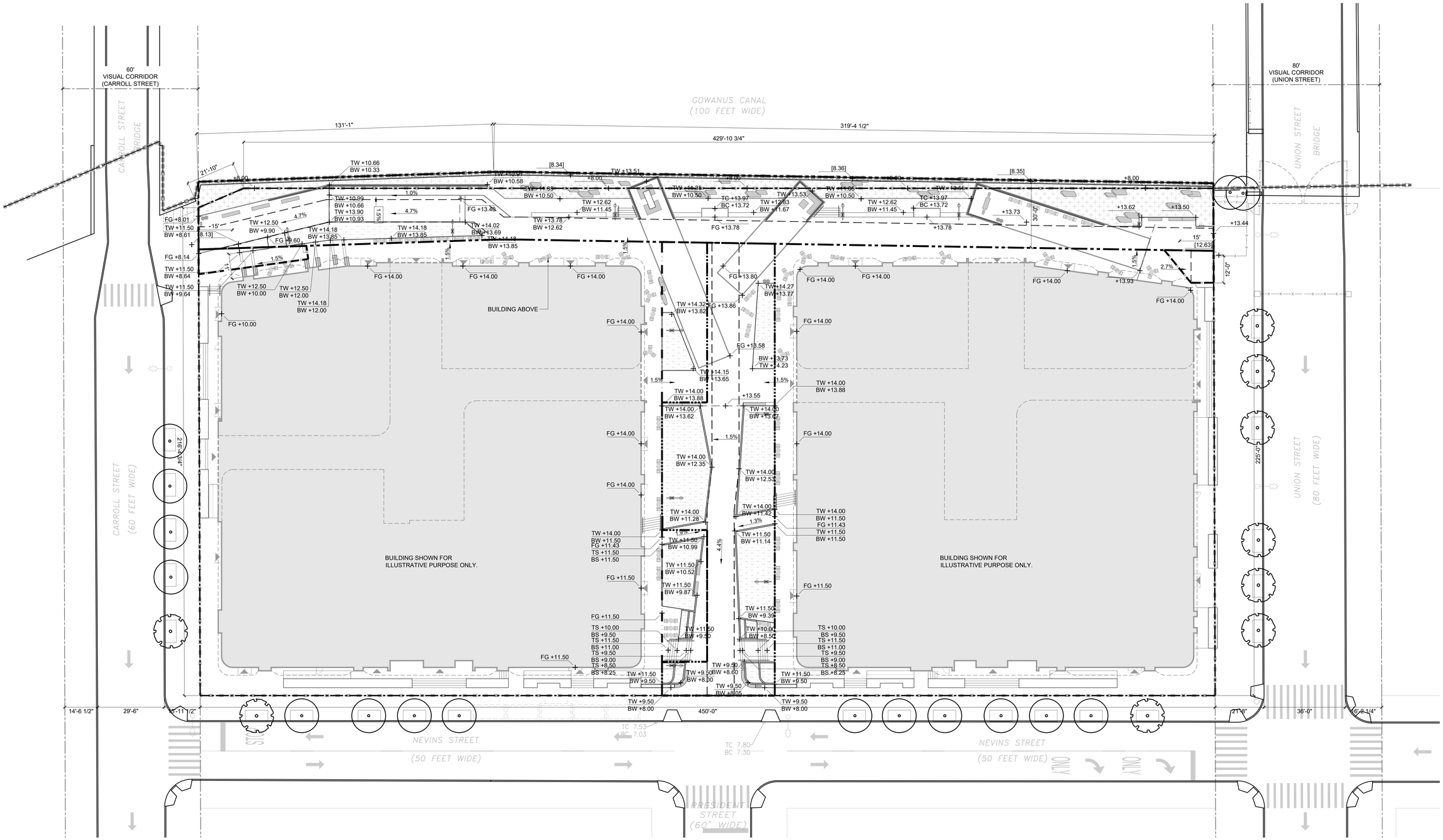
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TEL 212.929.5656

MARINE ENGINEER

MCLAREN ENGINEERING GROUP
131 WEST 35TH STREET4TH FLOOR
NEW YORK, NY 10001
TEL 201.775.6000

KEY PLAN

SEAL

NOT FOR CONSTRUCTION

ISSUANCE

NO.	DESCRIPTION	DATE
1	DLUA 1 SUBMISSION	8/5/2022
2	DLUA 2 SUBMISSION	10/21/2022

PROJECT NAME:

300 NEVINS STREET
300 NEVINS ST
BROOKLYN, NY 11217

JCFO PROJ.#
2119

PROJECT PHASE:
WPAA

DESIGNED BY: JW
DRAWN BY: JW
CHECKED BY: KT, BH

SCALE

VERT: N/A
HORZ: 1"= 15'

NORTH

0 7.5' 15' 30'

SHEET TITLE

GRADING PLAN

SHEET NUMBER

L-140.00

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GENERAL LEGEND

- PARCEL 5 BOUNDARY
- ZONING LOT LINE
- SHORELINE / MHW LINE
- VISUAL CORRIDOR
- US BULKHEAD LINE
- SPW 10' & UC 12' CLEAR PATH
- UPLAND CONNECTION (7,450 SF)
- SHORE PUBLIC WALKWAY (13,503 SF)
- OPEN AREA (2,586 SF)
- PUBLIC ACCESS AREA (634 SF)
- LIGHTING POLE
- TREES
- PROPOSED STREET TREES
- EXISTING STREET TREES

WPAA	WATERFRONT PUBLIC ACCESS AREA
SPW	SHORE PUBLIC WALKWAY
UC	UPLAND CONNECTION
PAA	PUBLIC ACCESS AREA
V.C.	VISUAL CORRIDOR

DOT STORAGE AREA
(SUBJECT TO CHANGE PER COORDINATION WITH FDNY AND DOT)

SPW TREE SCHEDULE

SYMBOL	DESCRIPTION	QTY
BN	Betula nigra	11
SN	Salix nigra	2
QB	Quercus bicolor	8
SA	Sassafras albidum	4
	TOTAL	25

SPW SHRUBS SCHEDULE

SYMBOL	DESCRIPTION	QTY
AA	Aronia arbutifolia	2
CA	Ceanothus americanus	9
PM	Prunus maritima	3
AC	Amelanchiercan adensis	3
RG	Rhus glabura	6
	TOTAL	23

SPW PLANTING SCHEDULE

SYMBOL	DESCRIPTION	AREA
PB-101-A	RAISED PLANTER	627 SF
PB-102	RIPARIAN PLANTING	3,595 SF

UC TREE SCHEDULE

SYMBOL	DESCRIPTION	QTY
AS	Acer saccharum "Arrowhead"	3
AR	Acer rubrum	5
CC	Cercis canadensis	3
	TOTAL	11

*NOTE: TWO 6" CALIPER ORNAMENTAL TREES ARE PROVIDED.

UC SHRUBS SCHEDULE

SYMBOL	DESCRIPTION	QTY
AA	Aronia arbutifolia	8
CA	Ceanothus americanus	15
PM	Prunus maritima	7
HQ	Hydrangea quercifolia "Pee Wee"	5
	TOTAL	35

UC PLANTING SCHEDULE

SYMBOL	DESCRIPTION	AREA
PB-101-B	RAISED PLANTER	3,001 SF

OPEN AREA PLANTING SCHEDULE

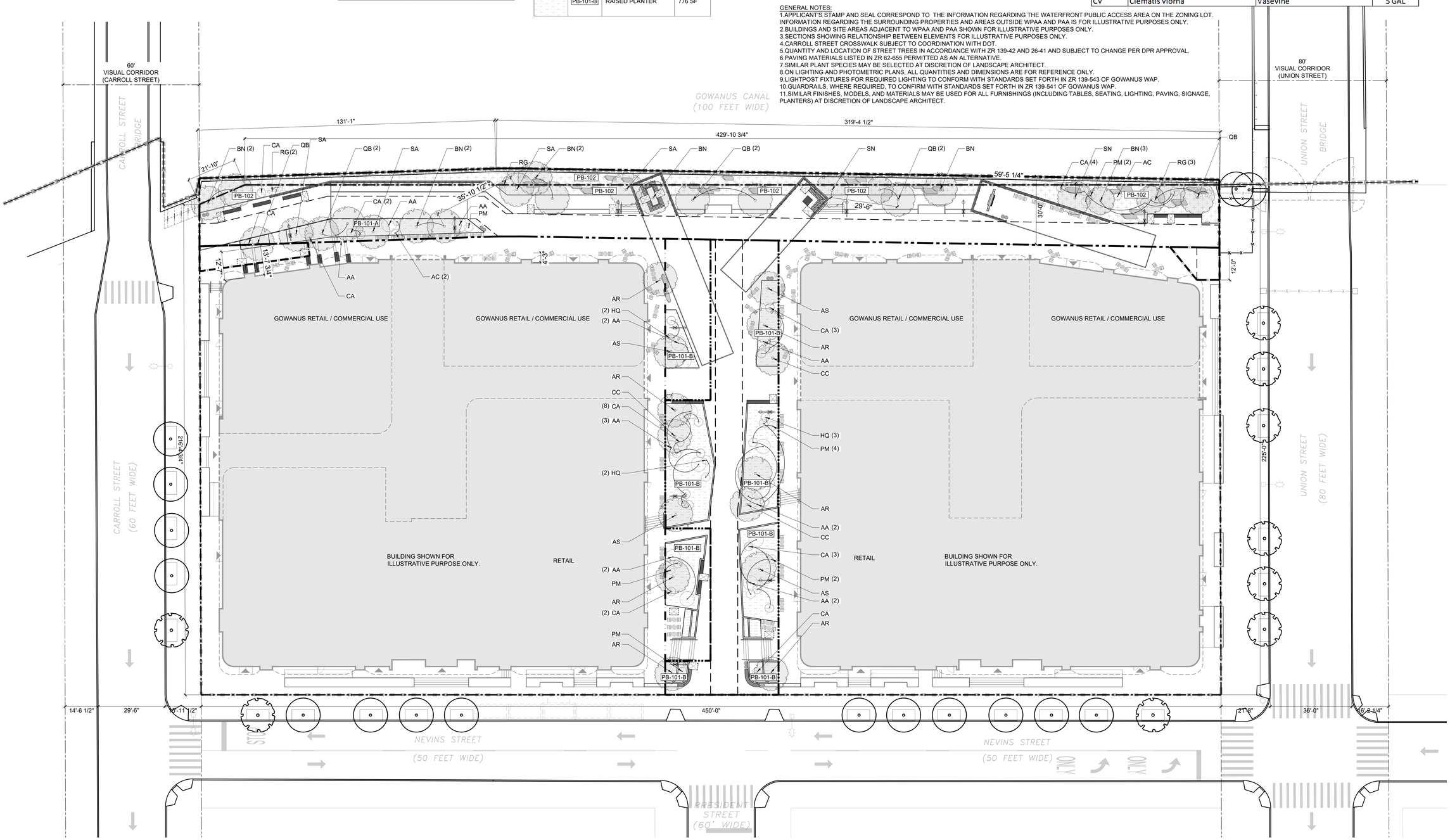
SYMBOL	DESCRIPTION	AREA
PB-101-B	RAISED PLANTER	776 SF

WPAA SHRUB & GROUNDCOVER PLANTING SCHEDULE

Sym.	Botanical Name	Common Name	Size
Shrubs			
AA	*Aronia Arbutifolia*	Red Chokeberry	30 GAL
CA	*Ceanothus Americanus*	New Jersey Tea	30 GAL
CA2	*Clethra Alnifolia*	Summersweet	30 GAL
GB	Gaylussacia Baccata	Black Huckleberry	30 GAL
MP	Myrica Pensylvanica	Northern Bayberry	30 GAL
PM	Prunus Maritima	Beach Plum	30 GAL
RG	Rhus Glabra	Smooth Sumac	30 GAL
RP	Rosa Carolina	Carolina Rose	30 GAL
RF	Rubus Flagellaris	Northern Dewberry	30 GAL
Grass & Perenials - Riparian Garden			
AF	Agastache Foeniculum	Blue Giant Hyssop	5 GAL
AH	Amsonia Hubrichtii	Arkansas Bluestar	5 GAL
AI	Asclepias Incarnata	Swamp Milkweed	5 GAL
AT	Asclepias Tuberosa	Butterfly Milkweed	5 GAL
DS	Distichlis Spicata	Saltgrass	5 GAL
HA	Helianthus Angustifolius	Swamp Sunflower	5 GAL
HY	Hemerocallis X	Hybrid Daylily	5 GAL
HM	Hibiscus Moscheutos	Rose Mallow	5 GAL
ID	Iris Domestica	Blackberry Lily Iris	5 GAL
IV	Iris Versicolor	Blue Flag	5 GAL
LL	Limonium Latifolium	Sea Lavender	5 GAL
LS	Liriope Spicata	Creeping Lilyturf	5 GAL
MF	Monarda Fistulosa	Bergamot	5 GAL
PV	Panicum Virgatum	Switch Grass	5 GAL
SL	Schizachyrium Littorale	Coastal Little Bluestem	5 GAL
SC	Symphyotrichum Concolor	Eastern Silver Aster	5 GAL
SNB	Symphyotrichum Novi-Belgii	New York Aster	5 GAL

Grasses & Perenials - Raised Planter			
LC	Lespedeza Capitata	Round-Headed Bush Clover	5 GAL
LSK	Liatris Spicata 'Kobold'	Kobold Blazing Star	5 GAL
LSS	Liatris Spicata 'Snow White'	Snow White Blazing Star	5 GAL
MS	Maianthemum Stellatum	False Lily Of The Valley	5 GAL
MF	Monarda Fistulosa	Bergamot	5 GAL
MP	Monarda Punctata	Spotted Horsemint	5 GAL
NC	Nuttallanthus Canadensis	Canada Toadflax	5 GAL
OF	Oenothera Fruticosa	Sundrops	5 GAL
PH	Penstemon Hirsutus	Hairy Beardtongue	5 GAL
PC	Potentilla Canadensis	Creeping Cinquefoil	5 GAL
PT	Pycnanthemum Tenuifolium	Slender Mountain Mint	5 GAL
SC	Solidago Canadensis	Goldenrod	5 GAL
SN	Solidago Nemoralis	Gray Goldenrod	5 GAL
SE	Symphyotrichum Ericoides	Heath Aster	5 GAL
SNA	Symphyotrichum Novae-Angliae	New England Aster	5 GAL
SO	Symphyotrichum Oblongifolium	Fall Aster	5 GAL
Bulbs - Raised Planter			
AC	Allium Cristophii	Star Of Persia	5 GAL
AG	Allium Giganteum 'Globemaster'	Globemaster Giant Allium	5 GAL
AS	Allium Schoenoprasum	Common Chives	5 GAL
CTL	Crocus Tommasinianus 'Lilac Beauty	Lilac Beauty Crocus	5 GAL
CTW	Crocus Tommasinianus 'Whitewell P	Whitewell Purple Crocus	5 GAL
EH	Eranthis Hyemalis	Winter Aconite	5 GAL
GN	Galanthus Nivalis	Snowdrop	5 GAL
ER	Eremurus x isabellinus	Foxtail Lilly	5 GAL
Vine - Planting along the Sheetpile Edge			
PQ	Parthenocissus Quinquefolia	Virginia Creeper	5 GAL
LS	Lonicera sempervirens	Trumpet Honeysuckle	5 GAL
CV	Clematis viorna	Vasevine	5 GAL

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6.PAVING MATERIALS LISTED IN ZR 62-655 PERMITTED AS AN ALTERNATIVE.
7.SIMILAR PLANT SPECIES MAY BE SELECTED AT DISCRETION OF LANDSCAPE ARCHITECT.
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CHECKED BY: KT, BH

SCALE
VERT: N/A
HORZ: 1"= 15'
0 7.5' 15' 30'
NORTH

SHEET TITLE
PLANTING PLAN

SHEET NUMBER
L-150.00

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DOT STORAGE AREA
(SUBJECT TO CHANGE PER COORDINATION WITH FDNY AND DOT)

SITE LIGHTING SCHEDULE

SYMBOL	KEY	QTY	FIXTURE MANUFACTURER	FIXTURE MODEL	FIXTURE DESCRIPTION	FIXTURE MOUNTING HEIGHT	LAMP/ SYSTEM WATTS	OPTICS	COLOR TEMPERATURE	LLF	FIXTURE CATALOGUE NO.	POLE MANUFACTURER	POLE DESCRIPTION	POLE LENGTH	POLE CATALOGUE NO.
	PL-1	7	SENTRY ELECTRIC	SBCA6-LED BISHOPS CROOK-A6	HIGH-STRENGTH CAST ALUMINUM HOUSING WITH ACRYLIC GLOBE. NYC DOT APPROVED FIXTURE. OPTICS FACING THE SAME DIRECTION AS POLE	17'-0"	97 WATTS	TYPE III	3,000K	0.89	SBCA6-LEDV29B-1.75A-830-KHT4P3	SPRING CITY	TBTA 17'-0" LAMP POST WITH TBTA PEDESTRIAN SINGLE 4'-0" CROSS ARM	17'-0"	SPSTBT-24-17.00-F2
	PL-1A	4	SENTRY ELECTRIC	SBCA6-LED BISHOPS CROOK-A6	HIGH-STRENGTH CAST ALUMINUM HOUSING WITH ACRYLIC GLOBE. NYC DOT APPROVED FIXTURE. OPTICS FACING THE OPPOSITE DIRECTION OF POLE	17'-0"	97 WATTS	TYPE III	3,000K	0.89	SBCA6-LEDV29B-1.75A-830-KHT4P3	SPRING CITY	TBTA 17'-0" LAMP POST WITH TBTA PEDESTRIAN SINGLE 4'-0" CROSS ARM	17'-0"	SPSTBT-24-17.00-F2

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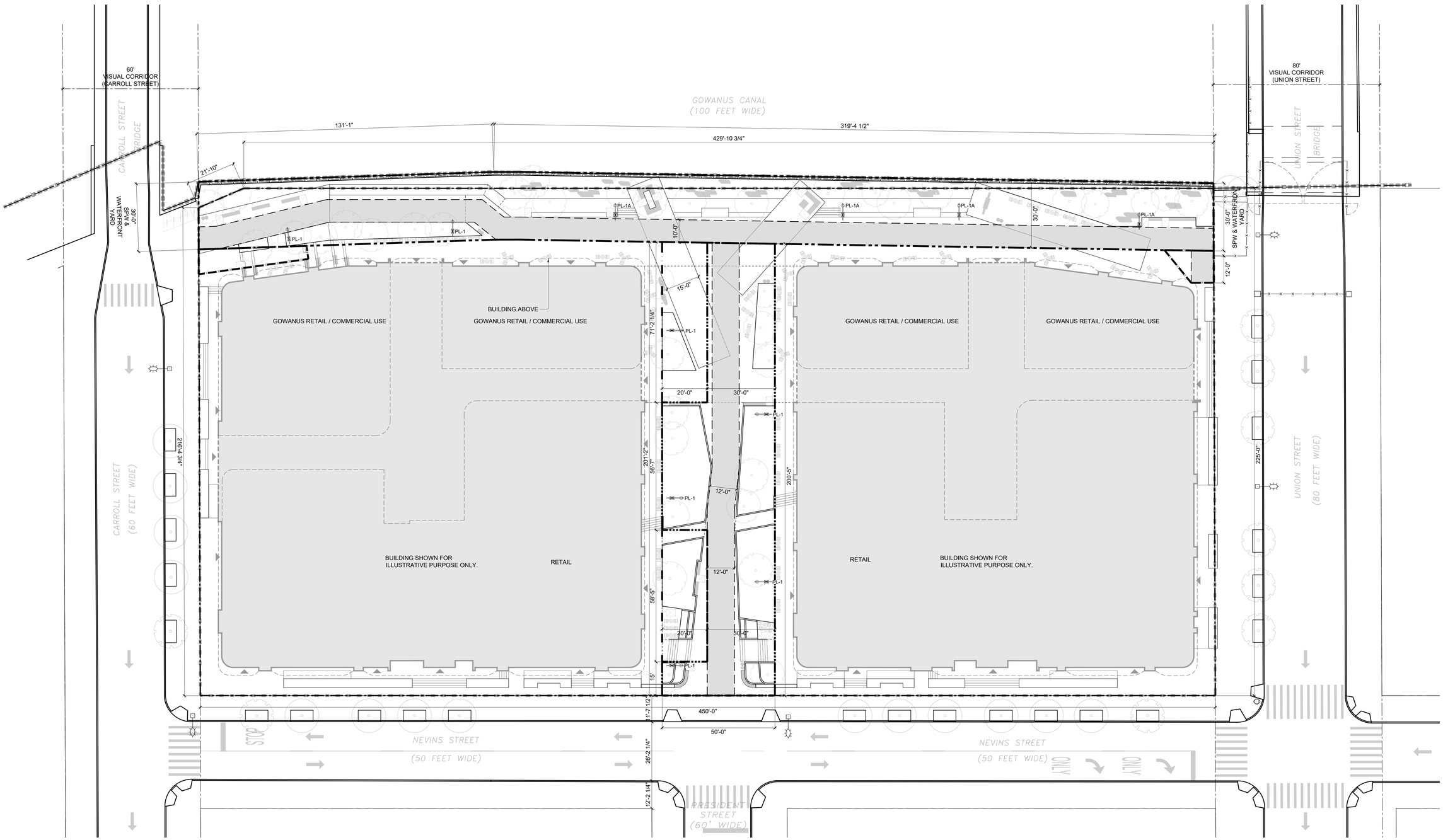
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KEY PLAN

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PROJECT NAME
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JCFO PROJ.#
2119

PROJECT PHASE:
WPAA

DESIGNED BY: JW
DRAWN BY: JW
CHECKED BY: KT, BH

SCALE
VERT: N/A
HORZ: N/A

NORTH

SHEET TITLE
LIGHTING PLAN

SHEET NUMBER
LTG-101.00

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DOT STORAGE AREA
(SUBJECT TO CHANGE PER COORDINATION WITH FDNY AND DOT)

LIGHTING

WATERFRONT PUBLIC ACCESS AREA AND UPLAND CONNECTION

ALL WALKABLE AREAS:

REQUIREMENT: AVERAGE OF NOT LESS THAN 0.5 HORIZONTAL FOOT CANDLE
PER 139-543

PROPOSED: AVERAGE OF NOT LESS THAN 0.5 HORIZONTAL FOOT CANDLE

ALL OTHER AREAS:

REQUIREMENT:
PER 62-653 MINIMUM OF 0.2 HORIZONTAL FOOT CANDLE

PROPOSED: MINIMUM OF 0.2 HORIZONTAL FOOT CANDLE

AVERAGE ILLUMINATION TO MINIMUM FC UNIFORMITY RATIO

ALL WALKABLE AREAS & ALL OTHER AREAS:

REQUIREMENT: AVERAGE ILLUMINATION TO MINIMUM FC UNIFORMITY RATIO LESS THAN 6:1
PER 139-543

PROPOSED: AVERAGE ILLUMINATION TO MINIMUM FC UNIFORMITY RATIO LESS THAN 6:1

LIGHTING NOTES:

1. LIGHTING CALCULATIONS REFLECT CONTRIBUTIONS FROM FIXTURES AS SHOWN ON DRAWINGS.
2. CONTRIBUTIONS FROM ADJACENT AMBIENT EXTERIOR LIGHTING, SKYGLOW, OR INTERIOR FIXTURES ARE NOT INCLUDED IN THE CALCULATION RESULTS.
3. ALL CALCULATION RESULTS ARE APPROXIMATE AND BASED ON AS DESIGNED CONDITIONS. AS BUILT CONDITIONS AND ENVIRONMENTAL CONTRIBUTIONS MAY RESULT IN VARIATIONS IN FIELD MEASUREMENTS.

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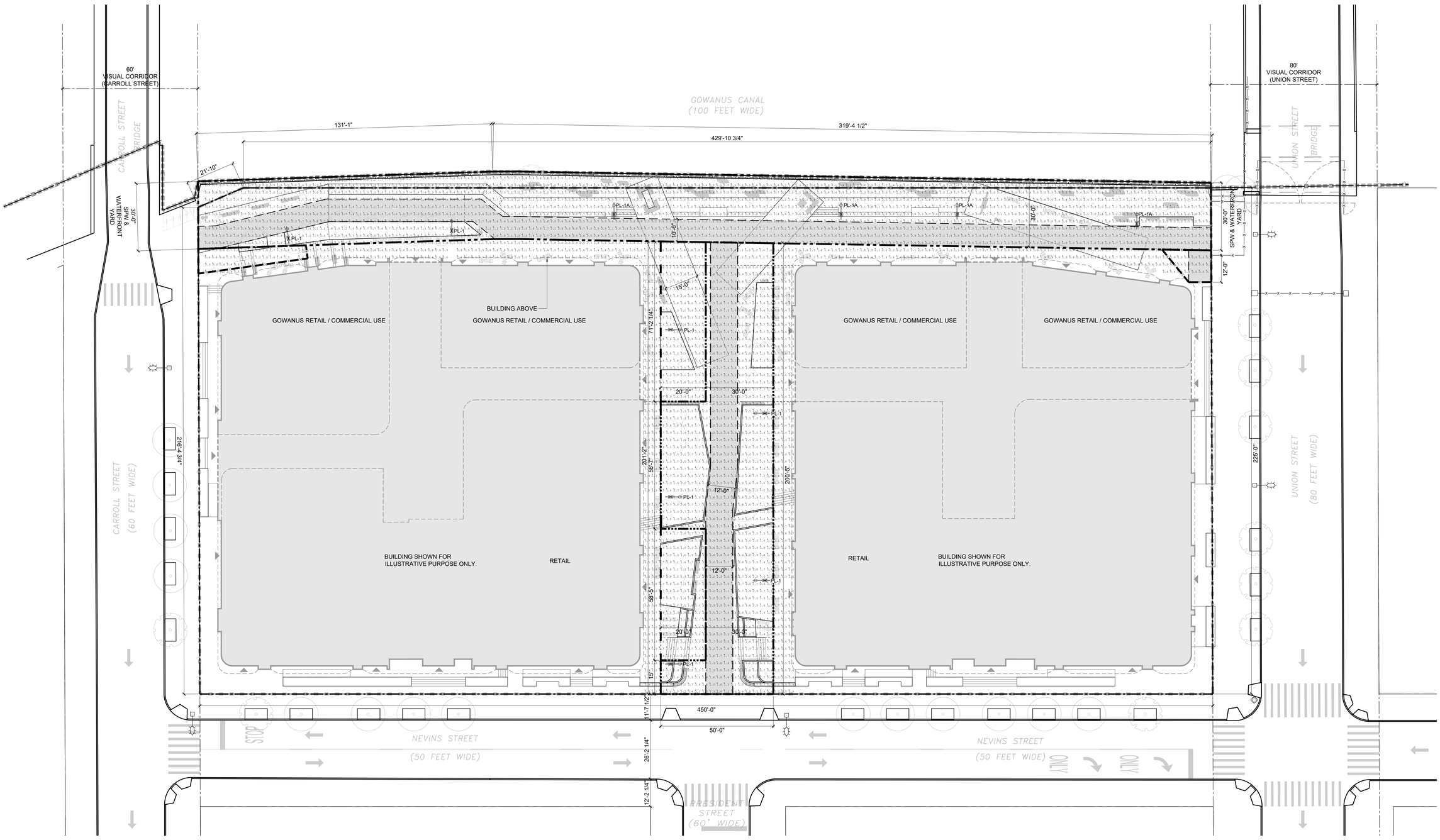
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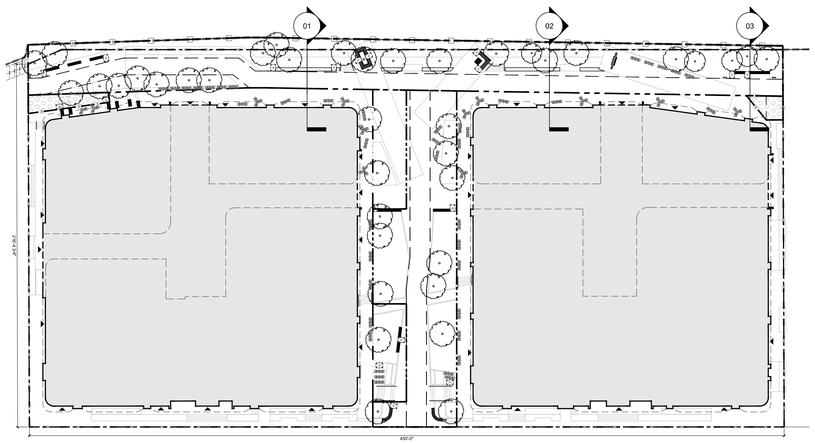
SCALE
VERT: N/A
HORZ: N/A

NORTH

SHEET TITLE
PHOTOMETRIC LIGHTING PLAN

SHEET NUMBER
LTG-102.00

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KEY MAP

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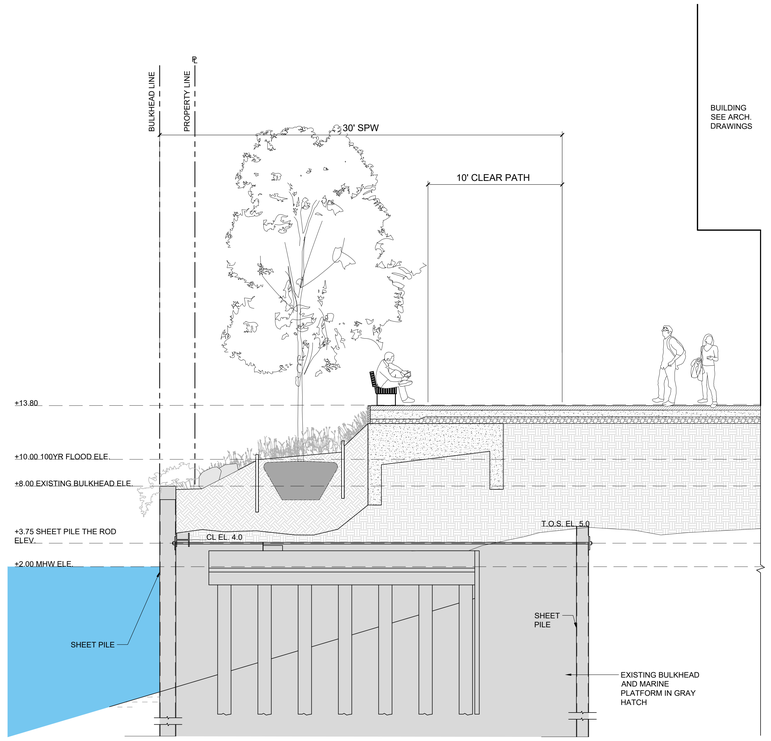
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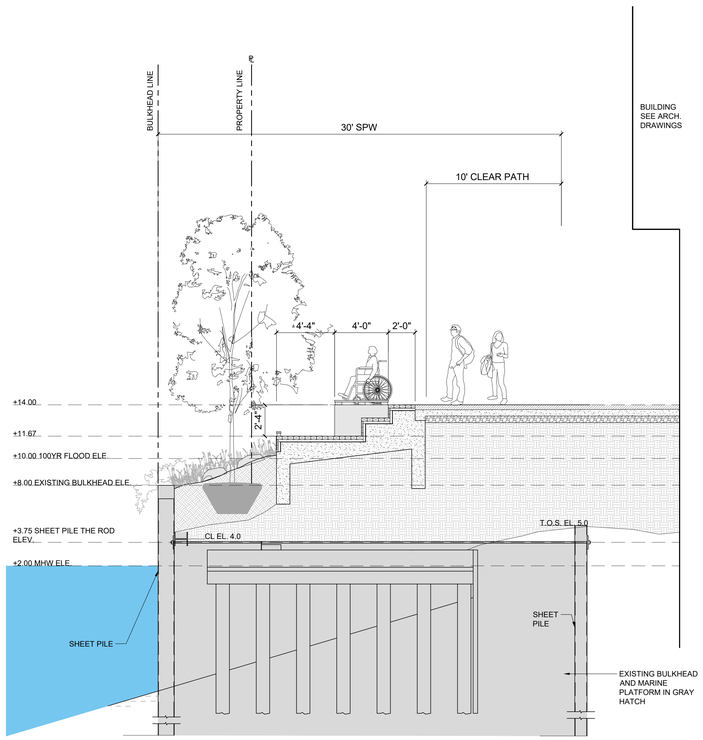
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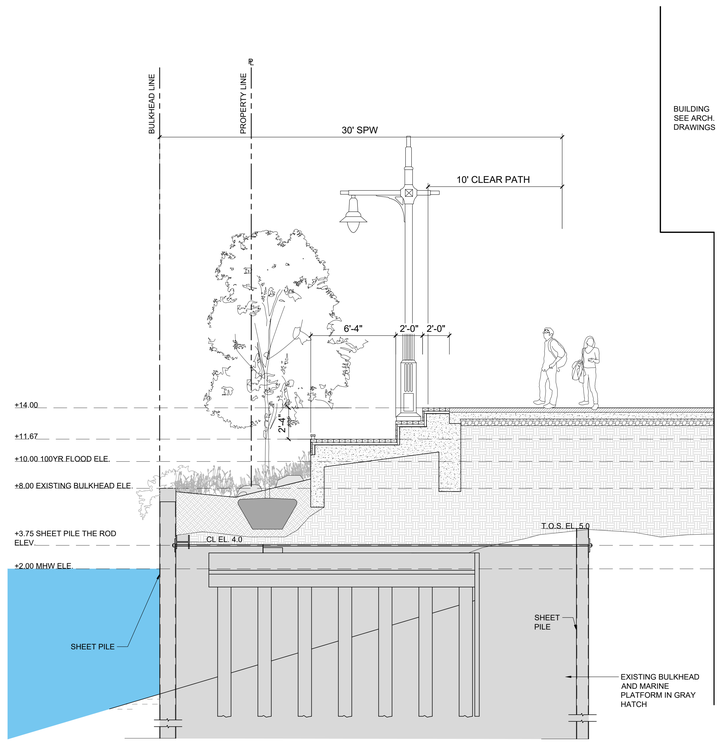
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03 SECTION 03
SECTION
1/4"=1'-0"



02 SECTION 02
SECTION
1/4"=1'-0"



01 SECTION 01
SECTION
1/4"=1'-0"

300 NEVINS ST.
BROOKLYN, NY 11215

OWNERSHIP

CHARNEY COMPANIES
5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

LANDSCAPE ARCHITECT

JAMES CORNER FIELD OPERATIONS
4 Bryant Park, 11th Floor, New York, NY 10018

FOR REFERENCE:

ARCHITECT

FOGARTY FINGER ARCHITECTURE
69 WALKER STREET, 2ND FLOOR
NEW YORK, NEW YORK 10013
TEL 212.966.7450

CIVIL ENGINEER

PHILIP HABIB & ASSOCIATES
102 MADISON AVENUE, ELEVENTH FLOOR
NEW YORK, NY 11222
TEL 212.929.5656

MARINE ENGINEER

MCLAREN ENGINEERING GROUP
131 WEST 35TH STREET4TH FLOOR
NEW YORK, NY 10001
TEL 201.775.6000

KEY PLAN

SEAL

NOT FOR CONSTRUCTION

ISSUANCE

NO.	DESCRIPTION	DATE
1	DLUA 1 SUBMISSION	8/5/2022
2	DLUA 2 SUBMISSION	10/21/2022

PROJECT NAME
300 NEVINS STREET
300 NEVINS ST.
BROOKLYN, NY 11217
JCFO PROJ.#
2119

PROJECT PHASE:
WPAA

DESIGNED BY: JW
DRAWN BY: JW
CHECKED BY: KT, BH

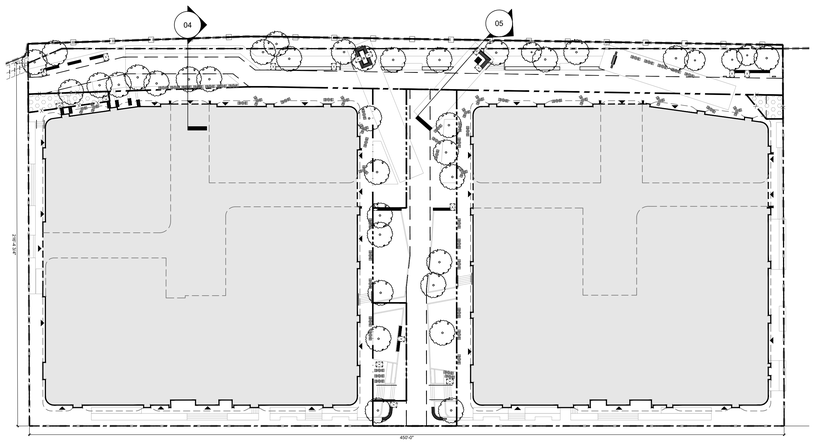
SCALE
NORTH
VERT: N/A
HORZ. AS NOTED

SHEET TITLE
SITE - SECTION

SHEET NUMBER
L-301.00

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ORIGINAL SHEET SIZE: 36" X 48"



KEY MAP

GENERAL NOTES:

1.APPLICANT'S STAMP AND SEAL CORRESPOND TO THE INFORMATION REGARDING THE WATERFRONT PUBLIC ACCESS AREA ON THE ZONING LOT. INFORMATION REGARDING THE SURROUNDING PROPERTIES AND AREAS OUTSIDE WPAA AND PAA IS FOR ILLUSTRATIVE PURPOSES ONLY.

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6.PAVING MATERIALS LISTED IN ZR 62-655 PERMITTED AS AN ALTERNATIVE.

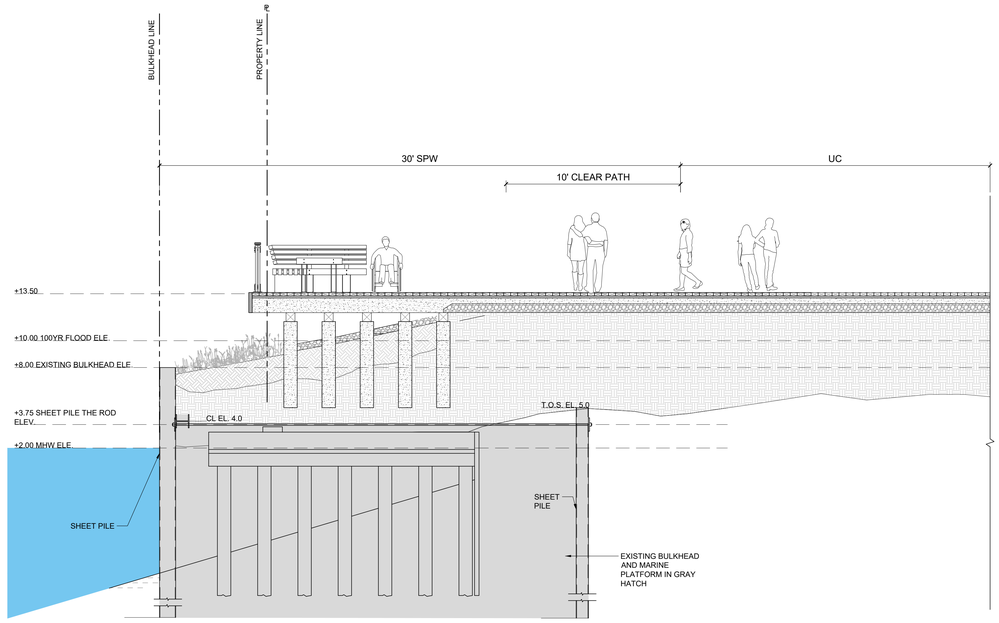
7.SIMILAR PLANT SPECIES MAY BE SELECTED AT DISCRETION OF LANDSCAPE ARCHITECT.

8.ON LIGHTING AND PHOTOMETRIC PLANS, ALL QUANTITIES AND DIMENSIONS ARE FOR REFERENCE ONLY.

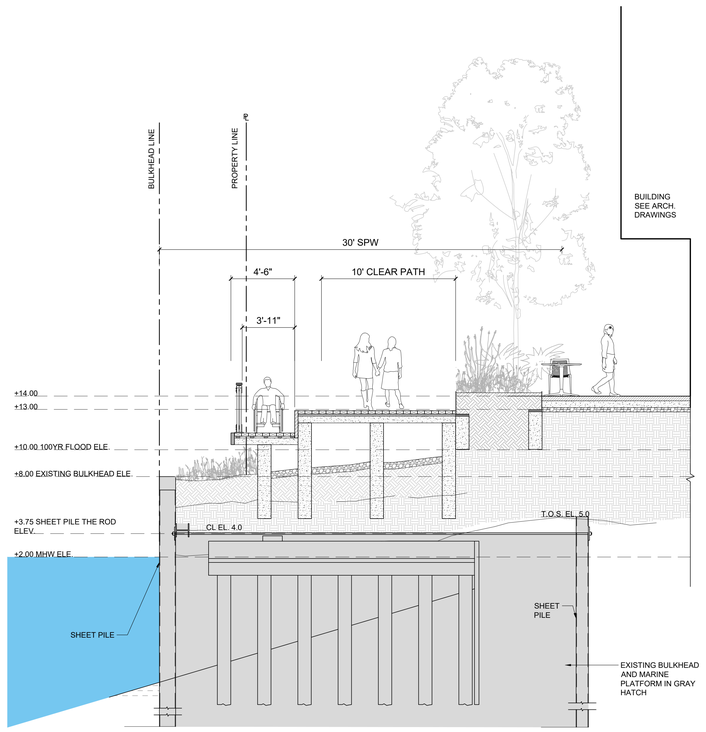
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10.GUARDRAILS, WHERE REQUIRED, TO CONFIRM WITH STANDARDS SET FORTH IN ZR 139-541 OF GOWANUS WAP.

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05 SECTION 05
SECTION
1/4"=1'-0"



04 SECTION 04
SECTION
1/4"=1'-0"

300 NEVINS ST.

BROOKLYN, NY 11215

OWNERSHIP

CHARNEY COMPANIES
5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
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NEW YORK, NY 10010

LANDSCAPE ARCHITECT

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MARINE ENGINEER

MCLAREN ENGINEERING GROUP
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KEY PLAN

SEAL

NOT FOR CONSTRUCTION

ISSUANCE

NO.	DESCRIPTION	DATE
1	DLUA 1 SUBMISSION	8/5/2022
2	DLUA 2 SUBMISSION	10/21/2022

PROJECT NAME:
300 NEVINS STREET
300 NEVINS ST.
BROOKLYN, NY 11217

COUNCIL#
2118

PROJECT PHASE:
WPAA

DESIGNED BY: JW
DRAWN BY: JW
CHECKED BY: KT, BH

SCALE NORTH

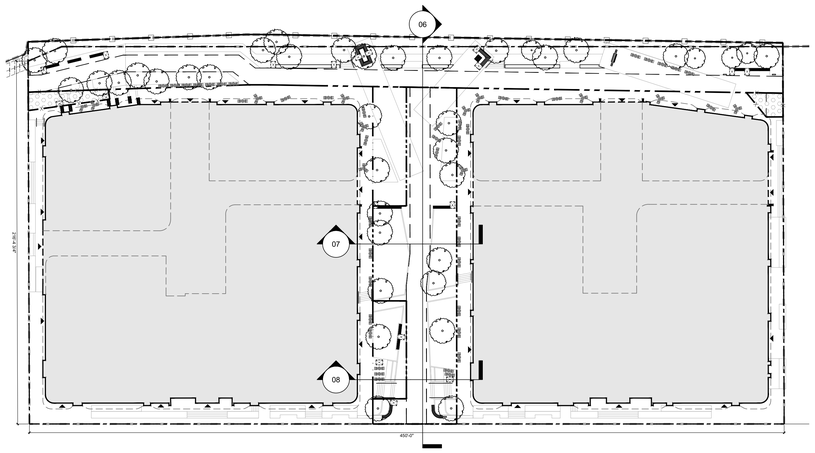
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HORZ. AS NOTED

SHEET TITLE
SITE - SECTION

SHEET NUMBER
L-302.00

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ORIGINAL SHEET SIZE: 36" X 48"



KEY MAP

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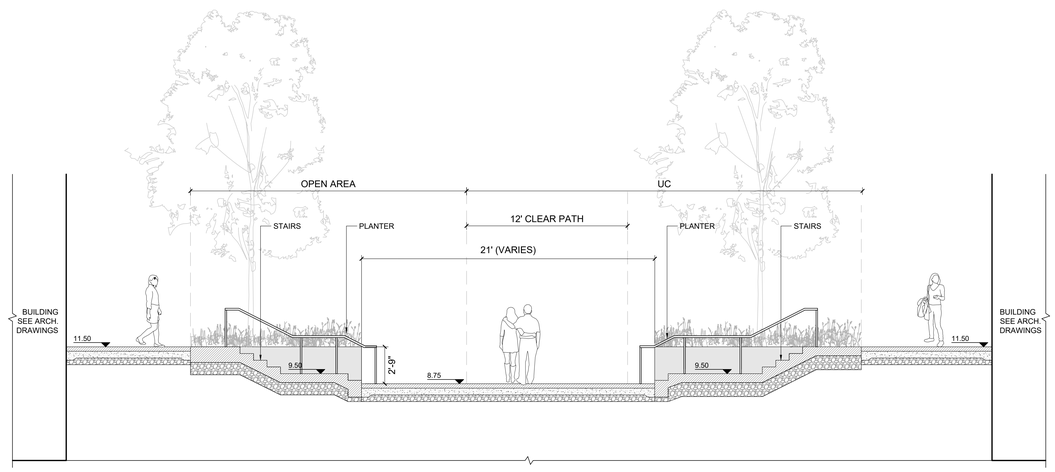
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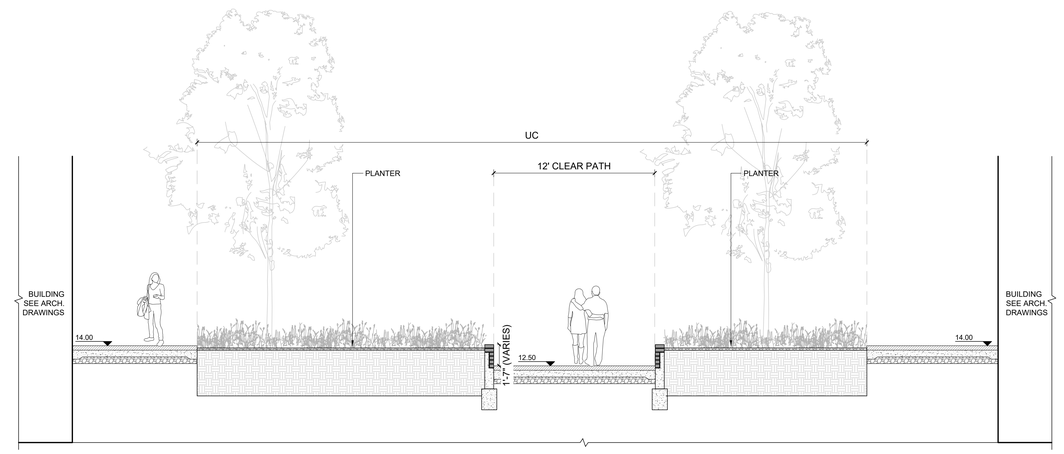
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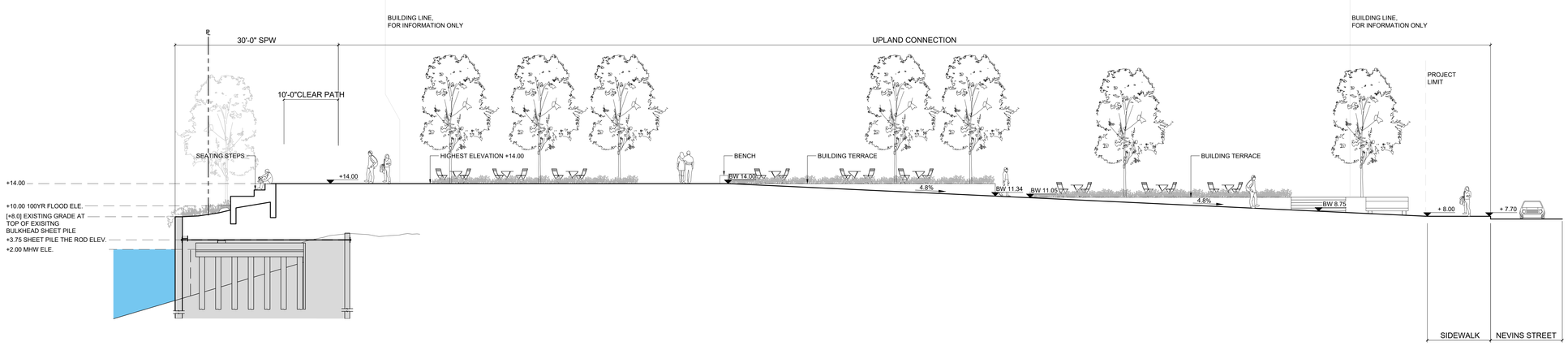
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08 SECTION 08
SECTION
1/4" = 1'-0"



07 SECTION 07
SECTION
1/4" = 1'-0"



06 UPLAND CONNECTION SECTION 06 @ NEVINS ST
SECTION
1/8" = 1'-0"

10/21/2022 12:56 PM BHEO L:\2119 NVS 300 NEVINS STREET\300-DESIGN\340-DRAWING\TASK 01 WPAA - REVISED\01-CAD\01 SHEETS\-303.00 SITE - SECTION.DWG

300 NEVINS ST.
BROOKLYN, NY 11215

OWNERSHIP

CHARNEY COMPANIES
5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
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4 Bryant Park, 11th Floor, New York, NY 10018

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KEY PLAN

SEAL

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ISSUANCE

NO.	DESCRIPTION	DATE
1	DLUA 1 SUBMISSION	8/5/2022
2	DLUA 2 SUBMISSION	10/21/2022

PROJECT NAME:
300 NEVINS STREET
300 NEVINS ST.
BROOKLYN, NY 11217
2119.01.P

PROJECT PHASE:
WPAA

DESIGNED BY: JW
DRAWN BY: JW
CHECKED BY: KT, BH

SCALE NORTH
VERT: N/A
HORZ: AS NOTED

SHEET TITLE
SITE - SECTION

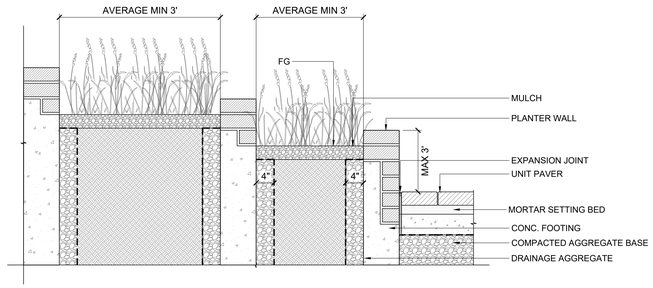
SHEET NUMBER
L-303.00

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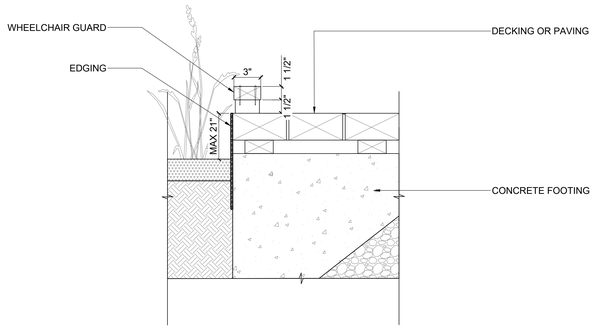
ORIGINAL SHEET SIZE: 36" X 48"

GENERAL NOTES:

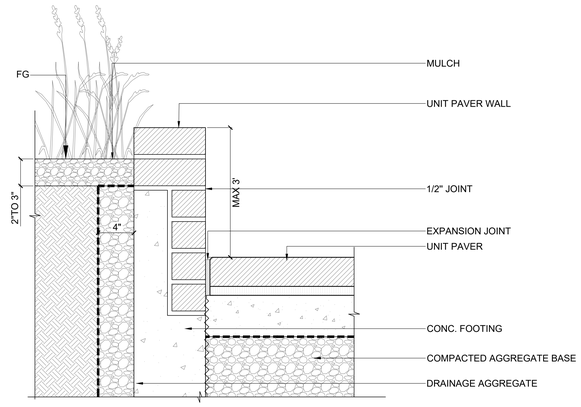
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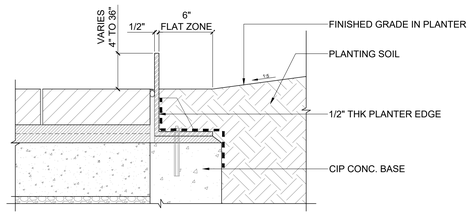
09 TERRACED PLANTER WALL @ UPLAND CONNECTION
DETAIL SECTION 1"=1'-0"



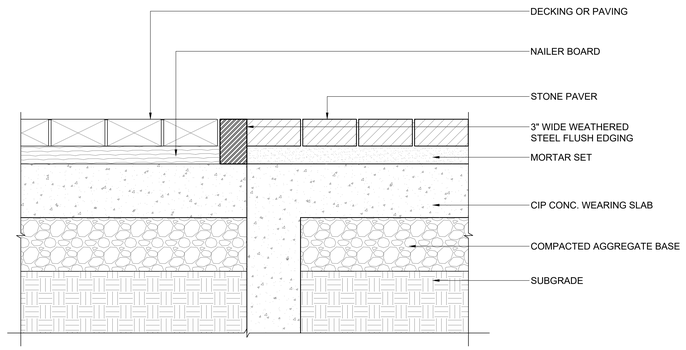
08 4" WIDE RAISED KICK RAILL
DETAIL SECTION 2"=1'-0"



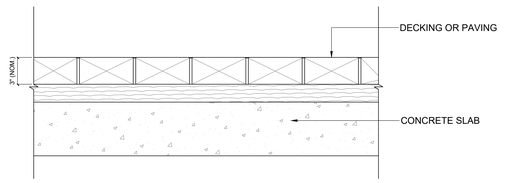
07 RAISED PLANTER WALL @ UPLAND CONNECTION TYP.
DETAIL SECTION 2"=1'-0"



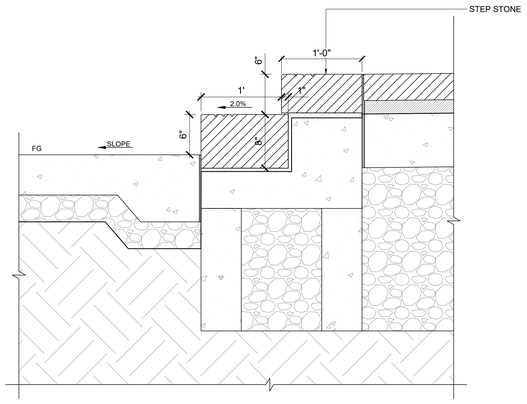
06 WEATHERED STEEL RAISED PLANTER EDGE
DETAIL SECTION 2"=1'-0"



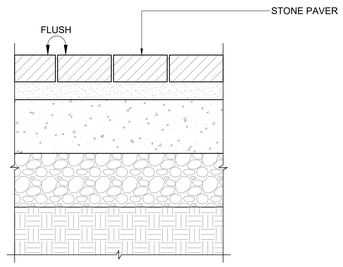
05 3' WIDE WEATHERED STEEL EDGE @ DECKING & STONE PAVERS
DETAIL SECTION 2"=1'-0"



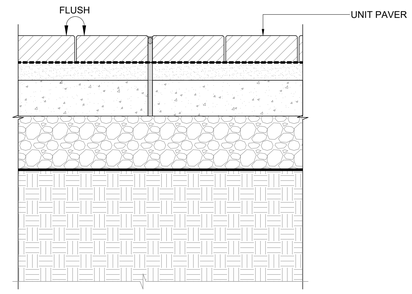
04 DECKING, TYP.
DETAIL SECTION 2"=1'-0"



03 STONE STAIRS, TYP.
DETAIL SECTION 1 1/2" = 1'-0"



02 STONE PAVER, TYP.
DETAIL SECTION 2" = 1'-0"



01 UNIT PAVER @ UC, TYP.
DETAIL SECTION 2" = 1'-0"

300 NEVINS ST.
BROOKLYN, NY 11215

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KEY PLAN

SEAL

NOT FOR CONSTRUCTION

ISSUANCE

NO.	DESCRIPTION	DATE
1	DLUA 1 SUBMISSION	8/5/2022
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PROJECT NAME
300 NEVINS STREET
300 NEVINS ST.
BROOKLYN, NY 11217

ACCORD JOB #
2119

PROJECT PHASE:
WPAA

DESIGNED BY: JW
DRAWN BY: JW
CHECKED BY: KT, BH

SCALE NORTH

VERT: N/A
HORZ: AS NOTED

SHEET TITLE
DETAILS - PAVING 01

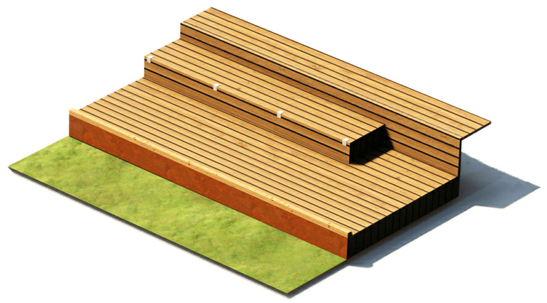
SHEET NUMBER
L-501.00

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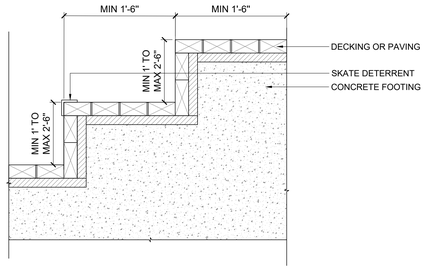
ORIGINAL SHEET SIZE: 36" X 48"

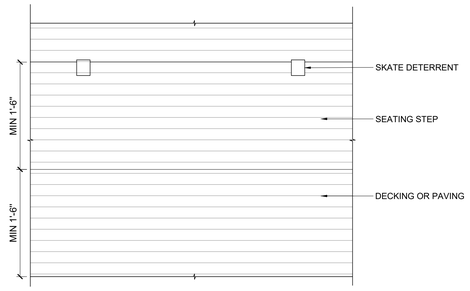
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06 SEATING STEP [SS]
AXON — NTS

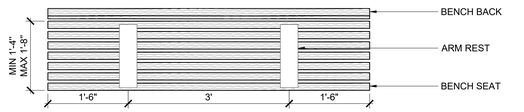




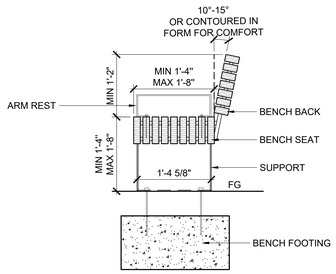
05 SEATING STEP [SS]
SECTION — 1" = 1'-0"



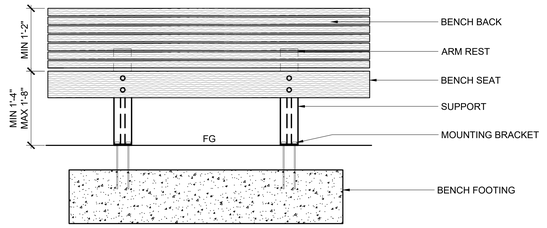
04 6 LF BENCH W/ BACK [B4]
AXON — NTS



PLAN

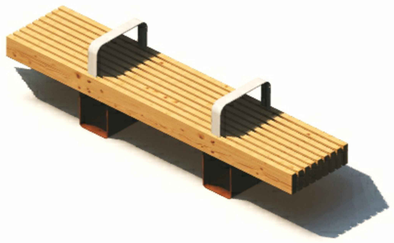


SIDE ELEVATION

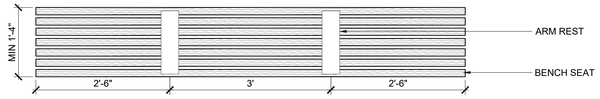


FRONT ELEVATION

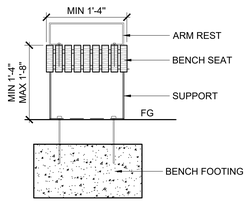
03 6 LF BENCH W/ BACK [B4]
SECTION — 1" = 1'-0"



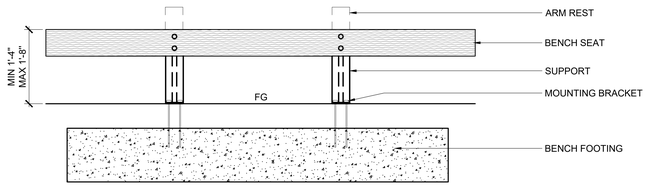
02 8 LF BENCH W/O BACK [B1]
AXON — NTS



PLAN



SIDE ELEVATION



FRONT ELEVATION

01 8 LF BENCH W/O BACK [B1]
SECTION — 1" = 1'-0"

300 NEVINS ST.
BROOKLYN, NY 11215

OWNERSHIP

CHARNEY COMPANIES
5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

LANDSCAPE ARCHITECT

JAMES CORNER FIELD OPERATIONS
4 Bryant Park, 11th Floor, New York, NY 10018

FOR REFERENCE:

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NEW YORK, NEW YORK 10013
TEL 212.966.7450

CIVIL ENGINEER

PHILIP HABIB & ASSOCIATES
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NEW YORK, NY 11222
TEL 212.929.5656

MARINE ENGINEER

MCLAREN ENGINEERING GROUP
131 WEST 35TH STREET4TH FLOOR
NEW YORK, NY 10001
TEL 201.775.6000

KEY PLAN

SEAL

NOT FOR CONSTRUCTION

ISSUANCE

NO.	DESCRIPTION	DATE
1	DLUA 1 SUBMISSION	8/5/2022
2	DLUA 2 SUBMISSION	10/21/2022

PROJECT NAME
300 NEVINS STREET
300 NEVINS ST.
BROOKLYN, NY 11217

ACCORD JOB #
2119

PROJECT PHASE:
WPAA

DESIGNED BY: JW
DRAWN BY: JW
CHECKED BY: KT, BH

SCALE — NORTH

VERT: N/A
HORZ: AS NOTED

SHEET TITLE
DETAILS - FURNISHING 01

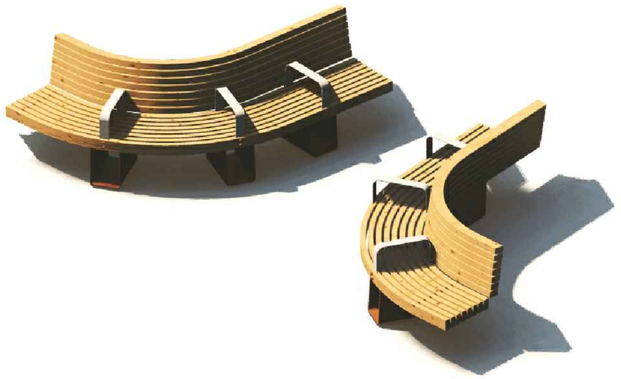
SHEET NUMBER
L-541.00

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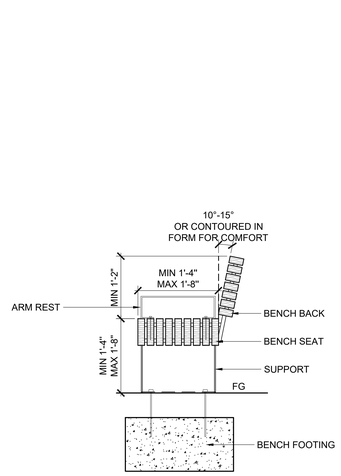
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GENERAL NOTES:

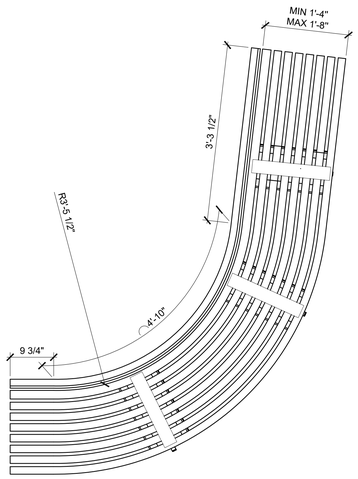
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5.QUANTITY AND LOCATION OF STREET TREES IN ACCORDANCE WITH ZR 139-42 AND 26-41 AND SUBJECT TO CHANGE PER DPR APPROVAL.
6.PAVING MATERIALS LISTED IN ZR 62-655 PERMITTED AS AN ALTERNATIVE.
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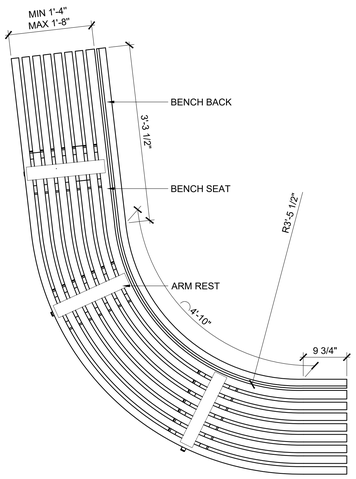
06 UC ENTRY BENCH W/ BACK [B6] & [B7]
AXON — NTS



SIDE ELEVATION

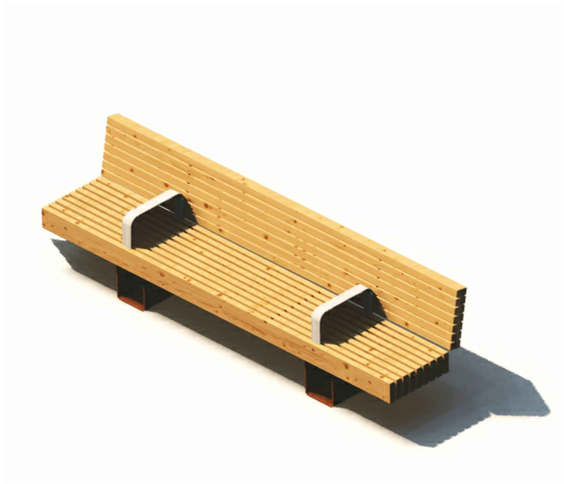


B6 PLAN

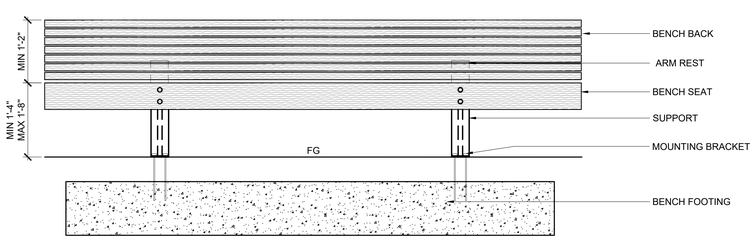


B7 PLAN

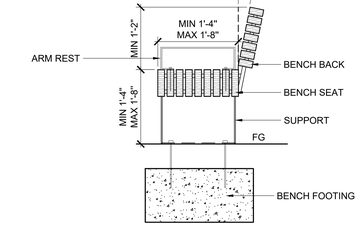
05 UC ENTRY BENCH W/ BACK [B6] & [B7]
SECTION — 1" = 1'-0"



04 10 LF BENCH W/ BACK [B5]
AXON — NTS



PLAN



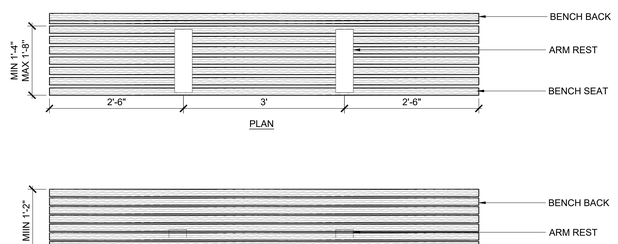
SIDE ELEVATION

FRONT ELEVATION

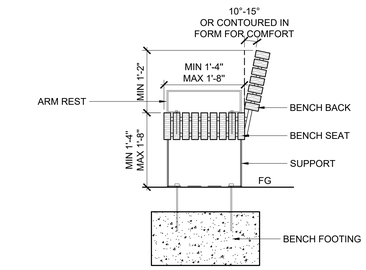
03 10 LF BENCH W/ BACK [B5]
SECTION — 1" = 1'-0"



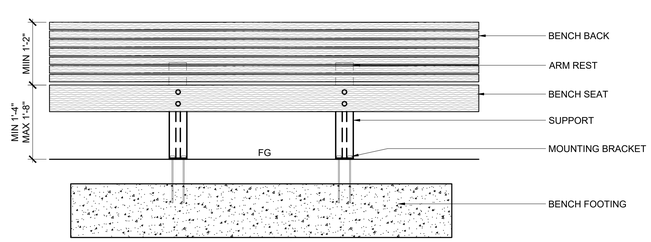
02 8 LF BENCH W/ BACK [B2]
AXON — NTS



PLAN



SIDE ELEVATION



FRONT ELEVATION

01 8 LF BENCH W/ BACK [B2]
SECTION — 1" = 1'-0"

10/21/2022 12:57 PM BHEO L:\2119 NVS 300 NEVINS STREET\000-DESIGN\340-DRAWING\TASK 01 WPAA - REVISED\01-CAD\01 SHEETS\L-546.00 DETAILS - FURNISHINGS 06.DWG

300 NEVINS ST.
BROOKLYN, NY 11215

OWNERSHIP

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LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
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NEW YORK, NY 10010

LANDSCAPE ARCHITECT

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MCLAREN ENGINEERING GROUP
131 WEST 35TH STREET4TH FLOOR
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TEL 201.775.6000

KEY PLAN

SEAL

NOT FOR CONSTRUCTION

ISSUANCE

NO.	DESCRIPTION	DATE
1	DLUA 1 SUBMISSION	8/5/2022
2	DLUA 2 SUBMISSION	10/21/2022

PROJECT NAME
300 NEVINS STREET
300 NEVINS ST.
BROOKLYN, NY 11217
GOWANUS #
2119
PROJECT PHASE:
WPAA

DESIGNED BY: JW
DRAWN BY: JW
CHECKED BY: KT, BH

SCALE — NORTH

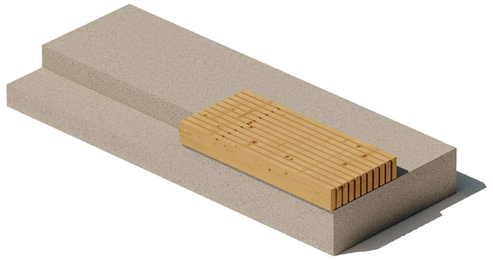
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SHEET TITLE
DETAILS - FURNISHINGS 02

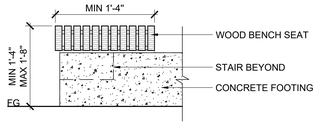
SHEET NUMBER
L-542.00

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ORIGINAL SHEET SIZE: 36" X 48"

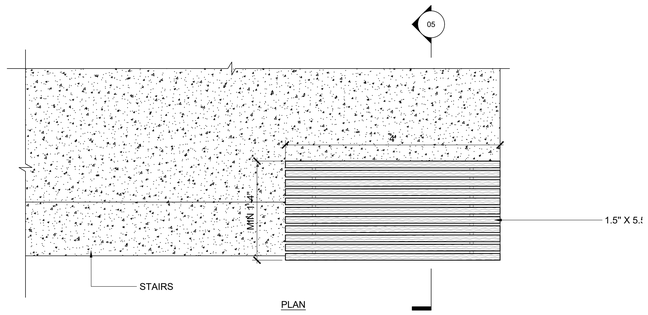


06 BENCH W/O BACK OUTSIDE OF WPAA
AXON — NTS



SECTION

05 BENCH W/O BACK OUTSIDE OF WPAA
SECTION — 1" = 1'-0"

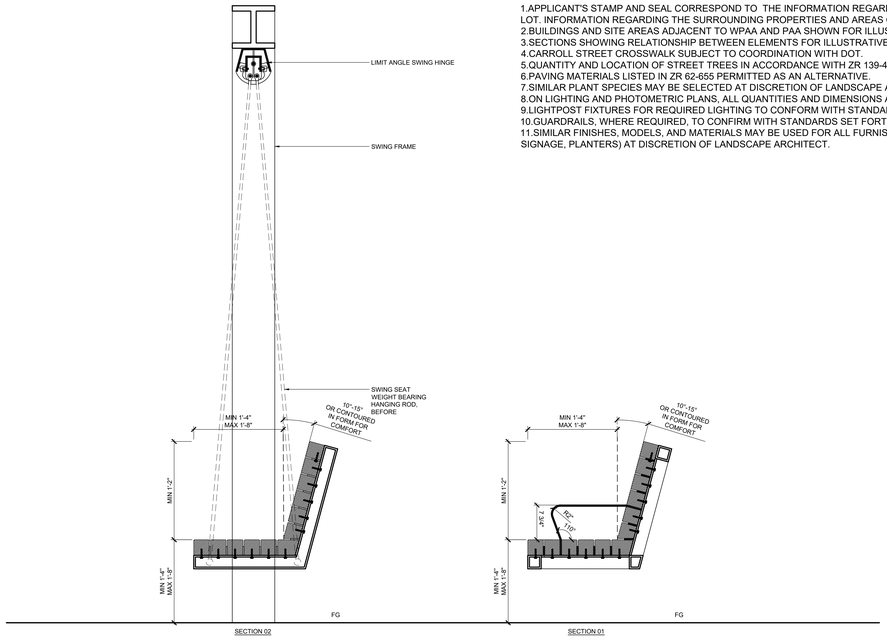


PLAN

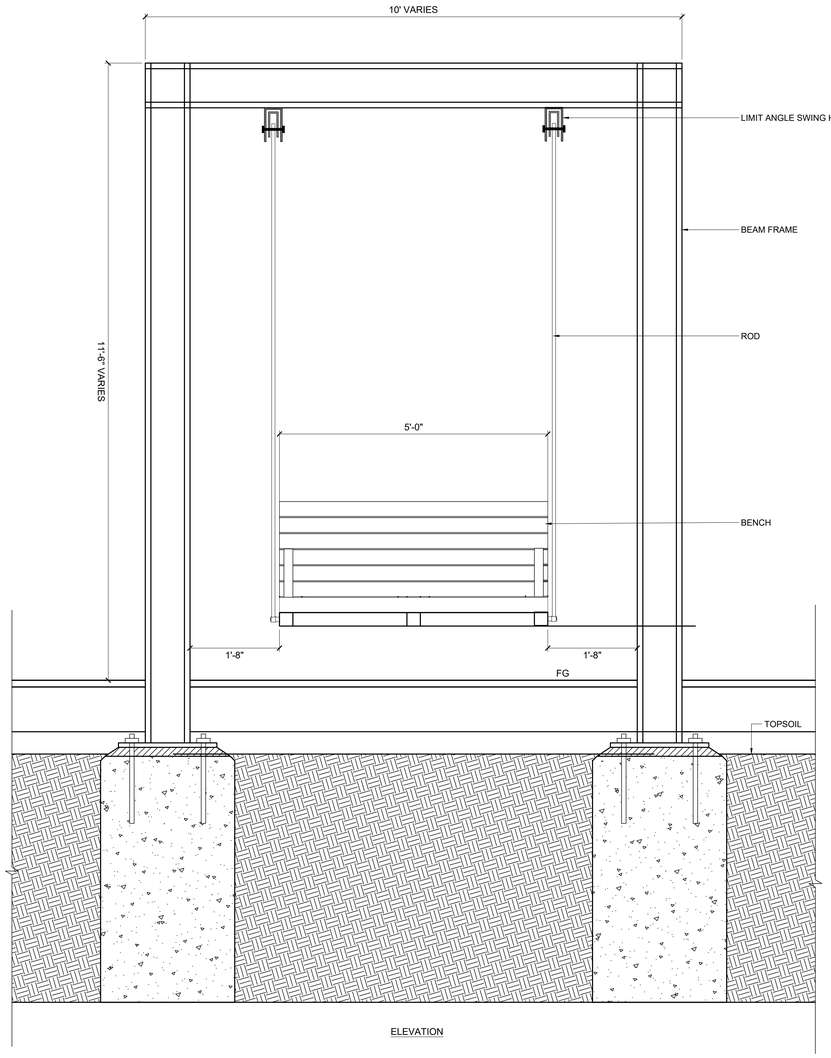
04 BENCH W/O BACK OUTSIDE OF WPAA
PLAN — 1" = 1'-0"



02 FAMILY SWING
AXON — NTS



03 FAMILY SWING
ELEVATION — 1" = 1'-0"



ELEVATION

01 FAMILY SWING
SECTION — 1" = 1'-0"

GENERAL NOTES:

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300 NEVINS ST.
BROOKLYN, NY 11215

OWNERSHIP

CHARNEY COMPANIES
5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

LANDSCAPE ARCHITECT

JAMES CORNER FIELD OPERATIONS
4 Bryant Park, 11th Floor, New York, NY 10018

FOR REFERENCE:

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TEL 212.966.7450

CIVIL ENGINEER

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TEL 212.929.5656

MARINE ENGINEER

MCLAREN ENGINEERING GROUP
131 WEST 35TH STREET4TH FLOOR
NEW YORK, NY 10001
TEL 201.775.6000

KEY PLAN

SEAL

NOT FOR CONSTRUCTION

ISSUANCE

NO.	DESCRIPTION	DATE
1	DLUA 1 SUBMISSION	8/5/2022
2	DLUA 2 SUBMISSION	10/21/2022

PROJECT NAME
300 NEVINS STREET
300 NEVINS ST.
BROOKLYN, NY 11217
ACCORD/J.#
2119
PROJECT PHASE:
WPAA

DESIGNED BY: JW
DRAWN BY: JW
CHECKED BY: KT, BH

SCALE — NORTH

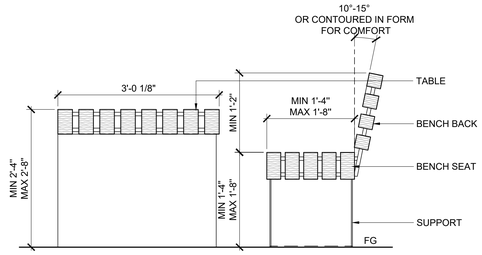
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SHEET TITLE
DETAILS - FURNISHINGS 03

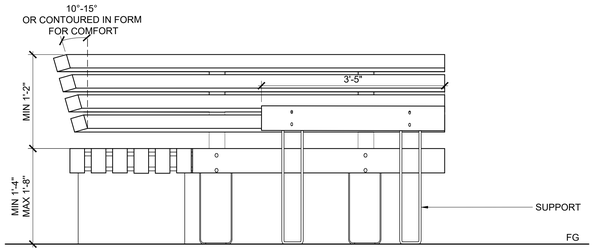
SHEET NUMBER
L-543.00

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ORIGINAL SHEET SIZE: 36" X 48"



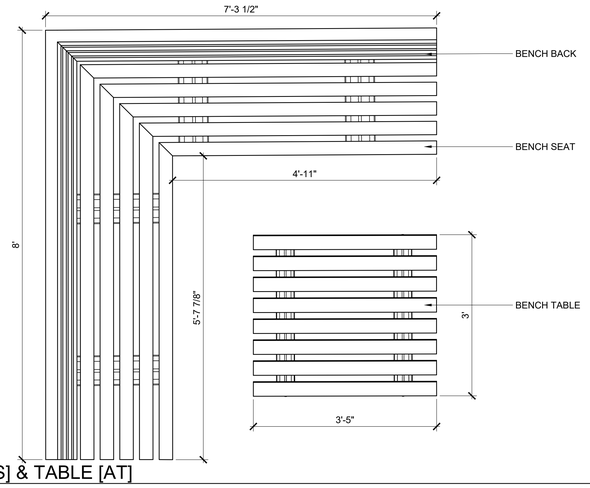
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SECTION 1" = 1'-0"



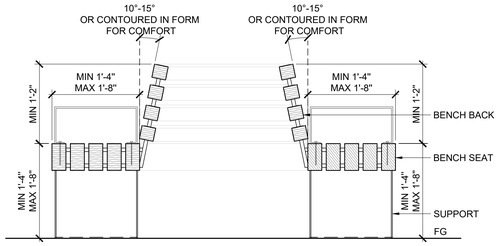
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ELEVATION 1" = 1'-0"



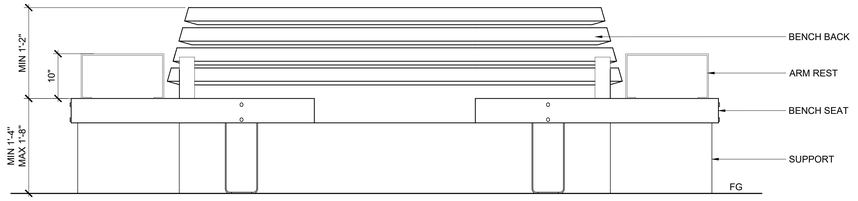
06 ALCOVE SEATING [AS] & TABLE [AT]
AXON NTS



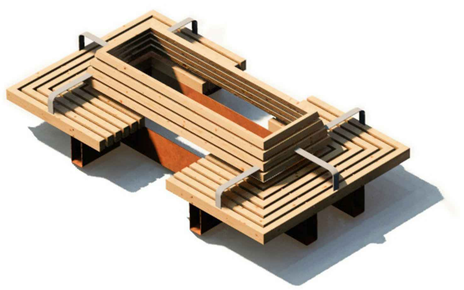
05 ALCOVE SEATING [AS] & TABLE [AT]
PLAN 1" = 1'-0"



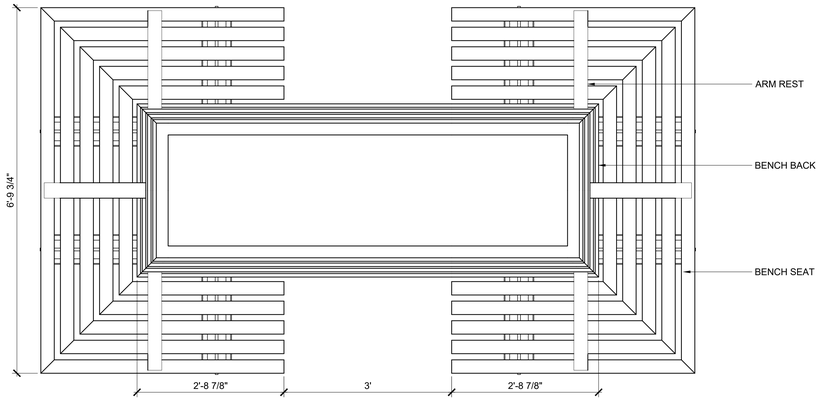
04 SEATING BAND [SB]
SECTION 1" = 1'-0"



03 SEATING BAND [SB]
ELEVATION 1" = 1'-0"



02 SEATING BAND [SB]
AXON NTS



01 SEATING BAND [SB]
PLAN 1" = 1'-0"

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300 NEVINS ST.
BROOKLYN, NY 11215

OWNERSHIP

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KEY PLAN

SEAL

NOT FOR CONSTRUCTION

ISSUANCE

NO.	DESCRIPTION	DATE
1	DLUA 1 SUBMISSION	8/5/2022
2	DLUA 2 SUBMISSION	10/21/2022

PROJECT NAME:
300 NEVINS STREET
300 NEVINS ST.
BROOKLYN, NY 11217

JOB/PROJ.#
2119

PROJECT PHASE:
WPAA

DESIGNED BY: JW
DRAWN BY: JW
CHECKED BY: KT, BH

SCALE NORTH

VERT: N/A
HORZ: AS NOTED

SHEET TITLE
DETAILS - FURNISHINGS 04

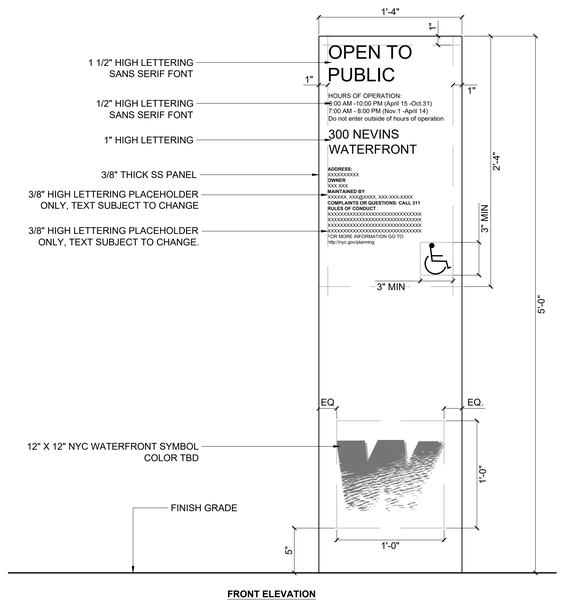
SHEET NUMBER
L-544.00

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ORIGINAL SHEET SIZE: 30" X 48"

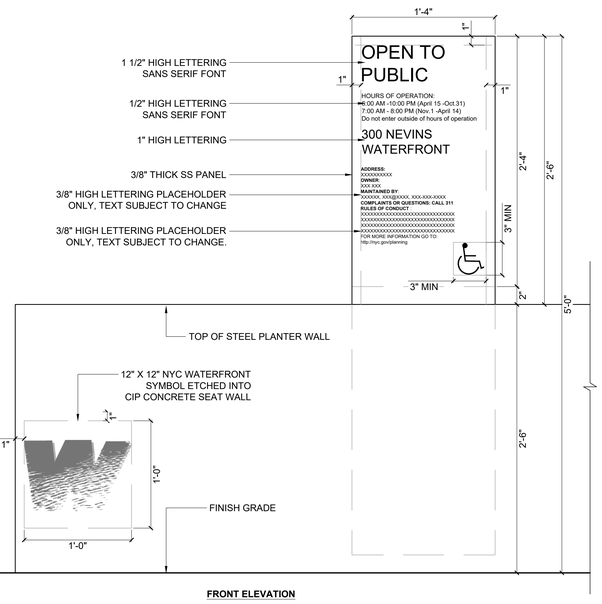
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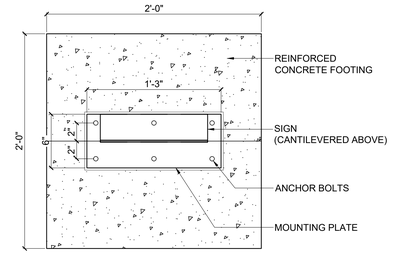


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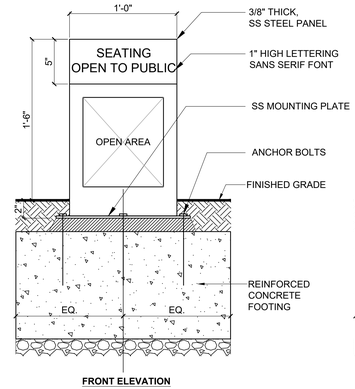
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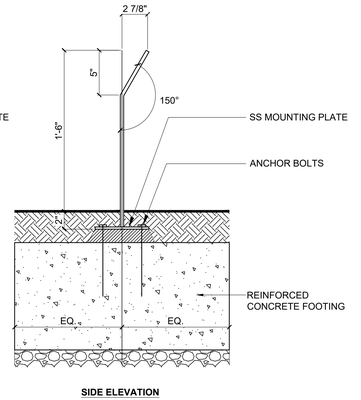
FRONT ELEVATION



PLAN



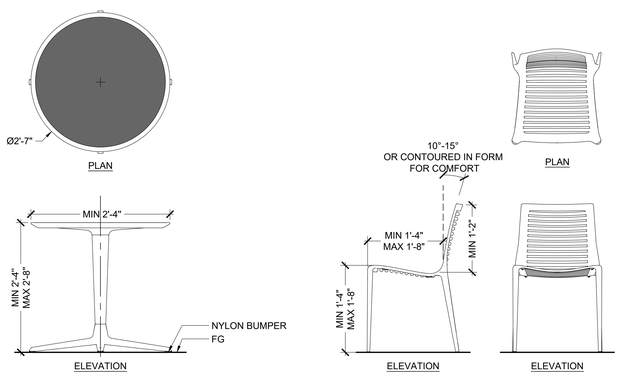
FRONT ELEVATION



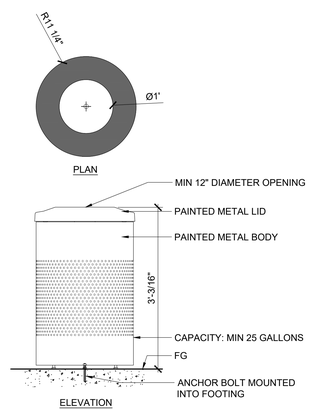
SIDE ELEVATION

05 WPAA ENTRY SIGN [ES]
DETAIL SECTION — 2" = 1'-0"

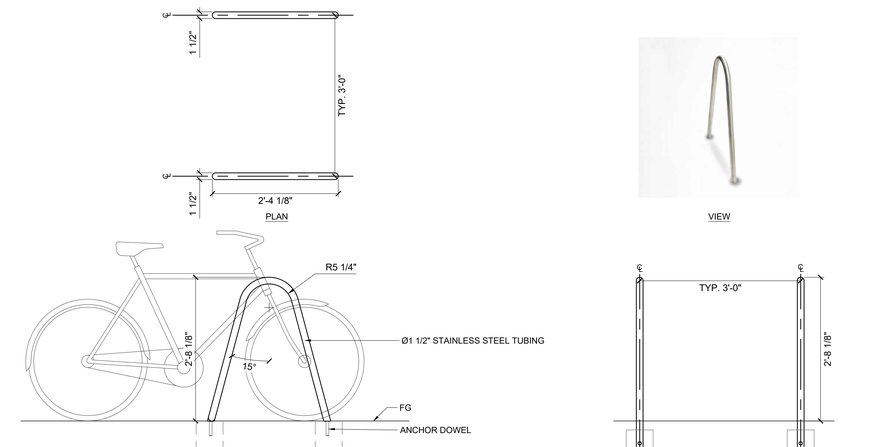
04 SEATING OPEN TO PUBLIC SIGN [PS]
DETAIL SECTION — 2" = 1'-0"



03 MOVABLE TABLE [M1] & CHAIR [M2]
SECTION — 1" = 1'-0"



02 TRASH RECEPTACLE [TR]
SECTION — 1" = 1'-0"



01 BIKE PARKING
SECTION — 1" = 1'-0"

300 NEVINS ST.
BROOKLYN, NY 11215

OWNERSHIP

CHARNEY COMPANIES
5-26 46TH AVENUE, SUITE 2A
LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
19 WEST 24TH STREET, 12TH FLOOR
NEW YORK, NY 10010

LANDSCAPE ARCHITECT

JAMES CORNER FIELD OPERATIONS
4 Bryant Park, 11th Floor, New York, NY 10018

FOR REFERENCE:

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MARINE ENGINEER

MCLAREN ENGINEERING GROUP
131 WEST 35TH STREET4TH FLOOR
NEW YORK, NY 10001
TEL 201.775.6000

KEY PLAN

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ISSUANCE

NO.	DESCRIPTION	DATE
1	DLUA 1 SUBMISSION	8/5/2022
2	DLUA 2 SUBMISSION	10/21/2022

PROJECT NAME:
300 NEVINS STREET
300 NEVINS ST.
BROOKLYN, NY 11217

SOLVIGO.#
2119

PHASE / PHASE:
WPAA

DESIGNED BY: JW
DRAWN BY: JW
CHECKED BY: KT, BH

SCALE NORTH

VERT: N/A
HORZ: AS NOTED

SHEET TITLE:
DETAILS - FURNISHINGS 05

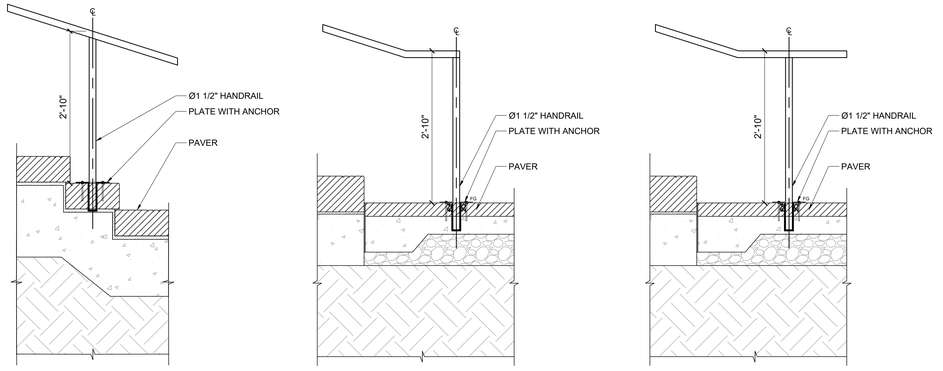
SHEET NUMBER:
L-545.00

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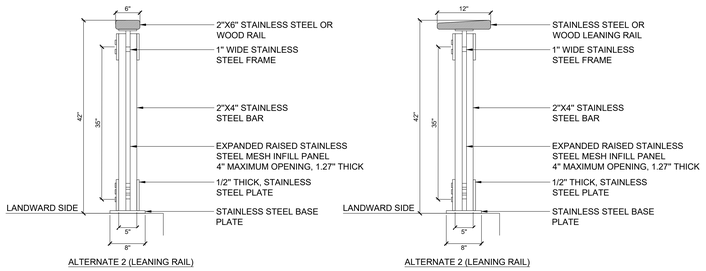
ORIGINAL SHEET SIZE: 36" X 48"

GENERAL NOTES:

1.APPLICANT'S STAMP AND SEAL CORRESPOND TO THE INFORMATION REGARDING THE WATERFRONT PUBLIC ACCESS AREA ON THE ZONING LOT. INFORMATION REGARDING THE SURROUNDING PROPERTIES AND AREAS OUTSIDE WPAA AND PAA IS FOR ILLUSTRATIVE PURPOSES ONLY.
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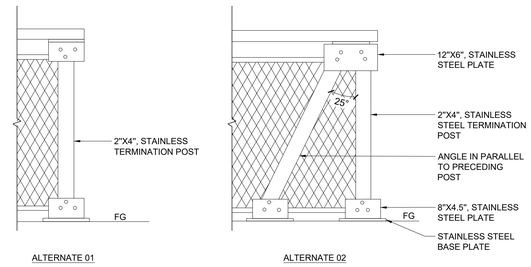
07 HANDRAIL ELEVATION [HR]
DETAIL SECTION
1"=1'-0"



ALTERNATE 2 (LEANING RAIL)

ALTERNATE 2 (LEANING RAIL)

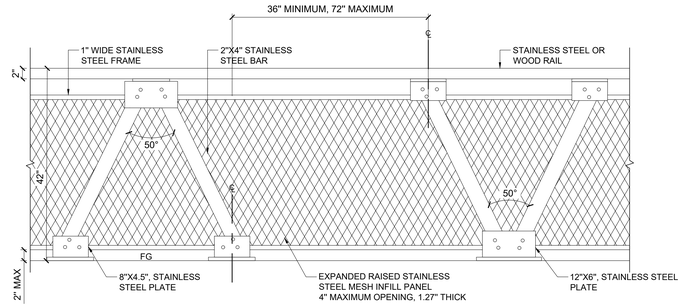
06 GUARDRAIL ELEVATION [GR] - OPTION 2: MESH GUARDRAIL
DETAIL SECTION
1"=1'-0"



ALTERNATE 01

ALTERNATE 02

05 GUARDRAIL ELEVATION [GR] - OPTION 2: MESH GUARDRAIL
DETAIL SECTION
1"=1'-0"



GUARDRAIL (TYPICAL)

04 GUARDRAIL ELEVATION [GR] - OPTION 2: MESH GUARDRAIL
DETAIL SECTION
1"=1'-0"

ALTERNATE 2 (LEANING RAIL)

ALTERNATE 2 (LEANING RAIL)

03 GUARDRAIL ELEVATION [GR] - OPTION 1: VERTICAL BAR GUARDRAIL
DETAIL SECTION
1"=1'-0"

ALTERNATE 01

ALTERNATE 02

02 GUARDRAIL ELEVATION [GR] - OPTION 1: VERTICAL BAR GUARDRAIL
DETAIL SECTION
1"=1'-0"

GUARDRAIL (TYPICAL)

01 GUARDRAIL ELEVATION [GR] - OPTION 1: VERTICAL BAR GUARDRAIL
DETAIL SECTION
1"=1'-0"

300 NEVINS ST.
BROOKLYN, NY 11215

OWNERSHIP

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TAVROS HOLDINGS
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NEW YORK, NY 10010

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NEW YORK, NY 10001
TEL 201.775.6000

KEY PLAN

SEAL

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ISSUANCE

NO.	DESCRIPTION	DATE
1	DLUA 1 SUBMISSION	8/5/2022
2	DLUA 2 SUBMISSION	10/21/2022

PROJECT NAME
300 NEVINS STREET
300 NEVINS ST.
BROOKLYN, NY 11217
ACCOUNT #
2119
PROJECT PHASE
WPAA

DESIGNED BY: JW
DRAWN BY: JW
CHECKED BY: KT, BH

SCALE NORTH

VERT: N/A
HORZ: AS NOTED

SHEET TITLE
RAILING DETAILS

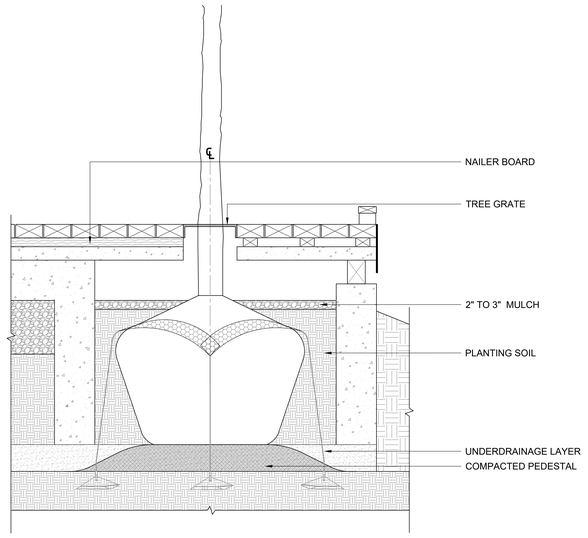
SHEET NUMBER
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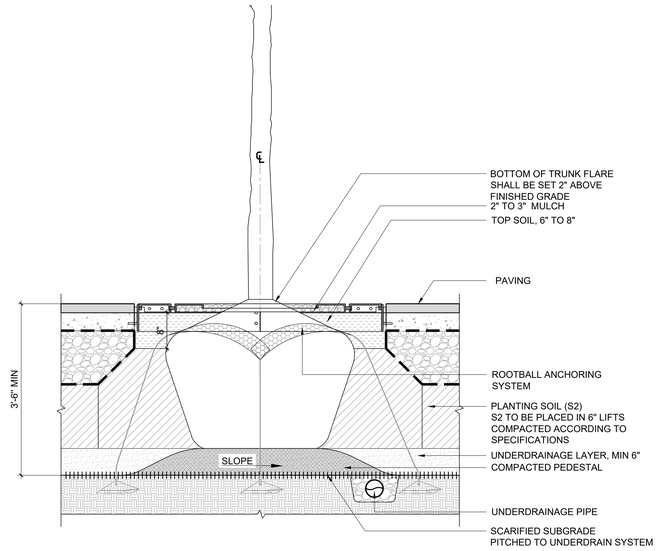
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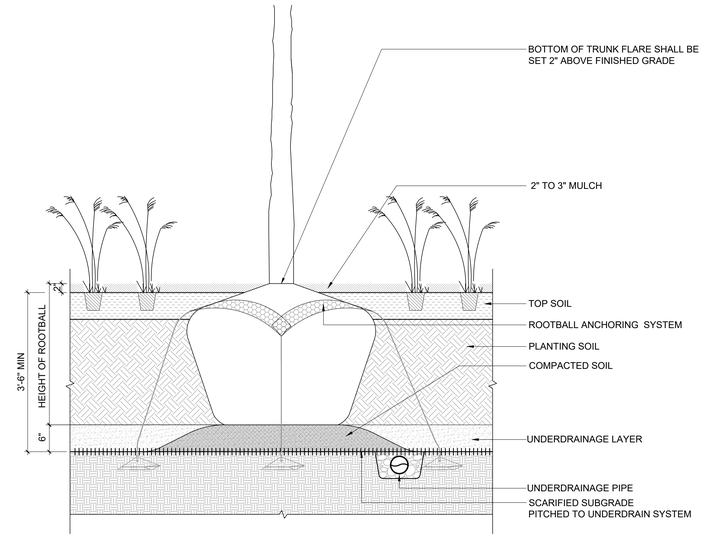
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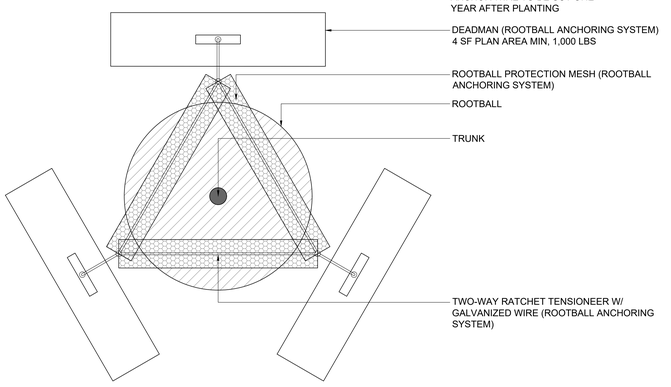
06 TYPICAL TREE PLANTING WITHIN BOARDWALK
SECTION 1" = 1'-0"



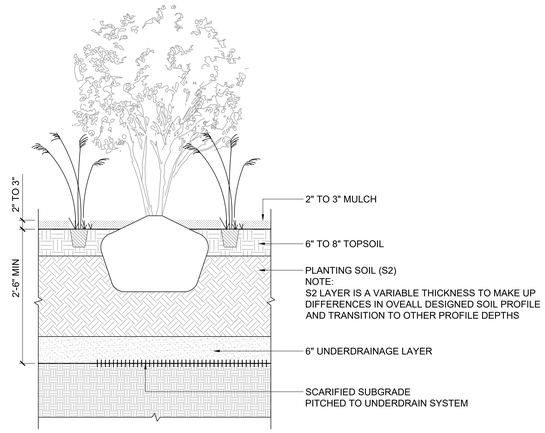
05 TYPICAL TREE PLANTING IN PAVING
SECTION 1" = 1'-0"



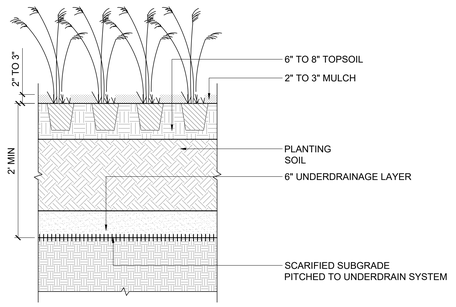
04 TYPICAL TREE PLANTING IN PLANTED AREA
SECTION 1" = 1'-0"



03 TYPICAL TREE ANCHORING PLAN
SECTION 1" = 1'-0"



02 TYPICAL SHRUB PLANTING
SECTION 1" = 1'-0"



01 TYPICAL GROUNDCOVER PLANTING
SECTION 1" = 1'-0"

300 NEVINS ST.
BROOKLYN, NY 11215

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LONG ISLAND CITY, NY 11101

TAVROS HOLDINGS
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MCLAREN ENGINEERING GROUP
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NEW YORK, NY 10001
TEL 201.775.6000

KEY PLAN

SEAL

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ISSUANCE

NO.	DESCRIPTION	DATE
1	DLUA 1 SUBMISSION	8/5/2022
2	DLUA 2 SUBMISSION	10/21/2022

PROJECT NAME
300 NEVINS STREET
300 NEVINS ST.
BROOKLYN, NY 11217
2119
PROJECT PHASE:
WPAA

DESIGNED BY: JW
DRAWN BY: JW
CHECKED BY: KT, BH

SCALE NORTH

VERT: N/A
HORZ: AS NOTED

SHEET TITLE
PLANTING DETAILS

SHEET NUMBER
L-551

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ORIGINAL SHEET SIZE: 30" X 48"

Appendix K

ISS Quality Assurance/Quality Control Plan

Remedial Action Work Plan
318 Nevins Street, Brooklyn, NY
NYSDEC BCP #C224350

Impact Environmental Engineering and Geology PLLC
170 KEYLAND COURT, BOHEMIA, NEW YORK 11716
TEL (631) 269-8800 ▪ FAX (631) 269-1599

In-Situ Stabilization Quality Assurance/Quality Control Plan

September 20, 2023

Site:

300-344 Nevins Street (aka 318 Nevins Street)
Brooklyn, New York
New York City Tax Map Designation: *Block 439; Lot 1*
NYSDEC BCP Site # C224350

Prepared for:

Gowanus 300 Nevins Street LLC
19 West 24th Street, 12h Floor
New York, NY 10010

Submitted to:

Site Control Section
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-7020

IMPACT ENVIRONMENTAL ENGINNERING & GEOLOGY, PLLC
| 170 Keyland Court | Bohemia | New York | 11716 | 631.269.8800

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2	TECHNOLOGY	2
3	DESIGN MIX	2
4	SAMPLING AND TESTING	3
4.1	Sample Collection	3
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4.3	Core Samples	5
5	CONTIGENCY PLAN	5
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7	SWELL MANAGEMENT	6
8	MATERIAL QUALITY CONTROL	6
9	FIELD OBSERVATIONS, QA/QC DATA AND DOCUMENTATION	6
10	REPORTING	7

APPENDICES

Appendix A: NYSDEC In-Situ Solidification QA/QC

1 INTRODUCTION

Impact Environmental Engineering and Geology, PLLC (IEEG) has prepared this ISS Quality Assurance/Quality Control (QA/QC) Plan for 318 Nevins Street, Brooklyn, New York (Site) on behalf of Gowanus Douglass Street LLC, the Volunteer, under the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP). This Site was assigned BCP number C224350. This plan describes the QA/QC required to ensure the Site remedy meets the remedial goals and objectives. This ISS QA/QC plan has been prepared in accordance with the NYSDEC In-Situ Solidification QA/QC document dated November 8, 2019 (**Appendix A**).

2 TECHNOLOGY

The ISS technology will solidify/stabilize the NAPL down to the terminal depth using an 8-foot diameter auger to create overlapping treatment columns where soils are mixed with reagents applied in a Portland cement slurry. The resulting solidified monolith will have increased strength and reduced permeability in comparison to the untreated Site conditions. The ISS technology will solidify/stabilize coal tar NAPL defined as blobs, blebs, sheen, NAPL coated material and NAPL saturated material in the subsurface strata down to a terminal depth of -19 feet NAVD88. Due to the existing bulkhead construction along the west shoreline of the Site, consisting of 1½-inch diameter galvanized rod tie backs (spaced approximately 8 feet apart) that extend approximately 30 feet west (inland) from the bulkhead sheet piles to a support structure, the use of the ISS technology is not compatible in this area. Therefore, In Situ Geochemical Stabilization (ISGS) is proposed for the bulkhead infrastructure area which is addressed in a separate ISGS QA/QC Plan.

The ISS remedial contractor is responsible for surveying the ISS column locations (coordinates) prior to auger mixing activities and depth in the field. Additionally, final grade elevations will be surveyed following the completion of remedial actions by the selected ISS contractor.

3 DESIGN MIX

Common additives that may be considered for the Site by the ISS contractor include blast furnace slag, bentonite, fly ash, lime kiln dust, organophilic clay. Additives may be added to the water or the mix based on the results of the bench scale treatability study and the pilot test. The NYSDEC shall approve additives used in the design mix for the bench scale treatability study and the pilot test as well as the full-scale ISS.

Additives/reagents shall be shipped to the Site in properly labeled containers with instructions for handling and storage. The instructions shall be strictly adhered to.

The ISS contractor's bench scale treatability results will be submitted as early as possible to IEEG and the NYSDEC with the compressive strength and permeability results summarizing the mix ratios that meet project performance criteria. The selected mix formulation will be employed by the ISS contractor in the field during a pilot test in accordance with the work plan where further adjustments will be made based on field conditions. The final design mix will be submitted to the NYSDEC with applicable QA/QC information for inclusion in a Remedial Design Work Plan (RDWP) with Quality Assurance Plan for NYSDEC review and approval.

4 SAMPLING AND TESTING

The ISS subcontractor shall test grout mix material from each batch for conformance with the approved mix design. Samples shall be collected by ISS contractor and shall include the samples detailed in the following sections.

Samples of treated media will be collected during the pilot test and full-scale implementation for field and lab testing for performance criteria metrics as compared against the treatability study results to verify treatment efficacy. The collection of these samples also allows for the ISS contractor to make field decisions for optimization of the mix ratios to meet the project goals. The NYSDEC has established procedures to document complete mixing of soil and reagents, and for the collection of confirmation samples in accordance with the November 8, 2019 NYSDEC In-Situ Solidification QA/QC document.

4.1 **Sample Collection**

Confirmation mixed soil samples will be collected during the ISS pilot test and the full-scale ISS implementation. Samples will be collected by the ISS contractor as wet mix samples for field testing and for laboratory analysis from mixed soil intervals, and core samples will be collected by drilling cores for visual inspection.

4.2 **Wet Mix Samples**

The ISS contractor will collect representative field samples with the in-situ sampler capable of collecting samples from varying depth intervals for visual inspection and evaluation of proper mixing based on color, homogeneity, absence of free product. A series of wet samples will also be collected at a minimum frequency of one set per every 500 cubic yards (yd^3) of mixed soil. A sufficient volume of representative wet mix samples will be collected and formed into test cylinders that are 6-inches long by 3-inches in diameter. Samples will be wrapped in clear plastic wrap to prevent moisture loss and will be stored in a cool, dry location to allow for curing and solidification. Curing samples will also be protected from freezing, as applicable.

The soil/reagent mix samples shall be subjected to a variety of QA/QC tests by the ISS contractor. Field samples will be collected and kept in coolers or other suitable container(s) on the Site by the ISS contractor to cure for periods of 24-hours, 72-hours, 5-days and 7-days. These samples will be field tested by the ISS contractor for unconfined compressive strength using a pocket penetrometer to provide an indication of the mix strength and curing properties. If ISS subcontractor and NYSDEC are not satisfied with initial on-site evaluation results, or if the curing is not progressing as anticipated, corrective measures shall be taken immediately.

Following satisfactory initial on-site evaluation, samples that have cured for the 7-days, 14-days and 28-days will be submitted by the ISS subcontractor to an independent materials laboratory for further analysis of unconfined compressive strength (UCS) and tested for permeability (hydraulic conductivity) in accordance with the following methodologies.

Analysis Type	**Analysis Method**
Unconfined Compressive Strength	ASTM Method D 2166
Permeability	ASTM Method D 5084

Sample depth locations shall vary, depending on subsurface soil types and geology as well as other potential subsurface conditions.

The ISS material formed by mixing the grout with soil/fill shall meet the following performance criteria:

- UCS of 50 psi or more after 28 days of curing
- Permeability of 1x10-6 cm/sec or less after 28 days of curing

4.3 Core Samples

Confirmation core samples will be collected during the ISS pilot test and the full-scale ISS implementation for visual inspection. One core sample will be collected for every 5,000 square feet (SF) of ISS treatment area. The treatment area is estimated at approximately 6250 SF. No less than two (2) boreholes will be completed for the ISS treatment area.

Core samples can be collected for QA/QC after a minimum cure time of between 7 and 14 days and prior to the ISS treatment being 25 percent complete so adjustments in the ISS operation can be made. The core samples will be collected using rock core drilling or driven split spoon sampler methods. The cores will be advanced by a drilling subcontractor at locations that are biased towards areas with the highest soil contamination; at locations where the ISS soil mixing encountered difficulty; areas where excessive grout loss was documented and at treatment cell overlap locations. The ISS contractor and IEEG will oversee the advancement of the cores. The depth of the cores will extend to at least 1-foot below the designated monolith base. The cores will be stored on Site and discarded after final inspection/approval by the NYSDEC. The NYSDEC must be notified no later than 48 hours after the collection of the core.

The cores will be inspected to identify areas of concern where corrective action may be required. Areas of concern are based on the visible inspection of the cores for percent of sample recovered, grout mixture cracking and volume shrinkage, non-aqueous phase liquid (NAPL) in the core and/or on drilling equipment. The core boreholes will be abandoned by tremie pipe grouting.

5 CONTIGENCY PLAN

Should the QA/QC data collected during the ISS pilot test and/or full-scale ISS treatment identify an unsatisfactory condition or performance concern after evaluation with the ISS contractor and the NYSDEC, the repair, remixing, isolation by permeation grouting and/or other applicable means will be evaluated and implemented to the extent practicable.

6 OBSTRUCTIONS

If obstructions, such as boulders or other potentially damaging materials, are encountered during the ISS pilot test and/or full-scale ISS treatment, the ISS contractor shall stop auger advancement until the nature of

the obstruction is determined. Obstructions, which cannot be penetrated, removed, or remediated by other acceptable means will be reported to the NYSDEC. Obstructions, which reduce the drilling rate to less than one foot of penetration per minute for at least five minutes, will be considered refusal and reviewed with the NYSDEC for alternative options.

7 SWELL MANAGEMENT

The ISS contractor shall manage excess spoil material resulting from the ISS treatment. ISS spoils management will be completed by staging stockpiles on polyethylene sheeting, covering the spoils with odor suppressant foam as well as covering stockpiles with polyethylene sheeting until transport and disposal of this material can be arranged with an approved disposal facility. The foam must be reapplied to stockpiles per the manufacturer's recommendations.

8 MATERIAL QUALITY CONTROL

The ISS contractor shall maintain their own quality control for ISS remediation under the direction of their ISS Quality Control Specialist. ISS continuity shall be assured by an overlapping pattern of the ISS columns in accordance with the project specifications. The ISS contractor shall be responsible for demonstrating to the satisfaction of NYSDEC that the ISS work is continuous, at the specified treatment intervals and meets the performance criteria.

9 FIELD OBSERVATIONS, QA/QC DATA AND DOCUMENTATION

All quality control records, sample collection, testing and inspections shall be documented by the ISS contractor and provided to IEEG for submittal to the NYSDEC for preparation of daily field reports. The ISS contractor shall:

- Record all measurements and test results each day ISS work is being implemented;
- Provide daily batch proportion and mixing quality control data; and
- Document and provide mixing time, mixing speed, and amounts of reagents and water added to each ISS column.

- The NYSDEC will be immediately notified of performance issues identified during the visual inspections of the mixed soils, field testing and confirmation soil mix sample testing to ensure modifications to the mix and/or remixing are implemented.

10 REPORTING

All quality control data generated as part of the ISS remedial action at the Site will be included in Daily Field Reports and the Final Engineering Report.

Appendix L

ISGS Quality Assurance/Quality Control Plan

Remedial Action Work Plan
318 Nevins Street, Brooklyn, NY
NYSDEC BCP #C224350

Impact Environmental Engineering and Geology PLLC
170 KEYLAND COURT, BOHEMIA, NEW YORK 11716
TEL (631) 269-8800 ▪ FAX (631) 269-1599

In-Situ Geochemical Stabilization Quality Assurance/Quality Control Plan

September 20, 2023

Site:

300-344 Nevins Street (aka 318 Nevins Street)
Brooklyn, New York
New York City Tax Map Designation: *Block 439; Lot 1*
NYSDEC BCP Site # C224350

Prepared for:

Gowanus 300 Nevins Street LLC
19 West 24th Street, 12h Floor
New York, NY 10010

Submitted to:

Site Control Section
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-7020

IMPACT ENVIRONMENTAL ENGINNERING & GEOLOGY, PLLC
| 170 Keyland Court | Bohemia | New York | 11716 | 631.269.8800

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1 INTRODUCTION

Impact Environmental Engineering and Geology, PLLC (IEEG) has prepared this ISGS Quality Assurance/Quality Control (QA/QC) Plan for 318 Nevins Street, Brooklyn, New York (Site) on behalf of Gowanus Douglass Street LLC, the Volunteer, under the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP). This Site was assigned BCP number C224350. This plan describes the QA/QC required to ensure the Site remedy meets the remedial goals and objectives. The purpose of this document is to provide a method of QA/QC to ensure the effectiveness of ISGS after field implementation is complete. This includes coring and testing for reagent presence and visual observations.

2 TECHNOLOGY

The ISGS technology is intended as an alternative remedial element at the Site to reduce non-aqueous phase (NAPL) contaminant mass and stabilize NAPL along the bulkhead where In-Situ Soil Stabilization (ISS) is not viable due to subsurface obstructions related to tie-backs and other support structures associated with the bulkhead. The horizontal treatment area is approximately 7,050 square feet. The vertical treatment zone will be from an elevation of NAVD88 -9 feet (ft) or approximately 20 feet below the ground surface (bgs) down to NAVD88 -19 ft or approximately 29’ ft bgs. The injection radius of influence (ROI) for the injection points is estimated at 10 feet based on Site geology and will be confirmed during the pilot test.

The ISGS remediation technology consists of a permanganate-based reagent that is injected into the subsurface treatment zone for the purposes of NAPL treatment, containment/stabilization and solute flux reduction. Aluminum silicate precipitates, with minor enhanced manganese-oxyhydroxide precipitates, are deposited around NAPL ganglia and droplets following reagent injection. As the ISGS reagent migrates through the treatment interval, various (bio)geochemical reactions destroy targeted compounds present in the dissolved phase which result in a “hardening” or "chemical weathering” of the NAPL as it steadily loses its more labile components and forms of a Birnessite-like crust.

The result is a net increase in viscosity of the organic material, which yields a more stable, recalcitrant residual mass. The precipitate that forms around the NAPL effectively isolates the free-phase NAPL from future migration by encapsulation and groundwater dissolution reactions. The deposition of the mineral shell also reduces the overall formation permeability in the treated area, thereby reducing the volumetric flux of upgradient groundwater into and through the impacted area. The ISGS processes will reduce organic constituent loading to the groundwater and allow natural attenuation mechanisms to degrade organic

constituents. In addition, both the insoluble MnO_2 precipitate that results from permanganate oxidation and other mineral species included in the ISGS formulation accumulate along the NAPL interface, physically encapsulating the NAPL. This encapsulation minimizes NAPL/groundwater contact, thereby reducing the mass flux of dissolved-phase constituents of interest (COI) into the groundwater.

3 ISS MIX AND INJECTION

Chemicals required to prepare the ISGS injection solution include a 40 percent (%) solution of sodium permanganate ($NaMnO_4$) and other liquid and solid chemical reagents as part of the proprietary formulation. The final ISGS reagent will be a 10 percent-weight solution of $NaMnO_4$. The ISGS solution will be mixed by the ISGS contractor and delivered to the subsurface via a proprietary mixing/injection system that is housed in a trailer. This trailer is equipped with appropriate means of safe chemical measuring, mixing, and transfer. A perimeter will be set up around the mixing area to prevent unauthorized Site personnel from entering the work area. The reagent solutions will be mixed immediately before injection.

The ISGS formulation is delivered to targeted NAPL zones by-way of temporary injection points which are installed by a direct push drill rig using specialized drilling rods and 24-inch retractable injection point. The drilling rods are connected to high pressure delivery hoses and are extracted as the ISGS solution is pumped into the rods. Complete mixing of the NAPL contaminated soil and the ISGS reagents is not necessary for the process to be effective since the ISGS formulation has a specific gravity of between 1.05 and 1.12 which allows uninhibited migrate into the formation. Following completion of each ISGS injection, the temporary injection point boring will be filled with bentonite chips.

4 ISGS PERFORMANCE CONFIRMATION

To confirm the distribution of the reagent after the ISGS injections are complete, field samples will be collected for evaluation. This includes collection of drilled core samples, field testing for reagent presence and visual observations. The proposed core sample collection interval will be from the top to the bottom elevation of the targeted ISGS treatment zone.

<u>Core Sample Collection</u>

Upon completion of the daily injection target area, soil borings will be advanced for the collection of soil core samples from the treatment interval to confirm lateral and vertical distribution confirmed by visual

inspection and field testing for the reagent. Also, soil core samples will be collected 5-days after injection event completion and visually inspected to identify the Birnessite-like structure. Photographic evidence of the ISGS emplacement will be completed during the soil boring advancement and core sample inspections.

The treatment interval soil cores will be collected using a direct push drill rig. Driven macro-core samplers will typically be used with direct push drilling; however, split spoon samples can also be collected of the ISGS treated soil. The use of rotosonic and/or compressed air drilling methods is not appropriate once the ISGS material has been introduced into the formation as these drilling methods can disrupt the NAPL encapsulation processes in the subsurface. Once core samples are collected from the targeted ISGS treatment zone, the boring is considered complete. Following completion of each boring location, the boring will be filled with bentonite chips.

Sample cores will not be longer than five (5) feet. Should there be less than 60% core sample recovery from the desired interval, a new boring will be advance to that interval at an adjacent location for core sample collection. If the recovery from the adjacent boring core sample continues to be less than 60% recovery, the drilling contractor will abandon the location. The NYSDEC will be notified of inadequate core sample recovery and alternatives to core sample collection will be discussed.

A minimum of one (1) soil boring will be advanced at the end of each day when the ISGS reagent being emplaced in the subsurface during to evaluate distribution and identify if adjustments in the ISGS injections are required. A minimum of five (5) soil borings will be advanced 5-days after the ISGS reagent being emplaced in the subsurface to confirm treatment and crystalline encapsulation. The borehole locations shall be biased towards areas with the greatest soil contamination, at locations that are subject to the ROI overlap between injection points and/or locations where difficulties in the ISGS injections were encountered.

Core Sample Inspection and Testing

The daily core samples after injection will be visually inspected to confirm the emplacement of the ISGS liquid into the targeted zones.

Daily Core Sample Inspection: The inspection will be conducted to identify the percent of core sample recovered, visible NAPL and presence of potassium permanganate. In addition, indirect indicators such as NAPL or ISGS coating on drilling tools will be documented.

The visual evaluation of the daily cores may present a purple color representing the unreacted potassium permanganate component of the ISGS formulation. Further confirmation of the presence of the injected ISGS liquid may be accomplished by spraying the soil with a dilute hydrogen peroxide mixture. The residual, unreacted potassium permanganate will elicit an effervescence in the soil core where the peroxide reacts with the permanganate. The residual purple color and/or the effervescence provide field evidence to document the ROI design.

5-Day Core Samples: The core inspection will be conducted to identify the percent of core sample recovered, visible NAPL and presence of the Birnessite-like structure. The identification of the psudo- Birnessite crystals formed because of the reaction of the ISGS with NAPL will be visually confirmed in each core sample.

Alternative Testing: Although laboratory analysis of the core samples is typically not necessary, confirmation sampling of the soil cores will be performed where visual observation of Birnessite crystals during field evaluation is not evident based on field evaluation. The laboratory analysis will further provide evidence of the emplacement of the ISGS reagent when analyzed for manganese. Cylinders may also be tested for hydraulic conductivity in accordance with the approved plans, where required by NYSDEC. The maximum permeability should generally be several orders of magnitude greater than native soil cores.

Investigation Derived Waste (IDW)

During subsurface activities, drill cuttings generated during advancement of soil borings will be containerized in DOT approved 55-gallon drums. The drums will be labeled in accordance with contents, origin, and date of generation using labels or paint stick marker on two sides and the top of each drum. The drums will be staged onsite pending analyses and disposal. The drums will then be transferred to a licensed currier for proper disposal at an approved off-site facility. Full accounting of the disposal destination and receipt approval for all contaminated material removed from the Site will be maintained by IEEG.

5 CONTIGENCY PLAN

If the ISGS installation is deemed unsatisfactory after a collaborative evaluation of the coring program, measures will be put in-place to address the deficiencies and ensure that the remedy is protective of human health and the environment. Such measures may include reapplication of the ISGS reagent between injection locations previously treated with the ISGS material.

6 OBSTRUCTIONS

If obstructions, such as boulders or other subsurface materials, are encountered during the ISGS pilot test and/or full-scale ISGS treatment, the ISGS contractor shall stop injection point advancement until the nature of the obstruction is determined. Obstructions, which cannot be penetrated, removed, or remediated by other acceptable means will be considered refusal, and will be reported to the NYSDEC. Field conditions may warrant relocating injection points based on underground obstructions.

7 FIELD OBSERVATIONS, QA/QC DATA AND DOCUMENTATION

All quality control records, sample collection, testing and inspections shall be documented by the ISGS contractor and provided to IEEG for submittal to the NYSDEC for preparation of daily field reports. The ISGS Subcontractor shall:

- Record all measurements and test results each day ISGS work is being implemented;
- Provide daily batch proportion and mixing quality control data; and
- Document and provide amounts of reagents and water added per ISGS injection point.
- The NYSDEC will be immediately notified of performance issues identified during the visual inspections, field testing and other testing as applicable to ensure modifications to the reagent mix and/or reinjection are implemented.

8 REPORTING

All quality control data generated as part of the ISGS remedial action at the Site will be included in Daily Field Reports and the Final Engineering Report.