City Environmental Quality Review
ENVIRONMENTAL ASSESSMENT STATEMENT (EAS) SHORT FORM

FOR UNLISTED ACTIONS ONLY • *Please fill out and submit to the appropriate agency* (see instructions)

Part I: GENERAL INFORMATION

1. *Does the Action Exceed Any Type I Threshold in 6 NYCRR Part 617.4 or 43 RCNY §6-15(A) (Executive Order 91 of 1977, as amended)?* ☐ YES ☒ NO

If "yes," **STOP** and **complete the FULL EAS FORM**.

2. *Project Name* 1776 48th Street Rezoning

3. *Reference Numbers*

CEQR REFERENCE NUMBER (to be assigned by lead agency)	BSA REFERENCE NUMBER (if applicable)
20DCP108K	
ULURP REFERENCE NUMBER (if applicable)	OTHER REFERENCE NUMBER(S) (if applicable) (*e.g.*, legislative intro, CAPA)
200296ZMK N200297ZRK	

4a. *Lead Agency Information*			**4b. *Applicant Information***		
NAME OF LEAD AGENCY			NAME OF APPLICANT		
NYC Department of City Planning			Yitzchok Stern		
NAME OF LEAD AGENCY CONTACT PERSON			NAME OF APPLICANT'S REPRESENTATIVE OR CONTACT PERSON		
Olga Abinader			Hiram A. Rothkrug, Environmental Studies Corp.		
ADDRESS 120 Broadway			ADDRESS 55 Water Mill Road		
CITY New York	STATE NY	ZIP 10271	CITY Great Neck	STATE NY	ZIP 11021
TELEPHONE 212-720-3496	EMAIL oabinad@planning.nyc.gov		TELEPHONE 718-343-0025	EMAIL hrothkrug@environmentalstudiescorp.com	

5. *Project Description*

The Applicant, Yitzchok Stern, seeks a zoning map amendment (Zoning Sectional Map 22c) and a text amendment (Appendix F). The proposed rezoning would rezone an area mapped at a depth of 100 feet from 18th Ave between 48th and 49th St from an R5 to an R6B zoning district. It would include a C2-4 commercial overlay mapped at a depth of 35 feet from 18th Ave. The rezoning area (Block (5449, Lots 34 (p/o), 35, 36, 37, 41 42 and 44) is located in the Borough Park section of Brooklyn's Community District 12. The proposed rezoning action would facilitate the development of a three story mixed-use commercial and residential building. The text amendment would require future residential development to provide permanent affordable housing (Mandatory Inclusionary Housing MIH).

Project Location

BOROUGH Brooklyn	COMMUNITY DISTRICT(S) 12	STREET ADDRESS 1776 48th Street
TAX BLOCK(S) AND LOT(S) Block 5449, Lots 34 (p/o), 35, 36, 37, 41, 42, and 44.		ZIP CODE 11204
DESCRIPTION OF PROPERTY BY BOUNDING OR CROSS STREETS 48th Street at 18th Avenue		
EXISTING ZONING DISTRICT, INCLUDING SPECIAL ZONING DISTRICT DESIGNATION, IF ANY R5		ZONING SECTIONAL MAP NUMBER 22c

6. *Required Actions or Approvals* (check all that apply)

***City Planning Commission*:** ☒ YES ☐ NO ☐ UNIFORM LAND USE REVIEW PROCEDURE (ULURP)

☐ CITY MAP AMENDMENT	☐ ZONING CERTIFICATION	☐ CONCESSION
☒ ZONING MAP AMENDMENT	☐ ZONING AUTHORIZATION	☐ UDAAP
☒ ZONING TEXT AMENDMENT	☐ ACQUISITION—REAL PROPERTY	☐ REVOCABLE CONSENT
☐ SITE SELECTION—PUBLIC FACILITY	☐ DISPOSITION—REAL PROPERTY	☐ FRANCHISE
☐ HOUSING PLAN & PROJECT	☐ OTHER, explain:	

☐ SPECIAL PERMIT (if appropriate, specify type: ☐ modification; ☐ renewal; ☐ other); EXPIRATION DATE:

SPECIFY AFFECTED SECTIONS OF THE ZONING RESOLUTION

***Board of Standards and Appeals*:** ☐ YES ☒ NO

☐ VARIANCE (use)

☐ VARIANCE (bulk)

☐ SPECIAL PERMIT (if appropriate, specify type: ☐ modification; ☐ renewal; ☐ other); EXPIRATION DATE:
SPECIFY AFFECTED SECTIONS OF THE ZONING RESOLUTION

***Department of Environmental Protection*:** ☐ YES ☒ NO If "yes," specify:

Other City Approvals Subject to CEQR (check all that apply)

☐ LEGISLATION
☐ RULEMAKING
☐ CONSTRUCTION OF PUBLIC FACILITIES
☐ 384(b)(4) APPROVAL
☐ OTHER, explain:
☐ FUNDING OF CONSTRUCTION, specify:
☐ POLICY OR PLAN, specify:
☐ FUNDING OF PROGRAMS, specify:
☐ PERMITS, specify:

Other City Approvals Not Subject to CEQR (check all that apply)

☐ PERMITS FROM DOT'S OFFICE OF CONSTRUCTION MITIGATION AND COORDINATION (OCMC)
☐ LANDMARKS PRESERVATION COMMISSION APPROVAL
☐ OTHER, explain:

***State or Federal Actions/Approvals/Funding*:** ☐ YES ☒ NO If "yes," specify:

7. *Site Description:* *The directly affected area consists of the project site and the area subject to any change in regulatory controls. Except where otherwise indicated, provide the following information with regard to the directly affected area.*

***Graphics*:** *The following graphics must be attached and each box must be checked off before the EAS is complete. Each map must clearly depict the boundaries of the directly affected area or areas and indicate a 400-foot radius drawn from the outer boundaries of the project site. Maps may not exceed 11 x 17 inches in size and, for paper filings, must be folded to 8.5 x 11 inches.*

☐ SITE LOCATION MAP ☐ ZONING MAP ☐ SANBORN OR OTHER LAND USE MAP
☐ TAX MAP ☐ FOR LARGE AREAS OR MULTIPLE SITES, A GIS SHAPE FILE THAT DEFINES THE PROJECT SITE(S)
☐ PHOTOGRAPHS OF THE PROJECT SITE TAKEN WITHIN 6 MONTHS OF EAS SUBMISSION AND KEYED TO THE SITE LOCATION MAP

Physical Setting (both developed and undeveloped areas)

Total directly affected area (sq. ft.): 15,835
Waterbody area (sq. ft) and type:
Roads, buildings, and other paved surfaces (sq. ft.): 15,835
Other, describe (sq. ft.):

8. *Physical Dimensions and Scale of Project* (if the project affects multiple sites, provide the total development facilitated by the action)

SIZE OF PROJECT TO BE DEVELOPED (gross square feet): 33,650
NUMBER OF BUILDINGS: 5
GROSS FLOOR AREA OF EACH BUILDING (sq. ft.): 7,445; 5,469; 6,293; 7,222; 7,222
HEIGHT OF EACH BUILDING (ft.): 55
NUMBER OF STORIES OF EACH BUILDING: 5

Does the proposed project involve changes in zoning on one or more sites? ☒ YES ☐ NO
If "yes," specify: The total square feet owned or controlled by the applicant: 3,614
The total square feet not owned or controlled by the applicant: 12,221

Does the proposed project involve in-ground excavation or subsurface disturbance, including, but not limited to foundation work, pilings, utility lines, or grading? ☐ YES ☒ NO
If "yes," indicate the estimated area and volume dimensions of subsurface permanent and temporary disturbance (if known):
AREA OF TEMPORARY DISTURBANCE: sq. ft. (width x length) VOLUME OF DISTURBANCE: cubic ft. (width x length x depth)
AREA OF PERMANENT DISTURBANCE: sq. ft. (width x length)

Description of Proposed Uses (please complete the following information as appropriate)

	Residential	***Commercial***	***Community Facility***	***Industrial/Manufacturing***
Size (in gross sq. ft.)	31,523	2,127		
Type (*e.g.,* retail, office, school)	42 units	retail		

Does the proposed project increase the population of residents and/or on-site workers? ☒ YES ☐ NO
If "yes," please specify: NUMBER OF ADDITIONAL RESIDENTS: 130 NUMBER OF ADDITIONAL WORKERS: 6
Provide a brief explanation of how these numbers were determined: workers:3/1000 sf retail; Res: 3.82 average HH size (42-8 existing = 34 du)

Does the proposed project create new open space? ☐ YES ☒ NO If "yes," specify size of project-created open space: sq. ft.

Has a No-Action scenario been defined for this project that differs from the existing condition? ☐ YES ☒ NO
If "yes," see Chapter 2, "Establishing the Analysis Framework" and describe briefly:

9. *Analysis Year* CEQR Technical Manual Chapter 2

ANTICIPATED BUILD YEAR (date the project would be completed and operational): 2022

ANTICIPATED PERIOD OF CONSTRUCTION IN MONTHS: 8-12		
WOULD THE PROJECT BE IMPLEMENTED IN A SINGLE PHASE? ☒ YES ☐ NO		IF MULTIPLE PHASES, HOW MANY?
BRIEFLY DESCRIBE PHASES AND CONSTRUCTION SCHEDULE: The Project Development site is Applicant owned and will take 8-12 months to construct. No other site within the study area is Applicant owned so there is no way of knowing future development time-lines.		
10. *Predominant Land Use in the Vicinity of the Project* (check all that apply) ☒ RESIDENTIAL ☐ MANUFACTURING ☒ COMMERCIAL ☐ PARK/FOREST/OPEN SPACE ☒ OTHER, specify: CF		

Part II: TECHNICAL ANALYSIS

INSTRUCTIONS: For each of the analysis categories listed in this section, assess the proposed project's impacts based on the thresholds and criteria presented in the CEQR Technical Manual. Check each box that applies.

- If the proposed project can be demonstrated not to meet or exceed the threshold, check the "no" box.
- If the proposed project will meet or exceed the threshold, or if this cannot be determined, check the "yes" box.
- For each "yes" response, provide additional analyses (and, if needed, attach supporting information) based on guidance in the CEQR Technical Manual to determine whether the potential for significant impacts exists. Please note that a "yes" answer does not mean that an EIS must be prepared—it means that more information may be required for the lead agency to make a determination of significance.
- The lead agency, upon reviewing Part II, may require an applicant to provide additional information to support the Short EAS Form. For example, if a question is answered "no," an agency may request a short explanation for this response.

	YES	NO
1. *LAND USE, ZONING, AND PUBLIC POLICY*: CEQR Technical Manual Chapter 4		
(a) Would the proposed project result in a change in land use different from surrounding land uses?	☐	☒
(b) Would the proposed project result in a change in zoning different from surrounding zoning?	☒	☐
(c) Is there the potential to affect an applicable public policy?	☐	☒
(d) If "yes," to (a), (b), and/or (c), complete a preliminary assessment and attach. see attached		
(e) Is the project a large, publicly sponsored project?	☐	☒
○ If "yes," complete a PlaNYC assessment and attach.		
(f) Is any part of the directly affected area within the City's Waterfront Revitalization Program boundaries?	☐	☒
○ If "yes," complete the Consistency Assessment Form.		
2. *SOCIOECONOMIC CONDITIONS*: CEQR Technical Manual Chapter 5		
(a) Would the proposed project:		
○ Generate a net increase of 200 or more residential units?	☐	☒
○ Generate a net increase of 200,000 or more square feet of commercial space?	☐	☒
○ Directly displace more than 500 residents?	☐	☒
○ Directly displace more than 100 employees?	☐	☒
○ Affect conditions in a specific industry?	☐	☒
3. *COMMUNITY FACILITIES*: CEQR Technical Manual Chapter 6		
(a) Direct Effects		
○ Would the project directly eliminate, displace, or alter public or publicly funded community facilities such as educational facilities, libraries, hospitals and other health care facilities, day care centers, police stations, or fire stations?	☐	☒
(b) Indirect Effects		
○ **Child Care Centers:** Would the project result in 20 or more eligible children under age 6, based on the number of low or low/moderate income residential units? (See Table 6-1 in Chapter 6)	☐	☒
○ **Libraries:** Would the project result in a 5 percent or more increase in the ratio of residential units to library branches? (See Table 6-1 in Chapter 6)	☐	☒
○ **Public Schools:** Would the project result in 50 or more elementary or middle school students, or 150 or more high school students based on number of residential units? (See Table 6-1 in Chapter 6)	☐	☒
○ **Health Care Facilities and Fire/Police Protection:** Would the project result in the introduction of a sizeable new neighborhood?	☐	☒
4. *OPEN SPACE*: CEQR Technical Manual Chapter 7		
(a) Would the proposed project change or eliminate existing open space?	☐	☒
(b) Is the project located within an under-served area in the Bronx, Brooklyn, Manhattan, Queens, or Staten Island?	☐	☒
○ If "yes," would the proposed project generate more than 50 additional residents or 125 additional employees?	☐	☐
(c) Is the project located within a well-served area in the Bronx, Brooklyn, Manhattan, Queens, or Staten Island?	☐	☒
○ If "yes," would the proposed project generate more than 350 additional residents or 750 additional employees?	☐	☐
(d) If the project in located an area that is neither under-served nor well-served, would it generate more than 200 additional residents or 500 additional employees?	☐	☒

	YES	NO
5. *SHADOWS*: CEQR Technical Manual Chapter 8		
(a) Would the proposed project result in a net height increase of any structure of 50 feet or more?	☒	☐
(b) Would the proposed project result in any increase in structure height and be located adjacent to or across the street from a sunlight-sensitive resource?	☐	☒
6. *HISTORIC AND CULTURAL RESOURCES*: CEQR Technical Manual Chapter 9		
(a) Does the proposed project site or an adjacent site contain any architectural and/or archaeological resource that is eligible for or has been designated (or is calendared for consideration) as a New York City Landmark, Interior Landmark or Scenic Landmark; that is listed or eligible for listing on the New York State or National Register of Historic Places; or that is within a designated or eligible New York City, New York State or National Register Historic District? (See the GIS System for Archaeology and National Register to confirm)	☐	☒
(b) Would the proposed project involve construction resulting in in-ground disturbance to an area not previously excavated?	☒	☐
(c) If "yes" to either of the above, list any identified architectural and/or archaeological resources and attach supporting information on whether the proposed project would potentially affect any architectural or archeological resources.		
7. *URBAN DESIGN AND VISUAL RESOURCES*: CEQR Technical Manual Chapter 10		
(a) Would the proposed project introduce a new building, a new building height, or result in any substantial physical alteration to the streetscape or public space in the vicinity of the proposed project that is not currently allowed by existing zoning?	☒	☐
(b) Would the proposed project result in obstruction of publicly accessible views to visual resources not currently allowed by existing zoning?	☐	☒
8. *NATURAL RESOURCES*: CEQR Technical Manual Chapter 11		
(a) Does the proposed project site or a site adjacent to the project contain natural resources as defined in Section 100 of Chapter 11?	☐	☒
○ If "yes," list the resources and attach supporting information on whether the proposed project would affect any of these resources.		
(b) Is any part of the directly affected area within the Jamaica Bay Watershed?	☒	☐
○ If "yes," complete the Jamaica Bay Watershed Form, and submit according to its instructions. see attached		
9. *HAZARDOUS MATERIALS*: CEQR Technical Manual Chapter 12		
(a) Would the proposed project allow commercial or residential uses in an area that is currently, or was historically, a manufacturing area that involved hazardous materials?	☐	☒
(b) Does the proposed project site have existing institutional controls (*e.g.*, (E) designation or Restrictive Declaration) relating to hazardous materials that preclude the potential for significant adverse impacts?	☐	☒
(c) Would the project require soil disturbance in a manufacturing area or any development on or near a manufacturing area or existing/historic facilities listed in Appendix 1 (including nonconforming uses)?	☐	☒
(d) Would the project result in the development of a site where there is reason to suspect the presence of hazardous materials, contamination, illegal dumping or fill, or fill material of unknown origin?	☐	☒
(e) Would the project result in development on or near a site that has or had underground and/or aboveground storage tanks (*e.g.*, gas stations, oil storage facilities, heating oil storage)?	☐	☒
(f) Would the project result in renovation of interior existing space on a site with the potential for compromised air quality; vapor intrusion from either on-site or off-site sources; or the presence of asbestos, PCBs, mercury or lead-based paint?	☐	☒
(g) Would the project result in development on or near a site with potential hazardous materials issues such as government-listed voluntary cleanup/brownfield site, current or former power generation/transmission facilities, coal gasification or gas storage sites, railroad tracks or rights-of-way, or municipal incinerators?	☐	☒
(h) Has a Phase I Environmental Site Assessment been performed for the site?	☒	☐
○ If "yes," were Recognized Environmental Conditions (RECs) identified? Briefly identify:	☐	☒
10. *WATER AND SEWER INFRASTRUCTURE*: CEQR Technical Manual Chapter 13		
(a) Would the project result in water demand of more than one million gallons per day?	☐	☒
(b) If the proposed project located in a combined sewer area, would it result in at least 1,000 residential units or 250,000 square feet or more of commercial space in Manhattan, or at least 400 residential units or 150,000 square feet or more of commercial space in the Bronx, Brooklyn, Staten Island, or Queens?	☐	☒
(c) If the proposed project located in a separately sewered area, would it result in the same or greater development than the amounts listed in Table 13-1 in Chapter 13?	☐	☒
(d) Would the proposed project involve development on a site that is 5 acres or larger where the amount of impervious surface would increase?	☐	☒
(e) If the project is located within the Jamaica Bay Watershed or in certain specific drainage areas, including Bronx River, Coney Island Creek, Flushing Bay and Creek, Gowanus Canal, Hutchinson River, Newtown Creek, or Westchester Creek, would it involve development on a site that is 1 acre or larger where the amount of impervious surface would increase?	☐	☒

	YES	NO
(f) Would the proposed project be located in an area that is partially sewered or currently unsewered?	☐	☒
(g) Is the project proposing an industrial facility or activity that would contribute industrial discharges to a Wastewater Treatment Plant and/or generate contaminated stormwater in a separate storm sewer system?	☐	☒
(h) Would the project involve construction of a new stormwater outfall that requires federal and/or state permits?	☐	☒
11. *SOLID WASTE AND SANITATION SERVICES*: CEQR Technical Manual Chapter 14		
(a) Using Table 14-1 in Chapter 14, the project's projected operational solid waste generation is estimated to be (pounds per week): 1,786		
○ Would the proposed project have the potential to generate 100,000 pounds (50 tons) or more of solid waste per week?	☐	☒
(b) Would the proposed project involve a reduction in capacity at a solid waste management facility used for refuse or recyclables generated within the City?	☐	☒
12. *ENERGY*: CEQR Technical Manual Chapter 15		
(a) Using energy modeling or Table 15-1 in Chapter 15, the project's projected energy use is estimated to be (annual BTUs): 4,472,659		
(b) Would the proposed project affect the transmission or generation of energy?	☐	☒
13. *TRANSPORTATION*: CEQR Technical Manual Chapter 16		
(a) Would the proposed project exceed any threshold identified in Table 16-1 in Chapter 16?	☐	☒
(b) If "yes," conduct the screening analyses, attach appropriate back up data as needed for each stage and answer the following questions:		
○ Would the proposed project result in 50 or more Passenger Car Equivalents (PCEs) per project peak hour?	☐	☐
If "yes," would the proposed project result in 50 or more vehicle trips per project peak hour at any given intersection? ***It should be noted that the lead agency may require further analysis of intersections of concern even when a project generates fewer than 50 vehicles in the peak hour. See Subsection 313 of Chapter 16 for more information.*	☐	☐
○ Would the proposed project result in more than 200 subway/rail or bus trips per project peak hour?	☐	☐
If "yes," would the proposed project result, per project peak hour, in 50 or more bus trips on a single line (in one direction) or 200 subway trips per station or line?	☐	☐
○ Would the proposed project result in more than 200 pedestrian trips per project peak hour?	☐	☐
If "yes," would the proposed project result in more than 200 pedestrian trips per project peak hour to any given pedestrian or transit element, crosswalk, subway stair, or bus stop?	☐	☐
14. *AIR QUALITY*: CEQR Technical Manual Chapter 17		
(a) *Mobile Sources*: Would the proposed project result in the conditions outlined in Section 210 in Chapter 17?	☐	☒
(b) *Stationary Sources*: Would the proposed project result in the conditions outlined in Section 220 in Chapter 17?	☐	☒
○ If "yes," would the proposed project exceed the thresholds in Figure 17-3, Stationary Source Screen Graph in Chapter 17? (Attach graph as needed)	☐	☐
(c) Does the proposed project involve multiple buildings on the project site?	☐	☒
(d) Does the proposed project require federal approvals, support, licensing, or permits subject to conformity requirements?	☐	☒
(e) Does the proposed project site have existing institutional controls (*e.g.*, (E) designation or Restrictive Declaration) relating to air quality that preclude the potential for significant adverse impacts?	☐	☒
15. *GREENHOUSE GAS EMISSIONS*: CEQR Technical Manual Chapter 18		
(a) Is the proposed project a city capital project or a power generation plant?	☐	☒
(b) Would the proposed project fundamentally change the City's solid waste management system?	☐	☒
(c) If "yes" to any of the above, would the project require a GHG emissions assessment based on the guidance in Chapter 18?	☐	☒
16. *NOISE*: CEQR Technical Manual Chapter 19		
(a) Would the proposed project generate or reroute vehicular traffic?	☒	☐
(b) Would the proposed project introduce new or additional receptors (see Section 124 in Chapter 19) near heavily trafficked roadways, within one horizontal mile of an existing or proposed flight path, or within 1,500 feet of an existing or proposed rail line with a direct line of site to that rail line?	☐	☒
(c) Would the proposed project cause a stationary noise source to operate within 1,500 feet of a receptor with a direct line of sight to that receptor or introduce receptors into an area with high ambient stationary noise?	☐	☒
(d) Does the proposed project site have existing institutional controls (*e.g.*, (E) designation or Restrictive Declaration) relating to noise that preclude the potential for significant adverse impacts?	☐	☒
17. *PUBLIC HEALTH*: CEQR Technical Manual Chapter 20		
(a) Based upon the analyses conducted, do any of the following technical areas require a detailed analysis: Air Quality;	☐	☒

	YES	NO
Hazardous Materials; Noise?		
(b) If "yes," explain why an assessment of public health is or is not warranted based on the guidance in Chapter 20, "Public Health." Attach a preliminary analysis, if necessary.		
18. *NEIGHBORHOOD CHARACTER*: CEQR Technical Manual Chapter 21		
(a) Based upon the analyses conducted, do any of the following technical areas require a detailed analysis: Land Use, Zoning, and Public Policy; Socioeconomic Conditions; Open Space; Historic and Cultural Resources; Urban Design and Visual Resources; Shadows; Transportation; Noise?	☐	☒
(b) If "yes," explain why an assessment of neighborhood character is or is not warranted based on the guidance in Chapter 21, "Neighborhood Character." Attach a preliminary analysis, if necessary.		
19. *CONSTRUCTION*: CEQR Technical Manual Chapter 22		
(a) Would the project's construction activities involve:		
○ Construction activities lasting longer than two years?	☐	☒
○ Construction activities within a Central Business District or along an arterial highway or major thoroughfare?	☐	☒
○ Closing, narrowing, or otherwise impeding traffic, transit, or pedestrian elements (roadways, parking spaces, bicycle routes, sidewalks, crosswalks, corners, *etc.*)?	☐	☒
○ Construction of multiple buildings where there is a potential for on-site receptors on buildings completed before the final build-out?	☐	☒
○ The operation of several pieces of diesel equipment in a single location at peak construction?	☐	☒
○ Closure of a community facility or disruption in its services?	☐	☒
○ Activities within 400 feet of a historic or cultural resource?	☐	☒
○ Disturbance of a site containing or adjacent to a site containing natural resources?	☐	☒
○ Construction on multiple development sites in the same geographic area, such that there is the potential for several construction timelines to overlap or last for more than two years overall?	☒	☐
(b) If any boxes are checked "yes," explain why a preliminary construction assessment is or is not warranted based on the guidance in Chapter 22, "Construction." It should be noted that the nature and extent of any commitment to use the Best Available Technology for construction equipment or Best Management Practices for construction activities should be considered when making this determination.		

20. *APPLICANT'S CERTIFICATION*

I swear or affirm under oath and subject to the penalties for perjury that the information provided in this Environmental Assessment Statement (EAS) is true and accurate to the best of my knowledge and belief, based upon my personal knowledge and familiarity with the information described herein and after examination of the pertinent books and records and/or after inquiry of persons who have personal knowledge of such information or who have examined pertinent books and records.

Still under oath, I further swear or affirm that I make this statement in my capacity as the applicant or representative of the entity that seeks the permits, approvals, funding, or other governmental action(s) described in this EAS.

APPLICANT/REPRESENTATIVE NAME	DATE
Kathleen M Feeney	3/3/21

SIGNATURE

PLEASE NOTE THAT APPLICANTS MAY BE REQUIRED TO SUBSTANTIATE RESPONSES IN THIS FORM AT THE DISCRETION OF THE LEAD AGENCY SO THAT IT MAY SUPPORT ITS DETERMINATION OF SIGNIFICANCE.

Part III: DETERMINATION OF SIGNIFICANCE (To Be Completed by Lead Agency)

INSTRUCTIONS: In completing Part III, the lead agency should consult 6 NYCRR 617.7 and 43 RCNY § 6-06 (Executive Order 91 or 1977, as amended), which contain the State and City criteria for determining significance.

1. For each of the impact categories listed below, consider whether the project may have a significant adverse effect on the environment, taking into account its (a) location; (b) probability of occurring; (c) duration; (d) irreversibility; (e) geographic scope; and (f) magnitude.

IMPACT CATEGORY	Potentially Significant Adverse Impact YES	NO
Land Use, Zoning, and Public Policy	☐	☒
Socioeconomic Conditions	☐	☒
Community Facilities and Services	☐	☒
Open Space	☐	☒
Shadows	☐	☒
Historic and Cultural Resources	☐	☒
Urban Design/Visual Resources	☐	☒
Natural Resources	☐	☒
Hazardous Materials	☐	☒
Water and Sewer Infrastructure	☐	☒
Solid Waste and Sanitation Services	☐	☒
Energy	☐	☒
Transportation	☐	☒
Air Quality	☐	☒
Greenhouse Gas Emissions	☐	☒
Noise	☐	☒
Public Health	☐	☒
Neighborhood Character	☐	☒
Construction	☐	☒

2. Are there any aspects of the project relevant to the determination of whether the project may have a significant impact on the environment, such as combined or cumulative impacts, that were not fully covered by other responses and supporting materials? ☐ YES ☒ NO

If there are such impacts, attach an explanation stating whether, as a result of them, the project may have a significant impact on the environment.

3. Check determination to be issued by the lead agency:

☐ **Positive Declaration**: If the lead agency has determined that the project may have a significant impact on the environment, and if a Conditional Negative Declaration is not appropriate, then the lead agency issues a *Positive Declaration* and prepares a draft Scope of Work for the Environmental Impact Statement (EIS).

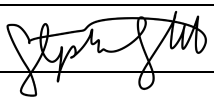
☐ **Conditional Negative Declaration:** A *Conditional Negative Declaration* (CND) may be appropriate if there is a private applicant for an Unlisted action AND when conditions imposed by the lead agency will modify the proposed project so that no significant adverse environmental impacts would result. The CND is prepared as a separate document and is subject to the requirements of 6 NYCRR Part 617.

☒ **Negative Declaration:** If the lead agency has determined that the project would not result in potentially significant adverse environmental impacts, then the lead agency issues a *Negative Declaration*. The *Negative Declaration* may be prepared as a separate document (see template) or using the embedded Negative Declaration on the next page.

4. ***LEAD AGENCY'S CERTIFICATION***

TITLE	LEAD AGENCY
Deputy Director, Environmental Assessment and Review Division	Department of City Planning on behalf of the City Planning Commission
NAME	DATE
Stephanie Shellooe	April 2, 2021

SIGNATURE



NEGATIVE DECLARATION

Statement of No Significant Effect

Pursuant to Executive Order 91 of 1977, as amended, and the Rules of Procedure for City Environmental Quality Review, found at Title 62, Chapter 5 of the Rules of the City of New York and 6 NYCRR, Part 617, State Environmental Quality Review, the Department of City Planning acting on behalf of the City Planning Commission assumed the role of lead agency for the environmental review of the proposed actions. Based on a review of information about the project contained in this environmental assessment statement (EAS) and any attachments hereto, which are incorporated by reference herein, the lead agency has determined that the proposed actions would not have a significant adverse impact on the environment.

Reasons Supporting this Determination

The above determination is based on information contained in this EAS, which finds the proposed actions sought before the City Planning Commission would not have a significant adverse impact on the environment. Reasons supporting this determination are noted below.

Land Use, Zoning, and Public Policy

A detailed analysis of land use, zoning, and public policy is included in the EAS. The Applicant, Yitzchok Stern, seeks a zoning map amendment (Zoning Sectional Map 22c) and a text amendment (Appendix F). The proposed rezoning would rezone an area mapped at a depth of 100 feet from 18th Ave between 48th and 49th St from an R5 to an R6B zoning district. It would include a C2-4 commercial overlay mapped at a depth of 35 feet from 18th Ave. The rezoning area (Block (5449, Lots 34 (p/o), 35, 36, 37, 41 42 and 44) is located in the Borough Park section of Brooklyn's Community District 12. The proposed rezoning action would facilitate the development of a three story mixed-use commercial and residential building. The text amendment would require future residential development to provide permanent affordable housing (Mandatory Inclusionary Housing, MIH). The analysis concludes that the proposed actions would not introduce a new land use, nor affect the existing mixed-use character of the area, nor affect public policy, which represent the thresholds of impact significance in the 2020 CEQR Technical Manual. Therefore, no significant adverse impacts related to Land Use, Zoning, and Public Policy would result from the proposed actions.

Air Quality, and Noise

An (E) designation (E-609) related to air quality, and noise would be established as part of the approval of the proposed actions. Refer to "Determination of Significance Appendix: (E) designation" for the applicable (E) designation requirements. The air quality and noise analyses conclude that with the (E) designation in place, the proposed actions would not result in a significant adverse impact related to air quality or noise.

No other significant effects upon the environment that would require the preparation of a Draft Environmental Impact Statement are foreseeable. This Negative Declaration has been prepared in accordance with Article 8 of the New York State Environmental Conservation Law (SEQRA). Should you have any questions pertaining to this Negative Declaration, you may contact Katherine Glass at kglass@planning.nyc.gov.

TITLE	LEAD AGENCY
Deputy Director, Environmental Assessment and Review Division	Department of City Planning on behalf of the City Planning Commission 120 Broadway, 31st Fl. New York, NY 10271 | 212.720.3328
NAME	DATE
Stephanie Shellooe, AICP	April 2, 2021
SIGNATURE	

TITLE	
Chair, City Planning Commission	
NAME	DATE
Marisa Lago	April 5, 2021
SIGNATURE	

Project Name: 1776 48th Street Rezoning
CEQR # 20DCP108K
SEQRA Classification: Unlisted

Determination of Significance Appendix

The Proposed Action(s) were determined to have the potential to result in changes to development on the following site(s):

Development Site	Borough	Block and Lot
Projected Development Site 1	Brooklyn	Block 5449, Lot 37
Projected Development Site 2	Brooklyn	Block 5449, Lot 35
Projected Development Site 3	Brooklyn	Block 5449, Lot 36
Projected Development Site 4	Brooklyn	Block 5449, Lot 42
Projected Development Site 5	Brooklyn	Block 5449, Lot 44

(E) Designation Requirements

To ensure that the proposed actions would not result in significant adverse impacts related to hazardous materials, air quality, and noise an (E) designation (**E-609**) would be established as part of approval of the proposed actions on **Projected Development Sites 1-5,** as described below:

Development Site	Hazardous Materials	Air Quality	Noise
Projected Development Site 1		X	X
Projected Development Site 2		X	X
Projected Development Site 3		X	X
Projected Development Site 4		X	X
Projected Development Site 5		X	X

Air Quality

The (E) designation requirements for Air Quality would apply as follows:

Block 5449, Lot 37 (Development Site 1): *Any new residential or commercial development on the above-referenced property must exclusively use natural gas as the type of fuel for heating, ventilating, air conditioning (HVAC), and hot water system(s), and must be fitted with low NOx (30 ppm) burners, ensure that the stack is located at the building's highest level and at a minimum of 58 feet above grade, and that the stack is located at least 30 feet from the southern lot line facing 49th Street and at least 20 feet from the western lot line facing Old New Utrecht Road to avoid any potential significant adverse air quality impacts.*

Block 5449, Lot 35 (Site 2): *Any new residential or commercial development on the above referenced property must ensure that the heating, ventilating, air conditioning (HVAC), and hot water system(s) stack is located at the building's highest level and at a minimum of 58 feet above grade ant that the stack is located at least 40 feet from the southern lot line facing 49th Street to avoid any potential significant adverse air quality impacts.*

Project Name: 1776 48th Street Rezoning
CEQR # 20DCP108K
SEQRA Classification: Unlisted

Block 5449, Lot 36 (Site 3*): Any new residential or commercial development on the above referenced property must exclusively use natural gas as the type of fuel for heating, ventilating, air conditioning (HVAC), and hot water system(s) and must be fitted with low NOx (30 ppm) burners, ensure that the stack is located at the building's highest level at a minimum of 58 feet above the grade, and that the stack is located at least 30 feet from the southern lot line facing 49th Street and 15 feet from the western lot line facing Old New Utrecht Road to avoid any potential significant adverse air quality impacts.*

Block 5449, Lot 42 (Site 4): *Any new residential or commercial development on the above referenced property must exclusively use natural gas as the type of fuel for heating, ventilating, air conditioning (HVAC), and hot water system(s) and must be fitted with low NOx (30 ppm) burners, ensure that the stack is located at the building's highest level at a minimum of 58 feet above the grade, and that the stack is located at least 40 feet from the northern lot line facing 48th Street and 25 feet from the western lot line facing Old New Utrecht Road to avoid any potential significant adverse air quality impacts.*

Block 5449, Lot 44 (Site 5): *Any new residential or commercial development on the above referenced property must ensure that the heating, ventilating, air conditioning (HVAC), and hot water system(s) stack is located at the building's highest level and at a minimum of 58 feet above grade ant that the stack is located at least 40 feet from the northern lot line facing 48th Street and 20 feet from the eastern lot line facing 18th Avenue to avoid any potential significant adverse air quality impacts.*

Noise

The (E) designation requirements for noise would apply as follows:

Block 5449, Lot 37 (Projected Development Site 1): *To ensure an acceptable interior noise environment, future residential/commercial office uses must provide a closed-window condition with a minimum of 33 dBA window/wall attenuation on all facades facing 48th Street and the facades facing 18th Avenue within 50 feet of 48th Street and the facades facing Old New Utrecht Road within 50 feet of 48th Street and 31 dBA of attenuation on all facades facing 49th Street and the facades facing 18th Avenue beyond 50 feet from 48th Street and 28 dBA of attenuation on the facades facing Old New Utrecht Road beyond 50 feet from 48th Street to maintain an interior noise level not greater than 45 dBA for residential uses or not greater than 50 dBA for commercial office uses as illustrated in the EAS. To maintain a closed-window condition, an alternate means of ventilation must also be provided. Alternate means of ventilation includes, but is not limited to, air conditioning.*

Block 5449, Lot 35 (Projected Development Site 2): *To ensure an acceptable interior noise environment, future residential/commercial office uses must provide a closed-window condition with a minimum of 33 dBA window/wall attenuation on all facades facing 48th Street and the facades facing 18th Avenue within 50 feet of 48th Street and the façades facing Old New Utrecht Road within 50 feet of 48th Street and 28 dBA of attenuation on all other facades to maintain an interior noise level not greater than 45 dBA for residential/commercial office uses as illustrated in the EAS. To maintain a closed-window condition, an alternate means of ventilation must also be provided. Alternate means of ventilation includes, but is not limited to, air conditioning.*

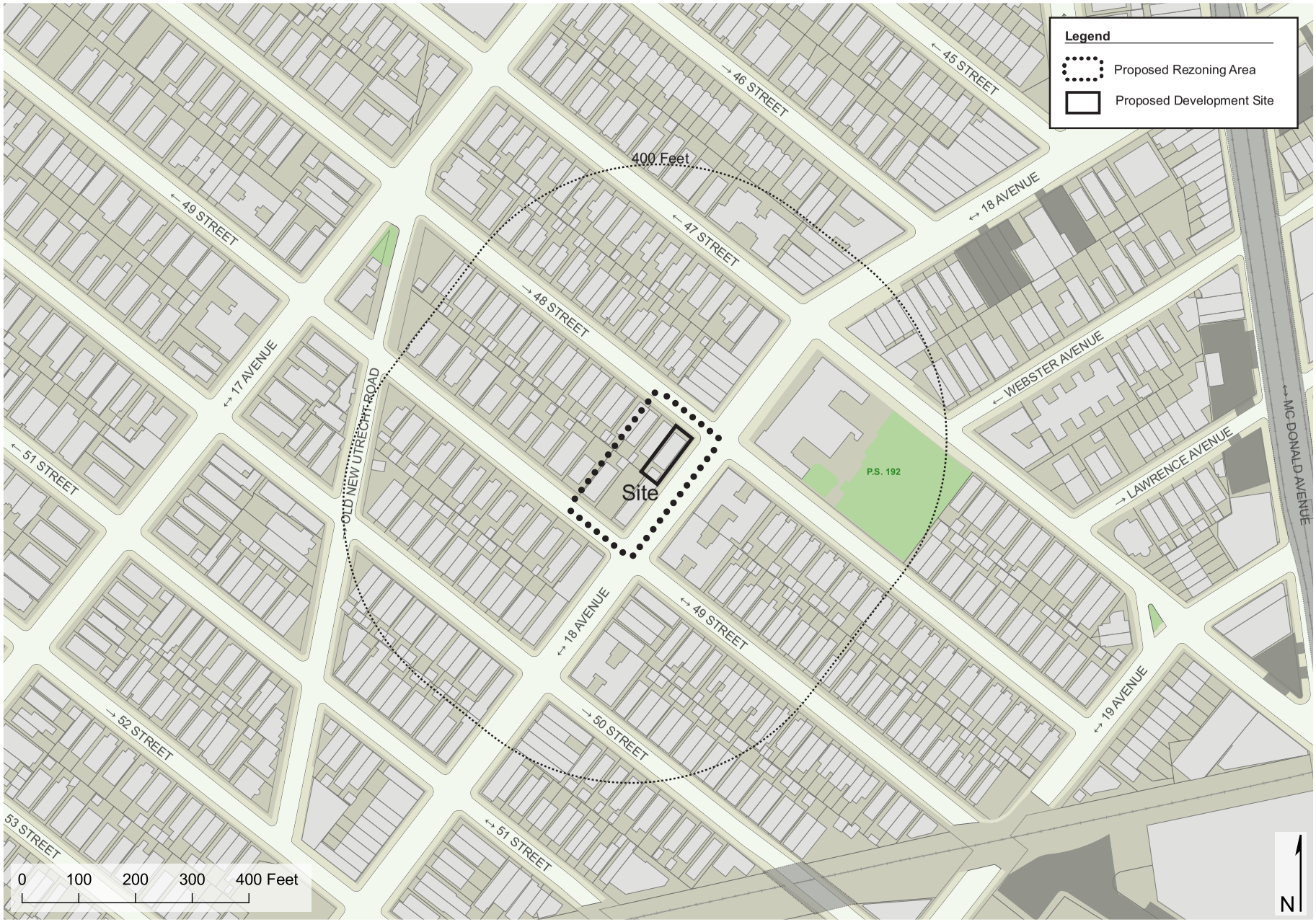
Block 5449, Lot 36 (Projected Development Site 3): *To ensure an acceptable interior noise environment, future residential uses must provide a closed-window condition with a minimum of 33 dBA window/wall attenuation on all facades facing 48th Street and the facades facing 18th Avenue within 50 feet of 48th Street and the facades facing Old New Utrecht Road within 50 feet of 48th Street and 28 dBA of attenuation*

on all other facades to maintain an interior noise level not greater than 45 dBA for residential uses as illustrated in the EAS. To maintain a closed window condition, an alternate means of ventilation must also be provided. Alternate means of ventilation includes, but is not limited to, air conditioning.

Block 5449, Lot 42 (Projected Development Site 4): *To ensure an acceptable interior noise environment, future residential uses must provide a closed-window condition with a minimum of 28 dBA window/wall attenuation on all facades to maintain an interior noise level not greater than 45 dBA for residential uses. To maintain a closed-window condition, an alternate means of ventilation must also be provided. Alternate means of ventilation includes, but is not limited to, air conditioning.*

Block 5449, Lot 44 (Projected Development Site 5): *To ensure an acceptable interior noise environment, future residential uses must provide a closed-window condition with a minimum of 28 dBA window/wall attenuation on all facades to maintain an interior noise level not greater than 45 dBA for residential uses. To maintain a closed-window condition, an alternate means of ventilation must also be provided. Alternate means of ventilation includes, but is not limited to, air conditioning.*

Figure 1 - Site Location Map



Primary Data Source: MapPLUTO 2018v1

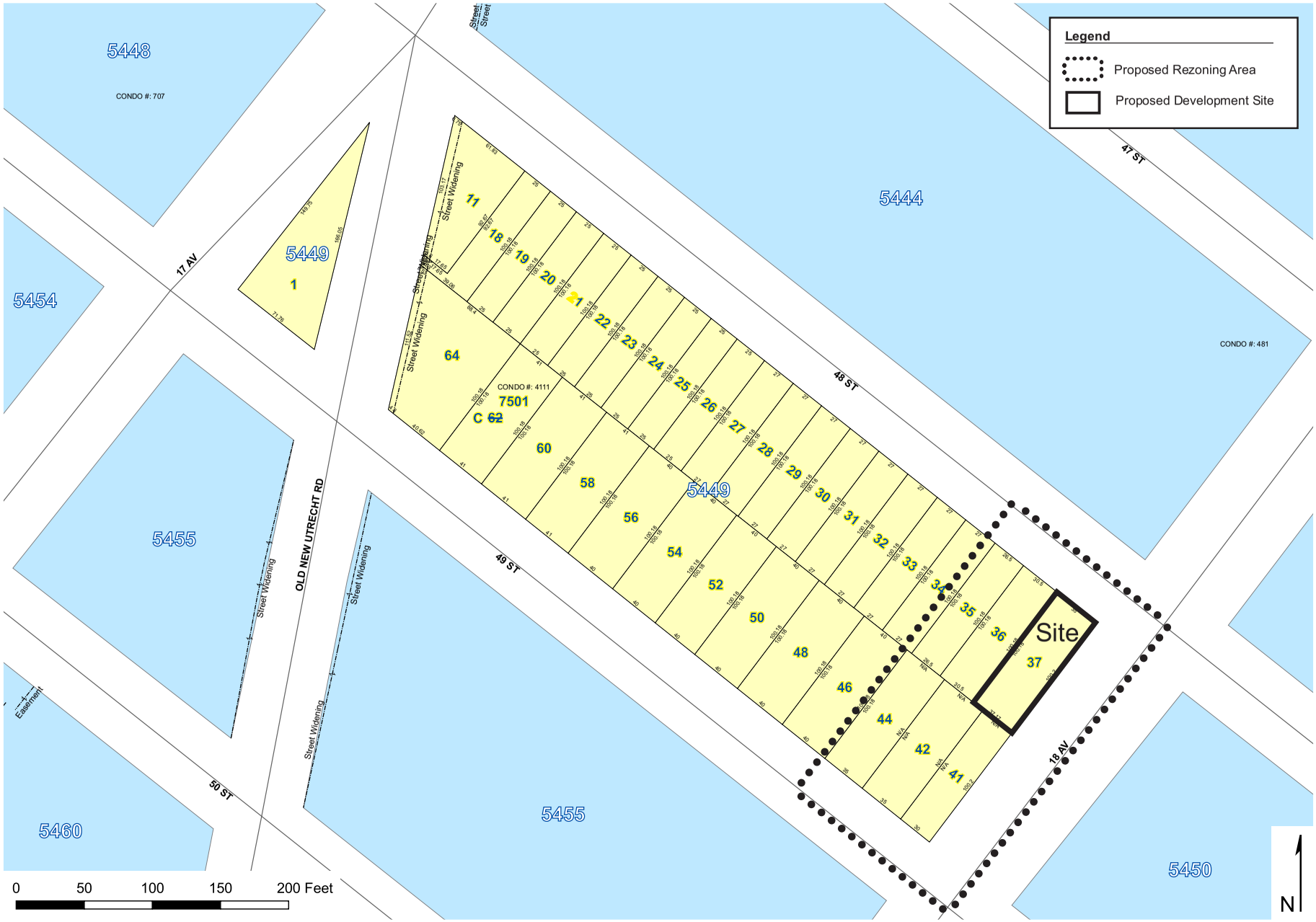
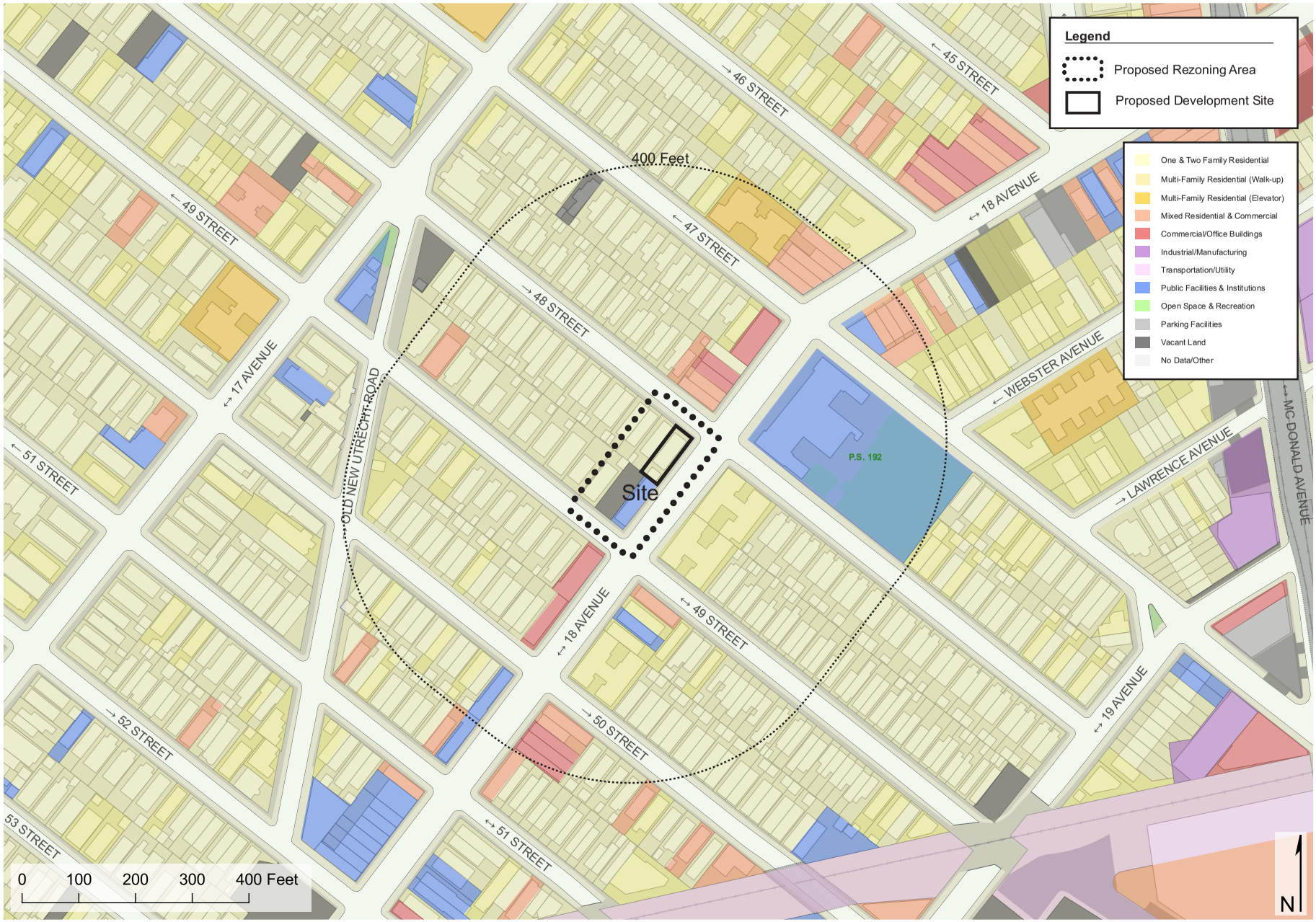
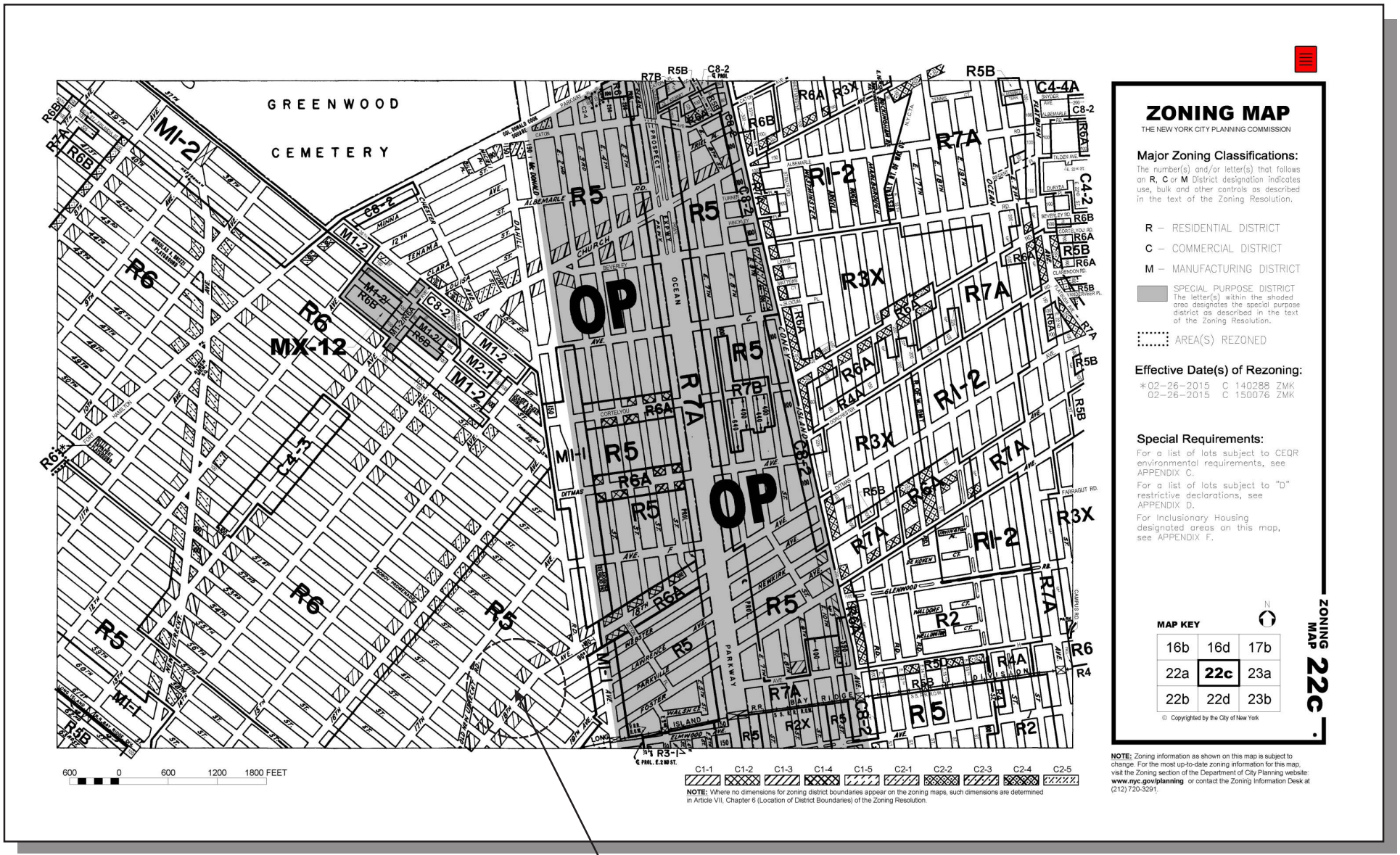

Legend
Proposed Rezoning Area
Proposed Development Site
5448
CONDO #: 707
5454
5455
5460
5444
CONDO #: 481
5450
5449
1
64
CONDO #: 4111
7501
C 62
60
58
56
54
52
50
48
46
44
42
41
11
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
Site
17 AV
18 AV
47 ST
48 ST
49 ST
50 ST
OLD NEW UTRECHT RD
Street Widening
Easement
0
50
100
150
200 Feet
N

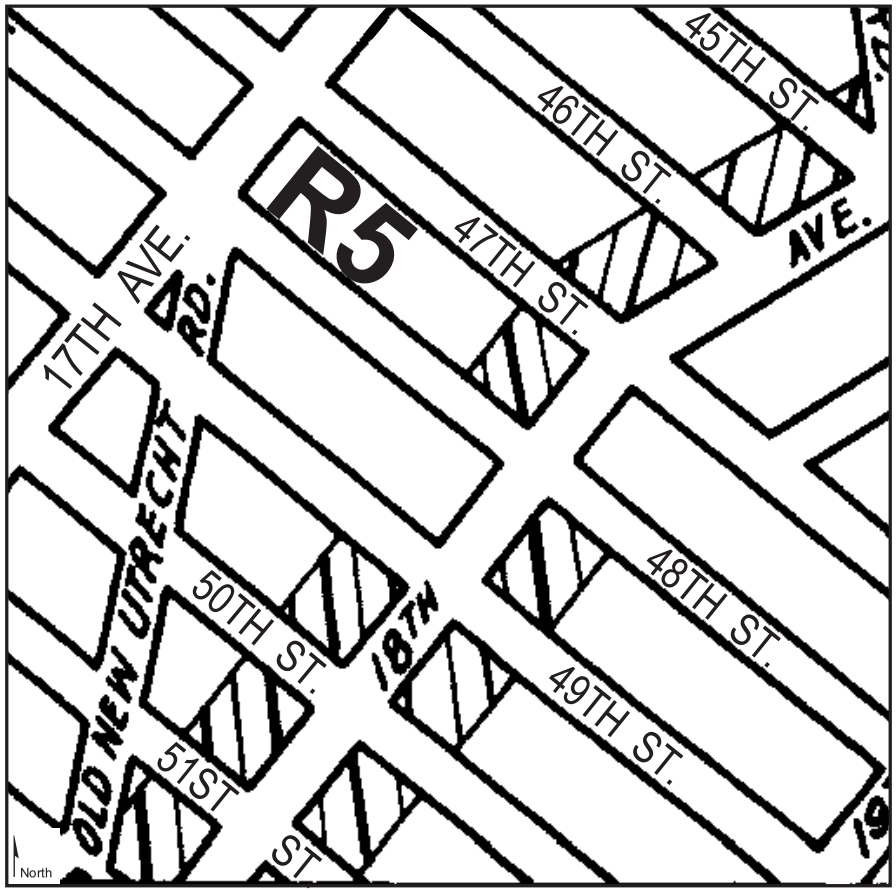
Figure 3 - Land Use Map



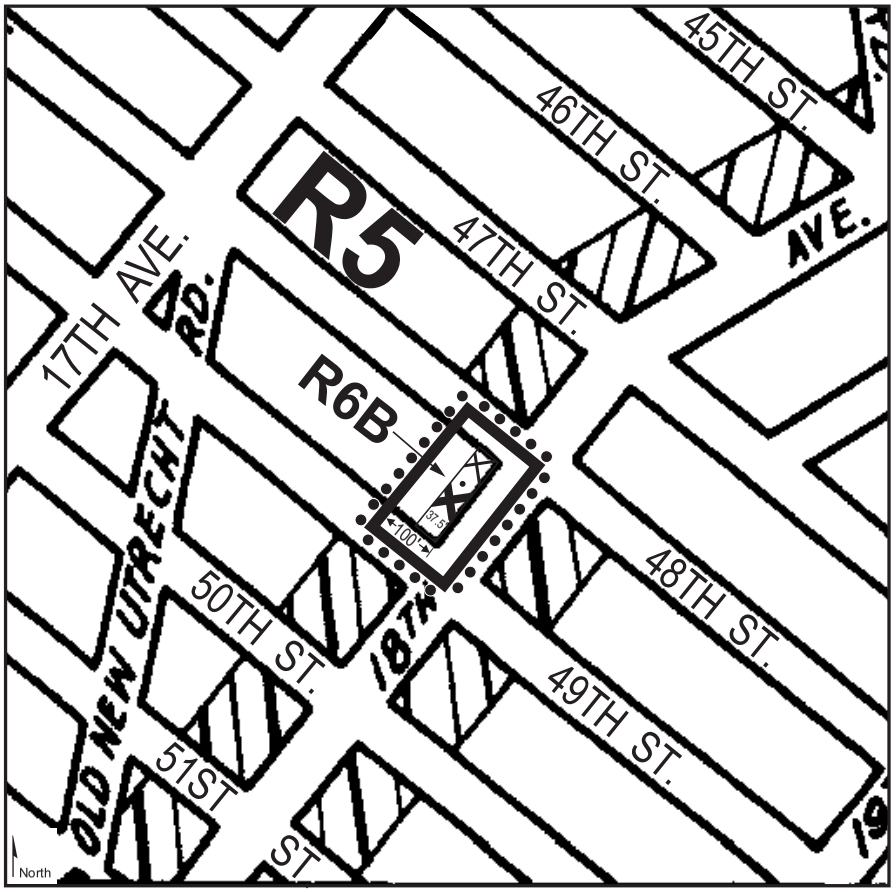
Primary Data Source: MapPLUTO 2018v1


GREENWOOD
CEMETERY
OP
OP
R6
R6
MX-12
R5
R7A
R7B
R6A
R6B
R4A
R4
R3X
R3-1
R2
R2X
M1-1
M1-2
M2-1
C8-2
C4-4A
C4-2
C4-5
R1-2
ZONING MAP
THE NEW YORK CITY PLANNING COMMISSION
Major Zoning Classifications:
The number(s) and/or letter(s) that follows an R, C or M District designation indicates use, bulk and other controls as described in the text of the Zoning Resolution.
R – RESIDENTIAL DISTRICT
C – COMMERCIAL DISTRICT
M – MANUFACTURING DISTRICT
SPECIAL PURPOSE DISTRICT
The letter(s) within the shaded area designates the special purpose district as described in the text of the Zoning Resolution.
AREA(S) REZONED
Effective Date(s) of Rezoning:
*02-26-2015 C 140288 ZMK
02-26-2015 C 150076 ZMK
Special Requirements:
For a list of lots subject to CEQR environmental requirements, see APPENDIX C.
For a list of lots subject to "D" restrictive declarations, see APPENDIX D.
For Inclusionary Housing designated areas on this map, see APPENDIX F.
MAP KEY
16b 16d 17b
22a 22c 23a
22b 22d 23b
© Copyrighted by the City of New York
ZONING MAP 22c
NOTE: Zoning information as shown on this map is subject to change. For the most up-to-date zoning information for this map, visit the Zoning section of the Department of City Planning website: www.nyc.gov/planning or contact the Zoning Information Desk at (212) 720-3291.
600 0 600 1200 1800 FEET
C1-1 C1-2 C1-3 C1-4 C1-5 C2-1 C2-2 C2-3 C2-4 C2-5
NOTE: Where no dimensions for zoning district boundaries appear on the zoning maps, such dimensions are determined in Article VII, Chapter 6 (Location of District Boundaries) of the Zoning Resolution.
Site

Zoning Change Map



Current Zoning Map (22c)



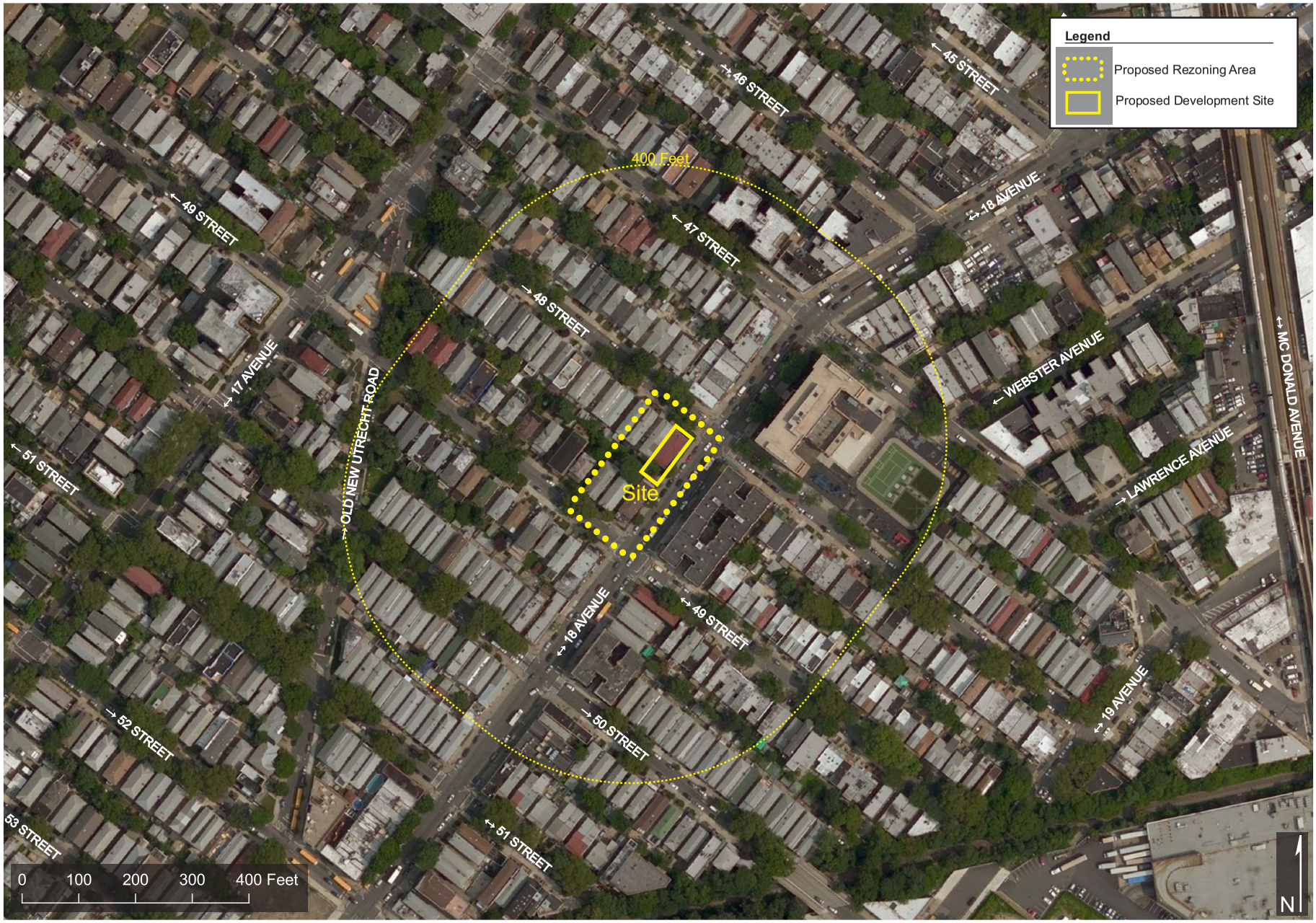
Proposed Zoning Map (22c) - Area being rezoned is outlined with dotted lines

Rezoning from R5 to R6B/C2-4

C1-1 C1-2 C1-3 C1-4 C1-5 C2-1 C2-2 C2-3 C2-4 C2-5

NOTE: Where no dimensions for zoning district boundaries appear on the zoning maps, such dimensions are determined in Article VII, Chapter 6 (Location of District Boundaries) of the Zoning Resolution.

Figure 5 - Aerial Map



Imagery Source: 2018 Bing, Microsoft Corporation



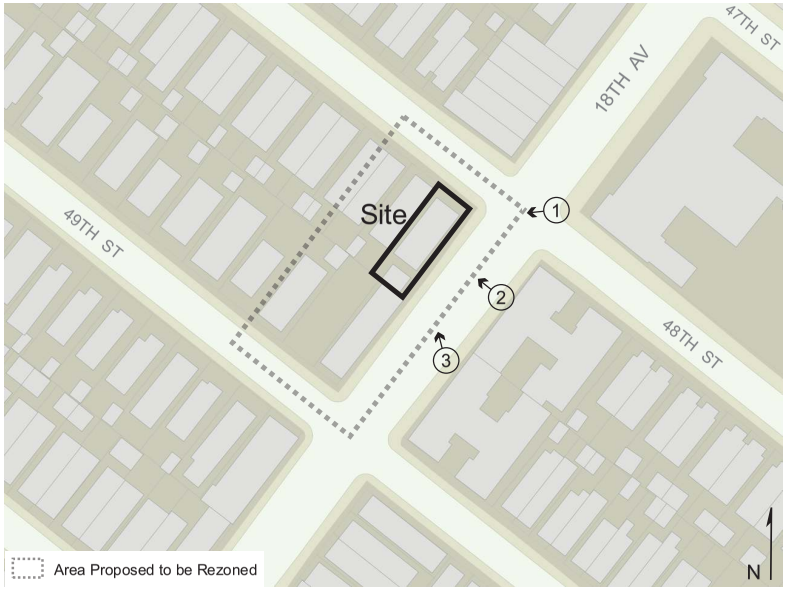
1. View of the Site facing west from the intersection of 18th Avenue and 48th Street.



2. View of the Site facing northwest from 18th Avenue.



3. View of the Site facing north from 18th Avenue.

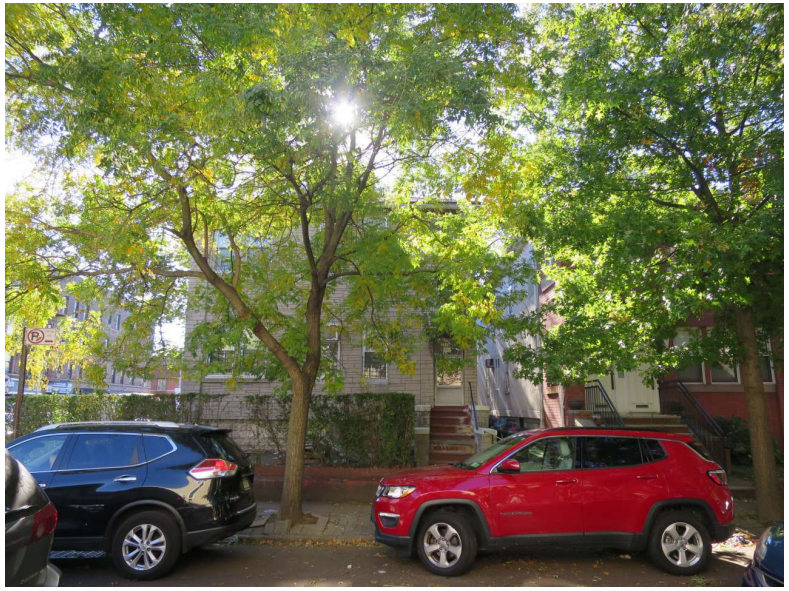




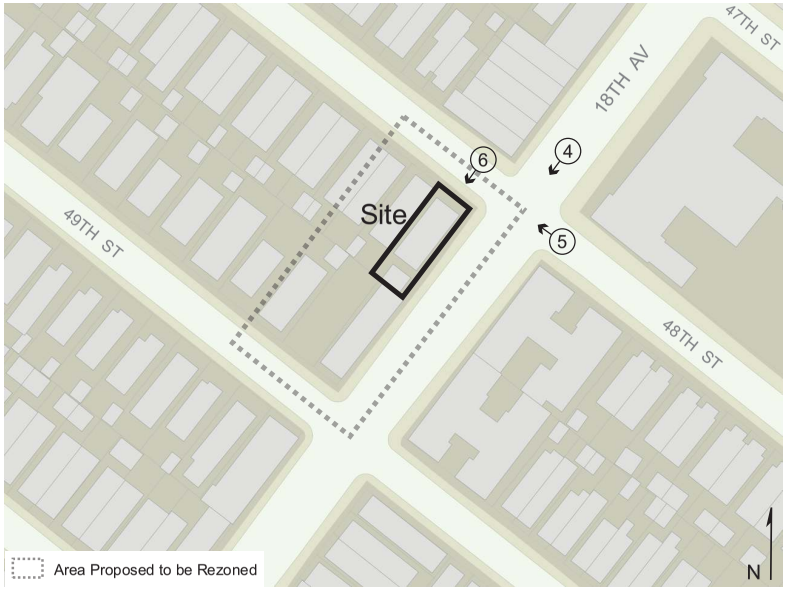
4. View of 18th Avenue facing southwest from 48th Street.



5. View of 48th Street facing northwest from 18th Avenue.



6. View of the Site facing southwest from 48th Street.





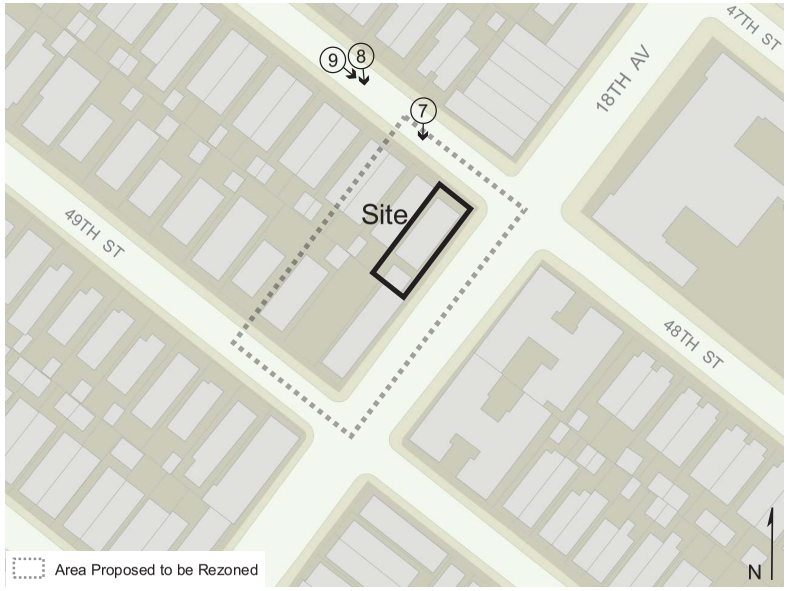
7. View of the south side of 48th Street facing south (Site at left).



8. View of the south side of 48th Street between 17th Avenue and 18th Avenue facing south.

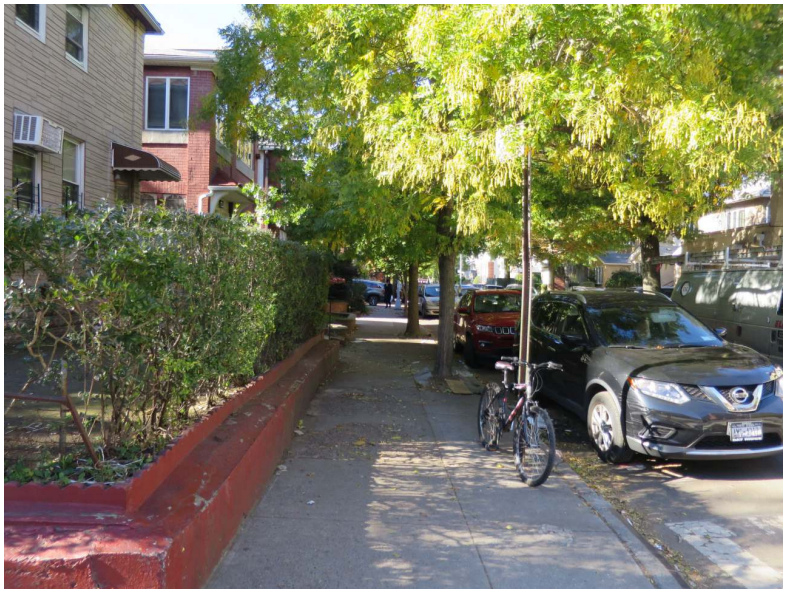


9. View of 48th Street facing southeast toward 18th Avenue.





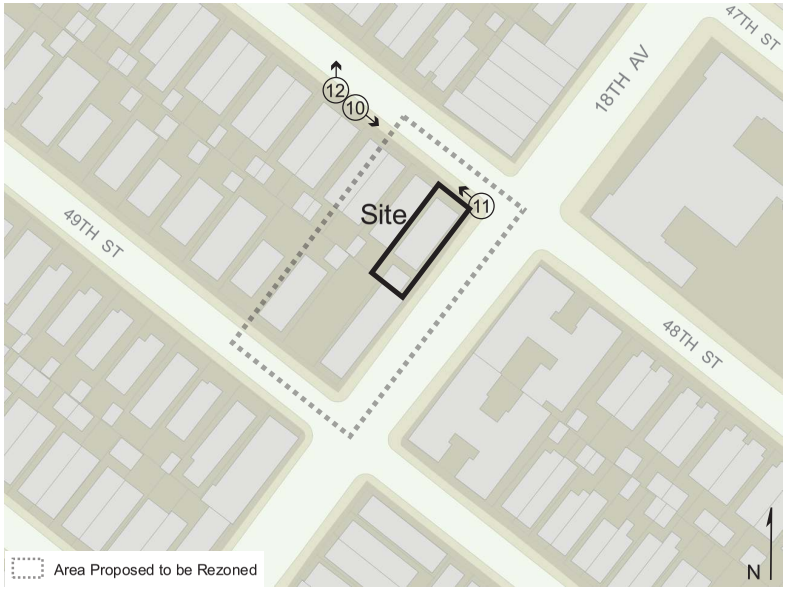
10. View of the sidewalk along the south side of 48th Street facing southeast toward 18th Avenue.



11. View of the sidewalk along the south side of 48th Street facing northwest from 18th Avenue.

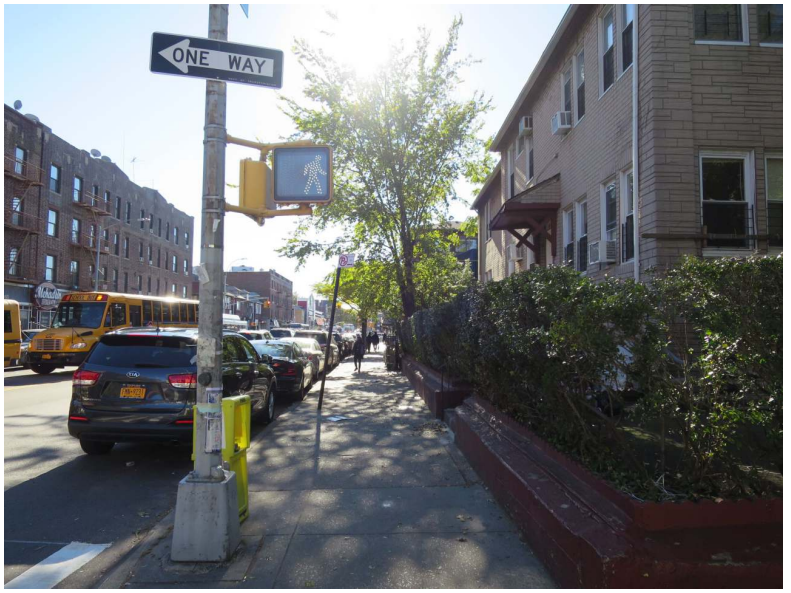


12. View of the north side of 48th Street between 17th Avenue and 18th Avenue facing north.





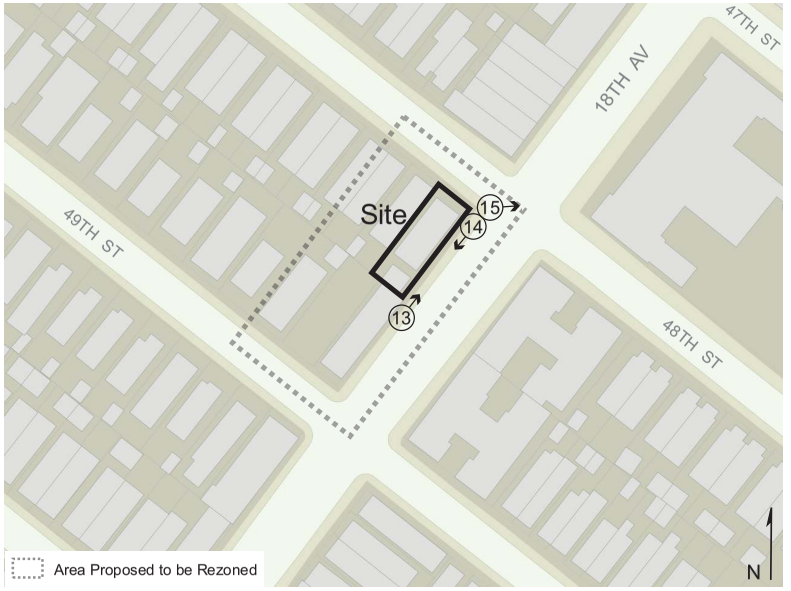
13. View of the sidewalk along the west side of 18th Avenue facing northeast (Site at left).



14. View of the sidewalk along the west side of 18th Avenue facing southwest from 48th Street (Site at right).



15. View of the intersection of 18th Avenue and 48th Street facing east from the Site.





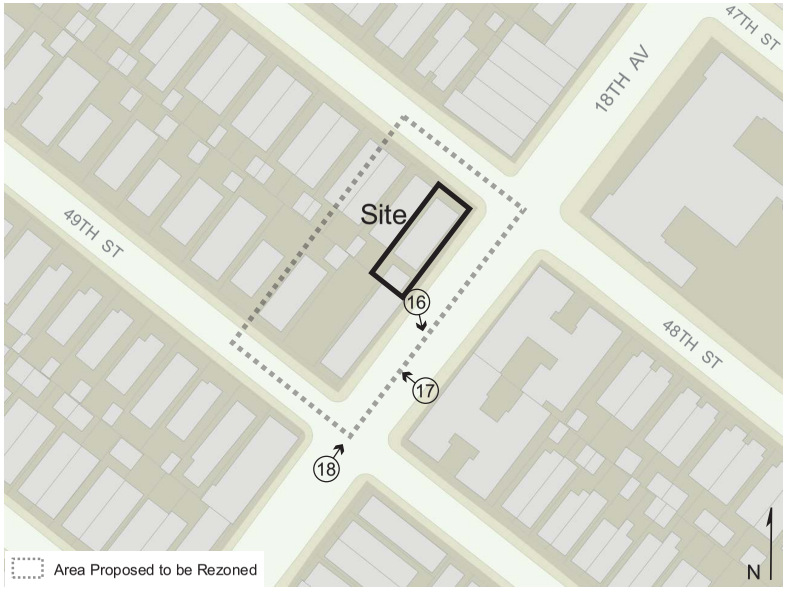
16. View of the east side of 18th Avenue facing south from the Site.



17. View of the west side of 18th Avenue between 48th Street and 49th Street facing northwest.

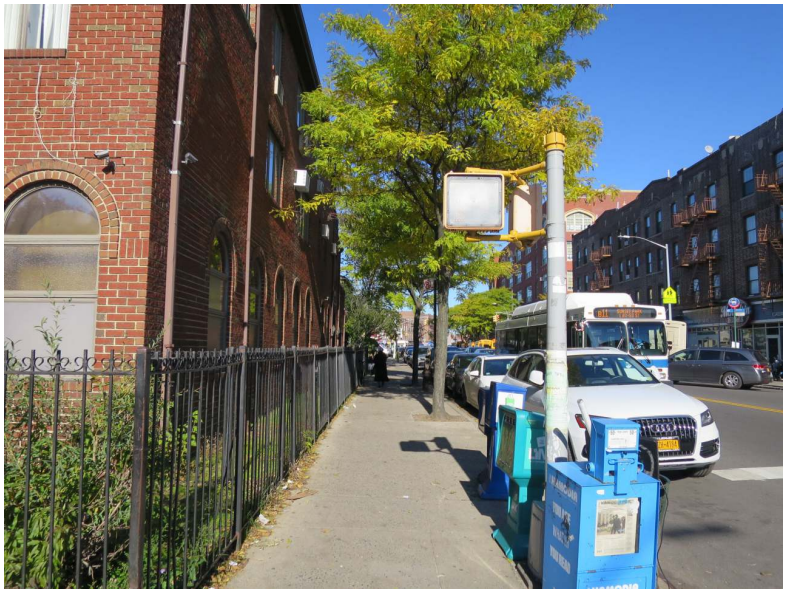


18. View of 18th Avenue facing northeast from 49th Street.





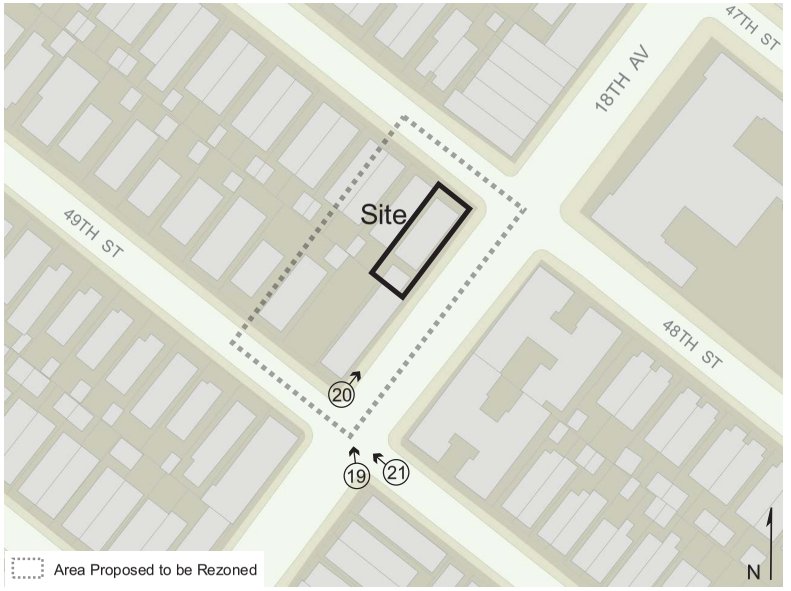
19. View of the intersection of 18th Avenue and 49th Street facing north.



20. View of the sidewalk along the west side of 18th Avenue facing northeast from 49th Street.



21. View of 49th Street facing northwest from 18th Avenue.





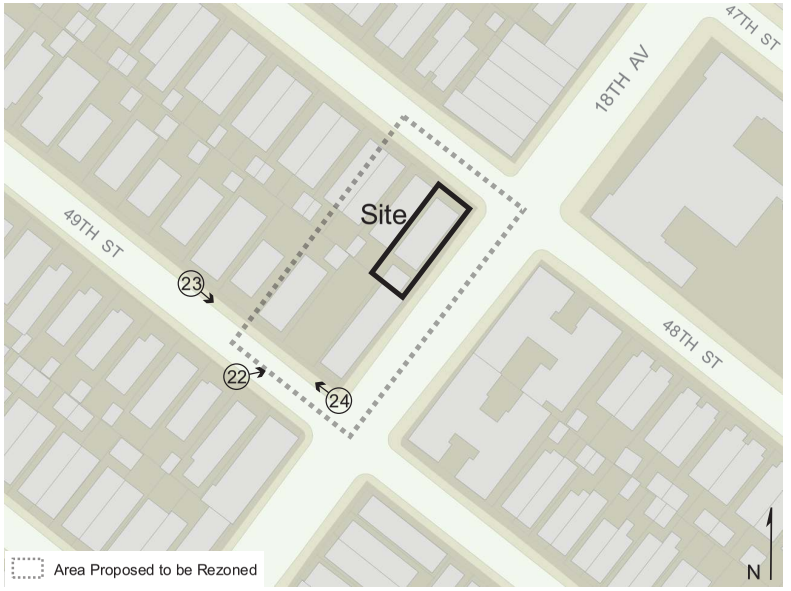
22. View of the north side of 49th Street between 17th Avenue and 18th Avenue facing northeast.



23. View of the sidewalk along the north side of 49th Street facing southeast toward 18th Avenue.



24. View of the sidewalk along the north side of 49th Street facing northwest from 18th Avenue.





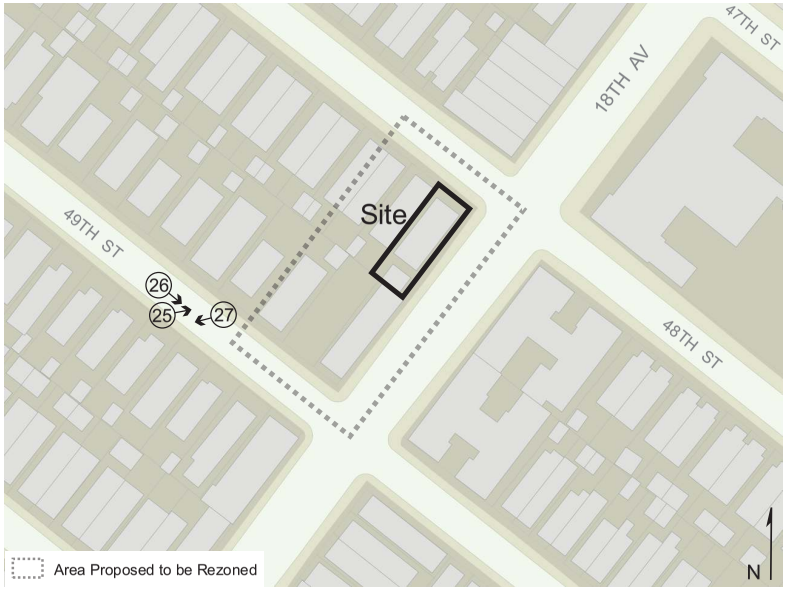
25. View of the north side of 49th Street between 17th Avenue and 18th Avenue facing northeast.



26. View of 49th Street facing southeast toward 18th Avenue.



27. View of south side of 49th Street between 17th Avenue and 18th Avenue facing southwest.





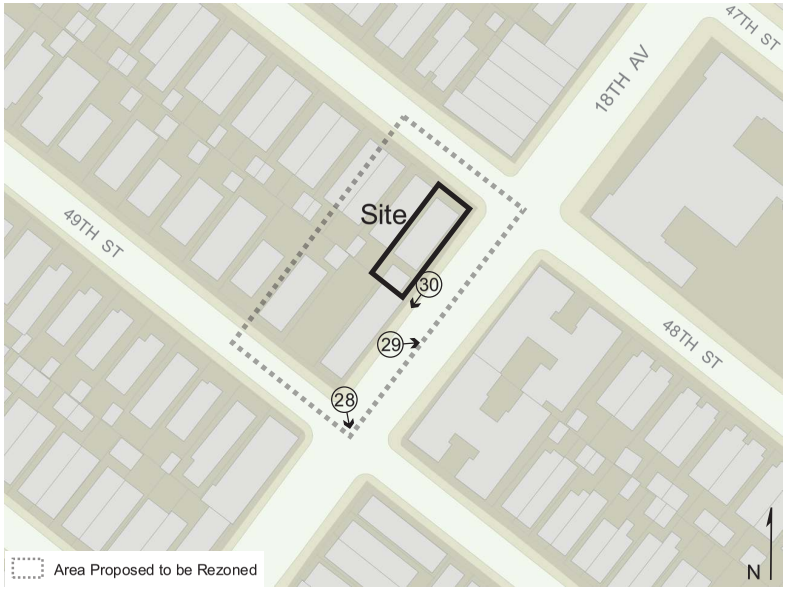
28. View of the intersection of 18th Avenue and 49th Street facing south.



29. View of the east side of 18th Avenue between 48th Street and 49th Street facing east.



30. View of the sidewalk along the west side of 18th Avenue facing southwest from the Site.



PROJECT DESCRIPTION
1776 48th STREET, BROOKLYN, NY

Introduction

The applicant, Yitzchok Stern, (the "Applicant"), seeks a zoning map amendment to Zoning Map 22c and a zoning text amendment to Appendix F that would include Block 5449, Lots 34 (p/o), 35, 36, 37, 41, 42 and 44 located at 1776 48th Street (the "Rezoning Area") in the Borough Park section of Brooklyn, Community District 12.

A proposed zoning map amendment (the "Proposed Actions") would rezone an area mapped at a depth of 100 feet from 18th Avenue between 48th and 49th Street from an R5 to an R6B zoning district. It would include a C2-4 commercial overlay mapped at a depth of 35 feet from 18th Avenue. The proposed zoning text amendment would designate the Rezoning Area a Mandatory Inclusionary Housing (MIH) area requiring all future residential development to include permanent affordable housing.

The Proposed Actions to Block 5449, Lot 37 (the applicant-owned "Projected Development Site 1") would facilitate the development of a three-story plus cellar mixed-use commercial and residential building (the "Proposed Project"). The Proposed Actions to Block 5449, Lot 35 (the "Projected Development Site 2"), Lot 36 (the "Projected Development Site 3"), Lot 42 (the "Projected Development Site 4") and Lot 44 (the "Projected Development Site 5") would facilitate the redevelopment of residential use. Lots 34 (p/o) and 41 are not considered potential development sites.

See **Figure 1 –** Site Location and **Figure 2 –** Tax Map.

Existing Conditions

The proposed Rezoning Area consists of seven adjacent tax and zoning lots, (Block 5449, Lots 34 (p/o), 35, 36, 37, 41, 42 and 44) in the Borough Park section of Brooklyn, Community District 12. It encompasses the entire block front on the western side of 18th Avenue between 48th and 49th Streets. Based on *City Environmental Quality Review (CEQR)* technical manual criteria, two of these seven lots have screened out. Only 600 square feet of Lot 34 falls within the Rezoning Area, the remainder of which is improved with a two-family home, and therefore is too small to be included in the analysis. In addition, Lot 41 is also excluded from this analysis because of its longstanding institutional use (synagogue) with no plans to redevelop. Lots 34 (p/o) and 41 are included in the overall square footage of the proposed Rezoning Area, but do not affect any of the Projected Development Sites and are not included in the analysis.

The entire proposed Rezoning Area is 19,440 square feet and is situated along 18th Avenue, which is an 80' wide north-south commercial thoroughfare in Borough Park.

The Rezoning Area and surrounding neighborhood are primarily residential use with commercial and community facility uses concentrated along 18th Avenue.

See **Figure 3 –** Land Use Map.

Proposed Actions

The Proposed Actions is a zoning map amendment to establish a R6B/C2-4 district in the existing R5 zoning district. The zoning map amendment is necessary to permit new mixed-use commercial and residential use within the Rezoning Area.

See **Figures 4a and 4b –** Zoning Maps.

Proposed Zoning Map Amendment:

R5 zoning district to an R6B zoning district with a C2-4 commercial overlay (Block 5449; Lots 34 (p/o), 35, 36, 37, 41, 42 and 44)
Zoning Text amendment (Appendix F) to make the rezoning area applicable as a Mandatory Inclusionary Housing (MIH) Area

The proposed R6B/C2-4 zoning district along 18th Avenue between 48th and 49th Streets would permit an FAR of 2.00 for commercial use and FAR 2.0 for residential use, facilitating the Proposed Project on the Applicant-owned Projected Development Site 1. The proposed depth of 35 feet for the commercial overlay is appropriate for this area, as it would prevent commercial uses from encroaching further onto predominantly residential side streets (48th and 49th Streets), given the narrow depth of lots present in the Project Area, and would serve to primarily permit commercial uses fronting 18th Avenue. This would be consistent with the pre-existing context of the surrounding area where commercial uses primarily front 18th Avenue and do not front residential side streets.

Development Sites

The Proposed Project would consist of a new three-story plus cellar mixed-use commercial and residential building on Projected Development Site 1. The development would have a floor area of 7,204 gross square feet (gsf) (6,994 zoning square feet (zsf), 1.93 FAR), a base height of 30 feet and total height of 40 feet. The building would contain five dwelling units for a total combined residential floor area of 5,076 gsf (4,928 zsf, 1.36 FAR). The building would also contain 2,128 gsf (2,066 zsf, 0.57

FAR) of commercial floor area on the ground floor. The Proposed Project would not provide any parking spaces since the requirement is waived as the total number of parking spaces is below the statutory threshold.

The proposed zoning map amendment would also affect the entire Rezoning Area, which includes Block 5449, Lots 34 (p/o), 35, 36, 37, 41, 42 and 44. As discussed above, Lots 34 and 41 are not considered a potential development sites and are not included in the analysis. For purposes of conservative analysis, a Reasonable Worst Case Development Scenario (RWCDS) has been established for the proposed Rezoning Area.

Projected Development Site No.	Block	Lot
Projected Development Site 1 (Applicant Site)	5449	37
Projected Development Site 2	5449	35
Projected Development Site 3	5449	36
Projected Development Site 4	5449	42
Projected Development Site 5	5449	44

Existing Conditions

Projected Development Site 1

Block 5449, Lot 37 has 3,614 square feet of lot area and is improved with a two-story two-family residential building (Use Group 2) with 3,634 gsf (3,528 zsf) of floor area (0.98 FAR) and two parking spaces.

Projected Development Site 2

Block 5449, Lot 35 has 2,655 square feet of lot area and is improved with a two-story two-family residential building (Use Group 2) with 2,800 gsf (2,716 zsf) of floor area (1.02 FAR) and two parking spaces.

Projected Development Site 3

Block 5449, Lot 36 has 3,055 square feet of lot area and is improved with a two-story two-family residential building (Use Group 2) with 2,800 gsf (2,716 zsf) of floor area (0.90 FAR) and two parking spaces.

Projected Development Site 4
Block 5449, Lot 42 has 3,506 square feet of lot area and is currently vacant.

Projected Development Site 5
Block 5449, Lot 44 has 3,506 square feet of lot area and is improved with a two-story two-family residential building (Use Group 2) with 3,250 gsf (3,153 zsf) of floor area (0.90 FAR) and two parking spaces.

The Rezoning Area (**Figure 5** – Aerial Map) is within a R5 district which permits residential uses (Use Groups 1 and 2) and community facility uses (Use Groups 3 and 4) only. The maximum residential FAR is 1.25 and the maximum community facility FAR is 2.0. Commercial use is not permitted as-of-right. Photos of the existing area are attached (**Figures 6-1 through 6-10**).

Future No-Action Scenario

There are no current plans for redevelopment in the Rezoning Area. Absent the Proposed Actions, the properties within the Rezoning Area would remain in their current condition.

Future With-Action Scenario

In the future with the Proposed Actions, Projected Development Sites 1 through 5 would be redeveloped.

Projected Development Site 1 (Block 5449, Lot 37): With the Proposed Actions, rezoning to R6B residential with a C2-4 commercial overlay, Site 1 would consist of a 7,445 gsf (7,228 zsf) mixed residential/commercial use building (FAR 2.0). The building would contain a total residential floor area of 5,317 gsf (5,162 zsf, 1.43 FAR) or seven dwelling units (DU) based on an average 680 sf per DU for this zoning district. The building would also contain 2,127 gsf (2,066 zsf, 0.57 FAR) of commercial floor area on the ground floor. The maximum building height would be 55 feet (five stories) in an MIH area. Site 1 would not provide any parking spaces since the requirement is waived as the total number of parking spaces is below the statutory threshold.

Projected Development Site 2 (Block 5449, Lot 35): With the Proposed Actions of rezoning to R6B residential, Site 2 would consist of a 5,469 gsf (5,310 zsf) residential use building (FAR 2.0). The building would contain a total residential floor area of 5,310 sf, or seven dwelling units, based on an average 680 sf per dwelling unit in this zoning district. The maximum building height would be 55 feet (five stories) in an MIH area. Site 2 would not provide any parking spaces since the requirement is waived as the total number of parking spaces is below the statutory threshold.

Projected Development Site 3 (Block 5449, Lot 36): With the Proposed Actions of rezoning to R6B residential, Site 3 would consist of a 6,293 gsf (6,110 zsf) residential use building (FAR 2.0). The building would contain eight dwelling units based on an average 680 sf per dwelling unit in this zoning area. The maximum building height would be 55 feet (five stories) in an MIH area. Site 3 would not provide any parking spaces since the requirement is waived as the total number of parking spaces is below the statutory threshold.

Projected Development Site 4 (Block 5449, Lot 42): With the Proposed Actions of rezoning to R6B residential, Site 4 would consist of a 7,222 gsf (7,012 zsf) residential use building (FAR 2.0). The building would contain ten dwelling units based on an average 680 sf per dwelling unit in this zoning area. The building maximum building height would be 55 feet (five stories) in an MIH area. Site 4 would not provide any parking spaces since the requirement is waived as the total number of parking spaces is below the statutory threshold.

Projected Development Site 5 (Block 5449, Lot 44): With the Proposed Actions of rezoning to R6B residential, Site 5 would consist of a 7,222 gsf (7,012 zsf) residential use building (FAR 2.0). The building would contain ten dwelling units based on an average 680 sf per dwelling unit in this zoning district. The building maximum building height would be 55 feet (five stories) in an MIH area. Site 5 would not provide any parking spaces since the requirement is waived as the total number of parking spaces is below the statutory threshold.

Purpose and Need

The Projected Development Site 1 requires a zoning map amendment to facilitate the development of a mixed-use commercial and residential building. The Rezoning Area contains as-of-right residential and community facility uses in the existing R5 zoning district. The proposed R6B/C2-4 overlay would allow additional residential dwelling units to the area while providing neighborhood retail along 18th Avenue, consistent with the existing commercial character of 18th Avenue.

In addition to the zoning map amendment, a zoning text amendment to Appendix F of the New York City Zoning Resolution (ZR) would be required to make the proposed Rezoning Area applicable as a Mandatory Inclusionary Housing Area (MIH). MIH would require any future residential development within the Rezoning Area to include permanent affordable dwelling units, a demonstrated city-wide need.

Build Year

Based on an estimated 8- to 12-month construction period, the analysis year is assumed as 2022.

1776 48th STREET
BROOKLYN, NEW YORK

INTRODUCTION

Based on the analysis and the screens contained in the Environmental Assessment Statement Short Form, the analysis areas that require further explanation include land use, zoning, and public policy; shadows; historic and cultural resources; urban design and visual resources; natural resources; hazardous materials; transportation; air quality; and noise, as further detailed below. The subject heading numbers below correlate with the relevant chapters of the *CEQR Technical Manual.*

The Applicant seeks a zoning map amendment that would rezone Block 5449, Lots 34 (p/o), 35, 36, 37, 41, 42 and 44 (the "Rezoning Area") from an R5 zoning district to an R6B/C2-4 zoning overlay (the "Proposed Actions").

The Applicant also seeks a zoning text amendment which would designate the Proposed Rezoning Area a Mandatory Inclusionary Housing (MIH) area requiring all future residential development to include some permanent affordable housing.

The Proposed Actions would facilitate the development of a mixed-use commercial building on the applicant-owned Projected Development Site 1 (Block 5449, Lot 37). It would also facilitate the redevelopment of additional dwelling units to Block 5449, Lot 35 (the "Projected Development Site 2"), Lot 36 (the "Projected Development Site 3"), Lot 42 (the "Projected Development Site 4") and Lot 44 (the "Projected Development Site 5").

Only 600 square feet of Lot 34 falls within the Rezoning Area, the remainder of which is improved with a two-family home and therefore, is not included in the analysis. In addition, Lot 41 is also excluded from this analysis because of its longstanding institutional use (synagogue) with no plans to redevelop. Lots 34 (p/o) and 41 are included in the overall square footage of the proposed Rezoning Area, but do not affect any of the Projected Development Sites.

For purposes of conservative analysis, A Reasonable Worst Case Development Scenario (RWCDS) has been established for the entire Rezoning Area. Projected Development Site 1 would allow for approximately 7,445 gsf (7,228 zsf) mixed residential/commercial use building (FAR 2.0). Projected Development Site 2 would allow for approximately 5,469 gsf (5,310 zsf) residential use building (FAR 2.0). Projected Development Site 3 would allow for approximately 6,293 gsf (6,110 zsf) residential use building (FAR 2.0). Projected Development Site 4 would allow for approximately 7,222 gsf (7,012 zsf) residential use building (FAR 2.0). Projected Development Site 5 would allow for approximately 7,222 gsf (7,012 zsf) residential use building (FAR 2.0). They would each have a maximum building height of 55 feet within a MIH area.

4. LAND USE, ZONING AND PUBLIC POLICY

I. Introduction

The analysis of land use, zoning and public policy characterizes the existing conditions of the Proposed Rezoning Area (**Block 5449, Lots 34 (p/o), 35, 36, 37, 41, 42 and 44**) and the surrounding study area; anticipates and evaluates those changes in land use, zoning and public policy that are expected to occur independently of the Proposed Actions; and identifies and addresses any potential impacts related to land use, zoning and public policy resulting from the Proposed Actions. Various sources have been used to prepare a comprehensive analysis of land use, zoning and public policy characteristics of the area, including field surveys, studies of the neighborhood, census data, and land use and zoning maps.

Land Use Study Area

In order to assess the potential for project related impacts, the land use study area has been defined as the area located within a 400-foot radius of the site, which is an area within which the Proposed Actions have the potential to affect land use or land use trends. The 400-foot radius study area is bounded roughly by 47th Street to the north; 50th Street to the south; Old New Utrech Road to the west; and midblock between 18th and 19th Avenue to the east. It is characterized by a mix of low-density residential with two-family detached homes and semi-detached homes and mixed-use buildings with residential and commercial uses. A variety of commercial uses, community facility uses and mixed-use commercial and residential buildings are concentrated along 18th Avenue.

II. Land Use

Site Description (Existing Conditions)
Projected Development Site 1: (Block 5449, Lot 37) has 3,614 square feet of lot area and is improved with a two-story two-family residential building (Use Group 2) with 3,634 gsf (3,528 zsf) of floor area (0.98 FAR) and two parking spaces.

Projected Development Site 2: (Block 5449, Lot 35) has 2,655 square feet of lot area and is improved with a two-story two-family residential building (Use Group 2) with 2,800 gsf (2,716 zsf) of floor area (1.02 FAR) and two parking spaces.

Projected Development Site 3: (Block 5449, Lot 36) has 3,055 square feet of lot area and is improved with a two-story two-family residential building (Use Group 2) with 2,800 gsf (2,716 zsf) of floor area (0.90 FAR) and two parking spaces.

Projected Development Site 4: (Block 5449, Lot 42) has 3,506 square feet of lot area and is currently vacant.

Projected Development Site 5: (Block 5449, Lot 44) has 3,506 square feet of lot area and is improved with a two-story two-family residential building (Use Group 2) with 3,250 gsf (3,153 zsf) of floor area (0.90 FAR) and two parking spaces.

The study area surrounding the Proposed Rezoning Area is predominantly low-density residential uses with two-family detached and semi-detached homes along 48th and 49th Streets. Eighteenth Avenue contains a variety of commercial, community facility and mixed-use commercial and residential buildings. Land uses in the area include residential (Use Groups 1 and 2), community facility uses (Use Groups 3 and 4) as well as a range of commercial uses including local retail and service establishments (Use Group 6).

Future No-Action (No-Build) Scenario

In the future and absent the Proposed Actions, no land use changes would be made to the Proposed Rezoning Area and the study area would continue to remain in its existing condition. Although Projected Development Site 4 is currently vacant and could be developed as-of-right, there are currently no plans for redevelopment by the Build Year 2022.

The Proposed Rezoning Area is assumed to remain in its existing condition.

With-Action (Build) Scenario

In the future with the Proposed Actions, residential uses (Use Groups 1 and 2) and commercial uses (Use Group 6) would be permitted within the proposed Rezoning Area. This would facilitate the development of the proposed mixed-use commercial and residential building on Projected Development Site 1. The proposed C2-4 overlay permits commercial uses including local retail and service establishments (Use Group 6), home maintenance or repair services (Use Group 7), amusement or service establishments (Use Group 8), retail and service establishments that serve a larger area (Use Group 9) and special services related to boating (Use Group 14).

The Proposed R6B/C2-4 district permits a maximum of 2.0 FAR for residential, 2.00 commercial and 2.00 community facility uses. The R6B permits a maximum of 2.0 FAR for residential and 2.00 community facility uses. Commercial uses are not permitted as-or-right.

The Proposed Actions would facilitate the proposed new mixed-use commercial and residential development on the Projected Development Site 1 (Block 5449, Lot 37), where only residential and community facility uses are currently permitted, as well as allow for the enlargement of the existing residential use buildings in the Rezoning Area, as detailed below.

Projected Development Site 1 (Block 5449, Lot 37): With the Proposed Actions, rezoning to R6B residential with a C2-4 commercial overlay, Site 1 would consist of a 7,445 gsf (7,228 zsf) mixed residential/commercial use building (FAR 2.0). The building would contain a total residential floor area of 5,317 gsf (5,162 zsf, 1.43 FAR) or seven dwelling units (DU) based on an average 680 sf per DU for this zoning district. The building would also contain 2,127 gsf (2,066 zsf, 0.57 FAR) of commercial floor area on the ground floor. The maximum building height would be 55 feet (five stories).

Projected Development Site 2 (Block 5449, Lot 35): With the Proposed Actions of rezoning to R6B residential, Site 2 would consist of a 5,469 gsf (5,310 zsf) residential use building (FAR 2.0). The building would contain a total residential floor area of 5,310 sf, or seven dwelling units, based on an average 680 sf per dwelling unit in this zoning district. The maximum building height would be 55 feet (five stories).

Projected Development Site 3 (Block 5449, Lot 36): With the Proposed Actions of rezoning to R6B residential, Site 3 would consist of a 6,293 gsf (6,110 zsf) residential use building (FAR 2.0). The building would contain eight dwelling units based on an average 680 sf per dwelling unit in this zoning area. The maximum building height would be 55 feet (five stories).

Projected Development Site 4 (Block 5449, Lot 42): With the Proposed Actions of rezoning to R6B residential, Site 4 would consist of a 7,222 gsf (7,012 sf) residential use building (FAR 2.0). The building would contain ten dwelling units based on an average 680 sf per dwelling unit in this zoning area. The building maximum building height would be 55 feet (five stories).

Projected Development Site 5 (Block 5449, Lot 44): With the Proposed Actions of rezoning to R6B residential, Site 5 would consist of a 7,222 gsf (7,012 sf) residential use building (FAR 2.0). The building would contain 10 dwelling units based on an average 680 sf per dwelling unit in this zoning district. The building maximum building height would be 55 feet (five stories).

Conclusion

The Proposed Actions are not anticipated to result in any new land uses or uses that are significantly different from surrounding uses. There are commercial, mixed-use commercial and residential and community facility uses along most of 18th Avenue.

The Proposed Actions would not be a departure from adjacent uses, would not be incompatible with the land uses in the surrounding area and would activate an otherwise underutilized site.

No potentially significant adverse impacts related to land use are expected to occur as a result of the Proposed Actions. Therefore, further analysis of land use is not warranted.

III. Zoning

Existing Conditions

The Proposed Rezoning Area is currently zoned R5, which permits a maximum FAR of 1.25 for residential and 2.00 for community facilities. Typically, R5 zoning allow a variety of housing at a higher density than permitted in R3-2 and R4 districts. The floor area ratio (FAR) of 1.25 typically produces three-and four-story attached houses and small apartment houses. With a height limit of 40 feet, R5 districts provide a transition between lower- and higher-density neighborhoods.

Projected Development Site 1: (Block 5449, Lot 37) has 3,614 square feet of lot area and is improved with a two-story two-family residential building with 3,634 gsf (3,528 zsf) of floor area (0.98 FAR) and two parking spaces.

Projected Development Site 2: (Block 5449, Lot 35) has 2,655 square feet of lot area and is improved with a two-story two-family residential building with 2,800 gsf (2,716 zsf) of floor area (1.02 FAR) and two parking spaces.

Projected Development Site 3: (Block 5449, Lot 36) has 3,055 square feet of lot area and is improved with a two-story two-family residential building with 2,800 gsf (2,716 zsf) of floor area (0.90 FAR) and two parking spaces.

Projected Development Site 4: (Block 5449, Lot 42) has 3,506 square feet of lot area and is currently vacant.

Projected Development Site 5: (Block 5449, Lot 44) has 3,506 square feet of lot area and is improved with a two-story two-family residential building with 3,250 gsf (3,153 zsf) of floor area (0.90 FAR) and two parking spaces.

In addition to the R5 zone, the only other zoning districts within the study area is R5/C1-3. R5/C1-3 allows for a maximum residential FAR of 1.25, a maximum commercial FAR of 1.0 and a maximum community facility FAR of 2.0. One car per 400 commercial sf is required.

Future No-Action (No-Build) Scenario

In the future and absent the action, development of the Proposed Rezoning Area would continue to be governed by the provisions of the existing R5 zoning district. Projected Development Site 1 is Applicant-owned. The Applicant has no plans to redevelop this site absent the Proposed Action. Although Projected Development Site 4 is vacant and could be developed as-of-right, there are currently no plans for redevelopment by the build year 2022.

No changes are anticipated to the zoning districts and zoning regulations relating to the Proposed Rezoning Area or the surrounding study area by the project build year of 2022.

Future With-Action (Build) Scenario

In the future with the Proposed Actions, commercial uses would be permitted within the commercial overlay portion of the Proposed Rezoning Area. This would facilitate the proposed mixed-use commercial and residential development of Applicant-owned Projected Development Site 1. The proposed zoning text amendment would designate the Rezoning Area a Mandatory Inclusionary Housing (MIH) area requiring all future residential development to include permanent affordable housing.

Within the R6B/C2-4 zoning district, the maximum FAR for commercial uses is 2.0. The maximum FAR permitted for residential is 2.0 and the maximum community facility FAR is 2.0 remain. The maximum permitted base height in the R6B/C2-4 zone is 55 feet or 5 stories in a MIH area. The R6B/C2-4 zoning district requires accessory residential parking spaces for 50 percent of dwelling units. Parking is required for commercial uses based on area, with retail uses at one space per 1,000 square feet. However, accessory commercial parking may be waived if fewer than 25 spaces are required pursuant to ZR § 36-231.

The Proposed Actions seek a zoning map amendment that would facilitate the following:

Projected Development Site 1 (Block 5449, Lot 37): With the Proposed Actions, rezoning to R6B residential with a C2-4 commercial overlay, Site 1 would consist of a 7,445 gsf (7,228 zsf) mixed residential/commercial use building (FAR 2.0). The building would contain a total residential floor area of 5,317 gsf (5,162 zsf, 1.43 FAR) or seven dwelling units (DU) based on an average 680 sf per DU for this zoning district. The building would also contain 2,127 gsf (2,066 zsf, 0.57 FAR) of commercial floor area on the ground floor. The maximum height would be 55 feet (five stories). Site 1 would not provide any parking spaces since the requirement is waived as the total number of parking spaces is below the statutory threshold.

Projected Development Site 2 (Block 5449, Lot 35): With the Proposed Actions of rezoning to R6B residential, Site 2 would consist of a 5,469 gsf (5,310 zsf) residential use building (FAR 2.0). The building would contain a total residential floor area of 5,310 sf, or seven dwelling units, based on an average 680 sf per dwelling unit in this zoning district. The maximum height would be 55 feet (five stories). Site 2 would not provide any parking spaces since the requirement is waived as the total number of parking spaces is below the statutory threshold.

Projected Development Site 3 (Block 5449, Lot 36): With the Proposed Actions of rezoning to R6B residential, Site 3 would consist of a 6,293 gsf (6,110 zsf) residential use building (FAR 2.0). The building would contain eight dwelling units based on an average 680 sf per dwelling unit in this zoning area. The maximum height would be 55 feet (five stories). Site 3 would not provide any parking spaces since the requirement is waived as the total number of parking spaces is below the statutory threshold.

Projected Development Site 4 (Block 5449, Lot 42): With the Proposed Actions of rezoning to R6B residential, Site 4 would consist of a 7,222 gsf (7,012 zsf) residential use building (FAR 2.0). The building would contain ten dwelling units based on an average 680 sf per dwelling unit in this zoning area. The building maximum building height would be 55 feet (five stories). Site 4 would not provide any parking spaces since the requirement is waived as the total number of parking spaces is below the statutory threshold.

Projected Development Site 5 (Block 5449, Lot 44): With the Proposed Actions of rezoning to R6B residential, Site 5 would consist of a 7,222 gsf (7,012 zsf) residential use building (FAR 2.0). The building would contain 10 dwelling units based on an average 680 sf per dwelling unit in this zoning district. The building maximum height would be 55 feet (five stories). Site 5 would not provide any parking spaces since the requirement is waived as the total number of parking spaces is below the statutory threshold.

All the proposed developments as a result of the Proposed Action would be within the permitted R6B/C2-4 zoning regulations.

In addition to the zoning map amendment, a zoning text amendment to Appendix F of the New York City Zoning Resolution (ZR) would be required to make the Rezoning Area applicable as a Mandatory Inclusionary Housing Area (MIH). MIH would require any future residential development in the Rezoning Area to include permanent affordable dwelling units, a demonstrated city-wide need.

Therefore, the Future With-Action Scenario would facilitate the redevelopment of the Rezoning Area and provide for future affordable housing.

Conclusion
No significant impacts to zoning patterns in the area would be expected. The Proposed Actions would result in a zoning map amendment that creates new R6B/C2-4 zoning district.

While the Proposed Actions would facilitate redevelopment in the proposed Rezoning Area, the action is not intended to facilitate additional development but would be compatible with the existing adjacent R5/C1-3 along 18th Avenue and would ensure the provision of affordable housing.

Therefore, the Proposed Actions would not have a significant impact on the extent of conformity with the current zoning in the surrounding area, and it would not adversely affect the viability of conforming uses on nearby properties and further assessment of zoning is not warranted.

IV. Public Policy

Existing Conditions
The Proposed Rezoning Area is within the Borough Park section of Brooklyn, Community District 12.

No public policies relate to the proposed Rezoning Area or to the surrounding 400-foot radius study area. The Rezoning Area and the 400-foot radius area are not located within an Historic District and do not contain any designated historic resources and are therefore not subject to any historic regulations. Neither the proposed Rezoning Area nor the study area are located within a Federal Empowerment Zone, nor are they covered by any 197-a Community Development Plans and are not located within a critical environmental area (The Jamaica Bay Watershed Protection Plan is discussed in Section 11: Natural Resources), a significant coastal fish and wildlife habitat, a wildlife refuge, or a special natural waterfront area.

Future No-Action (No-Build) Scenario
No new public policy initiatives or changes to existing initiatives are anticipated to affect the Proposed Rezoning Area or the surrounding 400-foot study area by the analysis year of 2022.

Future With-Action (Build) Scenario
The future with the Proposed Actions would result in a zoning map amendment that would include a commercial overlay over an R6B zoning district, creating a new R6B/C2-4 zoning district. This R6B/C4-2 district would facilitate the redevelopment of the Applicant-owned Projected Development Site 1. The R5/C2-4 district permits a maximum FAR of 2.0 for residential use, 2.00 for community facility use and 1.00 for

commercial use. Projected Development Sites 2 through 5 would be rezoned to R6B which would permit a maximum residential FAR of 2.0 and a maximum community facility FAR of 2.0. As noted within the land use analysis above, the proposed uses would be compatible with the existing land uses within a 400-foot radius of the proposed Rezoning Area.

In addition, the zoning text amendment to Appendix F required to make the Rezoning Area applicable as a Mandatory Inclusionary Housing Area (MIH) would ensure future residential development in the proposed Rezoning Area would include permanent affordable housing, a demonstrated city-wide need.

No adverse impact to public policies would occur as a result of the Proposed Actions.

Conclusion
The Proposed Actions, which would facilitate both a mixed-use commercial and residential development and additional residential use in the proposed Rezoning Area, would not be inconsistent with the goals of any existing public policies for the area, as discussed above.

No potentially significant adverse impacts related to public policy are anticipated to occur as a result of the Proposed Actions, and further assessment of public policy is not warranted.

V. Conclusion

No significant adverse impacts related to land use, zoning, and public policy are anticipated to occur as a result of the Proposed Actions. Therefore, the Proposed Actions are not expected to result in any of the conditions that warrant the need for further assessment of land use, zoning, or public policy.

8. SHADOWS

Introduction

Under *CEQR*, a shadow is defined as the circumstance in which a building or other built structure blocks the sun from the land. An adverse shadow impact is considered to occur when the shadow from a proposed project falls upon a publicly accessible open space, a historic landscape, or other historic resource if the features that make the resource significant depend on sunlight, or if the shadow falls on an important natural feature and adversely affects its uses or threatens the survival of important vegetation. An adverse impact would occur only if the shadow would fall on a location that would otherwise be in sunlight; the assessment therefore distinguishes between existing shadows and new shadows resulting from a proposed project. Finally, the determination of whether the impact of new shadows on an open space or a natural or historic resource would be significant is dependent on their extent and duration. In general, shadows on City streets and sidewalks or on other buildings are not considered significant under *CEQR*. In addition, shadows occurring within an hour and a half of sunrise or sunset generally are not considered significant under *CEQR*.

According to the *CEQR Technical Manual*, a shadows assessment is not required unless the project would include a structure or an addition to a structure at least 50 feet in height or if it would contain shorter structures that might cast substantial new shadows on an adjacent park, historic resource, or an important natural resource.

The RWCDS assumed the Rezoning Area would be redeveloped with five buildings, only one of which would have an incremental height over 50 feet. Projected Development Site 4 (Block 5449, Lot 42) is currently vacant. A five-story 55-foot building is proposed on the site. With the 3.5-foot parapet, the height of the building would be 58.5 feet.

The Rezoning Area is located in close proximity to one open space resources.

Preliminary Screening Assessment

Tier 1 Screening Assessment

There is one shadow sensitive open space resources in the vicinity of the Rezoning Area as shown on the attached Tier 1 Screening Assessment diagram. There are no historic resources in the vicinity of the Projected Development Sites. The shadow sensitive open space resource includes the following:

- The Public School 192 – The Magnet School for Math and Science Inquiry (P.S. 192) playgrounds and playing fields. This park outlined in a dashed red line and colored green on the attached **Figure 8-1**, Tier 1 Screening Assessment diagram.

The longest shadows radius is calculated as 4.3 times the maximum proposed building height including rooftop bulkheads. The longest shadow cast by the building on the Development Site is as follows:

- Projected Development Site 4: roof top including parapet: 58.5' x 4.3 = 251.55'

The longest shadow of 251.55 feet on the Tier 1 shadow assessment figure was calculated as 4.3 times the maximum proposed building height of 58.5 feet including the parapet on the roof of the proposed five-story building on Projected Development Site 4.

Due to the proximity of the Rezoning Area to the open space resource noted above, potential shadow impacts could occur from the Proposed Actions.

Tier 2 Screening Assessment

Based on the Tier 1 assessment, which showed the potential for the longest shadow to reach a sunlight sensitive open space resource, a Tier 2 assessment was generated. A Tier 2 assessment locates the area south of a building that cannot be cast in shadow. This area in New York City lies between -108 and +108 degrees from true north.

The attached **Figure 8-2**, Tier 2 Screening Assessment diagram shows the area south of the Development Sites that cannot be shaded by the proposed project. As illustrated on the figure, none of the P.S. 192 playgrounds falls within this area so the open space resource could experience new shadows from the project and further assessment is therefore required.

Tier 3 Screening Assessment

The Tier 3 screening assessment is used to determine if shadows resulting from the proposed project can reach a sunlight-sensitive resource. The screening assessment uses three-dimensional computer modeling software with the capacity to accurately calculate shadow patterns.

A Tier 3 screening assessment was performed for the four representative days of the year set forth in the *CEQR Technical Manual*: December 21, the winter solstice and shortest day of the year; March 21/September 21, the equinoxes; May 6, the midpoint between the summer solstice and the equinox (and equivalent to August 6); and June 21, the summer solstice and the longest day of the year. The *CEQR Technical Manual* defines the temporal limits of a shadow analysis period to fall from an hour and a half after sunrise to an hour and a half before sunset. In accordance with the *CEQR Technical Manual*, surrounding buildings are not included in the Tier 3 shadow assessment model.

A Tier 3 screening assessment has been performed as some of the P.S. 192 playgrounds could be shaded by the proposed project. As shown on the attached **Figures 8-3**

through 8-5, Tier 3 Screening Assessment diagrams, shadows from the development would not reach the P.S. 192 playgrounds.

Conclusion

The proposed building on Projected Development Site 4 would not cast any new shadows on shadow sensitive open space or historic resources. Therefore, the Proposed Actions would not result in any significant shadows impacts, and no further assessment is needed for the project.

Figure 8-1: Tier 1 Screening Assessment



Figure 8-2: Tier 2 Screening Assessment



Figure 8-3: Tier 3 Screening Assessment for the December 21 Analysis Day



Figure 8-4: Tier 3 Screening Assessment for the March 21 Analysis Day



Figure 8-5: Tier 3 Screening Assessment for the May 6 Analysis Day



Figure 8-6: Tier 3 Screening Assessment for the June 21 Analysis Day



9. HISTORIC AND CULTURAL RESOURCES

Historic and cultural resources include both architectural and archaeological resources. Architectural resources generally include historically important buildings, structures, objects, sites, and districts. They may include bridges, canals, piers, wharves, and railroad transfer bridges that may be wholly or partially visible above ground. Archaeological resources are physical remains, usually subsurface, of the prehistoric, Native American, and historic periods—such as burials, foundations, artifacts, wells, and privies. As a general rule, archaeological resources do not include 20th and 21st Century artifacts.

According to the *CEQR Technical Manual*, a historic and cultural resources assessment is required if a project has the potential to affect either archaeological or architectural resources. The attached letter dated April 22, 2019 from the New York City Landmarks Preservation Commission (NYC LPC), affirms that the Proposed Rezoning Area has no architectural or archaeological significance. See **Appendix A**.

Conclusion

Based on the above, there is no potential for impacts related to architectural historic resources or archaeological historic resources as a result of the Proposed Actions and further analysis is not required.

10. URBAN DESIGN AND VISUAL RESOURCES

An assessment of urban design is needed when a project may have effects on any of the elements that contribute to the pedestrian experience of public space. A preliminary assessment is appropriate when there is the potential for a pedestrian to observe, from the street level, a physical alteration beyond that allowed by existing zoning. An assessment would be appropriate for the following:

1. Projects that permit the modification of yard, height, and setback requirements; and
2. Projects that result in an increase in built floor area beyond what would be allowed 'as-of-right'.

The Applicant seeks a zoning map amendment that would include Block 5449, Lots 34 (p/o), 35, 36, 37, 41, 42 and 44 located at 1776 48th Street (the "Rezoning Area") in the Borough Park section of Brooklyn, Community District 12. The proposed zoning map amendment would rezone the Proposed Rezoning Area from an R5 zoning district to an R6B/C2-4 zoning overlay and the zoning text amendment would designate the proposed Rezoning Area a MIH area requiring all future development to include permanent affordable housing (the "Proposed Actions").

This R6B/C4-2 district would facilitate the development of the Applicant-owned Projected Development Site 1 with a mixed-use commercial and residential building. Projected Development Sites 2 through 5 would be developed with residential buildings.

Existing Conditions (and No-Action Scenario)

The Proposed Rezoning Area is currently zoned R5. R5 zoning districts allow all types of housing (Use Groups 1-2) at a maximum FAR of 1.25. Community facility uses (Use Groups 3-4) are permitted at a maximum FAR of 2.0. The maximum height of R5 districts is 40 feet, with a perimeter wall height of 30 feet. Commercial uses are not permitted in R5 districts. This district usually produces buildings with four stories. Front yards must be 10 feet deep or, if deeper, a minimum of 18 feet to provide sufficient space for on-site parking. Detached houses must have two side yards that total at least 13 feet and each one must be at least five feet wide. Semi-detached buildings need one side yard with a minimum width of eight feet. The maximum street wall length for a building on a single zoning lot is 185 feet. Parking is required for 85% of the dwelling units.

In the future, without the Proposed Actions, the existing development is anticipated to remain in their existing conditions.

With-Action Scenario

In the future with the Proposed Actions, the R6B/C2-4 zoning district overlay with MIH would permit commercial FAR of 2.0, residential FAR of 2.0 and community facility FAR of 2.0. One parking space per 1,000 sf of commercial floor area is required.

The Proposed Action would allow the following develoment:

Projected Development Site 1: With the Proposed Actions, Site 1 would consist of a 7,445 gsf (7,228 zsf) mixed residential/commercial use building (FAR 2.0). The ground floor would be commercial retail with residential use above. The maximum building height would be 55 feet (five stories). Site 1 would not provide any parking spaces since the requirement is waived as the total number of parking spaces is below the statutory threshold.

Projected Development Site 2: With the Proposed Actions, Site 2 would consist of a 5,469 gsf (5,310 zsf) residential use building (FAR 2.0). The maximum building height would be 55 feet (five stories). Site 2 would not provide any parking spaces since the requirement is waived as the total number of parking spaces is below the statutory threshold.

Projected Development Site 3 (Block 5449, Lot 36): With the Proposed Actions, Site 3 would consist of a 6,293 gsf (6,110 zsf) residential use building (FAR 2.0). The maximum building height would be 55 feet (five stories). Site 3 would not provide any parking spaces since the requirement is waived as the total number of parking spaces is below the statutory threshold.

Projected Development Site 4 (Block 5449, Lot 42): With the Proposed Actions, Site 4 would consist of a 7,222 gsf (7,012 sf) residential use building (FAR 2.0). The building maximum building height would be 55 feet (five stories). Site 4 would not provide any parking spaces since the requirement is waived as the total number of parking spaces is below the statutory threshold.

Projected Development Site 5 (Block 5449, Lot 44): With the Proposed Actions, Site 5 would consist of a 7,222 gsf (7,012 sf) residential use building (FAR 2.0). The building maximum building height would be 55 feet (five stories). Site 5 would not provide any parking spaces since the requirement is waived as the total number of parking spaces is below the statutory threshold.

All the proposed developments as a result of the Propose Actions would be within the permitted R6B/C2-4 zoning regulations.

The Proposed Actions would allow a maximum building height of 55 feet in an MIH area and would comply with the permitted height of the R6B/C2-4 zoning district. Buildings directly across 18th Avenue vary in height from 48 to 81 feet. Along 48th Street there are nearby buildings that reach a height of 48 feet and along 49th Street nearby building heights reach up to 50 feet. This is illustrated in the **Urban Design Diagrams** following this section.

Although the height of the proposed buildings are 58.5 feet, including rooftop structures, the base height which is most visible to the pedestrian experience is 48.5 feet and similar to the buildings in the surrounding area that is zoned R5/C1-3. Therefore, the Proposed Action would be consistent with the character of the neighborhood.

The Proposed Actions would not alter the essential character of the neighborhood, impair the appropriate use or development of the adjacent properties, or be detrimental to the public welfare. The impacts would be similar to those of the existing commercial uses along 18th Avenue.

Development as a result of the Proposed Actions would be consistent with other commercial building size and bulk along 18th Avenue. Therefore, there is no potential for a pedestrian to observe, from street level, a physical alteration beyond that allowed by the existing zoning.

Based on the above, a detailed urban design assessment is not warranted and no urban design or visual resource impacts would occur.

18th Avenue facing north (Projected Development Site 1 at left)



No-Action Scenario

18th Avenue facing north (Projected Development Site 1 at left)



With-Action Scenario

49th Street facing west (Projected Development Sites 4 & 5 at right)



No-Action Scenario

49th Street facing west (Projected Development Sites 4 & 5 at right)



With-Action Scenario

48th Street facing east (Projected Development Sites 1-3 at right)



No-Action Scenario

48th Street facing east (Projected Development Sites 1-3 at right)



With-Action Scenario

11. NATURAL RESOURCES

The Proposed Rezoning Area is located within the boundaries of the Jamaica Bay Watershed Protection Plan (See *Jamaica Bay Watershed Form*, **Appendix B**). As such, a preliminary assessment of the Proposed Action's potential effect on natural resources is required. Relative to the requirements of the Natural Resources chapter of the *CEQR Technical Manual*, the Proposed Rezoning Area is developed with active residential and community facility uses and is within the highly urbanized area of Borough Park Brooklyn, making the site devoid of any significant natural resource. The site is fully covered by impervious surfaces and does not contain any vegetation or animal habitat. The Proposed Actions are not anticipated to create a significant adverse impact on natural resources and no further analysis is warranted.

12. HAZARDOUS MATERIALS

An analysis of hazardous materials is conducted to determine whether or not a proposed project would increase the exposure of the people of the environment to hazardous materials, and, if so, whether this increased exposure would result in potentially significant public health or environmental impacts. If significant adverse impacts are identified CEQR requires that the impacts be disclosed and mitigated or avoided to the greatest extent practicable.

A Phase I Environmental Site Assessment (ESA) was performed of the subject property located at 1776 48th Street, in the Borough of Brooklyn, New York City, New York. This Phase I ESA was prepared in accordance with the latest ASTM Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (ASTM Designation E 1527-13).

Site Description

The subject property at 1776 48th Street, Brooklyn, N.Y., consists of a 3,500+/- square foot, rectangular shaped lot that contains a 2-story (plus basement), 2-family dwelling. Heat for the building is provided by a gas-fired boiler located in the basement. There is also a detached 2-car garage located on the south side of the lot. Exterior portions of the site consist of small side and rear yards around the building.

Site History

Research into the history of the project site shows that the property was undeveloped, vacant land in 1906. Given the residential and rural nature of the area in the early 1900s, it is considered unlikely that the project site would have contained a business or operation that stored or used hazardous materials or petroleum products prior to 1906. The subject building was constructed in 1922 as a 2-family dwelling. The uses of the building have been residential since its construction. A dentist and two doctors are also identified in the building; however, it is not known if their offices were located in the building. Dentist and doctor's offices are types of operations that may have involved the storage or use of small quantities of hazardous substances, however, and given that the subject building is connected to the municipal sewer system, any materials discharged from former doctor's or dentist's offices would have been carried off site via the municipal sewer system. Therefore, it is considered unlikely that these uses would have impacted the project site.

Typical lavatory drainage structures such as sinks and toilets are present in the building. These discharge to the municipal sewer system. No additional drainage structures were observed at the subject property during the site visit.

No aboveground storage tanks, or visible indications of the presence of underground storage tanks, such as tank fillports or tank vent lines, associated mechanical

equipment, etc., were observed during the site visit. The property does not appear in the New York State Department of Environmental Conservation (NYSDEC) Petroleum Bulk Storage (PBS) database, which lists all registered facilities with a total combined petroleum storage capacity in excess of 1,100 gallons. In addition, there are not any Oil Burner Applications on file in the New York City Department of Buildings records reviewed for the project site.

Given the age of the building (constructed in 1922), it is possible that it contains asbestos building materials and lead-based paints. Potential asbestos-containing materials observed in the building include floor tiles, roofing materials, surfacing materials and pipe insulation.

The property does not appear in any of the Federal or State environmental databases reviewed, including the USEPA's Superfund, CERCLIS or ERNS databases, the RCRA Hazardous Waste Treatment/Storage/Disposal Facilities list, or the NYSDEC's, Spill Logs database, Solid Waste Facilities database, Petroleum Bulk Storage database, Brownfield site database, Voluntary Cleanup Program list or the Registry of Inactive Hazardous Waste Disposal Sites.

The project site is adjoined to the north by 48th Street, beyond which are residential buildings with first floor retail stores. Adjacent and to the south of the site is a synagogue. Adjacent and to the east of the site is 18th Avenue, beyond which are residential apartment buildings with first floor retail stores. The property is adjoined to the west by residential dwellings. Land uses in the immediate vicinity of the property (i.e., within approximately 500 feet of the site) are primarily comprised of residential uses, retail stores and a public school. There were not any heavy industrial uses or gasoline filling stations identified in the immediate vicinity of the project site.

A review of Sanborn maps shows that land uses in the immediate area of the subject property have been a mix of residential uses, a public school, and commercial/retail businesses since at least the 1930s.

Conclusions

A Phase I Environmental Site Assessment was performed in conformance with the scope and limitations of ASTM Practice E 1527-13 of 1776 48th Street, Brooklyn, N.Y., the property. Upon review of the Phase I report, the Department of Environmental Protection (DEP) requested soil, soil vapor and groundwater testing to be performed. One complete, a Remedial Action Plan (RAP) and Construction Health and Safety Plan (CHASP) were prepared and are included in **Appendix C**. Upon review, DEP signed off in a letter dated March 11, 2011, (also included in Appendix C), concluding no hazardous material impacts would occur. Therefore, no further review of hazardous materials is warranted.

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14. TRANSPORTATION

Weighted Average Screening

This level of development would not exceed the minimum development density potentially requiring a transportation analysis, requiring a Weighted Average Screening analysis, as shown in Table 16-1 of the transportation chapter of the *2014 CEQR Technical Manual.* The applicable minimum development density for the location of the project development site (all areas within 0.25 miles of subway station) in Zone 2 is 200 new residential dwelling units, 15,000 additional square feet of local retail space, 25,000 additional square feet of community facility or 85 new off-street parking spaces.

Based on a Weighted Average Screening as shown below, and in accordance with *the CEQR Technical Manual criteria (Table 16-1)*, the project development would not result in any conditions that would typically trigger the need for a detailed assessment of transportation related impacts.

34/200 (residential)+2127/15,000 (local retail) =0.17+0.1418=0.3118<1

17. AIR QUALITY

Analysis Framework

Ambient air quality, or the quality of the surrounding air, may be affected by air pollutants produced by motor vehicles, referred to as "mobile sources"; by fixed facilities, usually referenced as "stationary sources"; or by a combination of both. Under CEQR, an air quality assessment determines both a proposed project's effects on ambient air quality as well as the effects of ambient air quality on the project. The analysis framework, as mandated by the State Environmental Review Act, followed the *New York City Environmental Quality Review 2020 Technical Manual*.

Project Description

Proposed Action

The Rezoning Area, located in the Borough Park neighborhood of Brooklyn Community District #12, comprises of seven lots on a single block. The Project Area is on Block 5449 (bounded by 48th and 49th Streets, 18th Avenue, and Old New Utrecht Road). This would include Block 5449, Lots 34 (p/o), 35, 36, 37, 41, 42 and 44. The Applicant-controlled Development Site is located at 1776 48th Street (Block 5449, Lot 37).

Two of these lots have screened out of the analysis. Lot 34 screens out because only a small portion (600 sf) of the entire lot falls within the Rezoning Area, which includes part of an existing two-family home. Lot 41 screens out because it is a longstanding (1989) institution use (synagogue) with no plans for redevelopment. Therefore, these lots are not included in the EAS for analysis purpose.

The total anticipated development within the proposed Rezoning Area would consist of 33,651 gross square feet (gsf), containing 42 dwelling units, 2,127 gsf of commercial space, and no (0) additional off-street parking spaces. The project Build year is 2022.

Site 1 (Block 5449, Lot 37 Development Site): The Development Site, the Applicant's owned property, would consist of a three-story (including a cellar) mixed-use building to contain 7,204 gsf of floor area, of which 5,076 gsf are residential floor area and 2,128 gsf are commercial floor area. The Development Site Reasonable Worst Case Development Scenario (RWCDS) would facilitate a five-story, 55 feet high building, containing 7,445 gsf of floor area. Natural gas would be the type of fuel used in the building's HVAC system.

Site 2 (Block 5449, Lot 35): Site 2 RWCDS would consist of a five-story, 55 feet high, residential-use building to contain 5,469 gsf of floor area.

Site 3 (Block 5449, Lot 36): Site 3 RWCDS would consist of a five-story, 55 feet high, residential-use building to contain 6,293 gsf of floor area.

Site 4 (Block 5449, Lot 42): Site 4 RWCDS would consist of a five-story, 55 feet high, residential-use building to contain 7,222 gsf of floor area.

Site 5 (Block 5449, Lot 44): Site 5 RWCDS would consist of a five-story, 55 feet high, residential-use building to contain 7,222 gsf of floor area.

Air Pollutants and Applicable Standards and Guidelines

Criteria Pollutants

The EPA has identified six pollutants, known as criteria pollutants which are of concern nationwide, and established threshold concentrations for these pollutants based upon their adverse effects on human health. As required by the Clean Air Act, the National Ambient Air Quality Standards (NAAQS) have been established for the criteria pollutants by the EPA, and New York State has adopted the NAAQS as the State ambient air quality standards.

In addition to the NAAQS, the *CEQR Technical Manual* requires that projects subject to CEQR apply a $PM_{2.5}$ and 8-hour CO averaging time significant impact criteria (based on concentration increments). These criteria, named *de minimis*, are more stringent than the NAAQS and the state standards, as the criteria set a maximum increase of pollutant concentration that is below the national standard. If the predicted impact concentrations associated with the Proposed Action are less than the *de minimis* criteria, the impacts are not considered to be significant. Detailed analysis was required only for $PM_{2.5}$ stationary source (no detailed analysis was required for CO source of pollutant, nor for $PM_{2.5}$ source of pollutant applicable to ground level on a neighborhood scale). The $PM_{2.5}$ significant impact concentrations for stationary sources are evaluated as follows:

- Predicted 24-hour maximum $PM_{2.5}$ concentration increase of more than half the difference between the 24-hour background concentration and the 24-hour standard; or
- Predicted annual average $PM_{2.5}$ concentration increments greater than 0.3 $\mu g/m^3$ at any receptor location for stationary sources.

To determine compliance with the NAAQS, the predicted impact concentrations are added to the background concentrations. Background concentrations were obtained from the New York State Department of Environmental Conservation (NYSDEC) Queens College 2 and JHS 45 monitoring stations. Table 17-1 shows the background concentrations at the nearest NYSDEC monitoring stations and the NAAQS.

Table 17-1: The NAAQS and Background Concentrations at the Nearest NYSDEC Monitoring Stations

Pollutant	Averaging Period	National and State Standards	Background Concentration	Monitoring Station
NO_2	1-Hour	188 $\mu g/m^3$	103.6 $\mu g/m^3$	Queens College 2
	Annual	100 $\mu g/m^3$	26.8 $\mu g/m^3$	
SO_2	1-Hour	196 $\mu g/m^3$	13.5 $\mu g/m^3$	
	Annual	80 $\mu g/m^3$	1.0 $\mu g/m^3$	
$PM_{2.5}$	24-Hour	35 $\mu g/m^3$	19.6 $\mu g/m^3$	Division Street
	Annual	12 $\mu g/m^3$	9.3 $\mu g/m^3$	

The concentrations' increments, *de minimis*, for stationary source $PM_{2.5}$, the pollutants for which a detailed analysis was required are 24-hour $PM_{2.5}$ concentration increment of 7.7 $\mu g/m^3$ and annual $PM_{2.5}$ concentration increment of 0.3 $\mu g/m^3$ (for stationary source).

NO_2 NAAQS

The 1-hour NO_2 NAAQS was promulgated in the United States in February 2010. The 1-hour standard is based on a percentile rank from the annual distribution of daily maximum 1-hour values, averaged across the number of years processed. The 1-hour NO_2 modeled design value is based on the 98th percentile, or 8th highest, of the daily maximum 1-hour values across the year. For typical multi-year modeling analysis based on 5 years of National Weather Service (NWS) meteorological data, the modeled design value is the 5-year average of the 8th highest values for NO_2.

Nitrogen oxide (NOx) emissions from combustion consist predominantly of nitric oxide (NO) at the source. The NOx in these emissions is then gradually converted to NO_2. For determining compliance with the 1-hour standard, the EPA has developed a three-tiered modeling approach: a) Tier 1, the most conservative approach, assumes a full (100%) conversion of NOx to NO_2. b) Tier 2 is the Ambient Ratio Method 2 (ARM2) which assumes ambient equilibrium between NO and NO_2. AERMOD multiplies Tier 1 impacts with default ambient ratios, or source-specific NO_2/NO_x in-stack ratio (ISR) data (the national default minimum and maximum ambient ratios for the primary facility are 0.5 and 0.9, respectively.) c) Tier 3, which is the most precise approach, accounts for the chemical transformation of NO emitted from the stack to NO_2 within the source plume using hourly ozone background concentrations.

Non-Criteria Pollutants

In addition to the NAAQS, the NYSDEC has established guidelines for maximum allowable concentration of "noncriteria pollutants," which are potentially toxic or carcinogenic pollutants. The maximum allowable guidelines set a maximum 1-hour and annual averaging time concentrations and are published in the DAR-1 AGC/SGC Table, where AGC/SGC refers to Annual and Short-term Guideline Concentrations. The most recent DAR-1 guidelines were published on August 10, 2016. NYSDEC also regulates pollutants that produce discomfort due to odors, where significant discomfort is evaluated on quantity, characteristic, or duration.

Mobile Source

Per the *CEQR Technical Manual*, localized increases in CO and $PM_{2.5}$ levels may result from increased vehicular traffic volumes and changed traffic patterns in the study area as a consequence of the proposed project. For this area of the City, the threshold volume for a detailed analysis of CO concentration, using MOVES2014 and CAL3QHC/R or AERMOD, is an increment of 170 vehicles. $PM_{2.5}$ threshold criterion is an increment of applies heavy-duty diesel vehicles (HDDVs) screen.

The Proposed Action would not exceed the *CEQR Technical Manual Table 16-1* thresholds criterions. As such, the maximum trip generation would not exceed the 170 net vehicles trips at any given hour at any intersection during any peak hour.

The project-generate peak hour HDDVs traffic or its equivalent in vehicular emission that would require a detailed $PM_{2.5}$ analysis depends on the type of road. The thresholds incremental traffic per road type ranges from 12 to 23 HDDVs. Per the NYS Department of Transportation (NYSDOT)[1], 48th Street is classified as a local street (12 HDDVs threshold screen), which is paved road with 5,000 vehicles, and 49th Street and 18th Avenue are arterial roadways (23 HDDVs threshold screen).

[1] https://gis3.dot.ny.gov/html5viewer/?viewer=FC

The NYC Department of City Planning (DCP) online CEQR App was used to predict the project-generated traffic, where the CEQR App output is based on the *CEQR Technical Manual* planning factors. These resulted, using the CEQR App, in a maximum peak hour increment of 12 autos and no (0) trucks during the AM and PM peak hour periods (see - Appendix D Figure 1: CEQR App – AM, MD, PM and Saturday Project-generated Traffic). The HDDVs screen assumed that all autos are LDGT1 class vehicles. The worst-case HDDVs or its equivalent in vehicular emissions would result in a maximum of 6 equivalent trucks traveling on 48th Street (see - Appendix D Figure 2: *CEQR Technical Manual* Equivalent Truck Calculations). As such, the Proposed Action passes the $PM_{2.5}$ HDDVs screening analysis and no detailed analysis was required.

In addition, the Proposed Action would result in reduction of eight (-8) off-street parking spaces, and there is no existing mobile source of pollutant near the proposed project.

Therefore, no significant adverse air quality impact(s) is predicted from mobile source(s).

HVAC System

Introduction

Per the *CEQR Technical Manual*, the HVAC analysis considers the potential for emissions from the HVAC system(s) of the proposed project to significantly impact existing land uses (project-on-existing), and the potential of the proposed project to significantly impact each other (project-on-project). Based on CEQR guidelines, a preliminary screening analysis is to be conducted as a first step to predict whether the potential impacts of the heat and hot water system boiler emissions can be significant. The screening analysis determines the threshold of development size below which the action would not have a significant impact. This CEQR screening procedure is applicable to buildings that are not less than 30 feet from the nearest building of similar or greater height. Otherwise, a detailed dispersion analysis is required.

Screening Analysis

Per the *CEQR Technical Manual,* the potential for stationary source emissions from heat and hot water systems to have a significant adverse impact on nearby receptors depends on the type of fuel that would be used, the building's residential or non-residential use, the square footage of the development that would be served by the system, the height of the building served by the HVAC system and the distance to the nearest building whose height is at least as great as the building served by the HVAC system. The *CEQR Technical Manual* provides a screening analysis based on these factors, which was utilized to determine the potential for significant impacts from the projected building's HVAC system.

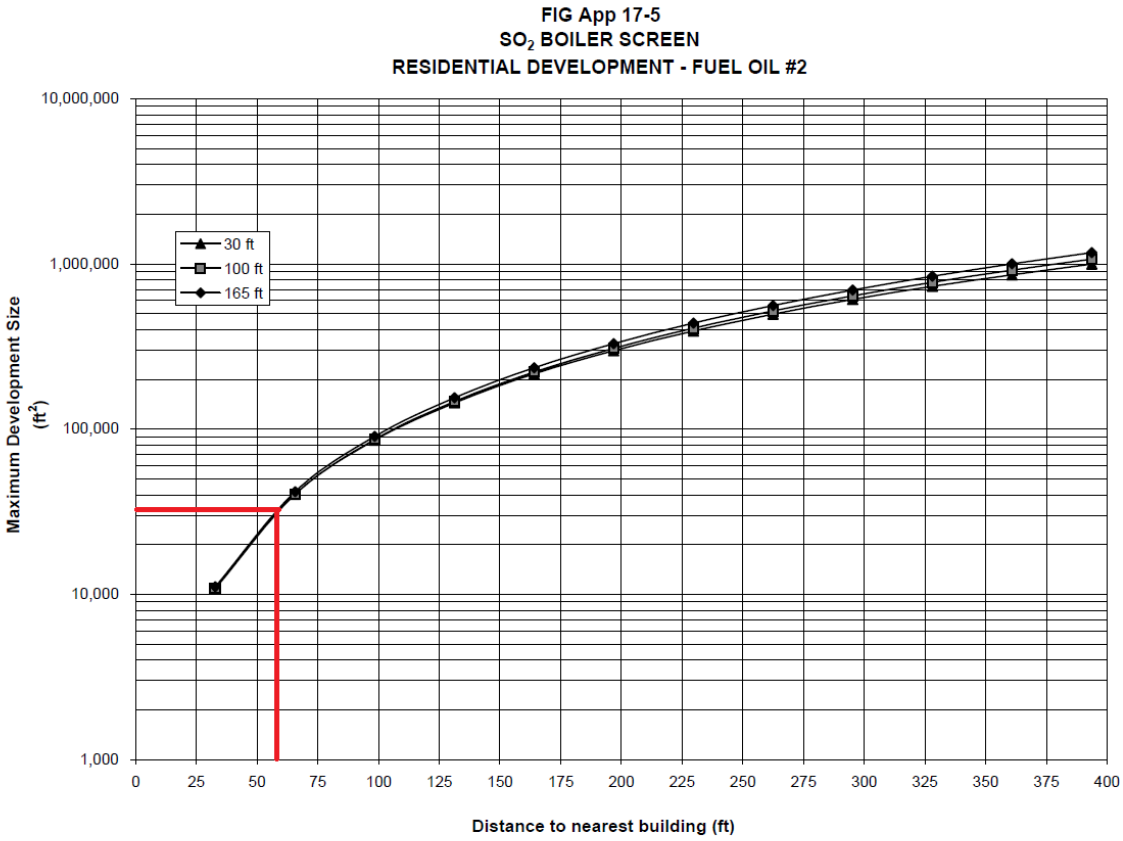
As the proposed developments are clustered together, the CEQR screening analysis is not applicable for the project-on-project screening scenario (screening analysis is applicable for distance greater than 30 feet). Therefore, dispersion modeling analyses were conducted for the project-on-project analysis.

Screening analysis is only applicable to a single smokestack. However, for purpose of a cumulative analysis, emissions from multiple stacks could be combined in a single stack situated as close as possible to a receiving building. The scenarios of project-on-existing screening analyses considered were:

The impact of the proposed project on existing land uses, assuming residential occupancy, building height of 55 feet, and 33,652 gsf of floor area. Fuel oil #2 would be the type of fuel used

in the building's (combined development sites gsf as a single building) HVAC system. The CEQR nomographs depicted on Figure 17-5 of the *CEQR Technical Manual Appendices* was used for the screening analysis. This stationary source screen is a generic screen for oil No. 2 fueled boiler serving a residential use building. According to 15 RCNY 2-15, no new boiler or burner installations may use No. 6 or No. 4 fuel oils. Therefore, the highest-emitting fuel that could be used is a No. 2 fuel oil. The CEQR nomograph depict the size of the development versus distance below which the potential impact can occur and provides a conservative estimate of the threshold distance. Figures 17-1 (using Figure 17-5 of the *CEQR Technical Manual Appendices)* shows the cumulative project-on-existing screening analysis nomograph.

Figure 17-1: Project-on-Existing - HVAC Screen Fuel Oil #2 Nomograph



The screening analysis nomograph Figure 17-1 (Figure 17-5 as it is known in the *CEQR Technical Manual Appendices*) shows that a detailed analysis would be required for any existing land use that is 55 feet or higher and is located at a distance less than 60 feet from the Project Area. Building footprint geo metadata, obtained from the NYC Open Data Building Footprints shapefile[2], shows that there are no existing buildings within 60 feet of the Project Area that are higher. Therefore, the proposed project passes the project-on-existing screening analysis. However, the project-on-project scenario required a detailed analysis.

Detailed Analysis

[2] https://data.cityofnewyork.us/Housing-Development/Building-Footprints/nqwf-w8eh/data.

A stationary source modeling was conducted to evaluate the potential impacts associated with the boilers stacks emissions. Lakes Environmental MPI executable was used in the analysis. The MPI executable take advantage of computers with multiple processors, reducing run-time significantly. Lakes Environmental has adjusted the US EPA AERMOD source code and recompiled the model to parallelize the processing of receptors. The latest MPI executable (used in the analysis) modified the EPA's AERMOD latest executable model version 19191. The AERMOD model incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources, and both simple and complex terrain. The model was run with the regulatory default option, and the Building Profile Input Program (BPIP) was run with the downwash effect enabled. All analyses were conducted using the latest five consecutive years of meteorological data (2015-2019), obtained from the NYSDEC, Division of Air Resources, BAQAR, Impact Assessment and Meteorology Section. Surface data used in the analysis is from LaGuardia Airport, upper air data is from Brookhaven station, New York. The meteorological data was processed using the latest versions of AERMINUTE, AERSURFACE and AERMET. The meteorological data provided hour-by-hour wind speeds and directions, stability states, and temperature inversion elevations over the 5-year period. Population in Brooklyn county, obtained from the U.S. Census Bureau (July 2019), was specified to account for the effects of increased surface heating from an urban area on pollutant dispersion under stable atmospheric conditions.

The pollutants of concern of oil #2 fueled boilers are SO_2, $PM_{2.5}$, and NO_2. The pollutants of concern of natural gas fueled boilers are NO_2 and $PM_{2.5}$. The developments RWCDS gsf assuming residential use were used to calculate the boilers' energy intensities and fuel usage. Pollutants emission rates were calculated based on pertinent values obtained from the *CEQR Technical Manual Appendices*, the assumption that all fuel would be consumed during the 100-day (or 2,400 hour) heating season, and emission factors from the EPA's AP-42 manual for external combustion sources[3]. **Table 17-2** shows the Scenario A RWCDS HVAC systems short-term and annual emission rates.

Table 17-2: The HVAC Systems Calculated Short-term and Annual Emission Rates

Site ID	Fuel	Pollutant	Averaging Time	Emission Rate (g/s)
Development Site	Natural Gas Low-NOx	NO_2	1-hour	1.15E-03
			Annual	3.16E-04
		$PM_{2.5}$	24-hour	1.76E-04
			Annual	4.81E-05
Site 2	Fuel Oil #2	NO_2	1-hour	2.50E-03
			Annual	6.84E-04
		$PM_{2.5}$	24-hour	2.66E-04
			Annual	7.28E-05
		SO_2	1-hour	2.66E-05
			Annual	7.28E-06
Site 3	Natural Gas Low-NOx	NO_2	1-hour	9.76E-04
			Annual	2.67E-04
		$PM_{2.5}$	24-hour	1.48E-04
			Annual	4.07E-05

[3] EPA. *Compilation of Air Pollutant Emission Factors AP-42 Fifth Edition, Vol. 1:* Chapter 1: External Combustion Sources, https://www3.epa.gov/ttn/chief/ap42/ch01/final/c01s04.pdf. July 1998.

Site 4	Natural Gas Low-NOx	NO_2	1-hour	1.12E-03
			Annual	3.07E-04
		$PM_{2.5}$	24-hour	1.70E-04
			Annual	4.67E-05
Site 5	Fuel Oil #2	NO_2	1-hour	3.30E-03
			Annual	9.03E-04
		$PM_{2.5}$	24-hour	3.51E-04
			Annual	9.62E-05
		SO_2	1-hour	3.51E-05
			Annual	9.62E-06

The diameter of the stacks and the exhausts' exit velocities were assumed to be 0.0 feet and 0.001 meter per second, respectively, based on values obtained from the *CEQR Technical Manual*. The stacks' exit temperatures were assumed to be 300°F (423°K), which is appropriate for boilers. The New York City Building Code (Building Code) requires that a rooftop stack should be at least 3 feet higher than the roofline. As such, the stacks were situated 3 feet above the roofline. Stack(s) were initially situated close to the receiving building, and a setback distance was applied if exceedance of the air quality standard was predicted.

Each site was modeled as a building that cover the whole footprint of its lot area. In addition, numerus buildings in the surrounding area were input into the models to account for the downwash effect on plum dispersions. Receptors on the receiving buildings were placed all around the receiving building envelope on all floor levels to the height of the roof in spaced intervals.

SO_2 and annual NO_2 were evaluated with generic emissions of 1 gram per second and 1st highest predicted concentrations. The concentration from each source building was added to predict the cumulative concentrations. 1-hour NO_2 concentrations were evaluated with the NAAQS design value of 8th highest concentration and Tier 1, 2, or 3 approaches. For the Tier 2 (ARM 2) and/or Tier 3 (PVMRM) approaches, the national default in-stack and ambient ratios of 0.5 and 0.9, respectively, were applied. For the Tier 3 approach, 2015-2019 ozone and 2017-2019 NO_2 hourly background concentrations were obtained from the nearest NYSDEC monitoring station(s)[4]. The NYSDEC DAR-10 guidance was used to fill ozone incomplete data. The highest concentrations of the previous and subsequent hour concentrations were used to fill in single missing hour concentrations, and other ozone missing 1-hour concentrations were filled in with corresponding (exact day and hour) data from the IS 52 monitoring station. Additional missing data was filled on a monthly basis with each month hour of the day maximum ozone concentration. Other models were run with the calculated emission rates, where the cumulative concentrations evaluated within the models.

Results of Dispersion Analyses

The NO_2 and SO_2 predicted concentrations were evaluated with the NAAQS; the $PM_{2.5}$ predicted concentrations were evaluated with the NYC *de minimis* threshold concentrations. The reported concentrations are the maximum predicted concentrations of the building wake effects

[4] Data sets were obtained from the NYSDEC Division of Air Resources (NO_2 data set from the NYSDEC obtained through the NYC Department of City Planning).

abled/disabled scenarios. The result of the HVAC dispersion analyses with the Development Site RWCDS building height are shown in Table 17-3.

Table 17-3: HVAC Dispersion Analysis Results (Development Site RWCDS)

Pollutant and Averaging Time	Modeled Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Evaluated Concentration ($\mu g/m^3$)	Threshold Concentration ($\mu g/m^3$)	Threshold Standard
Cumulative Impact on the Development Site					
1-hour NO_2	48.51	103.6	152	**188**	NAAQS
Annual NO_2	1.43	26.8	28	**100**	NAAQS
24-hour $PM_{2.5}$	5.0050	N.A.	5.01	**7.70**	*de minimis*
Annual $PM_{2.5}$	0.1618	N.A.	0.16	**0.3**	*de minimis*
1-hour SO_2	1.27	13.5	15	**196**	NAAQS
Annual SO_2	0.0193	1	1	**80**	NAAQS
Cumulative Impact on Site 2					
1-hour NO_2 (1)	179.67		**180**	**188**	NAAQS
Annual NO_2	1.55	26.8	28	**100**	NAAQS
24-hour $PM_{2.5}$	5.6605	N.A.	5.66	**7.70**	*de minimis*
Annual $PM_{2.5}$	0.1760	N.A.	0.18	**0.3**	*de minimis*
1-hour SO_2	0.73	13.5	14	**196**	NAAQS
Annual SO_2	0.0086	1	1	**80**	NAAQS
Cumulative Impact on Site 3					
1-hour NO_2	82.65	103.6	186	**188**	NAAQS
Annual NO_2	1.72	26.8	28	**100**	NAAQS
24-hour $PM_{2.5}$	5.9671	N.A.	5.97	**7.70**	*de minimis*
Annual $PM_{2.5}$	0.1921	N.A.	0.19	**0.3**	*de minimis*
1-hour SO_2	1.90	13.5	15	**196**	NAAQS
Annual SO_2	0.0111	1	1	**80**	NAAQS
Cumulative Impact on Site 4					
1-hour NO_2	78.05	103.6	182	**188**	NAAQS
Annual NO_2	1.75	26.8	29	**100**	NAAQS
24-hour $PM_{2.5}$	2.2507	N.A.	2.25	**7.70**	*de minimis*
Annual $PM_{2.5}$	0.1931	N.A.	0.19	**0.3**	*de minimis*
1-hour SO_2	2.15	13.5	16	**196**	NAAQS
Annual SO_2	0.0120	1	1	**80**	NAAQS
Cumulative Impact on Site 5					
1-hour NO_2 (2)	78.69	103.6	182	**188**	NAAQS
Annual NO_2	1.49	26.8	28	**100**	NAAQS
24-hour $PM_{2.5}$	6.6380	N.A.	6.64	**7.70**	*de minimis*
Annual $PM_{2.5}$	0.1773	N.A.	0.18	**0.3**	*de minimis*
1-hour SO_2	1.12	13.5	15	**196**	NAAQS
Annual SO_2	0.0084	1	1	**80**	NAAQS

1. Concentration predicted with a Tier 3 approach.
2. Concentration predicted with a Tier 2 approach.

As seen in Table 17-3, the NO_2 and SO_2 predicted concentrations do not exceed the NAAQS and the $PM_{2.5}$ concentrations do not exceed the *de minimis*. These results were predicted with certain restrictions, such as use the type of fuel in the boilers, or stacks setback distances, or low-NOx burners. These stacks restrictions are specified in the E-Designations language.

(E) Designation

Block 5449, Lot 37 (Development Site): Any new residential or commercial development on the above-referenced property must exclusively use natural gas as the type of fuel for heating, ventilating, air conditioning (HVAC), and hot water system(s), and must be fitted with low NOx (30 ppm) burners, ensure that the stack is located at the building's highest level and at a minimum of 58 feet above grade, and that the stack is located at least 30 feet from the southern lot line facing 49th Street and at least 20 feet from the western lot line facing Old New Utrecht Road to avoid any potential significant adverse air quality impacts.

Block 5449, Lot 35 (Site 2): Any new residential or commercial development on the above-referenced property must ensure that the heating, ventilating, air conditioning (HVAC), and hot water system(s) stack is located at the building's highest level and at a minimum of 58 feet above grade ant that the stack is located at least 40 feet from the southern lot line facing 49th Street to avoid any potential significant adverse air quality impacts.

Block 5449, Lot 36 (Site 3): Any new residential or commercial development on the above-referenced property must exclusively use natural gas as the type of fuel for heating, ventilating, air conditioning (HVAC), and hot water system(s) and must be fitted with low NOx (30 ppm) burners, ensure that the stack is located at the building's highest level at a minimum of 58 feet above the grade, and that the stack is located at least 30 feet from the southern lot line facing 49th Street and 15 feet from the western lot line facing Old New Utrecht Road to avoid any potential significant adverse air quality impacts.

Block 5449, Lot 42 (Site 4): Any new residential or commercial development on the above-referenced property must exclusively use natural gas as the type of fuel for heating, ventilating, air conditioning (HVAC), and hot water system(s) and must be fitted with low NOx (30 ppm) burners, ensure that the stack is located at the building's highest level at a minimum of 58 feet above the grade, and that the stack is located at least 40 feet from the northern lot line facing 48th Street and 25 feet from the western lot line facing Old New Utrecht Road to avoid any potential significant adverse air quality impacts.

Block 5449, Lot 44 (Site 5): Any new residential or commercial development on the above-referenced property must ensure that the heating, ventilating, air conditioning (HVAC), and hot water system(s) stack is located at the building's highest level and at a minimum of 58 feet above grade ant that the stack is located at least 40 feet from the northern lot line facing 48th Street and 20 feet from the eastern lot line facing 18th Avenue to avoid any potential significant adverse air quality impacts.

Industrial Source

Per the *CEQR Technical Manual*, projects that would introduce new uses near industrial sources may result in potentially significant adverse air quality impacts. The study area considers industrial sources within 400 feet of the proposed project. Industrial sources are categorized as the operation of manufacturing or processing facilities, or medical, chemical, or research labs. These types of facilities are likely to have New York City Department of Environmental

Protection (DEP) processing permits, but some operate with no DEP permit(s). The analysis first determines if there are any existing industrial sources located in the study area. An air dispersion analysis is then performed for any existing industrial source that is in the study area. Otherwise no analysis is required.

A dry-cleaning facility with an expired as of 2006 permit application (PB029001) is located in the 400 feet study area. Dry cleaning facilities no longer require analysis as they are regulated in a different process application. No other facility in the study area has a processing type permit application. In addition, the land survey study identified no likely processing facility, such as an auto body facility or woodworking facility, in the study area. Therefore, the proposed project would not be affected by manufacturing processing source of emissions and no further analysis for these types of facilities is warranted.

Major and Large Source

As outlined in the *CEQR Technical Manual*, projects that would introduce new uses near major sources, large sources, and odor producing facilities may result in potentially significant adverse air quality impacts. The study area considers major sources, large sources, and odor producing facilities within 1,000 feet of the Project Area. Major emission sources are identified as those sources located at Title V facilities that require Prevention of Significant Deterioration permits; large emission sources are identified as sources located at facilities which require a State facility permit. Solid waste or medical waste incinerators, asphalt and concrete plants, power generating plants, large boilers of large public facilities for example, and large industrial facilities are typical type of sources requiring these permits. Odor producing facilities are operations that have the potential to cause discomfort, such as: solid waste management facilities, water pollution control plants (i.e., sewage treatment plants), and incinerators.

The NYSDEC online database[5] was reviewed on May 2019 to identify Title V or Air State facilities in the study area (both issued and draft permits). No existing large combustion sources, such as power plants, cogeneration facilities, etc., located within 1,000 feet of the Project Area were identified. The nearest major/large source facility is the Maimonides Medical Center, located at 4802 10th Avenue and approximately a mile east of the Project Area. In addition, no odor producing facility was identified within 1,000 feet of the Project Area. As such, no analysis was warranted.

Conclusion

Based on the analysis, conditions associated with the proposed project would not result in any violations of the ambient air quality standards. Therefore, there is no reason to believe that the proposed project would result in any potentially significant adverse stationary or mobile source air quality impacts, and further assessment is not warranted.

[5] http://www.dec.ny.gov/chemical/32249.html

19. NOISE

Introduction

Noise monitoring was conducted on Thursday, May 30th, 2019 and Wednesday, June 5th, 2019 in support of a proposed zoning map amendment to establish an R6B and R6B/C2-4 district within an area currently zoned R5. The affected area is located on 18th Avenue between 48th Street and 49th Street.

The Affected Area is identified as Block 5449, Lots 35 (Site 2), 36 (Site 3), 37 (Site 1, the 'Development Site), 41, 42 (Site 4), 44 (Site 5), and 34 (p/o) within Brooklyn Community District 12 on the New York City Tax Map. The Affected Area is situated on the west side of 18th Avenue between 48th Street to the north and 49th Street to the south as shown in Figure 19-1 below. 18th Avenue at the Affected Area is a two-way street with one moving lane in each direction and curbside parking. 48thStreet in a one-way street with one moving lane and curbside parking. 49th Street is a one-way street with one moving lane and curbside parking. Local intersections are controlled by traffic signals and stop signs. An elevated rail line runs along McDonald Avenue approximately 1,200 feet to the northeast. The B8 bus operates on 18th Avenue, and the B11 bus operates on 49th Street and on 18th Avenue adjacent to the Affected Area.

The Proposed Action would allow new noise-sensitive residential development at a greater density than is permitted by existing zoning. Possible sources of ambient noise include vehicular traffic on adjacent streets and an elevated rail line that runs above McDonald Avenue approximately 1,200 feet to the northeast. Because the Proposed Action would allow for development of a noise-sensitive land use, an assessment of the potential for adverse effects on project occupants from ambient noise is warranted. The proposed development would not create a significant stationary noise generator. Additionally, project-generated traffic would not double vehicular traffic on nearby roadways, and therefore would not result in a perceptible increase in vehicular noise. Therefore, this noise assessment is limited to an assessment of ambient noise that could adversely affect occupants of the development.

Framework of Noise Analysis

Noise is defined as any unwanted sound, and sound is defined as any pressure variation that the human ear can detect. Humans can detect a large range of sound pressures, from 20 to 20 million micropascals, but only those air pressure variations occurring within a particular set of frequencies are experienced as sound. Air pressure changes that occur between 20 and 20,000 times a second, stated as units of Hertz (Hz), are registered as sound.

Because the human ear can detect such a wide range of sound pressures, sound pressure is converted to sound pressure level (SPL), which is measured in units called decibels (dB). The decibel is a relative measure of the sound pressure with respect to a standardized reference quantity. Because the dB scale is logarithmic, a relative increase of 10 dB represents a sound pressure that is 10 times higher. However, humans do not perceive a 10-dB increase as 10 times louder. Instead, they perceive it as twice as loud.

Sound is often measured and described in terms of its overall energy, taking all frequencies into account. However, the human hearing process is not the same at all frequencies. Humans are less sensitive to low frequencies (less than 250 Hz) than mid-frequencies (500 Hz to 1,000 Hz) and are most sensitive to frequencies in the 1,000- to 5,000-Hz range. Therefore, noise measurements are often adjusted, or weighted, as a function of frequency to account for human perception and sensitivities. The most common frequency weightings used are the A- and C-weightings. These weight scales were developed to allow sound level meters, which use filter networks to approximate the characteristic of the human hearing mechanism, to simulate the frequency sensitivity of human hearing. The A-weighting is the most commonly used for environmental measurements, and sound levels measured using this weighting are denoted as dBA. The letter "A" indicates that the sound has been filtered to reduce the strength of very low and very high frequency sounds, much as the human ear does. C-weighting gives nearly equal emphasis to sounds of most frequencies. Mid-range frequencies approximate the actual (unweighted) sound level, while the very low and very high frequency bands are significantly affected by C-weighting.

Table 19-1: Noise Levels of Common Sources

Sound Source	SPL (dB(A))
Air Raid Siren at 50 feet	120
Maximum Levels at Rock Concerts (Rear Seats)	110
On Platform by Passing Subway Train	100
On Sidewalk by Passing Heavy Truck or Bus	90
On Sidewalk by Typical Highway	80
On Sidewalk by Passing Automobiles with Mufflers	70
Typical Urban Area	60-70
Typical Suburban Area	50-60
Quiet Suburban Area at Night	40-50
Typical Rural Area at Night	30-40
Isolated Broadcast Studio	20
Audiometric (Hearing Testing) Booth	10
Threshold of Hearing	0
Notes: A change in 3dB(A) is a just noticeable change in SPL. A change in 10 dB(A)Is perceived as a doubling or halving in SPL.	
Source: 2014 CEQR Technical Manual	

The following is typical of human response to relative changes in noise level:

- 3-dBA change is the threshold of change detectable by the human ear;
- 5-dBA change is readily noticeable; and
- 10-dBA change is perceived as a doubling or halving of the noise level.

The SPL that humans experience typically varies from moment to moment. Therefore, various descriptors are used to evaluate noise levels over time. Some typical descriptors are defined below.

- L_{eq} is the continuous equivalent sound level. The sound energy from the fluctuating SPLs is averaged over time to create a single number to describe the mean energy, or intensity, level. High noise levels during a measurement period will have a greater effect on the L_{eq} than low noise levels. L_{eq} has an advantage over other descriptors because L_{eq} values from various noise sources can be added and subtracted to determine cumulative noise levels.

- L_{max} is the highest SPL measured during a given period of time. It is useful in evaluating L_{eq}s for time periods that have an especially wide range of noise levels.

- $L_{eq(24)}$ is the continuous equivalent sound level over a 24-hour time period.

The sound level exceeded during a given percentage of a measurement period is the percentile-exceeded sound level (L_X). Examples include L_{10}, L_{50}, and L_{90}. L_{10} is the A-weighted sound level that is exceeded 10% of the measurement period.

The decrease in sound level caused by the distance from any single noise source normally follows the inverse square law (i.e., the SPL changes in inverse proportion to the square of the distance from the sound source). In a large open area with no obstructive or reflective surfaces, it is a general rule that at distances greater than 50 feet, the SPL from a point source of noise drops off at a rate of 6 dB with each doubling of distance away from the source. For "line" sources, such as vehicles on a street, the SPL drops off at a rate of 3 dBA with each doubling of the distance from the source. Sound energy is absorbed in the air as a function of temperature, humidity, and the frequency of the sound. This attenuation can be up to 2 dB over 1,000 feet. The drop-off rate also will vary with both terrain conditions and the presence of obstructions in the sound propagation path.

Noise Standards and Guidelines

In 1983, the New York City Department of Environmental Protection (NYCDEP) adopted the City Environmental Quality Review (CEQR) noise exposure guidelines for exterior noise levels. As shown in Table 19-2 below, noise standards classify noise exposure into four categories based on noise level limits and land use, for vehicular traffic, rail, and aircraft noise sources: Acceptable, Marginally Acceptable, Marginally Unacceptable and Clearly Unacceptable, Table 19-3 of the *CEQR Technical Manual* defines attenuation requirements for buildings based on exterior noise exposure levels. Recommended noise attenuation values for buildings are designed to maintain interior noise levels of 45 dBA (*L_{10} or Ldn, depending on the source*) or below.

Table 19-2: Noise Exposure Guidelines for Use in City Environmental Impact Review

Receptor Type	Time Period	Acceptable General External Exposure	Airport[3] Exposure	Marginally Acceptable General External Exposure	Airport[3] Exposure	Marginally Unacceptable General External Exposure	Airport[3] Exposure	Clearly Unacceptable General External Exposure	Airport[3] Exposure
1.Outdoor area requiring serenity and quiet[2]		$L_{10} \leq 55$ dBA	Ldn < 60 dBA		Ldn < 60 dBA		Ldn < 60 dBA		Ldn < 75 dBA
2. Hospital, Nursing Home		$L_{10} \leq 55$ dBA		55<L_{10}≤65 dBA		65<L_{10}≤80 dBA		L_{10}>80dBA	
3. Residence, residential hotel or motel	7 am to 10 pm	$L_{10} \leq 65$dBA		65<L_{10}≤70 dBA		70<L_{10}≤80 dBA		L_{10}>80dBA	
	10 pm to 7 am	L10≤55dBA		55<L_{10}≤70 dBA		70<L_{10}≤80 dBA		L_{10}>80dBA	
4. School, museum, library, court house of worship, transient hotel or motel, public meeting room, auditorium, out- patient public health facility		Same as Residential Day (7 AM-10 PM)		Same as Residential Day (7 AM-10 PM)		Same as Residential Day (7 AM- 10 PM)		Same as Residential Day (7 AM –10 PM)	
5. Commercial or office		Same as Residential Day (7 AM-10 PM)		Same as Residential Day (7 AM-10 PM)		Same as Residential Day (7 AM –10 PM)		Same as Residential Day (7 AM-10 PM)	
6. Industrial, public areas only[4]	Note 4	Note 4		Note 4		Note 4		Note 4	

Source: New York City Department of Environmental Protection (adopted policy 1983).

Notes:

(i) In addition, any new activity shall not increase the ambient noise level by 3 dBA or more;

1 Measurements and projections of noise exposures are to be made at appropriate heights above site boundaries as given by American National Standards Institute (ANSI) Standards; all values are for the worst hour in the time period.

2 Tracts of land where serenity and quiet are extraordinarily important and serve an important public need and where the preservation of these qualities is essential for the area to serve its intended purpose. Such areas could include amphitheaters, particular parks or portions of parks or open spaces dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet. Examples are grounds for ambulatory hospital patients and patients and residents of sanitariums and nursing homes.

3 One may use the FAA-approved L_{dn} contours supplied by the Port Authority, or the noise contours may be computed from the federally approved INM Computer Model using flight data supplied by the Port Authority of New York and New Jersey.

4 External Noise Exposure standards for industrial areas of sounds produced by industrial operations other than operating motor vehicles or other transportation facilities are spelled out in the New York City Zoning Resolution, Sections 42-20 and 42-21. The referenced standards apply to M1, M2, and M3 manufacturing districts and to adjoining residence districts (performance standards are octave band standards).

Table 19-3 CEQR TM: Attenuation Values to Achieve Acceptable Interior Noise Levels

	Marginally Unacceptable				Clearly Unacceptable
Noise Level with Proposed Project	$70 < L_{10} \leq 73$	$73 < L_{10} \leq 76$	$76 < L_{10} \leq 78$	$78 < L_{10} \leq 80$	$80 < L_{10}$
Attenuation[1]	(i) 28 dB(A)	(ii) 31 dB(A)	(iii) 33 dB(A)	(iv) 35 dB(A)	$36 + (L_{10} - 80)^2$ dB(A)

Source: New York City of Environmental Protection

Notes:

[1] The above composite window-wall attenuation values are for residential dwellings. Commercial office space and meeting rooms spaces/meeting rooms would be 5 dB(A) less in each category. All the above categories require a closed window situation and hence an alternate means of ventilation.

[2] Required attenuation values increase by 1 dB(A) increments for L_{10} values greater than 80 dBA.

Measurement Location and Equipment

Because of the proposed sensitive use and predominant noise sources in the area of the proposed project consist of vehicular and train movements, noise monitoring was conducted during peak weekday vehicular travel periods (AM, Midday, PM). Pursuant to CEQR Technical Manual Methodology, measurements were conducted for a 1-hour period during each of the peak periods at two locations at the Project Site that could be affected by train noise and one location at the elevated rail line; one 20-minute period during each of the peak periods was conducted at one location at the Project Site. Location One (1) was monitored for 20-minute periods on the 49th Street frontage of the Affected Area; Location Two (2) was monitored for 1-hour periods on the 18th Avenue frontage of the Affected Area; Location Three (3) was monitored for 1-hour periods on the 48th Street frontage of the Affected Area; Location Four (4) was monitored for 1-hour periods on the elevated train platform above McDonald Avenue. The monitoring locations are identified in Figure 19-1 and Photo 19-1 19-2, 19-3, and 19-4 below.

Noise monitoring was conducted using Type 1 Casella CEL-633C sound meters with wind screen and a Type I Larson Davis PRMLxT2 sound meter with wind screen. The monitors were placed on a tripod at a height of approximately three feet above the ground or roof, away from any other noise-reflective surfaces. The monitors were calibrated prior to and following each monitoring session. Periods of peak vehicular traffic around the subject site constitute a worst-case condition for noise at the project site. Noise meter calibration certification and back up data are provided in **Appendix E**.

Photo 19-1: ***Noise Monitoring Location One (1) on the 49th Street frontage of the Affected Area***



Photo 19-2: ***Noise Monitoring Location Two (2) at the 18th Avenue frontage of the Affected Area***



Photo 19-3: ***Noise Monitoring Location Three (3) at the 48th Street frontage of the Affected Area***

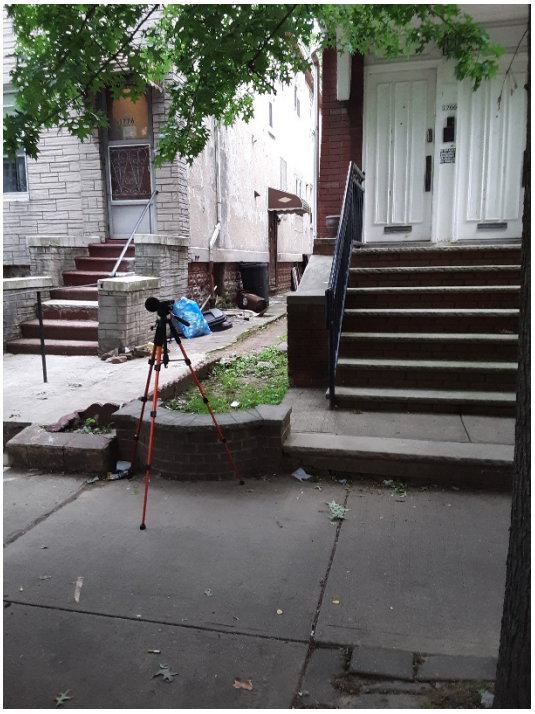


Photo 19-4: ***Noise Monitoring Location Four (4) on the elevated train platform above McDonald Avenue***

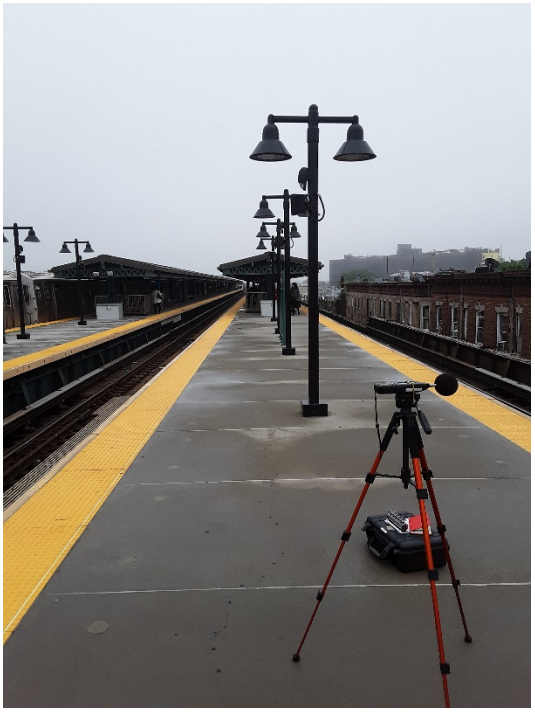


Figure 19-1: Noise Monitoring Locations



Measurement Conditions

Monitoring was conducted during typical midweek conditions, on Thursday, May 20th, 2019 and Wednesday June 5th, 2019. The weather was dry and wind speeds were moderate during all monitoring periods. The sound meters were calibrated before and after each monitoring session.

Existing Conditions

Based on the noise measurements taken at the Affected Area, the predominant source of noise is vehicular traffic.

Table 19-4, 19-5, 19-6, and 19-7 *below contains the results for the measurements taken at the Project Site:*

Table 19-4
Noise Levels (dB) at Location 1

Wednesday, June 5th, 2019

Time	**8:33 am – 8:53 am**	**1:03 pm – 1:23 pm**	**5:32 pm – 5:52 pm**
L_{max}	87.5	80.1	99.1
L_{10}	**72.0**	62.5	67.0
L_{eq}	69.3	60.0	67.8
L_{50}	59.5	54.5	57.5
L_{90}	54.0	50.0	52.0
L_{min}	50.4	48.3	48.4

Note: **Bold** denotes L_{10} noise level exceedances, according to Table 19-2 of the CEQR Technical Manual

Table 19-5
Noise Levels (dB) at Location 2

Wednesday, June 5th, 2019

Time	**7:31 am – 8:31 am**	**12:00 pm – 1:00 pm**	**4:30 pm – 5:30 pm**
L_{max}	98.9	101.6	103.4
L_{10}	**73.0**	68.5	**70.0**
L_{eq}	69.2	68.2	72.8
L_{50}	63.5	61.0	63.0
L_{90}	58.0	56.5	58.0
L_{min}	51.3	51.5	53.6

Note: **Bold** denotes L_{10} noise level exceedances, according to Table 19-2 of the CEQR Technical Manual

Table 19-6 *Noise Levels (dB) at Location 3*			
Wednesday, June 5th, 2019			
Time	**7:30 am – 8:30 am**	**12:00 pm – 1:00 pm**	**4:30 pm – 5:30 pm**
L_{max}	103.3	97.2	95.4
L_{10}	**72.7**	67.7	**76.4**
L_{eq}	70.2	68.3	72.7
L_{50}	64.6	62.7	65.6
L_{90}	57.3	59.1	60.1
L_{min}	49.1	53.9	53.0

Note: **Bold** denotes L_{10} noise level exceedances, according to Table 19-2 of the CEQR Technical Manual

Table 19-7 *Noise Levels (dB) at Location 4*			
Thursday, May 30th, 2019			
Time	**7:30 am – 8:30 am**	**12:00 pm - 1:00 pm**	**5:00 pm – 6:00 pm**
L_{max}	105.2	94.1	92.9
L_{10}	**80.1**	**77.0**	**78.7**
L_{eq}	76.8	74.0	75.3
L_{50}	67.4	64.8	64.8
L_{90}	62.7	60.3	59.2
L_{min}	56.5	54.3	52.8

Note: **Bold** denotes L_{10} noise level exceedances, according to Table 19-2 of the CEQR Technical Manual

Table 19-8, 19-9, 19-10, and 19-11 *below contains the traffic counts and vehicle classifications taken at the Project Site during each monitoring period for their noise monitoring duration:*

Table 19-8 ***Location 1:*** *Traffic volumes and vehicle classification at Location 1*			
	8:33 am – 8:53 am	**1:03 pm – 1:23 pm**	**5:32 pm – 5:52 pm**
Car/ Taxi	2	10	14
Van/Light Truck/SUV	21	30	18
Motorcycle	0	0	0
Heavy Truck	1	0	0
Bus	18	1	5
Train	0	0	0

Table 19-9 ***Location 2:*** *Traffic volumes and vehicle classification at Location 2*			
	7:31 am – 8:31 am	**12:00 pm – 1:00 pm**	**4:30 pm – 5:30 pm**
Car/ Taxi	205	204	247
Van/Light Truck/SUV	435	432	486
Motorcycle	0	1	0
Heavy Truck	19	12	5
Bus	92	23	66
Train	0	0	0

Table 19-10 ***Location 3:*** *Traffic volumes and vehicle classification at Location 3*			
	7:30 am – 8:30 am	**12:00 pm – 1:00 pm**	**4:30 pm – 5:30 pm**
Car/ Taxi	38	71	64
Van/Light Truck/SUV	70	109	106
Motorcycle	0	0	0
Heavy Truck	2	2	8
Bus	47	1	22
Train	0	0	0

Table 19-11 ***Location 3:*** *Traffic volumes and vehicle classification at Location 4*			
	7:30 am – 8:30 am	**12:00 pm - 1:00 pm**	**5:00 pm – 6:00 pm**
Train	21	22	19

Determination of Impacts/Building Attenuation Requirements

The 2014 *CEQR Technical Manual* Table 19-2 contains noise exposure guidelines. For a residential use such as would occur under the proposed action, an L_{10} of between 65 and 70 dB(A) is identified as marginally acceptable general external exposure. An L_{10} of between 70 and 80 dB(A) is identified as marginally unacceptable general external exposure. The highest recorded L_{10} at Location One (1) of the Affected Area was 72.0 dB during the morning monitoring period. The highest recorded L_{10} at Location Two (2) of the Affected Area was 73.0 dBA during the morning monitoring period. The highest recorded L_{10} at Location Three (3) of the Affected Area was 76.4 dBA during the evening monitoring period. The highest recorded L_{10} at Location Four (4) on the elevated train platform was 80.1 dBA during the morning monitoring period.

Per the 2014 *CEQR Technical Manual, Chapter 19, Section 332.1* measured data from a site in the area may sometimes be adjusted assuming a 3 dB(A) reduction per doubling of distance to estimate existing noise levels at the receptor location. The elevated subway line is approximately 1,200 feet to the northeast of the Project Site. Noise Monitoring on the elevated subway line (Location 4) took place approximately 5 feet from the subway line. According to the doubling of distance noise reduction calculation, a 23.8 dB(A) noise reduction from the highest L_{eq} of 76.8 dB(A) reading collected on the subway platform totaling 53 dB(A) of noise reaching the Project Site. The noise reaching the site (53.1) from the elevated rail line was then added to the ground level noise readings at the 48th Street (Location 3) and 18th Avenue (Location 2) facades. The train noise added to the lower level noise is 76.4 dB(A) for Location 3 and 73.0 dB(A) for Location 2.

Based on the results of the noise monitoring, the following window-wall attenuations will be required (listed by Projected Development Sites):

Block 5449, Lot 37 (Projected Development Site 1): 33 dBA window/wall attenuation on all facades facing 48th Street and the facades facing 18th Avenue within 50 feet of 48th Street and the facades facing Old New Utrecht Road within 50 feet of 48th Street and 31 dBA of attenuation on all facades facing 49th Street and the facades facing 18th Avenue beyond 50 feet from 48th Street and 28 dBA of attenuation on the facades facing Old New Utrecht Road beyond 50 feet from 48th Street

Block 5449, Lot 35 (Projected Development Site 2): 33 dBA window/wall attenuation on all facades facing 48th Street and the facades facing 18th Avenue within 50 feet of 48th Street and the façades facing Old New Utrecht Road within 50 feet of 48th Street and 28 dBA of attenuation on all other facades.

Block 5449, Lot 36 (Projected Development Site 3): 33 dBA window/wall attenuation on all facades facing 48th Street and the facades facing 18th Avenue within 50 feet of 48th Street and the facades facing Old New Utrecht Road within 50 feet of 48th Street and 28 dBA of attenuation on all other facades.

Block 5449, Lot 42 (Projected Development Site 4): 28 dBA window/wall attenuation on all facades.

Block 5449, Lot 44 (Projected Development Site 5): 28 dBA window/wall attenuation on all facades.

With these levels of attenuation there would be no potential for adverse impacts related to ambient noise. Figure 19-3 below shows the attenuation requirements by Projected Development Site.

To preclude the potential for significant adverse impacts related to noise, an (E) designation would be incorporated into the rezoning proposal for Block 5449, Lots 35, 36, 42, 44. The text for the (E) designations are as follows:

Block 5449, Lot 37 (Projected Development Site 1): To ensure an acceptable interior noise environment, future residential/commercial office uses must provide a closed-window condition with a minimum of 33 dBA window/wall attenuation on all facades facing 48th Street and the facades facing 18th Avenue within 50 feet of 48th Street and the facades facing Old New Utrecht Road within 50 feet of 48th Street and 31 dBA of attenuation on all facades facing 49th Street and the facades facing 18th Avenue beyond 50 feet from 48th Street and 28 dBA of attenuation on the facades facing Old New Utrecht Road beyond 50 feet from 48th Street to maintain an interior noise level not greater than 45 dBA for residential uses or not greater than 50 dBA for commercial office uses as illustrated in the EAS. To maintain a closed-window condition, an alternate means of ventilation must also be provided. Alternate means of ventilation includes, but is not limited to, air conditioning.

Block 5449, Lot 35 (Projected Development Site 2): To ensure an acceptable interior noise environment, future residential/commercial office uses must provide a closed-window condition with a minimum of 33 dBA window/wall attenuation on all facades facing 48th Street and the facades facing 18th Avenue within 50 feet of 48th Street and the façades facing Old New Utrecht Road within 50 feet of 48th Street and 28 dBA of attenuation on all other facades to maintain an interior noise level not greater than 45 dBA for residential uses or not greater than 50 dBA for commercial office uses as illustrated in the EAS. To maintain a closed-window condition, an alternate means of ventilation must also be provided. Alternate means of ventilation includes, but is not limited to, air conditioning.

Block 5449, Lot 36 (Projected Development Site 3): To ensure an acceptable interior noise environment, future residential uses must provide a closed-window condition with a minimum of 33 dBA window/wall attenuation on all facades facing 48th Street and the facades facing 18th Avenue within 50 feet of 48th Street and the facades facing Old New Utrecht Road within 50 feet of 48th Street and 28 dBA of attenuation on all other facades to maintain an interior noise level not greater than 45 dBA for residential uses as illustrated in the EAS. To maintain a closed-window condition, an alternate means of ventilation must also be provided. Alternate means of ventilation includes, but is not limited to, air conditioning.

Block 5449, Lot 42 (Projected Development Site 4): To ensure an acceptable interior noise environment, future residential uses must provide a closed-window condition with a minimum of 28 dBA window/wall attenuation on all facades to maintain an interior noise level not greater than 45 dBA for residential uses. To maintain a closed-window condition, an alternate means of ventilation must also be provided. Alternate means of ventilation includes, but is not limited to, air conditioning.

Block 5449, Lot 44 (Projected Development Site 5): To ensure an acceptable interior noise environment, future residential uses must provide a closed-window condition with a minimum of 28 dBA window/wall attenuation on all facades to maintain an interior noise level not greater than 45 dBA for residential uses. To maintain a closed-window condition, an alternate means of ventilation must also be provided. Alternate means of ventilation includes, but is not limited to, air conditioning.

Figure 19-2: Elevated Rail Distance



Figure 19-3: Attenuation Requirements



22. CONSTRUCTION

According to the *CEQR Technical Manual*, construction activities, although temporary in nature, can sometimes result in significant adverse impacts. A project's construction activities may affect a number of technical areas analyzed for the operational period, such as air quality, noise, and traffic; therefore, a construction assessment relies to a significant extent on the methodologies and resulting information gathered in the analyses of these technical areas. Short-term (less than two years) construction generally does not warrant a detailed construction analysis. However, consideration of other factors, including location and setting of the Proposed Action may require further analysis.

This includes construction on multiple development sites within the same geographical area with the potential to have overlapping timelines. Although the RWCDS considers all the Projected Development Sites within the Rezoning Area to be built-out, only the Applicant-owned Projected Development Site 1 has proposed plans. It is anticipated that Projected Development Site 1 would take 8-12 months to construct (Build Year 2022). No other sites within the Rezoning Area are Applicant-owned, therefore there is no way of knowing future development timelines.

APPENDIX A
New York City Landmarks Preservation Commission

Landmarks Preservation Commission

1 Centre Street
9th Floor North
New York, NY 10007

Voice (212)-669-7700
Fax (212)-669-7960
http://nyc.gov/landmarks

ENVIRONMENTAL REVIEW

Project number: DEPARTMENT OF CITY PLANNING / LA-CEQR-K
Project: 1776 48 STREET
Date received: 4/22/2019

Properties with no Architectural or Archaeological significance:

1) ADDRESS: 1760 48 ST, BBL: 3054490034
2) ADDRESS: 1762 48 ST, BBL: 3054490035
3) ADDRESS: 1766 48 ST, BBL: 3054490036
4) ADDRESS: 1776 48 ST, BBL: 3054490037
5) ADDRESS: 1777 48 ST, BBL: 3054490041
6) ADDRESS: 1771 49 ST, BBL: 3054490042
7) ADDRESS: 1769 49 ST, BBL: 3054490044

Gina Santucci 4/26/2019

SIGNATURE DATE
Gina Santucci, Environmental Review Coordinator

File Name: 34168_FSO_DNP_04262019.doc

APPENDIX B
Jamaica Bay Watershed Form

Print Form

Jamaica Bay Watershed Protection Plan
Project Tracking Form

The Jamaica Bay Watershed Protection Plan, developed pursuant to Local Law 71 of 2005, mandates that the New York City Department of Environmental Protection (DEP) work with the Mayor's Office of Environmental Coordination (MOEC) to review and track proposed development projects in the Jamaica Bay Watershed (http://www.nyc.gov/html/oec/downloads/pdf/ceqr/Jamaica_Bay_Watershed_Map.jpg) that are subject to CEQR in order to monitor growth and trends. If a project is located in the Jamaica Bay Watershed, (the applicant should complete this form and submit it to DEP and MOEC. This form must be updated with any project modifications and resubmitted to DEP and MOEC.

The information below will be used for tracking purposes only. It is not intended to indicate whether further CEQR analysis is needed to substitute for the guidance offered in the relevant chapters of the CEQR Technical Manual.

A. GENERAL PROJECT INFORMATION

1. CEQR Number: _____ 1a. Modification ☐
2. Project Name: 1776 48th Street Rezoning
3. Project Description:

   The Applicant, Yitzchok Stern, seeks a zoning map amendment (Zoning Sectional Map 22c) that would rezone an area mapped at a depth of 100 feet from 18th Ave between 48th and 49th St from an R5 to an R6B zoning district. Including a C2-4 commercial overlay mapped at a depth of 35 feet from 18th Ave
4. Project Sponsor: Yitzchok Stern
5. Required approvals: Zoning map amendment (R5 to R6B/C2-4) / text amendment (appendix f)
6. Project schedule (build year and construction schedule): Build Year 2021 (6-8 months construction)

B. PROJECT LOCATION:

1. Street address: 1776 48th Street
2. Tax block(s): 5449 Tax Lot(s): 32 (p/o), 35,36,37,41,42 and 47
3. Identify existing land use and zoning on the project site: residential/CF, R5
4. Identify proposed land use and zoning on the project site: mixed res/comm, R6B/C2-4
5. Identify land use of adjacent sites (include any open space): Res, Comm Fac
6. Describe existing density on the project site and the proposed density:

Existing Condition	Proposed Condition
Residential 1.25	Residential 2.0 FAR

7. Is project within 100 or 500 year floodplain (specify)? ☐ **100 Year** ☐ **500 Year** ☒ **No**

C. GROUND AND GROUNDWATER

1. Total area of in-ground disturbance, if any (in square feet): 0
2. Will soil be removed (if so, what is the volume in cubic yards)? 0
3. Subsurface soil classification:
   (per the New York City Soil and Water Conservation Board): urban land flatbush complex
4. If project would change site grade, provide land contours (**attach** map showing existing in 1' contours and proposed in 1' contours).
5. Will groundwater be used (list volumes/rates)? ☐ **Yes** ☐ **No**

   Volumes: Rates:
6. Will project involve dewatering (list volumes/rates)? ☐ **Yes** ☐ **No**

   Volumes: Rates:
7. Describe site elevation above seasonal high groundwater:

D. HABITAT

1. Will vegetation be removed, particularly native vegetation? ☐ **Yes** ☒ **No**

   If YES,
   - **Attach** a detailed list (species, size and location on site) of vegetation to be removed (including trees >2" caliper, shrubs, understory planting and groundcover).
   - **List** species to remain on site.
   - **Provide** a detailed list (species and sizes) of proposed landscape restoration plan (including any wetland restoration plans).
2. Is the site used or inhabited by any rare, threatened or endangered species? ☐ **Yes** ☒ **No**
3. Will the project affect habitat characteristics? ☐ **Yes** ☒ **No**

   If YES, describe existing wildlife use and habitat classification using "Ecological Communities of New York State." at http://www.dec.ny.gov/animals/29392.html.
4. Will pesticides, rodenticides or herbicides be used during construction? ☐ **Yes** ☒ **No**

   If YES, estimate quantity, area and duration of application.
5. Will additional lighting be installed? ☐ **Yes** ☒ **No**

   If YES and near existing open space or natural areas, what measures would be taken to reduce light penetration into these areas?

E. SURFACE COVERAGE AND CHARACTERISTICS

(describe the following for both the existing and proposed condition):

	Existing Condition	Proposed Condition
1. ***Surface area:***		
Roof:	6,242	6,524
Pavement/walkway:	9,593	9,311
Grass/softscape:		
Other (describe):		
2. ***Wetland*** (regulated or non-regulated) area and classification:		
3. ***Water surface area:***		

4. ***Stormwater management*** (describe):

Existing – how is the site drained?

Stormwater drains overland into sewers in adjacent streets.

Proposed – describe, including any infrastructure improvements necessary off-site:

Storm water would continue to drain overland into sewers in adjacent streets. No off-site infrastructure improvements are planned or necessary.

APPENDIX C

Department of Environmental Protection
Sign Off Letter

Remedial Action Plan

Construction Health and Safety Plan

Vincent Sapienza, P.E.
Commissioner

Angela Licata
Deputy Commissioner of Sustainability

59-17 Junction Blvd.
Flushing, NY 11373

Tel. (718) 595-4398
Fax (718) 595-4422
alicata@dep.nyc.gov

March 11, 2021

Katherine Glass
Senior Project Manager
Environmental Assessment and Review Division
New York City Department of City Planning
120 Broadway, 31st Floor
New York, NY 10271

Re: 1776 48th Street
Block 5449, Lot 37
CEQR # 20DCP108K

Dear Ms. Glass:

The New York City Department of Environmental Protection, Bureau of Sustainability (DEP) has reviewed the January 2021 Remedial Action Plan (RAP) and Construction Health and Safety Plan (CHASP) prepared by Environmental Studies Corporation on behalf of Yitzchok Stern (applicant) for the above referenced project. It is our understanding that the applicant is seeking a zoning map amendment and a zoning text amendment from the New York City Department of City Planning (DCP). The proposed rezoning would rezone an area mapped at a depth of 100 feet from 18th Ave between 48th and 49th Street from an R5 to an R6B zoning district. It would include a C2-4 commercial overlay mapped at a depth of 37.5 feet from 18th Avenue. The rezoning area is located in the Borough Park neighborhood of Brooklyn Community District 12. The text amendment would require future residential development to provide permanent affordable housing. The proposed rezoning action would facilitate the development of a three story, 7,204 gross square feet (gsf) mixed-use commercial and residential building on the applicant-owned Projected Development Site 1 (Block 5449, Lot 37). The building would contain five dwelling units for a total combined residential floor area of 5,076 gsf. The building would also contain 2,128 gsf of commercial floor area on the ground floor.

The January 2021 RAP proposes the excavation, transportation and off-site disposal of soil in accordance with applicable federal, state and local laws and regulations; underground storage tanks encountered will be removed in accordance with applicable federal, state and local laws and regulations; if dewatering into New York City sewer drains is anticipated during the proposed construction, a New York City Department of Environmental Protection Sewer Discharge Permit will be obtained prior to the start of any dewatering activities; stockpiled soil will be covered with appropriately anchored plastic tarps; dust control; air monitoring; installation of a vapor barrier system consisting of a 20-mil Stego Wrap or similar vapor barrier membrane below the slab throughout the full building area and on all sub-grade foundation sidewalls (if the type of

vapor barrier is changed an amendment must first be approved by DEP); and placement of 2-feet of certified clean soil in landscaped areas where not capped with asphalt or concrete. The January 2021 CHASP addresses worker and community health and safety during construction.

Based upon our review of the submitted documentation, we have the following comments and recommendations to DCP:

DEP finds the January 2021 RAP and CHASP for the proposed project acceptable. DCP should instruct the applicant that at the completion of the project, a Professional Engineer (P.E.) certified Remedial Closure Report should be submitted for DEP review and approval for the proposed project. The P.E. certified Remedial Closure Report should indicate that all remedial requirements have been properly implemented (i.e., transportation/disposal manifests for removal and disposal of soil in accordance with applicable local, state, and federal laws and regulations; two feet of DEP approved certified clean fill/top soil capping requirement in any landscaped/grass covered areas not capped with concrete/asphalt; installation of vapor barrier, etc.).

Future correspondence and submittals related to this project should include the following CEQR # **20DCP108K**. If you have any questions, you may contact me at (718) 595-4358.

Sincerely,

Wei Yu
Deputy Director, Hazardous Materials

c: R. Weissbard
T. Estesen
M. Wimbish
R. Lucas
O. Abinader (DCP)

environmental studies corporation

Environmental Studies Corporation, Inc.
55 Watermill Lane, Suite 200, Great Neck, NY 11021, Tel: 718.343.0026 Fax: 516.487.2439

REMEDIAL ACTION PLAN
and
CONSTRUCTION HEALTH AND SAFETY PLAN

1776 48th Street
A.K.A. 4802-4812 18th Avenue
Brooklyn, NY
Block 5449, Lot 37

January 2021

REMEDIAL ACTION PLAN

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LIST OF ACRONYMS

Acronym	Definition
BDC	Brooklyn Developmental Center
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
CAMP	Community Air Monitoring Plan
CEQR	City Environmental Quality Review
CFR	Code of Federal Regulations
CHASP	Construction Health and Safety Plan
DNAPL	Dense Non-aqueous Phase Liquid
EC/IC	Engineering Control and Institutional Control
ELAP	Environmental Laboratory Accreditation Program
GPS	Global Positioning System
HAZWOPER	Hazardous Waste Operations Emergency Response
HDPE	High Density Polyethylene
LNAPL	Light Non-aqueous Phase Liquid
mcg/m^3	micrograms per cubic meter
NYC DCP	New York City Department of City Planning
NYC DEP	New York City Department of Environmental Protection
NYCRR	New York Codes Rules and Regulations
NYS DEC	New York State Department of Environmental Conservation
NYS DEC DER	New York State Department of Environmental Conservation Division of Environmental Remediation
NYS DOH	New York State Department of Health
OSHA	United States Occupational Health and Safety Administration
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PCE	Tetrachloroethylene
PE	Professional Engineer
Phase II	Phase II Subsurface Investigation
PID	Photo Ionization Detector
PM	Particulate Matter
PPE	Personal Protective Equipment
QEP	Qualified Environmental Professional
RAP	Remedial Action Plan

Acronym	Definition
RAR	Remedial Action Report
RCA	Recycled Concrete Aggregate
RCR	Remedial Closure Report
RI	Remedial Investigation
RRSCO	Restricted Residential Soil Cleanup Objective
SCOs	Soil Cleanup Objectives
SMP	Site Management Plan
SSDS	Sub-Slab Depressurization System
SVOCs	Semi-Volatile Organic Compounds
TAL	Target Analyte List
TCE	Trichloroethylene
TOGS	Technical and Operational Guidance Standards
$\mu g/m^3$	micrograms per cubic meter
USCO	Unrestricted Soil Cleanup Objective
VOCs	Volatile Organic Compounds

CERTIFICATION

I, Hiram Rothkrug, am a Qualified Environmental Professional as defined in §43-140. I have primary direct responsibility for implementation of the remedial action for 1776 48th Street in Brooklyn, New York.

I certify that this Remedial Action Plan (RAP) has a plan for handling, transport and disposal of soil, fill, fluids and other materials removed from the property in accordance with applicable City, State and Federal laws and regulations. Importation of all soil, fill and other material from off-Site will be in accordance with all applicable City, State and Federal laws and requirements. This RAP has provisions to control nuisances during the remediation and all invasive work, including dust and odor suppression. The oversite remedial professional engineer has yet to be determined for this project.

Hiram A. Rothkrug.
QEP Name

Hiram A. Rothkrug
QEP Signature

10/27/2020
Date

EXECUTIVE SUMMARY

A Phase I and II Environmental Investigation was performed to compile and evaluate data and information necessary to develop this Remedial Action Plan (RAP). The remedial action described in this document achieves the remedial objectives, complies with applicable environmental standards, criteria and guidance, and conforms to applicable laws and regulations.

Site Location and Current Usage

The subject property at 1776 48th Street, Brooklyn, N.Y., consists of a 3,500+/- square foot, rectangular shaped lot that contains a 2-story (plus basement), 2-family dwelling. Heat for the building is provided by a gas-fired boiler located in the basement. There is also a detached 2-car garage located on the south side of the lot. Exterior portions of the site consist of small side and rear yards around the building. A Phase 1 Environmental Site Assessment (ESA) was completed by Environmental Studies Corporation (ESC) in January 2019. Research into the history of the project site shows that the property was undeveloped vacant land in 1906. Given the residential and rural nature of the area in the early 1900s, it is considered unlikely that the project site would have contained a business or operation that stored or used hazardous materials or petroleum products prior to 1906. The subject building was constructed in 1922 as a 2-family dwelling. The uses of the building have been residential since its construction. A dentist and two doctors are also identified in the building; however, it is not known if their offices were located in the building. Dentist and doctor's offices are types of operations that may have involved the storage or use of small quantities of hazardous substances, however, and given that the subject building is connected to the municipal sewer system, any materials discharged from former doctor's or dentist's offices would have been carried off site via the municipal sewer system. Therefore, it is considered unlikely that these uses would have impacted the project site. No aboveground storage tanks, or visible indications of the presence of underground storage tanks, such as tank fillports or tank vent lines, associated mechanical equipment, etc., were observed during the site visit. The property does not appear in the New York State Department of Environmental Conservation (NYSDEC) Petroleum Bulk Storage (PBS) database, which lists all registered facilities with a total combined petroleum storage capacity in excess of 1,100 gallons. In addition, there are no Oil Burner Applications on file in the New York City Department of

Buildings records reviewed for the project site. The project site is adjoined to the north by 48th Street, beyond which are residential buildings with first floor retail stores. Adjacent and to the south of the site is a synagogue. Adjacent and to the east of the site is 18th Avenue, beyond which are residential apartment buildings with first floor retail stores. The property is adjoined to the west by residential dwellings. Land uses in the immediate vicinity of the property (i.e., within approximately 500 feet of the site) are primarily comprised of residential uses, retail stores and a public school. There were not any heavy industrial uses or gasoline filling stations identified in the immediate vicinity of the project site. A review of Sanborn maps shows that land uses in the immediate area of the subject property have been a mix of residential uses, a public school, and commercial/retail businesses since at least the 1930s.

The Phase 1 ESA revealed no evidence of Recognized Environmental Conditions, Historical Recognized Environmental Conditions or Controlled Recognized Environmental Conditions in connection with the property.

Summary of Proposed Redevelopment Plan

The proposed project is the development of a new 3-story plus cellar mixed- use commercial and residential building. The development would have a floor area of 7,204 square feet, a base height of 30 feet and total height of 40 feet. The building would consist of five dwelling units for a total combined residential floor area of 5,076 square feet. The building would also contain 2,128 square feet of commercial floor area on the ground floor. No parking spaces are proposed or required.

Layout of the proposed site development is presented in **Appendix 2**.

Summary of the Remedy

The proposed remedial action achieves all of the remedial action goals established for the project. The proposed remedial action is effective in both the short-term and long-term and reduces mobility, toxicity, and volume of contaminants and uses standard methods that are well established in the industry. The proposed remedial action will consist of:

1. Perform a Community Air Monitoring Program (CAMP) for particulates and volatile organic carbon compounds.

2. Site mobilization involving site security setup, equipment mobilization, utility mark outs and, marking and staking excavation areas.

3. Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil samples will be collected at a frequency dictated by disposal facility(s).

4. Excavation and removal of soil/fill exceeding New York State Department of Environmental Conservation (NYSDEC) Part 375 unrestricted use (Track 4) soil cleanup objective SCOs. Areas of the property will be excavated for foundation installation to a maximum depth elevation of 10.5 feet below grade for development purposes. Any soil/fill removed from the site will be properly disposed at an appropriately licensed or permitted facility.

5. If de-watering into New York City sewer drains is anticipated during the proposed construction, a New York City Department of Environmental Protection (NYCDEP) Sewer Discharge Permit must be obtained prior to the start of any de-watering activities at the site.

6. Removal of underground storage tanks, if encountered, and closure of petroleum spills in compliance with applicable local, State and Federal laws and regulations.

7. The construction and maintenance cover system will consist of the 6-inch thick concrete foundation and building slab.

8. Landscaped areas where not capped with asphalt or concrete, placement of 2-feet of certified clean soil and a demarcation barrier and will serve to prevent human exposure to any remaining residual soil/fill remaining under the Site. The clean fill/topsoil must be segregated at the source facility, have qualified environmental personnel collect representative samples at a frequency of one sample for every 250 cubic yards, analyze the samples for Target Compound List (TCL) volatile organic compounds by USEPA Method 8260, semi-volatile organic compounds by USEPA Method 8270, pesticides by USEPA Method 8081, polychlorinated biphenyls (PCBs) by USEPA 8082, and TCL metals by a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified laboratory and compared to NYSDEC 6

NYCRR Part 375 Environmental Laboratory Approval Programs (ELAP). Upon completion of the investigation the applicant shall submit a detailed clean soil report to NYCDEP for review and approval prior to importing and placement on-site. The report shall include, at a minimum, an executive summary, narrative of the filed activities, laboratory data and a comparison of soil analytical results to NYSDEC NYCRR Part 375 Environmental Remediation Programs.

9. Installation of a vapor barrier system consisting of a vapor barrier beneath the building slab and on sub-grade foundation sidewalls to mitigate soil vapor migration into the building. The vapor barrier system will consist of a 20-mil Stego Wrap or similar vapor barrier membrane protected with 6-oz/sq. per yard geotextiles below the slab throughout the full building area and a 20-mil Stego Wrap vapor barrier or similar on all sub-grade foundation sidewalls. All welds, seams and penetrations will be properly sealed according to manufactures specifications to prevent preferential pathways for vapor migration. If the type of vapor barrier is changed an amendment must first be approved by NYCDEP.

10. Transportation and off-site disposal of visually impacted soil/fill material from foundation areas at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal. Sampling and analysis of excavated media will be performed as required by disposal facilities.

11. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a photo ionization detector (PID). Appropriate segregation of excavated media on-Site.

12. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.

13. Collection and analysis post-excavation endpoint confirmation samples to determine the performance of the remedy with respect to attainment of Unrestricted Use SCOs. Post-excavation confirmation sample locations are included in **Appendix 4**.

14. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.

15. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.

16. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.

17. Submission of a Remedial Closure Report (RCR) that describes the remedial activities certifies that the remedial requirements have been achieved, and describes all Engineering and Institutional Controls to be implemented at the Site, and lists any changes from this Remedial Action Plan (RAP).

18. Submission of an approved Site Management Plan (SMP) in the Remedial Closure Report (RCR) for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls, and reporting at a specified frequency.

REMEDIAL ACTION PLAN

1.0 SITE BACKGROUND

This Remedial Action Plan (RAP) and site-specific Construction Health and Safety Plan (CHASP) have been developed for the project site located at 1776 48th Street in Brooklyn, New York (the Site). This RAP describes the remediation and/or mitigation activities to be implemented at the Site in accordance with applicable laws and regulations, and the site specific CHASP. The site-specific CHASP **(Appendix 1)** addresses site-specific hazards to construction workers and the public, identified contaminants of concern, and safety requirements associated with remediation and mitigation activities in accordance with ASTM and United States Occupational Health and Safety Administration (OSHA) guidelines.

1.1 Site Location and Current Usage

The subject property at 1776 48th Street, Brooklyn, N.Y., consists of a 3,500+/- square foot, rectangular shaped lot that contains a 2-story (plus basement), 2-family dwelling. Heat for the building is provided by a gas-fired boiler located in the basement. There is also a detached 2-car garage located on the south side of the lot. Exterior portions of the site consist of small side and rear yards around the building. A Phase 1 Environmental Site Assessment (ESA) was completed by Environmental Studies Corporation (ESC) in January 2019. Research into the history of the project site shows that the property was undeveloped vacant land in 1906. Given the residential and rural nature of the area in the early 1900s, it is considered unlikely that the project site would have contained a business or operation that stored or used hazardous materials or petroleum products prior to 1906. The subject building was constructed in 1922 as a 2-family dwelling. The uses of the building have been residential since its construction. A dentist and two doctors are also identified in the building; however, it is not known if their offices were located in the building. Dentist and doctor's offices are types of operations that may have involved the storage or use of small quantities of hazardous substances, however, and given that the subject building is connected to the municipal sewer system, any materials discharged from former doctor's or dentist's offices would have been carried off site via the municipal sewer system. Therefore, it is considered unlikely that these uses would have impacted the project site. No aboveground storage tanks, or visible indications of the presence of underground storage tanks, such as tank

fillports or tank vent lines, associated mechanical equipment, etc., were observed during the site visit. The property does not appear in the New York State Department of Environmental Conservation (NYSDEC) Petroleum Bulk Storage (PBS) database, which lists all registered facilities with a total combined petroleum storage capacity in excess of 1,100 gallons. In addition, there are no Oil Burner Applications on file in the New York City Department of Buildings records reviewed for the project site. The project site is adjoined to the north by 48th Street, beyond which are residential buildings with first floor retail stores. Adjacent and to the south of the site is a synagogue. Adjacent and to the east of the site is 18th Avenue, beyond which are residential apartment buildings with first floor retail stores. The property is adjoined to the west by residential dwellings. Land uses in the immediate vicinity of the property (i.e., within approximately 500 feet of the site) are primarily comprised of residential uses, retail stores and a public school. There were not any heavy industrial uses or gasoline filling stations identified in the immediate vicinity of the project site. A review of Sanborn maps shows that land uses in the immediate area of the subject property have been a mix of residential uses, a public school, and commercial/retail businesses since at least the 1930s.

The Phase 1 ESA revealed no evidence of Recognized Environmental Conditions, Historical Recognized Environmental Conditions or Controlled Recognized Environmental Conditions in connection with the property.

1.2 Proposed Redevelopment Plan

The proposed project is the development of a new 3-story plus cellar mixed- use commercial and residential building. The development would have a floor area of 7,204 square feet, a base height of 30 feet and total height of 40 feet. The building would consist of five dwelling units for a total combined residential floor area of 5,076 square feet. The building would also contain 2,128 square feet of commercial floor area on the ground floor. No parking spaces are proposed or required.

Layout of the proposed site development is presented in **Appendix 2**.

1.3 Environmental Investigation Reports

The following environmental reports were developed for the Site:

Environmental Studies Corp. performed a Phase I ESA of the subject in accordance with the latest ASTM Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (ASTM Designation E 1527-13).

A Phase 1 Environmental Site Assessment (ESA) was performed. The results of the ESA revealed recognized environmental conditions (REC)'s based upon historic onsite and offsite uses which could have the potential to cause environmental impacts to the subject property. The New York City Department of Environmental Protection (NYCDEP) requested that a Phase II Environmental Site Assessment is necessary to adequately identify and characterize the surface and subsurface soils, soil vapor and ground water. Based upon the historic on-site and surrounding land uses testing of the subsurface soil vapor, soil, and ground water were proposed to establish baseline existing conditions. A subsurface investigation work plan was developed prior sampling activities. The scope of work was implemented to determine the subsurface soil, water and soil vapor quality conditions at the subject property. The scope of work included the following elements:

- Completed a geophysical investigation which included an electromagnetic survey and ground penetrating radar (GPR) survey.
- Performed three (3) soil test borings (B-1, B-2 and B-3) and collected two soil samples from each soil boring location one at the surface (0 - 2ft) and a deeper sample from (10 – 12 ft) to match the excavation depth of the proposed building foundation and elevator pit.
- Installed one (1) temporary groundwater monitoring well (GW-1) which remained dry and could not be sampled due to shallow bedrock.
- Collected three soil vapor samples (SV-1, SV-2 and SV-3) at a depth of the proposed building foundation depth.
- Prepared a written comprehensive report of findings.

The environmental summary of the report is included as **Appendix 3**.

1.4 Summary of Regulatory Correspondence

There has been no known pertinent regulatory correspondence prior to the current investigation.

1.5 Findings of Environmental Investigation

Geophysical Survey

An Electromagnetic (EM) Magnetometer survey was conducted in an attempt to identify any possible unknown magnetic anomalies such as underground storage tanks (USTs) on the site. ESC used a Fisher TW-6 magnetometer in the inductive phase mode over the property accessible areas in an overlapping grid pattern. The results of the survey indicated no evidence of any magnetic anomalies indicative of USTs.

Soil Testing

A total of three soil test borings (B-1, B-2 and B-3) were conducted on the subject property using a Geoprobe direct-push drilling rig. A total of six soil samples were collected from the borings and sent to the laboratory for analysis. Two soil samples were collected from each soil boring location. One soil sample was collected from the surface at a depth of 0 to 2 feet, and another deeper soil sample was collected at a depth 10 - 12 feet below surface grade elevation. One temporary monitoring well piezometer was installed at location B-1 to a depth of 30 feet below surface grade. The boreholes were drilled into soil and screened using 1-inch diameter machine slotted (0.20 slot) schedule 40 PVC screen and riser pipe. The soil was characterized and logged for potential impacts (e.g., odor, staining, anthropogenic materials and other observations) and screened for volatile organic vapors with a photoionization detector (PID). All soil samples were analyzed for the following parameters:

- Volatile Organic Compounds (VOCs) by United Stated Environmental Protection Agency (USEPA) Method 8260
- Semi-Volatile Organic Compounds by USEPA Method 8270 BN
- Pesticides/Polychlorinated Biphenyls (PCBs) using USEPA Method 8081/8082
- Target Analyte List (TAL) Metals

Groundwater Quality

One (1) temporary groundwater monitoring well (GW-1) constructed of one-inch slotted PVC, was installed at a depth of 30 feet in order to evaluate the groundwater quality underlying the site. No groundwater was found to develop in this monitoring well therefore no groundwater was collected during this investigation. Heavy glacial till with silt and clay was found to a depth of a least 30 feet. No groundwater was found in the dense non-permeable glacial till soils. It was concluded that no significant groundwater exists on site within the near surface.

Soil Vapor Testing

Soil vapor probes (SV-1, SV-2, and SV-3) were installed to a depth of 10-12 feet below surface grade. Soil vapor samples were collected via dedicated polyethylene tubing and Summa Canisters, tested for VOCs using USEPA TO-15 method parameters.

Soil Quality Conditions

Fine brown sand, fine gravel and silt disturbed soil and was found intermixed with fine to coarse sand and gravel throughout the property to an average depth of 2 to 3 feet. Below this disturbed soil layer is undisturbed native fine sand and silt with little gravel glacial till deposit. Drilling was advanced to a depth of 30 feet in an attempt to encounter groundwater. Fine sand and gravel with silt and dense clay was found with occasional cobbles and boulders. No petroleum type odors were observed in the fill materials or in any soil samples observed. Results of photoionization detector field screening readings which give an indication of if any volatile organic compounds (VOC) are present generally did not detect readings above instrument detection levels. Based on observations noted in the field (visual, olfactory and PID readings), No petroleum or chemical type impacts at the site were identified.

The samples were compared to NYSDEC Soil Cleanup Objectives (SCOs) 6 NYCRR Subpart 375-6.8 (a): Unrestricted Use SCOs.

- No Volatile organic compounds (VOCs) were identified above laboratory detection limitations or unrestricted use soil cleanup objectives (UUSCOs) in the soil samples collected.
- No Semi-volatile organic PAH compounds (SVOCs) were identified above Unrestricted Use Soil Cleanup Objectives (UUSCO)s and Restricted Use Soil Cleanup Objectives (RUSCO)s in the soil samples collected.
- No pesticides were identified above laboratory detection limitations or UUSCOs in the soil samples collected.
- No Polyvinyl Chlorinated Bi-phenols (PCBs) were identified above laboratory detection limitations or UUSCOs in the soil samples collected...
- Total metals exceeding the unrestricted SCOs included Lead (maximum 104 mg/kg), Nickel (maximum 48.6 mg/kg), and Mercury (0.446 mg/kg maximum). The concentrations of Lead, Manganese and Nickel exceeded the UUSCO's but were below the restricted RUSCO's.

Groundwater

No groundwater was sampled due to dry dense impermeable soil conditions found throughout the site.

Soil Vapor Sampling

The following compounds were found above laboratory method detection limitations in soil vapor samples collected: 1,2,4 Trimethylbenzene (620 ug/m3 maximum), 1,3,5 Trimethylbenzene (150 ug/m3 maximum), 2-Butanone (540 ug/m3 maximum), Acetone (200 ug/m3), Benzene (150 ug/m3 maximum), Cyclohexane (44 g/m3 maximum), Dichlorodifluoromethane (1.8 ug/m3), Ethyl Benzene (590 ug/m3 maximum), n-Heptane (310 ug/m3 maximum), n-Hexane (230 ug/m3 maximum), o-xylene (670 ug/m3 maximum), m&p Xylene (2,300 ug/m3 maximum), Tetrachloroethlene (11 ug/m3 maximum) and Toluene (1,900 ug/m3 maximum).

Conclusions

Geophysical Survey

An Electromagnetic (EM) Magnetometer survey was conducted in an attempt to identify any possible unknown magnetic anomalies such as underground storage tanks (USTs) on the site. ESC used a Fisher TW-6 magnetometer in the inductive phase mode over the property accessible areas in an overlapping grid pattern. The results of the survey indicated no evidence of any magnetic anomalies indicative of USTs.

Soil Conditions

The results of this subsurface investigation has not identified soil contamination above NYSDEC Part 375 restricted use soil cleanup objectives. Total Lead, Nickel and Mercury concentrations in the surface 2-3 feet of fill soils were above unrestricted use soil cleanup objectives but below restricted use soil cleanup objectives. Below the fill soils is native sand and gravel deposits which meets NYSDEC Part 375 unrestricted soil cleanup standards.

Groundwater Quality

No groundwater was sampled on the property. No groundwater exists within 30 feet of the surface and therefore is not anticipated to be encountered during the proposed development therefore no de-watering activity is anticipated during foundation excavation.

Soil Vapor Conditions

Results of the soil vapor investigation identified low concentrations of volatile organic compounds (VOCs) related to petroleum compounds above laboratory method detection limits. These VOC's are likely resulting from the urban fill materials and interchange with the ambient air surrounding the project site and adjacent neighborhood. The soil vapor conditions found are common of what is usually measured in shallow soils in the metropolitan New York neighborhoods. The concentration of chlorinated volatile organic compounds (CVOCs) are

below the New York State Department of Health (NYSDOH) soil vapor Matrix concentrations (May 2017) and require no further action.

Recommendations

There are no recommendations for additional testing or remedial action being made at this time. Urban fill and native soil exported offsite should be disposed in accordance with New York State Department of Environmental Conservation (NYSDEC) Part 365 regulations.

The new building construction should have an engineered polyethylene vapor barrier under occupied areas of the building. The vapor barrier should be a minimum thickness of 20 mils under the foundation slab and foundation sidewalls in order to prevent any potential vapor migration into the building structure.

A Remedial Action Plan (RAP) detailing the installation of a vapor barrier and a Construction Health and Safety Plan (CHASP) should be written describing the means and methods for the vapor barrier installation and excavation and disposal of impacted soils.

2.0 DESCRIPTION OF REMEDIATION

2.1 Objectives

Remedial and mitigation measures described herein will be performed in accordance with applicable laws and regulations, and the site specific construction health and safety plan (CHASP). This remedy is protective of public health and/or the environment for the intended use. A Remedial Closure Report (RCR) will be prepared and shall include photographs of the installation processes, PE/RA certified letters from the primary contractor responsible for installation and oversite and field inspections and copies of manufactures warranty certificates provided.

The Site remediation and mitigation objectives are:

Soil

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

Groundwater

- Prevent direct exposure to contaminated groundwater.

Soil Vapor

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

2.2 Summary of Remedial Action

The proposed plan achieves all of the remedial action goals established for the project. The proposed remedial action is effective in both the short-term and long-term and reduces mobility,

toxicity and volume of contaminants, and uses standard methods that are well established in the industry.

The proposed remedial action will consist of:

1. Perform a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
2. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
3. Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil samples will be collected at a frequency dictated by disposal facility(s).
4. Excavation and removal of soil/fill exceeding Unrestricted Use SCOs. The property will be excavated to install foundations to a depth of approximately 10.5 feet below grade for development foundation and elevator pit purposes. Soil/fill will be removed from the Site and properly disposed at an appropriately licensed or permitted facility.
5. If de-watering into New York City sewer drains is anticipated during the proposed construction, a New York City Department of Environmental Protection Sewer Discharge Permit must be obtained prior to the start of any de-watering activities at the site.
6. Removal of underground storage tanks, if encountered, and closure of petroleum spills in compliance with applicable local, State and Federal laws and regulations.
7. The construction and maintenance cover system consisting of the 6-inch thick concrete building slab and 2 feet of imported certified clean soil in landscaped areas and surrounding paved surfaces, shall serve to prevent human exposure to any remaining residual soil/fill remaining under the Site. The clean fill/topsoil must be segregated at the source facility, have qualified environmental personnel collect representative samples at a frequency of one sample for every 250 cubic yards, analyze the samples for Target Compound List volatile organic compounds by USEPA Method 8260, semi-volatile organic compounds by USEPA Method 8270, pesticides by USEPA Method

8081, polychlorinated biphenyls by USEPA 8082, and Target Compound List metals by a New York State Department of Health Environmental Laboratory Approval Program certified laboratory, compared to NYSDEC 6 NYCRR Part 375 Environmental Laboratory Approval Programs. Upon completion of the investigation the applicant should submit a detailed clean soil report to NYCDEP for review and approval prior to importing and placement on-site. The report shall include, at a minimum, an executive summary, narrative of the filed activities, laboratory data and a comparison of soil analytical results to NYSDEC NYCRR Part 375 Environmental Remediation Programs.

8. Installation of a vapor barrier system consisting of a vapor barrier beneath the building slab and outside of sub-grade foundation sidewalls to mitigate soil vapor migration into the building. The vapor barrier system will consist of Stego Wrap 20 mil polyethylene Vapor Barrier or similar below the slab throughout the full building area and outside all sub-grade foundation sidewalls. All welds, seams, and penetrations will be properly sealed using a Stego Wrap tape product or similar to prevent preferential pathways for vapor migration. All penetrations will be sealed using Stego Industries, Inc. or similarly compatible accessories. If the type of vapor barrier is changed an amendment must first be approved by NYCDEP.

9. Transportation and off-Site disposal of visually impacted soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal. Sampling and analysis of excavated media as required by disposal facilities.

10. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a photoionization detector (PID). Appropriate segregation of excavated media on-Site.

11. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.

12. Collection and analysis of three end-point samples to determine the performance of the remedy with respect to attainment of Track 4 SCOs. Endpoint sample locations are included in **Appendix 4**.

13. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.

14. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.

15. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.

16. Submission of a Remedial Closure Report (RCR) that describes the remedial actions certifies that the remedial requirements have been achieved, describes all Engineering and Institutional Controls to be implemented at the Site, and lists any changes from this RAP.

17. Submission of an approved SMP in the RCR for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.

2.3 Soil Cleanup Objectives and Soil/Fill Management

Soil Cleanup Objectives (SCOs) proposed for this project will be Track 4 restricted Use SCOs. Soil and materials management on-Site and off-Site, including excavation, handling and disposal, will be conducted in accordance with the Soil/Materials Management Plan in **Appendix 5**.

Any discrete contaminant sources (such as hotspots) identified during the remedial action will be horizontally and vertically identified by Global Positioning System (GPS) or surveyed. This information will be provided in the RCR.

Estimated Soil/Fill Removal Quantities

The total quantity of soil/fill and bedrock expected to be excavated and disposed off-Site is (to be determined). The proposed disposal locations for Site-derived impacted materials are (to be determined) pending waste characterization sampling.

Post Excavation Confirmation Sampling

Removal actions under this plan will be performed in conjunction with remedial end-point sampling. Three confirmation samples will be collected from the base of the excavation at locations shown on **Appendix 4**. The exact post-excavation sample depths and locations may change based upon site contingencies and will be reported in the Remedial Closure Report.

Post-excavation sample locations and depth will be biased towards any areas of contamination identified during prior sampling (including waste characterization) or observed during excavation based on field indicators, such as PID measurements or visual signs of contamination. In all cases, post-remediation samples would be biased toward locations and depths of the highest expected contamination.

NYSDOH Environmental Laboratory Accreditation Program (ELAP) certified labs will be used for all endpoint sample analyses. Labs for post-excavation sample analyses will be reported in the RCR. Analytical results will be reported in the RCR with a tabular summary of all data including, non-detects and applicable standards and/or guidance values and a map depicting exceedances of Unrestricted Soil Cleanup Objectives (USCOs) and/or Restricted Residential Soil Cleanup Objectives (RRSCOs). The soil samples will be analyzed for trigger analyses (i.e., those with SCO exceedance) utilizing the following methodology:

- Volatile organic compounds (VOCs) by (United States Environmental Protection Agency (EPA) Method 8260;
- Semi-volatile organic compounds (SVOCs) by EPA Method 8270;
- Pesticides/PCBs by EPA Method 8081/8082; and
- Target Analyte List (TAL) metals by EPA Methods 6010/7471.

If either light non-aqueous phase liquid (LNAPL) and/or dense non-aqueous phase liquid (DNAPL) are detected, appropriate samples will be collected for characterization and "finger print analysis" and any required regulatory reporting (e.g., NYSDEC spills hotline) will be performed.

Hotspot End-point Sampling

End-point samples will be collected from the sidewalls and base of excavation at hotspots identified in the RI, according to the procedure listed below. End-point samples will be analyzed for SCO trigger parameters.

For any hotspots identified during this remedial program, including any hotspots identified during the remedial action, hotspot removal actions will be performed to ensure that hotspots are fully removed and end-point samples will be collected at the following frequency:

1. For excavations less than 20 feet in total perimeter, at least one bottom sample and one sidewall sample biased in the direction of surface runoff.
2. For excavations 20 to 300 feet in perimeter:
    - For surface removals, one sample from the top of each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.
    - For subsurface removals, one sample from each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.
3. For sampling of volatile organics, bottom samples should be taken within 24 hours of excavation, and should be taken from the zero to 6-inch interval at the excavation floor. Samples taken after 24 hours should be taken at 6- to 12 inches.
4. For contaminated soil removal, post remediation soil samples for laboratory analysis should be taken immediately after contaminated soil removal. If the excavation is enlarged horizontally, additional soil samples will be taken pursuant to numbers 1-3 above. Post-remediation end-point sample locations and depth will be biased towards the areas and depths of highest contamination identified during previous sampling episodes, unless field indicators, such as field instrument measurements or visual contamination, identified during the remedial action indicate that other locations and depths may be more heavily contaminated. In all cases, post-remediation samples should be biased toward locations and depths of the highest expected contamination.
5. If either LNAPL and/or DNAPL are detected, appropriate samples will be collected for characterization and “finger print analysis” and required regulatory reporting (i.e. spills hotline) will be performed.

Import and Reuse of Soils

No import or reuse of soil is planned; however, if import or reuse of soils already onsite becomes necessary, it will be performed in conformance with the Soil/Materials Management Plan in **Appendix 5**. Imported soil will meet the lower of:

- Track 2 Restricted Residential, and
- Groundwater Protection Standards in Part 375-6.8.

2.4 Engineering Controls

Engineering Controls will be employed in the remedial action to address residual contamination remaining at the Site. The Site has two primary Engineering Control (EC) Systems. These are:

- composite cover system consisting of the concrete building slab;
- two feet of certified clean fill soil in landscaped areas;
- vapor barrier system;

This RAP includes a description of all ECs and Institutional Controls (ICs) and summarizes the requirements of the SMP which will note that the property owner and property owner's successors and assigns must comply with the approved SMP;

Composite Cover System

Soil at the site in the areas of foundations will be excavated. Exposure to residual soil will be prevented by an engineered cover system to be built on the Site. This cover system will be limited to the concrete building slab and two feet of certified clean soil in landscaped areas.

The cover system is a permanent EC for the Site.

Vapor Barrier

Migration of soil vapor will be mitigated with a 20 mil water-proofing membrane. The vapor barrier will extend throughout the area occupied by the footprint of the new building and up the foundation sidewalls to grade and will be installed in accordance with manufacturer specifications.

A plan view showing the location of the proposed vapor barrier system and the product specification sheets are provided in **Appendix 6**. The RAR will include as-built drawings and diagrams; manufacturer documentation; and photographs.

The RAR will include a PE /PG-certified letter (on company letterhead) from the primary contractor responsible for installation oversight and field inspections and a copy of the manufacturer's certificate of warranty.

The Vapor Barrier System is a permanent EC and will be inspected and its performance certified at specified intervals as required by this RAP and the SMP. A Soil and Materials Management Plan will be included in the SMP and will outline the procedures to be followed in the event that the composite cover system and underlying vapor barrier system is disturbed after the remedial action is complete. Maintenance of these systems will be described in the SMP in the RAR.

3.0 REMEDIAL ACTION MANAGEMENT

3.1 Project Organization and Oversight

Principal personnel who will participate in the remedial action include Hiram A. Rothkrug who will be the remediation project director. The Professional Engineer (PE) and Qualified Environmental Professionals (QEP) for this project are [to be determined] and Hiram A. Rothkrug, respectively.

3.2 Site Security

Site access will be controlled through gated entrances to the fenced property.

3.3 Work Hours

The hours for operation of remedial construction will be from 8:00 AM to 5:00 PM. These hours conform to the New York City Department of Buildings construction code requirements.

3.4 Construction Health and Safety Plan

The site-specific Construction Health and Safety Plan (CHASP) is included in **Appendix 1**. The Site Safety Coordinator has yet to be determined. Remedial work performed under this RAP will be in full compliance with applicable health and safety laws and regulations, including Site and OSHA worker safety requirements and HAZWOPER requirements. Confined space entry, if any, will comply with OSHA requirements and industry standards and will address potential risks. The parties performing the remedial construction work will ensure that performance of work is in compliance with the CHASP and applicable laws and regulations.

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

Personnel entering any exclusion zone will be trained in the provisions of the CHASP and be required to sign a CHASP acknowledgment. Site-specific training will be provided to field

personnel. Additional safety training may be added depending on the tasks performed. Emergency telephone numbers will be posted at the site location before any remedial work begins. A safety meeting will be conducted before each shift begins. Topics to be discussed include task hazards and protective measures (physical, chemical, environmental); emergency procedures; PPE levels and other relevant safety topics. Meetings will be documented in a log book or specific form.

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

3.5 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/waste excavation and handling, test pit excavation or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be performed during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. Periodic monitoring during sample collection, for instance, will consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. Depending upon the proximity of potentially exposed individuals, continuous monitoring may be performed during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence. Exceedances of action levels observed during performance of the Community Air Monitoring Plan (CAMP) will be included in the Daily Report.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis during invasive work. Upwind concentrations will be measured at the start of each workday and periodically thereafter

to establish background conditions. The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment will be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

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

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

Particulate Monitoring, Response Levels, and Actions

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

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

All readings will be recorded and available for review.

3.6 Agency Approvals

All permits or government approvals required for remediation and construction shall be obtained prior to the start of remediation and construction. Acceptance of this RAP by the regulatory lead NYC agency does not constitute satisfaction of these requirements and will not be a substitute for any required permit.

3.7 Site Preparation

Pre-Construction Meeting

The lead NYC agency and other regulatory third party agents will be invited to attend the pre-construction meeting at the Site with all parties involved in the remedial process prior to the start of remedial construction activities.

Mobilization

Mobilization will be conducted as necessary for each phase of work at the Site. Mobilization includes field personnel orientation, equipment mobilization (including securing all sampling equipment needed for the field investigation), marking/staking sampling locations and

utility mark-outs. Each field team member will attend an orientation meeting to become familiar with the general operation of the Site, health and safety requirements, and field procedures.

Utility Marker Layouts, Easement Layouts

The presence of utilities and easements on the Site will be fully investigated prior to the performance of invasive work such as excavation or drilling under this plan by using, at a minimum, the One-Call System (811). Underground utilities may pose an electrocution, explosion, or other hazard during excavation or drilling activities. All invasive activities will be performed incompliance with applicable laws and regulations to assure safety. Utility companies and other responsible authorities will be contacted to locate and mark the locations, and a copy of the Markout Ticket will be retained by the contractor prior to the start of drilling, excavation or other invasive subsurface operations. Overhead utilities may also be present 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.

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

Equipment and Material Staging

Equipment and materials will be stored and staged in a manner that complies with applicable laws and regulations.

Stabilized Construction Entrance

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 cleaned asphalt or concrete roads or use of stone or other aggregate-based egress paths between the truck inspection station and the property exit. Measures will be taken to ensure that adjacent roadways will be kept clean of project related soils, fill and debris.

Truck Inspection Station

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. Brooms, shovels and potable water will be utilized for the removal of soil from vehicles and equipment, as necessary.

3.8 Traffic Control

Drivers of trucks leaving the Site with soil/fill will be instructed to proceed without stopping in the vicinity of the site to prevent neighborhood impacts. The planned route on local roads for trucks leaving the site will be provided when the disposal facility is identified.

3.9 Demobilization

Demobilization will include:

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

Equipment will be decontaminated and demobilized at the completion of all field activities. Investigation equipment and large equipment (*e.g.*, soil excavators) will be washed at the truck inspection station as necessary. In addition, all investigation and remediation derived waste will be appropriately disposed.

3.10 Reporting and Record Keeping

Daily Reports

Daily reports providing a general summary of activities for each day of active remedial work will be prepared by the end of the following day. Those reports will include:

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

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

Record Keeping and Photo-Documentation

Job-site record keeping for all remedial work will be performed. These records will be maintained on-Site during the project and will be available for inspection. Representative photographs will be taken of the Site prior to any remedial activities and during major remedial activities to illustrate remedial program elements and contaminant source areas. Photographs will be submitted at the completion of the project in the RCR in digital format (i.e. jpeg files).

3.11 Complaint Management

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

3.12 Deviations from the Remedial Action Plan

All changes to the RAP will be reported to the Project Manager and will be documented in daily reports and reported in the RCR. The process to be followed if there are any deviations from the RAP will include the following:

- Reasons for deviating from the approved RAP;
- Effect of the deviations on overall remedy; and
- Determination that the remedial action with the deviation(s) is protective of public health and the environment.

4.0 REMEDIAL CLOSURE REPORT

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

- Information required by this RAP;
- As-built drawings for all constructed remedial elements, required certifications, manifests and other written and photographic documentation of remedial work performed under this remedy;
- Description of any changes in the remedial action from the elements provided in this RAP and associated design documents;
- Site Management Plan;
- Tabular summary of all endpoint sampling results and all material characterization result, QA/QC results for endpoint sampling, and other sampling and chemical analysis performed as part of the remedial action;
- Test results or other evidence demonstrating that remedial systems are functioning properly;
- Account of the source area locations and characteristics of all contaminated material removed from the Site including a map showing source areas;
- Account of the disposal destination of all contaminated material removed from the Site. Documentation associated with disposal of all material will include transportation and disposal records, and letters approving receipt of the material.
- Reports and supporting material will be submitted in digital form.

Remedial Closure Report Certification

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

I, [to be determined], am currently a professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the property located at 1776 48th Street in Brooklyn, New York.

I, Hiram Rothkrug, am a qualified Environmental Professional. I had primary direct responsibility for implementation remedial program for the property located at 1776 48th Street in Brooklyn, New York.

I certify that the Remedial Action Plan dated October 2020 was implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquids or other material from the property were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.

5.0 SCHEDULE

The table below presents a schedule for the proposed remedial action and reporting. If the schedule for remediation and development activities changes, it will be updated. Currently, a 2-month remediation period is anticipated.

Schedule Milestone	Weeks from Remedial Action Start	Duration (weeks)
Approval of RAP	0	2
Mobilization	2	2
Remedial Construction	3	20
Demobilization	23	7
Submit Remedial Closure Report	30	10

Appendix 1

Construction Health and Safety Plan

CONSTRUCTION HEALTH and SAFETY PLAN (CHASP)

1776 48th Street
A.K.A. 4802-4812 18th Avenue
Brooklyn, NY
Block 5449, Lot 37

The following Construction Health and Safety Plan (HASP) is valid for work conducted by Environmental Studies Corporation (ESC) personnel as defined in the accompanying Remedial Action Plan. If this work is performed by others, ESC assumes no responsibility for any aspects of this CHASP.

I. INTRODUCTION

This Construction Health and Safety Plan (CHASP) address the site-specific health and safety requirements for 1776 48th Street in Brooklyn, New York.

This CHASP is prepared to be consistent with the anticipated areas of concern. This is the most recent and available information. If additional pertinent information is made available, it will be used to amend this plan. In addition, the site project manager/safety officer may use this information to increase personal protective measures on the study area site. All workers will be briefed on any amendments made to this plan.

The CHASP assigns responsibilities, establishes personal protection standards, recommends operating procedures, and provides for contingencies that may arise during performance of the assessment at the site. The protocols in this CHASP apply to all personnel involved in the work activities including: all outside subcontractors, client, or regulatory agencies present during the performance of the work.

II. GENERAL PROCEDURES AND WORK PLANS FOR THE SITE REMEDIATION

Based on what is already known about the site, it is anticipated that Level D protection will be adequate for all other tasks to be performed at the site.

Level D protection will consist of the following:

- Coveralls
- Gloves
- Boot/shoes, leather
- Hard hat when working in the vicinity of the drill rig

- Safety glasses will be worn when working in the vicinity of the drill rig.

In the event that air monitoring data, during the excavation of the soils, indicate PID levels above 5 ppm, all personnel will need to convert to Level C protection. Specifically, the following criteria will be used for the selection of Level C.

1. Measured concentration is within the service limit of the respirator's canister.

2. Atmospheric contaminant concentrations do not exceed IDLH levels.

3. Atmospheric contaminants, liquid splashes, or other direct contact, will not adversely affect the small area of skin left unprotected by chemical resistant clothing.

4. Vapor readings of 5 ppm above background as registered on the PID meters.

Level C protection will consist of the following protective equipment (e.g., in addition to level D): full-face, air-purifying canister equipped respirator (MSHA/NIOSH approved), and chemical resistant coveralls.

In order to control soil from releasing dust, or wind-blown due to its disturbance, the following control procedures will be instituted:

a. Establish Exclusion Zone - All people entering this zone must wear prescribed levels of protection. An entry and exit check point must be established at the periphery to regulate the flow of personnel and equipment. The exclusion zone, for the purpose of this work, will probably include the area of excavation and, therefore, the outer boundaries will need to be established by use of the PID readings. The radius of this zone will be determined by the distance it will take for the PID readings to stabilize between 0 to 5 ppm.

b. Establish Contamination Reduction Zone - This zone provides a transition. It provides additional assurance that the physical transfer of contaminating substances on people, equipment, or in the air and water is limited through a combination of decontamination procedures.

As previously mentioned, there are no reasons to believe that this site is unsafe or potentially unsafe, nonetheless, there are certain safety measures and precautions which can be instituted to reduce risk. The following are some of those personal precautions:

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 activities.

3. Whenever cleaning procedures for outer garments are in effect, the entire body should be thoroughly washed as soon as possible after the protective garment is removed.

4. No excessive facial hair, which interferes with a satisfactory fit of the mask-to-face-seal, is allowed on personnel required to wear respiratory protective equipment.

5. Whenever possible, do not walk through puddles, mud, or other discolored surfaces; kneel on ground; lean; sit; or place equipment on surfaces, vehicles, or ground.

In addition, the following safety equipment will be maintained on-site for responding to potential emergency situations: Portable eye wash, ABC fire extinguisher, and first aid kit. Telephone numbers of emergency response units in the area will also be posted where they can be easily seen by all those working at the site. All personnel who will be working at the site will also be required to receive training in respirator fitting, emergency procedures, equipment decontamination, and specific task procedures. All personnel involved with the collection of soil or water will have successfully completed the 40-hour OSHA Hazardous Materials Training Program.

- Safety Decision-Making Procedures

During the course of this remediation, health and safety procedures will be reviewed daily by the Health and Safety Officer (HASO). If modifications or additional field protection requirements are deemed necessary, such changes will be incorporated into the Health and Safety Plan by the Health and Safety Officer and reviewed by all field personnel prior to their implementation.

In addition, the Health and Safety Officer will monitor near the excavation with a CGI (Combustible Gas Indicator) and PID, and scan excavation soils with the PID and monitor the samples upon retrieval. The contents of the excavator bucket will be screened using the PID when opened and the Site Health and Safety Officer will inform the Site

Manager and site supervisor of the readings, and notify the on-site personnel if any changes need to be made in personal protective equipment requirements.

All personnel working at the site will enter their names into the project log book which will be kept by the Health and Safety Officer.

Before engaging in the assigned work, all personnel will be briefed on the following:

- Identification of the project Health & Safety Officer.
- Location of first aid and emergency equipment.
- Activities taking place that day.
- Personnel protective equipment requirements and limitations.

In addition all field personnel will be required to review these Health and Safety Procedures and acknowledge such review. The Health and Safety Officer will ensure that all health and safety field procedures are followed, field conditions are regularly reviewed, and any alterations to the Health and Safety Procedures are communicated to all site personnel and implemented when they become necessary. Prior to commencing each day's field activities, the Health and Safety Officer will verbally review all health and safety procedures during a meeting with all field personnel.

All field personnel will acknowledge their review by signing an acknowledgment statement; this statement will be maintained with the daily Health and Safety Log.

III. DETAILED HEALTH AND SAFETY PLAN

1.0. Industrial Hygiene Monitoring

Industrial hygiene monitoring is an important component of the Health and Safety Plan. Industrial hygiene monitoring evaluates potential exposure to harmful chemicals or physical agents. Heat street/cold exposure evaluation is required to determine worker acclimatization and to determine work/rest regimes for heat stress. Exposure to high levels of noise during drilling, and operation of mechanical equipment needs to be evaluated. Personnel need to be advised on the use of ear muffs and may have to be evaluated with audiometry testing depending on the nature and severity of the noise levels. Photoionization detectors, flame ionization detectors, combustible gas indicator (LEL meter, oxygen detection meters) will be used during every step of the site remediation. This monitoring will provide worker safety against exposure to combustible gases, oxygen deficient atmospheres, and other hazards. This monitoring will also identify the type and level of Personal Protective Equipment required to carry out the task.

2.0 Training of Personnel

All Contractor personnel undergo extensive training in hazardous materials management. All Contractor personnel undergo 40 hours of OSHA training under OSHA regulations, Title 29, Code of Federal Regulations, Part 1910.120 before being assigned to any field job. As part of the training, personnel learn the use, maintenance, and limitations of PPE. All supervisory personnel undergo eight hours of supervisors training in addition to the regular 40-hour training. Other areas covered during the training are the types of hazards that personnel may encounter, hearing protection against noise, respiratory protection, eye protection, decontamination, various levels of protection, site emergency responses and site control. In addition, site specific hazards and requirements will be reviewed at daily safety meetings.

3.0 Health and Safety Hazards

Hazards that may be encountered at hazardous waste sites can be broadly divided into three general categories: Physical, Chemical, and Mechanical Hazards (Electrical Hazards should also be accounted).

3.1 Physical Hazards

Physical hazards that may be encountered at the hazardous waste site include hazardous waste drums; underground storage tanks containing hazardous chemicals, heat and cold stress, noise induced hearing loss. Drums and tanks can leak or explode under pressure; heat stress can cause heat exhaustion, heat syncope and heat stroke. Cold stress can cause hypothermia and frostbite. Machinery and mechanical noise can cause hearing impairment.

3.2 Chemical Hazards

Chemical hazards most likely include volatile organic vapors, semi-volatile organic vapors, PAHs, and metals used during the construction of the foundation from gasoline or diesel fuels or building materials.

3.3 Mechanical Hazards

Mechanical, safety, and electrical hazards may be encountered at any hazardous waste site. The hazards include moving or swinging machinery, uneven terrain, ditches, rusty objects, glass and other sharp objects, overhead power lines, buried electrical sources, faulty electrical tools, and other hazards. All mechanical hazards on-site will be addressed by the site Health and Safety Officer. All personnel will be fully trained to deal with mechanical hazards on-site.

3.4 Real-Time Air Monitoring, VOCs and Particulates (if Needed)

Air monitoring will be conducted at the site with the required instrumentation for organic vapors and combustible gases. Air monitoring for specific compounds will be conducted based on the results of the preliminary air monitoring data.

Monitoring on-site will be conducted using the following field instruments:

- Photoionization detector (PID): The PID shall be calibrated before use following the instrument manufacturer's recommendation. The PID will be maintained in operational condition at all times. The use of a PID is limited during humid atmospheric conditions, and the results may not be accurate. A PID should be used under such conditions. During the use of the PID, the UV lamp should be cleaned frequently, calibration checked regularly, and battery recharged after each use.

- Combustible gas and oxygen meter will be used to detect any combustible and explosive gases and oxygen deficient atmospheres at the worksite. The instrument shall be calibrated and used as per manufacturers specifications. Results obtained as a result of such monitoring will determine the level of respiratory protection required.

- Airborne particulates will be monitored using a Dust Trac Ambient Particulate Monitoring System.

- The detector will be calibrated and used as per manufacturers specifications.

Real-time monitoring will be conducted during the remediation. Monitoring will also be conducted at perimeter locations, including an upwind and downwind location. A background reading will be established at all locations of the site on a daily basis when worker or technicians are present at the site.

If established action levels are exceeded at the perimeter location for organic vapors, work will be suspended and engineering controls implemented to bring concentrations back to acceptable levels.

GUIDE TO CONTAMINANT LEVELS AND LEVELS OF PROTECTION

Monitoring Instruments	Contaminant Levels (above background)	Level of Protection or Prescribed Action
Photoionization Detector (PID) MiniRAe 2000 or equivalent	0 to 5 ppm	Level D
	5 to 50 ppm	Level C
	Above 50 ppm	Level B or evacuate site

4.0 Health and Safety Risk Analysis

The level of protection to be employed is Level D, which requires the use of gloves and two sets of clothing, safety boots, hard hat, and safety glasses. This protection will minimize dermal contact with the subsurface soils and groundwater and present little risk to be workers performing the subsurface remediation. The total vapor reading measured by the PID will ensure that exposure to organic vapors above 5 ppm will not occur. All sampling will occur in open areas, thus further limiting the possible exposure to the anticipated contaminants.

The following are basic toxicological profiles for some of the contaminants of concern. It should be noted that the semi-volatile PAH compounds, pesticides and metals bound up in the fill material are not volatile. Little exposure data are available for non-airborne PAHs, pesticides and metals. Most metals are irritants and the PAHs and pesticides are suspected carcinogens. Strict enforcement of the CHASP will limit exposure to these contaminants. The real-time air monitoring to be conducted at the site will limit exposure to the volatile compounds. The Safety Data Sheets for the volatile and semi-volatile compounds and metals are presented.

Volatile Organic Compounds

Benzene

Benzene is a clear colorless liquid with a characteristic odor. It is slightly soluble in water. Benzene is a known human carcinogen. It is poisonous via the inhalation route of exposure. It also causes adverse effects via dermal absorption. It is a central nervous system narcotic. Dermal contact produces severe irritation, erythema, burns, edema and blisters. Chronic poisoning can cause fatigue, headache, dizziness, nausea, loss of appetite and weight, weakness, pallor, nosebleeds, bleeding gums, menorrhagia in women, petechiae, and purpura. It is a dangerous fire hazard and reacts violently with oxidizers. It has an OSHA PEL of 0.1 ppm.

Toluene

It is an experimental mutagen. It is a skin and eye irritant. It causes human central nervous system psychotropic effects. It is a moderate toxin via the inhalation and subcutaneous routes. Toxicity is low via dermal exposure. The compound is derived from coal tar and commercial grades and usually contains small amounts of Benzene as an impurity. Chronic exposure to repeated small doses can cause headache, nausea, eye irritation, loss of appetite, bad taste, lassitude, impairment of coordination and reaction time. Acute fatal exposure causes the victim to go from intoxication to coma. It is a dangerous fire and explosion hazard from heat, flame, and powerful oxidizers. The OSHA permissible exposure limit (PEL) is 100 ppm. The ACGIH threshold limit value (TLV) is 100 ppm as a time weighted average.

Xylene

Xylene is a human eye irritant; it causes some transient conjunctiva and corneal irritation. It is an experimental skin and eye irritant. It causes irritation of the mucous membrane and is a moderate irritant via the oral inhalation and subcutaneous routes. It is a moderate toxin via dermal exposure. It is a dangerous fire hazard from heat, flame, and powerful oxidizers. The OSHA permissible exposure limit (PEL) is 100 ppm. The ACGIH threshold limit value (TLV) is 100 ppm as a time weighted average.

Ethyl Benzene

It is a moderate irritant to the skin, eyes and mucous membrane. It is toxic via the oral and inhalation routes. Liquid Ethyl Benzene is an irritant to the skin and mucous membrane. The vapor is an irritant first to the eyes, then causes dizziness, irritation of the nose and throat and a sense of constriction in the chest. Chronic exposure causes congestion of the brain and edema of the lungs. Contact with the liquid can cause

erythema and inflammation of the skin. It is a dangerous fire hazard from heat, flame and powerful oxidizers. The OSHA permissible exposure level (PEL) is 100 ppm. The ACGIH threshold limit value (TLV) is 100 ppm as an 8-hour time weighted average.

1,1,1 Trichloroethane

It is a colorless liquid, causes adverse psychotropic, gastrointestinal and central nervous system effects in humans. It is a moderate irritant to the skin and a severe eye irritant. It is a moderate toxin via the oral route. It is narcotic in high concentrations. It may sensitize the heart to epinephrine-induced arrhythmia. Acute inhalation of large quantities may cause cardiac arrest. It reacts violently with N204, 02, NaOH, Na-K alloy. Heat decomposition emits very toxic chlorine fumes. The OSHA permissible exposure limit (PEL) is 350 ppm. The ACGIH threshold limit value (TLV) is 350 ppm as an 8-hour time weighted average.

Tetrachloroethylene

Is a colorless liquid with a chloroform-like odor. It is moderately toxic via the inhalation, oral, subcutaneous and dermal routes. The liquid can cause damage to the cornea and conjunctiva, ingestion causes irritation of the gastrointestinal tract, with vomiting, nausea, diarrhea and bloody stools. Acute intoxication causes adverse effects to the nervous system. It is an experimental carcinogen and mutagen. Heat decomposition emits very toxic chlorine fumes. The OSHA permissible exposure level is 25 ppm. The ACHIH threshold limit value (TLV) is 50 ppm as an 8-hour time weighted average.

Methane

Methane is a colorless odorless gas that occurs abundantly in nature a product of certain human activities. Methane is the simplest member of the paraffin series of hydrocarbons and is among the most potent of the greenhouse gases. Methane is classified as a simple asphyxiant and impairs normal breathing and is an explosion hazard. Methane is not known to be toxic and consuming water that contains methane does not present a health hazard. Exposure to methane is not known to increase the chance of any type of cancer. Methane is lighter than air and free methane gas may accumulate within an enclosed space. Poorly ventilated spaces could accumulate methane at explosive levels.

Semi-Volatile Organic Compounds

A semi-volatile organic compound is an organic compound which has a boiling point higher than water and which may vaporize when exposed to temperatures above room temperature. Semi-volatile organic compounds include phenols and polynuclear aromatic compounds.

Heavy Metals

Heavy metals are natural components of the earths crust. They cannot be degraded or destroyed. They enter our bodies via food, drinking water and air. As trace elements, some heavy metals are essential to maintain the metabolism of the human body. However, at higher concentrations they can cause metal poisoning, for instance from drinking water contamination (Lead Pipes) high concentrations near emission sources, or intake via the food chain. Heavy Metals are dangerous because they tend to bioaccumulate. Bioaccumulation means an increase of a chemical in a biological organism over time compared to the chemicals concentration in the environment.

Pesticides

Pesticides are substances meant for preventing, destroying or mitigating any pest. They are a class of biocide. The most common use of pesticides is as plant protection products (also known as crop protection products), which in general protect plants from damaging influences such as weeds, diseases or insects. This use of pesticides is so common that the term *pesticide* is often treated as synonymous with plant protection product, although it is in fact a broader term, as pesticides are also used for non-agricultural purposes. The term pesticide includes all of the following: herbicide, insecticide, insect growth regulator, nematicide, termiticide, molluscicide, piscicide, avicide, rodenticide, predacide, bactericide, insect repellent, animal repellent, antimicrobial, fungicide, disinfectant (antimicrobial) and sanitizer.[2]

A pesticide is generally a chemical or biological agent (such as a virus, bacterium, antimicrobial or disinfectant) that through its effect deters, incapacitates, kills or otherwise discourages pests. Target pests can include insects, plant pathogens, weeds, mollusks, birds, mammals, fish, nematodes (roundworms), and microbes that destroy property, cause nuisance, spread disease or are vectors for disease. Although there are benefits to the use of pesticides, some also have drawbacks, such as potential toxicity to humans and other animals. According to the Stockholm Convention on Persistent Organic Pollutants, 9 of the 12 most dangerous and persistent organic chemicals are pesticides.

5.0 Site Safety and Health and Safety Officers

The contractor shall provide a full time Health and Safety Officer at the site. The Health and Safety Officer shall be knowledgeable regarding the health and safety requirements of the site-specific plan, OSHA and the USEPA health and safety guidelines. The Health and Safety Officer shall be trained and certified in cardiopulmonary resuscitation (CPR) and shall fully understand hazardous waste handling precautions. The

Health and Safety Officer, under the guidance from the CIH/CSP, and Health and Safety Manager, shall be responsible for all final safety requirements. The Health and Safety Officer will be on-site at all times during work and shall implement the Health and Safety Plan, monitoring the environment, calibrating instruments, and enforcing all the health and safety requirements.

General health and safety procedures have been developed and will be implemented by the project manager and/or safety officer. OSHA standards and regulations contained in the Department of Labor, Title 29 Code of Federal Regulations, Parts 1910 and 1926, and the applicable recommendations by the National Institute for Occupational Safety and Health (NIOSH) regarding procedures to assure safe operations, represent the basis for the health and safety program. All personnel, subcontractors, state and federal representatives and visitors shall abide by the site health and safety requirements.

6.0 General Safety Rules

1. Prior to the start of each work day, a meeting shall be held for all personnel, subcontractors, and representatives. Safety procedures, safe work practices, site evacuation and escape procedures, and the planned daily activities will be reviewed during these meetings.

2. Provisions will be made for first aid for all on-site personnel. At a minimum, a standard industrial-type first aid kit will be on-site. The location of the first aid supplies will be posted on-site, and this information will be reviewed at the daily meetings.

3. Eating, drinking, smoking, and other similar activities, are strictly prohibited in both the work zones and the decontamination (contamination reduction) zones.

4. Fire extinguishers shall be provided at active locations within the contaminated zone. At a minimum, fire extinguishers shall be 20 pound, ABC dry chemical, halon or carbon dioxide. Class D extinguishing agents shall be available, if necessary.

5. All tools and equipment, where necessary, shall be spark proof, explosion proof, and/or grounded and bonded.

6. All atmosphere-supplied respiratory devices shall meet at least the requirements of the specifications for Grade D Breathing Air as described in Compressed Gas Association Commodity Specification G-7.1-1966.

7. All staff shall have medical clearance which includes a physical exam and appropriate clinical tests.

8. No person shall be assigned to a task that requires the use of respiratory protection until it is determined that he/she is physically capable of using such devices. This judgment shall be made by a physician.

9. When respirators are required, beards, facial hair, and sideburns (which may interfere with the sealing portion of a respirator) are to be removed.

10. Parking of vehicles, other than those required for emergency purposes outside the designated parking area, shall be prohibited, since safe egress and ingress areas may be obstructed.

11. All personnel shall use one entrance and exit only from the work zone (except in an emergency or a life threatening situation).

12. The project manager shall have the authority to remove anyone from the site and prohibit his/her re-entry should it be determined that the person threatens site security or the safety of on-site personnel.

13. High pressure, low volume cleaning shall be used at the decontamination pad. Steam cleaning shall be required on all heavy equipment prior to leaving the site. At a minimum, two personnel with adequate protection as required by this plan shall be stationed in the decontamination area during decontamination of equipment. The decontamination pad shall be cleaned as necessary at least once per working day. No ice, snow, or soil is to be allowed to build on the pad.

14. All prescription eyeglasses in use will be ANSI approved safety glasses. All eyeglass inserts shall be compatible and proper for the full face respirator.

15. Respirator cartridges shall be changed upon breakthrough or daily. Each person shall wash and disinfect his/her respirator daily.

16. Workers who have worked in a hazardous work zone will shower at the end of the work day.

17. No alcohol, drugs, or weapons will be allowed on-site at any time.

6.1 Electrical Installations

All electrical installations will comply with state code, National Electrical Code (NEC) and the United States Coast Guard Regulations. All portable generators used on-site will be grounded. Extension cords will be the hard usage type or better, and will contain the number of conductors required for the service plug and equipment ground wire. Ground-fault circuit interrupters shall be used as necessary. All electrical tools, fuse boxes, and other equipment with conducting surfaces that could be energized, will be grounded.

6.2 Hand and Power Tools

All hand and power tools will be inspected, tested, and determined to be in safe operating condition and properly maintained. Circular saws will be equipped with guards that automatically and completely enclose the cutting edges, splinters, and anti-kickback devices. Power saws will not be left running unattended.

Safety clips or retainers will be installed and maintained on pneumatic impact tools. Pressure will be shut off and exhausted from the line before disconnecting the line from any tool or connection. Safety lashing will be provided at connections between tool and hose, at all quick make-up type connections. Impact wrenches will be provided with a locking device for retaining the socket.

6.3 Safety Meetings

On-site personnel will meet daily to discuss safety matters, appropriate personal protection, and site conditions related to safety. All on-site personnel, subcontractors, and representatives will receive site-specific safety training before work begins.

6.4 Material Handling and Storage

- Cylindrical materials will be stacked and blocked to prevent spreading or tilting.
- Lumber will be stacked level, in piles no more than 10 feet high, on stable sills. Crushed stone and rip rap will be stored in piles in a safe manner.
- Fuel oil will be stored in approved storage tanks and barges. No smoking signs will be posted. Storage tanks will be bermed to prevent the spread of fuel oils due to spillage and leakage.

- Miscellaneous parts and tools will be stored in trailers or suitable buildings. All accessways to the work area will be kept clear at all times.

6.5 Machinery, Mechanized and Heavy Equipment

Any machinery or mechanized equipment shall be brought on-site only after it has been checked for any mechanical defects. Machinery will not be operated in a manner that will endanger persons or property, nor will the safe operating speeds or loads be exceeded. Machinery left on-site overnight will be rendered unusable or will be guarded. Heavy equipment, such as bulldozers, will be provided with seat belts and roll-over protective devices.

6.6 Motor Vehicles

Every motor vehicle operator will possess a valid operator's license. Vehicles used to transport personnel will be properly equipped with seats. All tools and equipment will be guarded, stowed, and secured when transported with personnel.

6.7 Pressurized Equipment and Systems

Pressurized equipment and systems will be inspected and performance tested. Pressure vessels will be equipped with safety valves set at no more than 10 percent over working pressure. Every air compressor will automatically cease operating prior to exceeding the maximum working pressure allowable in the system. Compressed gas cylinders will be secured in an upright position at all times, except when being hoisted.

6.8 Excavations

The sides of all excavations in which employees are exposed to danger from moving ground will be adequately sloped or shored. Excavated material will be stockpiled at least four feet from the side of the excavations. Barriers will be placed at the excavation adjacent to the path, walkways, sidewalks, driveways, and other pedestrian or vehicle thoroughfares. Ramps will be provided for access to excavation. A proper route of egress shall be maintained.

6.9 Heat and Cold Stress

Heat stress can occur at any hazardous waste site. Chemically resistant protective clothing prevents the evaporation of perspiration. The wearing of vapor barrier clothing greatly increases the potential for heat stress and heat-induced illness. A heat stress disorder can result if minerals and liquids are not adequately replaced, especially after long work hours with loss of body water and electrolytes. Heat stress is a combination of

environmental and physical work factors that can cause heat rash, heat cramps, heat exhaustion, and heat stroke. It may be necessary to acclimatize workers and to monitor workers at frequent intervals, and to provide a work rest regimen to ensure that heat stress disorders do not occur.

Environmental conditions may be monitored by determining the atmospheric temperature, a measurement of the radiant heat and corresponding relative humidity. Personal worker condition can be monitored by heart rate, body temperature, and loss of body water and electrolytes.

Cold-related injuries may occur at hazardous waste site locations due to exposure to extremely low temperatures. Frost bite injury can occur due to exposure to extreme cold conditions. Hypothermia can occur when workers are exposed to extreme cold and in situations where workers are wearing wet or damp personal protective equipment. Cold-related injuries can be avoided by using layers of clothing and providing adequate heating equipment at the support zone on-site.

The Health and Safety Officer will monitor the ambient air temperature, if the ambient air temperature exceeds 80° F for one hour. The Safety Officer will begin monitoring personnel for signs and symptoms of heat stress. A fluid/electrolyte/water replacement will be made available in the support zone for the workers on-site.

6.10 Incident and Accident Reporting and Recordkeeping

All incidents and accidents will be reported, investigated, and analyzed by the site safety officer site supervisor or his designated representative. An incident reporting log (attached) will be completed. Any deaths, fires, or explosions will be reported to appropriate emergency personnel. Fatalities will be reported to the OSHA regional office within 24 hours.

The incident reporting log to be used when a reportable incident occurs is attached.

7.0 Hazardous Communication

7.1 Container Labeling

All containers received on-site will be inspected to ensure the following: 1) all containers will be clearly labeled as to the contents; 2) the appropriate hazard warnings will be noted; and 3) the name and address of the manufacturer will be listed.

All secondary containers will be labeled with either an extra copy of the original manufacturers label or with generic labels, which have a block for identify and blocks for the hazard warning.

7.2 Safety Data Sheets (SDSs)

Copies of the SDSs for all hazardous chemicals known or suspected to be on-site will be maintained in the work area. SDSs will be available to all employees for review during each work shift.

7.3 Employee Training and Information

Prior to starting work, each employee will attend a health and safety orientation and will receive information and training on the following: 1) an overview of the requirements contained in the Hazard Communication Standard, 29 CFR 1910.1200; 2) chemicals present in their workplace operations; 3) location and availability of a written hazard program; 4) physical and health effect of the hazardous chemicals; 5) methods and observation techniques used to determine the presence or release of hazardous chemicals; 6) how to lessen or prevent exposure to these hazardous chemicals through usage of control/work practices and personal protective equipment; 7) emergency procedures to follow if they are exposed to these chemicals; 8) how to read labels and review MSDSs to obtain appropriate hazard information; 9) location of MSDS file and location of hazardous chemical lists.

7.4 Key Personnel

The Project Manager is Hiram Rothkrug - Cell (516) 582-6906
Alternate: Todd McArthur. – Cell (516) 897-7344

The Site Supervisor is Hiram Rothkrug - Cell (516) 582-6906
Alternate: Todd McArthur – Cell (516) 897-7344

The Site Health and Safety Officer is Hiram Rothkrug - Cell (516) 582-6906
Alternate: Todd McArthur – Cell (631) 897-7344

8.0 Site Control Measures

The following section defines measures and procedures for maintaining site control. Site control is an essential component in the implementation of the site health and safety program.

8.1 Buddy System

During all Level D activities or when some conditions present a risk to personnel, the implementation of a buddy system is anticipated. A buddy system requires at least two people to work as a team; each looking out for each other. Level B operations generally require three people. It is anticipated that Level D activities will occur, two-person buddy system.

PERSONNEL REQUIREMENTS

Task	Control Measures
In-Situ Bio-Chemical Remediation	Line of sight, buddy system
Soil and groundwater sampling	Line of sight, buddy system

8.2 Site Communications Plan

Successful communications between field teams and contact with personnel in the support zone is essential. The following communications systems will be available during activities at the subject site.

- Hand signals
- Direct vocal communication
- For hand signal communications, the following definitions will apply during activities at the subject site:

HAND SIGNAL DEFINITIONS

Signal	Definition
Hands clutching throat	Out of air/cannot breath
Hands on top of head	Need assistance
Thumbs up	OK/I am all right/I understand
Thumbs down	No/Negative
Grip partners wrist	Exit area immediately

Communication by two-way short distance radio will also be employed.

8.3 Site Control

Access to the site shall be restricted with a single access point. A written log of all contractors, subcontractors, state and federal representatives, and visitors shall be kept by the site Health and Safety Officer. The exclusion zone and all contaminated areas will be indicated by red barrier tape or red snow fencing and accessible through personal and equipment decontamination facilities. A contamination reduction zone will be designated, between a contaminated area and the clean area.

8.4 Access and Egress

Safe access and egress will be provided to all work areas. Accessways will be kept clear of operating or construction materials, or debris that would obstruct passages or cause a tripping hazard. Haul roads will be constructed to widths suitable for safe operation of the equipment. Erection, moving, dismantling, or alteration will be under the supervision of a competent employee. A ladder will be provided as access to all scaffolds or platforms.

8.5 Site Security

Each visitor must adhere to the site control and safety guidelines established in this plan.

All site visitors and subcontractors must meet the educational and medical requirements of 29 CFR 1910.120. This requirement shall be met by presenting appropriate documentation to the Contractors site officer, prior to entry into the work zone.

Authorized visitors who work for regulatory agencies shall receive approval to enter the site from the Department. The Contractor shall maintain a chronological log of all persons entering and leaving the work site.

8.6 Site Plan and Designated Control Zones

If contamination is detected at the site, the three work zone approach, outlined below may be utilized.

- Exclusion (Contaminated) Zone

For all areas of remediation, the Exclusion Zone consists of at least a fifteen-foot extension of the horizontal limits of the area, and may need to be expanded where heavy

equipment is operating so that the equipment remains wholly within the Exclusion Zone. The Exclusion Zone will be clearly marked with traffic cones and safety tape throughout the execution of the work.

The level of personnel protective equipment required in the Exclusion Zone shall be in accordance with the specified requirements as a minimum, or as determined by the site health and safety coordinator after monitoring and on-site inspection. No eating, drinking, or smoking will be allowed in this zone. No personnel will be allowed in the Exclusion Zone without: 1) a buddy, 2) proper PPE, and 3) specified task responsibilities.

- Contamination Reduction (Buffer) Zone

This zone will serve as a general entry and egress zone to and from the Exclusion Zone. This area will be designated for the decontamination of personnel and equipment prior to re-entering the Support Zone, and also for physical segregation of the Support and Exclusion zones.

The level of PPE required in this zone shall be in accordance with the specified requirements as a minimum or as determined by the Contractors SHSO, after monitoring and on-site inspection. No eating, drinking, or smoking will be allowed in this area. The contamination reduction station will also contain appropriate safety and emergency equipment, such as a first aid kit and fire extinguisher.

- Support (Safe or Clean) Zone

This zone is the area outside the zone of significant contamination. The Support Zone shall be protected from work site contamination. Eating and drinking will be allowed only in this zone. The function of the Support Zone is to provide an entry area for personnel, material, and equipment to the Exclusion Zone.

8.7 Site Engineering Controls - Air Emissions

The contractor shall provide all equipment and personnel necessary to monitor and control air emissions.

In the event total organic vapors are detected at levels exceeding 5 ppm above background, all precautions to minimize emissions in the air shall be made. These will include, but are not limited to:

1. Excavating the areas in small parts and covering it up before excavating the next area
2. Upgrading the level of protection for workers

3. Removing any excavated material from the ground, staging, and covering it.

4. The use of vapor suppressing foam.

If the level of total organic vapors exceeds 5 ppm above background, or greater than 20 percent of the LEL, the work will be immediately suspended and workers evacuated.

8.8 Nearest Medical Assistance

The route map to the nearest facility is attached which can provide emergency care for individuals who may experience an injury or exposure on-site. The nearest facility with a full service emergency room is

Lutheran Medical Center Emergency Room
Located at:
6317 4th Avenue, Brooklyn NY
Phone (718)630-7300

8.9 Site Control Measures

Standing Orders for Exclusion Zone

No smoking, eating, or drinking in this zone
No horse play
No matches or lighters in this zone
Check-in on entrance to this zone
Check-out on exit from this zone
Implement the communications system
Line of sight must be in position
Wear the appropriate level of protection as defined in the Safety Plan.

Standing Orders for Contamination Reduction Zone

No smoking, eating, or drinking in this zone
No horse play
No matches or lighters in this zone
Wear the appropriate level of protection

LOG FOR ALL PERSONNEL ENTERING THE SUBJECT PROPERTY

SITE: 1776 48th Street, Brooklyn, New York

The undersigned certify that they have read this Health and Safety Plan document, understand it, and will comply with its provisions.

Name (Please Print)	Affiliation	Date	Time
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			

9.0 Decontamination Plan

9.1 Standard Operating Procedures

Decontamination involves the orderly controlled removal of contaminants. Standard decontamination sequences are presented in the Decontamination Table. All site personnel should minimize contact with contaminants in order to minimize the need for extensive decon.

9.2 Levels of Decontamination Protection Required for Personnel

The levels of protection required for personnel assisting with decontamination will be Level D. The Site Safety officer is responsible for monitoring decontamination procedures and determining their effectiveness.

9.3 Equipment Decontamination

All equipment and material used on-site will be thoroughly decontaminated before it is removed from the project. All material such as contaminated debris, and contaminated clothing, with the exception of the excavated materials which cannot be decontaminated, shall be disposed of by a method permitted by regulatory agencies.

All vehicles and equipment used in the Exclusion Zone will be decontaminated to the satisfaction of the Safety Officer who shall certify that each piece of equipment has been decontaminated prior to removal from the site.

Decontamination shall take place within designated equipment and materials decontamination areas. The Contractor shall provide suitable barriers. The decontamination shall consist of high pressure water cleaning, supplemented by detergent as appropriate. Wash units shall be portable high pressure with a self-contained water storage tank and pressurized system (as required). Each unit shall be capable of heating wash water to 180° F and providing a nozzle pressure of 150 psi.

Personnel involved in vehicle and equipment decontamination shall wear Level C protective clothing. At the close of the project, the Contractor shall completely decontaminate and clean the decontamination area.

9.4 Decontamination Pad

The decontamination pad shall be located in the contamination reduction zone and shall be used for cleaning all vehicles leaving the Exclusion Zone prior to entering the Support Zone or leaving the site.

9.5 Disposition of Decontamination Wastes

LEVEL D DECONTAMINATION STEPS

Step 1	Remove outer garments (i.e., coveralls)
Step 2	Remove gloves
Step 3	Wash hands and face

9.6 Sanitation and Decontamination

The personnel decontamination and emergency medical facilities shall be properly maintained and shall be kept clean and sanitary at all times.

An adequate supply of drinking water will be obtained from a source approved by local health authorities. Drinking water will be dispensed from clearly marked containers by means which prevent contamination. Paper cups dispensed from a sanitary container and a waste receptacle for used cups will be provided.

The decontamination facility shall consist of clean and dirty lockers in separate areas. Shower facilities and a lunch/break room shall be available. Dirty and contaminated work clothes shall not be stored with clean clothes.

Contaminated clothing, used respirator cartridges, and other disposable items will be put into lined drums/containers and transported for proper disposal.

Personal protective clothing donning will consist of the following:

1. Put on inner gloves and put on coveralls
2. Put on outer gloves

10.0 Emergency Response/Contingency Plan

This section describes contingencies and emergency planning procedures to be implemented at the subject site. This plan is compatible with local, state and federal disaster and emergency management plans, as appropriate.

10.1 Pre-Emergency Planning

During the site briefing held periodically/daily, all employees will be trained in and reminded of provisions of the emergency response plan, communication systems, and evacuation routes. This section identifies potential hazards associated with site activities, along with the available emergency prevention/control equipment and its location. The plan will be reviewed and revised, if necessary, on a regular basis by the HSO. This will ensure that the plan is adequate and consistent with prevailing site conditions.

EMERGENCY RECOGNITION/CONTROL MEASURES

Hazard	Prevention/Control	Location
Fire/Explosion	Fire Extinguisher	Contractors Vehicle
Spill	Sorbent Materials	Contractors Vehicle

Emergency Recognition/Prevention - Section 4 provides a listing of chemical and physical hazards on-site. Additional potential hazards associated with site activities are listed in Section 5 and Section 11.5 along with the available emergency prevention/control equipment and its location. Personnel will be familiar with techniques of hazard recognition from preassignment training and site-specific briefings. The HSO is responsible for ensuring that prevention devices and equipment are available to personnel

Evacuation Routes/Procedures - In the event of an emergency which necessitates an evacuation of the site, the following alarm procedures will be implemented:

Ensure that a predetermined location is identified off-site in case of an emergency, so that all personnel can be accounted for

Personnel will be expected to proceed to the closest exit with your buddy, and mobilize to the safe distance area associated with the evacuation route. Personnel will remain at that area until the re-entry alarm is sounded or an authorized individual provides further instructions

Emergency Contact/Notification System - The following list provides names and telephone numbers for emergency contact personnel. In the event of a medical emergency, personnel will take direction from the HSO and notify

the appropriate emergency organization(s). In the event of a fire or spill, the site supervisor will notify the appropriate local, state and federal agencies.

Emergency Numbers:

To call for an ambulance 911
To call for the local fire department 911
To call the police department 911
To call Emergency Room 911
To call DEC Spill Hot Line 1 (800) 457-7362

10.2 Emergency Medical Treatment Procedures

Any person who becomes ill or injured in the exclusion zone must be decontaminated to the maximum extent possible. If the injury or illness is minor, full decontamination should be completed and first aid administered prior to transport. If the patient's condition is serious, at least partial decontamination should be completed (i.e., complete disrobing of the victim and redressing in clean coveralls or wrapping in a blanket). First aid should be administered while awaiting an ambulance or paramedics. All injuries and illnesses must immediately be reported to the project manager.

Any person being transported to a clinic or hospital for treatment should take with them information on the chemical(s) they have been exposed to at the site.

10.3 Fire or Explosion

In the event of a fire or explosion, the local fire department should be summoned immediately. Upon their arrival, the project manager or designated alternate will advise the fire commander of the location, nature, and identification of the hazardous materials on-site.

If it is safe to do so, site personnel may:

Use firefighting equipment available on-site to control or extinguish the fire; and
Remove or isolate flammable or other hazardous materials, which may contribute to the fire.

10.4 Spills or Leaks

In the event of a spill or a leak, site personnel will:

Inform their supervisor immediately;
Supervisor will immediately inform the NYSDEC Spill Hotline (800) 457-7362 regarding the spill or leak event,
Locate the source of the spillage and stop the flow if it can be done safely; and, begin containment and recovery of the spilled materials.

10.5 Emergency Equipment/Facilities

The following emergency equipment/facilities will be utilized on-site.

LIST OF EMERGENCY EQUIPMENT/FACILITIES

List of Emergency Equipment/Facilities	Storage Location
First Aid Kit	On-Site Engineers Trailer
Fire Extinguisher	On-Site Engineers Trailer
Spill Kits	On-Site Engineers Trailer
Berm Materials	On-Site Engineers Trailer
Eye Wash	On-Site Engineers Trailer

11.0 Site Personal Protective Equipment

The levels of personal protective equipment warranted by any given situation are dependent on the hazard, situation, area, and to a lesser degree, temperature. The goal of protective equipment is to offer the highest level of protection to the employee. The degree and kind of known or unknown chemical, the situation or the nature of work being done, the general area full of inherent or potential dangers, as well as the physiological stress factors, determine the types of protective equipment required.

An effective program must address the human element. Temperatures, either hot or cold, dramatically affect the employee wearing protective equipment. The resistance to breathing offered by respirators and the appreciable weight of some units define the amount of time that respiratory protection can be used daily. Other factors, like the need for flexible clothing that will not impede movement or limit body action influence the selection of protective equipment.

Acknowledgment of the human stress factor is important, for it will determine the amount of cooperation and strict adherence to the safety guidelines that can be expected from the employee.

Generally, protection is necessary to provide protection for the exposed person for three modes of contamination: ingestion, inhalation, and dermal absorption.

The protection from contamination due to ingestion is simply managed. Eating, drinking, and smoking are prohibited in the work area. All employees must leave the contaminated work area completely for breaks, remove protective clothing, wash their hands, and spend the rest of the break time in an uncontaminated, designated area.

The question of protection from contamination due to inhalation and absorption is complex. The appropriate protective equipment to be used on-site is determined by hazardous levels, work area conditions, and specific tasks. It remains the responsibility of the project manager to define, uphold, and maintain the appropriate level of protective equipment.

If contact with liquid is possible, then the coveralls shall be chemically resistant with chemically resistant gloves with interfaces taped. Supplied air respiratory protection will be available if protection must be upgraded.

The following sections describe the levels of protection developed by OSHA and EPA. The equipment will be selected based upon the hazards and to a lesser extent the environmental conditions and job tasks.

11.1 Level A - Personal Protective Equipment

- Pressure-demand, full-face SCBA or pressure-demand supplied-air respirator with escape SCBA. To be used only by rescue or fire-fighting personnel.
- Fully-encapsulating, chemical-resistant suit
- Inner chemical-resistant gloves
- Chemical-resistant safety boots/shoes
- Two-way radio communications

Optional:

- Cooling unit
- Coveralls
- Long cotton underwear
- Hard hat
- Disposable gloves and boot covers

The highest available level of respiratory, skin, and eye protection should be used. Fully encapsulated suits are primarily designed to provide a gas or vapor tight barrier between the wearer and atmospheric contaminants. Until air surveillance data become available to assist in the selection of appropriate level of protection, the use of Level A may have to be based on indirect evidence of the potential for atmospheric contamination or other means of skin contact with severe skin affecting substances.

Conditions that may require Level A protection include:

- Confined space which presents a severe skin hazard
- Suspected/known highly toxic substances
- Totally unknown substances are present

It is not anticipated that Level A protection will be required during performance of work at this site.

11.2 Level B

- Pressure-demand, full-face SCBA or pressure-demand supplied-air respirator with escape SCBA

- Chemical-resistant coveralls; hooded, one-piece disposable chemical-resistant one piece suit. Coveralls shall be Saranex when liquid splashes may occur.

- Inner and outer chemical-resistant gloves

- Chemical-resistant safety boots/shoes
- Hard hat (under suit)

- Two-way radio communications

Optional:

- Disposable gloves and boot covers
- Face shield
- Long cotton underwear

This has the same level of respiratory protection, but less skin protection as Level A. It is the minimum level recommended for initial site entries until the hazards have been further identified.

11.3 <u>Level C</u>

- MSHA/NIOSH approved full-face, air-purifying, canister-equipped respirator

- Chemical resistant clothing (overalls and long-sleeved jacket; hooded, one- or two-piece chemical splash suit; disposable chemical-resistant one-piece suit). Coveralls shall be Tyvek poly-coated or Saranex when liquid splashes may occur.

- Inner and outer chemical-resistant gloves

- Chemical resistant safety boots/shoes

- Hard hat (comply with 29 CFR 1910.135)

Optional:

- Two-way radio communications
- Disposable boot covers
- Face shield
- Long cotton underwear, cotton glove liners

Level C protection must meet several criteria. These criteria are:

1. Measured air concentrations of substances will be reduced by the respirator to below the substances Threshold Limit Value.

2. The substance must have good warning properties (taste, smell, or irritation below the Threshold Limit Value).

3. Atmospheric concentrations do not exceed the IDLH levels (IDLH = Immediately dangerous to life and health).

4. Total vapor readings register between background and 5 ppm above background as measured by an organic vapor detector (PID).

5. Air will be monitored continuously.

6. Oxygen content of the air is at least 19.5 percent.

7. An appropriate cartridge is available that will remove the contaminant.

8. The individual has been fit-tested in the particular respirator.

9. The substance(s) present are known, do not present a severe skin absorption or contact hazard and the concentrations are within acceptable limits.

10. The job functions have been determined not to require Level ABC PPE.

11.4 Level D

- A minimum of two sets of work clothing/uniforms
- Safety boots/shoes
- Safety glasses or chemical splash goggles
- Hard hat

Optional:

- Gloves
- Escape mask
- Face shield

Level D protection provides no respiratory protection and minimal skin protection.

Level D protection will only be worn when no splash hazards or vapor hazards exist.

The following are the anticipated Task-Specific initial levels or PPE:

Task	Level of PPE
Soil Excavation	D

Vapor Barrier Installation	D
Endpoint Sampling	D

Note: Respirator shall be immediately available in the event of air monitoring indicates an upgrade to Level C is required.

12.0 Action Levels

In the absence of additional air monitoring information, the following levels of respirator protection will be required:

Maximum Total Organic Vapors in the Breathing Zone (ppm)	Level of Protection
0 to 5 ppm	D
5 to 50 ppm	C
Above 50 ppm	Level B or Suspend Work

PID readings must be taken simultaneously with Benzene colormetric tubes. If Benzene is present, the action levels will be:

0 to 0.1 ppm	Level D 0.1 to 5.0 ppm	Level C Above 5.0 ppm	Level B or Evacuate

In addition to the above action levels, the following action levels will be established for perimeter monitoring. If the following action levels are attained in the Exclusion Zone perimeter, then work will stop until engineering controls are implemented to reduce levels to acceptable limits.

Parameter	Action Level
Total Organic Vapors (with PID)	5 ppm

12.1 Medical and First Aid Facilities

Arrangements for medical personnel, medical facilities, and ambulance service will be made for all projects. An industrial-type first-aid kit will be provided and stored in a clean, weatherproof container. Emergency eyewash will be located at a convenient location at the work site.

12.2 Incident and Accident Reporting and Recording

All accidents will be reported, investigated, and analyzed by the project manager or his designated representative. Any serious injury to personnel or property, fires or explosions, will be reported to the appropriate agencies. Fatalities will be reported to the regional OSHA office within 24 hours.

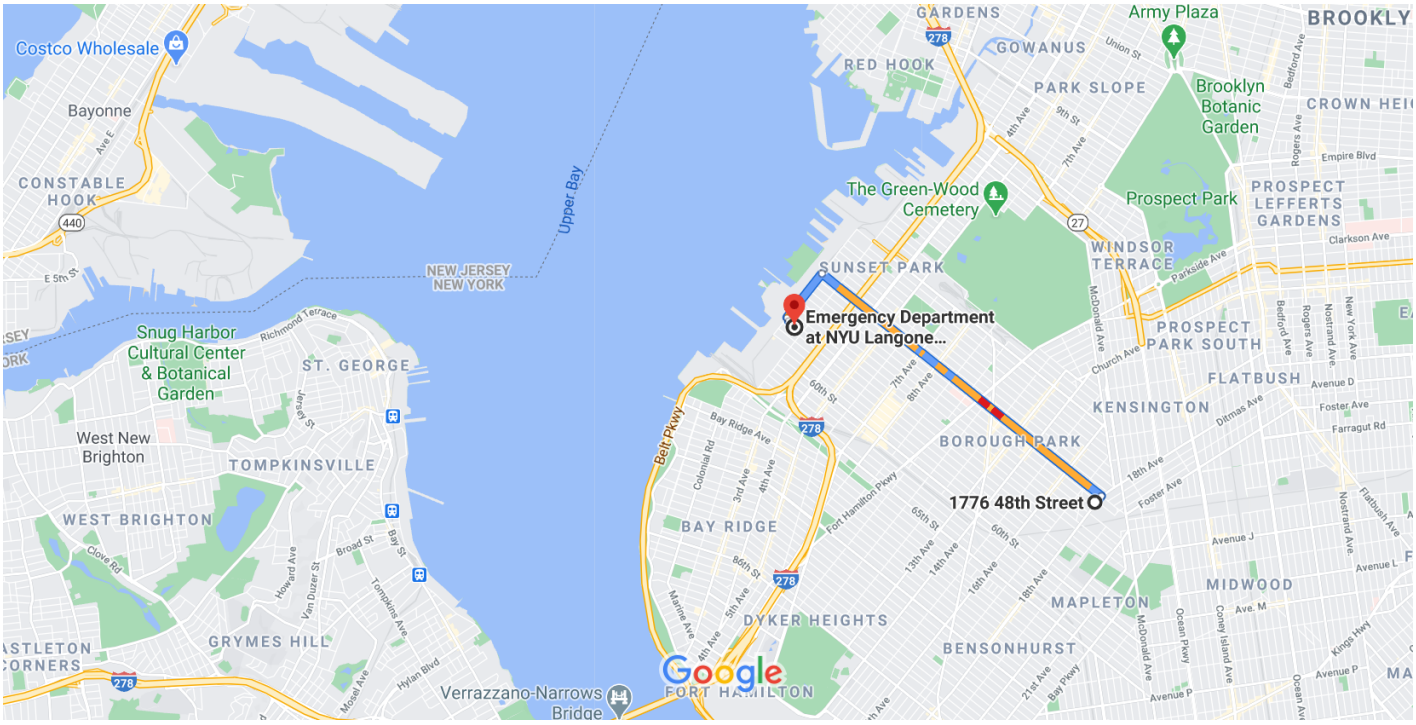
All incidents will be reported on the attached Incident Reporting Log which is attached.

Hospital Route

Google Maps

1776 48th St, Brooklyn, NY 11204 to Emergency Department at NYU Langone Hospital—Brooklyn

Drive 3.0 miles, 22 min



Map data ©2021 Google 1 mi

1776 48th St

Brooklyn, NY 11204

1. Head southeast on 48th St toward 18th Ave — 49 ft
2. Turn left at the 1st cross street onto 18th Ave — 262 ft
3. Turn left onto 47th St — 2.5 mi
4. Turn left onto 1st Ave — 0.4 mi
5. Turn left onto 55th St — 118 ft
6. Turn right — 62 ft
7. Turn left
   Destination will be on the right — 203 ft

Emergency Department at NYU Langone Hospital—Brooklyn

150 55th St, Brooklyn, NY 11220

Incident Reporting Log

OSHA's Form 301
Injury and Illness Incident Report

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

This *Injury and Illness Incident Report* is one of the first forms you must fill out when a recordable work-related injury or illness has occurred. Together with the *Log of Work-Related Injuries and Illnesses* and the accompanying *Summary,* these forms help the employer and OSHA develop a picture of the extent and severity of work-related incidents.

Within 7 calendar days after you receive information that a recordable work-related injury or illness has occurred, you must fill out this form or an equivalent. Some state workers' compensation, insurance, or other reports may be acceptable substitutes. To be considered an equivalent form, any substitute must contain all the information asked for on this form.

According to Public Law 91-596 and 29 CFR 1904, OSHA's recordkeeping rule, you must keep this form on file for 5 years following the year to which it pertains.

If you need additional copies of this form, you may photocopy and use as many as you need.

Completed by _____

Title _____

Phone (_____)_____–_____ **Date** ____/ ____/ ____

Information about the employee

1) **Full name** _____

2) **Street** _____

City _____ **State** _____ **ZIP** _____

3) **Date of birth** _____ / ____ / _____

4) **Date hired** _____ / ____ / _____

5) ☐ **Male**
☐ **Female**

Information about the physician or other health care professional

6) **Name of physician or other health care professional** _____

_____

7) **If treatment was given away from the worksite, where was it given?**

Facility _____

Street _____

City _____ **State** _____ **ZIP** _____

8) **Was employee treated in an emergency room?**
☐ **Yes**
☐ **No**

9) **Was employee hospitalized overnight as an in-patient?**
☐ **Yes**
☐ **No**

Information about the case

10) **Case number from the *Log*** _____ *(Transfer the case number from the Log after you record the case.)*

11) **Date of injury or illness** _____ / ____ / _____

12) **Time employee began work** _____ **AM / PM**

13) **Time of event** _____ **AM / PM** ☐ **Check if time cannot be determined**

14) ***What was the employee doing just before the incident occurred?*** **Describe the activity, as well as the tools, equipment, or material the employee was using. Be specific.** ***Examples:*** **"climbing a ladder while carrying roofing materials"; "spraying chlorine from hand sprayer"; "daily computer key-entry."**

15) ***What happened?*** **Tell us how the injury occurred.** *Examples:* **"When ladder slipped on wet floor, worker fell 20 feet"; "Worker was sprayed with chlorine when gasket broke during replacement"; "Worker developed soreness in wrist over time."**

16) ***What was the injury or illness?*** **Tell us the part of the body that was affected and how it was affected; be more specific than "hurt," "pain," or sore."** *Examples:* **"strained back"; "chemical burn, hand"; "carpal tunnel syndrome."**

17) ***What object or substance directly harmed the employee?*** *Examples:* **"concrete floor"; "chlorine"; "radial arm saw."** ***If this question does not apply to the incident, leave it blank.***

18) ***If the employee died, when did death occur?*** **Date of death** _____ / ____ / _____

Public reporting burden for this collection of information is estimated to average 22 minutes per response, including 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 current valid OMB control number. If you have any comments about this estimate or any other aspects of this data collection, including suggestions for reducing this burden, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Avenue, NW, Washington, DC 20210. Do not send the completed forms to this office.

Safety Data Sheets

Indoor Air Quality (IAQ)

Volatile Organic Compounds' Impact on Indoor Air Quality

On this page:

- Introduction
- Sources
- Health Effects
- Levels in Homes
- Steps to Reduce Exposure
- Standards or Guidelines
- Additional Resources

Introduction

Volatile organic compounds (VOCs) are emitted as gases from certain solids or liquids. VOCs include a variety of chemicals, some of which may have short- and long-term adverse health effects. Concentrations of many VOCs are consistently higher indoors (up to ten times higher) than outdoors. VOCs are emitted by a wide array of products numbering in the thousands.

Organic chemicals are widely used as ingredients in household products. Paints, varnishes;and wax all contain organic solvents, as do many cleaning, disinfecting, cosmetic, degreasing and hobby products. Fuels are made up of organic chemicals. All of these products can release organic compounds while you are using them, and, to some degree, when they are stored.

EPA's Office of Research and Development's "Total Exposure Assessment Methodology (TEAM) Study" (Volumes I through IV, completed in 1985) found levels of about a dozen common organic pollutants to be 2 to 5 times higher inside homes than outside, regardless of whether the homes were located in rural or highly industrial areas. TEAM studies indicated that while people are using products containing organic chemicals, they can expose themselves and others to very high pollutant levels, and elevated concentrations can persist in the air long after the activity is completed.

Sources of VOCs

Household products, including:

- paints, paint strippersand other solvents
- wood preservatives
- aerosol sprays
- cleansers and disinfectants

- moth repellents and air fresheners
- stored fuels and automotive products
- hobby supplies
- dry-cleaned clothing
- pesticide

Other products, including:

- building materials and furnishings
- office equipment such as copiers and printers, correction fluids and carbonless copy paper
- graphics and craft materials including glues and adhesives, permanent markers and photographic solutions.

Health Effects

Health effects may include:

- Eye, nose and throat irritation
- headaches, loss of coordination and nausea
- damage to liver, kidney and central nervous system
- Some organics can cause cancer in animals, some are suspected or known to cause cancer in humans.

Key signs or symptoms associated with exposure to VOCs include:

- conjunctival irritation
- nose and throat discomfort
- headache
- allergic skin reaction
- dyspnea
- declines in serum cholinesterase levels
- nausea
- emesis
- epistaxis
- fatigue
- dizziness

The ability of organic chemicals to cause health effects varies greatly from those that are highly toxic, to those with no known health effect.

As with other pollutants, the extent and nature of the health effect will depend on many factors including level of exposure and length of time exposed. Among the immediate symptoms that some people have experienced soon after exposure to some organics include:

- Eye and respiratory tract irritation
- headaches
- dizziness
- visual disorders and memory impairment

At present, not much is known about what health effects occur from the levels of organics usually found in homes.

- Search EPA's Integrated Risk Information System (IRIS)
    - A compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects
- EPA's Office of Drinking Water Regulations
    - List of Contaminants and Their MCLs: Organic Chemicals
- U.S. Geology Survey's National Water-Quality Assessment (NAWQA) Program
    - Information on VOCs in Water Sources

Levels in Homes

Studies have found that levels of several organics average 2 to 5 times higher indoors than outdoors. During and for several hours immediately after certain activities, such as paint stripping, levels may be 1,000 times background outdoor levels.

Steps to Reduce Exposure

- Increase ventilation when using products that emit VOCs.
- Meet or exceed any label precautions.
- Do not store opened containers of unused paints and similar materials within the school.
- Formaldehyde, one of the best known VOCs, is one of the few indoor air pollutants that can be readily measured.
    - Identify, and if possible, remove the source.
    - If not possible to remove, reduce exposure by using a sealant on all exposed surfaces of paneling and other furnishings.
- Use integrated pest management techniques to reduce the need for pesticides.
- Use household products according to manufacturer's directions.
- Make sure you provide plenty of fresh air when using these products.
- Throw away unused or little-used containers safely; buy in quantities that you will use soon.
- Keep out of reach of children and pets.
- Never mix household care products unless directed on the label.

Follow label instructions carefully.

Potentially hazardous products often have warnings aimed at reducing exposure of the user. For example, if a label says to use the product in a well-ventilated area, go outdoors or in areas equipped with an exhaust fan to use it. Otherwise, open up windows to provide the maximum amount of outdoor air possible.

Throw away partially full containers of old or unneeded chemicals safely.

Because gases can leak even from closed containers, this single step could help lower concentrations of organic chemicals in your home. (Be sure that materials you decide to keep are stored not only in a well-ventilated area but are also safely out of reach of children.) Do not simply toss these unwanted products in the garbage can. Find out if your local government or any organization in your

community sponsors special days for the collection of toxic household wastes. If such days are available, use them to dispose of the unwanted containers safely. If no such collection days are available, think about organizing one.

Buy limited quantities.

If you use products only occasionally or seasonally, such as paints, paint strippers and kerosene for space heaters or gasoline for lawn mowers, buy only as much as you will use right away.

Keep exposure to emissions from products containing methylene chloride to a minimum.

Consumer products that contain methylene chloride include paint strippers, adhesive removers and aerosol spray paints. Methylene chloride is known to cause cancer in animals. Also, methylene chloride is converted to carbon monoxide in the body and can cause symptoms associated with exposure to carbon monoxide. Carefully read the labels containing health hazard information and cautions on the proper use of these products. Use products that contain methylene chloride outdoors when possible; use indoors only if the area is well ventilated.

Keep exposure to benzene to a minimum.

Benzene is a known human carcinogen. The main indoor sources of this chemical are:

- environmental tobacco smoke
- stored fuels
- paint supplies
- automobile emissions in attached garages

Actions that will reduce benzene exposure include:

- eliminating smoking within the home
- providing for maximum ventilation during painting
- discarding paint supplies and special fuels that will not be used immediately

Keep exposure to perchloroethylene emissions from newly dry-cleaned materials to a minimum.

Perchloroethylene is the chemical most widely used in dry cleaning. In laboratory studies, it has been shown to cause cancer in animals. Recent studies indicate that people breathe low levels of this chemical both in homes where dry-cleaned goods are stored and as they wear dry-cleaned clothing. Dry cleaners recapture the perchloroethylene during the dry-cleaning process so they can save money by re-using it, and they remove more of the chemical during the pressing and finishing processes. Some dry cleaners, however, do not remove as much perchloroethylene as possible all of the time.

Taking steps to minimize your exposure to this chemical is prudent.

- If dry-cleaned goods have a strong chemical odor when you pick them up, do not accept them until they have been properly dried.

- If goods with a chemical odor are returned to you on subsequent visits, try a different dry cleaner.

Standards or Guidelines

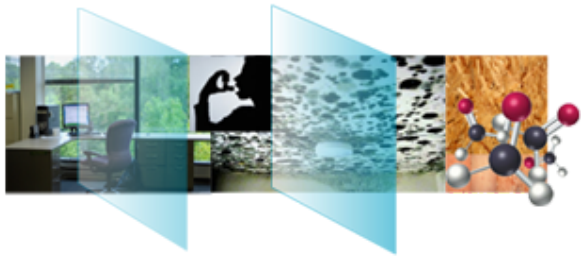
No federally enforceable standards have been set for VOCs in non-industrial settings. To learn more about VOC's, including current guidelines or recommendations set by various organizations for formaldehyde concentrations, visit Lawrence Berkeley National Laboratory's Indoor Air Quality Scientific Findings Resource Bank.

Additional Resources

- ASHRAE: Indoor Air Quality Guide, Strategies 5.1 and 5.2
- ASHRAE Standard 189.1-2014, Sections 10.3.1.4 and 10.3.1.4 (b) 1
- California Department of Public Health: Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers (Emission Testing Method for California Specification 01350)
- California Title 17 ATCM to Reduce Formaldehyde Emissions from Composite Wood Products
- Carpet and Rug Institute: Green Label Plus
- Collaborative for High Performance Schools: High Performance Products Database
- EPA: Formaldehyde Standards for Composite Wood Products
- Indoor Air Fact Sheet No. 4 (revised) - Sick Building Syndrome
    - Explains the term "sick building syndrome" (SBS) and "building related illness" (BRI). Discusses causes of sick building syndrome, describes building investigation procedures and provides general solutions for resolving the syndrome.
- Indoor Air Pollution: An Introduction for Health Professionals
    - Assists health professionals (especially the primary care physician) in diagnosis of patient symptoms that could be related to an indoor air pollution problem. Addresses the health problems that may be caused by contaminants encountered daily in the home and office. Organized according to pollutant or pollutant groups such as environmental tobacco smoke, VOCs, biological pollutants and sick building syndrome, this booklet lists key signs and symptoms from exposure to these pollutants, provides a diagnostic checklist and quick reference summary, and includes suggestions for remedial action. Also includes references for information contained in each section. This booklet was coauthored with the American Lung Association,

the American Medical Association and the U.S. Consumer Product Safety Commission.

Last updated on May 16, 2016



SVOCs and Health

Semivolatile organic compounds (SVOCs) are a subgroup of VOCs that tend to have a higher molecular weight and higher boiling point temperature than other VOCs. A comprehensive review of SVOCs in indoor environments, from which much of the below material is taken, is provided by Weschler and Nazaroff [92]. An additional overview is provided by Xu and Zhang [93]. Compounds considered to be SVOCs have boiling points ranging from 240-260 °C to 380-400°C. Despite these high boiling points, SVOCs such as plasticizers can vaporize from the surfaces of products containing them because they are not "bound" to the materials. They are present partly as gaseous airborne chemicals and partly as chemicals adsorbed on (attached reversibly to, without bonding) indoor surfaces and onto microscopic airborne and settled particles, although those with large molecular weight and low vapor pressures tend to predominate on surfaces and in dust [92]. SVOCs are ubiquitous in indoor environments, as they are released from multiple sources in the home and adsorb to all indoor surfaces.

People are exposed to SVOCs via multiple routes. They inhale air containing gaseous SVOCs or SVOCs adsorbed on airborne particles, they touch SVOC coated surfaces, they ingest dust containing SVOCs (a particularly important exposure route for infants), and the foods they eat contain SVOCs. Also, it has recently been recognized that airborne SVOCs can adsorb directly on the skin and then move into the body [94].

SVOCs that may be found in homes and other buildings, and also as detectable body burdens of occupants, include pesticides, plasticizers, and flame retardants. It has been calculated that many SVOCs have long persistence indoors. Even if the original sources are removed, SVOCs will persist indoors for weeks or years because all indoor surfaces have become coated with SVOCs. Calculations also indicate that human uptake of SVOCs by absorption on the skin can be much larger than previously thought, potentially equal to or in some cases exceeding intake through inhalation [95].

Less is known about SVOCs than VOCs in general, not because they are less important, but because they are more challenging to measure. Some SVOCs such as polycyclic aromatic hydrocarbons (PAHs), produced by combustion, have caused human exposures for millennia, whereas the manmade SVOCs have been present only on the order of decades. SVOCs are included as active ingredients in cleaning agents, pesticides, and personal care products, as well as substantial additives in floor coverings, furnishings, and electronic components. Food can also be a substantial, and sometimes, dominant sources of people's uptake of SVOCs. Because they are released slowly from their sources, adsorb readily onto surfaces, and can remain indoors for years after they are introduced, even if the original source is removed, they can be compared to outdoor persistent organic pollutants. The U.S. population has measurable levels in their bodies of more than 100 SVOCs (e.g., 95th

percentile values of 360, 270, 90, and 81mg/g creatinine in urine for triclosan, DEHP, BBzP, and DBP, respectively, with body burdens of many others in common use not known, because they are not routinely measured.

The health effects of a specific SVOC depend on its chemical nature and on the degree of exposure, which can occur through a combination of ingestion, respiration, and skin absorption. Individual susceptibility factors can also be important, and much attention has been focused on the developing fetus. Knowledge about effects from indoor exposures to SVOCs is limited. Some SVOCs are known to be toxic, such as dioxins and pentachlorophenol; some are no longer used because of demonstrated or suspected health effects, such as polybrominated biphenyls; and concerns are emerging about potential health effects of others. Health effects now associated with specific SVOCs include allergic symptoms, retarded reproductive development, and altered semen quality with phthalates, and lower birth weight with perfluorooctane sulfonate and perfluorooctanoate. For instance, Hsu [96] found that allergy or asthma in children was associated in a significant, dose-response manner with increased levels of benzylbutyl phthalate in home dust. A broad and growing concern is about SVOCs with chemical structures that may mimic human hormones and increase or decrease endocrine activity. These SVOCs, called endocrine disrupting chemicals (EDCs), are discussed further below.

A substantial discussion of the occurrence, physical properties, and dynamics of SVOCs in indoor environments, with the goal of understanding human exposures indoors, is provided by Weschler and Nazaroff [92], along with information on typical U.S. body burdens of many compounds.

SVOCS that are considered to be endocrine-disrupting chemicals (EDCs) include polybrominated flame retardants, phthalates, pesticides, antimicrobials, and polycyclic aromatic hydrocarbons. EDCs can interfere with the "synthesis, secretion, transport, activity, or elimination of natural hormones," which can cause a wide range of developmental and reproductive abnormalities [97, 98]. Scientific observations suggest that, acting through a very wide variety of pathways in the body, EDCs may contribute to cancer, diabetes, obesity, and infertility [99] as well as autism and attention deficit disorder, although supporting evidence is limited. Exposures to EDCs in utero, when the fetus is developing, are of special concern because the development process may be affected by very small amounts of EDCs. Additional information on the range of EDCs, the evidence for their health effects, proposed mechanisms of action, and the difficulties of assessing the risks, is provided by Casals-Casas et al. [98].

Many brominated and chlorinated flame retardants, commonly used in many household items and electronics, are SVOCs and have been identified in the body burdens (e.g., in blood or urine) of human populations. They have also been associated with adverse health effects in animals and humans, including endocrine and thyroid disruption, immunotoxicity, reproductive toxicity, cancer, and adverse effects on fetal and child development and neurologic function [100]. Polybrominated diphenyl ethers (PBDEs) and other flame retardants have been banned or phased out by manufacturers because of their environmental persistence and toxicity, but they have been replaced by other chemicals of similar structure but unknown toxicity. A summary of the known toxic effects of commonly used flame retardants is provided by Shaw et al. [100]. A review of animal studies of brominated flame retardants, on the other hand, found that the available animal evidence is not sufficient to document a causal relationship between early exposures and later motor activity effects, and noted that human studies are generally lacking [101].

A recent review of the literature on indoor exposures and asthma exacerbations [46] summarized current evidence related to plasticizers and pesticides. For plasticizers, recent studies have demonstrated associations between the presence of plastic materials in homes and increased allergies, respiratory symptoms, and diagnosed asthma [40, 102-104], but have not evaluated effects on asthma exacerbation. No evidence was identified on the relationship of indoor pesticide exposures and asthma exacerbation. The review concluded that there was inadequate or insufficient evidence to determine whether or not an association existed between non-occupational exposure to plasticizers, or to pesticides, and exacerbations of asthma.

Summary

For SVOCs overall, there is persuasive evidence that they can cause a variety of adverse health effects, if the exposures are sufficient. The SVOC situation indoors is complex and continually changing. There are multiple SVOCs, multiple routes of exposures to SVOCs, and the timing of SVOC exposures can be important, with in-utero exposures a particular concern for EDCs. There is an ongoing process in which some SVOCs, strongly suspected to pose health risks, are phased out by manufacturers and replaced with new SVOCs with unknown risks. For some SVOCs, foods are considered the predominant source of exposure. At present, the extent of health risks from indoor airborne SVOCs, and from people's contact with indoor SVOC-contaminated surfaces, is uncertain.

Target Compound List – Semi-volatile Organic Compounds

Source: https://www.epa.gov/sites/production/files/2015-06/documents/8270.pdf

1,2-Dichlorobenzene
1,2,4-Trichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
2-Chloronaphthalene
2-Chlorophenol
2-Methylnaphthalene
2-Methylphenol
2-Nitroaniline
2-Nitrophenol
2,2'-oxybis (1-Chloropropane)
2,4-Dichlorophenol
2,4-Dimethylphenol
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
2,6-Dinitrotoluene
3-Nitroaniline
3,3'-Dichlorobenzidine
4-Bromophenyl-phenylether
4-Chloro-3-methylphenol
4-Chloroaniline
4-Chlorophenyl-phenyl ether
4-Methylphenol
4-Nitroaniline
4-Nitrophenol
4,6-Dinitro-2-methylphenol
Acenaphthene
Acenaphthylene
Anthracene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
bis(2-Chloroethoxy)-methane
bis(2-Chloroethyl) ether
bis(2-Ethylhexyl)phthalate
Butylbenzylphthalate
Carbazole
Chrysene
Di-n-butylphthalate
Di-n-octylphthalate
Dibenz(a,h)anthracene
Dibenzofuran
Diethylphthalate
Dimethylphthalate
Fluoranthene
Fluorene
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachloroethane
Indeno(1,2,3-cd)pyrene
Isophorone
N-Nitroso-di-n-propylamine
N-nitrosodiphenylamine
Naphthalene
Nitrobenzene
Pentachlorophenol
Phenanthrene
Phenol
Pyrene

Polycyclic Aromatic Hydrocarbons (PAHs) - ToxFAQs™

This fact sheet answers the most frequently asked health questions (FAQs) about polycyclic aromatic hydrocarbons (PAHs). For more information, call the CDC Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to polycyclic aromatic hydrocarbons usually occurs by breathing air contaminated by wild fires or coal tar, or by eating foods that have been grilled. PAHs have been found in at least 600 of the 1,430 National Priorities List (NPL) sites identified by the Environmental Protection Agency (EPA).

What are polycyclic aromatic hydrocarbons?

(Pronounced pŏl′ĭ-sī′klĭk ăr′ə-măt′ĭk hī′drə-kar′bənz)

Polycyclic aromatic hydrocarbons (PAHs) are a group of over 100 different chemicals that are formed during the incomplete burning of coal, oil and gas, garbage, or other organic substances like tobacco or charbroiled meat. PAHs are usually found as a mixture containing two or more of these compounds, such as soot.

Some PAHs are manufactured. These pure PAHs usually exist as colorless, white, or pale yellow-green solids. PAHs are found in coal tar, crude oil, creosote, and roofing tar, but a few are used in medicines or to make dyes, plastics, and pesticides.

What happens to PAHs when they enter the environment?

- PAHs enter the air mostly as releases from volcanoes, forest fires, burning coal, and automobile exhaust.
- PAHs can occur in air attached to dust particles.
- Some PAH particles can readily evaporate into the air from soil or surface waters.
- PAHs can break down by reacting with sunlight and other chemicals in the air, over a period of days to weeks.
- PAHs enter water through discharges from industrial and wastewater treatment plants.
- Most PAHs do not dissolve easily in water. They stick to solid particles and settle to the bottoms of lakes or rivers.
- Microorganisms can break down PAHs in soil or water after a period of weeks to months.
- In soils, PAHs are most likely to stick tightly to particles; certain PAHs move through soil to contaminate underground water.
- PAH contents of plants and animals may be much higher than PAH contents of soil or water in which they live.

How might I be exposed to PAHs?

- Breathing air containing PAHs in the workplace of coking, coal-tar, and asphalt production plants; smokehouses; and municipal trash incineration facilities.
- Breathing air containing PAHs from cigarette smoke, wood smoke, vehicle exhausts, asphalt roads, or agricultural burn smoke.
- Coming in contact with air, water, or soil near hazardous waste sites.
- Eating grilled or charred meats; contaminated cereals, flour, bread, vegetables, fruits, meats; and processed or pickled foods.
- Drinking contaminated water or cow's milk.
- Nursing infants of mothers living near hazardous waste sites may be exposed to PAHs through their mother's milk.

Polycyclic Aromatic Hydrocarbons

How can PAHs affect my health?

Mice that were fed high levels of one PAH during pregnancy had difficulty reproducing and so did their offspring. These offspring also had higher rates of birth defects and lower body weights. It is not known whether these effects occur in people.

Animal studies have also shown that PAHs can cause harmful effects on the skin, body fluids, and ability to fight disease after both short- and long-term exposure. But these effects have not been seen in people.

How likely are PAHs to cause cancer?

The Department of Health and Human Services (DHHS) has determined that some PAHs may reasonably be expected to be carcinogens.

Some people who have breathed or touched mixtures of PAHs and other chemicals for long periods of time have developed cancer. Some PAHs have caused cancer in laboratory animals when they breathed air containing them (lung cancer), ingested them in food (stomach cancer), or had them applied to their skin (skin cancer).

Is there a medical test to show whether I've been exposed to PAHs?

In the body, PAHs are changed into chemicals that can attach to substances within the body. There are special tests that can detect PAHs attached to these substances in body tissues or blood. However, these tests cannot tell whether any health effects will occur or find out the extent or source of your exposure to the PAHs. The tests aren't usually available in your doctor's office because special equipment is needed to conduct them.

Has the federal government made recommendations to protect human health?

The Occupational Safety and Health Administration (OSHA) has set a limit of 0.2 milligrams of PAHs per cubic meter of air (0.2 mg/m^3). The OSHA Permissible Exposure Limit (PEL) for mineral oil mist that contains PAHs is 5 mg/m^3 averaged over an 8-hour exposure period.

The National Institute for Occupational Safety and Health (NIOSH) recommends that the average workplace air levels for coal tar products not exceed 0.1 mg/m^3 for a 10-hour workday, within a 40-hour workweek. There are other limits for workplace exposure for things that contain PAHs, such as coal, coal tar, and mineral oil.

Glossary

Carcinogen: A substance that can cause cancer.

Ingest: Take food or drink into your body.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for polycyclic aromatic hydrocarbons. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

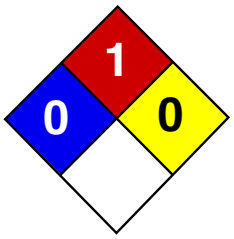
Where can I get more information?

For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Human Health Sciences, 1600 Clifton Road NE, Mailstop F-57, Atlanta, GA 30329-4027.

Phone: 1-800-232-4636.

ToxFAQs™ Internet address via WWW is http://www.atsdr.cdc.gov/toxfaqs/index.asp.

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.



Health	0
Fire	1
Reactivity	0
Personal Protection	E

Material Safety Data Sheet
Anthracene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Anthracene

Catalog Codes: SLA3670

CAS#: 120-12-7

RTECS: CA9350000

TSCA: TSCA 8(b) inventory: Anthracene

CI#: Not available.

Synonym:

Chemical Formula: C14H10

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Anthracene	120-12-7	100

Toxicological Data on Ingredients: Anthracene LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of skin contact (irritant, sensitizer), of eye contact (irritant), of inhalation. Hazardous in case of skin contact (permeator), of ingestion. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:
Very hazardous in case of skin contact (irritant, sensitizer), of eye contact (irritant), of inhalation. Hazardous in case of skin contact (permeator), of ingestion. CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH, 1 (Clear evidence.) by NTP, + (Proven.) by OSHA. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to kidneys, lungs, mucous membranes. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.

Skin Contact:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation: Not available.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: 540°C (1004°F)

Flash Points: CLOSED CUP: 121°C (249.8°F).

Flammable Limits: LOWER: 0.6%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances: Not available.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:
Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not breathe dust. In case of insufficient ventilation, wear suitable respiratory equipment. If you feel unwell, seek medical attention and show the label when possible. Avoid contact with skin and eyes.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection:
Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: Not available.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid.

Odor: Slight.

Taste: Not available.

Molecular Weight: 178.22 g/mole

Color: Colorless.

pH (1% soln/water): Not applicable.

Boiling Point: 342°C (647.6°F)

Melting Point: 218°C (424.4°F)

Critical Temperature: Not available.

Specific Gravity: 1.25 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: 6.15 (Air = 1)

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Insoluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Not available.

Corrosivity: Not available.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
LD50: Not available. LC50: Not available.

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH, 1 (Clear evidence.) by NTP, + (Proven.) by OSHA. Causes damage to the following organs: kidneys, lungs, mucous membranes.

Other Toxic Effects on Humans:
Very hazardous in case of skin contact (irritant, sensitizer), of inhalation. Hazardous in case of skin contact (permeator), of ingestion.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are more toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations:
Pennsylvania RTK: Anthracene Massachusetts RTK: Anthracene TSCA 8(b) inventory: Anthracene SARA 313 toxic chemical notification and release reporting: Anthracene CERCLA: Hazardous substances.: Anthracene

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada): CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R38- Irritating to skin. R41- Risk of serious damage to eyes. R43- May cause sensitization by skin contact. R45- May cause cancer.

HMIS (U.S.A.):

Health Hazard: 0

Fire Hazard: 1

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 0

Flammability: 1

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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Last Updated: 05/21/2013 12:00 PM

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SAFETY DATA SHEET

Version 5.7
Revision Date 06/02/2016
Print Date 07/28/2016

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name : Benz[*a*]anthracene

Product Number : B2209
Brand : Aldrich
Index-No. : 601-033-00-9

CAS-No. : 56-55-3

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
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832
Fax : +1 800-325-5052

1.4 Emergency telephone number

Emergency Phone # : (314) 776-6555

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Carcinogenicity (Category 1B), H350
Acute aquatic toxicity (Category 1), H400
Chronic aquatic toxicity (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

Hazard statement(s)
H350 May cause 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.
P273 Avoid release to the environment.
P281 Use personal protective equipment as required.
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

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Synonyms : 1,2-Benzanthracene
Tetraphene

Formula : $C_{18}H_{12}$
Molecular weight : 228.29 g/mol
CAS-No. : 56-55-3
EC-No. : 200-280-6
Index-No. : 601-033-00-9

Hazardous components

Component	Classification	Concentration
Benz[a]anthracene		
	Carc. 1B; Aquatic Acute 1; Aquatic Chronic 1; H350, H410	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

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.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
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

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
No data available

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
No data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, 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.

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.
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.

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components 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 CE 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
Impervious 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).

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.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: solid
b)	Odour	No data available
c)	Odour Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point/range: 157 - 159 °C (315 - 318 °F)
f)	Initial boiling point and boiling range	437.6 °C (819.7 °F)
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)	Vapour pressure	No data available
l)	Vapour 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)	Auto-ignition 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
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
Hazardous decomposition products formed under fire conditions. - Nature of decomposition products not known.
Other decomposition products - No data available
In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
No data available

Inhalation: No data available

Dermal: No data available

LD50 Intravenous - Rat - > 200 mg/kg

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitisation
No data available

Germ cell mutagenicity
No data available

Carcinogenicity

This product is or contains a component that has been reported to be probably carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification.

Possible human carcinogen

IARC:	2B - Group 2B: Possibly carcinogenic to humans (Benz[a]anthracene)
IARC:	2B - Group 2B: Possibly carcinogenic to humans (Benz[a]anthracene)
NTP:	Reasonably anticipated to be a human carcinogen (Benz[a]anthracene)
NTP:	Reasonably anticipated to be a human carcinogen (Benz[a]anthracene)
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.
	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

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.

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
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life.

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.

14. TRANSPORT INFORMATION

DOT (US)
Not dangerous goods

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. (Benz[a]anthracene)
Marine pollutant:yes

IATA
UN number: 3077 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Benz[a]anthracene)

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.

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
Benz[a]anthracene	56-55-3	1993-04-24

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Benz[a]anthracene	56-55-3	1993-04-24

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Benz[a]anthracene	56-55-3	1993-04-24

New Jersey Right To Know Components

	CAS-No.	Revision Date
Benz[a]anthracene	56-55-3	1993-04-24

California Prop. 65 Components

WARNING! This product contains a chemical known to the State of California to cause cancer. Benz[a]anthracene	CAS-No. 56-55-3	Revision Date 2007-09-28
WARNING! This product contains a chemical known to the State of California to cause cancer. Benz[a]anthracene	CAS-No. 56-55-3	Revision Date 2007-09-28

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

Aquatic Acute	Acute aquatic toxicity
Aquatic Chronic	Chronic aquatic toxicity
Carc.	Carcinogenicity
H350	May cause cancer.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

HMIS Rating

Health hazard:	2
Chronic Health Hazard:	*
Flammability:	0
Physical Hazard	0

NFPA Rating

Health hazard:	2
Fire Hazard:	0
Reactivity Hazard:	0

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.

Preparation Information

Sigma-Aldrich Corporation
Product Safety – Americas Region
1-800-521-8956

Version: 5.7 Revision Date: 06/02/2016 Print Date: 07/28/2016

Fisher Scientific

Part of Thermo Fisher Scientific

SAFETY DATA SHEET

Revision Date 10-Feb-2015 **Revision Number** 1

1. Identification

Product Name **Benzo[a]pyrene, 98%**

Cat No. : **AC105600010; AC105601000**

Synonyms Benzo[def]chrysene.; 3,4-Benzopyrene; 3,4-Benzpyrene

Recommended Use Laboratory chemicals.

Uses advised against No Information available

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Entity / Business Name
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)

Skin Sensitization	Category 1
Germ Cell Mutagenicity	Category 1A
Carcinogenicity	Category 1A
Reproductive Toxicity	Category 1A

Label Elements

Signal Word
Danger

Hazard Statements
May cause an allergic skin reaction
May cause genetic defects
May cause cancer
May damage fertility or 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

3. Composition / information on ingredients

Component	CAS-No	Weight %
Benzo[a]pyrene	50-32-8	> 96

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/effects 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
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
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
2	0	0	N/A

6. Accidental release measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment.
Environmental Precautions	See Section 12 for additional ecological information. Avoid release to the environment. Collect spillage.
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

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH
Benzo[a]pyrene		TWA: 0.2 mg/m^3	

Component	Quebec	Mexico OEL (TWA)	Ontario TWAEV
Benzo[a]pyrene	TWA: 0.005 mg/m^3		TWA:

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	
Melting Point/Range	175 179 °C
Boiling Point/Range	°C @ 760 mmHg
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	No information available
Vapor Density	No information available
Relative Density	No information available
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	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 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
Benzo[a]pyrene	50-32-8	Group 1	Reasonably Anticipated	A2	X	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 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 No information available

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
Do not empty into drains.

Persistence and Degradability No information available
Bioaccumulation/ Accumulation No information available.

Mobility No information available.

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 SUBSTANCE,SOLID, N.O.S.
- **Hazard Class** 9
- **Packing Group** III

TDG
- **UN-No** UN3077
- **Proper Shipping Name** ENVIRONMENTALLY HAZARDOUS SUBSTANCE,SOLID, N.O.S.
- **Hazard Class** 9
- **Packing Group** III

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 SUBSTANCE,SOLID, N.O.S.
Hazard Class 9
Packing Group III

15. Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Benzo[a]pyrene	X	X	-	200-028-5	-		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 %
Benzo[a]pyrene	50-32-8	> 96	0.1

SARA 311/312 Hazardous Categorization

Acute Health Hazard Yes
Chronic Health Hazard Yes
Fire Hazard No
Sudden Release of Pressure Hazard No
Reactive Hazard No

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 does not contain any 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

State Right-to-Know

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

Canada
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

WHMIS Hazard Class D2A Very toxic materials

16. Other information

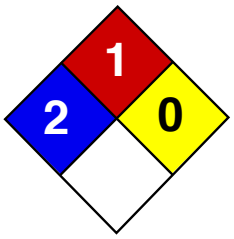
Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Revision Date 10-Feb-2015
Print Date 10-Feb-2015
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 on 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 guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as 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 material or in any process, unless specified in the text.

End of SDS





Health	2
Fire	1
Reactivity	0
Personal Protection	C

Material Safety Data Sheet
Pyrene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Pyrene

Catalog Codes: SLP3868

CAS#: 129-00-00

RTECS: UR2450000

TSCA: TSCA 8(b) inventory: Pyrene

CI#: Not available.

Synonym: Benzo(D,E,F)phenanthrene

Chemical Name: Pyrene

Chemical Formula: C16-H10

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Pyrene	129-00-00	100

Toxicological Data on Ingredients: Pyrene: ORAL (LD50): Acute: 2700 mg/kg [Rat]. 800 mg/kg [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, permeator).

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. Repeated or prolonged exposure is not known to aggravate medical condition.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact: Not available.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation: Not available.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Slightly flammable to flammable in presence of heat, of combustible materials. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Slightly explosive in presence of heat. Non-explosive in presence of open flames and sparks.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:
Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Avoid contact with eyes. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested,

seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

Storage:
Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above 24°C (75.2°F). Preferably refrigerate.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Safety glasses. Synthetic apron. Gloves (impervious).

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: Not available.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Crystalline solid. Powdered solid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 202.26 g/mole

Color: Yellow.

pH (1% soln/water): Not applicable.

Boiling Point: 404°C (759.2°F)

Melting Point: 151.2°C (304.2°F)

Critical Temperature: Not available.

Specific Gravity: 1.271 @ 23 C (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 4.9

Ionicity (in Water): Not available.

Dispersion Properties:
Is not dispersed in cold water, hot water. See solubility in diethyl ether.

Solubility:
Soluble in diethyl ether. Insoluble in cold water, hot water. Pyrene is fairly soluble in organic solvents. It is soluble in alcohol, benzene, carbon disulfide, ether, petroleum ether, and toluene

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Excess heat, incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Not available.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Inhalation. Ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): 800 mg/kg [Mouse].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast.

Other Toxic Effects on Humans:
Hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, permeator).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:
May affect genetic material (mutagenic). May cause cancer (tumorigenic) according to animal data.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: May cause skin irritation. May be absorbed through skin. Eyes: May cause eye irritation. Conjunctival irritation may be noted. Inhalation: May cause respiratory tract irritaiton. Ingestion: May cause gastrointestinal tract irritation. May affect behavior/Central Nervous System (excitation and muscel spasicity), liver and urinary system, and immune system, and blood.

Section 12: Ecological Information

Ecotoxicity: Ecotoxicity in water (LC50): 1.8 mg/l 48 hours [Water flea].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations:
Connecticut carcinogen reporting list.: Pyrene Illinois chemical safety act: Pyrene New York release reporting list: Pyrene Pennsylvania RTK: Pyrene Massachusetts RTK: Pyrene Massachusetts spill list: Pyrene New Jersey: Pyrene New Jersey spill list: Pyrene Louisiana RTK reporting list: Pyrene Louisiana spill reporting: Pyrene California Director's list of Hazardous Substances: Pyrene TSCA 8(b) inventory: Pyrene TSCA 8(a) CAIR: Pyrene TSCA 8(d) H and S data reporting: Pyrene: June 1, 1987-June1, 1997 SARA 302/304/311/312 extremely hazardous substances: Pyrene CERCLA: Hazardous substances.: Pyrene: 5000 lbs. (2268 kg)

Other Regulations: EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): Not controlled under WHMIS (Canada).

DSCL (EEC):
R20/21/22- Harmful by inhalation, in contact with skin and if swallowed. S2- Keep out of the reach of children. S36/37- Wear suitable protective clothing and gloves. S46- If swallowed, seek medical advice immediately and show this container or label.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 1

Reactivity: 0

Personal Protection: C

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 1

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves (impervious). Synthetic apron. Not applicable. Safety glasses.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/09/2005 06:14 PM

Last Updated: 05/21/2013 12:00 PM

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lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if ScienceLab.com has been advised of the possibility of such damages.

EPA United States Environmental Protection Agency

Types of Pesticide Ingredients

Pesticide active ingredients are described by the types of pests they control or how they work. People often use the term "pesticide" to refer only to insecticides, but it actually applies to all the substances used to control pests.

Well known pesticides include:

- insecticides,
- herbicides,
- rodenticides, and
- fungicides.

Less well-known pesticides include:

- disinfectants,
- attractants,
- plant defoliants,
- swimming pool treatments, and
- plant growth regulators.

The following list will help you understand the wide range of types of pesticides:

- **Algicides** kill algae in lakes, canals, swimming pools, water tanks, and other sites.
- **Antifoulants** kill or repel organisms that attach to underwater surfaces, such as barnacles that cling to boat bottoms.
- **Antimicrobials** kill microorganisms such as bacteria and viruses.
- **Attractants** lure pests to a trap or bait, for example, attract an insect or rodent into a trap. (However, food is not considered a pesticide when used as an attractant.)
- **Biopesticides** are derived from natural materials such as animals, plants, bacteria, and certain minerals.
- **Biocides** kill microorganisms.
- **Defoliants** cause leaves or foliage to drop from a plant, usually to facilitate harvest.
- **Desiccants** promote drying of living tissues, such as unwanted plant tops.
- **Disinfectants and sanitizers** kill or inactivate disease-producing microorganisms on inanimate objects.
- **Fungicides** kill fungi (including blights, mildews, molds, and rusts).
- **Fumigants** produce gas or vapor intended to destroy pests, for example in buildings or soil.
- **Herbicides** kill weeds and other plants that grow where they are not wanted.
- **Insect growth regulators** disrupt the molting, maturing from pupal stage to adult, or other life processes of insects.
- **Insecticides** kill insects and other arthropods.
- **Miticides** (also called acaricides) kill mites that feed on plants and animals.

- **Microbial pesticides** are microorganisms that kill, inhibit, or out-compete pests, including insects or other microorganism pests.
- **Molluscicides** kill snails and slugs.
- **Nematicides** kill nematodes (microscopic, worm-like organisms that feed on plant roots).
- **Ovicides** kill eggs of insects and mites.
- **Pheromones** disrupt the mating behavior of insects.
- **Plant growth regulators** alter the expected growth, flowering, or reproduction rate of plants (does not include fertilizers).
- **Plant Incorporated Protectants** are substances that plants produce from genetic material that has been added to the plant.
- **Repellents** repel pests, including insects (such as mosquitoes) and birds.
- **Rodenticides** control mice and other rodents.

Last updated on January 7, 2016

ATSDR Agency for Toxic Substances & Disease Registry

Polychlorinated Biphenyls (PCBs)

CAS ID #: 1336-36-3, 11097-69-1

Affected Organ Systems: Dermal (Skin), Developmental (effects during periods when organs are developing) , Endocrine (Glands and Hormones), Hepatic (Liver), Immunological (Immune System), Neurological (Nervous System)

Cancer Classification: NTP: Reasonably Anticipated to be a Human Carcinogen

Chemical Classification: Dioxins, Furans, PCBs (contain phenyl rings of carbon atoms), Pesticides (chemicals used for killing pests, such as rodents, insects, or plants)

Summary: Polychlorinated biphenyls are mixtures of up to 209 individual chlorinated compounds (known as congeners). There are no known natural sources of PCBs. PCBs are either oily liquids or solids that are colorless to light yellow. Some PCBs can exist as a vapor in air. PCBs have no known smell or taste. Many commercial PCB mixtures are known in the U.S. by the trade name Aroclor.PCBs have been used as coolants and lubricants in transformers, capacitors, and other electrical equipment because they don't burn easily and are good insulators. The manufacture of PCBs was stopped in the U.S. in 1977 because of evidence they build up in the environment and can cause harmful health effects. Products made before 1977 that may contain PCBs include old fluorescent lighting fixtures and electrical devices containing PCB capacitors, and old microscope and hydraulic oils.

Community Members



ToxFAQs (/toxfaqs/tf.asp?id=140&tid=26)

Fact sheet that answers the most frequently asked questions about a contaminant and its health effects.

Public Health Statement (/phs/phs.asp?id=139&tid=26)

Summary about a hazardous substance taken from Chapter One of its respective ATSDR Toxicological Profile.

National Report on Human Exposure to Environmental Chemicals (http://www.cdc.gov/exposurereport/)

Provides an ongoing assessment of the exposure of the U.S. population to environmental chemicals using biomonitoring.

Toxicological and Health Professionals



Toxicological Profile (/toxprofiles/tp.asp?id=142&tid=26)

Succinctly characterizes the toxicologic and adverse health effects information for a hazardous substance.

Addendum to the Profile (PDF, 1325KB*) (http://www.atsdr.cdc.gov/toxprofiles/pcbs_addendum.pdf)

Addendum to the Toxicological Profile for Polychlorinated Biphenyls (PCBs) (April 2011)

Priority List of Hazardous Substances (/spl/)

Prioritization of substances based on a combination of their frequency, toxicity, and potential for human exposure at National Priorities List (NPL) sites.

Minimal Risk Levels (MRL) (/mrls/mrllist.asp#26tag)

The MRL is an estimate of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse, non-cancer health effects over a specified duration of exposure. The information in this MRL serves as a screening tool to help public health professionals decide where to look more closely to evaluate possible risk of adverse health effects from human exposure.

Interaction Profiles (/interactionprofiles/index.asp)

Succintly characterizes the toxicologic and adverse health effects information for mixtures of hazardous substances.

- Page last reviewed: March 3, 2011
- Page last updated: March 3, 2011
- Content source: Agency for Toxic Substances and Disease Registry (http://www.atsdr.cdc.gov)

Agency for Toxic Substances and Disease Registry, 4770 Buford Hwy NE, Atlanta, GA 30341
Contact CDC: 800-232-4636 / TTY: 888-232-6348

USA.gov Government Made Easy

Heavy Metals Toxicity and the Environment

Source: US National Library of Medicine National Institutes of Health

Abstract

Heavy metals are naturally occurring elements that have a high atomic weight and a density at least 5 times greater than that of water. Their multiple industrial, domestic, agricultural, medical and technological applications have led to their wide distribution in the environment, raising concerns over their potential effects on human health and the environment. Their toxicity depends on several factors including the dose, route of exposure, and chemical species, as well as the age, gender, genetics, and nutritional status of exposed individuals. Because of their high degree of toxicity, arsenic, cadmium, chromium, lead, and mercury rank among the priority metals that are of public health significance. These metallic elements are considered systemic toxicants that are known to induce multiple organ damage, even at lower levels of exposure. They are also classified as human carcinogens (known or probable) according to the U.S. Environmental Protection Agency, and the International Agency for Research on Cancer.

This review provides an analysis of their environmental occurrence, production and use, potential for human exposure, and molecular mechanisms of toxicity, genotoxicity, and carcinogenicity.

Introduction

Heavy metals are defined as metallic elements that have a relatively high density compared to water. With the assumption that heaviness and toxicity are inter-related, heavy metals also include metalloids, such as arsenic, that are able to induce toxicity at low level of exposure. In recent years, there has been an increasing ecological and global public health concern associated with environmental contamination by these metals. Also, human exposure has risen dramatically as a result of an exponential increase of their use in several industrial, agricultural, domestic and technological applications. Reported sources of heavy metals in the environment include geogenic, industrial, agricultural, pharmaceutical, domestic effluents, and atmospheric sources. Environmental pollution is very prominent in point source areas such as mining, foundries and smelters, and other metal-based industrial operations.

Although heavy metals are naturally occurring elements that are found throughout the earth's crust, most environmental contamination and human exposure result from anthropogenic activities such as mining and smelting operations, industrial production and use, and domestic and agricultural use of metals and metal-containing compounds. Environmental contamination can also occur through metal corrosion, atmospheric deposition, soil erosion of metal ions and leaching of heavy metals, sediment re-suspension and metal evaporation from water resources to soil and ground water. Natural phenomena such as weathering and volcanic eruptions have also been reported to significantly contribute to heavy metal pollution. Industrial sources include metal processing in refineries, coal burning in power plants, petroleum combustion, nuclear power stations and high tension lines, plastics, textiles, microelectronics, wood preservation and paper processing plants.

It has been reported that metals such as cobalt (Co), copper (Cu), chromium (Cr), iron (Fe), magnesium (Mg), manganese (Mn), molybdenum (Mo), nickel (Ni), selenium (Se) and zinc (Zn) are essential nutrients that are required for various biochemical and physiological functions. Inadequate supply of these micro-nutrients results in a variety of deficiency diseases or syndromes.

Heavy metals are also considered as trace elements because of their presence in trace concentrations (ppb range to less than 10 ppm) in various environmental matrices. Their bioavailability is influenced by physical factors such as temperature, phase association, adsorption and sequestration. It is also affected by chemical factors that influence speciation at thermodynamic equilibrium, complexation kinetics, lipid solubility and octanol/water partition coefficients. Biological factors such as species characteristics, trophic interactions, and biochemical/physiological adaptation, also play an important role.

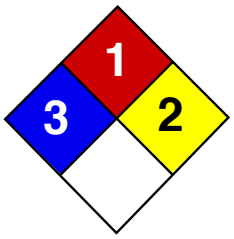
The essential heavy metals exert biochemical and physiological functions in plants and animals. They are important constituents of several key enzymes and play important roles in various oxidation-reduction reactions. Copper for example serves as an essential co-factor for several oxidative stress-related enzymes including catalase, superoxide dismutase, peroxidase, cytochrome c oxidases, ferroxidases, monoamine oxidase, and dopamine β-monooxygenase. Hence, it is an essential nutrient that is incorporated into a number of metalloenzymes involved in hemoglobin formation, carbohydrate metabolism, catecholamine biosynthesis, and cross-linking of collagen, elastin, and hair keratin. The ability of copper to cycle between an oxidized state, Cu(II), and reduced state, Cu(I), is used by cuproenzymes involved in redox reactions. However, it is this property of copper that also makes it potentially toxic because the transitions between Cu(II) and Cu(I) can result in the generation of superoxide and hydroxyl radicals. Also, excessive exposure to copper has been linked to cellular damage leading to Wilson disease in humans. Similar to copper, several other essential elements are required for biologic functioning, however, an excess amount of such metals produces cellular and tissue damage leading to a variety of adverse effects and human diseases. For some including chromium and copper, there is a very narrow range of concentrations between beneficial and toxic effects. Other metals such as aluminium (Al), antinomy (Sb), arsenic (As), barium (Ba), beryllium (Be), bismuth (Bi), cadmium (Cd), gallium (Ga), germanium (Ge), gold (Au), indium (In), lead (Pb), lithium (Li), mercury (Hg), nickel (Ni), platinum (Pt), silver (Ag), strontium (Sr), tellurium (Te), thallium (Tl), tin (Sn), titanium (Ti), vanadium (V) and uranium (U) have no established biological functions and are considered as non-essential metals.

In biological systems, heavy metals have been reported to affect cellular organelles and components such as cell membrane, mitochondrial, lysosome, endoplasmic reticulum, nuclei, and some enzymes involved in metabolism, detoxification, and damage repair. Metal ions have been found to interact with cell components such as DNA and nuclear proteins, causing DNA damage and conformational changes that may lead to cell cycle modulation, carcinogenesis or apoptosis. Several studies from our laboratory have demonstrated that reactive oxygen species (ROS) production and oxidative stress play a key role in the toxicity and carcinogenicity of metals such as arsenic, cadmium, chromium, lead, and mercury. Because of their high degree of toxicity, these five elements rank among the priority metals that are of great public health significance.

They are all systemic toxicants that are known to induce multiple organ damage, even at lower levels of exposure. According to the United States Environmental Protection Agency (U.S. EPA), and the International Agency for Research on Cancer (IARC), these metals are also classified as either “known” or “probable” human carcinogens based on epidemiological and experimental studies showing an association between exposure and cancer incidence in humans and animals.

Heavy metal-induced toxicity and carcinogenicity involves many mechanistic aspects, some of which are not clearly elucidated or understood. However, each metal is known to have unique features and physic-chemical properties that confer to its specific toxicological mechanisms of action. This review provides an analysis of the environmental occurrence, production and use, potential for human exposure, and molecular mechanisms of toxicity, genotoxicity, and carcinogenicity of arsenic, cadmium, chromium, lead, and mercury.





Health	3
Fire	1
Reactivity	2
Personal Protection	E

Material Safety Data Sheet
Arsenic MSDS

Section 1: Chemical Product and Company Identification

Product Name: Arsenic

Catalog Codes: SLA1006

CAS#: 7440-38-2

RTECS: CG0525000

TSCA: TSCA 8(b) inventory: Arsenic

CI#: Not applicable.

Synonym:

Chemical Name: Arsenic

Chemical Formula: As

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Arsenic	7440-38-2	100

Toxicological Data on Ingredients: Arsenic: ORAL (LD50): Acute: 763 mg/kg [Rat]. 145 mg/kg [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant), of eye contact (irritant).

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to kidneys, lungs, the nervous system, mucous membranes. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances: Flammable in presence of open flames and sparks, of heat, of oxidizing materials.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards:
Material in powder form, capable of creating a dust explosion. When heated to decomposition it emits highly toxic fumes.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Use appropriate tools to put the spilled solid in a convenient waste disposal container.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable

protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, acids, moisture.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.01 from ACGIH (TLV) [United States] [1995] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Lustrous solid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 74.92 g/mole

Color: Silvery.

pH (1% soln/water): Not applicable.

Boiling Point: Not available.

Melting Point: Sublimation temperature: 615°C (1139°F)

Critical Temperature: Not available.

Specific Gravity: 5.72 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Insoluble in cold water, hot water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Reactive with oxidizing agents, acids, moisture.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Inhalation. Ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): 145 mg/kg [Mouse].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH. Causes damage to the following organs: kidneys, lungs, the nervous system, mucous membranes.

Other Toxic Effects on Humans:
Very hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are as toxic as the original product.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: CLASS 6.1: Poisonous material.

Identification: : Arsenic UNNA: UN1558 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Arsenic California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Arsenic Pennsylvania RTK: Arsenic Massachusetts RTK: Arsenic TSCA 8(b) inventory: Arsenic

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):
CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R22- Harmful if swallowed. R45- May cause cancer.

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 1

Reactivity: 2

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 1

Reactivity: 2

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

Section 16: Other Information

References:
-Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. -Liste des produits purs tératogènes, mutagènes, cancérogènes. Répertoire toxicologique de la Commission de la Santé et de la Sécurité du Travail du Québec. -Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec. -SAX, N.I. Dangerous Properties of Indutrial Materials. Toronto, Van Nostrand Reinold, 6e ed. 1984. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Guide de la loi et du règlement sur le transport des marchandises dangeureuses au canada. Centre de conformité internatinal Ltée. 1986.

Other Special Considerations: Not available.

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Beryllium: the essentials



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Beryllium is a Group 2 (IIA) element. It is a metal and has a high melting point. At ordinary temperatures, beryllium resists oxidation in air. Beryllium compounds are very toxic. Its ability to scratch glass is probably due to the formation of a thin layer of the oxide. Aquamarine and emerald are precious forms of the mineral beryl, $[Be_3Al_2(SiO_3)_6]$.

Its chemistry is dominated by its tendency to lose an electron to form Be^{2+}. As this ion is so small it is highly polarising, to the extent that its compounds are rather covalent. Its small size means that its complexes tend to be tetrahedral rahter than octahedral.

- Name (../periodicity/name_english/): beryllium
- Symbol (../periodicity/name_english/): Be
- Atomic number (../periodicity/atomic_number/): 4
- Relative atomic mass (A_r) (../periodicity/atomic_weight/): 9.012182 (3)
- Standard state (../periodicity/standard_state/): solid at 298 K
- Colour (../periodicity/standard_state/): lead grey
- Classification (../periodicity/classification/): Metallic

- Group in periodic table (../periodicity/group_number/): 2
- Group name (../periodicity/group_number/): Alkaline earth metal
- Period in periodic table (../periodicity/group_number/): 2
- Block in periodic table (../periodicity/group_number/): s-block
- Electron shell structure (../periodicity/electron_shell_structure/): 2.2
- CAS Registry ID (../periodicity/cas_registry_id/): 7440-41-7

Beryllium: historical information

Beryllium was discovered (../periodicity/discovery/) by Nicholas Louis Vauquelin (1763-1829) in 1797 at France.
Origin of name (../periodicity/discovery/): from the Greek word "*beryllos*" meaning "*beryl*".
Emeralds and beryl were both known to early Egyptians but it was not realised until the end of the 18th century that they are the same mineral, now called beryllium aluminium silicate: $[Be_3Al_2(SiO_3)_6]$. The element was recognised by M.-L. Vauquelin in 1798 in beryl and emeralds. The metal was isolated much later on in 1828 by Friederich Wöhler (and independently by A.-A.B. Bussy) by the action of potassium on $BeCl_2$ in a platinum crucible.

Beryllium around us Read more » (./geology.html)

Beryllium has no biological role. In fact, compounds containing beryllium are poisonous.

Beryllium is found in a number of minerals. The most important minerals are beryl, [$Be_3Al_2(SiO_3)_6$], which is often found as hexagonal prisms, and bertrandite [$4BeO.2SiO_2.H_2O$]. Aquamarine and emerald are precious forms of beryl.

Abundances for beryllium in a number of different environments. More abundance data » (./geology.html)

Location	ppb by weight	ppb by atoms	Links
Universe (../periodicity/abundance_universe/)	1	0.1	 (../periodicity/abundance_universe/)
Crustal rocks (../periodicity/abundance_crust/)	1900	4300	 (../periodicity/abundance_crust/)
Human (../periodicity/abundance_humans/)	0.4 ppb by weight	0.3 atoms relative to C = 1000000	 (../periodicity/abundance_humans/)

Physical properties Read more » (./physics.html)

 Density of solid (../periodicity/density/): 1848 kg m^{-3}

 Molar volume (../periodicity/molar_volume/): 4.85 cm^3

 Thermal conductivity (../periodicity/thermal_conductivity/): 190 W m^{-1} K^{-1}

Heat properties Read more » (./thermochemistry.html)

 Melting point (../periodicity/melting_point/): 1560 [1287 °C (2349 °F)] K

 Boiling point (../periodicity/boiling_point/): 2742 [2469 °C (4476 °F)] K

 Enthalpy of fusion (../periodicity/enthalpy_fusion/): 7.95 kJ mol^{-1}

Crystal structure Read more » (./crystal_structure.html)

The solid state structure of beryllium is: hcp (hexagonal close-packed).

Beryllium: orbital properties Read more » (./atoms.html)

Beryllium atoms have 4 electrons and the **shell structure (../periodicity/electron_shell_structure/)** is 2.2. The **ground state electronic configuration of neutral Beryllium is (../periodicity/electronic_configuration/)** [**He**].**2s**^{2} and the **term symbol of Beryllium (../periodicity/term_symbol/) is** $^1\mathbf{S}_0$.


Pauling electronegativity (../periodicity/electronegativity_pauling/): 1.57 (Pauling units)


First ionisation energy (../periodicity/ionisation_energy_1/): 899.5 kJ mol^{-1}


Second ionisation energy (../periodicity/ionisation_energy_2/): 1757.1 kJ mol^{-1}

Isolation

Isolation (../periodicity/isolation/): beryllium metal is available commercially and so would never normally be made in the laboratory. Its extraction from ores is complex. The mineral beryl, [$Be_3Al_2(SiO_3)_6$] is the most important source of beryllium. It is roasted with sodimu hexafluorosilicate, Na_2SiF_6, at 700°C to form beryllium fluoride. This is water soluble and the beryllium may be precipitated as the hydroxide $Be(OH)_2$ by adjustment of the pH to 12.

Pure beryllium may be obtained by electrolysis of molten $BeCl_2$ containing some NaCl. The salt is added since the molten $BeCl_2$ conducts very poorly. Another method involves the reduction of beryllium fluoride with magnesium at 1300°C.

$$BeF_2 + Mg \rightarrow MgF_2 + Be$$

Beryllium isotopes Read more » (./isotopes.html)

Table. Stables isotopes of beryllium (../periodicity/isotopes/).

Isotope	Mass /Da	Natural abund. (atom %)	Nuclear spin (I)	Nuclear magnetic moment (μ/μ_N)
^{9}Be	9.012 182 1(4)	100	$^3/_2$	-1.1779


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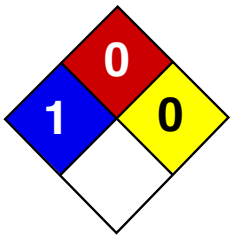

Health	1
Fire	0
Reactivity	0
Personal Protection	E

Material Safety Data Sheet
Lead MSDS

Section 1: Chemical Product and Company Identification

Product Name: Lead

Catalog Codes: SLL1291, SLL1669, SLL1081, SLL1459, SLL1834

CAS#: 7439-92-1

RTECS: OF7525000

TSCA: TSCA 8(b) inventory: Lead

CI#: Not available.

Synonym: Lead Metal, granular; Lead Metal, foil; Lead Metal, sheet; Lead Metal, shot

Chemical Name: Lead

Chemical Formula: Pb

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Lead	7439-92-1	100

Toxicological Data on Ingredients: Lead LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects: Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects:
Slightly hazardous in case of skin contact (permeator). CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation: Not available.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances: Non-flammable in presence of open flames and sparks, of shocks, of heat.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards: When heated to decomposition it emits highly toxic fumes of lead.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:
Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable

protective clothing. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.05 (mg/m3) from ACGIH (TLV) [United States] TWA: 0.05 (mg/m3) from OSHA (PEL) [United States] TWA: 0.03 (mg/m3) from NIOSH [United States] TWA: 0.05 (mg/m3) [Canada]Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Metal solid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 207.21 g/mole

Color: Bluish-white. Silvery. Gray

pH (1% soln/water): Not applicable.

Boiling Point: 1740°C (3164°F)

Melting Point: 327.43°C (621.4°F)

Critical Temperature: Not available.

Specific Gravity: 11.3 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Insoluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials, excess heat

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Can react vigorously with oxidizing materials. Incompatible with sodium carbide, chlorine trifluoride, trioxane + hydrogen peroxide, ammonium nitrate, sodium azide, disodium acetylide, sodium acetylide, hot concentrated nitric acid, hot concentrated hydrochloric acid, hot concentrated sulfuric acid, zirconium.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Inhalation. Ingestion.

Toxicity to Animals:
LD50: Not available. LC50: Not available.

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC. May cause damage to the following organs: blood, kidneys, central nervous system (CNS).

Other Toxic Effects on Humans: Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans:
Acute Potential: Skin: Lead metal granules or dust: May cause skin irritation by mechanical action. Lead metal foil, shot or sheets: Not likely to cause skin irritation Eyes: Lead metal granules or dust: Can irritate eyes by mechanical action. Lead metal foil, shot or sheets: No hazard. Will not cause eye irritation. Inhalation: In an industrial setting, exposure to lead mainly occurs from inhalation of dust or fumes. Lead dust or fumes: Can irritate the upper respiratory tract (nose, throat) as well as the bronchi and lungsby mechanical action. Lead dust can be absorbed through the respiratory system. However, inhaled lead does not accumulate in the lungs. All of an inhaled dose is eventually abssorbed or transferred to the gastrointestinal tract. Inhalation effects of exposure to fumes or dust of inorganic lead may not develop quickly. Symptoms may include metallic taste, chest pain, decreased physical fitness, fatigue, sleep disturbance, headache, irritability, reduces memory, mood and personality changes, aching bones and muscles, constipation, abdominal pains, decreasing appetite. Inhalation of large amounts may lead to ataxia, deliriuim, convulsions/seizures, coma, and death. Lead metal foil, shot, or sheets: Not an inhalation hazard unless metal is heated. If metal is heated, fumes will be released. Inhalation of these fumes may cause "fume metal fever", which is characterized by flu-like symptoms. Symptoms may include metallic taste, fever, nausea, vomiting, chills, cough, weakness, chest pain, generalized muscle pain/aches, and increased white blood cell count. Ingestion: Lead metal granules or dust: The symptoms of lead poisoning include abdominal pain or cramps (lead cholic), spasms, nausea, vomiting, headache, muscle weakness, hallucinations, distorted perceptions, "lead line" on the gums, metallic taste, loss of appetite, insomnia, dizziness and other symptoms similar to that of inhalation. Acute poisoning may result in high lead levels in the blood and urine, shock, coma and death in extreme cases. Lead metal foil, shot or sheets: Not an ingestion hazard for usual industrial handling.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Lead California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (female) which would require a warning under the statute: Lead California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (male) which would require a warning under the statute: Lead California prop. 65 (no significant risk level): Lead: 0.0005 mg/day (value) California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Lead California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Lead Connecticut hazardous material survey.: Lead Illinois toxic substances disclosure to employee act: Lead Illinois chemical safety act: Lead New York release reporting list: Lead Rhode Island RTK hazardous substances: Lead Pennsylvania RTK: Lead

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R20/22- Harmful by inhalation and if swallowed. R33- Danger of cumulative effects. R61- May cause harm to the unborn child. R62- Possible risk of impaired fertility. S36/37- Wear suitable protective clothing and gloves. S44- If you feel unwell, seek medical advice (show the label when possible). S53- Avoid exposure - obtain special instructions before use.

HMIS (U.S.A.):

Health Hazard: 1

Fire Hazard: 0

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 1

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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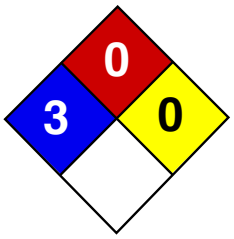



Material Safety Data Sheet
Mercury MSDS

Section 1: Chemical Product and Company Identification

Product Name: Mercury

Catalog Codes: SLM3505, SLM1363

CAS#: 7439-97-6

RTECS: OV4550000

TSCA: TSCA 8(b) inventory: Mercury

CI#: Not applicable.

Synonym: Quick Silver; Colloidal Mercury; Metallic Mercury; Liquid Silver; Hydragyrum

Chemical Name: Mercury

Chemical Formula: Hg

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Mercury	7439-97-6	100

Toxicological Data on Ingredients: Mercury LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Hazardous in case of skin contact (corrosive, permeator). Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:
Hazardous in case of skin contact (permeator). CARCINOGENIC EFFECTS: Classified A5 (Not suspected for human.) by ACGIH. 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, liver, brain, peripheral nervous system, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation.

Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention immediately.

Skin Contact:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: Not applicable.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards:
When thrown into mercury vapor, boron phosphodiiodide ignites at once. Flame forms with chlorine jet over mercury surface at 200 deg to 300 deg C. Mercury undergoes hazardous reactions in the presence of heat and sparks or ignition.

Special Remarks on Explosion Hazards:
A violent exothermic reaction or possible explosion occurs when mercury comes in contact with lithium and rubidium. CHLORINE DIOXIDE & LIQUID HG, WHEN MIXED, EXPLODE VIOLENTLY. Mercury and Ammonia can produce an

explosive compound. A mixture of the dry carbonyl and oxygen will explode on vigorous shaking with mercury. Methyl azide in the presence of mercury was shown to be potentially explosive.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Corrosive liquid. Poisonous liquid. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep container dry. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, metals.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above 25°C (77°F).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.025 from ACGIH (TLV) [United States] SKIN TWA: 0.05 CEIL: 0.1 (mg/m3) from OSHA (PEL) [United States] Inhalation TWA: 0.025 (mg/m3) [United Kingdom (UK)] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid. (Heavy liquid)

Odor: Odorless.

Taste: Not available.

Molecular Weight: 200.59 g/mole

Color: Silver-white

pH (1% soln/water): Not available.

Boiling Point: 356.73°C (674.1°F)

Melting Point: -38.87°C (-38°F)

Critical Temperature: 1462°C (2663.6°F)

Specific Gravity: 13.55 (Water = 1)

Vapor Pressure: Not available.

Vapor Density: 6.93 (Air = 1)

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Very slightly soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents, metals.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Ground mixtures of sodium carbide and mercury, aluminum, lead, or iron can react vigorously. A violent exothermic reaction or possible explosion occurs when mercury comes in contact with lithium and rubidium. Incompatible with boron diiodophosphide; ethylene oxide; metal oxides, metals(aluminum, potassium, lithium, sodium, rubidium); methyl azide; methylsilane, oxygen; oxidants(bromine, peroxyformic acid, chlorine dioxide, nitric acid, tetracarbonynickel, nitromethane, silver perchlorate, chlorates, sulfuric acid, nitrates,); tetracarbonylnickel, oxygen, acetylinic compounds, ammonia, ethylene oxide, methylsiliane, calcium,

Special Remarks on Corrosivity:
The high mobility and tendency to dispersion exhibited by mercury, and the ease with which it forms alloys (amalga) with many laboratory and electrical contact metals, can cause severe corrosion problems in laboratories. Special precautions: Mercury can attack copper and copper alloy materials.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
LD50: Not available. LC50: Not available.

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A5 (Not suspected for human.) by ACGIH. 3 (Not classifiable for human.) by IARC. May cause damage to the following organs: blood, kidneys, liver, brain, peripheral nervous system, central nervous system (CNS).

Other Toxic Effects on Humans:
Very hazardous in case of skin contact (irritant), of ingestion, of inhalation. Hazardous in case of skin contact (corrosive, permeator).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:

May affect genetic material. May cause cancer based on animal data. Passes through the placental barrier in animal. May cause adverse reproductive effects(paternal effects- spermatogenesis; effects on fertility - fetotoxicity, post-implantation mortality), and birth defects.

Special Remarks on other Toxic Effects on Humans:

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Class 8: Corrosive material

Identification: : Mercury UNNA: 2809 PG: III

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Mercury California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Mercury Connecticut hazardous material survey.: Mercury Illinois toxic substances disclosure to employee act: Mercury Illinois chemical safety act: Mercury New York acutely hazardous substances: Mercury Rhode Island RTK hazardous substances: Mercury Pennsylvania RTK: Mercury Minnesota: Mercury Massachusetts RTK: Mercury New Jersey: Mercury New Jersey spill list: Mercury Louisiana spill reporting: Mercury California Director's List of Hazardous Substances.: Mercury TSCA 8(b) inventory: Mercury SARA 313 toxic chemical notification and release reporting: Mercury CERCLA: Hazardous substances.: Mercury: 1 lbs. (0.4536 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC). CLASS E: Corrosive liquid.

DSCL (EEC):
R23- Toxic by inhalation. R33- Danger of cumulative effects. R38- Irritating to skin. R41- Risk of serious damage to eyes. R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. S2- Keep out of the

reach of children. S7- Keep container tightly closed. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S39- Wear eye/face protection. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). S46- If swallowed, seek medical advice immediately and show this container or label. 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.

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 0

Reactivity: 0

Personal Protection:

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Face shield.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:22 PM

Last Updated: 05/21/2013 12:00 PM

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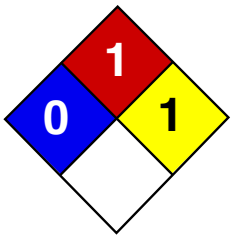

Health	1
Fire	1
Reactivity	1
Personal Protection	E

Material Safety Data Sheet
Zinc Metal MSDS

Section 1: Chemical Product and Company Identification

Product Name: Zinc Metal

Catalog Codes: SLZ1054, SLZ1159, SLZ1267, SLZ1099, SLZ1204

CAS#: 7440-66-6

RTECS: ZG8600000

TSCA: TSCA 8(b) inventory: Zinc Metal

CI#: Not applicable.

Synonym: Zinc Metal Sheets; Zinc Metal Shot; Zinc Metal Strips

Chemical Name: Zinc Metal

Chemical Formula: Zn

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Zinc Metal	7440-66-6	100

Toxicological Data on Ingredients: Zinc Metal LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects: Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. Repeated or prolonged exposure is not known to aggravate medical condition.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation: Not available.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 480°C (896°F)

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances:
Slightly flammable to flammable in presence of open flames and sparks, of heat, of oxidizing materials, of acids, of alkalis, of moisture. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
Flammable solid. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Special Remarks on Fire Hazards:
Zinc + NaOH causes ignition. Oxidation of zinc by potassium proceeds with incandescence. Residues from zinc dust /acetic acid reduction operations may ignite after long delay if discarded into waste bins with paper. Incandescent reaction when Zinc and Arsenic or Tellurium, or Selenium are combined. When hydrazine mononitrate is heated in contact with zinc, a flamming decomposition occurs at temperatures a little above its melting point. Contact with acids and alkali hydroxides (sodium hydroxide, postasium hydroxide, calcium hydroxide, etc.) results in evolution of hydrogen with sufficient heat of reaction to ignite the hydrogen gas. Zinc foil ignites if traces of moisture are present. It is water reactive and produces flammable gases on contact with water. It may ignite on contact with water or moist air.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:
Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:
Flammable solid that, in contact with water, emits flammable gases. Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Cover with dry earth, sand or other non-combustible material. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not breathe dust. Keep away from incompatibles such as oxidizing agents, acids, alkalis, moisture.

Storage:
Keep container tightly closed. Keep container in a cool, well-ventilated area. Keep from any possible contact with water. Do not allow water to get into container because of violent reaction.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: Not available.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Lustrous solid. Metal solid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 65.39 g/mole

Color: Bluish-grey

pH (1% soln/water): Not applicable.

Boiling Point: 907°C (1664.6°F)

Melting Point: 419°C (786.2°F)

Critical Temperature: Not available.

Specific Gravity: Not available.

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Insoluble in cold water, hot water, methanol, diethyl ether, n-octanol, acetone.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Excess heat, incompatible materials, moisture

Incompatibility with various substances:
Reactive with oxidizing agents, acids, alkalis. Slightly reactive to reactive with moisture. The product may react violently with water to emit flammable but non toxic gases.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Incompatible with acids, halogenated hydrocarbons, NH_4NO_3, barium oxide, $Ba(NO_3)_2$, Cadmium, CS_2, chlorates, Cl_2, CrO_3, F_2, Hydroxylamine, $Pb(N_3)_2$, $MnCl_2$, HNO_3, performic acid, $KClO_3$, KNO_3, N_2O_2, Selenium, $NaClO_3$, Na_2O_2, Sulfur, Te, water, $(NH_4)_2S$, As_2O_3, CS_2, $CaCl_2$, chlorinated rubber, catalytic metals, halocarbons, o-nitroanisole, nitrobenzene, nonmetals, oxidants, paint primer base, pentacarbonoyliron, transition metal halides, seleninyl bromide, HCl, H_2SO_4, (Mg +$Ba(NO_3)_2$ +BaO_2), (ethyl acetoacetate +tribromoneopentyl alcohol. Contact with Alkali Hydroxides(Sodium Hydroxide, Potassium Hydroxide, Calcium Hydroxide, etc) results in evolution of hydrogen. Ammonium nitrate + zinc + water causes a violent reaction with evolution of steam and zinc oxide. May react with water.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Inhalation. Ingestion.

Toxicity to Animals:
LD50: Not available. LC50: Not available.

Chronic Effects on Humans: Not available.

Other Toxic Effects on Humans: Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: May cause skin irritation. Dermal exposure to zinc may produce leg pains, fatigue, anorexia and weight loss. Eyes: May cause eye irritation. Ingestion: May be harmul if swallowed. May cause digestive tract irritation with tightness in throat, nausea, vomiting, diarrhea, loss of appetite, malaise, abdominal pain. fever, and chills. May affect behavior/central nervous system and autonomic nervous system with ataxia, lethargy, staggering gait, mild derrangement in cerebellar function, lightheadness, dizzness, irritability, muscular stiffness, and pain. May also affect blood. Inhalation: Inhalation of zinc dust or fumes may cause respiratory tract and mucous membrane irritation with cough and chest pain. It can also cause "metal fume fever", a flu-like condition characterized appearance of chills, headached fever, maliase, fatigue, sweating, extreme thirst, aches in the legs and chest, and difficulty in breathing. A sweet taste may also be be present in metal fume fever, as well as a dry throat, aches, nausea, and vomiting, and pale grey cyanosis. The toxicological properties of this substance have not been fully investisgated.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: Not available.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations:
New York release reporting list: Zinc Metal Rhode Island RTK hazardous substances: Zinc Metal Pennsylvania RTK: Zinc Metal Florida: Zinc Metal Michigan critical material: Zinc Metal Massachusetts RTK: Zinc Metal New Jersey: Zinc Metal California Director's List of Hazardous Substances: Zinc Metal TSCA 8(b) inventory: Zinc Metal TSCA 12(b) one time export: Zinc Metal SARA 313 toxic chemical notification and release reporting: Zinc Metal CERCLA: Hazardous substances.: Zinc Metal: 1000 lbs. (453.6 kg)

Other Regulations: EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): Not Available

DSCL (EEC):
R15- Contact with water liberates extremely flammable gases. R17- Spontaneously flammable in air. S7/8- Keep container tightly closed and dry.

HMIS (U.S.A.):

Health Hazard: 1

Fire Hazard: 1

Reactivity: 1

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 0

Flammability: 1

Reactivity: 1

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Safety glasses.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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Last Updated: 05/21/2013 12:00 PM

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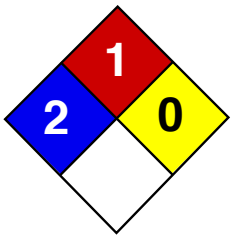

Health	2
Fire	1
Reactivity	0
Personal Protection	E

Material Safety Data Sheet
Copper MSDS

Section 1: Chemical Product and Company Identification

Product Name: Copper

Catalog Codes: SLC4939, SLC2152, SLC3943, SLC1150, SLC2941, SLC4729, SLC1936, SLC3727, SLC5515

CAS#: 7440-50-8

RTECS: GL5325000

TSCA: TSCA 8(b) inventory: Copper

CI#: Not available.

Synonym:

Chemical Name: Not available.

Chemical Formula: Cu

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Copper	7440-50-8	100

Toxicological Data on Ingredients: Copper LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of ingestion. Hazardous in case of eye contact (irritant), of inhalation. Slightly hazardous in case of skin contact (irritant).

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to lungs, mucous membranes. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact: Check for and remove any contact lenses. Do not use an eye ointment. Seek medical attention.

Skin Contact:
After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact: Not available.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation: Not available.

Ingestion:
Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances: Not available.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:
Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not breathe dust. Avoid contact with eyes Wear suitable protective clothing In case of insufficient ventilation, wear suitable respiratory equipment If you feel unwell, seek medical attention and show the label when possible.

Storage:
Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool, well-ventilated place. Combustible materials should be stored away from extreme heat and away from strong oxidizing agents.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection:
Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 1 (mg/m3) from ACGIH [1990] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid.

Odor: Not available.

Taste: Not available.

Molecular Weight: 63.54 g/mole

Color: Not available.

pH (1% soln/water): Not applicable.

Boiling Point: 2595°C (4703°F)

Melting Point: 1083°C (1981.4°F)

Critical Temperature: Not available.

Specific Gravity: 8.94 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Insoluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Not available.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
LD50: Not available. LC50: Not available.

Chronic Effects on Humans: The substance is toxic to lungs, mucous membranes.

Other Toxic Effects on Humans:
Very hazardous in case of ingestion. Hazardous in case of inhalation. Slightly hazardous in case of skin contact (irritant).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Human: passes through the placenta, excreted in maternal milk.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are as toxic as the original product.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Marine Pollutant

Section 15: Other Regulatory Information

Federal and State Regulations:
Pennsylvania RTK: Copper Massachusetts RTK: Copper TSCA 8(b) inventory: Copper CERCLA: Hazardous substances.: Copper

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada): CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC): R36- Irritating to eyes.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 1

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 1

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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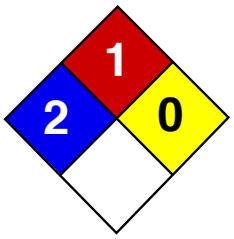

Health	2
Fire	1
Reactivity	0
Personal Protection	E

Material Safety Data Sheet
Chromium MSDS

Section 1: Chemical Product and Company Identification

Product Name: Chromium

Catalog Codes: SLC4711, SLC3709

CAS#: 7440-47-3

RTECS: GB4200000

TSCA: TSCA 8(b) inventory: Chromium

CI#: Not applicable.

Synonym: Chromium metal; Chrome; Chromium Metal Chips 2" and finer

Chemical Name: Chromium

Chemical Formula: Cr

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Chromium	7440-47-3	100

Toxicological Data on Ingredients: Chromium LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of skin contact (irritant), of eye contact (irritant), of inhalation. Slightly hazardous in case of ingestion.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys, lungs, liver, upper respiratory tract. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation: Not available.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: 580°C (1076°F)

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances:
Slightly flammable to flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards:
Moderate fire hazard when it is in the form of a dust (powder) and burns rapidly when heated in flame. Chromium is attacked vigorously by fused potassium chlorate producing vivid incandescence. Pyrophoric chromium unites with nitric oxide with incandescence. Incandescent reaction with nitrogen oxide or sulfur dioxide.

Special Remarks on Explosion Hazards:
Powdered Chromium metal +fused ammonium nitrate may react violently or explosively. Powdered Chromium will explode spontaneously in air.

Section 6: Accidental Release Measures

Small Spill:
Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids, alkalis.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection:
Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.5 (mg/m3) from ACGIH (TLV) [United States] TWA: 1 (mg/m3) from OSHA (PEL) [United States] TWA: 0.5 (mg/m3) from NIOSH [United States] TWA: 0.5 (mg/m3) [United Kingdom (UK)] TWA: 0.5 (mg/m3) [Canada]Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Metal solid.)

Odor: Odorless.

Taste: Not available.

Molecular Weight: 52 g/mole

Color: Silver-white to Grey.

pH (1% soln/water): Not applicable.

Boiling Point: 2642°C (4787.6°F)

Melting Point: 1900°C (3452°F) +/- !0 deg. C

Critical Temperature: Not available.

Specific Gravity: 7.14 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility:
Insoluble in cold water, hot water. Soluble in acids (except Nitric), and strong alkalies.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Excess heat, incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents, acids, alkalis.

Corrosivity: Not available.

Special Remarks on Reactivity:
Incompatible with molten Lithium at 180 deg. C, hydrogen peroxide, hydrochloric acid, sulfuric acid, most caustic alkalies and alkali carbonates, potassium chlorate, sulfur dioxide, nitrogen oxide, bromine pentafluoride. It may react violently or ignite with bromine pentafluoride. Chromium is rapidly attacked by fused sodium hydroxide + potassium nitrate. Potentially hazardous incompatibility with strong oxidizers.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Inhalation. Ingestion.

Toxicity to Animals:
LD50: Not available. LC50: Not available.

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. May cause damage to the following organs: kidneys, lungs, liver, upper respiratory tract.

Other Toxic Effects on Humans:
Hazardous in case of skin contact (irritant), of inhalation. Slightly hazardous in case of ingestion.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:
May cause cancer based on animal data. There is no evidence that exposure to trivalent chromium causes cancer in man.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: May cause skin irritation. Eyes: May cause mechanical eye irritation. Inhalation: May cause irritation of the respiratory tract and mucous membranes of the respiratory tract. Ingestion: May cause gastrointestinal tract irritation with nausea, vomiting, diarrhea. Chronic Potential Health Effects: Inhalation: The effects of chronic exposure include irritation , sneezing, reddness of the throat, bronchospasm, asthma, cough, polyps, chronic inflammation, emphysema, chronic bronchitis, pharyngitis, bronchopneumonia, pneumoconoisis. Effects on the nose from chronic chromium exposure include irritation, ulceration, and perforation of the nasal septum. Inflammation and ulceration of the larynx may also occur. Ingestion or Inhalation: Chronic exposure may cause liver and kidney damage.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations:
Connecticut hazardous material survey.: Chromium Illinois toxic substances disclosure to employee act: Chromium Illinois chemical safety act: Chromium New York release reporting list: Chromium Rhode Island RTK hazardous substances: Chromium Pennsylvania RTK: Chromium Minnesota: Chromium Michigan critical material: Chromium Massachusetts RTK: Chromium Massachusetts spill list: Chromium New Jersey: Chromium New Jersey spill list: Chromium Louisiana spill reporting: Chromium California Director's List of Hazardous Substances: Chromium TSCA 8(b) inventory: Chromium SARA 313 toxic chemical notification and release reporting: Chromium CERCLA: Hazardous substances.: Chromium: 5000 lbs. (2268 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): Not controlled under WHMIS (Canada).

DSCL (EEC):
R40- Limited evidence of carcinogenic effect S36/37/39- Wear suitable protective clothing, gloves and eye/face protection. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 1

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 1

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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The MSDS Hyper Glossary





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Risk Phrases (R-phrases)

Definition

The European Union (EU) requires that **risk phrases (R-phrases)** appear on each label and safety data sheet for hazardous chemicals. R-phrases consist of the letter R followed by a number. The precise meaning of each of these appears in the table below.

Labels will also have symbols or pictograms (see CHIP), but the R-phrase specifies the *particular* danger(s). For example, sodium metal may have a large F and flame icon on the label, but the particular risk is denoted by R14/15 and R34 which correspond to "Reacts violently with water liberating highly flammable gases" and "causes burns".

Safety phrases (S-phrases) for handling precautions are also part of the same requirements.

Additional Info

Both risk and safety phrases are being phased out in favor of Hazard Statements and Precautionary Statements under the EU's implementation of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) per EU Regulation (EC) 1272/2008 (6.6 MB PDF file).

More than one R-phrase may appear on an MSDS. These are usually presented in combination, such as R36/37/38. In the first table below, single phrases are given, and in the second table, combinations are given. In general, no more than four R-phrases should be sufficient to adequately communicate the risks of a particular material. The R phrases selected should be those applicable to the substance(s) present in the concentration which gives rise to the most severe classification (for example, T+ versus T).

Conversions from R-statements to H-statements can be found starting on page 1352 of EU Regulation (EC) 1272/2008.

Single Risk Phrases	
R1	Explosive when dry.
R2	Risk of explosion by shock, friction, fire or other sources of ignition.

R3	Extreme risk of explosion by shock, friction, fire or other sources of ignition.
R4	Forms very sensitive explosive metallic compounds.
R5	Heating may cause an explosion.
R6	Explosive with or without contact with air.
R7	May cause fire.
R8	Contact with combustible material may cause fire.
R9	Explosive when mixed with combustible material.
R10	Flammable.
R11	Highly flammable.
R12	Extremely flammable.
R13	Extremely flammable liquified gas. This code is no longer in use.
R14	Reacts violently with water.
R15	Contact with water liberates highly flammable gases.
R16	Explosive when mixed with oxidizing substances.
R17	Spontaneously flammable in air.
R18	In use, may form flammable/explosive vapour-air mixture.
R19	May form explosive peroxides.
R20	Harmful by inhalation.
R21	Harmful in contact with skin.
R22	Harmful if swallowed.
R23	Toxic by inhalation.
R24	Toxic in contact with skin.
R25	Toxic if swallowed.
R26	Very toxic by inhalation.
R27	Very toxic in contact with skin.
R28	Very toxic if swallowed.
R29	Contact with water liberates toxic gases.
R30	Can become highly flammable in use.
R31	Contact with acids liberates toxic gas.
R32	Contact with acids liberates Very toxic gas.
R33	Danger of cumulative effects.
R34	Causes burns.
R35	Causes severe burns.
R36	Irritating to eyes.
R37	Irritating to respiratory system.
R38	Irritating to skin.
R39	Danger of very serious irreversible effects.
R40	Possible risks of irreversible effects.
R41	Risk of serious damage to eyes.

R42	May cause sensitization by inhalation.
R43	May cause sensitization by skin contact.
R44	Risk of explosion if heated under confinement.
R45	May cause cancer.
R46	May cause heritable genetic damage.
R47	May cause birth defects.
R48	Danger of serious damage to health by prolonged exposure.
R49	May cause cancer by inhalation.
R50	Very toxic to aquatic organisms.
R51	Toxic to aquatic organisms.
R52	Harmful to aquatic organisms.
R53	May cause long-term adverse effects in the aquatic environment.
R54	Toxic to flora.
R55	Toxic to fauna.
R56	Toxic to soil organisms.
R57	Toxic to bees.
R58	May cause long-term adverse effects in the environment.
R59	Dangerous for the ozone layer.
R60	May impair fertility.
R61	May cause harm to the unborn child.
R62	Possible risk of impaired fertility.
R63	Possible risk of harm to the unborn child.
R64	May cause harm to breastfed babies.

Multiple Risk Phrases	
R14/15	Reacts violently with water liberating highly flammable gases.
R15/29	Contact with water liberates toxic, highly flammable gas.
R20/21	Harmful by inhalation and in contact with skin.
R20/22	Harmful by inhalation and if swallowed.
R20/21/22	Harmful by inhalation, in contact with skin and if swallowed.
R21/22	Harmful in contact with skin and if swallowed.
R23/24	Toxic by inhalation and in contact with skin.
R23/25	Toxic by inhalation and if swallowed.
R23/24/25	Toxic by inhalation, in contact with skin and if swallowed.
R24/25	Toxic in contact with skin and if swallowed.
R26/27	Very toxic by inhalation and in contact with skin.
R26/28	Very toxic by inhalation and if swallowed.
R26/27/28	Very toxic by inhalation, in contact with skin and if swallowed.
R27/28	Very toxic in contact with skin and if swallowed.

R36/37	Irritating to eyes and respiratory system.
R36/38	Irritating to eyes and skin.
R36/37/38	Irritating to eyes, respiratory system and skin.
R37/38	Irritating to respiratory system and skin.
R39/23	Toxic: danger of very serious irreversible effects through inhalation.
R39/24	Toxic: danger of very serious irreversible effects in contact with skin.
R39/25	Toxic: danger of very serious irreversible effects if swallowed.
R39/23/24	Toxic: danger of very serious irreversible effects through inhalation and in contact with skin.
R39/23/25	Toxic: danger of very serious irreversible effects through inhalation and if swallowed.
R39/24/25	Toxic: danger of very serious irreversible effects in contact with skin and if swallowed.
R39/23/24/25	Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.
R39/26	Very toxic: danger of very serious irreversible effects through inhalation.
R39/27	Very toxic: danger of very serious irreversible effects in contact with skin.
R39/28	Very toxic: danger of very serious irreversible effects if swallowed.
R39/26/27	Very toxic: danger of very serious irreversible effects through inhalation and in contact with skin.
R39/26/28	Very toxic: danger of very serious irreversible effects through inhalation and if swallowed.
R39/27/28	Very toxic: danger of very serious irreversible effects in contact with skin and if swallowed.
R39/26/27/28	Very toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.
R40/20	Harmful: possible risk of irreversible effects through inhalation.
R40/21	Harmful: possible risk of irreversible effects in contact with skin.
R40/22	Harmful: possible risk of irreversible effects if swallowed.
R40/20/21	Harmful: possible risk of irreversible effects through inhalation and in contact with skin.
R40/20/22	Harmful: possible risk of irreversible effects through inhalation and if swallowed.
R40/21/22	Harmful: possible risk of irreversible effects in contact with skin and if swallowed.
R40/20/21/22	Harmful: possible risk of irreversible effects through inhalation, in contact with skin and if swallowed.
R42/43	May cause sensitization by inhalation and skin contact.
R48/20	Harmful: danger of serious damage to health by prolonged exposure through inhalation.
R48/21	Harmful: danger of serious damage to health by prolonged exposure in contact with skin.
R48/22	Harmful: danger of serious damage to health by prolonged exposure if swallowed.

R48/20/21	Harmful: danger of serious damage to health by prolonged exposure through inhalation and in contact with skin.
R48/20/22	Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.
R48/21/22	Harmful: danger of serious damage to health by prolonged exposure in contact with skin and if swallowed.
R48/20/21/22	Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.
R48/23	Toxic: danger of serious damage to health by prolonged exposure through inhalation.
R48/24	Toxic: danger of serious damage to health by prolonged exposure in contact with skin.
R48/25	Toxic: danger of serious damage to health by prolonged exposure if swallowed.
R48/23/24	Toxic: danger of serious damage to health by prolonged exposure through inhalation and in contact with skin.
R48/23/25	Toxic: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.
R48/24/25	Toxic: danger of serious damage to health by prolonged exposure in contact with skin and if swallowed.
R48/23/24/25	Toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

MSDS Relevance

Risk phrases are not required on labels or MSDS's by U.S. OSHA, however, they are required in the European Community. Therefore, you may see these R phrases on your sheets, especially as manufacturers start following internationally-accepted formats such as the ANSI system. Or you may start seeing H-statements instead of risk phrases as the GHS is phased in.

Remember that risk phrases indicate only the risk of a material, not the safety precautions that you need to follow. For safety information see the safety phrases entry.



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Further Reading

- The Basics of Chemical Safety at the International Occupational Safety and Health Information Centre (CIS) discusses R- and S-phrases, and includes a list of chemicals.
- A R- and S-phrases language conversion tool in 23 languages at SchoolScout24.
- Council Directive 2006/102/EC (PDF file) contains R- and S-phrases as well as other hazard terms in 23 languages.

- The Provisions for Classifying Dangerous Preparations (see Schedule 3) discusses how risks and risk phrases are quantified.

See also: ANSI, CHIP, EINECS, Hazard Statements, safety phrases and the International Section of the MSDS FAQ.

Additional definitions from Google and OneLook.

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Abbreviations from *Instant Tox-Base*

ACGIH - American Conference of Governmental Industrial Hygeniests

AChE - acetylcholinesterase

Action Level - the exposure concentration at which certain provisions of the NIOSH recommended standard must be initiated.

ADI - acceptable daily intake

AIHA - American Industrial Hygiene Associaton

ASTM - American Society for Testing and Materials

brd - domestic or laboratory bird

Bw - body weight

bwd - wild bird species

Ca- potential human carcinogen

CAS - Chemical Abstract Service

CASRN - Chemical Abstract Service Registery Number

cat - adult cat

cc - cubic centimeter

CCINFO - Canadian Centre for Occupational Health and Safety, Toronto, Canada

CDC - Center for Disease Control (in Atlanta, Georgia)

CFR - Code of Federal Regulations

chd - child

Che - cholinesterase

CIB - NIOSH Current Intelligence Bulletin

CIS - Fein-Marquardt and Co., Chemical Information System

ckn - chicken, adult (male or female)

CL - ceiling limit - the concentration that should not be exceeded even instantaneously.

Clear Evidence - when carcinogenicity is demonstrated by studies that are interpreted as showing a chemically related increased incidence of malignant neoplasms, studies that exhibit a substantially increased incidence of benign neoplasms, or studies that exhibit an increased incidence of a combination of malignant and benign neoplasms where each increases with dose.

CODEN - a unique six-letter character code derived from the American Society for Testing and Materials CODEN for Periodical Titles and the CAS Source Index.

ctl - cattle or horse

dBA - decibel, weighted according to the A scale, which approximates the response of the human ear.

dck - duck

DEA - US Drug Enforcement Administration

dog - adult dog

dom - domestic animals such as goat or sheep

DOT - US Department of Transportation

ECG - electrocardiogram

EPA -- US Environmental Protection Agency

Equivocal Evidence - when carcinogenicity is demonstrated by studies that are interpreted as showing a chemically related marginal increase of neoplasms.

fbr - fiber

FR - Federal Register

frg - adult frog

GC - gas chromatography (a technique used to separate mixtures of volatile chemicals from each other)

GI - gastrointestional

gpg - guinea pig

grb - gerbil

ham - hamster

HDT - highest dose tested

HEC - human equivalent concentration

hmn - human

hor - horse or donkey

HPLC - high performance liquid chromatography (a technique used to separate mixtures of nonvolatile chemicals from each other)

HSDB - Hazardous Substances Data Bank

ial - intraaural (ear)

IARC - United Nations International Agency for Research on Cancer.

iat - intraarterial (artery)

ice - intracerebral (cerebrum)

ICR - Institute of Cancer Research

icv - intracervical (cervix)

idr - intradermal (dermis (skin))

idu - intraduodenal (duodenum)

ihl - inhalation (route of exposure used for a chemical)

IMO - International Maritime Organization

imp - surgical implant

ims - intramuscular (muscle)

Inadequate Evidence - when, because of major qualitative or quantitative limitatons, the studies cannot be interpreted as showing eiher the presence or absence of a carcinogenic effect. This indicates that one of two conditions prevailed: (a) there are few pertinent data; or (b) the available studies, while showing evidence of association, do not exclude chance, bias, or confounding.

Inadequate Study - when carcinogenicity is not demonstrated because of major qualitative or quantitative limitations, and the studies cannot be interpreted as valid for showing either the presence or absence of a carcinogenic effect.

inf - human infant

ipc - intraplacental (placenta)

ipl - intrapleural (pleural cavity)

ipr - intraperitoneal (peritoneal cavity)

IRIS - Integrated Risk Information System (Instant EPAs IRIS is one of the publications from Instant Reference Sources, Inc. that is hyperlinked to this publication)

irn - intrarenal (kidney)

isp - intraspinal (spinal canal)

itr - intratracheal (trachea)

itt - intratesticular (testes)

iut - intrauterine (uterus)

ivg - intravaginal (vagina)

ivn - intravenous (vein)

kdy - kidney

kg - killigram (one thousand grams)

L - liter (one thousand milliliters)

LC - lethal concentration

LC50 - Lethal Concentration 50 - a calculated concentration of a substance in air, exposure to which for a specified length of time, is expected to cause the death of 50% of an entire defined experimental population. It is determined from the exposure to the substance of a significant number from that population.

LCLo - Lethal Concentration Low - the lowest concentration of a substance in air, other than LC50, which has been reported to have caused death in humans or animals. The reported concentrations may be entered for periods of exposure which are less than 24 hours (acute) or greater than 24 hours (subacute and chronic).

LD - lethal dose

LD50 - Lethal Dose 50 - a calculated dose of a substance which is expected to cause the death of 50% of an experimental animal population. It is determined from the exposure to the substance by any route other than inhalation of a significant number from that population.

LDLo - Lethal Dose Low - the lowest dose (lower than LD50) of a substance introduced by any route, other than inhalation, over any given period of time, in one or more divided portions and reported to have caused death in humans or animals.

LDT - lowest dose tested

leu - leukemia

Limited Evidence - evidence of carcinogenicity when data suggest a carcinogenic effect but are limited because: (a) the studies involve a single species, strain or experiment; or (b) the experiments are restricted by inadequate dosage levels, inadequate duration of exposure to the agent, inadequate duration of exposure to the agent, inadequate period of follow-up, poor survival, too few animals, or inadequate reporting; or (c) the neoplasms produced often occur spontaneously and, in the past, have been difficult to classify as malignant by histological criteria alone. This indicates that a causal interpretation is credible, but that alternative explanations, such as chance, bias, or confounding, could not adequately be excluded.

LOAEL - lowest observed adverse effect level

lym - lymphatic (pertaining to lymph glands, cells or the lymphatic system)

mam - mammal of an unidentified species

man - adult man

MEV - minimum effective dose

mg - milligram

mky - monkey

MLD - mild - a well defined erythema and slight edema on the skin where the dose was applied.

mmol - millimole

MOD - moderate - moderate to severe erythema and severe edema on the skin where the dose was applied resulting in a raised area of about 1 mm.

MOE - margin of exposure

MSHA - Mine Safety and Health Administration

MTD - maximum tolerated dose

MTL - median threshold limit

mul - multiple

mus - mouse

NCI - National Cancer Institute

ng - nanogram

NIH - National Institues of Health

NIOSH - National Institute of Occupational Safety and Health

NLM - National Library of Medicine

nml - non-mammalian species

nmol - nanomole

No Evidence - when several adequate studies are available which show that, within the limits of the tests used, the chemical is not carcinogenic.

NOEL - no observed effect level

NRC - National Research Council

nse - non-standard exposure (for example, a spill or accidental exposure)

NTIS - National Technical Informational System

NTP - National Toxicology Program

ocu - ocular (eye)

ORD - US EPA Office of Research and Development

orl - oral (through the mouth via feeding or drinking)

oth - other (?)

otr - other (?)

OTS - US EPA Office of Toxic Substances

par - parenteral (skin)

PCB - polychlorinated biphenyls

PEL - OSHA permissible exposure level

pg - picogram

pgn - pigeon

pig - adult pig

pmol - picomole

ppb - parts per billion

pph - parts per hundred

ppm - parts per million

ppt - parts per trillion

qal - laboratory quail

rat - adult male, adult female or unspecified sex of rat

rbt - adult rabbit

rec - rectal (rectum or colon)

REL - NIOSH recommended exposure limi

rns - rinsed

RTECS - Registry of Toxic Effects of Chemical Substances

RV - residual volume

sat - saturated

scu - subcutaneous (under the skin)

SEV - severe - severe erythema (beet redness) to slight eschar formation (injuries in depth) and severe edema (raised more than 1 mm and extending beyond area of exposure) on the skin where the dose was applied.

(skin) - potential contribution to overall exposure by the cutaneous route including mucous membranes and eyes.

skn - skin

SMR - standard mortality rate

Some Evidence - when carcinogenicity is demonstrated by studies that are interpreted as showing a chemically related increased incidence of benign neoplasms, studies that exhibit marginal increases in neoplasms of several organs/tissues, or studies that exhibit a slight increase in uncommon malignant or benign neoplasms.

specie - species of animal tested (e.g., rat, rabbit, human, etc.)

sql - squirrel

STEL - short term exposure limit

Sufficient Evidence - evidence of carcinogenicity when there is an increased incidence of malignant tumors: (a) in multiple species or strains; or (b) in multiple experiments (preferably with different routes of administration or using different dose levels); or (c) to an unusual degree with regard to incidence, site or type of tumor, or age at onset. Additional evidence may be provided by data on dose-response effects. This indicates that there is a causal relationship between the exposure and human cancer.

TC - toxic concentration

TCLo - Toxic Concentration Low - the lowest concentration of substance in air to which humans or animals have been exposed for any given period of time, that has produced any toxic effect in humans, or has produced a tumorigenic or reproductive effect in animals or humans.

TD - toxic dose

TDLo - Toxic Dose Low - the lowest dose of a substance introduced by any route other than inhalation, over any given period of time, to which humans or animals have been exposed and reported to produce any non-significant toxic effects in humans or to produce non-significant tumorigenic or reproductive effects in animals or humans.

TEC - Toxic Effects Code

TLV - Threshold Limit Values - recommended limits proposed by the American Conference of Governmental Industrial Hygienists (ACGIH) to which most workers can be exposed wihout adverse effect. TLVs may be expressed as a time-weighted average (TWA), as a short term exposure limit (STEL), or as a ceiling value (CL).

tod - toad

TOXNET - Toxicology Data Network

trk - turkey

TSCA - Toxic Substances Control Act

TSCATS - Toxic Substance Control Act Test Submission

TWA - time-weighted average

ug - microgram

umol - micromole

unr - unreported

WHO - United Nations World Health Organization.

wmn - woman

Appendix 2

Proposed Development Plans



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Architecture - Planning - Interior Design

ARCHITECT:
OWNER:
APPLICATION:

PROJECT NAME
NEW 3-STORY & CELLAR
MIXED USE BUILDING. R6B / C2-4

PROJECT LOCATION
1776 48 STREET,
Brooklyn NY 11204

DRAWING TITLE
FRONT VIEW

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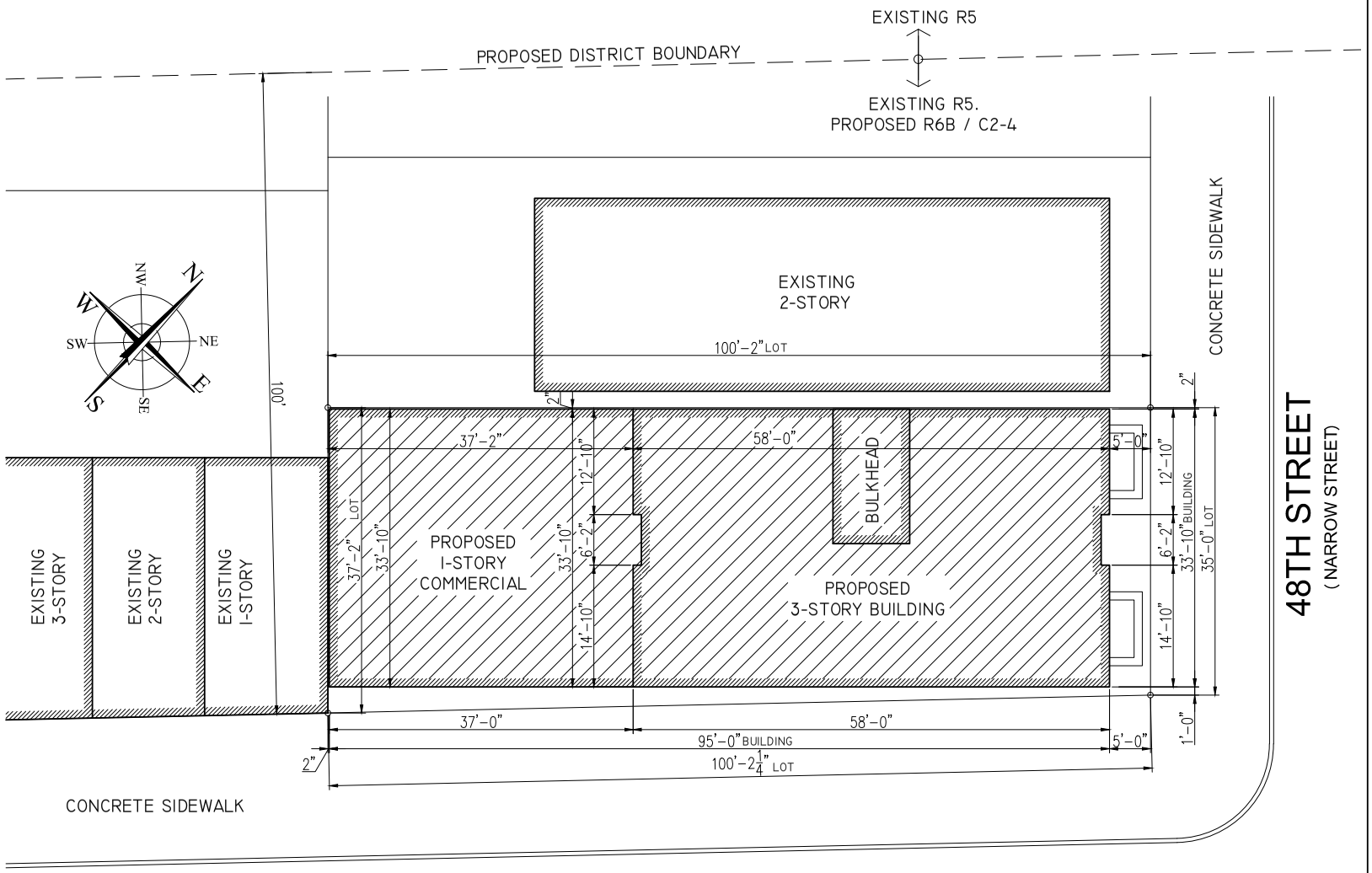

18TH AVENUE
(WIDE STREET)

PLOT PLAN

SCALE: 1/32"=1'-0"

0 5 10 15 20 30 40 50

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Brooklyn NY 11204

DRAWING TITLE:
ZONING / PLOT PLAN

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Z-001.00
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1 OF 11

DOB BSCAN

ZONING ANALYSIS

ADDRESS: 1776 48 STREET, BROOKLYN NY 11204
LOT AREA: 3,614.34 SF
BLOCK: 5449 LOT: 37
EXISTING ZONE: R5 PROPOSED ZONE: R6B / C2-4
ZONING MAP: 22C CORNER LOT
FLOOD ZONE: NO HISTORIC DISTRICT: NO LANDMARK: NO
WITHIN 200' OF TA STRUCTURE: NO
ENVIRONMENTAL DESIGNATION (LITTLE E): NO

SCOPE OF WORK: NEW 3-STORY & CELLAR MIXED USE RESIDENTIAL BUILDING
OCCUPANCY (2014 CODE) / USE GROUPS :
CELLAR: SPRINKLER ROOM, METER ROOMS, ACCESSORY STORAGE.
OCCUPANCY S-2, UG 2B
1ST FLOOR: OCCUPANCY M (COMMERCIAL. CONVENIENCE RETAIL OR SERVICE ESTABLISHMENT), UG 6A.
OCCUPANCY R-2 (RESIDENTIAL. ONE CLASS "A" DW. UNIT). UG 2A.
2ND FLOOR: OCCUPANCY R-2 (RESIDENTIAL. TWO CLASS "A" DW. UNITS). UG 2A.
3RD FLOOR: OCCUPANCY R-2 (RESIDENTIAL. TWO CLASS "A" DW. UNITS). UG 2A.
TOTAL 5 CLASS "A" DWELLING UNITS.

CONSTRUCTION CLASS (2014 CODE): I-B
DEVELOPED AS PER CHAPTER 8 THE QUALITY HOUSING PROGRAM
ZR 35-011 QUALITY HOUSING PROGRAM
(a) IN C1 ... DISTRICTS MAPPED WITHIN R6 THROUGH R10 DISTRICTS WITH A LETTER SUFFIX ... ALL BUILDINGS SHALL COMPLY WITH THE BULK REGULATIONS FOR QUALITY HOUSING BUILDINGS SET FORTH IN THIS CHAPTER, AND THE APPLICABLE PROVISIONS OF ARTICLE II, CHAPTER 8 (QUALITY HOUSING PROGRAM).
ZR 35-31 MAXIMUM FLOOR AREA RATIO
THE MAXIMUM FLOOR AREA RATIO PERMITTED FOR A COMMERCIAL OR COMMUNITY FACILITY USE SHALL BE AS SET FORTH IN ARTICLE III, CHAPTER 3, AND THE MAXIMUM FLOOR AREA RATIO PERMITTED FOR A RESIDENTIAL USE SHALL BE AS SET FORTH IN ARTICLE II, CHAPTER 3, PROVIDED THE TOTAL OF ALL SUCH FLOOR AREA RATIOS DOES NOT EXCEED THE GREATEST FLOOR AREA RATIO PERMITTED FOR ANY SUCH USE ON THE ZONING LOT.

ZR 23-153 FOR QUALITY HOUSING BUILDINGS
MAX PERMITTED FAR: 2.0. MAX PERMITTED "FA": 3,614.34 X 2.0 = 7,228.68 SF
MAX PERMITTED LOT COVERAGE=100% (CORNER LOT) = 3,614.34 SF
PROPOSED RESIDENTIAL LOT COVERAGE: 1,289.16 SF = 64.46 %

PROPOSED "FLOOR AREA" (COMBINED RES+COMMERCIAL)

	GROSS	FLOOR AREA
CELLAR	1,803.90	0
1 FLOOR	1,142.00	1,056
2 FLOOR	1,950.00	1,936
3 FLOOR	1,950.00	1,936
TOTAL	6,845.90	4,928.00

TOTAL "FA": 4,928 SF, LESS THAN 7,228.68 SF
PROPOSED RESIDENTIAL FAR: 1.36, NOT MORE THAN 2.00 THUS OK

23-22 MAXIMUM NUMBER OF DWELLING UNITS: (7,228.68-2,065.94)/680 =7 D.U.
PROPOSED: 5 D.U.
ZR 23-32 MINIMUM LOT AREA OR LOT WIDTH FOR RESIDENCES
MINIMUM LOT AREA: 1,700 SF MINIMUM LOT WIDTH: 18'
EXISTING LOT AREA: 3,614.34 SF EXISTING LOT WIDTH: 35'-0"

ZR 35-51 FRONT YARD. NOT REQUIRED
ZR 35-52 SIDE YARDS. REQUIRED: 0 OR MIN 8'. PROPOSED: 0'
ZR 35-53 / 23-541 WITHIN 100' OF CORNERS. REQUIRED: 0'. PROPOSED: 30'-0"

ZR 35-60 IN C2 ... DISTRICTS MAPPED WITHIN R6B DISTRICTS, ALL BUILDINGS SHALL COMPLY WITH THE BULK REGULATIONS FOR QUALITY HOUSING BUILDINGS SET FORTH IN SECTIONS 23-62 (PERMITTED OBSTRUCTIONS) AND 23-66 (HEIGHT AND SETBACK REQUIREMENTS FOR QUALITY HOUSING BUILDINGS), AS MODIFIED BY SECTION 35-65.

ZR 35-65 HEIGHT AND SETBACK REQUIREMENTS FOR QUALITY HOUSING BUILDINGS
STREET WALL LOCATION PROVISIONS OF SECTIONS 35-651 AND THE HEIGHT AND SETBACK PROVISIONS OF SECTION 35-652, SHALL APPLY TO QUALITY HOUSING BUILDINGS.

ZR 35-651 STREET WALL LOCATION
A)1) AT LEAST 70 PERCENT OF THE AGGREGATE WIDTH OF STREET WALLS SHALL BE LOCATED WITHIN EIGHT FEET OF THE
STREET LINE AND SHALL EXTEND TO AT LEAST THE MINIMUM BASE HEIGHT SPECIFIED IN SECTIONS 35-652 AND 23-662
(MAXIMUM HEIGHT OF BUILDINGS AND SETBACK REGULATIONS), OR THE HEIGHT OF THE BUILDING, WHICHEVER IS LESS. UP
TO 30 PERCENT OF THE AGGREGATE WIDTH OF STREET WALLS MAY BE RECESSED BEYOND EIGHT FEET OF THE STREET LINE, PROVIDED THAT ANY SUCH RECESSES DEEPER THAN 10 FEET ALONG A WIDE STREET OR 15 FEET ALONG A NARROW
STREET ARE LOCATED WITHIN AN OUTER COURT;
A)3) FOR ZONING LOTS BOUNDED BY MORE THAN ONE STREET LINE, THESE STREET WALL LOCATION PROVISIONS SHALL
BE MANDATORY ALONG ONLY ONE STREET LINE;

ZR 35-652 / ZR 23-662 MAXIMUM HEIGHT OF BUILDINGS AND SETBACK REGULATIONS
ZR 23-662 A) TABLE 1 FOR CONTEXTUAL DISTRICTS
MIN BASE HEIGHT: 30', MAX BASE HEIGHT: 40', MAX BUILDING HEIGHT: 50'
PROPOSED BASE HEIGHT: 30'. PROPOSED BUILDING HEIGHT: 30'
ZR 23-662 C)1) SETBACK REQUIREMENTS.
MIN REQ'D SETBACK: 10' ON WIDE STREET, 15' ON NARROW STREET.
PROPOSED: NA, ENTIRE BUILDING IS WITHIN ENVELOPE.

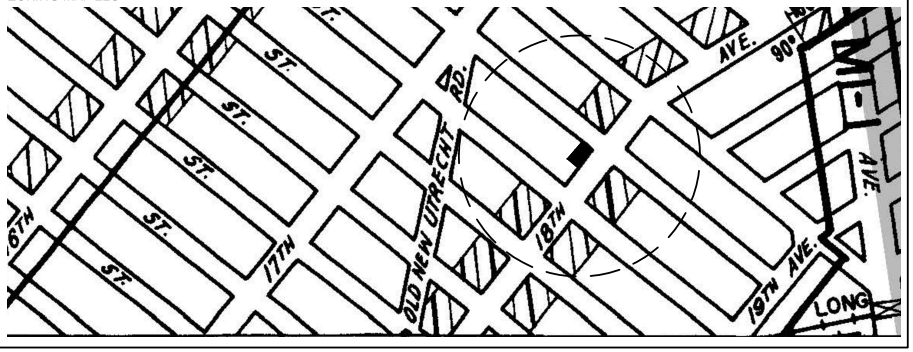
ZR 36-341 PARKING.
REQUIRED: 50% OF D.U.=5 X 50%= 3 SPACES. WAIVED AS PER ZR 25-251 (NOT MORE THAN 5 REQ'D)
ZR 36-711 BICYCLE PARKING. WAIVED, 10 OR LESS DWELLING UNITS.

ZR 33-03 / 26-41 REQUIRED STREET TREES:
135'-2 1/4"/25'= 5. EXISTING TREES: 1. PROPOSED: 4 STREET TREES TO BE PAID INTO TREE FUND.

ZR 35-31 / 33-121
MAX COMMERCIAL FAR: 2.0
MAX COMMERCIAL FLOOR AREA: 3,614.34 X 2.0 = 7,228.68 SF
PROPOSED COMMERCIAL FLOOR AREA: 2,065.94 SF
MAX COMBINED FAR: 2.0
MAX COMBINED RESIDENTIAL AND COMMERCIAL FLOOR AREA: 3,614.34 X 2.0 = 7,228.68 SF
PROPOSED COMBINED FLOOR AREA: 2,065.94 + 4,928.00 = 6,993.94 SF, LESS THAN 7,228.68 SF.

ZR 36-21 COMMERCIAL PARKING
REQ'D: 1 PER 1,000 SF OF FLOOR AREA (GENERAL RETAIL OR SERVICE): 2,065.94 / 1,000 = 2.
WAIVED AS PER ZR 36-232, LESS THAN 40 SPACES REQ'D

ZONING MAP 22C



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APPLICATION:

PROJECT NAME:
NEW 3-STORY & CELLAR
MIXED USE BUILDING. R6B / C2-4

PROJECT LOCATION:
1776 48 STREET,
Brooklyn NY 11204

DRAWING TITLE:
ZONING ANALYSIS / ZONING MAP

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PROJECT No:
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DWG No:
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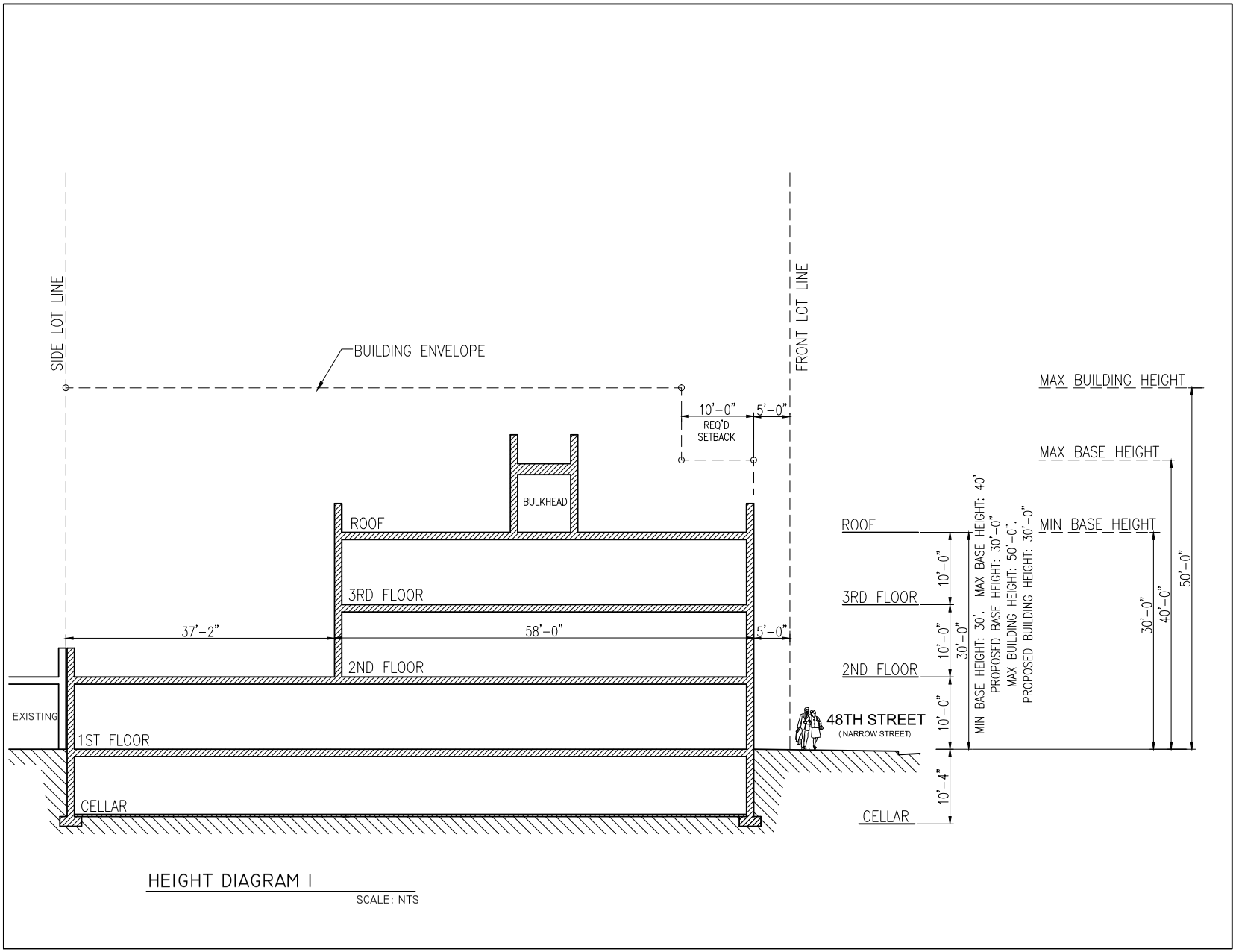
DOB BSCAN



HEIGHT DIAGRAM I

SCALE: NTS

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HEIGHT DIAGRAM 1

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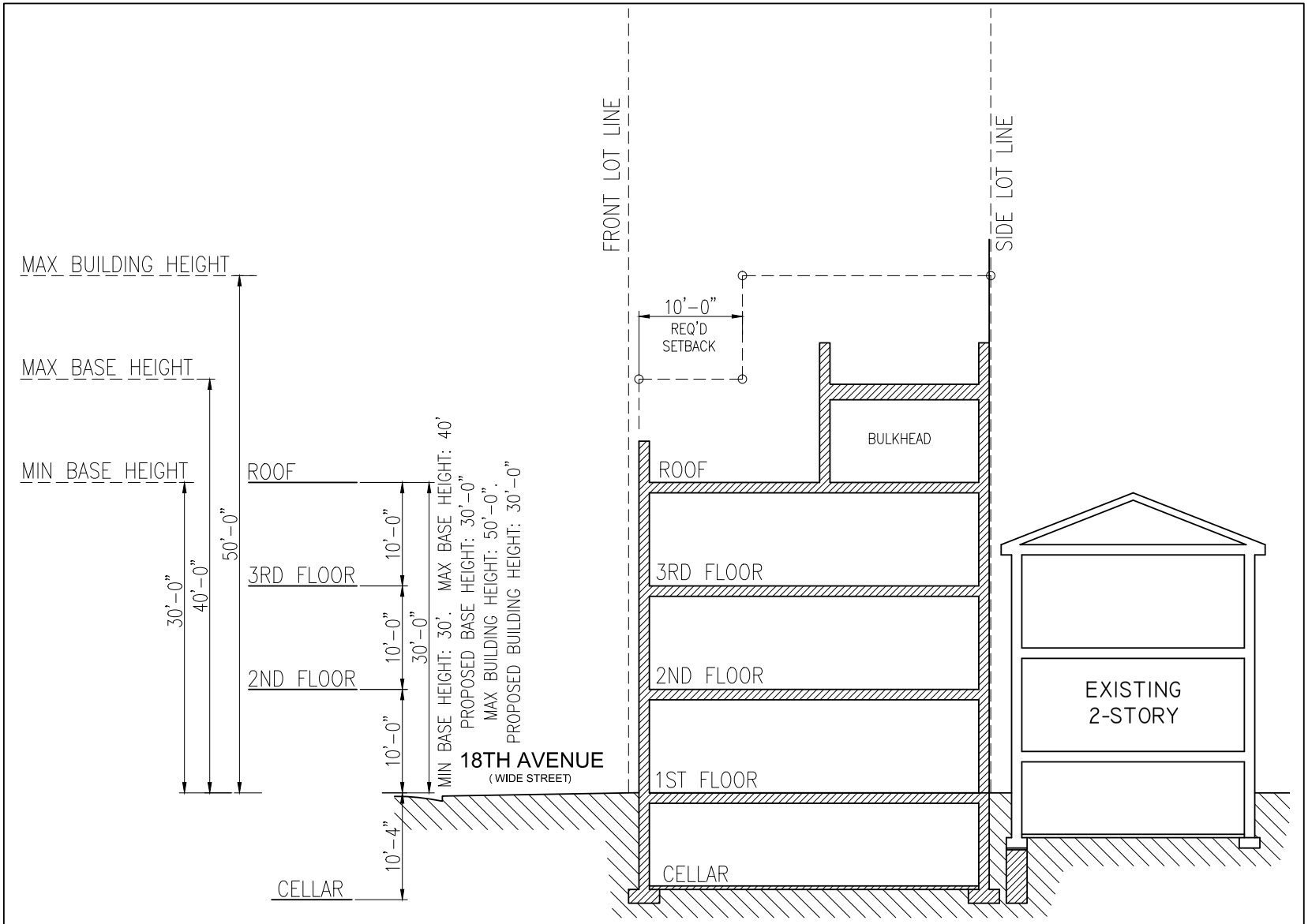

HEIGHT DIAGRAM 2

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HEIGHT DIAGRAM 2

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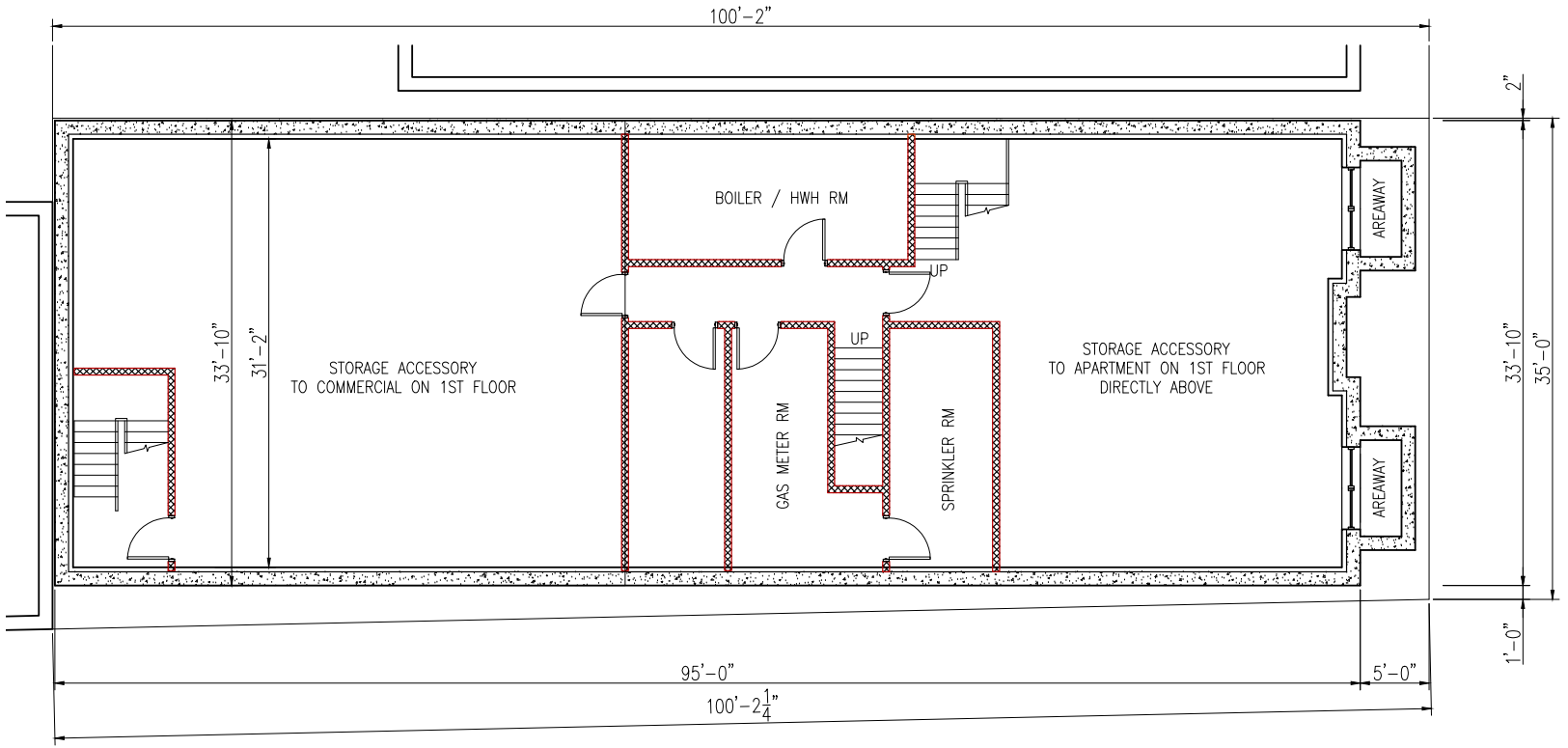

CELLAR PLAN

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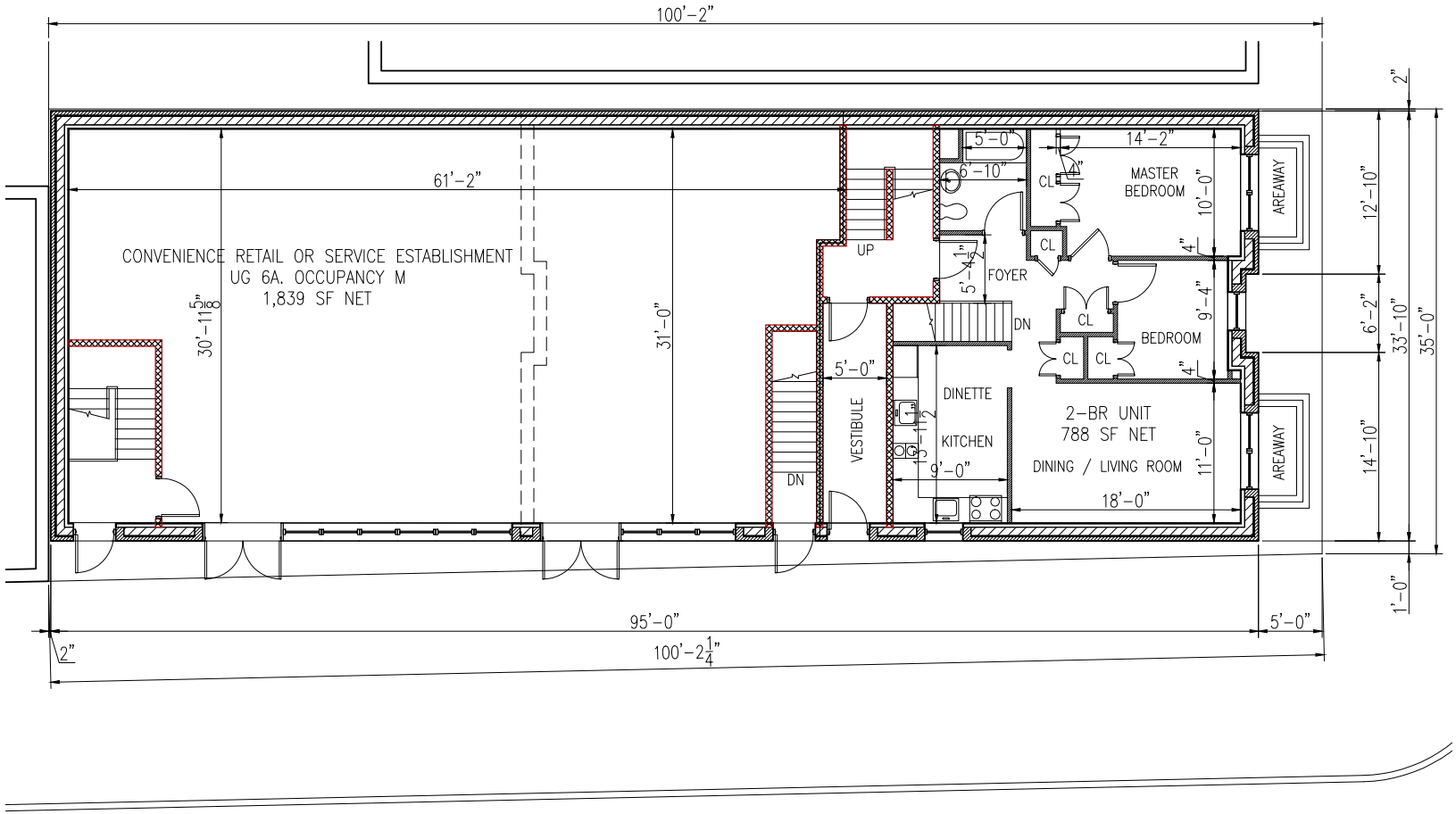

IST FLOOR PLAN

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1ST FLOOR PLAN

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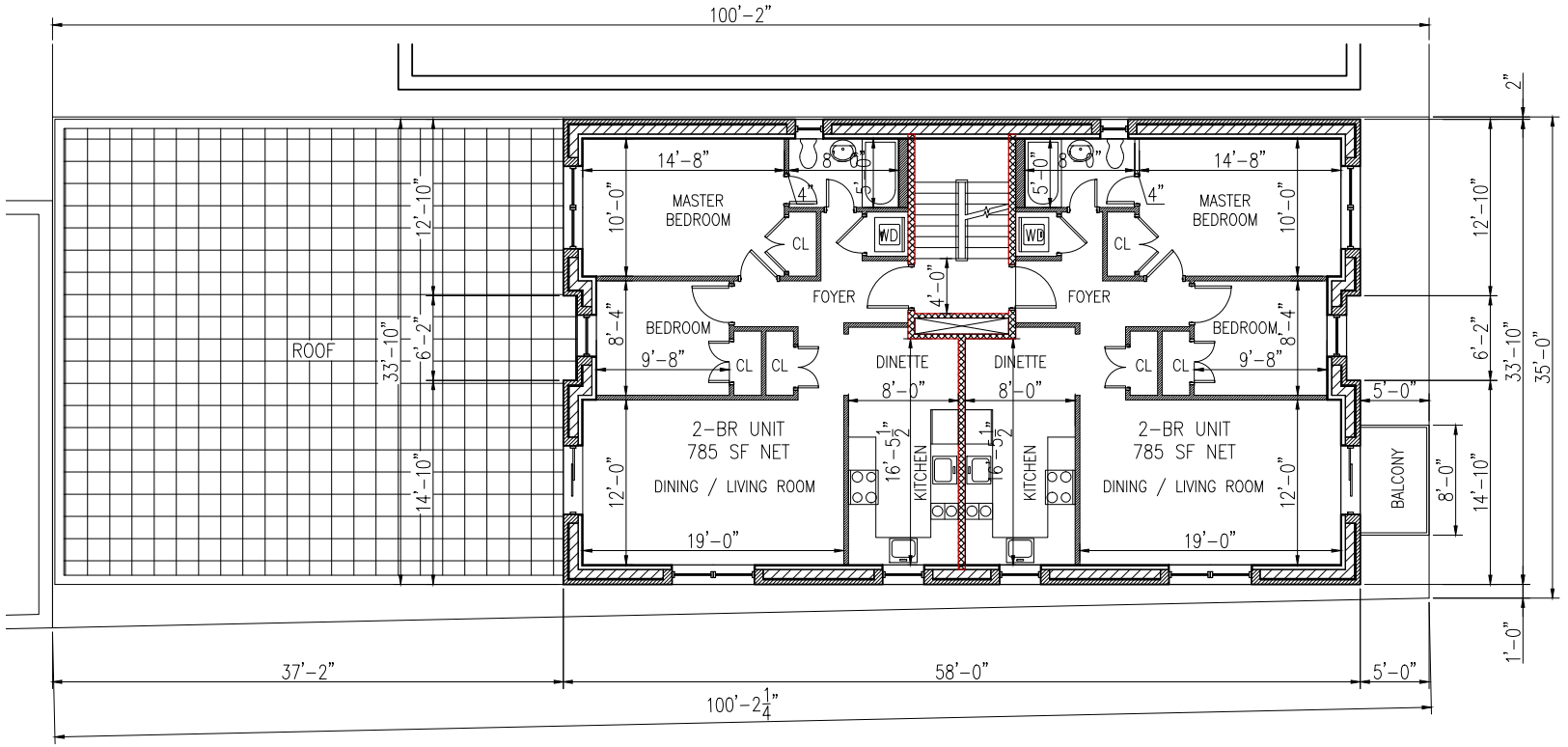

2ND FLOOR PLAN

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2ND FLOOR PLAN

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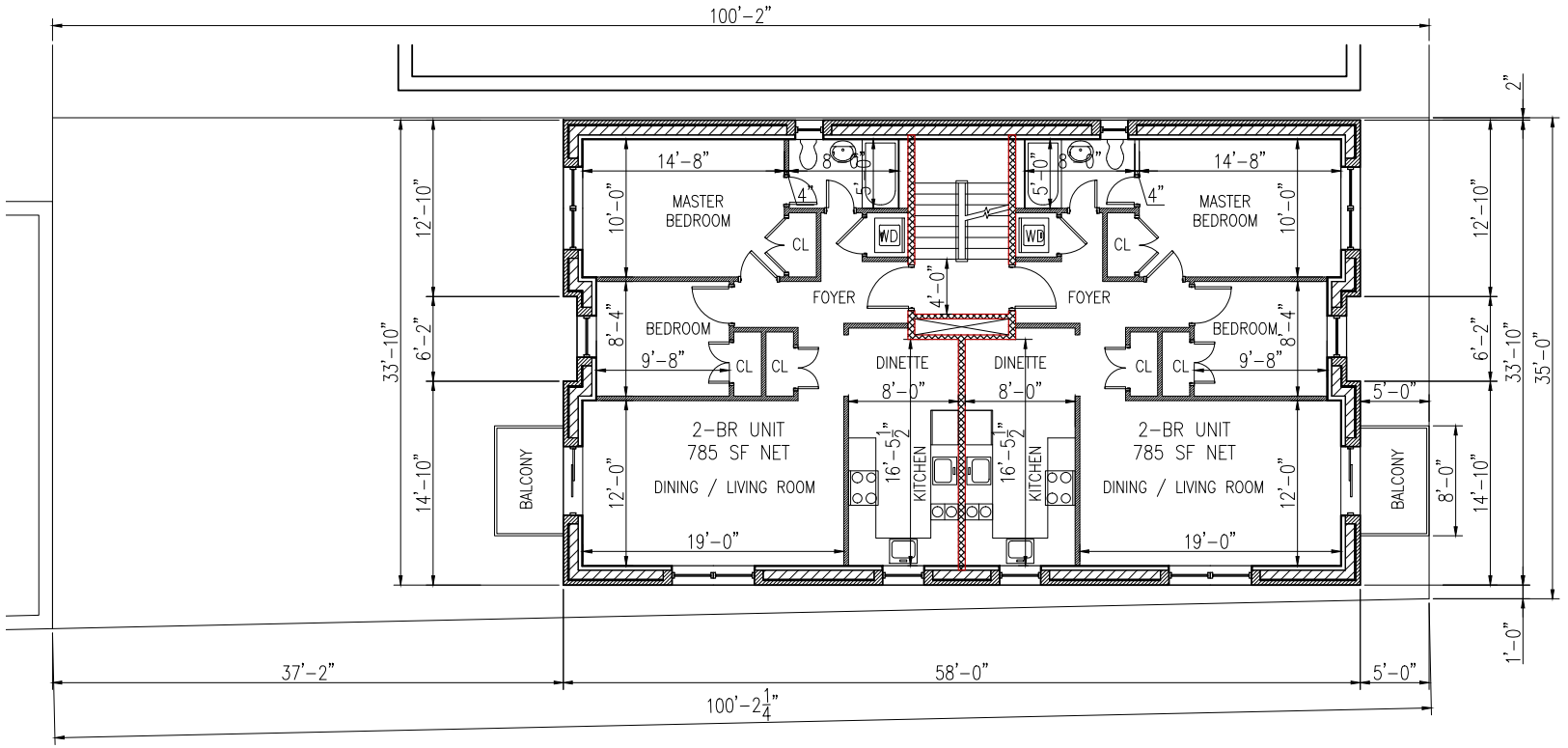

3RD FLOOR PLAN

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3RD & 4TH FLOOR PLAN

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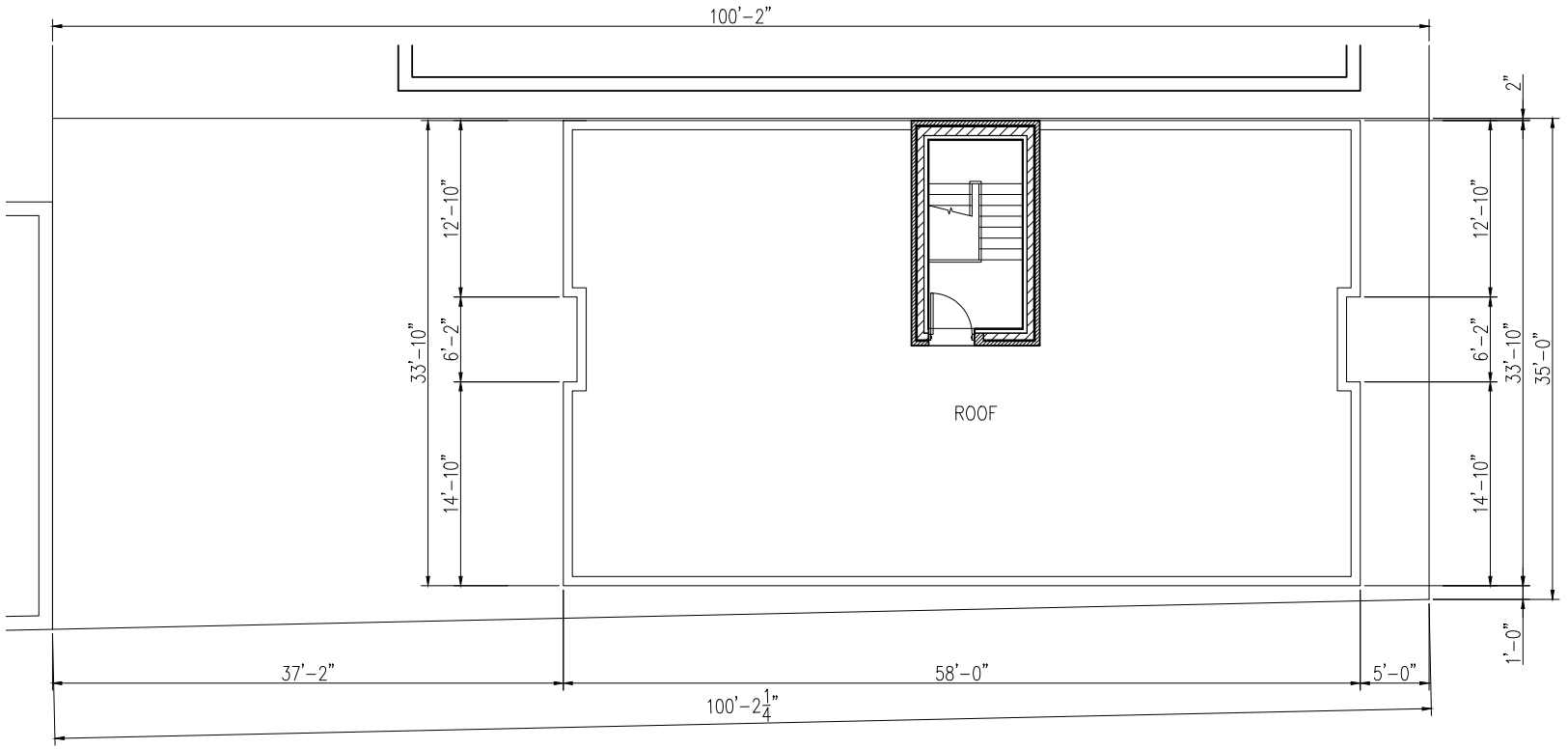

ROOF PLAN

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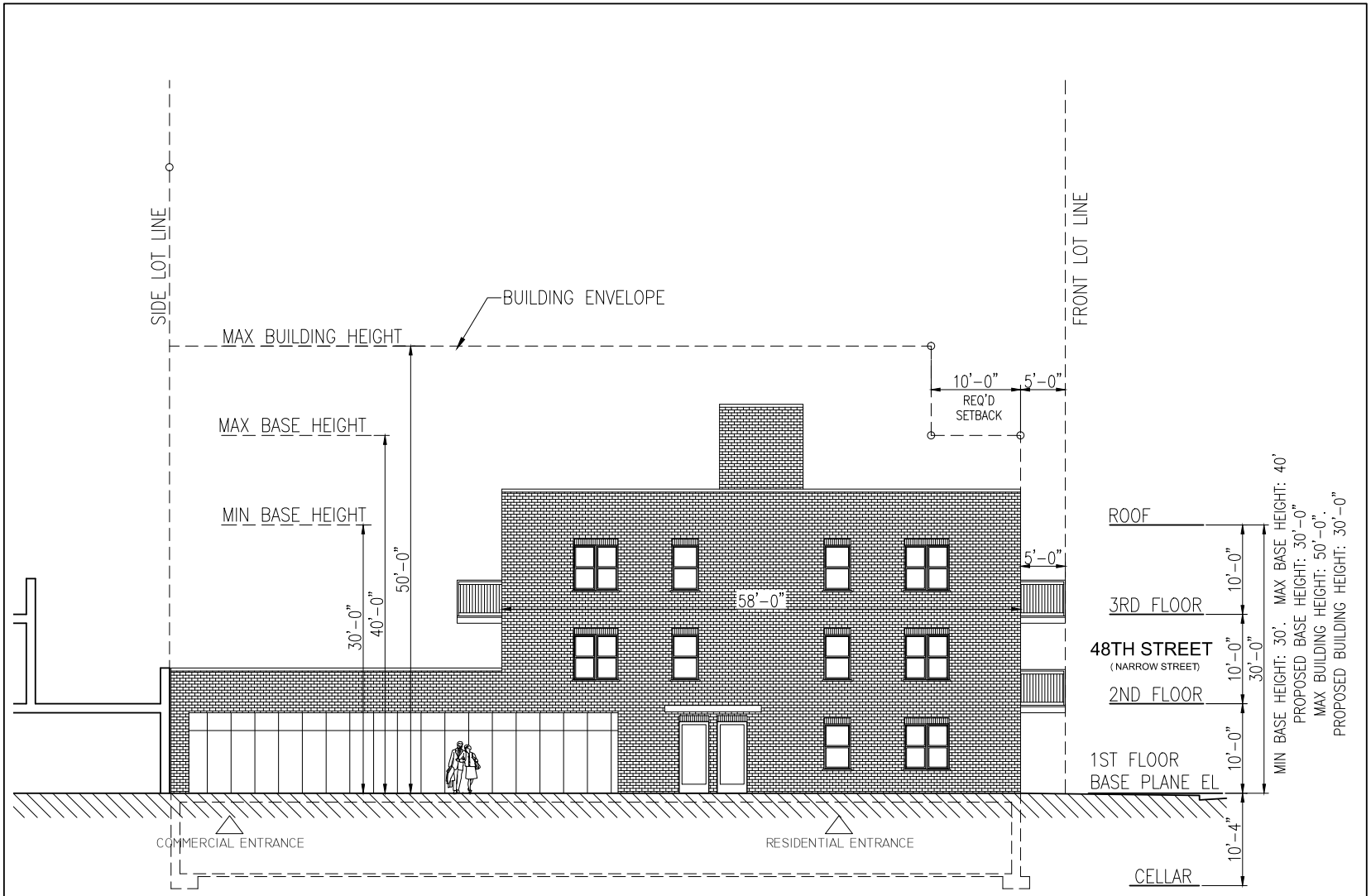

FRONT ELEVATION 1 (ALONG 18TH AVENUE)

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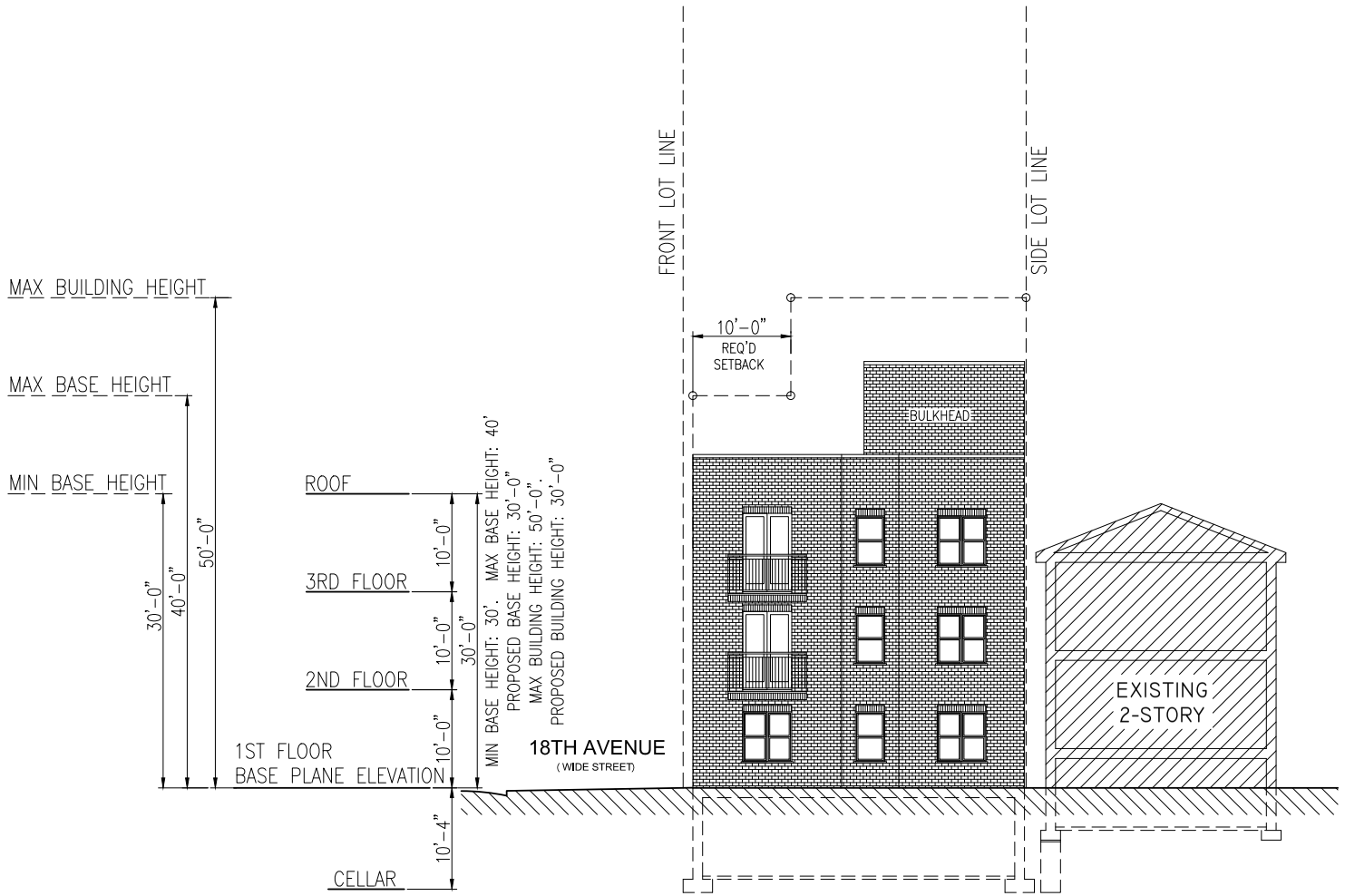
FRONT ELEVATION 1

SEAL & SIGNATURE

DATE:
PROJECT No:
DRAWING BY:
CHK BY:
DWG No:
A-105.00
CAD FILE No:

DOB BSCAN



FRONT ELEVATION 2 (ALONG 48TH STREET)

SCALE: NTS

It is a violation of the law for any person, unless acting under the direction of a licensed architect, to alter an item in any way.

REVISIONS

#	Date	Description

RSLN
ARCHITECTURE PLLC
1732 East 12 Street
Brooklyn, NY 11229
Tel. 347 374 5654
Fax. 347 713 3158
RSLN@RSLNArchitecture.com
Architecture - Planning - Interior Design

ARCHITECT:
OWNER:
APPLICATION:

PROJECT NAME:
NEW 3-STORY & CELLAR
MIXED USE BUILDING, R6B / C2-4

PROJECT LOCATION:
1776 48 STREET,
Brooklyn NY 11204

DRAWING TITLE:
FRONT ELEVATION 2

SEAL & SIGNATURE

DATE:
PROJECT No:
DRAWING BY:
CHK BY:
DWG No:
A-106.00
CAD FILE No:

DOB BSCAN

Appendix 3

Previous Reports

environmental studies corporation

Environmental Studies Corporation, Inc.
55 Watermill Lane, Suite 200, Great Neck, NY 11021, Tel: 718.343.0026 Fax: 516.487.2439

Phase II Environmental Site Assessment

1776 48th Street
A.K.A. 4802-4812 18th Avenue
Brooklyn, NY
Block 5449, Lot 37

August 2020

environmental studies corporation

Environmental Studies Corporation, Inc.
55 Watermill Lane, Suite 200, Great Neck, NY 11021, Tel: 718.343.0026 Fax: 516.487.2439

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FIGURES: **Figure 1: Sample Collection Locations**

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APPENDIX: **A. Site Photographs**
B. Laboratory Data Analytical Reports
C. Soil Boring Report Logs

Executive Summary

The purpose of this Phase 2 investigation was to establish existing soil, soil vapor and ground water quality conditions and a comparison to relevant regulatory agency and standard practice guidelines and standards. A Phase 2 Environmental Investigation Work Plan and Health and Safety Plan (HASP) were prepared which outlined the means and methods of the subsurface investigation. All work was completed in accordance with ASTM E1903-97 Standard Guide for Environmental Site Assessments: Phase 2 Environmental Site Assessment Process.

A subsurface investigation work plan was developed. The scope of work was implemented to determine whether the subsurface soil, water and soil vapor quality conditions at the subject property. The scope of work included the following elements:

- Completed a geophysical investigation which included an electromagnetic survey and ground penetrating radar (GPR) survey.
- Performed three (3) soil test borings (B-1, B-2, and B-3) and collected two soil samples from each soil boring location a surface (0 - 2ft) and a deeper sample from (10 - 12ft) to match the excavation depth of the proposed buildings.
- Installed one (1) temporary groundwater monitoring well (GW-1).
- Collected three soil vapor samples (SV-1, SV-2 and SV-3) at a depth of the proposed building foundation depth. (Note: The sample SV-1 canister was determined defective upon delivery at the lab and could not be analyzed, therefore there are no results for this sample location.)
- Prepared a written comprehensive report of findings.

Conclusions

An Electromagnetic (EM) Magnetometer survey was conducted in an attempt to identify any possible unknown magnetic anomalies such as underground storage tanks (USTs) on the site. ESC used a Fisher TW-6 magnetometer in the inductive phase mode over the property accessible areas in an overlapping grid pattern. The results of the survey indicated no evidence of any magnetic anomalies indicative of USTs.

<u>Soil Conditions</u>

The results of this subsurface investigation has not identified soil contamination above NYSDEC Part 375 restricted use soil cleanup objectives. Total Lead, Nickel and Mercury concentrations in the surface 2-3 feet of fill soils were above unrestricted use soil cleanup objectives but below restricted use soil cleanup objectives. Below the fill soils is native sand and gravel deposits which meets NYSDEC Part 375 unrestricted soil cleanup standards.

Groundwater Quality

No groundwater was sampled on the property. No groundwater exists within 30 feet of the surface and therefore is not anticipated to be encountered during the proposed development therefore no de-watering activity is anticipated during foundation excavation.

Soil Vapor Conditions

Results of the soil vapor investigation identified concentrations of volatile organic compounds (VOCs) related to petroleum compounds above laboratory method detection limits. These VOC's are likely resulting from interchange with the ambient air surrounding the project site and adjacent neighborhood. The soil vapor conditions found are common of what is usually measured in shallow soils in the metropolitan New York neighborhoods. The concentration of chlorinated volatile organic compounds (CVOCs) are below the New York State Department of Health (NYSDOH) soil vapor Matrix concentrations (May 2017) and require no further action.

Recommendations

There are no recommendations for additional testing or remedial action being made at this time. Fill and native soil exported offsite should be disposed in accordance with New York State Department of Environmental Conservation (NYSDEC) Part 365 regulations.

The new building construction should have an engineered polyethylene vapor barrier under occupied areas of the building. The vapor barrier should be a minimum thickness of 20 mils under the foundation slab and foundation sidewalls in order to prevent any potential vapor migration into the building structure.

A Remedial Action Plan (RAP) detailing the installation of a vapor barrier and a Construction Health and Safety Plan (CHASP) should be written describing the means and methods for the vapor barrier installation and excavation and disposal of impacted soils.

1. Introduction

The purpose of this Phase 2 investigation was to establish existing soil, soil vapor and ground water quality conditions and a comparison to relevant regulatory agency and standard practice guidelines and standards. A Phase 2 Environmental Investigation Work Plan and Health and Safety Plan (HASP) were prepared which outlined the means and methods of the subsurface investigation. All work was completed in accordance with ASTM E1903-97 Standard Guide for Environmental Site Assessments: Phase 2 Environmental Site Assessment Process.

1.1 Property Description and Previous Reports

The subject property at 1776 48th Street, Brooklyn, N.Y., consists of a 3,500+/- square foot, rectangular shaped lot that contains a 2-story (plus basement), 2-family dwelling. Heat for the building is provided by a gas-fired boiler located in the basement. There is also a detached 2-car garage located on the south side of the lot. Exterior portions of the site consist of small side and rear yards around the building. A Phase 1 Environmental Site Assessment (ESA) was completed by Environmental Studies Corporation (ESC) in January 2019. Research into the history of the project site shows that the property was undeveloped vacant land in 1906. Given the residential and rural nature of the area in the early 1900s, it is considered unlikely that the project site would have contained a business or operation that stored or used hazardous materials or petroleum products prior to 1906. The subject building was constructed in 1922 as a 2-family dwelling. The uses of the building have been residential since its construction. A dentist and two doctors are also identified in the building; however, it is not known if their offices were located in the building. Dentist and doctor's offices are types of operations that may have involved the storage or use of small quantities of hazardous substances, however, and given that the subject building is connected to the municipal sewer system, any materials discharged from former doctor's or dentist's offices would have been carried off site via the municipal sewer system. Therefore, it is considered unlikely that these uses would have impacted the project site. No aboveground storage tanks, or visible indications of the presence of underground storage tanks, such as tank fillports or tank vent lines, associated mechanical equipment, etc., were observed during the site visit. The property does not appear in the New York State Department of Environmental Conservation (NYSDEC) Petroleum Bulk Storage (PBS) database, which lists all registered facilities with a total combined petroleum storage capacity in excess of 1,100 gallons. In addition, there are no Oil Burner Applications on file in the New York City Department of Buildings records reviewed for the project site. The project site is adjoined to the north by 48th Street, beyond which are residential buildings with first floor retail stores. Adjacent and to the south of the site is a synagogue. Adjacent and to

the east of the site is 18th Avenue, beyond which are residential apartment buildings with first floor retail stores. The property is adjoined to the west by residential dwellings. Land uses in the immediate vicinity of the property (i.e., within approximately 500 feet of the site) are primarily comprised of residential uses, retail stores and a public school. There were not any heavy industrial uses or gasoline filling stations identified in the immediate vicinity of the project site. A review of Sanborn maps shows that land uses in the immediate area of the subject property have been a mix of residential uses, a public school, and commercial/retail businesses since at least the 1930s.

The Phase 1 ESA revealed no evidence of Recognized Environmental Conditions, Historical Recognized Environmental Conditions or Controlled Recognized Environmental Conditions in connection with the property.

1.2 Proposed Development

The proposed project is the development of a new 3-story plus cellar mixed- use commercial and residential building. The development would have a floor area of 7,204 square feet, a base height of 30 feet and total height of 40 feet. The building would consist of five dwelling units for a total combined residential floor area of 5,076 square feet. The building would also contain 2,128 square feet of commercial floor area on the ground floor. No parking spaces are proposed or required.

1.3 Health and Safety Plan (HASP)

ESC prepared a site specific Health and Safety Plan for this Phase II Environmental Subsurface Investigation. A copy of the HASP was present during the investigation. The HASP assigned responsibilities, established personal protection standards, recommended operating procedures, and provided for contingencies that may arose during performance of the assessment at the site. The protocols in the HASP apply to all personnel involved in the work activities, all outside subcontractors, client, or regulatory agencies present during the performance of the work.

2. Scope of Work

A subsurface investigation work plan was developed. The scope of work was implemented to determine whether the subsurface soil, water and soil vapor quality conditions at the subject property. The scope of work included the following elements:

- Completed a geophysical investigation which included an electromagnetic survey and ground penetrating radar (GPR) survey.
- Performed three (3) soil test borings (B-1, B-2, and B-3) and collected two soil samples from each soil boring location a surface (0 - 2ft) and a deeper sample from (10 - 12ft) to match the excavation depth of the proposed buildings.
- Installed one (1) temporary groundwater monitoring well (GW-1).
- Collected three soil vapor samples (SV-1, SV-2 and SV-3) at a depth of the proposed building foundation depth. (Note: The sample SV-1 canister was determined defective upon delivery at the lab and could not be analyzed, therefore there are no results for this sample location.)
- Prepared a written comprehensive report of findings.

The sample collection locations are shown on **Figure 1.**

Photographs taken during the implementation of the scope of work are included as **Appendix A**.

2.1 Geophysical Survey

An Electromagnetic (EM) Magnetometer survey was conducted in an attempt to identify any possible unknown magnetic anomalies such as underground storage tanks (USTs) on the site. ESC used a Fisher TW-6 magnetometer in the inductive phase mode over the property accessible areas in an overlapping grid pattern. The results of the survey indicated no evidence of any magnetic anomalies indicative of USTs.

2.2 Soil Testing

A total of three soil test borings (B-1, B-2, and B-3) were conducted on the subject property using a Geoprobe direct-push drilling rig. A total of 6 soil samples were collected from the borings and sent to the laboratory for analysis. Two soil samples were collected from each soil boring location. One soil sample was collected from the surface at a depth of 0- 2 feet, and another deeper soil sample was collected at a depth 10-12 feet below surface grade elevation. No groundwater was found in these soil boreholes to the depth sampled which was 12 feet.

Table 1 shows a summary of the analytical laboratory results and a comparison to NYSDEC Part 375 Soil Cleanup Objectives (SCOs). The analytical laboratory data results package is presented in **Appendix B**. **Figure 1** shows the location of the soil borings performed on the subject property. The soil boring and groundwater log reports which show the field observations found at each sample collection location is presented in **Appendix C.**

The soil was characterized and logged for potential impacts (e.g., odor, staining, anthropogenic materials and other observations) and screened for volatile organic vapors with a photoionization detector (PID). All soil samples were analyzed for the following parameters:

- Volatile Organic Compounds (VOCs) by United Stated Environmental Protection Agency (USEPA) Method 8260
- Semi-Volatile Organic Compounds by USEPA Method 8270 BN
- Pesticides/Polychlorinated Biphenyls (PCBs) using USEPA Method 8081/8082
- Target Analyte List (TAL) Metals

2.3 Groundwater

In order to evaluate the groundwater quality underlying the site one (1) temporary groundwater monitoring well (GW-1) was constructed of one-inch slotted PVC and schedule 40 PVC riser pipe installed in a cased borehole to a depth of 30 feet. No groundwater was found to develop in this monitoring well therefore no groundwater was collected during this investigation. It was concluded that no significant groundwater exists on site within the near surface to a depth of at least 30 feet.

2.4 Soil Vapor Testing

Soil vapor probes (SV-1, SV-2 and SV-3) were installed ranging in depth from 10 to 12 feet. Soil vapor samples were collected via dedicated polyethylene tubing and Summa Canisters, tested for VOCs using USEPA TO-15 method parameters. Locations of soil vapor samples are indicated on **Figure 1. Table 2** shows a summary of the analytical laboratory results.

The soil vapor points were installed using 1-inch diameter steel drill rods advanced using direct-push drilling methods. The soil vapor probe consisted of a prefabricated 2-3 inch perforated vapor probe tip attached to 3/8-inch diameter low-density polyethylene (LDPE) plastic riser tubing. Once driven to completion depth, the rods were removed leaving only the tip and the tubing. The vapor probe boreholes were backfilled with #2 morie well grade gravel. A surface seal was placed using an impermeable bentonite clay seal installed within the last six inches of the probe-hole

annulus from surface grade level. The vapor wells were measured and purged using a photoionization detector (PID) prior to sampling. The soil vapor probe samples were connected for sampling to 6-liter Summa canisters set to collect for a two-hour time period. Helium tracer gas was used before sampling and after the sampling event to confirm a proper surface seal of the vapor probes.

2.5 Field and Sampling Protocols

The field sampling techniques employed at the subject property are detailed in the standard operating procedures (SOPs) and work plan. All efforts were made to eliminate possible sample contamination and maximize the reliability of the analytical results. These efforts included proper use and cleaning of sampling equipment and sample containers to eliminate sample contamination; the use of standardized sampling procedures including decontamination of equipment; and use of chain-of-custody procedures to track the samples from source to analysis and minimize the opportunity for tampering.

2.5.1 Decontamination Procedures

2.5.1.1 Sampling Equipment

All re-usable sampling equipment used for laboratory sample collection underwent a thorough decontamination process. Disposable equipment was used whenever possible. The following steps outline the field decontamination procedures: Non-phosphate soap and tap water wash, Tap water rinse, Dilute nitric acid rinse (for samples to be analyzed for metals), Tap water rinse. Methanol rinse, and a final distilled water rinse.

2.5.2 Sampling Methodology

All sample collection activities were conducted so as to obtain reliable information regarding subsurface conditions. Following sample collection, soil and groundwater sampling jars were immediately placed in a cooler and kept at 4°C until arrival at the laboratory.

2.5.3 Sample Custody

The purpose of monitoring the chain-of-custody of a sample is to ensure that proper sample handling requirements have been met for representative samples prior to their analysis, and to document the record of custody from the moment of sample collection to analysis and sample disposal. The handling requirements, as set forth by New York State Department of Environmental Conservation (NYSDEC) and USEPA guidelines, such as sample preservation techniques and sample holding times.

As per the requirements of the Environmental Laboratory Approval Program (ELAP) certified laboratory and the NYSDEC, a Chain-of-Custody Record was maintained and accompanied the laboratory shuttle from the moment of the container dedication until the time of the corresponding analyses. A laboratory delivery of a sample container shuttle to the sampler, therefore, requires that a Chain-of-Custody Record is initiated by the authorized laboratory representative relinquishing the shuttle, and the time and date of the transfer documented. The record of this transfer is proof that the containers, which were used for sample storage, have been dedicated by the laboratory prior to their delivery, and in accordance with the quality controls governing the analyses of the collected samples.

After their collection and storage, the necessary field notes were recorded in the Chain-of Custody and were properly preserved in the shuttle until their transfer to the laboratory for analysis. The transfer was accompanied by the same Chain-of-Custody Record, which was completed to identify the sample identification numbers, quantities, and physical description of the samples, and the particular analyses requested. The name of the sampler who relinquished the shuttle, the time and date of the transfer, and the laboratory representative assuming responsibility for transporting the shuttle to the laboratory inspected the samples to document sample preservation, noted any discrepancies between the samples and chain-of-custody, and assigned a laboratory identification number and logged the laboratory number into the sample inventory system.

2.6 Laboratory Analysis

York Analytical Laboratories, Inc. (National Environmental Laboratory Accreditation Program [NELAP] Approved NY Lic. #10854), a New York State Department of Health (NYSDOH) approved laboratory was used for all analysis. The laboratory operates a QA/QC program that consists of proper laboratory practices (including the required chain-of-custody), an internal quality control program, and external quality control audits by New York State. (Note: The sample SV-1 canister was determined defective upon delivery at the lab and could not be analyzed, therefore there are no results for this sample location.) Further inquiry determined that the Summa canister vacuum seal failed during shipment from the site to the laboratory. Thus the sample became unusable for analysis as determined at the laboratory.

Laboratory QA/QC procedures include:

- Verification and/or validation of equipment according to National Institute of Standards and Technology (NIST).
- Regular calibrations and use of reference standards on instruments used for sample analysis.
- Adherence to sample acceptance policy; meaning, samples will not be analyzed if any of the following are encountered: damaged or leaking samples or samples improperly preserved (i.e., no preservative in sample if necessary and/or samples not kept at proper temperature if analysis requires).

- Prior to analysis, samples are to be stored according to SOPs.
- Analysis of Quality Control Samples including: laboratory control blanks, matrix spikes, method blanks and laboratory duplicate samples.

3. Findings

York Analytical Laboratories, Inc. prepared the results of analytical samples. The results can be found in the following tables:

Table 1 Soil Results Summary - presents the VOC, SVOC, Pesticide/PCB, and metals results for all soil samples collected and analyzed.

Table 2 Soil Vapor Results Summary - presents the VOC results for all the soil vapor and ambient air samples collected and analyzed.

The chain-of-custody records, as well as the analytical laboratory data sheets, are presented in **Appendix B** to this report.

Soil Quality Conditions

Fine brown sand, fine gravel and silt disturbed soil and was found intermixed with fine to coarse sand and gravel throughout the property to an average depth of 2 to 3 feet. Below this disturbed soil layer is undisturbed native fine sand and silt with little gravel. Drilling was advanced to a depth of 30 feet in an attempt to encounter groundwater. Fine sand and gravel was found with occasional cobbles and boulders. No petroleum type odors were observed in the fill materials or in any soil samples observed. Results of photoionization detector field screening readings which give an indication of if any volatile organic compounds (VOC) are present generally did not detect readings above instrument detection levels. The soil boring log reports which show the field observations found at each sample collection location are presented in **Appendix C**.

Based on observations noted in the field (visual, olfactory and PID readings), No petroleum or chemical type impacts at the site were identified.

Laboratory analytical results for the soil samples are shown on **Table 1**. The samples were compared to NYSDEC Soil Cleanup Objectives (SCOs) 6 NYCRR Subpart 375-6.8 (a): Unrestricted Use SCOs.

- No Volatile organic compounds (VOCs) were identified above laboratory detection limitations or unrestricted use soil cleanup objectives (UUSCOs) in the soil samples collected.
- No Semi-volatile organic PAH compounds (SVOCs) were identified above Unrestricted Use Soil Cleanup Objectives (UUSCO)s and Restricted Use Soil Cleanup Objectives (RUSCO)s in the soil samples collected.

- No pesticides were identified above laboratory detection limitations or UUSCOs in the soil samples collected.
- No Polyvinyl Chlorinated Bi-phenols (PCBs) were identified above laboratory detection limitations or UUSCOs in the soil samples collected...
- Total metals exceeding the unrestricted SCOs included Lead (maximum 104 mg/kg), Nickel (maximum 48.6 mg/kg), and Mercury (0.446 mg/kg maximum). The concentrations of Lead, Manganese and Nickel exceeded the UUSCO's but were below the restricted RUSCO's.

Soil Vapor Sampling

Laboratory analytical results for the soil vapor are shown in **Table 2**. All samples were analyzed for VOCs using EPA Method TO-15.

The following compounds were found above laboratory method detection limitations in soil vapor samples collected: 1,2,4 Trimethylbenzene (620 ug/m3 maximum), 1,3,5 Trimethylbenzene (150 ug/m3 maximum), 2-Butanone (540 ug/m3 maximum), Acetone (200 ug/m3), Benzene (150 ug/m3 maximum), Cyclohexane (44 g/m3 maximum), Dichlorodifluoromethane (1.8 ug/m3), Ethyl Benzene (590 ug/m3 maximum), n-Heptane (310 ug/m3 maximum), n-Hexane (230 ug/m3 maximum), o-xylene (670 ug/m3 maximum), m&p Xylene (2,300 ug/m3 maximum), Tetrachloroethlene (11 ug/m3 maximum) and Toluene (1,900 ug/m3 maximum).

4. Conclusions and Recommendations

4.1 Conclusions

Geophysical Survey

An Electromagnetic (EM) Magnetometer survey was conducted in an attempt to identify any possible unknown magnetic anomalies such as underground storage tanks (USTs) on the site. ESC used a Fisher TW-6 magnetometer in the inductive phase mode over the property accessible areas in an overlapping grid pattern. The results of the survey indicated no evidence of any magnetic anomalies indicative of USTs.

Soil Conditions

The results of this subsurface investigation has not identified soil contamination above NYSDEC Part 375 restricted use soil cleanup objectives. Total Lead, Nickel and Mercury concentrations in the surface 2-3 feet of fill soils were above unrestricted use soil cleanup objectives but below restricted use soil cleanup objectives. Below the fill soils is native sand and gravel deposits which meets NYSDEC Part 375 unrestricted soil cleanup standards.

Groundwater Quality

No groundwater was sampled on the property. No groundwater exists within 30 feet of the surface and therefore is not anticipated to be encountered during the proposed development therefore no de-watering activity is anticipated during foundation excavation.

Soil Vapor Conditions

Results of the soil vapor investigation identified concentrations of volatile organic compounds (VOCs) related to petroleum compounds above laboratory method detection limits. These VOC's are likely resulting from interchange with the ambient air surrounding the project site and adjacent neighborhood. The soil vapor conditions found are common of what is usually measured in shallow soils in the metropolitan New York neighborhoods. The concentration of chlorinated volatile organic compounds (CVOCs) are below the New York State Department of Health (NYSDOH) soil vapor Matrix concentrations (May 2017) and require no further action. (Note: The sample SV-1 canister was determined defective upon delivery at the lab and could not be analyzed, therefore there are no results for this sample location.) The remaining two soil vapor samples (SV-2 and SV-3) was determined adequate in the assessment of soil vapor conditions at the property.

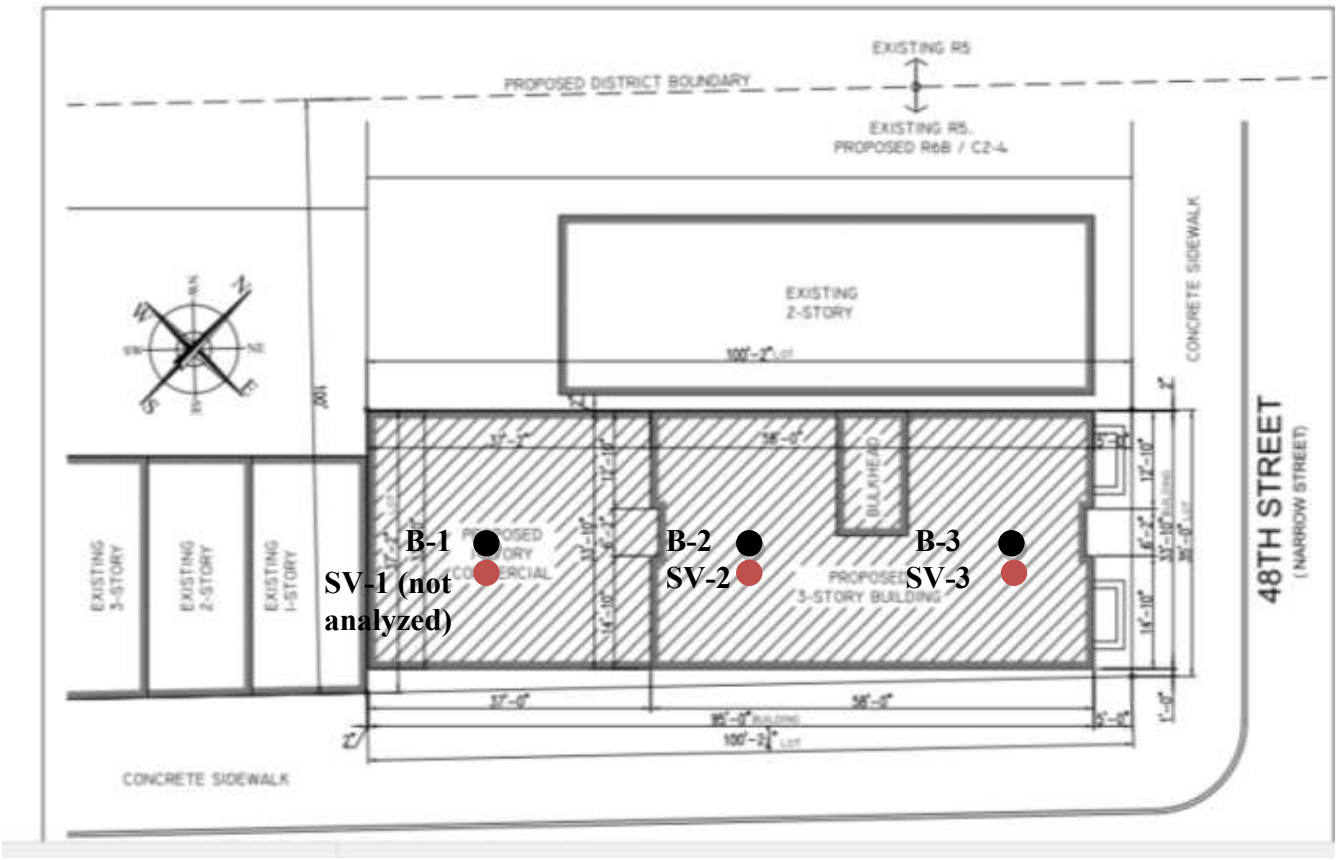
4.2 Recommendations

There are no recommendations for additional testing or remedial action being made at this time. Fill and native soil exported offsite should be disposed in accordance with New York State Department of Environmental Conservation (NYSDEC) Part 365 regulations.

The new building construction should have an engineered polyethylene vapor barrier under occupied areas of the building. The vapor barrier should be a minimum thickness of 20 mils under the foundation slab and foundation sidewalls in order to prevent any potential vapor migration into the building structure.

A Remedial Action Plan (RAP) detailing the installation of a vapor barrier and a Construction Health and Safety Plan (CHASP) should be written describing the means and methods for the vapor barrier installation and excavation and disposal of impacted soils.

Figure 1



Scale: 1''= 20ft

● Soil Boring ● SV Sample

Figure 1

Environmental Studies Corporation	Property Located at: 1776 48th Street Brooklyn, New York	Sample Collection Locations

Tables

Table 1 - Soil Results Summary

Sample ID York ID Sampling Date Client Matrix	NYSDEC Part 375 Restricted Use Soil Cleanup Objectives- Residential	NYSDEC Part 375 Restricted Use Soil Cleanup Objectives - Restricted Residential	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	B-1 0-2 ft Soil		B-1 10-12 ft Soil		B-2 0-2 ft Soil		B-2 10-12 ft Soil		B-3 0-2 ft Soil		B-3 10-12 ft Soil	
Compound				Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Volatile Organics, 8260	mg/Kg	mg/Kg	mg/Kg	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Dilution Factor				1		1		1		1		1		1	
1,1,1,2-Tetrachloroethane	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
1,1,1-Trichloroethane	100	100	0.68	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
1,1,2,2-Tetrachloroethane	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
1,1,2-Trichloro-1,2,2-trifluoroethane	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
1,1,2-Trichloroethane	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
1,1-Dichloroethane	19	26	0.27	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
1,1-Dichloroethylene	100	100	0.33	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
1,2,3-Trichlorobenzene	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
1,2,3-Trichloropropane	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
1,2,4-Trichlorobenzene	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
1,2,4-Trimethylbenzene	47	52	3.6	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
1,2-Dibromo-3-chloropropane	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
1,2-Dibromoethane	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
1,2-Dichlorobenzene	100	100	1.1	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
1,2-Dichloroethane	2.3	3.1	0.02	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
1,2-Dichloropropane	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
1,3,5-Trimethylbenzene	47	52	8.4	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
1,3-Dichlorobenzene	17	49	2.4	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
1,4-Dichlorobenzene	9.8	13	1.8	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
1,4-Dioxane	9.8	13	0.1	0.0350	U	0.0360	U	0.0390	U	0.0380	U	0.0560	U	0.0280	U
2-Butanone	100	100	0.12	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
2-Hexanone	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
4-Methyl-2-pentanone	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Acetone	100	100	0.05	0.00350	U	0.00360	U	0.00390	U	0.00380	U	0.00560	U	0.00280	U
Acrolein	~	~	~	0.00350	U	0.00360	U	0.00390	U	0.00380	U	0.00560	U	0.00280	U
Acrylonitrile	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Benzene	2.9	4.8	0.06	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Bromochloromethane	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Bromodichloromethane	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Bromoform	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Bromomethane	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Carbon disulfide	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U

Table 1 - Soil Results Summary

Sample ID York ID Sampling Date Client Matrix	NYSDEC Part 375 Restricted Use Soil Cleanup Objectives- Residential	NYSDEC Part 375 Restricted Use Soil Cleanup Objectives - Restricted Residential	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	B-1 0-2 ft Soil		B-1 10-12 ft Soil		B-2 0-2 ft Soil		B-2 10-12 ft Soil		B-3 0-2 ft Soil		B-3 10-12 ft Soil	
Compound				Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Carbon tetrachloride	1.4	2.4	0.76	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Chlorobenzene	100	100	1.1	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Chloroethane	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Chloroform	10	49	0.37	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Chloromethane	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
cis-1,2-Dichloroethylene	59	100	0.25	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
cis-1,3-Dichloropropylene	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Cyclohexane	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Dibromochloromethane	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Dibromomethane	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Dichlorodifluoromethane	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Ethyl Benzene	30	41	1	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Hexachlorobutadiene	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Isopropylbenzene	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Methyl acetate	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Methyl tert-butyl ether (MTBE)	62	100	0.93	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Methylcyclohexane	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Methylene chloride	51	100	0.05	0.00350	U	0.00360	U	0.00390	U	0.00380	U	0.00560	U	0.00280	U
n-Butylbenzene	100	100	12	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
n-Propylbenzene	100	100	3.9	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
o-Xylene	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
p- & m- Xylenes	~	~	~	0.00350	U	0.00360	U	0.00390	U	0.00380	U	0.00560	U	0.00280	U
p-Isopropyltoluene	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
sec-Butylbenzene	100	100	11	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Styrene	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
tert-Butyl alcohol (TBA)	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
tert-Butylbenzene	100	100	5.9	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Tetrachloroethylene	5.5	19	1.3	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Toluene	100	100	0.7	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
trans-1,2-Dichloroethylene	100	100	0.19	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
trans-1,3-Dichloropropylene	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
trans-1,4-dichloro-2-butene	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Trichloroethylene	10	21	0.47	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Trichlorofluoromethane	~	~	~	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U

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Sample ID York ID Sampling Date Client Matrix	NYSDEC Part 375 Restricted Use Soil Cleanup Objectives- Residential	NYSDEC Part 375 Restricted Use Soil Cleanup Objectives - Restricted Residential	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	B-1 0-2 ft Soil		B-1 10-12 ft Soil		B-2 0-2 ft Soil		B-2 10-12 ft Soil		B-3 0-2 ft Soil		B-3 10-12 ft Soil	
Compound				Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Vinyl Chloride	0.21	0.9	0.02	0.00180	U	0.00180	U	0.00200	U	0.00190	U	0.00280	U	0.00140	U
Xylenes, Total	100	100	0.26	0.00530	U	0.00530	U	0.00590	U	0.00560	U	0.00840	U	0.00420	U
Semi-Volatiles, 8270 Base/Neutrals	mg/Kg	mg/Kg	mg/Kg	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Dilution Factor				2		2		2		2		2		2	
1,2,4-Trichlorobenzene	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
1,2-Dichlorobenzene	100	100	1.1	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
1,3-Dichlorobenzene	17	49	2.4	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
1,4-Dichlorobenzene	9.8	13	1.8	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
2,4-Dinitrotoluene	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
2,6-Dinitrotoluene	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
2-Chloronaphthalene	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
2-Methylnaphthalene	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
3,3-Dichlorobenzidine	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
3-Nitroaniline	~	~	~	0.0928	U	0.0862	U	0.0865	U	0.0863	U	0.0921	U	0.0898	U
4-Bromophenyl phenyl ether	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
4-Chloroaniline	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
4-Chlorophenyl phenyl ether	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
4-Nitroaniline	~	~	~	0.0928	U	0.0862	U	0.0865	U	0.0863	U	0.0921	U	0.0898	U
Acenaphthene	100	100	20	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
Acenaphthylene	100	100	100	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
Aniline	~	~	~	0.186	U	0.173	U	0.173	U	0.173	U	0.184	U	0.180	U
Anthracene	100	100	100	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
Benzo(a)anthracene	1	1	1	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.102	D	0.101	D
Benzo(a)pyrene	1	1	1	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.117	D	0.115	D
Benzo(b)fluoranthene	1	1	1	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.110	D	0.105	D
Benzo(g,h,i)perylene	100	100	100	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0707	JD	0.0875	JD
Benzo(k)fluoranthene	1	3.9	0.8	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0905	JD	0.0933	D
Benzyl butyl phthalate	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
Bis(2-chloroethoxy)methane	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
Bis(2-chloroethyl)ether	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
Bis(2-chloroisopropyl)ether	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
Bis(2-ethylhexyl)phthalate	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
Carbazole	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
Chrysene	1	3.9	1	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.110	D	0.0983	D

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Compound				Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Dibenzo(a,h)anthracene	0.33	0.33	0.33	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
Dibenzofuran	14	59	7	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
Diethyl phthalate	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
Dimethyl phthalate	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
Di-n-butyl phthalate	~	~	~	0.0465	U	0.0432	U	0.0491	JD	0.0600	JD	0.0461	U	0.0450	U
Di-n-octyl phthalate	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
Fluoranthene	100	100	100	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.181	D	0.152	D
Fluorene	100	100	30	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
Hexachlorobenzene	0.33	1.2	0.33	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
Hexachlorobutadiene	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
Hexachlorocyclopentadiene	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
Hexachloroethane	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.5	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0869	JD	0.0983	D
Isophorone	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
Naphthalene	100	100	12	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
Nitrobenzene	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
N-Nitrosodimethylamine	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
N-nitroso-di-n-propylamine	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
N-Nitrosodiphenylamine	~	~	~	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0461	U	0.0450	U
Phenanthrene	100	100	100	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.0913	JD	0.0538	JD
Pyrene	100	100	100	0.0465	U	0.0432	U	0.0434	U	0.0433	U	0.167	D	0.136	D
Pyridine	~	~	~	0.186	U	0.173	U	0.173	U	0.173	U	0.184	U	0.180	U
Pesticides, 8081 target list	mg/Kg	mg/Kg	mg/Kg	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Dilution Factor				5		5		5		5		5		5	
4,4'-DDD	2.6	13	0.0033	0.00184	U	0.00171	U	0.00171	U	0.00171	U	0.00182	U	0.00178	U
4,4'-DDE	1.8	8.9	0.0033	0.00184	U	0.00171	U	0.00171	U	0.00171	U	0.00182	U	0.00178	U
4,4'-DDT	1.7	7.9	0.0033	0.00184	U	0.00171	U	0.00171	U	0.00171	U	0.00182	U	0.00178	U
Aldrin	0.019	0.097	0.005	0.00184	U	0.00171	U	0.00171	U	0.00171	U	0.00182	U	0.00178	U
alpha-BHC	0.097	0.48	0.02	0.00184	U	0.00171	U	0.00171	U	0.00171	U	0.00182	U	0.00178	U
alpha-Chlordane	0.91	4.2	0.094	0.00184	U	0.00171	U	0.00171	U	0.00171	U	0.00182	U	0.00178	U
beta-BHC	0.072	0.36	0.036	0.00184	U	0.00171	U	0.00171	U	0.00171	U	0.00182	U	0.00178	U
Chlordane, total	~	~	~	0.0367	U	0.0341	U	0.0342	U	0.0342	U	0.0364	U	0.0355	U
delta-BHC	100	100	0.04	0.00184	U	0.00171	U	0.00171	U	0.00171	U	0.00182	U	0.00178	U
Dieldrin	0.039	0.2	0.005	0.00184	U	0.00171	U	0.00171	U	0.00171	U	0.00182	U	0.00178	U

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Compound				Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Endosulfan I	4.8	24	2.4	0.00184	U	0.00171	U	0.00171	U	0.00171	U	0.00182	U	0.00178	U
Endosulfan II	4.8	24	2.4	0.00184	U	0.00171	U	0.00171	U	0.00171	U	0.00182	U	0.00178	U
Endosulfan sulfate	4.8	24	2.4	0.00184	U	0.00171	U	0.00171	U	0.00171	U	0.00182	U	0.00178	U
Endrin	2.2	11	0.014	0.00184	U	0.00171	U	0.00171	U	0.00171	U	0.00182	U	0.00178	U
Endrin aldehyde	~	~	~	0.00184	U	0.00171	U	0.00171	U	0.00171	U	0.00182	U	0.00178	U
Endrin ketone	~	~	~	0.00184	U	0.00171	U	0.00171	U	0.00171	U	0.00182	U	0.00178	U
gamma-BHC (Lindane)	0.28	1.3	0.1	0.00184	U	0.00171	U	0.00171	U	0.00171	U	0.00182	U	0.00178	U
gamma-Chlordane	~	~	~	0.00184	U	0.00171	U	0.00171	U	0.00171	U	0.00182	U	0.00178	U
Heptachlor	0.42	2.1	0.042	0.00184	U	0.00171	U	0.00171	U	0.00171	U	0.00182	U	0.00178	U
Heptachlor epoxide	~	~	~	0.00184	U	0.00171	U	0.00171	U	0.00171	U	0.00182	U	0.00178	U
Methoxychlor	~	~	~	0.00918	U	0.00853	U	0.00856	U	0.00854	U	0.00911	U	0.00888	U
Toxaphene	~	~	~	0.0929	U	0.0863	U	0.0866	U	0.0864	U	0.0922	U	0.0899	U
Metals, Target Analyte	mg/Kg	mg/Kg	mg/Kg	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Dilution Factor				1		1		1		1		1		1	
Aluminum	~	~	~	12,100	B	8,890	B	9,250	B	9,440	B	14,900	B	14,000	B
Antimony	~	~	~	2.830	U	2.660	U	2.620	U	2.630	U	2.780	U	2.740	U
Arsenic	16	16	13	2.620		1.600	U	2.630		1.580	U	8.190		4.870	
Barium	350	400	350	44.800		26.700		30.600		34.400		77.700		49.700	
Beryllium	14	72	7.2	0.0570	U	0.0530	U	0.0520	U	0.0530	U	0.0560	U	0.0550	U
Cadmium	2.5	4.3	2.5	0.339	U	0.319	U	0.314	U	0.316	U	0.333	U	0.328	U
Calcium	~	~	~	7,690		812		1,750		2,930		1,450		985	
Chromium	~	~	~	19.100		14.800		19.300		16.300		21.200		19.700	
Cobalt	~	~	~	9.020		7.100		9.510		11.700		8.510		8.700	
Copper	270	270	50	17.200		11.100		12.600		13		31.900		20.500	
Iron	~	~	~	17,300		14,100		16,300		15,600		18,800		18,400	
Lead	400	400	63	12.700		7.540		11		18.900		**104**		51	
Magnesium	~	~	~	3,670		2,710		4,660		4,560		2,550		2,920	
Manganese	2000	2000	1600	273		220		322		349		353		319	
Nickel	140	310	30	**35.3**		23.7		**48.6**		**46.3**		21.4		20.6	
Potassium	~	~	~	1,010		762		803		856		966		921	
Selenium	36	180	3.9	2.830	U	2.660	U	2.620	U	2.630	U	2.780	U	2.740	U
Silver	36	180	2	0.566	U	0.532	U	0.524	U	0.526	U	0.556	U	0.547	U
Sodium	~	~	~	380		145		173		200		268		294	
Thallium	~	~	~	2.830	U	2.660	U	2.620	U	2.630	U	2.780	U	2.740	U

Table 1 - Soil Results Summary

Sample ID York ID Sampling Date Client Matrix	NYSDEC Part 375 Restricted Use Soil Cleanup Objectives- Residential	NYSDEC Part 375 Restricted Use Soil Cleanup Objectives - Restricted Residential	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	B-1 0-2 ft Soil		B-1 10-12 ft Soil		B-2 0-2 ft Soil		B-2 10-12 ft Soil		B-3 0-2 ft Soil		B-3 10-12 ft Soil	
Compound				Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Vanadium	~	~	~	27.500		18.700		26.300		22.400		31.100		26.200	
Zinc	2200	10000	109	38.200		23.200		29		37		86.300		55.200	
Mercury by 7473	mg/Kg	mg/Kg	mg/Kg	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Dilution Factor				1		1		1		1		1		1	
Mercury	0.81	0.81	0.18	0.0393		0.0319	U	0.0314	U	0.119		**0.446**		**0.335**	
Total Solids				%		%		%		%		%		%	
Dilution Factor				1		1		1		1		1		1	
% Solids	~	~	~	88.400		93.900		95.400		95		90		91.400	
Polychlorinated Biphenyls (PCB)	mg/Kg	mg/Kg	mg/Kg	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Dilution Factor				1		1		1		1		1		1	
Aroclor 1016	~	~	~	0.0185	U	0.0172	U	0.0173	U	0.0172	U	0.0184	U	0.0179	U
Aroclor 1221	~	~	~	0.0185	U	0.0172	U	0.0173	U	0.0172	U	0.0184	U	0.0179	U
Aroclor 1232	~	~	~	0.0185	U	0.0172	U	0.0173	U	0.0172	U	0.0184	U	0.0179	U
Aroclor 1242	~	~	~	0.0185	U	0.0172	U	0.0173	U	0.0172	U	0.0184	U	0.0179	U
Aroclor 1248	~	~	~	0.0185	U	0.0172	U	0.0173	U	0.0172	U	0.0184	U	0.0179	U
Aroclor 1254	~	~	~	0.0185	U	0.0172	U	0.0173	U	0.0172	U	0.0184	U	0.0179	U
Aroclor 1260	~	~	~	0.0185	U	0.0172	U	0.0173	U	0.0172	U	0.0184	U	0.0179	U
Total PCBs	1	1	0.1	0.0185	U	0.0172	U	0.0173	U	0.0172	U	0.0184	U	0.0179	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 b

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 2 - Soil Vapor Results Summary

Sample ID York ID Sampling Date Client Matrix	NYSDOH Background Standards - Indoor Air - 25th Pctl	NYSDOH Background Standards - Indoor Air - Upper Fence	NYSDOH Background Standards - Outdoor Air - 25th Pctl	SV-2 Soil Vapor		SV-3 Soil Vapor	
Compound				Result	Q	Result	Q
Volatile Organics, EPA TO15 Full List	ug/m3	ug/m3	ug/m3	ug/m3		ug/m3	
Dilution Factor				9.57		16.69	
1,1,1,2-Tetrachloroethane	~	~	~	6.600	U	11	U
1,1,1-Trichloroethane	0.25	2.5	0.25	5.200	U	9.100	U
1,1,2,2-Tetrachloroethane	0.25	0.4	0.25	6.600	U	11	U
1,1,2-Trichloro-1,2,2-trifluoroethane	0.25	2.5	0.25	7.300	U	13	U
1,1,2-Trichloroethane	0.25	0.4	0.25	5.200	U	9.100	U
1,1-Dichloroethane	0.25	0.4	0.25	3.900	U	6.800	U
1,1-Dichloroethylene	0.25	0.4	0.25	0.950	U	1.700	U
1,2,4-Trichlorobenzene	0.25	0.5	0.25	7.100	U	12	U
1,2,4-Trimethylbenzene	0.7	9.8	0.25	**360**	D	**620**	D
1,2-Dibromoethane	0.25	0.4	0.25	7.400	U	13	U
1,2-Dichlorobenzene	0.25	0.5	0.25	5.800	U	10	U
1,2-Dichloroethane	0.25	0.4	0.25	3.900	U	6.800	U
1,2-Dichloropropane	0.25	0.4	0.25	4.400	U	7.700	U
1,2-Dichlorotetrafluoroethane	0.25	0.4	0.25	6.700	U	12	U
1,3,5-Trimethylbenzene	0.25	3.9	0.25	**77**	D	**150**	D
1,3-Butadiene	~	~	~	6.400	U	11	U
1,3-Dichlorobenzene	0.25	0.5	0.25	5.800	U	10	U
1,3-Dichloropropane	~	~	~	4.400	U	7.700	U
1,4-Dichlorobenzene	0.25	1.2	0.25	5.800	U	10	U
1,4-Dioxane	~	~	~	6.900	U	12	U
2-Butanone	0.25	16	0.25	**9.9**	D	**540**	D
2-Hexanone	~	~	~	7.800	J	25	D
3-Chloropropene	~	~	~	15	U	26	U
4-Methyl-2-pentanone	0.25	1.9	0.25	3.900	U	6.800	U
Acetone	9.9	115	3.40	4.500	U	**200**	D
Acrylonitrile	~	~	~	2.100	U	3.600	U
Benzene	1.1	13	0.6	**100**	D	**150**	D
Benzyl chloride	~	~	~	5	U	8.600	U
Bromodichloromethane	~	~	~	6.400	U	11	U
Bromoform	~	~	~	9.900	U	17	U
Bromomethane	0.25	0.5	0.25	3.700	U	6.500	U
Carbon disulfide	~	~	~	3	U	5.200	U
Carbon tetrachloride	0.25	1.3	0.25	1.500	U	2.600	U
Chlorobenzene	0.25	0.4	0.25	4.400	U	7.700	U
Chloroethane	0.25	0.4	0.25	2.500	U	4.400	U
Chloroform	0.25	1.2	0.25	4.700	U	8.100	U
Chloromethane	0.25	4.2	0.25	2	U	3.400	U
cis-1,2-Dichloroethylene	0.25	0.4	0.25	0.950	U	1.700	U
cis-1,3-Dichloropropylene	0.25	0.4	0.25	4.300	U	7.600	U
Cyclohexane	0.25	6.3	0.25	**42**	D	**44**	D
Dibromochloromethane	~	~	~	8.200	U	14	U
Dichlorodifluoromethane	0.25	10	0.25	4.700	U	8.300	U
Ethyl acetate	~	~	~	6.900	U	12	U
Ethyl Benzene	0.40	6.4	0.25	**390**	D	**590**	D
Hexachlorobutadiene	0.25	0.5	0.25	10	U	18	U

Table 2 - Soil Vapor Results Summary

Sample ID York ID Sampling Date Client Matrix	NYSDOH Background Standards - Indoor Air - 25th Pctl	NYSDOH Background Standards - Indoor Air - Upper Fence	NYSDOH Background Standards - Outdoor Air - 25th Pctl	SV-2 Soil Vapor		SV-3 Soil Vapor	
Compound				Result	Q	Result	Q
Volatile Organics, EPA TO15 Full List	ug/m3	ug/m3	ug/m3	ug/m3		ug/m3	
Isopropanol	~	~	~	30	D	8.200	U
Methyl Methacrylate	0.25	0.4	0.25	3.900	U	6.800	U
Methyl tert-butyl ether (MTBE)	0.25	14	0.25	3.500	U	6	U
Methylene chloride	0.30	16	0.25	6.600	U	12	U
n-Heptane	1	18	0.25	**230**	D	**310**	D
n-Hexane	0.60	14	0.25	**160**	D	**230**	D
o-Xylene	0.40	7.1	0.25	**420**	D	**670**	D
p- & m- Xylenes	0.5	11	0.25	**1,600**	D	**2,300**	D
p-Ethyltoluene	~	~	~	480	D	770	D
Propylene	~	~	~	4.600	D	52	D
Styrene	0.25	1.4	0.25	4.100	J	7.100	U
Tetrachloroethylene	0.25	2.5	0.25	**6.5**	D	**11**	J
Tetrahydrofuran	0.25	0.8	0.25	5.600	U	9.800	U
Toluene	3.5	57	0.60	**1,200**	D	**1,900**	D
trans-1,2-Dichloroethylene	~	~	~	3.800	U	6.600	U
trans-1,3-Dichloropropylene	0.25	~	0.25	4.300	U	7.600	U
Trichloroethylene	0.25	0.5	0.25	1.300	U	2.200	U
Trichlorofluoromethane (Freon 11)	1.1	12	0.25	5.400	U	9.400	U
Vinyl acetate	~	~	~	3.400	U	5.900	U
Vinyl bromide	~	~	~	4.200	U	7.300	U
Vinyl Chloride	0.25	0.4	0.25	1.200	U	2.100	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

U=analyte not detected at or above the level indicated

Appendix A – Site Photographs



PHOTO 1: 1776 48th Street Brooklyn, NY



PHOTO 2: Soil and Soil Vapor Sampling



PHOTO 3: Basement of 1776 48th Street Brooklyn, NY



PHOTO 4: Installing Soil Vapor sample probe B-3



PHOTO 5: Soil Sample B-1 0-2ft and 10-12ft



PHOTO 6: Soil Vapor Sample SV-1



PHOTO 7:. Soil Sample B-2 0-2ft and 10-12ft



PHOTO 8: Soil Vapor sample SV-2



PHOTO 9: Soil Sample B-3 0-2ft and 10-12ft



Photo 10: Soil Vapor Sample SV-3

Appendix B – Laboratory Data Sheets

Technical Report

prepared for:

Tri-State Drilling Technologies, Inc.
94 Gardiners Avenue #388
Levittown NY, 11756
Attention: Nicholas Recchia

Report Date: 07/23/2020
Client Project ID: 1776 48th St.
York Project (SDG) No.: 20G0654

Report Date: 07/23/2020
Client Project ID: 1776 48th St.
York Project (SDG) No.: 20G0654

Tri-State Drilling Technologies, Inc.
94 Gardiners Avenue #388
Levittown NY, 11756
Attention: Nicholas Recchia

Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on July 17, 2020 with a temperature of 1.9 C. The project was identified as your project: **1776 48th St.**.

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables.

All samples were received in proper condition meeting the customary acceptance requirements for environmental samples except those indicated under the Sample and Analysis Qualifiers section of this report.

All analyses met the method and laboratory standard operating procedure requirements except as indicated by any data flags, the meaning of which are explained in the Sample and Data Qualifiers Relating to This Work Order section of this report and case narrative if applicable.

The results of the analyses, which are all reported on dry weight basis (soils) unless otherwise noted, are detailed in the following pages.

Please contact Client Services at 203.325.1371 with any questions regarding this report.

York Sample ID	Client Sample ID	Matrix	Date Collected	Date Received
20G0654-01	B-1 0-2 ft	Soil	07/16/2020	07/17/2020
20G0654-02	B-1 10-12 ft	Soil	07/16/2020	07/17/2020
20G0654-03	B-2 0-2 ft	Soil	07/16/2020	07/17/2020
20G0654-04	B-2 10-12 ft	Soil	07/16/2020	07/17/2020
20G0654-05	B-3 0-2 ft	Soil	07/16/2020	07/17/2020
20G0654-06	B-3 10-12 ft	Soil	07/16/2020	07/17/2020

General Notes for York Project (SDG) No.: 20G0654

1. The RLs and MDLs (Reporting Limit and Method Detection Limit respectively) reported are adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference. The RL(REPORTING LIMIT) is based upon the lowest standard utilized for the calibration where applicable.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All analyses conducted met method or Laboratory SOP requirements. See the Sample and Data Qualifiers Section for further information.
6. It is noted that no analyses reported herein were subcontracted to another laboratory, unless noted in the report.
7. This report reflects results that relate only to the samples submitted on the attached chain-of-custody form(s) received by York.
8. Analyses conducted at York Analytical Laboratories, Inc. Stratford, CT are indicated by NY Cert. No. 10854; those conducted at York Analytical Laboratories, Inc., Richmond Hill, NY are indicated by NY Cert. No. 12058.

Approved By: 

Date: 07/23/2020

Benjamin Gulizia
Laboratory Director

Sample Information

Client Sample ID: B-1 0-2 ft

York Sample ID: 20G0654-01

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 9:00 am	07/17/2020

Volatile Organics, 8260 - Comprehensive

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 5035A

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
630-20-6	1,1,1,2-Tetrachloroethane	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
71-55-6	1,1,1-Trichloroethane	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
79-34-5	1,1,2,2-Tetrachloroethane	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
79-00-5	1,1,2-Trichloroethane	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-34-3	1,1-Dichloroethane	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-35-4	1,1-Dichloroethylene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
87-61-6	1,2,3-Trichlorobenzene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
96-18-4	1,2,3-Trichloropropane	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP		
120-82-1	1,2,4-Trichlorobenzene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
95-63-6	1,2,4-Trimethylbenzene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
96-12-8	1,2-Dibromo-3-chloropropane	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
106-93-4	1,2-Dibromoethane	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
95-50-1	1,2-Dichlorobenzene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
107-06-2	1,2-Dichloroethane	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
78-87-5	1,2-Dichloropropane	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-67-8	1,3,5-Trimethylbenzene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
541-73-1	1,3-Dichlorobenzene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
106-46-7	1,4-Dichlorobenzene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
123-91-1	1,4-Dioxane	ND		ug/kg dry	35	70	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		

Sample Information

Client Sample ID: B-1 0-2 ft

York Sample ID: 20G0654-01

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 9:00 am	07/17/2020

Volatile Organics, 8260 - Comprehensive

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 5035A

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
78-93-3	2-Butanone	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
591-78-6	2-Hexanone	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-10-1	4-Methyl-2-pentanone	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
67-64-1	Acetone	ND		ug/kg dry	3.5	7.0	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
107-02-8	Acrolein	ND		ug/kg dry	3.5	7.0	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
107-13-1	Acrylonitrile	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
71-43-2	Benzene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
74-97-5	Bromochloromethane	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
75-27-4	Bromodichloromethane	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-25-2	Bromoform	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
74-83-9	Bromomethane	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-15-0	Carbon disulfide	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
56-23-5	Carbon tetrachloride	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-90-7	Chlorobenzene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-00-3	Chloroethane	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
67-66-3	Chloroform	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
74-87-3	Chloromethane	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
156-59-2	cis-1,2-Dichloroethylene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
10061-01-5	cis-1,3-Dichloropropylene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
110-82-7	Cyclohexane	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
124-48-1	Dibromochloromethane	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		

Sample Information

Client Sample ID: B-1 0-2 ft

York Sample ID: 20G0654-01

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 9:00 am	07/17/2020

Volatile Organics, 8260 - Comprehensive

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 5035A

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
74-95-3	Dibromomethane	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
75-71-8	Dichlorodifluoromethane	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
100-41-4	Ethyl Benzene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
87-68-3	Hexachlorobutadiene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
98-82-8	Isopropylbenzene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
79-20-9	Methyl acetate	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
1634-04-4	Methyl tert-butyl ether (MTBE)	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-87-2	Methylcyclohexane	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
75-09-2	Methylene chloride	ND		ug/kg dry	3.5	7.0	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
104-51-8	n-Butylbenzene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
103-65-1	n-Propylbenzene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
95-47-6	o-Xylene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,PA		
179601-23-1	p- & m- Xylenes	ND		ug/kg dry	3.5	7.0	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,PA		
99-87-6	p-Isopropyltoluene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
135-98-8	sec-Butylbenzene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
100-42-5	Styrene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-65-0	tert-Butyl alcohol (TBA)	ND		ug/kg dry	1.8	18	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
98-06-6	tert-Butylbenzene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
127-18-4	Tetrachloroethylene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-88-3	Toluene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
156-60-5	trans-1,2-Dichloroethylene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		

Sample Information

Client Sample ID: B-1 0-2 ft

York Sample ID: 20G0654-01

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 9:00 am	07/17/2020

Volatile Organics, 8260 - Comprehensive

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 5035A

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
10061-02-6	trans-1,3-Dichloropropylene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
110-57-6	* trans-1,4-dichloro-2-butene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH		
79-01-6	Trichloroethylene	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-69-4	Trichlorofluoromethane	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-01-4	Vinyl Chloride	ND		ug/kg dry	1.8	3.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
1330-20-7	Xylenes, Total	ND		ug/kg dry	5.3	11	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:11	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		

	Surrogate Recoveries	Result	Acceptance Range
17060-07-0	*Surrogate: SURR: 1,2-Dichloroethane-d4*	*105 %*	*77-125*
2037-26-5	*Surrogate: SURR: Toluene-d8*	*104 %*	*85-120*
460-00-4	*Surrogate: SURR: p-Bromofluorobenzene*	*101 %*	*76-130*

Semi-Volatiles, 8270 Base/Neutrals

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
120-82-1	1,2,4-Trichlorobenzene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
95-50-1	1,2-Dichlorobenzene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	NELAC-NY10854,PADEP		
541-73-1	1,3-Dichlorobenzene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	NELAC-NY10854,PADEP		
106-46-7	1,4-Dichlorobenzene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	NELAC-NY10854,PADEP		
121-14-2	2,4-Dinitrotoluene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
606-20-2	2,6-Dinitrotoluene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
91-58-7	2-Chloronaphthalene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
91-57-6	2-Methylnaphthalene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
91-94-1	3,3-Dichlorobenzidine	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	NELAC-NY10854,NJDEP,PADEP		
99-09-2	3-Nitroaniline	ND		ug/kg dry	92.8	185	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		

Sample Information

Client Sample ID: B-1 0-2 ft

York Sample ID: 20G0654-01

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 9:00 am	07/17/2020

Semi-Volatiles, 8270 Base/Neutrals

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
101-55-3	4-Bromophenyl phenyl ether	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
106-47-8	4-Chloroaniline	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
7005-72-3	4-Chlorophenyl phenyl ether	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
100-01-6	4-Nitroaniline	ND		ug/kg dry	92.8	185	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
83-32-9	Acenaphthene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
208-96-8	Acenaphthylene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
62-53-3	Aniline	ND		ug/kg dry	186	372	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	NELAC-NY10854,NJDEP,PADEP		
120-12-7	Anthracene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
56-55-3	Benzo(a)anthracene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
50-32-8	Benzo(a)pyrene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
205-99-2	Benzo(b)fluoranthene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
191-24-2	Benzo(g,h,i)perylene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
207-08-9	Benzo(k)fluoranthene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
85-68-7	Benzyl butyl phthalate	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
111-91-1	Bis(2-chloroethoxy)methane	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
111-44-4	Bis(2-chloroethyl)ether	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
108-60-1	Bis(2-chloroisopropyl)ether	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
117-81-7	Bis(2-ethylhexyl)phthalate	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
86-74-8	Carbazole	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
218-01-9	Chrysene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
53-70-3	Dibenzo(a,h)anthracene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		

Sample Information

Client Sample ID: B-1 0-2 ft

York Sample ID: 20G0654-01

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 9:00 am	07/17/2020

Semi-Volatiles, 8270 Base/Neutrals

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
132-64-9	Dibenzofuran	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
84-66-2	Diethyl phthalate	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
131-11-3	Dimethyl phthalate	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
84-74-2	Di-n-butyl phthalate	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
117-84-0	Di-n-octyl phthalate	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
206-44-0	Fluoranthene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
86-73-7	Fluorene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	NELAC-NY10854,NJDEP,PADEP		
118-74-1	Hexachlorobenzene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
87-68-3	Hexachlorobutadiene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
77-47-4	Hexachlorocyclopentadiene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
67-72-1	Hexachloroethane	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
193-39-5	Indeno(1,2,3-cd)pyrene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
78-59-1	Isophorone	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
91-20-3	Naphthalene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
98-95-3	Nitrobenzene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
62-75-9	N-Nitrosodimethylamine	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
621-64-7	N-nitroso-di-n-propylamine	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
86-30-6	N-Nitrosodiphenylamine	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
85-01-8	Phenanthrene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
129-00-0	Pyrene	ND		ug/kg dry	46.5	92.8	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
110-86-1	Pyridine	ND		ug/kg dry	186	372	2	EPA 8270D	07/22/2020 06:17	07/22/2020 21:48	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		

Surrogate Recoveries	Result	Acceptance Range

Sample Information

Client Sample ID: B-1 0-2 ft

York Sample ID: 20G0654-01

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 9:00 am	07/17/2020

Semi-Volatiles, 8270 Base/Neutrals

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
4165-60-0	*Surrogate: SURR: Nitrobenzene-d5*	*84.7 %*			*22-108*						
321-60-8	*Surrogate: SURR: 2-Fluorobiphenyl*	*67.2 %*			*21-113*						
1718-51-0	*Surrogate: SURR: Terphenyl-d14*	*82.1 %*			*24-116*						

Pesticides, 8081 target list

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
72-54-8	4,4'-DDD	ND		ug/kg dry	1.84	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:30	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
72-55-9	4,4'-DDE	ND		ug/kg dry	1.84	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:30	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
50-29-3	4,4'-DDT	ND		ug/kg dry	1.84	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:30	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
309-00-2	Aldrin	ND		ug/kg dry	1.84	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:30	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
319-84-6	alpha-BHC	ND		ug/kg dry	1.84	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:30	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
5103-71-9	alpha-Chlordane	ND		ug/kg dry	1.84	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:30	CM
							Certifications:	NELAC-NY10854,NJDEP		
319-85-7	beta-BHC	ND		ug/kg dry	1.84	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:30	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
57-74-9	Chlordane, total	ND		ug/kg dry	36.7	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:30	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
319-86-8	delta-BHC	ND		ug/kg dry	1.84	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:30	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
60-57-1	Dieldrin	ND		ug/kg dry	1.84	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:30	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
959-98-8	Endosulfan I	ND		ug/kg dry	1.84	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:30	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
33213-65-9	Endosulfan II	ND		ug/kg dry	1.84	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:30	CM
							Certifications:	CTDOH,NELAC-NY10854		
1031-07-8	Endosulfan sulfate	ND		ug/kg dry	1.84	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:30	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
72-20-8	Endrin	ND		ug/kg dry	1.84	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:30	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
7421-93-4	Endrin aldehyde	ND		ug/kg dry	1.84	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:30	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
53494-70-5	Endrin ketone	ND		ug/kg dry	1.84	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:30	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
58-89-9	gamma-BHC (Lindane)	ND		ug/kg dry	1.84	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:30	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		

Sample Information

Client Sample ID: B-1 0-2 ft

York Sample ID: 20G0654-01

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 9:00 am	07/17/2020

Pesticides, 8081 target list

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
5566-34-7	gamma-Chlordane	ND		ug/kg dry	1.84	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:30	CM
							Certifications: NELAC-NY10854,NJDEP			
76-44-8	Heptachlor	ND		ug/kg dry	1.84	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:30	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
1024-57-3	Heptachlor epoxide	ND		ug/kg dry	1.84	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:30	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
72-43-5	Methoxychlor	ND		ug/kg dry	9.18	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:30	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
8001-35-2	Toxaphene	ND		ug/kg dry	92.9	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:30	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			

	Surrogate Recoveries	Result	Acceptance Range
2051-24-3	*Surrogate: Decachlorobiphenyl*	*122 %*	*30-150*
877-09-8	*Surrogate: Tetrachloro-m-xylene*	*78.2 %*	*30-150*

Polychlorinated Biphenyls (PCB)

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
12674-11-2	Aroclor 1016	ND		mg/kg dry	0.0185	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:16	BJ
							Certifications: NELAC-NY10854,CTDOH,NJDEP,PADEP			
11104-28-2	Aroclor 1221	ND		mg/kg dry	0.0185	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:16	BJ
							Certifications: NELAC-NY10854,CTDOH,NJDEP,PADEP			
11141-16-5	Aroclor 1232	ND		mg/kg dry	0.0185	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:16	BJ
							Certifications: NELAC-NY10854,CTDOH,NJDEP,PADEP			
53469-21-9	Aroclor 1242	ND		mg/kg dry	0.0185	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:16	BJ
							Certifications: NELAC-NY10854,CTDOH,NJDEP,PADEP			
12672-29-6	Aroclor 1248	ND		mg/kg dry	0.0185	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:16	BJ
							Certifications: NELAC-NY10854,CTDOH,NJDEP,PADEP			
11097-69-1	Aroclor 1254	ND		mg/kg dry	0.0185	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:16	BJ
							Certifications: NELAC-NY10854,CTDOH,NJDEP,PADEP			
11096-82-5	Aroclor 1260	ND		mg/kg dry	0.0185	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:16	BJ
							Certifications: NELAC-NY10854,CTDOH,NJDEP,PADEP			
1336-36-3	* Total PCBs	ND		mg/kg dry	0.0185	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:16	BJ
							Certifications:			

	Surrogate Recoveries	Result	Acceptance Range
877-09-8	*Surrogate: Tetrachloro-m-xylene*	*61.0 %*	*30-140*
2051-24-3	*Surrogate: Decachlorobiphenyl*	*84.5 %*	*30-140*

Sample Information

Client Sample ID: B-1 0-2 ft

York Sample ID: 20G0654-01

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 9:00 am	07/17/2020

Metals, Target Analyte

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3050B

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
7429-90-5	**Aluminum**	**12100**	B	mg/kg dry	5.66	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:54	KML
7440-36-0	Antimony	ND		mg/kg dry	2.83	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:54	KML
7440-38-2	**Arsenic**	**2.62**		mg/kg dry	1.70	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:54	KML
7440-39-3	**Barium**	**44.8**		mg/kg dry	2.83	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:54	KML
7440-41-7	Beryllium	ND		mg/kg dry	0.057	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:54	KML
7440-43-9	Cadmium	ND		mg/kg dry	0.339	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:54	KML
7440-70-2	**Calcium**	**7690**		mg/kg dry	5.66	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:54	KML
7440-47-3	**Chromium**	**19.1**		mg/kg dry	0.566	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:54	KML
7440-48-4	**Cobalt**	**9.02**		mg/kg dry	0.453	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:54	KML
7440-50-8	**Copper**	**17.2**		mg/kg dry	2.26	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:54	KML
7439-89-6	**Iron**	**17300**		mg/kg dry	28.3	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:54	KML
7439-92-1	**Lead**	**12.7**		mg/kg dry	0.566	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:54	KML
7439-95-4	**Magnesium**	**3670**		mg/kg dry	5.66	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:54	KML
7439-96-5	**Manganese**	**273**		mg/kg dry	0.566	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:54	KML
7440-02-0	**Nickel**	**35.3**		mg/kg dry	1.13	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:54	KML
7440-09-7	**Potassium**	**1010**		mg/kg dry	5.66	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:54	KML
7782-49-2	Selenium	ND		mg/kg dry	2.83	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:54	KML
7440-22-4	Silver	ND		mg/kg dry	0.566	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:54	KML
7440-23-5	**Sodium**	**380**		mg/kg dry	56.6	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:54	KML
7440-28-0	Thallium	ND		mg/kg dry	2.83	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:54	KML
7440-62-2	**Vanadium**	**27.5**		mg/kg dry	1.13	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:54	KML
7440-66-6	**Zinc**	**38.2**		mg/kg dry	2.83	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:54	KML

Sample Information

Client Sample ID: B-1 0-2 ft

York Sample ID: 20G0654-01

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 9:00 am	07/17/2020

Mercury by 7473

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 7473 soil

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
7439-97-6	**Mercury**	**0.0393**		mg/kg dry	0.0339	1	EPA 7473	07/17/2020 14:36	07/17/2020 19:00	MAO
							Certifications:	CTDOH,NJDEP,NELAC-NY10854,PADEP		

Total Solids

Log-in Notes:

Sample Notes:

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**88.4**		%	0.100	1	SM 2540G	07/20/2020 08:06	07/20/2020 15:11	WJM
							Certifications:	CTDOH		

Sample Information

Client Sample ID: B-1 10-12 ft

York Sample ID: 20G0654-02

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 9:30 am	07/17/2020

Volatile Organics, 8260 - Comprehensive

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 5035A

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
630-20-6	1,1,1,2-Tetrachloroethane	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
71-55-6	1,1,1-Trichloroethane	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
79-34-5	1,1,2,2-Tetrachloroethane	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
79-00-5	1,1,2-Trichloroethane	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-34-3	1,1-Dichloroethane	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-35-4	1,1-Dichloroethylene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
87-61-6	1,2,3-Trichlorobenzene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
96-18-4	1,2,3-Trichloropropane	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP		

Sample Information

Client Sample ID: B-1 10-12 ft

York Sample ID: 20G0654-02

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 9:30 am	07/17/2020

Volatile Organics, 8260 - Comprehensive

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 5035A

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
120-82-1	1,2,4-Trichlorobenzene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 14:39 NELAC-NY10854,NELAC-NY12058,NJDEP,PAL	SS
95-63-6	1,2,4-Trimethylbenzene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 14:39 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
96-12-8	1,2-Dibromo-3-chloropropane	ND		ug/kg dry	1.8	3.6	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 14:39 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
106-93-4	1,2-Dibromoethane	ND		ug/kg dry	1.8	3.6	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 14:39 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
95-50-1	1,2-Dichlorobenzene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 14:39 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
107-06-2	1,2-Dichloroethane	ND		ug/kg dry	1.8	3.6	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 14:39 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
78-87-5	1,2-Dichloropropane	ND		ug/kg dry	1.8	3.6	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 14:39 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
108-67-8	1,3,5-Trimethylbenzene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 14:39 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
541-73-1	1,3-Dichlorobenzene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 14:39 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
106-46-7	1,4-Dichlorobenzene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 14:39 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
123-91-1	1,4-Dioxane	ND		ug/kg dry	36	71	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 14:39 NELAC-NY10854,NELAC-NY12058,NJDEP,PAL	SS
78-93-3	2-Butanone	ND		ug/kg dry	1.8	3.6	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 14:39 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
591-78-6	2-Hexanone	ND		ug/kg dry	1.8	3.6	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 14:39 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
108-10-1	4-Methyl-2-pentanone	ND		ug/kg dry	1.8	3.6	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 14:39 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
67-64-1	Acetone	ND		ug/kg dry	3.6	7.1	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 14:39 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
107-02-8	Acrolein	ND		ug/kg dry	3.6	7.1	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 14:39 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
107-13-1	Acrylonitrile	ND		ug/kg dry	1.8	3.6	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 14:39 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
71-43-2	Benzene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 14:39 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
74-97-5	Bromochloromethane	ND		ug/kg dry	1.8	3.6	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 14:39 NELAC-NY10854,NELAC-NY12058,NJDEP,PAL	SS
75-27-4	Bromodichloromethane	ND		ug/kg dry	1.8	3.6	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 14:39 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
75-25-2	Bromoform	ND		ug/kg dry	1.8	3.6	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 14:39 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS

Sample Information

Client Sample ID: B-1 10-12 ft

York Sample ID: 20G0654-02

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 9:30 am	07/17/2020

Volatile Organics, 8260 - Comprehensive

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 5035A

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
74-83-9	Bromomethane	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-15-0	Carbon disulfide	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
56-23-5	Carbon tetrachloride	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-90-7	Chlorobenzene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-00-3	Chloroethane	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
67-66-3	Chloroform	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
74-87-3	Chloromethane	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
156-59-2	cis-1,2-Dichloroethylene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
10061-01-5	cis-1,3-Dichloropropylene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
110-82-7	Cyclohexane	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
124-48-1	Dibromochloromethane	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
74-95-3	Dibromomethane	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
75-71-8	Dichlorodifluoromethane	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
100-41-4	Ethyl Benzene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
87-68-3	Hexachlorobutadiene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
98-82-8	Isopropylbenzene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
79-20-9	Methyl acetate	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
1634-04-4	Methyl tert-butyl ether (MTBE)	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-87-2	Methylcyclohexane	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
75-09-2	Methylene chloride	ND		ug/kg dry	3.6	7.1	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
104-51-8	n-Butylbenzene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		

Sample Information

Client Sample ID: B-1 10-12 ft

York Sample ID: 20G0654-02

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 9:30 am	07/17/2020

Volatile Organics, 8260 - Comprehensive

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 5035A

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
103-65-1	n-Propylbenzene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
95-47-6	o-Xylene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,PA		
179601-23-1	p- & m- Xylenes	ND		ug/kg dry	3.6	7.1	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,PA		
99-87-6	p-Isopropyltoluene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
135-98-8	sec-Butylbenzene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
100-42-5	Styrene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-65-0	tert-Butyl alcohol (TBA)	ND		ug/kg dry	1.8	18	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
98-06-6	tert-Butylbenzene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
127-18-4	Tetrachloroethylene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-88-3	Toluene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
156-60-5	trans-1,2-Dichloroethylene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
10061-02-6	trans-1,3-Dichloropropylene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
110-57-6	* trans-1,4-dichloro-2-butene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH		
79-01-6	Trichloroethylene	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-69-4	Trichlorofluoromethane	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-01-4	Vinyl Chloride	ND		ug/kg dry	1.8	3.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
1330-20-7	Xylenes, Total	ND		ug/kg dry	5.3	11	1	EPA 8260C	07/20/2020 09:30	07/20/2020 14:39	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		

	Surrogate Recoveries	Result	Acceptance Range
17060-07-0	*Surrogate: SURR: 1,2-Dichloroethane-d4*	*104 %*	*77-125*
2037-26-5	*Surrogate: SURR: Toluene-d8*	*104 %*	*85-120*
460-00-4	*Surrogate: SURR: p-Bromofluorobenzene*	*99.4 %*	*76-130*

Sample Information

Client Sample ID: B-1 10-12 ft

York Sample ID: 20G0654-02

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 9:30 am	07/17/2020

Semi-Volatiles, 8270 Base/Neutrals

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
120-82-1	1,2,4-Trichlorobenzene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 22:19	KH
95-50-1	1,2-Dichlorobenzene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D Certifications: NELAC-NY10854,PADEP	07/22/2020 06:17	07/22/2020 22:19	KH
541-73-1	1,3-Dichlorobenzene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D Certifications: NELAC-NY10854,PADEP	07/22/2020 06:17	07/22/2020 22:19	KH
106-46-7	1,4-Dichlorobenzene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D Certifications: NELAC-NY10854,PADEP	07/22/2020 06:17	07/22/2020 22:19	KH
121-14-2	2,4-Dinitrotoluene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 22:19	KH
606-20-2	2,6-Dinitrotoluene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 22:19	KH
91-58-7	2-Chloronaphthalene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 22:19	KH
91-57-6	2-Methylnaphthalene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 22:19	KH
91-94-1	3,3-Dichlorobenzidine	ND		ug/kg dry	43.2	86.2	2	EPA 8270D Certifications: NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 22:19	KH
99-09-2	3-Nitroaniline	ND		ug/kg dry	86.2	172	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 22:19	KH
101-55-3	4-Bromophenyl phenyl ether	ND		ug/kg dry	43.2	86.2	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 22:19	KH
106-47-8	4-Chloroaniline	ND		ug/kg dry	43.2	86.2	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 22:19	KH
7005-72-3	4-Chlorophenyl phenyl ether	ND		ug/kg dry	43.2	86.2	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 22:19	KH
100-01-6	4-Nitroaniline	ND		ug/kg dry	86.2	172	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 22:19	KH
83-32-9	Acenaphthene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 22:19	KH
208-96-8	Acenaphthylene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 22:19	KH
62-53-3	Aniline	ND		ug/kg dry	173	345	2	EPA 8270D Certifications: NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 22:19	KH
120-12-7	Anthracene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 22:19	KH
56-55-3	Benzo(a)anthracene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 22:19	KH
50-32-8	Benzo(a)pyrene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 22:19	KH
205-99-2	Benzo(b)fluoranthene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 22:19	KH

Sample Information

Client Sample ID: B-1 10-12 ft

York Sample ID: 20G0654-02

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 9:30 am	07/17/2020

Semi-Volatiles, 8270 Base/Neutrals

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
191-24-2	Benzo(g,h,i)perylene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
207-08-9	Benzo(k)fluoranthene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
85-68-7	Benzyl butyl phthalate	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
111-91-1	Bis(2-chloroethoxy)methane	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
111-44-4	Bis(2-chloroethyl)ether	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
108-60-1	Bis(2-chloroisopropyl)ether	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
117-81-7	Bis(2-ethylhexyl)phthalate	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
86-74-8	Carbazole	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
218-01-9	Chrysene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
53-70-3	Dibenzo(a,h)anthracene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
132-64-9	Dibenzofuran	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
84-66-2	Diethyl phthalate	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
131-11-3	Dimethyl phthalate	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
84-74-2	Di-n-butyl phthalate	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
117-84-0	Di-n-octyl phthalate	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
206-44-0	Fluoranthene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
86-73-7	Fluorene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	NELAC-NY10854,NJDEP,PADEP		
118-74-1	Hexachlorobenzene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
87-68-3	Hexachlorobutadiene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
77-47-4	Hexachlorocyclopentadiene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
67-72-1	Hexachloroethane	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		

Sample Information

Client Sample ID: B-1 10-12 ft

York Sample ID: 20G0654-02

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 9:30 am	07/17/2020

Semi-Volatiles, 8270 Base/Neutrals

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
193-39-5	Indeno(1,2,3-cd)pyrene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
78-59-1	Isophorone	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
91-20-3	Naphthalene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
98-95-3	Nitrobenzene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
62-75-9	N-Nitrosodimethylamine	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
621-64-7	N-nitroso-di-n-propylamine	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
86-30-6	N-Nitrosodiphenylamine	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
85-01-8	Phenanthrene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
129-00-0	Pyrene	ND		ug/kg dry	43.2	86.2	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
110-86-1	Pyridine	ND		ug/kg dry	173	345	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:19	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		

	Surrogate Recoveries	Result	Acceptance Range
4165-60-0	*Surrogate: SURR: Nitrobenzene-d5*	*77.4 %*	*22-108*
321-60-8	*Surrogate: SURR: 2-Fluorobiphenyl*	*62.8 %*	*21-113*
1718-51-0	*Surrogate: SURR: Terphenyl-d14*	*79.1 %*	*24-116*

Pesticides, 8081 target list

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
72-54-8	4,4'-DDD	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:46	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
72-55-9	4,4'-DDE	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:46	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
50-29-3	4,4'-DDT	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:46	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
309-00-2	Aldrin	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:46	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
319-84-6	alpha-BHC	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:46	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
5103-71-9	alpha-Chlordane	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:46	CM
							Certifications:	NELAC-NY10854,NJDEP		

Sample Information

Client Sample ID: B-1 10-12 ft

York Sample ID: 20G0654-02

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 9:30 am	07/17/2020

Pesticides, 8081 target list

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
319-85-7	beta-BHC	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:46	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
57-74-9	Chlordane, total	ND		ug/kg dry	34.1	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:46	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
319-86-8	delta-BHC	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:46	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
60-57-1	Dieldrin	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:46	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
959-98-8	Endosulfan I	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:46	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
33213-65-9	Endosulfan II	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:46	CM
							Certifications:	CTDOH,NELAC-NY10854		
1031-07-8	Endosulfan sulfate	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:46	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
72-20-8	Endrin	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:46	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
7421-93-4	Endrin aldehyde	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:46	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
53494-70-5	Endrin ketone	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:46	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
58-89-9	gamma-BHC (Lindane)	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:46	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
5566-34-7	gamma-Chlordane	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:46	CM
							Certifications:	NELAC-NY10854,NJDEP		
76-44-8	Heptachlor	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:46	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
1024-57-3	Heptachlor epoxide	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:46	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
72-43-5	Methoxychlor	ND		ug/kg dry	8.53	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:46	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
8001-35-2	Toxaphene	ND		ug/kg dry	86.3	5	EPA 8081B	07/22/2020 05:39	07/22/2020 17:46	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		

	Surrogate Recoveries	Result	Acceptance Range
2051-24-3	*Surrogate: Decachlorobiphenyl*	*141 %*	*30-150*
877-09-8	*Surrogate: Tetrachloro-m-xylene*	*89.1 %*	*30-150*

Polychlorinated Biphenyls (PCB)

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
12674-11-2	Aroclor 1016	ND		mg/kg dry	0.0172	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:29	BJ
							Certifications:	NELAC-NY10854,CTDOH,NJDEP,PADEP		

Sample Information

Client Sample ID: B-1 10-12 ft

York Sample ID: 20G0654-02

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 9:30 am	07/17/2020

Polychlorinated Biphenyls (PCB)

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
11104-28-2	Aroclor 1221	ND		mg/kg dry	0.0172	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:29	BJ
							Certifications:	NELAC-NY10854,CTDOH,NJDEP,PADEP		
11141-16-5	Aroclor 1232	ND		mg/kg dry	0.0172	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:29	BJ
							Certifications:	NELAC-NY10854,CTDOH,NJDEP,PADEP		
53469-21-9	Aroclor 1242	ND		mg/kg dry	0.0172	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:29	BJ
							Certifications:	NELAC-NY10854,CTDOH,NJDEP,PADEP		
12672-29-6	Aroclor 1248	ND		mg/kg dry	0.0172	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:29	BJ
							Certifications:	NELAC-NY10854,CTDOH,NJDEP,PADEP		
11097-69-1	Aroclor 1254	ND		mg/kg dry	0.0172	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:29	BJ
							Certifications:	NELAC-NY10854,CTDOH,NJDEP,PADEP		
11096-82-5	Aroclor 1260	ND		mg/kg dry	0.0172	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:29	BJ
							Certifications:	NELAC-NY10854,CTDOH,NJDEP,PADEP		
1336-36-3	* Total PCBs	ND		mg/kg dry	0.0172	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:29	BJ
							Certifications:			

	Surrogate Recoveries	Result	Acceptance Range
877-09-8	*Surrogate: Tetrachloro-m-xylene*	*68.0 %*	*30-140*
2051-24-3	*Surrogate: Decachlorobiphenyl*	*97.0 %*	*30-140*

Metals, Target Analyte

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3050B

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
7429-90-5	**Aluminum**	**8890**	B	mg/kg dry	5.32	1	EPA 6010D	07/20/2020 08:31	07/21/2020 18:57	KML
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
7440-36-0	Antimony	ND		mg/kg dry	2.66	1	EPA 6010D	07/20/2020 08:31	07/21/2020 18:57	KML
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
7440-38-2	Arsenic	ND		mg/kg dry	1.60	1	EPA 6010D	07/20/2020 08:31	07/21/2020 18:57	KML
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
7440-39-3	**Barium**	**26.7**		mg/kg dry	2.66	1	EPA 6010D	07/20/2020 08:31	07/21/2020 18:57	KML
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
7440-41-7	Beryllium	ND		mg/kg dry	0.053	1	EPA 6010D	07/20/2020 08:31	07/21/2020 18:57	KML
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
7440-43-9	Cadmium	ND		mg/kg dry	0.319	1	EPA 6010D	07/20/2020 08:31	07/21/2020 18:57	KML
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
7440-70-2	**Calcium**	**812**		mg/kg dry	5.32	1	EPA 6010D	07/20/2020 08:31	07/21/2020 18:57	KML
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
7440-47-3	**Chromium**	**14.8**		mg/kg dry	0.532	1	EPA 6010D	07/20/2020 08:31	07/21/2020 18:57	KML
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
7440-48-4	**Cobalt**	**7.10**		mg/kg dry	0.426	1	EPA 6010D	07/20/2020 08:31	07/21/2020 18:57	KML
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
7440-50-8	**Copper**	**11.1**		mg/kg dry	2.13	1	EPA 6010D	07/20/2020 08:31	07/21/2020 18:57	KML
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		

Sample Information

Client Sample ID: B-1 10-12 ft

York Sample ID: 20G0654-02

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 9:30 am	07/17/2020

Metals, Target Analyte

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3050B

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
7439-89-6	**Iron**	**14100**		mg/kg dry	26.6	1	EPA 6010D	07/20/2020 08:31	07/21/2020 18:57	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7439-92-1	**Lead**	**7.54**		mg/kg dry	0.532	1	EPA 6010D	07/20/2020 08:31	07/21/2020 18:57	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7439-95-4	**Magnesium**	**2710**		mg/kg dry	5.32	1	EPA 6010D	07/20/2020 08:31	07/21/2020 18:57	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7439-96-5	**Manganese**	**220**		mg/kg dry	0.532	1	EPA 6010D	07/20/2020 08:31	07/21/2020 18:57	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-02-0	**Nickel**	**23.7**		mg/kg dry	1.06	1	EPA 6010D	07/20/2020 08:31	07/21/2020 18:57	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-09-7	**Potassium**	**762**		mg/kg dry	5.32	1	EPA 6010D	07/20/2020 08:31	07/21/2020 18:57	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7782-49-2	Selenium	ND		mg/kg dry	2.66	1	EPA 6010D	07/20/2020 08:31	07/21/2020 18:57	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-22-4	Silver	ND		mg/kg dry	0.532	1	EPA 6010D	07/20/2020 08:31	07/21/2020 18:57	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-23-5	**Sodium**	**145**		mg/kg dry	53.2	1	EPA 6010D	07/20/2020 08:31	07/21/2020 18:57	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-28-0	Thallium	ND		mg/kg dry	2.66	1	EPA 6010D	07/20/2020 08:31	07/21/2020 18:57	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-62-2	**Vanadium**	**18.7**		mg/kg dry	1.06	1	EPA 6010D	07/20/2020 08:31	07/21/2020 18:57	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-66-6	**Zinc**	**23.2**		mg/kg dry	2.66	1	EPA 6010D	07/20/2020 08:31	07/21/2020 18:57	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			

Mercury by 7473

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 7473 soil

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
7439-97-6	Mercury	ND		mg/kg dry	0.0319	1	EPA 7473	07/17/2020 14:36	07/17/2020 19:08	MAO
							Certifications: CTDOH,NJDEP,NELAC-NY10854,PADEP			

Total Solids

Log-in Notes:

Sample Notes:

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**93.9**		%	0.100	1	SM 2540G	07/20/2020 08:06	07/20/2020 15:11	WJM
							Certifications: CTDOH			

Sample Information

Client Sample ID: B-2 0-2 ft

York Sample ID: 20G0654-03

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 10:00 am	07/17/2020

Volatile Organics, 8260 - Comprehensive

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 5035A

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
630-20-6	1,1,1,2-Tetrachloroethane	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 15:07	SS
71-55-6	1,1,1-Trichloroethane	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 15:07	SS
79-34-5	1,1,2,2-Tetrachloroethane	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 15:07	SS
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 15:07	SS
79-00-5	1,1,2-Trichloroethane	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 15:07	SS
75-34-3	1,1-Dichloroethane	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 15:07	SS
75-35-4	1,1-Dichloroethylene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 15:07	SS
87-61-6	1,2,3-Trichlorobenzene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30 NELAC-NY10854,NELAC-NY12058,NJDEP,PAL	07/20/2020 15:07	SS
96-18-4	1,2,3-Trichloropropane	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30 NELAC-NY10854,NELAC-NY12058,NJDEP	07/20/2020 15:07	SS
120-82-1	1,2,4-Trichlorobenzene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30 NELAC-NY10854,NELAC-NY12058,NJDEP,PAL	07/20/2020 15:07	SS
95-63-6	1,2,4-Trimethylbenzene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 15:07	SS
96-12-8	1,2-Dibromo-3-chloropropane	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 15:07	SS
106-93-4	1,2-Dibromoethane	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 15:07	SS
95-50-1	1,2-Dichlorobenzene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 15:07	SS
107-06-2	1,2-Dichloroethane	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 15:07	SS
78-87-5	1,2-Dichloropropane	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 15:07	SS
108-67-8	1,3,5-Trimethylbenzene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 15:07	SS
541-73-1	1,3-Dichlorobenzene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 15:07	SS
106-46-7	1,4-Dichlorobenzene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 15:07	SS
123-91-1	1,4-Dioxane	ND		ug/kg dry	39	78	1	EPA 8260C Certifications:	07/20/2020 09:30 NELAC-NY10854,NELAC-NY12058,NJDEP,PAL	07/20/2020 15:07	SS
78-93-3	2-Butanone	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 15:07	SS

Sample Information

Client Sample ID: B-2 0-2 ft

York Sample ID: 20G0654-03

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 10:00 am	07/17/2020

Volatile Organics, 8260 - Comprehensive

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 5035A

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
591-78-6	2-Hexanone	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 15:07 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
108-10-1	4-Methyl-2-pentanone	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 15:07 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
67-64-1	Acetone	ND		ug/kg dry	3.9	7.8	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 15:07 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
107-02-8	Acrolein	ND		ug/kg dry	3.9	7.8	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 15:07 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
107-13-1	Acrylonitrile	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 15:07 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
71-43-2	Benzene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 15:07 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
74-97-5	Bromochloromethane	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 15:07 NELAC-NY10854,NELAC-NY12058,NJDEP,PAL	SS
75-27-4	Bromodichloromethane	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 15:07 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
75-25-2	Bromoform	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 15:07 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
74-83-9	Bromomethane	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 15:07 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
75-15-0	Carbon disulfide	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 15:07 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
56-23-5	Carbon tetrachloride	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 15:07 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
108-90-7	Chlorobenzene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 15:07 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
75-00-3	Chloroethane	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 15:07 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
67-66-3	Chloroform	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 15:07 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
74-87-3	Chloromethane	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 15:07 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
156-59-2	cis-1,2-Dichloroethylene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 15:07 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
10061-01-5	cis-1,3-Dichloropropylene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 15:07 CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	SS
110-82-7	Cyclohexane	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 15:07 NELAC-NY10854,NELAC-NY12058,NJDEP,PAL	SS
124-48-1	Dibromochloromethane	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 15:07 NELAC-NY10854,NELAC-NY12058,NJDEP,PAL	SS
74-95-3	Dibromomethane	ND		ug/kg dry	2.0	3.9	1	EPA 8260C Certifications:	07/20/2020 09:30	07/20/2020 15:07 NELAC-NY10854,NELAC-NY12058,NJDEP,PAL	SS

Sample Information

Client Sample ID: B-2 0-2 ft

York Sample ID: 20G0654-03

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 10:00 am	07/17/2020

Volatile Organics, 8260 - Comprehensive

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 5035A

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
75-71-8	Dichlorodifluoromethane	ND		ug/kg dry	2.0	3.9	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
100-41-4	Ethyl Benzene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
87-68-3	Hexachlorobutadiene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
98-82-8	Isopropylbenzene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
79-20-9	Methyl acetate	ND		ug/kg dry	2.0	3.9	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
1634-04-4	Methyl tert-butyl ether (MTBE)	ND		ug/kg dry	2.0	3.9	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-87-2	Methylcyclohexane	ND		ug/kg dry	2.0	3.9	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
75-09-2	Methylene chloride	ND		ug/kg dry	3.9	7.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
104-51-8	n-Butylbenzene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
103-65-1	n-Propylbenzene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
95-47-6	o-Xylene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,PA		
179601-23-1	p- & m- Xylenes	ND		ug/kg dry	3.9	7.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,PA		
99-87-6	p-Isopropyltoluene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
135-98-8	sec-Butylbenzene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
100-42-5	Styrene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-65-0	tert-Butyl alcohol (TBA)	ND		ug/kg dry	2.0	20	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
98-06-6	tert-Butylbenzene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
127-18-4	Tetrachloroethylene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-88-3	Toluene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
156-60-5	trans-1,2-Dichloroethylene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
10061-02-6	trans-1,3-Dichloropropylene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		

Sample Information

Client Sample ID: B-2 0-2 ft

York Sample ID: 20G0654-03

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 10:00 am	07/17/2020

Volatile Organics, 8260 - Comprehensive

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 5035A

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
110-57-6	* trans-1,4-dichloro-2-butene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications: CTDOH			
79-01-6	Trichloroethylene	ND		ug/kg dry	2.0	3.9	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ			
75-69-4	Trichlorofluoromethane	ND		ug/kg dry	2.0	3.9	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ			
75-01-4	Vinyl Chloride	ND		ug/kg dry	2.0	3.9	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ			
1330-20-7	Xylenes, Total	ND		ug/kg dry	5.9	12	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:07	SS
								Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ			

	Surrogate Recoveries	Result	Acceptance Range
17060-07-0	*Surrogate: SURR: 1,2-Dichloroethane-d4*	*109 %*	*77-125*
2037-26-5	*Surrogate: SURR: Toluene-d8*	*102 %*	*85-120*
460-00-4	*Surrogate: SURR: p-Bromofluorobenzene*	*95.9 %*	*76-130*

Semi-Volatiles, 8270 Base/Neutrals

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
120-82-1	1,2,4-Trichlorobenzene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
95-50-1	1,2-Dichlorobenzene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications: NELAC-NY10854,PADEP			
541-73-1	1,3-Dichlorobenzene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications: NELAC-NY10854,PADEP			
106-46-7	1,4-Dichlorobenzene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications: NELAC-NY10854,PADEP			
121-14-2	2,4-Dinitrotoluene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
606-20-2	2,6-Dinitrotoluene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
91-58-7	2-Chloronaphthalene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
91-57-6	2-Methylnaphthalene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
91-94-1	3,3-Dichlorobenzidine	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications: NELAC-NY10854,NJDEP,PADEP			
99-09-2	3-Nitroaniline	ND		ug/kg dry	86.5	173	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
101-55-3	4-Bromophenyl phenyl ether	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			

Sample Information

Client Sample ID: B-2 0-2 ft

York Sample ID: 20G0654-03

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 10:00 am	07/17/2020

Semi-Volatiles, 8270 Base/Neutrals

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
106-47-8	4-Chloroaniline	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
7005-72-3	4-Chlorophenyl phenyl ether	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
100-01-6	4-Nitroaniline	ND		ug/kg dry	86.5	173	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
83-32-9	Acenaphthene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
208-96-8	Acenaphthylene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
62-53-3	Aniline	ND		ug/kg dry	173	347	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	NELAC-NY10854,NJDEP,PADEP		
120-12-7	Anthracene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
56-55-3	Benzo(a)anthracene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
50-32-8	Benzo(a)pyrene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
205-99-2	Benzo(b)fluoranthene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
191-24-2	Benzo(g,h,i)perylene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
207-08-9	Benzo(k)fluoranthene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
85-68-7	Benzyl butyl phthalate	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
111-91-1	Bis(2-chloroethoxy)methane	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
111-44-4	Bis(2-chloroethyl)ether	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
108-60-1	Bis(2-chloroisopropyl)ether	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
117-81-7	Bis(2-ethylhexyl)phthalate	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
86-74-8	Carbazole	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
218-01-9	Chrysene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
53-70-3	Dibenzo(a,h)anthracene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
132-64-9	Dibenzofuran	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		

Sample Information

Client Sample ID: B-2 0-2 ft

York Sample ID: 20G0654-03

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 10:00 am	07/17/2020

Semi-Volatiles, 8270 Base/Neutrals

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
84-66-2	Diethyl phthalate	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
131-11-3	Dimethyl phthalate	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
84-74-2	**Di-n-butyl phthalate**	**49.1**	J	ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
117-84-0	Di-n-octyl phthalate	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
206-44-0	Fluoranthene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
86-73-7	Fluorene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	NELAC-NY10854,NJDEP,PADEP		
118-74-1	Hexachlorobenzene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
87-68-3	Hexachlorobutadiene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
77-47-4	Hexachlorocyclopentadiene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
67-72-1	Hexachloroethane	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
193-39-5	Indeno(1,2,3-cd)pyrene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
78-59-1	Isophorone	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
91-20-3	Naphthalene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
98-95-3	Nitrobenzene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
62-75-9	N-Nitrosodimethylamine	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
621-64-7	N-nitroso-di-n-propylamine	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
86-30-6	N-Nitrosodiphenylamine	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
85-01-8	Phenanthrene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
129-00-0	Pyrene	ND		ug/kg dry	43.4	86.5	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
110-86-1	Pyridine	ND		ug/kg dry	173	347	2	EPA 8270D	07/22/2020 06:17	07/22/2020 22:50	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		

	Surrogate Recoveries	Result	Acceptance Range
4165-60-0	*Surrogate: SURR: Nitrobenzene-d5*	*78.8 %*	*22-108*
321-60-8	*Surrogate: SURR: 2-Fluorobiphenyl*	*62.7 %*	*21-113*

Sample Information

Client Sample ID: B-2 0-2 ft

York Sample ID: 20G0654-03

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 10:00 am	07/17/2020

Semi-Volatiles, 8270 Base/Neutrals

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
1718-51-0	*Surrogate: SURR: Terphenyl-d14*	*77.9 %*			*24-116*						

Pesticides, 8081 target list

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
72-54-8	4,4'-DDD	ND		ug/kg dry	1.71	5	EPA 8081B Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 05:39	07/22/2020 18:03	CM
72-55-9	4,4'-DDE	ND		ug/kg dry	1.71	5	EPA 8081B Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 05:39	07/22/2020 18:03	CM
50-29-3	4,4'-DDT	ND		ug/kg dry	1.71	5	EPA 8081B Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 05:39	07/22/2020 18:03	CM
309-00-2	Aldrin	ND		ug/kg dry	1.71	5	EPA 8081B Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 05:39	07/22/2020 18:03	CM
319-84-6	alpha-BHC	ND		ug/kg dry	1.71	5	EPA 8081B Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 05:39	07/22/2020 18:03	CM
5103-71-9	alpha-Chlordane	ND		ug/kg dry	1.71	5	EPA 8081B Certifications: NELAC-NY10854,NJDEP	07/22/2020 05:39	07/22/2020 18:03	CM
319-85-7	beta-BHC	ND		ug/kg dry	1.71	5	EPA 8081B Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 05:39	07/22/2020 18:03	CM
57-74-9	Chlordane, total	ND		ug/kg dry	34.2	5	EPA 8081B Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 05:39	07/22/2020 18:03	CM
319-86-8	delta-BHC	ND		ug/kg dry	1.71	5	EPA 8081B Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 05:39	07/22/2020 18:03	CM
60-57-1	Dieldrin	ND		ug/kg dry	1.71	5	EPA 8081B Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 05:39	07/22/2020 18:03	CM
959-98-8	Endosulfan I	ND		ug/kg dry	1.71	5	EPA 8081B Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 05:39	07/22/2020 18:03	CM
33213-65-9	Endosulfan II	ND		ug/kg dry	1.71	5	EPA 8081B Certifications: CTDOH,NELAC-NY10854	07/22/2020 05:39	07/22/2020 18:03	CM
1031-07-8	Endosulfan sulfate	ND		ug/kg dry	1.71	5	EPA 8081B Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 05:39	07/22/2020 18:03	CM
72-20-8	Endrin	ND		ug/kg dry	1.71	5	EPA 8081B Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 05:39	07/22/2020 18:03	CM
7421-93-4	Endrin aldehyde	ND		ug/kg dry	1.71	5	EPA 8081B Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 05:39	07/22/2020 18:03	CM
53494-70-5	Endrin ketone	ND		ug/kg dry	1.71	5	EPA 8081B Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 05:39	07/22/2020 18:03	CM
58-89-9	gamma-BHC (Lindane)	ND		ug/kg dry	1.71	5	EPA 8081B Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 05:39	07/22/2020 18:03	CM
5566-34-7	gamma-Chlordane	ND		ug/kg dry	1.71	5	EPA 8081B Certifications: NELAC-NY10854,NJDEP	07/22/2020 05:39	07/22/2020 18:03	CM

Sample Information

Client Sample ID: B-2 0-2 ft

York Sample ID: 20G0654-03

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 10:00 am	07/17/2020

Pesticides, 8081 target list

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
76-44-8	Heptachlor	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:03	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
1024-57-3	Heptachlor epoxide	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:03	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
72-43-5	Methoxychlor	ND		ug/kg dry	8.56	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:03	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
8001-35-2	Toxaphene	ND		ug/kg dry	86.6	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:03	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			

	Surrogate Recoveries	Result	Acceptance Range
2051-24-3	*Surrogate: Decachlorobiphenyl*	*116 %*	*30-150*
877-09-8	*Surrogate: Tetrachloro-m-xylene*	*55.3 %*	*30-150*

Polychlorinated Biphenyls (PCB)

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
12674-11-2	Aroclor 1016	ND		mg/kg dry	0.0173	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:43	BJ
							Certifications: NELAC-NY10854,CTDOH,NJDEP,PADEP			
11104-28-2	Aroclor 1221	ND		mg/kg dry	0.0173	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:43	BJ
							Certifications: NELAC-NY10854,CTDOH,NJDEP,PADEP			
11141-16-5	Aroclor 1232	ND		mg/kg dry	0.0173	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:43	BJ
							Certifications: NELAC-NY10854,CTDOH,NJDEP,PADEP			
53469-21-9	Aroclor 1242	ND		mg/kg dry	0.0173	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:43	BJ
							Certifications: NELAC-NY10854,CTDOH,NJDEP,PADEP			
12672-29-6	Aroclor 1248	ND		mg/kg dry	0.0173	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:43	BJ
							Certifications: NELAC-NY10854,CTDOH,NJDEP,PADEP			
11097-69-1	Aroclor 1254	ND		mg/kg dry	0.0173	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:43	BJ
							Certifications: NELAC-NY10854,CTDOH,NJDEP,PADEP			
11096-82-5	Aroclor 1260	ND		mg/kg dry	0.0173	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:43	BJ
							Certifications: NELAC-NY10854,CTDOH,NJDEP,PADEP			
1336-36-3	* Total PCBs	ND		mg/kg dry	0.0173	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:43	BJ
							Certifications:			

	Surrogate Recoveries	Result	Acceptance Range
877-09-8	*Surrogate: Tetrachloro-m-xylene*	*59.5 %*	*30-140*
2051-24-3	*Surrogate: Decachlorobiphenyl*	*86.5 %*	*30-140*

Metals, Target Analyte

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3050B

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst

Sample Information

Client Sample ID: B-2 0-2 ft

York Sample ID: 20G0654-03

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 10:00 am	07/17/2020

Metals, Target Analyte

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3050B

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
7429-90-5	**Aluminum**	**9250**	B	mg/kg dry	5.24	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:59	KML
7440-36-0	Antimony	ND		mg/kg dry	2.62	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:59	KML
7440-38-2	**Arsenic**	**2.63**		mg/kg dry	1.57	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:59	KML
7440-39-3	**Barium**	**30.6**		mg/kg dry	2.62	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:59	KML
7440-41-7	Beryllium	ND		mg/kg dry	0.052	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:59	KML
7440-43-9	Cadmium	ND		mg/kg dry	0.314	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:59	KML
7440-70-2	**Calcium**	**1750**		mg/kg dry	5.24	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:59	KML
7440-47-3	**Chromium**	**19.3**		mg/kg dry	0.524	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:59	KML
7440-48-4	**Cobalt**	**9.51**		mg/kg dry	0.419	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:59	KML
7440-50-8	**Copper**	**12.6**		mg/kg dry	2.10	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:59	KML
7439-89-6	**Iron**	**16300**		mg/kg dry	26.2	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:59	KML
7439-92-1	**Lead**	**11.0**		mg/kg dry	0.524	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:59	KML
7439-95-4	**Magnesium**	**4660**		mg/kg dry	5.24	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:59	KML
7439-96-5	**Manganese**	**322**		mg/kg dry	0.524	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:59	KML
7440-02-0	**Nickel**	**48.6**		mg/kg dry	1.05	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:59	KML
7440-09-7	**Potassium**	**803**		mg/kg dry	5.24	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:59	KML
7782-49-2	Selenium	ND		mg/kg dry	2.62	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:59	KML
7440-22-4	Silver	ND		mg/kg dry	0.524	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:59	KML
7440-23-5	**Sodium**	**173**		mg/kg dry	52.4	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:59	KML
7440-28-0	Thallium	ND		mg/kg dry	2.62	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:59	KML
7440-62-2	**Vanadium**	**26.3**		mg/kg dry	1.05	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:59	KML
7440-66-6	**Zinc**	**29.0**		mg/kg dry	2.62	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 18:59	KML

Sample Information

Client Sample ID: B-2 0-2 ft **York Sample ID:** 20G0654-03

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 10:00 am	07/17/2020

Mercury by 7473

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA 7473 soil

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
7439-97-6	Mercury	ND		mg/kg dry	0.0314	1	EPA 7473	07/17/2020 14:36	07/17/2020 19:17	MAO
							Certifications: CTDOH,NJDEP,NELAC-NY10854,PADEP			

Total Solids

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**95.4**		%	0.100	1	SM 2540G	07/20/2020 08:06	07/20/2020 15:11	WJM
							Certifications: CTDOH			

Sample Information

Client Sample ID: B-2 10-12 ft **York Sample ID:** 20G0654-04

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 10:30 am	07/17/2020

Volatile Organics, 8260 - Comprehensive

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA 5035A

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
630-20-6	1,1,1,2-Tetrachloroethane	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ			
71-55-6	1,1,1-Trichloroethane	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ			
79-34-5	1,1,2,2-Tetrachloroethane	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ			
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ			
79-00-5	1,1,2-Trichloroethane	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ			
75-34-3	1,1-Dichloroethane	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ			
75-35-4	1,1-Dichloroethylene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ			
87-61-6	1,2,3-Trichlorobenzene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications: NELAC-NY10854,NELAC-NY12058,NJDEP,PAL			
96-18-4	1,2,3-Trichloropropane	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications: NELAC-NY10854,NELAC-NY12058,NJDEP			

Sample Information

Client Sample ID: B-2 10-12 ft

York Sample ID: 20G0654-04

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 10:30 am	07/17/2020

Volatile Organics, 8260 - Comprehensive

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 5035A

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
120-82-1	1,2,4-Trichlorobenzene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
95-63-6	1,2,4-Trimethylbenzene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
96-12-8	1,2-Dibromo-3-chloropropane	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
106-93-4	1,2-Dibromoethane	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
95-50-1	1,2-Dichlorobenzene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
107-06-2	1,2-Dichloroethane	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
78-87-5	1,2-Dichloropropane	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-67-8	1,3,5-Trimethylbenzene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
541-73-1	1,3-Dichlorobenzene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
106-46-7	1,4-Dichlorobenzene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
123-91-1	1,4-Dioxane	ND		ug/kg dry	38	75	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
78-93-3	2-Butanone	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
591-78-6	2-Hexanone	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-10-1	4-Methyl-2-pentanone	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
67-64-1	Acetone	ND		ug/kg dry	3.8	7.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
107-02-8	Acrolein	ND		ug/kg dry	3.8	7.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
107-13-1	Acrylonitrile	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
71-43-2	Benzene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
74-97-5	Bromochloromethane	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
75-27-4	Bromodichloromethane	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-25-2	Bromoform	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		

Sample Information

Client Sample ID: B-2 10-12 ft

York Sample ID: 20G0654-04

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 10:30 am	07/17/2020

Volatile Organics, 8260 - Comprehensive

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 5035A

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
74-83-9	Bromomethane	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-15-0	Carbon disulfide	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
56-23-5	Carbon tetrachloride	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-90-7	Chlorobenzene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-00-3	Chloroethane	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
67-66-3	Chloroform	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
74-87-3	Chloromethane	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
156-59-2	cis-1,2-Dichloroethylene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
10061-01-5	cis-1,3-Dichloropropylene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
110-82-7	Cyclohexane	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
124-48-1	Dibromochloromethane	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
74-95-3	Dibromomethane	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
75-71-8	Dichlorodifluoromethane	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
100-41-4	Ethyl Benzene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
87-68-3	Hexachlorobutadiene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
98-82-8	Isopropylbenzene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
79-20-9	Methyl acetate	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
1634-04-4	Methyl tert-butyl ether (MTBE)	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-87-2	Methylcyclohexane	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
75-09-2	Methylene chloride	ND		ug/kg dry	3.8	7.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
104-51-8	n-Butylbenzene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		

Sample Information

Client Sample ID: B-2 10-12 ft

York Sample ID: 20G0654-04

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 10:30 am	07/17/2020

Volatile Organics, 8260 - Comprehensive

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 5035A

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
103-65-1	n-Propylbenzene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
95-47-6	o-Xylene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,PA		
179601-23-1	p- & m- Xylenes	ND		ug/kg dry	3.8	7.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,PA		
99-87-6	p-Isopropyltoluene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
135-98-8	sec-Butylbenzene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
100-42-5	Styrene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-65-0	tert-Butyl alcohol (TBA)	ND		ug/kg dry	1.9	19	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
98-06-6	tert-Butylbenzene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
127-18-4	Tetrachloroethylene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-88-3	Toluene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
156-60-5	trans-1,2-Dichloroethylene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
10061-02-6	trans-1,3-Dichloropropylene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
110-57-6	* trans-1,4-dichloro-2-butene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH		
79-01-6	Trichloroethylene	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-69-4	Trichlorofluoromethane	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-01-4	Vinyl Chloride	ND		ug/kg dry	1.9	3.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
1330-20-7	Xylenes, Total	ND		ug/kg dry	5.6	11	1	EPA 8260C	07/20/2020 09:30	07/20/2020 15:34	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		

	Surrogate Recoveries	Result	Acceptance Range
17060-07-0	*Surrogate: SURR: 1,2-Dichloroethane-d4*	*102 %*	*77-125*
2037-26-5	*Surrogate: SURR: Toluene-d8*	*105 %*	*85-120*
460-00-4	*Surrogate: SURR: p-Bromofluorobenzene*	*100 %*	*76-130*

Sample Information

Client Sample ID: B-2 10-12 ft

York Sample ID: 20G0654-04

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 10:30 am	07/17/2020

Semi-Volatiles, 8270 Base/Neutrals

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
120-82-1	1,2,4-Trichlorobenzene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 23:21	KH
95-50-1	1,2-Dichlorobenzene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D Certifications: NELAC-NY10854,PADEP	07/22/2020 06:17	07/22/2020 23:21	KH
541-73-1	1,3-Dichlorobenzene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D Certifications: NELAC-NY10854,PADEP	07/22/2020 06:17	07/22/2020 23:21	KH
106-46-7	1,4-Dichlorobenzene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D Certifications: NELAC-NY10854,PADEP	07/22/2020 06:17	07/22/2020 23:21	KH
121-14-2	2,4-Dinitrotoluene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 23:21	KH
606-20-2	2,6-Dinitrotoluene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 23:21	KH
91-58-7	2-Chloronaphthalene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 23:21	KH
91-57-6	2-Methylnaphthalene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 23:21	KH
91-94-1	3,3-Dichlorobenzidine	ND		ug/kg dry	43.3	86.3	2	EPA 8270D Certifications: NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 23:21	KH
99-09-2	3-Nitroaniline	ND		ug/kg dry	86.3	172	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 23:21	KH
101-55-3	4-Bromophenyl phenyl ether	ND		ug/kg dry	43.3	86.3	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 23:21	KH
106-47-8	4-Chloroaniline	ND		ug/kg dry	43.3	86.3	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 23:21	KH
7005-72-3	4-Chlorophenyl phenyl ether	ND		ug/kg dry	43.3	86.3	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 23:21	KH
100-01-6	4-Nitroaniline	ND		ug/kg dry	86.3	172	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 23:21	KH
83-32-9	Acenaphthene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 23:21	KH
208-96-8	Acenaphthylene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 23:21	KH
62-53-3	Aniline	ND		ug/kg dry	173	346	2	EPA 8270D Certifications: NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 23:21	KH
120-12-7	Anthracene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 23:21	KH
56-55-3	Benzo(a)anthracene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 23:21	KH
50-32-8	Benzo(a)pyrene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 23:21	KH
205-99-2	Benzo(b)fluoranthene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 06:17	07/22/2020 23:21	KH

Sample Information

Client Sample ID: B-2 10-12 ft

York Sample ID: 20G0654-04

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 10:30 am	07/17/2020

Semi-Volatiles, 8270 Base/Neutrals

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
191-24-2	Benzo(g,h,i)perylene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
207-08-9	Benzo(k)fluoranthene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
85-68-7	Benzyl butyl phthalate	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
111-91-1	Bis(2-chloroethoxy)methane	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
111-44-4	Bis(2-chloroethyl)ether	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
108-60-1	Bis(2-chloroisopropyl)ether	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
117-81-7	Bis(2-ethylhexyl)phthalate	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
86-74-8	Carbazole	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
218-01-9	Chrysene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
53-70-3	Dibenzo(a,h)anthracene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
132-64-9	Dibenzofuran	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
84-66-2	Diethyl phthalate	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
131-11-3	Dimethyl phthalate	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
84-74-2	**Di-n-butyl phthalate**	**60.0**	J	ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
117-84-0	Di-n-octyl phthalate	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
206-44-0	Fluoranthene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
86-73-7	Fluorene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	NELAC-NY10854,NJDEP,PADEP		
118-74-1	Hexachlorobenzene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
87-68-3	Hexachlorobutadiene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
77-47-4	Hexachlorocyclopentadiene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
67-72-1	Hexachloroethane	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		

Sample Information

Client Sample ID: B-2 10-12 ft

York Sample ID: 20G0654-04

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 10:30 am	07/17/2020

Semi-Volatiles, 8270 Base/Neutrals

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
193-39-5	Indeno(1,2,3-cd)pyrene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
78-59-1	Isophorone	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
91-20-3	Naphthalene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
98-95-3	Nitrobenzene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
62-75-9	N-Nitrosodimethylamine	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
621-64-7	N-nitroso-di-n-propylamine	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
86-30-6	N-Nitrosodiphenylamine	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
85-01-8	Phenanthrene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
129-00-0	Pyrene	ND		ug/kg dry	43.3	86.3	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
110-86-1	Pyridine	ND		ug/kg dry	173	346	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:21	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		

	Surrogate Recoveries	Result	Acceptance Range
4165-60-0	*Surrogate: SURR: Nitrobenzene-d5*	*60.0 %*	*22-108*
321-60-8	*Surrogate: SURR: 2-Fluorobiphenyl*	*51.0 %*	*21-113*
1718-51-0	*Surrogate: SURR: Terphenyl-d14*	*65.8 %*	*24-116*

Pesticides, 8081 target list

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
72-54-8	4,4'-DDD	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:20	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
72-55-9	4,4'-DDE	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:20	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
50-29-3	4,4'-DDT	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:20	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
309-00-2	Aldrin	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:20	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
319-84-6	alpha-BHC	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:20	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
5103-71-9	alpha-Chlordane	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:20	CM
							Certifications:	NELAC-NY10854,NJDEP		

Sample Information

Client Sample ID: B-2 10-12 ft

York Sample ID: 20G0654-04

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 10:30 am	07/17/2020

Pesticides, 8081 target list

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
319-85-7	beta-BHC	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:20	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
57-74-9	Chlordane, total	ND		ug/kg dry	34.2	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:20	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
319-86-8	delta-BHC	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:20	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
60-57-1	Dieldrin	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:20	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
959-98-8	Endosulfan I	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:20	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
33213-65-9	Endosulfan II	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:20	CM
							Certifications:	CTDOH,NELAC-NY10854		
1031-07-8	Endosulfan sulfate	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:20	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
72-20-8	Endrin	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:20	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
7421-93-4	Endrin aldehyde	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:20	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
53494-70-5	Endrin ketone	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:20	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
58-89-9	gamma-BHC (Lindane)	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:20	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
5566-34-7	gamma-Chlordane	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:20	CM
							Certifications:	NELAC-NY10854,NJDEP		
76-44-8	Heptachlor	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:20	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
1024-57-3	Heptachlor epoxide	ND		ug/kg dry	1.71	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:20	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
72-43-5	Methoxychlor	ND		ug/kg dry	8.54	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:20	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
8001-35-2	Toxaphene	ND		ug/kg dry	86.4	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:20	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		

	Surrogate Recoveries	Result	Acceptance Range
2051-24-3	*Surrogate: Decachlorobiphenyl*	*138 %*	*30-150*
877-09-8	*Surrogate: Tetrachloro-m-xylene*	*89.1 %*	*30-150*

Polychlorinated Biphenyls (PCB)

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
12674-11-2	Aroclor 1016	ND		mg/kg dry	0.0172	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:56	BJ
							Certifications:	NELAC-NY10854,CTDOH,NJDEP,PADEP		

Sample Information

Client Sample ID: B-2 10-12 ft

York Sample ID: 20G0654-04

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 10:30 am	07/17/2020

Polychlorinated Biphenyls (PCB)

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
11104-28-2	Aroclor 1221	ND		mg/kg dry	0.0172	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:56	BJ
							Certifications:	NELAC-NY10854,CTDOH,NJDEP,PADEP		
11141-16-5	Aroclor 1232	ND		mg/kg dry	0.0172	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:56	BJ
							Certifications:	NELAC-NY10854,CTDOH,NJDEP,PADEP		
53469-21-9	Aroclor 1242	ND		mg/kg dry	0.0172	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:56	BJ
							Certifications:	NELAC-NY10854,CTDOH,NJDEP,PADEP		
12672-29-6	Aroclor 1248	ND		mg/kg dry	0.0172	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:56	BJ
							Certifications:	NELAC-NY10854,CTDOH,NJDEP,PADEP		
11097-69-1	Aroclor 1254	ND		mg/kg dry	0.0172	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:56	BJ
							Certifications:	NELAC-NY10854,CTDOH,NJDEP,PADEP		
11096-82-5	Aroclor 1260	ND		mg/kg dry	0.0172	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:56	BJ
							Certifications:	NELAC-NY10854,CTDOH,NJDEP,PADEP		
1336-36-3	* Total PCBs	ND		mg/kg dry	0.0172	1	EPA 8082A	07/22/2020 05:39	07/22/2020 17:56	BJ
							Certifications:			

	Surrogate Recoveries	Result	Acceptance Range
877-09-8	*Surrogate: Tetrachloro-m-xylene*	*64.5 %*	*30-140*
2051-24-3	*Surrogate: Decachlorobiphenyl*	*84.5 %*	*30-140*

Metals, Target Analyte

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3050B

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
7429-90-5	**Aluminum**	**9440**	B	mg/kg dry	5.26	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:01	KML
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
7440-36-0	Antimony	ND		mg/kg dry	2.63	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:01	KML
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
7440-38-2	Arsenic	ND		mg/kg dry	1.58	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:01	KML
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
7440-39-3	**Barium**	**34.4**		mg/kg dry	2.63	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:01	KML
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
7440-41-7	Beryllium	ND		mg/kg dry	0.053	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:01	KML
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
7440-43-9	Cadmium	ND		mg/kg dry	0.316	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:01	KML
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
7440-70-2	**Calcium**	**2930**		mg/kg dry	5.26	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:01	KML
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
7440-47-3	**Chromium**	**16.3**		mg/kg dry	0.526	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:01	KML
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
7440-48-4	**Cobalt**	**11.7**		mg/kg dry	0.421	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:01	KML
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
7440-50-8	**Copper**	**13.0**		mg/kg dry	2.10	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:01	KML
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		

Sample Information

Client Sample ID: B-2 10-12 ft

York Sample ID: 20G0654-04

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 10:30 am	07/17/2020

Metals, Target Analyte

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3050B

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
7439-89-6	**Iron**	**15600**		mg/kg dry	26.3	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:01	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7439-92-1	**Lead**	**18.9**		mg/kg dry	0.526	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:01	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7439-95-4	**Magnesium**	**4560**		mg/kg dry	5.26	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:01	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7439-96-5	**Manganese**	**349**		mg/kg dry	0.526	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:01	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-02-0	**Nickel**	**46.3**		mg/kg dry	1.05	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:01	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-09-7	**Potassium**	**856**		mg/kg dry	5.26	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:01	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7782-49-2	Selenium	ND		mg/kg dry	2.63	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:01	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-22-4	Silver	ND		mg/kg dry	0.526	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:01	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-23-5	**Sodium**	**200**		mg/kg dry	52.6	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:01	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-28-0	Thallium	ND		mg/kg dry	2.63	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:01	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-62-2	**Vanadium**	**22.4**		mg/kg dry	1.05	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:01	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-66-6	**Zinc**	**37.0**		mg/kg dry	2.63	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:01	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			

Mercury by 7473

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 7473 soil

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
7439-97-6	**Mercury**	**0.119**		mg/kg dry	0.0316	1	EPA 7473	07/17/2020 14:36	07/17/2020 19:26	MAO
							Certifications: CTDOH,NJDEP,NELAC-NY10854,PADEP			

Total Solids

Log-in Notes:

Sample Notes:

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**95.0**		%	0.100	1	SM 2540G	07/20/2020 08:06	07/20/2020 15:11	WJM
							Certifications: CTDOH			

Sample Information

Client Sample ID: B-3 0-2 ft

York Sample ID: 20G0654-05

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 11:00 am	07/17/2020

Volatile Organics, 8260 - Comprehensive

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 5035A

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
630-20-6	1,1,1,2-Tetrachloroethane	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
71-55-6	1,1,1-Trichloroethane	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
79-34-5	1,1,2,2-Tetrachloroethane	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
79-00-5	1,1,2-Trichloroethane	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-34-3	1,1-Dichloroethane	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-35-4	1,1-Dichloroethylene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
87-61-6	1,2,3-Trichlorobenzene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
96-18-4	1,2,3-Trichloropropane	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP		
120-82-1	1,2,4-Trichlorobenzene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
95-63-6	1,2,4-Trimethylbenzene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
96-12-8	1,2-Dibromo-3-chloropropane	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
106-93-4	1,2-Dibromoethane	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
95-50-1	1,2-Dichlorobenzene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
107-06-2	1,2-Dichloroethane	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
78-87-5	1,2-Dichloropropane	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-67-8	1,3,5-Trimethylbenzene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
541-73-1	1,3-Dichlorobenzene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
106-46-7	1,4-Dichlorobenzene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
123-91-1	1,4-Dioxane	ND		ug/kg dry	56	110	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
78-93-3	2-Butanone	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		

Sample Information

Client Sample ID: B-3 0-2 ft

York Sample ID: 20G0654-05

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 11:00 am	07/17/2020

Volatile Organics, 8260 - Comprehensive

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 5035A

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
591-78-6	2-Hexanone	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-10-1	4-Methyl-2-pentanone	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
67-64-1	Acetone	ND		ug/kg dry	5.6	11	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
107-02-8	Acrolein	ND		ug/kg dry	5.6	11	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
107-13-1	Acrylonitrile	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
71-43-2	Benzene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
74-97-5	Bromochloromethane	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
75-27-4	Bromodichloromethane	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-25-2	Bromoform	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
74-83-9	Bromomethane	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-15-0	Carbon disulfide	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
56-23-5	Carbon tetrachloride	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-90-7	Chlorobenzene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-00-3	Chloroethane	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
67-66-3	Chloroform	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
74-87-3	Chloromethane	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
156-59-2	cis-1,2-Dichloroethylene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
10061-01-5	cis-1,3-Dichloropropylene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
110-82-7	Cyclohexane	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
124-48-1	Dibromochloromethane	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
74-95-3	Dibromomethane	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		

Sample Information

Client Sample ID: B-3 0-2 ft

York Sample ID: 20G0654-05

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 11:00 am	07/17/2020

Volatile Organics, 8260 - Comprehensive

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 5035A

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
75-71-8	Dichlorodifluoromethane	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
100-41-4	Ethyl Benzene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
87-68-3	Hexachlorobutadiene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
98-82-8	Isopropylbenzene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
79-20-9	Methyl acetate	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
1634-04-4	Methyl tert-butyl ether (MTBE)	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-87-2	Methylcyclohexane	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
75-09-2	Methylene chloride	ND		ug/kg dry	5.6	11	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
104-51-8	n-Butylbenzene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
103-65-1	n-Propylbenzene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
95-47-6	o-Xylene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,PA		
179601-23-1	p- & m- Xylenes	ND		ug/kg dry	5.6	11	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,PA		
99-87-6	p-Isopropyltoluene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
135-98-8	sec-Butylbenzene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
100-42-5	Styrene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-65-0	tert-Butyl alcohol (TBA)	ND		ug/kg dry	2.8	28	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
98-06-6	tert-Butylbenzene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
127-18-4	Tetrachloroethylene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-88-3	Toluene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
156-60-5	trans-1,2-Dichloroethylene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
10061-02-6	trans-1,3-Dichloropropylene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		

Sample Information

Client Sample ID: B-3 0-2 ft

York Sample ID: 20G0654-05

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 11:00 am	07/17/2020

Volatile Organics, 8260 - Comprehensive

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 5035A

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
110-57-6	* trans-1,4-dichloro-2-butene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications: CTDOH			
79-01-6	Trichloroethylene	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ			
75-69-4	Trichlorofluoromethane	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ			
75-01-4	Vinyl Chloride	ND		ug/kg dry	2.8	5.6	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ			
1330-20-7	Xylenes, Total	ND		ug/kg dry	8.4	17	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:02	SS
								Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ			

	Surrogate Recoveries	Result	Acceptance Range
17060-07-0	*Surrogate: SURR: 1,2-Dichloroethane-d4*	*101 %*	*77-125*
2037-26-5	*Surrogate: SURR: Toluene-d8*	*106 %*	*85-120*
460-00-4	*Surrogate: SURR: p-Bromofluorobenzene*	*101 %*	*76-130*

Semi-Volatiles, 8270 Base/Neutrals

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
120-82-1	1,2,4-Trichlorobenzene	ND		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
95-50-1	1,2-Dichlorobenzene	ND		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications: NELAC-NY10854,PADEP			
541-73-1	1,3-Dichlorobenzene	ND		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications: NELAC-NY10854,PADEP			
106-46-7	1,4-Dichlorobenzene	ND		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications: NELAC-NY10854,PADEP			
121-14-2	2,4-Dinitrotoluene	ND		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
606-20-2	2,6-Dinitrotoluene	ND		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
91-58-7	2-Chloronaphthalene	ND		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
91-57-6	2-Methylnaphthalene	ND		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
91-94-1	3,3-Dichlorobenzidine	ND		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications: NELAC-NY10854,NJDEP,PADEP			
99-09-2	3-Nitroaniline	ND		ug/kg dry	92.1	184	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
101-55-3	4-Bromophenyl phenyl ether	ND		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			

Sample Information

Client Sample ID: B-3 0-2 ft

York Sample ID: 20G0654-05

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 11:00 am	07/17/2020

Semi-Volatiles, 8270 Base/Neutrals

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
106-47-8	4-Chloroaniline	ND		ug/kg dry	46.1	92.1	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 23:52	KH
7005-72-3	4-Chlorophenyl phenyl ether	ND		ug/kg dry	46.1	92.1	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 23:52	KH
100-01-6	4-Nitroaniline	ND		ug/kg dry	92.1	184	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 23:52	KH
83-32-9	Acenaphthene	ND		ug/kg dry	46.1	92.1	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 23:52	KH
208-96-8	Acenaphthylene	ND		ug/kg dry	46.1	92.1	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 23:52	KH
62-53-3	Aniline	ND		ug/kg dry	184	369	2	EPA 8270D Certifications:	07/22/2020 06:17 NELAC-NY10854,NJDEP,PADEP	07/22/2020 23:52	KH
120-12-7	Anthracene	ND		ug/kg dry	46.1	92.1	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 23:52	KH
56-55-3	**Benzo(a)anthracene**	**102**		ug/kg dry	46.1	92.1	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 23:52	KH
50-32-8	**Benzo(a)pyrene**	**117**		ug/kg dry	46.1	92.1	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 23:52	KH
205-99-2	**Benzo(b)fluoranthene**	**110**		ug/kg dry	46.1	92.1	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 23:52	KH
191-24-2	**Benzo(g,h,i)perylene**	**70.7**	J	ug/kg dry	46.1	92.1	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 23:52	KH
207-08-9	**Benzo(k)fluoranthene**	**90.5**	J	ug/kg dry	46.1	92.1	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 23:52	KH
85-68-7	Benzyl butyl phthalate	ND		ug/kg dry	46.1	92.1	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 23:52	KH
111-91-1	Bis(2-chloroethoxy)methane	ND		ug/kg dry	46.1	92.1	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 23:52	KH
111-44-4	Bis(2-chloroethyl)ether	ND		ug/kg dry	46.1	92.1	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 23:52	KH
108-60-1	Bis(2-chloroisopropyl)ether	ND		ug/kg dry	46.1	92.1	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 23:52	KH
117-81-7	Bis(2-ethylhexyl)phthalate	ND		ug/kg dry	46.1	92.1	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 23:52	KH
86-74-8	Carbazole	ND		ug/kg dry	46.1	92.1	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 23:52	KH
218-01-9	**Chrysene**	**110**		ug/kg dry	46.1	92.1	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 23:52	KH
53-70-3	Dibenzo(a,h)anthracene	ND		ug/kg dry	46.1	92.1	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 23:52	KH
132-64-9	Dibenzofuran	ND		ug/kg dry	46.1	92.1	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 23:52	KH
84-66-2	Diethyl phthalate	ND		ug/kg dry	46.1	92.1	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 23:52	KH

Sample Information

Client Sample ID: B-3 0-2 ft

York Sample ID: 20G0654-05

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 11:00 am	07/17/2020

Semi-Volatiles, 8270 Base/Neutrals

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
131-11-3	Dimethyl phthalate	ND		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
84-74-2	Di-n-butyl phthalate	ND		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
117-84-0	Di-n-octyl phthalate	ND		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
206-44-0	**Fluoranthene**	**181**		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
86-73-7	Fluorene	ND		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications:	NELAC-NY10854,NJDEP,PADEP		
118-74-1	Hexachlorobenzene	ND		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
87-68-3	Hexachlorobutadiene	ND		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
77-47-4	Hexachlorocyclopentadiene	ND		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
67-72-1	Hexachloroethane	ND		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
193-39-5	**Indeno(1,2,3-cd)pyrene**	**86.9**	J	ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
78-59-1	Isophorone	ND		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
91-20-3	Naphthalene	ND		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
98-95-3	Nitrobenzene	ND		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
62-75-9	N-Nitrosodimethylamine	ND		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
621-64-7	N-nitroso-di-n-propylamine	ND		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
86-30-6	N-Nitrosodiphenylamine	ND		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
85-01-8	**Phenanthrene**	**91.3**	J	ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
129-00-0	**Pyrene**	**167**		ug/kg dry	46.1	92.1	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
110-86-1	Pyridine	ND		ug/kg dry	184	369	2	EPA 8270D	07/22/2020 06:17	07/22/2020 23:52	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		

	Surrogate Recoveries	Result	Acceptance Range
4165-60-0	*Surrogate: SURR: Nitrobenzene-d5*	*70.2 %*	*22-108*
321-60-8	*Surrogate: SURR: 2-Fluorobiphenyl*	*57.8 %*	*21-113*
1718-51-0	*Surrogate: SURR: Terphenyl-d14*	*69.4 %*	*24-116*

Sample Information

Client Sample ID: B-3 0-2 ft

York Sample ID: 20G0654-05

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 11:00 am	07/17/2020

Pesticides, 8081 target list

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
72-54-8	4,4'-DDD	ND		ug/kg dry	1.82	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:37	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
72-55-9	4,4'-DDE	ND		ug/kg dry	1.82	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:37	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
50-29-3	4,4'-DDT	ND		ug/kg dry	1.82	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:37	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
309-00-2	Aldrin	ND		ug/kg dry	1.82	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:37	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
319-84-6	alpha-BHC	ND		ug/kg dry	1.82	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:37	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
5103-71-9	alpha-Chlordane	ND		ug/kg dry	1.82	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:37	CM
							Certifications: NELAC-NY10854,NJDEP			
319-85-7	beta-BHC	ND		ug/kg dry	1.82	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:37	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
57-74-9	Chlordane, total	ND		ug/kg dry	36.4	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:37	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
319-86-8	delta-BHC	ND		ug/kg dry	1.82	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:37	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
60-57-1	Dieldrin	ND		ug/kg dry	1.82	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:37	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
959-98-8	Endosulfan I	ND		ug/kg dry	1.82	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:37	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
33213-65-9	Endosulfan II	ND		ug/kg dry	1.82	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:37	CM
							Certifications: CTDOH,NELAC-NY10854			
1031-07-8	Endosulfan sulfate	ND		ug/kg dry	1.82	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:37	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
72-20-8	Endrin	ND		ug/kg dry	1.82	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:37	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7421-93-4	Endrin aldehyde	ND		ug/kg dry	1.82	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:37	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
53494-70-5	Endrin ketone	ND		ug/kg dry	1.82	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:37	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
58-89-9	gamma-BHC (Lindane)	ND		ug/kg dry	1.82	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:37	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
5566-34-7	gamma-Chlordane	ND		ug/kg dry	1.82	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:37	CM
							Certifications: NELAC-NY10854,NJDEP			
76-44-8	Heptachlor	ND		ug/kg dry	1.82	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:37	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
1024-57-3	Heptachlor epoxide	ND		ug/kg dry	1.82	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:37	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
72-43-5	Methoxychlor	ND		ug/kg dry	9.11	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:37	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			

Sample Information

Client Sample ID: B-3 0-2 ft

York Sample ID: 20G0654-05

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 11:00 am	07/17/2020

Pesticides, 8081 target list

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
8001-35-2	Toxaphene	ND		ug/kg dry	92.2	5	EPA 8081B Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/22/2020 05:39	07/22/2020 18:37	CM

	Surrogate Recoveries	Result	Acceptance Range
2051-24-3	*Surrogate: Decachlorobiphenyl*	*131 %*	*30-150*
877-09-8	*Surrogate: Tetrachloro-m-xylene*	*87.9 %*	*30-150*

Polychlorinated Biphenyls (PCB)

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
12674-11-2	Aroclor 1016	ND		mg/kg dry	0.0184	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH,NJDEP,PADEP	07/22/2020 05:39	07/22/2020 18:10	BJ
11104-28-2	Aroclor 1221	ND		mg/kg dry	0.0184	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH,NJDEP,PADEP	07/22/2020 05:39	07/22/2020 18:10	BJ
11141-16-5	Aroclor 1232	ND		mg/kg dry	0.0184	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH,NJDEP,PADEP	07/22/2020 05:39	07/22/2020 18:10	BJ
53469-21-9	Aroclor 1242	ND		mg/kg dry	0.0184	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH,NJDEP,PADEP	07/22/2020 05:39	07/22/2020 18:10	BJ
12672-29-6	Aroclor 1248	ND		mg/kg dry	0.0184	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH,NJDEP,PADEP	07/22/2020 05:39	07/22/2020 18:10	BJ
11097-69-1	Aroclor 1254	ND		mg/kg dry	0.0184	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH,NJDEP,PADEP	07/22/2020 05:39	07/22/2020 18:10	BJ
11096-82-5	Aroclor 1260	ND		mg/kg dry	0.0184	1	EPA 8082A Certifications: NELAC-NY10854,CTDOH,NJDEP,PADEP	07/22/2020 05:39	07/22/2020 18:10	BJ
1336-36-3	* Total PCBs	ND		mg/kg dry	0.0184	1	EPA 8082A Certifications:	07/22/2020 05:39	07/22/2020 18:10	BJ

	Surrogate Recoveries	Result	Acceptance Range
877-09-8	*Surrogate: Tetrachloro-m-xylene*	*68.5 %*	*30-140*
2051-24-3	*Surrogate: Decachlorobiphenyl*	*102 %*	*30-140*

Metals, Target Analyte

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3050B

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
7429-90-5	**Aluminum**	**14900**	B	mg/kg dry	5.56	1	EPA 6010D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/20/2020 08:31	07/21/2020 19:04	KML
7440-36-0	Antimony	ND		mg/kg dry	2.78	1	EPA 6010D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/20/2020 08:31	07/21/2020 19:04	KML
7440-38-2	**Arsenic**	**8.19**		mg/kg dry	1.67	1	EPA 6010D Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP	07/20/2020 08:31	07/21/2020 19:04	KML

Sample Information

Client Sample ID: B-3 0-2 ft

York Sample ID: 20G0654-05

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 11:00 am	07/17/2020

Metals, Target Analyte

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3050B

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
7440-39-3	**Barium**	**77.7**		mg/kg dry	2.78	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 19:04	KML
7440-41-7	Beryllium	ND		mg/kg dry	0.056	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 19:04	KML
7440-43-9	Cadmium	ND		mg/kg dry	0.333	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 19:04	KML
7440-70-2	**Calcium**	**1450**		mg/kg dry	5.56	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 19:04	KML
7440-47-3	**Chromium**	**21.2**		mg/kg dry	0.556	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 19:04	KML
7440-48-4	**Cobalt**	**8.51**		mg/kg dry	0.445	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 19:04	KML
7440-50-8	**Copper**	**31.9**		mg/kg dry	2.22	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 19:04	KML
7439-89-6	**Iron**	**18800**		mg/kg dry	27.8	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 19:04	KML
7439-92-1	**Lead**	**104**		mg/kg dry	0.556	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 19:04	KML
7439-95-4	**Magnesium**	**2550**		mg/kg dry	5.56	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 19:04	KML
7439-96-5	**Manganese**	**353**		mg/kg dry	0.556	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 19:04	KML
7440-02-0	**Nickel**	**21.4**		mg/kg dry	1.11	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 19:04	KML
7440-09-7	**Potassium**	**966**		mg/kg dry	5.56	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 19:04	KML
7782-49-2	Selenium	ND		mg/kg dry	2.78	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 19:04	KML
7440-22-4	Silver	ND		mg/kg dry	0.556	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 19:04	KML
7440-23-5	**Sodium**	**268**		mg/kg dry	55.6	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 19:04	KML
7440-28-0	Thallium	ND		mg/kg dry	2.78	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 19:04	KML
7440-62-2	**Vanadium**	**31.1**		mg/kg dry	1.11	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 19:04	KML
7440-66-6	**Zinc**	**86.3**		mg/kg dry	2.78	1	EPA 6010D Certifications:	07/20/2020 08:31 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/21/2020 19:04	KML

Mercury by 7473

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 7473 soil

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
7439-97-6	**Mercury**	**0.446**		mg/kg dry	0.0333	1	EPA 7473 Certifications:	07/17/2020 14:36 CTDOH,NJDEP,NELAC-NY10854,PADEP	07/17/2020 19:35	MAO

Sample Information

Client Sample ID: B-3 0-2 ft | **York Sample ID:** 20G0654-05

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 11:00 am	07/17/2020

Total Solids | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	* % Solids	90.0		%	0.100	1	SM 2540G Certifications: CTDOH	07/20/2020 08:06	07/20/2020 15:11	WJM

Sample Information

Client Sample ID: B-3 10-12 ft | **York Sample ID:** 20G0654-06

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 11:30 am	07/17/2020

Volatile Organics, 8260 - Comprehensive | **Log-in Notes:** | **Sample Notes:**

Sample Prepared by Method: EPA 5035A

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
630-20-6	1,1,1,2-Tetrachloroethane	ND		ug/kg dry	1.4	2.8	1	EPA 8260C Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 09:30	07/20/2020 16:30	SS
71-55-6	1,1,1-Trichloroethane	ND		ug/kg dry	1.4	2.8	1	EPA 8260C Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 09:30	07/20/2020 16:30	SS
79-34-5	1,1,2,2-Tetrachloroethane	ND		ug/kg dry	1.4	2.8	1	EPA 8260C Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 09:30	07/20/2020 16:30	SS
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND		ug/kg dry	1.4	2.8	1	EPA 8260C Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 09:30	07/20/2020 16:30	SS
79-00-5	1,1,2-Trichloroethane	ND		ug/kg dry	1.4	2.8	1	EPA 8260C Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 09:30	07/20/2020 16:30	SS
75-34-3	1,1-Dichloroethane	ND		ug/kg dry	1.4	2.8	1	EPA 8260C Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 09:30	07/20/2020 16:30	SS
75-35-4	1,1-Dichloroethylene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 09:30	07/20/2020 16:30	SS
87-61-6	1,2,3-Trichlorobenzene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C Certifications: NELAC-NY10854,NELAC-NY12058,NJDEP,PAL	07/20/2020 09:30	07/20/2020 16:30	SS
96-18-4	1,2,3-Trichloropropane	ND		ug/kg dry	1.4	2.8	1	EPA 8260C Certifications: NELAC-NY10854,NELAC-NY12058,NJDEP	07/20/2020 09:30	07/20/2020 16:30	SS
120-82-1	1,2,4-Trichlorobenzene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C Certifications: NELAC-NY10854,NELAC-NY12058,NJDEP,PAL	07/20/2020 09:30	07/20/2020 16:30	SS
95-63-6	1,2,4-Trimethylbenzene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 09:30	07/20/2020 16:30	SS
96-12-8	1,2-Dibromo-3-chloropropane	ND		ug/kg dry	1.4	2.8	1	EPA 8260C Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 09:30	07/20/2020 16:30	SS
106-93-4	1,2-Dibromoethane	ND		ug/kg dry	1.4	2.8	1	EPA 8260C Certifications: CTDOH,NELAC-NY10854,NELAC-NY12058,NJ	07/20/2020 09:30	07/20/2020 16:30	SS

Sample Information

Client Sample ID: B-3 10-12 ft

York Sample ID: 20G0654-06

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 11:30 am	07/17/2020

Volatile Organics, 8260 - Comprehensive

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 5035A

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
95-50-1	1,2-Dichlorobenzene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
107-06-2	1,2-Dichloroethane	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
78-87-5	1,2-Dichloropropane	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-67-8	1,3,5-Trimethylbenzene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
541-73-1	1,3-Dichlorobenzene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
106-46-7	1,4-Dichlorobenzene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
123-91-1	1,4-Dioxane	ND		ug/kg dry	28	57	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
78-93-3	2-Butanone	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
591-78-6	2-Hexanone	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-10-1	4-Methyl-2-pentanone	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
67-64-1	Acetone	ND		ug/kg dry	2.8	5.7	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
107-02-8	Acrolein	ND		ug/kg dry	2.8	5.7	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
107-13-1	Acrylonitrile	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
71-43-2	Benzene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
74-97-5	Bromochloromethane	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
75-27-4	Bromodichloromethane	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-25-2	Bromoform	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
74-83-9	Bromomethane	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-15-0	Carbon disulfide	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
56-23-5	Carbon tetrachloride	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-90-7	Chlorobenzene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		

Sample Information

Client Sample ID: B-3 10-12 ft

York Sample ID: 20G0654-06

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 11:30 am	07/17/2020

Volatile Organics, 8260 - Comprehensive

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 5035A

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
75-00-3	Chloroethane	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
67-66-3	Chloroform	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
74-87-3	Chloromethane	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
156-59-2	cis-1,2-Dichloroethylene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
10061-01-5	cis-1,3-Dichloropropylene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
110-82-7	Cyclohexane	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
124-48-1	Dibromochloromethane	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
74-95-3	Dibromomethane	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
75-71-8	Dichlorodifluoromethane	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
100-41-4	Ethyl Benzene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
87-68-3	Hexachlorobutadiene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
98-82-8	Isopropylbenzene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
79-20-9	Methyl acetate	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
1634-04-4	Methyl tert-butyl ether (MTBE)	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-87-2	Methylcyclohexane	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
75-09-2	Methylene chloride	ND		ug/kg dry	2.8	5.7	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
104-51-8	n-Butylbenzene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
103-65-1	n-Propylbenzene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
95-47-6	o-Xylene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,PA		
179601-23-1	p- & m- Xylenes	ND		ug/kg dry	2.8	5.7	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,PA		
99-87-6	p-Isopropyltoluene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		

Sample Information

Client Sample ID: B-3 10-12 ft

York Sample ID: 20G0654-06

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 11:30 am	07/17/2020

Volatile Organics, 8260 - Comprehensive

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 5035A

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
135-98-8	sec-Butylbenzene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
100-42-5	Styrene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-65-0	tert-Butyl alcohol (TBA)	ND		ug/kg dry	1.4	14	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	NELAC-NY10854,NELAC-NY12058,NJDEP,PAL		
98-06-6	tert-Butylbenzene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
127-18-4	Tetrachloroethylene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
108-88-3	Toluene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
156-60-5	trans-1,2-Dichloroethylene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
10061-02-6	trans-1,3-Dichloropropylene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
110-57-6	* trans-1,4-dichloro-2-butene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH		
79-01-6	Trichloroethylene	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-69-4	Trichlorofluoromethane	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
75-01-4	Vinyl Chloride	ND		ug/kg dry	1.4	2.8	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		
1330-20-7	Xylenes, Total	ND		ug/kg dry	4.2	8.5	1	EPA 8260C	07/20/2020 09:30	07/20/2020 16:30	SS
								Certifications:	CTDOH,NELAC-NY10854,NELAC-NY12058,NJ		

	Surrogate Recoveries	Result	Acceptance Range
17060-07-0	*Surrogate: SURR: 1,2-Dichloroethane-d4*	*104 %*	*77-125*
2037-26-5	*Surrogate: SURR: Toluene-d8*	*105 %*	*85-120*
460-00-4	*Surrogate: SURR: p-Bromofluorobenzene*	*104 %*	*76-130*

Semi-Volatiles, 8270 Base/Neutrals

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
120-82-1	1,2,4-Trichlorobenzene	ND		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
95-50-1	1,2-Dichlorobenzene	ND		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	NELAC-NY10854,PADEP		
541-73-1	1,3-Dichlorobenzene	ND		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	NELAC-NY10854,PADEP		

Sample Information

Client Sample ID: B-3 10-12 ft

York Sample ID: 20G0654-06

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 11:30 am	07/17/2020

Semi-Volatiles, 8270 Base/Neutrals

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
106-46-7	1,4-Dichlorobenzene	ND		ug/kg dry	45.0	89.8	2	EPA 8270D Certifications:	07/22/2020 06:17 NELAC-NY10854,PADEP	07/23/2020 14:06	KH
121-14-2	2,4-Dinitrotoluene	ND		ug/kg dry	45.0	89.8	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/23/2020 14:06	KH
606-20-2	2,6-Dinitrotoluene	ND		ug/kg dry	45.0	89.8	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/23/2020 14:06	KH
91-58-7	2-Chloronaphthalene	ND		ug/kg dry	45.0	89.8	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/23/2020 14:06	KH
91-57-6	2-Methylnaphthalene	ND		ug/kg dry	45.0	89.8	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/23/2020 14:06	KH
91-94-1	3,3-Dichlorobenzidine	ND		ug/kg dry	45.0	89.8	2	EPA 8270D Certifications:	07/22/2020 06:17 NELAC-NY10854,NJDEP,PADEP	07/23/2020 14:06	KH
99-09-2	3-Nitroaniline	ND		ug/kg dry	89.8	179	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/23/2020 14:06	KH
101-55-3	4-Bromophenyl phenyl ether	ND		ug/kg dry	45.0	89.8	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/23/2020 14:06	KH
106-47-8	4-Chloroaniline	ND		ug/kg dry	45.0	89.8	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/23/2020 14:06	KH
7005-72-3	4-Chlorophenyl phenyl ether	ND		ug/kg dry	45.0	89.8	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/23/2020 14:06	KH
100-01-6	4-Nitroaniline	ND		ug/kg dry	89.8	179	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/23/2020 14:06	KH
83-32-9	Acenaphthene	ND		ug/kg dry	45.0	89.8	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/23/2020 14:06	KH
208-96-8	Acenaphthylene	ND		ug/kg dry	45.0	89.8	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/23/2020 14:06	KH
62-53-3	Aniline	ND		ug/kg dry	180	360	2	EPA 8270D Certifications:	07/22/2020 06:17 NELAC-NY10854,NJDEP,PADEP	07/23/2020 14:06	KH
120-12-7	Anthracene	ND		ug/kg dry	45.0	89.8	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/23/2020 14:06	KH
56-55-3	**Benzo(a)anthracene**	**101**		ug/kg dry	45.0	89.8	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/23/2020 14:06	KH
50-32-8	**Benzo(a)pyrene**	**115**		ug/kg dry	45.0	89.8	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/23/2020 14:06	KH
205-99-2	**Benzo(b)fluoranthene**	**105**		ug/kg dry	45.0	89.8	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/23/2020 14:06	KH
191-24-2	**Benzo(g,h,i)perylene**	**87.5**	J	ug/kg dry	45.0	89.8	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/23/2020 14:06	KH
207-08-9	**Benzo(k)fluoranthene**	**93.3**		ug/kg dry	45.0	89.8	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/23/2020 14:06	KH
85-68-7	Benzyl butyl phthalate	ND		ug/kg dry	45.0	89.8	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/23/2020 14:06	KH
111-91-1	Bis(2-chloroethoxy)methane	ND		ug/kg dry	45.0	89.8	2	EPA 8270D Certifications:	07/22/2020 06:17 CTDOH,NELAC-NY10854,NJDEP,PADEP	07/23/2020 14:06	KH

Sample Information

Client Sample ID: **B-3 10-12 ft** **York Sample ID:** **20G0654-06**

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 11:30 am	07/17/2020

Semi-Volatiles, 8270 Base/Neutrals **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
111-44-4	Bis(2-chloroethyl)ether	ND		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
108-60-1	Bis(2-chloroisopropyl)ether	ND		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
117-81-7	Bis(2-ethylhexyl)phthalate	ND		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
86-74-8	Carbazole	ND		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
218-01-9	**Chrysene**	**98.3**		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
53-70-3	Dibenzo(a,h)anthracene	ND		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
132-64-9	Dibenzofuran	ND		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
84-66-2	Diethyl phthalate	ND		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
131-11-3	Dimethyl phthalate	ND		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
84-74-2	Di-n-butyl phthalate	ND		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
117-84-0	Di-n-octyl phthalate	ND		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
206-44-0	**Fluoranthene**	**152**		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
86-73-7	Fluorene	ND		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	NELAC-NY10854,NJDEP,PADEP		
118-74-1	Hexachlorobenzene	ND		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
87-68-3	Hexachlorobutadiene	ND		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
77-47-4	Hexachlorocyclopentadiene	ND		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
67-72-1	Hexachloroethane	ND		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
193-39-5	**Indeno(1,2,3-cd)pyrene**	**98.3**		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
78-59-1	Isophorone	ND		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
91-20-3	Naphthalene	ND		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
98-95-3	Nitrobenzene	ND		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
62-75-9	N-Nitrosodimethylamine	ND		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		

Sample Information

Client Sample ID: B-3 10-12 ft

York Sample ID: 20G0654-06

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 11:30 am	07/17/2020

Semi-Volatiles, 8270 Base/Neutrals

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
621-64-7	N-nitroso-di-n-propylamine	ND		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
86-30-6	N-Nitrosodiphenylamine	ND		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
85-01-8	**Phenanthrene**	**53.8**	J	ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
129-00-0	**Pyrene**	**136**		ug/kg dry	45.0	89.8	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
110-86-1	Pyridine	ND		ug/kg dry	180	360	2	EPA 8270D	07/22/2020 06:17	07/23/2020 14:06	KH
								Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			

	Surrogate Recoveries	Result	Acceptance Range
4165-60-0	*Surrogate: SURR: Nitrobenzene-d5*	*75.4 %*	*22-108*
321-60-8	*Surrogate: SURR: 2-Fluorobiphenyl*	*61.1 %*	*21-113*
1718-51-0	*Surrogate: SURR: Terphenyl-d14*	*69.7 %*	*24-116*

Pesticides, 8081 target list

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
72-54-8	4,4'-DDD	ND		ug/kg dry	1.78	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:53	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
72-55-9	4,4'-DDE	ND		ug/kg dry	1.78	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:53	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
50-29-3	4,4'-DDT	ND		ug/kg dry	1.78	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:53	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
309-00-2	Aldrin	ND		ug/kg dry	1.78	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:53	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
319-84-6	alpha-BHC	ND		ug/kg dry	1.78	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:53	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
5103-71-9	alpha-Chlordane	ND		ug/kg dry	1.78	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:53	CM
							Certifications: NELAC-NY10854,NJDEP			
319-85-7	beta-BHC	ND		ug/kg dry	1.78	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:53	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
57-74-9	Chlordane, total	ND		ug/kg dry	35.5	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:53	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
319-86-8	delta-BHC	ND		ug/kg dry	1.78	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:53	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
60-57-1	Dieldrin	ND		ug/kg dry	1.78	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:53	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
959-98-8	Endosulfan I	ND		ug/kg dry	1.78	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:53	CM
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			

Sample Information

Client Sample ID: B-3 10-12 ft

York Sample ID: 20G0654-06

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 11:30 am	07/17/2020

Pesticides, 8081 target list

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
33213-65-9	Endosulfan II	ND		ug/kg dry	1.78	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:53	CM
							Certifications:	CTDOH,NELAC-NY10854		
1031-07-8	Endosulfan sulfate	ND		ug/kg dry	1.78	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:53	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
72-20-8	Endrin	ND		ug/kg dry	1.78	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:53	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
7421-93-4	Endrin aldehyde	ND		ug/kg dry	1.78	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:53	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
53494-70-5	Endrin ketone	ND		ug/kg dry	1.78	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:53	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
58-89-9	gamma-BHC (Lindane)	ND		ug/kg dry	1.78	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:53	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
5566-34-7	gamma-Chlordane	ND		ug/kg dry	1.78	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:53	CM
							Certifications:	NELAC-NY10854,NJDEP		
76-44-8	Heptachlor	ND		ug/kg dry	1.78	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:53	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
1024-57-3	Heptachlor epoxide	ND		ug/kg dry	1.78	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:53	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
72-43-5	Methoxychlor	ND		ug/kg dry	8.88	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:53	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		
8001-35-2	Toxaphene	ND		ug/kg dry	89.9	5	EPA 8081B	07/22/2020 05:39	07/22/2020 18:53	CM
							Certifications:	CTDOH,NELAC-NY10854,NJDEP,PADEP		

	Surrogate Recoveries	Result	Acceptance Range
2051-24-3	*Surrogate: Decachlorobiphenyl*	*135 %*	*30-150*
877-09-8	*Surrogate: Tetrachloro-m-xylene*	*90.0 %*	*30-150*

Polychlorinated Biphenyls (PCB)

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
12674-11-2	Aroclor 1016	ND		mg/kg dry	0.0179	1	EPA 8082A	07/22/2020 05:39	07/22/2020 18:23	BJ
							Certifications:	NELAC-NY10854,CTDOH,NJDEP,PADEP		
11104-28-2	Aroclor 1221	ND		mg/kg dry	0.0179	1	EPA 8082A	07/22/2020 05:39	07/22/2020 18:23	BJ
							Certifications:	NELAC-NY10854,CTDOH,NJDEP,PADEP		
11141-16-5	Aroclor 1232	ND		mg/kg dry	0.0179	1	EPA 8082A	07/22/2020 05:39	07/22/2020 18:23	BJ
							Certifications:	NELAC-NY10854,CTDOH,NJDEP,PADEP		
53469-21-9	Aroclor 1242	ND		mg/kg dry	0.0179	1	EPA 8082A	07/22/2020 05:39	07/22/2020 18:23	BJ
							Certifications:	NELAC-NY10854,CTDOH,NJDEP,PADEP		
12672-29-6	Aroclor 1248	ND		mg/kg dry	0.0179	1	EPA 8082A	07/22/2020 05:39	07/22/2020 18:23	BJ
							Certifications:	NELAC-NY10854,CTDOH,NJDEP,PADEP		
11097-69-1	Aroclor 1254	ND		mg/kg dry	0.0179	1	EPA 8082A	07/22/2020 05:39	07/22/2020 18:23	BJ
							Certifications:	NELAC-NY10854,CTDOH,NJDEP,PADEP		

Sample Information

Client Sample ID: B-3 10-12 ft

York Sample ID: 20G0654-06

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 11:30 am	07/17/2020

Polychlorinated Biphenyls (PCB)

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
11096-82-5	Aroclor 1260	ND		mg/kg dry	0.0179	1	EPA 8082A	07/22/2020 05:39	07/22/2020 18:23	BJ
							Certifications: NELAC-NY10854,CTDOH,NJDEP,PADEP			
1336-36-3	* Total PCBs	ND		mg/kg dry	0.0179	1	EPA 8082A	07/22/2020 05:39	07/22/2020 18:23	BJ
							Certifications:			

Surrogate Recoveries	Result	Acceptance Range
877-09-8 *Surrogate: Tetrachloro-m-xylene*	*68.5 %*	*30-140*
2051-24-3 *Surrogate: Decachlorobiphenyl*	*87.5 %*	*30-140*

Metals, Target Analyte

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3050B

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
7429-90-5	**Aluminum**	**14000**	B	mg/kg dry	5.47	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:07	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-36-0	Antimony	ND		mg/kg dry	2.74	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:07	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-38-2	**Arsenic**	**4.87**		mg/kg dry	1.64	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:07	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-39-3	**Barium**	**49.7**		mg/kg dry	2.74	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:07	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-41-7	Beryllium	ND		mg/kg dry	0.055	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:07	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-43-9	Cadmium	ND		mg/kg dry	0.328	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:07	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-70-2	**Calcium**	**985**		mg/kg dry	5.47	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:07	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-47-3	**Chromium**	**19.7**		mg/kg dry	0.547	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:07	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-48-4	**Cobalt**	**8.70**		mg/kg dry	0.438	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:07	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-50-8	**Copper**	**20.5**		mg/kg dry	2.19	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:07	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7439-89-6	**Iron**	**18400**		mg/kg dry	27.4	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:07	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7439-92-1	**Lead**	**51.0**		mg/kg dry	0.547	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:07	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7439-95-4	**Magnesium**	**2920**		mg/kg dry	5.47	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:07	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7439-96-5	**Manganese**	**319**		mg/kg dry	0.547	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:07	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-02-0	**Nickel**	**20.6**		mg/kg dry	1.09	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:07	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-09-7	**Potassium**	**921**		mg/kg dry	5.47	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:07	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			

Sample Information

Client Sample ID: B-3 10-12 ft

York Sample ID: 20G0654-06

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0654	1776 48th St.	Soil	July 16, 2020 11:30 am	07/17/2020

Metals, Target Analyte

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 3050B

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
7782-49-2	Selenium	ND		mg/kg dry	2.74	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:07	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-22-4	Silver	ND		mg/kg dry	0.547	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:07	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-23-5	**Sodium**	**294**		mg/kg dry	54.7	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:07	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-28-0	Thallium	ND		mg/kg dry	2.74	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:07	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-62-2	**Vanadium**	**26.2**		mg/kg dry	1.09	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:07	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			
7440-66-6	**Zinc**	**55.2**		mg/kg dry	2.74	1	EPA 6010D	07/20/2020 08:31	07/21/2020 19:07	KML
							Certifications: CTDOH,NELAC-NY10854,NJDEP,PADEP			

Mercury by 7473

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 7473 soil

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
7439-97-6	**Mercury**	**0.335**		mg/kg dry	0.0328	1	EPA 7473	07/17/2020 14:36	07/17/2020 19:44	MAO
							Certifications: CTDOH,NJDEP,NELAC-NY10854,PADEP			

Total Solids

Log-in Notes:

Sample Notes:

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**91.4**		%	0.100	1	SM 2540G	07/20/2020 08:06	07/20/2020 15:11	WJM
							Certifications: CTDOH			

Volatile Analysis Sample Containers

Lab ID	Client Sample ID	Volatile Sample Container
20G0654-01	B-1 0-2 ft	40mL Vial with Stir Bar-Cool 4° C
20G0654-02	B-1 10-12 ft	40mL Vial with Stir Bar-Cool 4° C
20G0654-03	B-2 0-2 ft	40mL Vial with Stir Bar-Cool 4° C
20G0654-04	B-2 10-12 ft	40mL Vial with Stir Bar-Cool 4° C
20G0654-05	B-3 0-2 ft	40mL Vial with Stir Bar-Cool 4° C
20G0654-06	B-3 10-12 ft	40mL Vial with Stir Bar-Cool 4° C

Sample and Data Qualifiers Relating to This Work Order

QL-02	This LCS analyte is outside Laboratory Recovery limits due the analyte behavior using the referenced method. The reference method has certain limitations with respect to analytes of this nature.
J	Detected below the Reporting Limit but greater than or equal to the Method Detection Limit (MDL/LOD) or in the case of a TIC, the result is an estimated concentration.
CCV-E	The value reported is ESTIMATED. The value is estimated due to its behavior during continuing calibration verification (>20% Difference for average Rf or >20% Drift for quadratic fit).
B	Analyte is found in the associated analysis batch blank. For volatiles, methylene chloride and acetone are common lab contaminants.

Definitions and Other Explanations

*	Analyte is not certified or the state of the samples origination does not offer certification for the Analyte.
ND	NOT DETECTED - the analyte is not detected at the Reported to level (LOQ/RL or LOD/MDL)
RL	REPORTING LIMIT - the minimum reportable value based upon the lowest point in the analyte calibration curve.
LOQ	LIMIT OF QUANTITATION - the minimum concentration of a target analyte that can be reported within a specified degree of confidence. This is the lowest point in an analyte calibration curve that has been subjected to all steps of the processing/analysis and verified to meet defined criteria. This is based upon NELAC 2009 Standards and applies to all analyses.
LOD	LIMIT OF DETECTION - a verified estimate of the minimum concentration of a substance in a given matrix that an analytical process can reliably detect. This is based upon NELAC 2009 Standards and applies to all analyses conducted under the auspices of EPA SW-846.
MDL	METHOD DETECTION LIMIT - a statistically derived estimate of the minimum amount of a substance an analytical system can reliably detect with a 99% confidence that the concentration of the substance is greater than zero. This is based upon 40 CFR Part 136 Appendix B and applies only to EPA 600 and 200 series methods.
Reported to	This indicates that the data for a particular analysis is reported to either the LOD/MDL, or the LOQ/RL. In cases where the "Reported to" is located above the LOD/MDL, any value between this and the LOQ represents an estimated value which is "J" flagged accordingly. This applies to volatile and semi-volatile target compounds only.
NR	Not reported
RPD	Relative Percent Difference
Wet	The data has been reported on an as-received (wet weight) basis
Low Bias	Low Bias flag indicates that the recovery of the flagged analyte is below the laboratory or regulatory lower control limit. The data user should take note that this analyte may be biased low but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
High Bias	High Bias flag indicates that the recovery of the flagged analyte is above the laboratory or regulatory upper control limit. The data user should take note that this analyte may be biased high but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
Non-Dir.	Non-dir. flag (Non-Directional Bias) indicates that the Relative Percent Difference (RPD) (a measure of precision) among the MS and MSD data is outside the laboratory or regulatory control limit. This alerts the data user where the MS and MSD are from site-specific samples that the RPD is high due to either non-homogeneous distribution of target analyte between the MS/MSD or indicates poor reproducibility for other reasons.

If EPA SW-846 method 8270 is included herein it is noted that the target compound N-nitrosodiphenylamine (NDPA) decomposes in the gas chromatographic inlet and cannot be separated from diphenylamine (DPA). These results could actually represent 100% DPA, 100% NDPA or some combination of the two. For this reason, York reports the combined result for n-nitrosodiphenylamine and diphenylamine for either of these compounds as a combined concentration as Diphenylamine.

If Total PCBs are detected and the target aroclors reported are "Not detected", the Total PCB value is reported due to the presence of either or both Aroclors 1262 and 1268 which are non-target aroclors for some regulatory lists.

2-chloroethylvinyl ether readily breaks down under acidic conditions. Samples that are acid preserved, including standards will exhibit breakdown. The data user should take note.

Certification for pH is no longer offered by NYDOH ELAP.

Semi-Volatile and Volatile analyses are reported down to the LOD/MDL, with values between the LOD/MDL and the LOQ being "J" flagged as estimated results.

For analyses by EPA SW-846-8270D, the Limit of Quantitation (LOQ) reported for benzidine is based upon the lowest standard used for calibration and is not a verified LOQ due to this compound's propensity for oxidative losses during extraction/concentration procedures and non-reproducible chromatographic performance.

YORK ANALYTICAL LABORATORIES
120 RESEARCH DR.
STRATFORD, CT 06615
(203) 325-1371
FAX (203) 357-0166

Field Chain-of-Custody Record

NOTE: York's Std. Terms & Conditions are listed on the back side of this document. This document serves as your written authorization to York to proceed with the analyses requested and your signature binds you to York's Std. Terms & Conditions.

York Project No. 20G0654

YOUR Information

Company: Tri State Drilling Tech
Address: 94 Carolyn Ave #388
Lawrence, NY 11756
Phone No.:
Contact Person: Recchia/tristate
E-Mail Address: drillingtech.com

Report To:

Company: SAME
Address:
Phone No.:
Attention:
E-Mail Address:

Invoice To:

Company: SAME
Address:
Phone No.:
Attention:
E-Mail Address:

YOUR Project ID

1776 48th St.

Purchase Order No.

1776 48th St

Samples from: CT ___ NY ✓ NJ ___

Turn-Around Time

- RUSH - Same Day ☐
- RUSH - Next Day ☐
- RUSH - Two Day ☐
- RUSH - Three Day ☐
- RUSH - Four Day ☐
- Standard(5-7 Days) ✓

Report Type

- Summary Report ✓
- Summary w/ QA Summary
- CT RCP Package
- CTRCP DQA/DUE Pkg
- NY ASP A Package
- NY ASP B Package
- NJDEP Red. Deliv.

Electronic Data Deliverables (EDD)

- Simple Excel ✓
- NYSDEC EQuIS
- EQuIS (std)
- EZ-EDD (EQuIS)
- NJDEP SRP HazSite EDD
- GIS/KEY (std)
- Other
- **York Regulatory Comparison Excel Spreadsheet** ✓

Compare to the following Regs. (please fill in):
NYSPART 375 Unrestricted/Restricted Residential

Print Clearly and Legibly. All Information must be complete. Samples will NOT be logged in and the turn-around time clock will not begin until any questions by York are resolved.

Samples Collected/Authorized By (Signature)
Paul Recchia
Name (printed)

Matrix Codes
(S) soil
Other - specify(oil, etc.)
WW - wastewater
GW - groundwater
DW - drinking water
Air-A - ambient air
Air-SV - soil vapor

Volatiles		Semi-Vols.	Pest/PCB/Herb	Metals	Misc. Org.	Full Lists	Misc.
(8260 full)	TICs	(8270 or 625)	(8082PCB)	RCRA8	TPH GRO	Pri.Poll.	Corrosivity
624	Site Spec.	STARS list	(8081Pest)	PP13 list	TPH DRO	TCL Organics	Reactivity
STARS list	Nassau Co.	(BN Only)	8151Herb	(TAL)	CT ETPH	TAL Met/CN	Ignitability
BTEX	Suffolk Co.	Acids Only	CT RCP	CT15 list	NY 310-13	Full TCLP	Flash Point
MTBE	Ketones	PAH list	App. IX	TAGM list	TPH 1664	Full App. IX	Sieve Anal.
TCL list	Oxygenates	TAGM list	Site Spec.	NJDEP list	Air TO14A	Part 360-Routine	Heterotrophs
TAGM list	TCLP list	CT RCP list	SPLP or TCLP	Total	Air TO15	Part 360-Baseline	TOX
CT RCP list	524.2	TCL list	TCLP Pest	Dissolved	Air STARS	Part 360-Expanded No Dioxins/Furans	BTU/lb.
Arom. only	502.2	NJDEP list	TCLP Herb	SPLP or TCLP	Air VPH	Part 360-Expanded Full List	Aquatic Tox.
Halog.only	NJDEP list	App. IX	Chlordane	Indiv. Metals	Air TICs	NYCDEP Sewer	TOC
App.IX list	SPLP or TCLP	TCLP BNA	608 Pest	LIST Below	Methane	NYSDEC Sewer	Asbestos
8021B list		SPLP or TCLP	608 PCB		Helium	TAGM	Silica

Sample Identification	Date/Time Sampled	Sample Matrix	Choose Analyses Needed from the Menu Above and Enter Below	Container Description(s)
B-1 0-2ft	7/16/20 0900	S	VOC's, SVOCs(BN), Pest/PCBs + TAL Metals	1-8oz + Terra cores
B-1 10-12ft	0930	S		
B-2 0-2ft	1000	S		
B-2 10-12ft	1030	S		
B-3 0-2ft	1100	S		
B-3 10-12ft	1130	S		

Comments: NYCOER Contract Pricing (N)

Preservation Check those Applicable
Special Instructions
Field Filtered ☐
Lab to Filter ☐

4°C ✓ Frozen ___ HCl ___ MeOH ___ HNO_3 ___ H_2SO_4 ___ NaOH ___
ZnAc Ascorbic Acid Other

Samples Relinquished By — Date/Time: 7/17/20 1120 AM
Samples Relinquished By — Date/Time: 7/17/20 1648
Samples Received By — Date/Time: 7/17/20 1120 AM
Samples Received in LAB by — Date/Time: 7/17/2020 1648

Temperature on Receipt 1.9 °C

Technical Report

prepared for:

Tri-State Drilling Technologies, Inc.
94 Gardiners Avenue #388
Levittown NY, 11756
Attention: Nicholas Recchia

Report Date: 07/24/2020
Client Project ID: 1776 48th St.
York Project (SDG) No.: 20G0662

Report Date: 07/24/2020
Client Project ID: 1776 48th St.
York Project (SDG) No.: 20G0662

Tri-State Drilling Technologies, Inc.
94 Gardiners Avenue #388
Levittown NY, 11756
Attention: Nicholas Recchia

Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on July 17, 2020 with a temperature of C. The project was identified as your project: **1776 48th St.**.

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables.

All samples were received in proper condition meeting the customary acceptance requirements for environmental samples except those indicated under the Sample and Analysis Qualifiers section of this report.

All analyses met the method and laboratory standard operating procedure requirements except as indicated by any data flags, the meaning of which are explained in the Sample and Data Qualifiers Relating to This Work Order section of this report and case narrative if applicable.

The results of the analyses, which are all reported on dry weight basis (soils) unless otherwise noted, are detailed in the following pages.

Please contact Client Services at 203.325.1371 with any questions regarding this report.

York Sample ID	Client Sample ID	Matrix	Date Collected	Date Received
20G0662-02	SV-2	Soil Vapor	07/16/2020	07/17/2020
20G0662-03	SV-3	Soil Vapor	07/16/2020	07/17/2020

General Notes for York Project (SDG) No.: 20G0662

1. The RLs and MDLs (Reporting Limit and Method Detection Limit respectively) reported are adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference. The RL(REPORTING LIMIT) is based upon the lowest standard utilized for the calibration where applicable.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All analyses conducted met method or Laboratory SOP requirements. See the Sample and Data Qualifiers Section for further information.
6. It is noted that no analyses reported herein were subcontracted to another laboratory, unless noted in the report.
7. This report reflects results that relate only to the samples submitted on the attached chain-of-custody form(s) received by York.
8. Analyses conducted at York Analytical Laboratories, Inc. Stratford, CT are indicated by NY Cert. No. 10854; those conducted at York Analytical Laboratories, Inc., Richmond Hill, NY are indicated by NY Cert. No. 12058.

Approved By: 

Date: 07/24/2020

Benjamin Gulizia
Laboratory Director

Sample Information

Client Sample ID: SV-2 **York Sample ID:** 20G0662-02

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0662	1776 48th St.	Soil Vapor	July 16, 2020 12:00 am	07/17/2020

Volatile Organics, EPA TO15 Full List

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA TO15 PREP

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
630-20-6	* 1,1,1,2-Tetrachloroethane	ND		ug/m³	6.6	9.57	EPA TO-15 Certifications:	07/21/2020 09:00	07/22/2020 03:03	LLJ
71-55-6	1,1,1-Trichloroethane	ND		ug/m³	5.2	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
79-34-5	1,1,2,2-Tetrachloroethane	ND		ug/m³	6.6	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND		ug/m³	7.3	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
79-00-5	1,1,2-Trichloroethane	ND		ug/m³	5.2	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
75-34-3	1,1-Dichloroethane	ND		ug/m³	3.9	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
75-35-4	1,1-Dichloroethylene	ND		ug/m³	0.95	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
120-82-1	1,2,4-Trichlorobenzene	ND		ug/m³	7.1	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
95-63-6	**1,2,4-Trimethylbenzene**	**360**		ug/m³	4.7	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
106-93-4	1,2-Dibromoethane	ND		ug/m³	7.4	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
95-50-1	1,2-Dichlorobenzene	ND		ug/m³	5.8	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
107-06-2	1,2-Dichloroethane	ND		ug/m³	3.9	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
78-87-5	1,2-Dichloropropane	ND		ug/m³	4.4	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
76-14-2	1,2-Dichlorotetrafluoroethane	ND		ug/m³	6.7	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
108-67-8	**1,3,5-Trimethylbenzene**	**77**		ug/m³	4.7	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
106-99-0	1,3-Butadiene	ND		ug/m³	6.4	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
541-73-1	1,3-Dichlorobenzene	ND		ug/m³	5.8	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
142-28-9	* 1,3-Dichloropropane	ND		ug/m³	4.4	9.57	EPA TO-15 Certifications:	07/21/2020 09:00	07/22/2020 03:03	LLJ
106-46-7	1,4-Dichlorobenzene	ND		ug/m³	5.8	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
123-91-1	1,4-Dioxane	ND		ug/m³	6.9	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
78-93-3	**2-Butanone**	**9.9**		ug/m³	2.8	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ

Sample Information

Client Sample ID: SV-2 **York Sample ID:** 20G0662-02

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0662	1776 48th St.	Soil Vapor	July 16, 2020 12:00 am	07/17/2020

Volatile Organics, EPA TO15 Full List

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA TO15 PREP

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
591-78-6	* 2-Hexanone	ND		ug/m³	7.8	9.57	EPA TO-15 Certifications:	07/21/2020 09:00	07/22/2020 03:03	LLJ
107-05-1	3-Chloropropene	ND		ug/m³	15	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
108-10-1	4-Methyl-2-pentanone	ND		ug/m³	3.9	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
67-64-1	Acetone	ND		ug/m³	4.5	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
107-13-1	Acrylonitrile	ND		ug/m³	2.1	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
71-43-2	**Benzene**	**100**		ug/m³	3.1	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
100-44-7	Benzyl chloride	ND		ug/m³	5.0	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
75-27-4	Bromodichloromethane	ND		ug/m³	6.4	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
75-25-2	Bromoform	ND		ug/m³	9.9	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
74-83-9	Bromomethane	ND		ug/m³	3.7	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
75-15-0	Carbon disulfide	ND		ug/m³	3.0	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
56-23-5	Carbon tetrachloride	ND		ug/m³	1.5	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
108-90-7	Chlorobenzene	ND		ug/m³	4.4	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
75-00-3	Chloroethane	ND		ug/m³	2.5	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
67-66-3	Chloroform	ND		ug/m³	4.7	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
74-87-3	Chloromethane	ND		ug/m³	2.0	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
156-59-2	cis-1,2-Dichloroethylene	ND		ug/m³	0.95	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
10061-01-5	cis-1,3-Dichloropropylene	ND		ug/m³	4.3	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
110-82-7	**Cyclohexane**	**42**		ug/m³	3.3	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
124-48-1	Dibromochloromethane	ND		ug/m³	8.2	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
75-71-8	Dichlorodifluoromethane	ND		ug/m³	4.7	9.57	EPA TO-15 Certifications: NELAC-NY12058,NJDEP-Queens	07/21/2020 09:00	07/22/2020 03:03	LLJ
141-78-6	* Ethyl acetate	ND		ug/m³	6.9	9.57	EPA TO-15 Certifications:	07/21/2020 09:00	07/22/2020 03:03	LLJ

Sample Information

Client Sample ID: SV-2 **York Sample ID:** 20G0662-02

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0662	1776 48th St.	Soil Vapor	July 16, 2020 12:00 am	07/17/2020

Volatile Organics, EPA TO15 Full List

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA TO15 PREP

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
100-41-4	**Ethyl Benzene**	**390**		ug/m³	4.2	9.57	EPA TO-15	07/21/2020 09:00	07/22/2020 03:03	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
87-68-3	Hexachlorobutadiene	ND		ug/m³	10	9.57	EPA TO-15	07/21/2020 09:00	07/22/2020 03:03	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
67-63-0	**Isopropanol**	**30**		ug/m³	4.7	9.57	EPA TO-15	07/21/2020 09:00	07/22/2020 03:03	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
80-62-6	Methyl Methacrylate	ND		ug/m³	3.9	9.57	EPA TO-15	07/21/2020 09:00	07/22/2020 03:03	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
1634-04-4	Methyl tert-butyl ether (MTBE)	ND		ug/m³	3.5	9.57	EPA TO-15	07/21/2020 09:00	07/22/2020 03:03	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-09-2	Methylene chloride	ND		ug/m³	6.6	9.57	EPA TO-15	07/21/2020 09:00	07/22/2020 03:03	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
142-82-5	**n-Heptane**	**230**		ug/m³	3.9	9.57	EPA TO-15	07/21/2020 09:00	07/22/2020 03:03	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
110-54-3	**n-Hexane**	**160**		ug/m³	3.4	9.57	EPA TO-15	07/21/2020 09:00	07/22/2020 03:03	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
95-47-6	**o-Xylene**	**420**		ug/m³	4.2	9.57	EPA TO-15	07/21/2020 09:00	07/22/2020 03:03	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
179601-23-1	**p- & m- Xylenes**	**1600**		ug/m³	8.3	9.57	EPA TO-15	07/21/2020 09:00	07/22/2020 03:03	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
622-96-8	*** p-Ethyltoluene**	**480**		ug/m³	4.7	9.57	EPA TO-15	07/21/2020 09:00	07/22/2020 03:03	LLJ
							Certifications:			
115-07-1	*** Propylene**	**4.6**		ug/m³	1.6	9.57	EPA TO-15	07/21/2020 09:00	07/22/2020 03:03	LLJ
							Certifications:			
100-42-5	Styrene	ND		ug/m³	4.1	9.57	EPA TO-15	07/21/2020 09:00	07/22/2020 03:03	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
127-18-4	**Tetrachloroethylene**	**6.5**		ug/m³	6.5	9.57	EPA TO-15	07/21/2020 09:00	07/22/2020 03:03	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
109-99-9	* Tetrahydrofuran	ND		ug/m³	5.6	9.57	EPA TO-15	07/21/2020 09:00	07/22/2020 03:03	LLJ
							Certifications:			
108-88-3	**Toluene**	**1200**		ug/m³	3.6	9.57	EPA TO-15	07/21/2020 09:00	07/22/2020 03:03	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
156-60-5	trans-1,2-Dichloroethylene	ND		ug/m³	3.8	9.57	EPA TO-15	07/21/2020 09:00	07/22/2020 03:03	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
10061-02-6	trans-1,3-Dichloropropylene	ND		ug/m³	4.3	9.57	EPA TO-15	07/21/2020 09:00	07/22/2020 03:03	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
79-01-6	Trichloroethylene	ND		ug/m³	1.3	9.57	EPA TO-15	07/21/2020 09:00	07/22/2020 03:03	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-69-4	Trichlorofluoromethane (Freon 11)	ND		ug/m³	5.4	9.57	EPA TO-15	07/21/2020 09:00	07/22/2020 03:03	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
108-05-4	Vinyl acetate	ND		ug/m³	3.4	9.57	EPA TO-15	07/21/2020 09:00	07/22/2020 03:03	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
593-60-2	Vinyl bromide	ND		ug/m³	4.2	9.57	EPA TO-15	07/21/2020 09:00	07/22/2020 03:03	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		

Sample Information

Client Sample ID: SV-2 **York Sample ID:** 20G0662-02

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0662	1776 48th St.	Soil Vapor	July 16, 2020 12:00 am	07/17/2020

Volatile Organics, EPA TO15 Full List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA TO15 PREP

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
75-01-4	Vinyl Chloride	ND		ug/m³	1.2	9.57	EPA TO-15	07/21/2020 09:00	07/22/2020 03:03	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		

Surrogate Recoveries	Result	Acceptance Range
460-00-4 *Surrogate: SURR: p-Bromofluorobenzene*	*90.9 %*	*70-130*

Sample Information

Client Sample ID: SV-3 **York Sample ID:** 20G0662-03

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0662	1776 48th St.	Soil Vapor	July 16, 2020 12:00 am	07/17/2020

Volatile Organics, EPA TO15 Full List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA TO15 PREP

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
630-20-6	* 1,1,1,2-Tetrachloroethane	ND		ug/m³	11	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:			
71-55-6	1,1,1-Trichloroethane	ND		ug/m³	9.1	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
79-34-5	1,1,2,2-Tetrachloroethane	ND		ug/m³	11	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND		ug/m³	13	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
79-00-5	1,1,2-Trichloroethane	ND		ug/m³	9.1	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-34-3	1,1-Dichloroethane	ND		ug/m³	6.8	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-35-4	1,1-Dichloroethylene	ND		ug/m³	1.7	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
120-82-1	1,2,4-Trichlorobenzene	ND		ug/m³	12	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
95-63-6	**1,2,4-Trimethylbenzene**	**620**		ug/m³	8.2	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
106-93-4	1,2-Dibromoethane	ND		ug/m³	13	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
95-50-1	1,2-Dichlorobenzene	ND		ug/m³	10	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
107-06-2	1,2-Dichloroethane	ND		ug/m³	6.8	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		

Sample Information

Client Sample ID: SV-3 **York Sample ID:** 20G0662-03

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0662	1776 48th St.	Soil Vapor	July 16, 2020 12:00 am	07/17/2020

Volatile Organics, EPA TO15 Full List

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA TO15 PREP

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
78-87-5	1,2-Dichloropropane	ND		ug/m³	7.7	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
76-14-2	1,2-Dichlorotetrafluoroethane	ND		ug/m³	12	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
108-67-8	**1,3,5-Trimethylbenzene**	**150**		ug/m³	8.2	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
106-99-0	1,3-Butadiene	ND		ug/m³	11	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
541-73-1	1,3-Dichlorobenzene	ND		ug/m³	10	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
142-28-9	* 1,3-Dichloropropane	ND		ug/m³	7.7	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:			
106-46-7	1,4-Dichlorobenzene	ND		ug/m³	10	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
123-91-1	1,4-Dioxane	ND		ug/m³	12	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
78-93-3	**2-Butanone**	**540**		ug/m³	4.9	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
591-78-6	*** 2-Hexanone**	**25**		ug/m³	14	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:			
107-05-1	3-Chloropropene	ND		ug/m³	26	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
108-10-1	4-Methyl-2-pentanone	ND		ug/m³	6.8	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
67-64-1	**Acetone**	**200**		ug/m³	7.9	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
107-13-1	Acrylonitrile	ND		ug/m³	3.6	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
71-43-2	**Benzene**	**150**		ug/m³	5.3	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
100-44-7	Benzyl chloride	ND		ug/m³	8.6	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-27-4	Bromodichloromethane	ND		ug/m³	11	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-25-2	Bromoform	ND		ug/m³	17	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
74-83-9	Bromomethane	ND		ug/m³	6.5	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-15-0	Carbon disulfide	ND		ug/m³	5.2	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
56-23-5	Carbon tetrachloride	ND		ug/m³	2.6	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
108-90-7	Chlorobenzene	ND		ug/m³	7.7	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		

Sample Information

Client Sample ID: SV-3 **York Sample ID:** 20G0662-03

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0662	1776 48th St.	Soil Vapor	July 16, 2020 12:00 am	07/17/2020

Volatile Organics, EPA TO15 Full List

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA TO15 PREP

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
75-00-3	Chloroethane	ND		ug/m³	4.4	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
67-66-3	Chloroform	ND		ug/m³	8.1	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
74-87-3	Chloromethane	ND		ug/m³	3.4	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
156-59-2	cis-1,2-Dichloroethylene	ND		ug/m³	1.7	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
10061-01-5	cis-1,3-Dichloropropylene	ND		ug/m³	7.6	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
110-82-7	**Cyclohexane**	**44**		ug/m³	5.7	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
124-48-1	Dibromochloromethane	ND		ug/m³	14	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-71-8	Dichlorodifluoromethane	ND		ug/m³	8.3	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
141-78-6	* Ethyl acetate	ND		ug/m³	12	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:			
100-41-4	**Ethyl Benzene**	**590**		ug/m³	7.2	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
87-68-3	Hexachlorobutadiene	ND		ug/m³	18	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
67-63-0	Isopropanol	ND		ug/m³	8.2	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
80-62-6	Methyl Methacrylate	ND		ug/m³	6.8	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
1634-04-4	Methyl tert-butyl ether (MTBE)	ND		ug/m³	6.0	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-09-2	Methylene chloride	ND		ug/m³	12	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
142-82-5	**n-Heptane**	**310**		ug/m³	6.8	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
110-54-3	**n-Hexane**	**230**		ug/m³	5.9	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
95-47-6	**o-Xylene**	**670**		ug/m³	7.2	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
179601-23-1	**p- & m- Xylenes**	**2300**		ug/m³	14	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
622-96-8	*** p-Ethyltoluene**	**770**		ug/m³	8.2	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:			
115-07-1	*** Propylene**	**52**		ug/m³	2.9	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:			
100-42-5	Styrene	ND		ug/m³	7.1	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		

Sample Information

Client Sample ID: SV-3 **York Sample ID:** 20G0662-03

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
20G0662	1776 48th St.	Soil Vapor	July 16, 2020 12:00 am	07/17/2020

Volatile Organics, EPA TO15 Full List

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA TO15 PREP

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
127-18-4	Tetrachloroethylene	ND		ug/m³	11	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
109-99-9	* Tetrahydrofuran	ND		ug/m³	9.8	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:			
108-88-3	**Toluene**	**1900**		ug/m³	6.3	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
156-60-5	trans-1,2-Dichloroethylene	ND		ug/m³	6.6	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
10061-02-6	trans-1,3-Dichloropropylene	ND		ug/m³	7.6	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
79-01-6	Trichloroethylene	ND		ug/m³	2.2	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-69-4	Trichlorofluoromethane (Freon 11)	ND		ug/m³	9.4	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
108-05-4	Vinyl acetate	ND		ug/m³	5.9	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
593-60-2	Vinyl bromide	ND		ug/m³	7.3	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		
75-01-4	Vinyl Chloride	ND		ug/m³	2.1	16.69	EPA TO-15	07/20/2020 09:00	07/21/2020 09:07	LLJ
							Certifications:	NELAC-NY12058,NJDEP-Queens		

	Surrogate Recoveries	Result	Acceptance Range
460-00-4	*Surrogate: SURR: p-Bromofluorobenzene*	*94.6 %*	*70-130*

Sample and Data Qualifiers Relating to This Work Order

TO-LCS-L	The result reported for this compound may be biased low due to its behavior in the analysis batch LCS where it recovered less 70% of the expected value.
CCV-E	The value reported is ESTIMATED. The value is estimated due to its behavior during continuing calibration verification (>20% Difference for average Rf or >20% Drift for quadratic fit).

Definitions and Other Explanations

*	Analyte is not certified or the state of the samples origination does not offer certification for the Analyte.
ND	NOT DETECTED - the analyte is not detected at the Reported to level (LOQ/RL or LOD/MDL)
RL	REPORTING LIMIT - the minimum reportable value based upon the lowest point in the analyte calibration curve.
LOQ	LIMIT OF QUANTITATION - the minimum concentration of a target analyte that can be reported within a specified degree of confidence. This is the lowest point in an analyte calibration curve that has been subjected to all steps of the processing/analysis and verified to meet defined criteria. This is based upon NELAC 2009 Standards and applies to all analyses.
LOD	LIMIT OF DETECTION - a verified estimate of the minimum concentration of a substance in a given matrix that an analytical process can reliably detect. This is based upon NELAC 2009 Standards and applies to all analyses conducted under the auspices of EPA SW-846.
MDL	METHOD DETECTION LIMIT - a statistically derived estimate of the minimum amount of a substance an analytical system can reliably detect with a 99% confidence that the concentration of the substance is greater than zero. This is based upon 40 CFR Part 136 Appendix B and applies only to EPA 600 and 200 series methods.
Reported to	This indicates that the data for a particular analysis is reported to either the LOD/MDL, or the LOQ/RL. In cases where the "Reported to" is located above the LOD/MDL, any value between this and the LOQ represents an estimated value which is "J" flagged accordingly. This applies to volatile and semi-volatile target compounds only.
NR	Not reported
RPD	Relative Percent Difference
Wet	The data has been reported on an as-received (wet weight) basis
Low Bias	Low Bias flag indicates that the recovery of the flagged analyte is below the laboratory or regulatory lower control limit. The data user should take note that this analyte may be biased low but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
High Bias	High Bias flag indicates that the recovery of the flagged analyte is above the laboratory or regulatory upper control limit. The data user should take note that this analyte may be biased high but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
Non-Dir.	Non-dir. flag (Non-Directional Bias) indicates that the Relative Percent Difference (RPD) (a measure of precision) among the MS and MSD data is outside the laboratory or regulatory control limit. This alerts the data user where the MS and MSD are from site-specific samples that the RPD is high due to either non-homogeneous distribution of target analyte between the MS/MSD or indicates poor reproducibility for other reasons.

If EPA SW-846 method 8270 is included herein it is noted that the target compound N-nitrosodiphenylamine (NDPA) decomposes in the gas chromatographic inlet and cannot be separated from diphenylamine (DPA). These results could actually represent 100% DPA, 100% NDPA or some combination of the two. For this reason, York reports the combined result for n-nitrosodiphenylamine and diphenylamine for either of these compounds as a combined concentration as Diphenylamine.

If Total PCBs are detected and the target aroclors reported are "Not detected", the Total PCB value is reported due to the presence of either or both Aroclors 1262 and 1268 which are non-target aroclors for some regulatory lists.

2-chloroethylvinyl ether readily breaks down under acidic conditions. Samples that are acid preserved, including standards will exhibit breakdown. The data user should take note.

Certification for pH is no longer offered by NYDOH ELAP.

Semi-Volatile and Volatile analyses are reported down to the LOD/MDL, with values between the LOD/MDL and the LOQ being "J" flagged as estimated results.

For analyses by EPA SW-846-8270D, the Limit of Quantitation (LOQ) reported for benzidine is based upon the lowest standard used for calibration and is not a verified LOQ due to this compound's propensity for oxidative losses during extraction/concentration procedures and non-reproducible chromatographic performance.

York Analytical Laboratories, Inc.
120 Research Drive, Stratford, CT 06615
132-02 89th Ave Queens, NY 11418
clientservices@yorklab.com
www.yorklab.com

Field Chain-of-Custody Record - AIR

NOTE: YORK's Standard Terms & Conditions are listed on the back side of this document. This document serves as your written authorization for YORK to proceed with the analyses requested below. Your signature binds you to YORK's Standard Terms & Conditions.

YORK Project No. 20G0662

Page 1 of ____

YOUR Information	Report To:	Invoice To:
Company: Tri State Drilling Tech	Company: SAME	Company: SAME
Address: 94 Gardiner Ave Levittown, NY 11756	Address:	Address:
Phone.:	Phone.:	Phone.:
Contact: Nrecchia@tristate	Contact:	Contact:
E-mail: drillingtech@gm	E-mail:	E-mail:

YOUR Project Number: 1776 48th St.

YOUR Project Name: 1776 48th St.

YOUR PO#:

Turn-Around Time

- RUSH - Next Day
- RUSH - Two Day
- RUSH - Three Day
- RUSH - Four Day
- Standard (5-7 Day) ✓

Please print clearly and legibly. All information must be complete. Samples will not be logged in and the turn-around-time clock will not begin until any questions by YORK are resolved.

Samples Collected by: (print your name above and sign below)

Paul Recchia

Air Matrix Codes

- AI - Indoor Ambient Air
- AO - Outdoor Amb. Air
- AE - Vapor Extraction Well/ Process Gas/Effluent
- AS - Soil Vapor/Sub-Slab

Samples From

- New York ✓
- New Jersey
- Connecticut
- Pennsylvania
- Other

Report / EDD Type (circle selections)

Summary Report	CT RCP	Standard Excel EDD
QA Report	CT RCP DQA/DUE	EQuIS (Standard)
NY ASP A Package	NJDEP Reduced Deliv.	NYSDEC EQuIS
NY ASP B Package	NJDKQP	NJDEP SRP HazSite
Other:		

YORK Reg. Comp.

Compared to the following Regulation(s): (please fill in) NYSDOH Ambient Air

Certified Canisters: Batch ___ Individual ___

Please enter the following REQUIRED Field Data

Reporting Units: ug/m³ ✓ ppbv ___ ppmv ___

Sample Identification	Date/Time Sampled	Air Matrix	Canister Vacuum Before Sampling (in Hg)	Canister Vacuum After Sampling (in Hg)	Canister ID	Flow Cont. ID	Analysis Requested
SV-1	7/16/2020	AS	-28	-7	18340	7361	TO-15
SV-2	7/16/2020	AS	-27	-5	28306	4-19	TO-15
SV-3	7/16/2020	AS	-29	-6	16953	7418	TO-15

Comments: NYSDER Contract Pricing

Detection Limits Required

≤ 1 ug/m³ ____ NYSDEC V1 Limits ____

Routine Survey ✓ Other ____

Sampling Media

- 6 Liter Canister ✓
- Tedlar Bag

Samples Relinquished by / Company	Date/Time	Samples Received by / Company	Date/Time	Samples Relinquished by / Company	Date/Time
[signature]	7/17/2020 11:20 AM	[signature]	7/17/20 11:20 AM	[signature]	7/20/20 8:35 AM
Samples Received by / Company	Date/Time	Samples Relinquished by / Company	Date/Time	Samples Received by / Company	Date/Time
Queens Service Room	7/20/20 8:35 AM			Lab Service	
Samples Relinquished by / Company	Date/Time	Samples Received by / Company	Date/Time	Samples Received in LAB by	Date/Time
				[signature]	7/20/20 @ 0900

Appendix C – Soil Boring Log Reports

TSDT

SOIL BORING REPORT LOG

DATE 7- 16 - 2020						SHEET 1 OF 1
CLIENT Environmental Studies Corporation						LOCATION ID#
PROJECT LOCATION 1776 48th Street Brooklyn, New York						**B-1**
REMARKS: Basement						**SV-1**
DRILLING CONTRACTOR TSDT, INC.			LOGGED BY PR		DRILLER Carlos	
EQUIPMENT	SOIL SAMPLER	HAMMER WEIGHT/FALL		Groundwater Collection		DRILL RIG
						DRILL METHOD
TYPE	Macrocore					Bucker Auger Direct Push
SIZE	2 inch O.D.					
SURFACE ELEVATION NA		Surface Materials: concrete slab				
WATER LEVEL (IN OPEN BOREHOLE) None encountered						

DEPTH	SAMPLE	DEPTH	OVA/PID READINGS	MOISTURE	STRATA	SOIL – ROCK DESCRIPTION – CLASSIFICATION
	*S-1	0 - 4	0.0	dry		Brown Loose F-C SAND some fine gravel (Fill)
	S-2	4 – 8	0.0	dry		Brown/Tan Fine SAND and SILT (Native)
5						
	*S-3	8 – 12	0.0	dry		Brown/Tan Fine SAND little gravel (Native)
10						
						EOB @ 12 ft
15						SV-1 10 ft
20						
25						
30						

TSDT

SOIL BORING REPORT LOG

DATE 7- 16 - 2020						SHEET 1 OF 1
CLIENT Environmental Studies Corporation						LOCATION ID#
PROJECT LOCATION 1776 48th Street Brooklyn, New York						**B-2**
REMARKS: Basement						**SV-2**
DRILLING CONTRACTOR TSDT, INC.			LOGGED BY PR		DRILLER Carlos	
EQUIPMENT	SOIL SAMPLER	HAMMER WEIGHT/FALL		Groundwater Collection		DRILL RIG
						DRILL METHOD
TYPE	Macrocore					Bucker Auger Direct Push
SIZE	2 inch O.D.					
SURFACE ELEVATION NA		Surface Materials: concrete slab				
WATER LEVEL (IN OPEN BOREHOLE) None encountered						

DEPTH	SAMPLE	DEPTH	OVA/PID READINGS	MOISTURE	STRATA	SOIL – ROCK DESCRIPTION – CLASSIFICATION
	*S-1	0 - 4	0.0	dry		Brown Loose F-C SAND some fine gravel (Fill)
	S-2	4 – 8	0.0	dry		Brown/Tan Fine SAND and SILT (Native)
5						
	*S-3	8 – 12	0.0	dry		Brown/Tan Fine SAND little gravel (Native)
10						
						EOB @ 12 ft
15						SV-2 10 ft
20						
25						
30						

TSDT

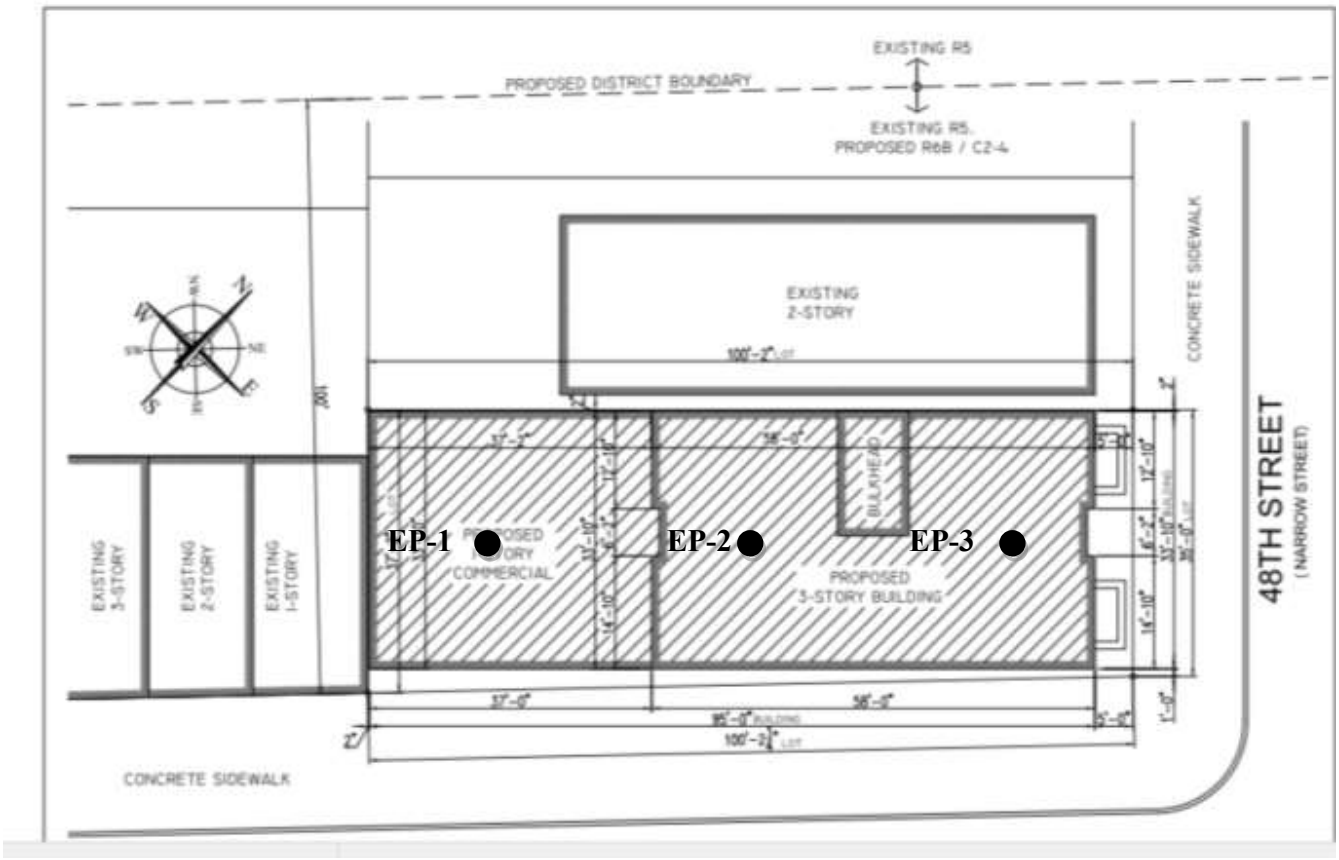
SOIL BORING REPORT LOG

DATE 7- 16 - 2020						SHEET 1 OF 1
CLIENT Environmental Studies Corporation						LOCATION ID#
PROJECT LOCATION 1776 48th Street Brooklyn, New York						**B-3**
REMARKS : Ground water sample attempted in temporary well set in borehole						**SV-3**
DRILLING CONTRACTOR TSDT, INC.			LOGGED BY PR		DRILLER Carlos	
EQUIPMENT	SOIL SAMPLER	HAMMER WEIGHT/FALL		Groundwater Collection		DRILL RIG
						DRILL METHOD
TYPE	Macrocore			1-inch dia.	PVC	Geoprobe LT 5400 Direct Push
SIZE	2 inch O.D.		Machine slotted 0.20 10 ft screen			
SURFACE ELEVATION NA		Surface Materials: grass and soil				
WATER LEVEL (IN OPEN BOREHOLE) None encountered advance borehole to 30 feet						

DEPTH	SAMPLE	DEPTH	OVA/PID READINGS	MOISTURE	STRATA	SOIL – ROCK DESCRIPTION – CLASSIFICATION
	*S-1	0 - 4	0.0	dry		Brown Loose F-C SAND some fine gravel (Fill)
	S-2	4 – 8	0.0	dry		Brown/Tan Fine SAND and SILT (Native)
5						
	*S-3	8 – 12	0.0	dry		Brown/Tan Fine SAND little gravel (Native)
10	Advance	drilling				
15						
20						Heavy cobbles and boulders
25						EOB @ 30 ft
30						Drill stem pushed to depth of 30ft where no GW was encountered

Appendix 4

Post Excavation Sample Location Map



	Scale: 1''= 20ft
● **Endpoint Sample**	**Appendix 4**

Environmental Studies Corporation	**Property Located at: 1776 48th Street Brooklyn, New York**	**Endpoint Sample Collection Locations**

Appendix 5

SOIL/MATERIALS MANAGEMENT PLAN

1.1 Soil Screening Methods

Visual, olfactory and PID soil screening and assessment will be performed under the supervision of a Qualified Environmental Professional (QEP) and will be reported in the Remedial Closure Report (RCR). Soil screening will be performed during invasive work performed during the remedy and development phases prior to issuance of the Notice of Satisfaction.

1.2 Stockpile Methods

Excavated soil from suspected areas of contamination (e.g., hot spots, USTs, drains, etc.) will be stockpiled separately and will be segregated from clean soil and construction materials. Stockpiles will be used only when necessary and will be removed as soon as practicable. While stockpiles are in place, they will be inspected daily, and before and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection. Excavated soils will be stockpiled on, at minimum, double layers of 6-mil minimum sheeting, will be kept covered at all times with appropriately anchored plastic tarps, and will be routinely inspected. Broken or ripped tarps will be promptly replaced.

All stockpile activities will be compliant with applicable laws and regulations. Soil stockpile areas will be appropriately graded to control run-off in accordance with applicable laws and regulations. Stockpiles of excavated soils and other materials shall be located at least of 50 feet from the property boundaries, where possible. Hay bales or equivalent will surround soil stockpiles except for areas where access by equipment is required. Silt fencing and hay bales will be used as needed near catch basins, surface waters and other discharge points.

1.3 Characterization of Excavated Materials

Soil/fill or other excavated media that is transported off-Site for disposal will be sampled in a manner required by the receiving facility, and in compliance with applicable laws and regulations. Soils proposed for reuse on-Site will be managed as defined in this plan.

1.4 Materials Excavation, Load-Out and Departure

The PE/QEP overseeing the remedial action will:

- oversee remedial work and the excavation and load-out of excavated material;
- ensure that there is a party responsible for the safe execution of invasive and other work performed under this work plan;
- ensure that Site development activities and development-related grading cuts will not interfere with, or otherwise impair or compromise the remedial activities proposed in this RAP;
- ensure that the presence of utilities and easements on the Site have been investigated and that any identified risks from work proposed under this plan are properly addressed by appropriate parties;
- ensure that all loaded outbound trucks are inspected and cleaned if necessary before leaving the Site;
- ensure that all egress points for truck and equipment transport from the Site will be kept clean of Site-derived materials during Site remediation.

Locations where vehicles exit the Site shall be inspected daily for evidence of soil tracking off premises. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

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

1.5 Off-Site Materials Transport

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

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

1.6 Materials Disposal Off-Site

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

The RCR will include an itemized account of the destination of all material removed from the Site during this remedial action. Documentation associated with disposal of all material will include records and approvals for receipt of the material. This information will be presented in the RCR.

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

Waste characterization will be performed for off-Site disposal in a manner required by the receiving facility and in conformance with its applicable permits. Waste characterization sampling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the RCR. A manifest system for off-Site transportation of exported materials will be employed. Manifest information will be reported in the RCR. Hazardous wastes derived from on-Site will be stored, transported, and disposed of in compliance with applicable laws and regulations.

A volume (to be determined) tons is proposed for unregulated disposal (i.e., clean soil removed for development purposes), including transport to a Part 360-16 Registration Facility, and with an associated plan compliant with 6NYCRR Part 360-16. This plan will include the location, volume, and a description of the material to be recycled, including verification that the material is not impacted by site uses and that the material complies with receipt requirements for recycling under 6NYCRR Part 360. This material will be appropriately handled on-Site to prevent mixing with impacted material.

1.7 Materials Reuse On-Site

No materials reuse on-Site is planned for this project.

Organic matter (wood, roots, stumps, etc.) or other waste derived from clearing and grubbing of the Site will not be buried on-Site. Soil or fill excavated from the Site for grading or other purposes will not be reused within a cover soil layer or within landscaping berms.

1.8 Demarcation

Since all residual soil/fill will be removed from the Site, demarcation does not apply.

1.9 Import of Backfill Soil from Off-Site Sources

No soil is planned to be imported to the Site.

1.10 Fluids Management

No liquids are planned for removal from the Site.

1.11 Storm-water Pollution Prevention

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

1.12 Contingency Plan

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

1.13 Odor, Dust and Nuisance Control

Odor Control

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

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

Dust Control

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

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

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

Other Nuisances

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

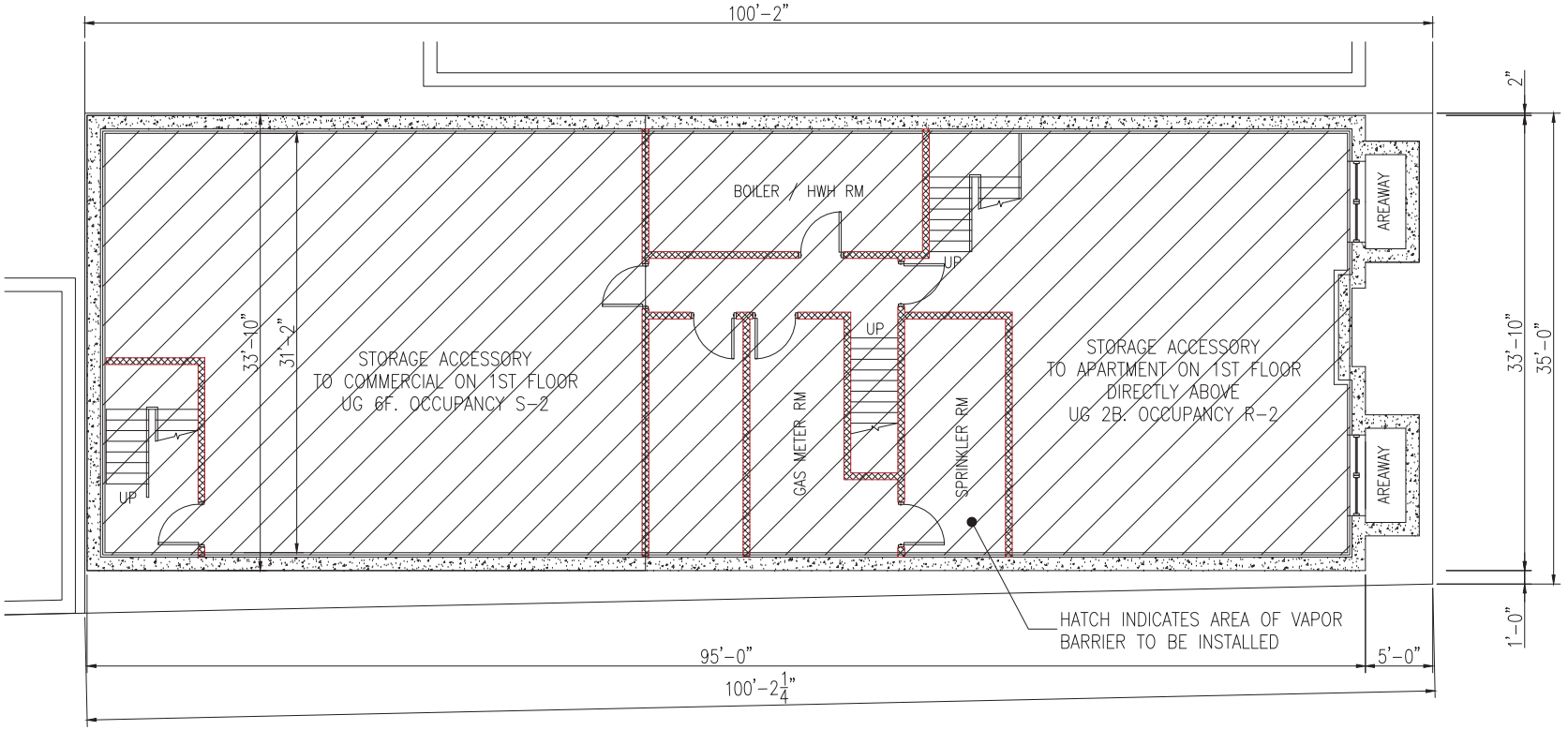
Rodent control will be provided, during Site clearing and grubbing, and during the remedial program, as necessary, to prevent nuisances.

1.14 Import of Clean Cover

Import of clean cover soil will not be needed for this project.

Appendix 6

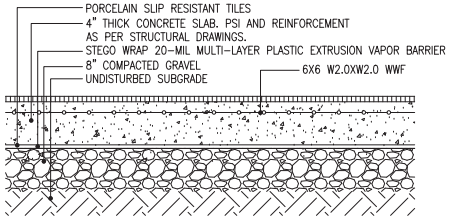
Design Diagrams and Specifications for Vapor Barrier/Waterproofing Membrane



VAPOR BARRIER PLAN

SCALE: 1/4"=1'-0"

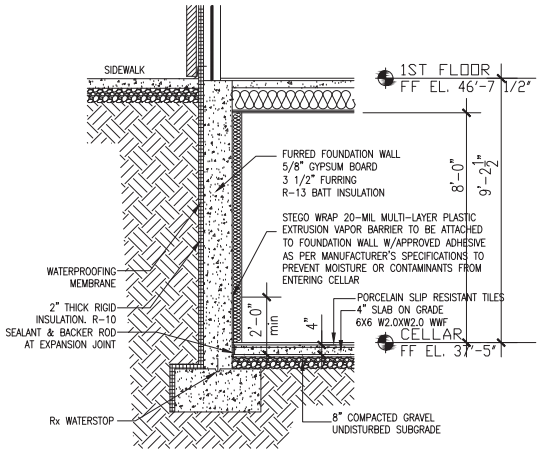
SLAB ON GRADE ASSEMBLY



SLAB ON GRADE SHALL BE PLACED SUCH THAT ECH SINGLE POUR AREA DOES NOT EXCEED 900 SQ FT AND 30'-0" IN THE LONGEST DIMENSION. EACH PANEL SHALL BE BOUNDED WITH CONSTRUCTION JOINTS.

SAWED CONTROL JOINTS ARE AN ALTERNATE AND ARE TO BE LOCATED IN A RECTANGULAR PATTERN WITH A MAXIMUM SPACING OF 30'-0". JOINTS SHALL BE SAWED NO LATER THAN 24 HOURS AFTER CONCRETE IS PLACED. MAXIMUM POUR LENGTH SHALL NOT EXCEED 90'-0"

GRAVEL OR CRASHED STONE SHALL BE PLACED ON UNDISTURBED SOIL OR FILL COMPACTED TO 95% OF MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT



FOUNDATION WALL DETAIL

SCALE: 1/2"=1'-0"

DOB STAMP DOC. 01

It is a violation of the law for any person, unless acting under the direction of a licensed architect, to alter an item in any way.

REVISIONS

#	Date	Description

RSLN
ARCHITECTURE PLLC
6701 Bay Parkway, 3rd Floor
Brooklyn, NY 11204
Tel. 347 702 5454
Fax. 347 702 5455
RSLN@RSLNArchitecture.com
Architecture - Planning - Interior Design

PROJECT NAME

NEW 3-STORY & CELLAR
MIXED USE BUILDING, R6B / C2-4

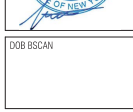
PROJECT LOCATION

1776 48 STREET,
Brooklyn NY 11204

DRAWING TITLE

VAPOR BARRIER PLAN AND DETAILS

SEAL & SIGNATURE



DATE:
PROJECT No:
DRAWING BY:
CHK BY:
DWG No:

SK-001.00

CAD FILE No:

1 OF 1

DOB BSCAN

STEGO® WRAP 20-MIL VAPOR BARRIER

A STEGO INDUSTRIES, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: JULY 20, 2018

1. PRODUCT NAME

STEGO WRAP 20-MIL VAPOR BARRIER



2. MANUFACTURER

Stego Industries, LLC
216 Avenida Fabricante, Suite 101
San Clemente, CA 92672 USA
Sales, Technical Assistance
Ph: (877) 464-7834
contact@stegoindustries.com
www.stegoindustries.com

3. PRODUCT DESCRIPTION

USES: Stego Wrap 20-Mil Vapor Barrier is used as a below-slab vapor barrier.

COMPOSITION: Stego Wrap 20-Mil Vapor Barrier is a multi-layer plastic extrusion manufactured with only the highest grade of prime, virgin, polyolefin resins.

ENVIRONMENTAL FACTORS: Stego Wrap 20-Mil Vapor Barrier can be used in systems for the control of soil gases (radon, methane), soil poisons (oil by-products) and sulfates.

4. TECHNICAL DATA

TABLE 4.1: PHYSICAL PROPERTIES OF STEGO WRAP 20-MIL VAPOR BARRIER

PROPERTY	TEST	RESULTS
Under Slab Vapor Retarders	ASTM E1745 Class A, B & C – Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs	Exceeds Class A, B & C
Water Vapor Permeance	ASTM F1249 – Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor	0.0071 perms
Permeance After Conditioning (ASTM E1745 Sections 7.1.2 - 7.1.5)	ASTM E154 Section 8, F1249 – Permeance after wetting, drying, and soaking ASTM E154 Section 11, F1249 – Permeance after heat conditioning ASTM E154 Section 12, F1249 – Permeance after low temperature conditioning ASTM E154 Section 13, F1249 – Permeance after soil organism exposure	0.0088 perms 0.0081 perms 0.0084 perms 0.0077 perms
Methane Transmission Rate	ASTM D1434 - Standard Test Method for Determining Gas Permeability Characteristics of Plastic Film and Sheeting	152.2 GTR* (mL(STP)/m²*day)
Radon Diffusion Coefficient	K124/02/95	9.9 x 10^{-12} m²/second
Puncture Resistance	ASTM D1709 – Test Method for Impact Resistance of Plastic Film by Free-Falling Dart Method	3500+ grams**
Tensile Strength	ASTM D882 – Test Method for Tensile Properties of Thin Plastic Sheeting	97.7 lbf/in
Thickness		20 mil
Roll Dimensions	width x length: area:	14' x 105' 1470 ft²
Roll Weight		140 lb

Note: perm unit = grains/(ft²*hr*in-Hg)
*GTR = Gas Transmission Rate
**The material maxed out the testing equipment and did not fail at 3746 grams.

Continued...
Note – legal notice on page 2.

STEGO® WRAP 20-MIL VAPOR WRAP BARRIER

A STEGO INDUSTRIES, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: JULY 20, 2018

5. INSTALLATION

UNDER SLAB: Unroll Stego Wrap 20-Mil Vapor Barrier over an aggregate, sand or tamped earth base. Overlap all seams a minimum of 6 inches and tape using Stego® Tape or Stego® Crete Claw® Tape. All penetrations must be sealed using a combination of Stego Wrap and Stego Accessories.

For additional information, please refer to Stego's complete installation instructions.

6. AVAILABILITY & COST

Stego Wrap 20-Mil Vapor Barrier is available through our network of building supply distributors. For current cost information, contact your local Stego distributor or Stego Industries' Sales Representative.

7. WARRANTY

Stego Industries, LLC believes to the best of its knowledge, that specifications and recommendations herein are accurate and reliable. However, since site conditions are not within its control, Stego Industries does not guarantee results from the use of the information provided herein. Stego Industries, LLC does offer a limited warranty on Stego Wrap. Please see www.stegoindustries.com/legal.

8. MAINTENANCE

None required.

9. TECHNICAL SERVICES

Technical advice, custom CAD drawings, and additional information can be obtained by contacting Stego Industries or by visiting the website.

Contact Number: (877) 464-7834
Website: www.stegoindustries.com

10. FILING SYSTEMS

- www.stegoindustries.com

DATA SHEETS ARE SUBJECT TO CHANGE. FOR MOST CURRENT VERSION, VISIT WWW.STEGOINDUSTRIES.COM

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UNDER-SLAB VAPOR BARRIER

PART 1 – GENERAL

1.1 SUMMARY

A. Products supplied under this section:
   1. Vapor barrier and installation accessories for installation under concrete slabs.

B. Related sections:
   1. Section 03 30 00 Cast-in-Place Concrete
   2. Section 07 26 00 Vapor Retarders

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM E1745-17 Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs.
   2. ASTM E1643-11 Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.

B. Technical Reference - American Concrete Institute (ACI):
   1. ACI 302.2R-06 Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials.
   2. ACI 302.1R-15 Guide to Concrete Floor and Slab Construction.

1.3 SUBMITTALS

A. Quality control/assurance:
   1. Summary of test results per paragraph 9.3 of ASTM E1745.
   2. Manufacturer's samples and literature.
   3. Manufacturer's installation instructions for placement, seaming, penetration prevention and repair, and perimeter seal per ASTM E1643.
   4. All mandatory ASTM E1745 testing must be performed on a single production roll per ASTM E1745 Section 8.1.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Vapor barrier shall have all of the following qualities:
   1. Maintain permeance of less than 0.01 Perms [grains/(ft^2 · hr · inHg)] as tested in accordance with mandatory conditioning tests per ASTM E1745 Section 7.1 (7.1.1-7.1.5).
   2. Other performance criteria:
      a. Strength: ASTM E1745 Class A.
      b. Thickness: 20 mils minimum
   3. Provide third party documentation that all testing was performed on a single production roll per ASTM E1745 Section 8.1

B. Vapor barrier products:
   1. Basis of Design: Stego Wrap 20-Mil Vapor Barrier by Stego Industries LLC., (877) 464-7834 www.stegoindustries.com.
   2. No substitutions.

2.2 ACCESSORIES

A. Seams:
   1. Stego Tape by Stego Industries LLC, (877) 464-7834 www.stegoindustries.com.

B. Sealing Penetrations of Vapor barrier:
   1. Stego Mastic by Stego Industries LLC, (877) 464-7834 www.stegoindustries.com.
   2. Stego Tape by Stego Industries LLC, (877) 464-7834 www.stegoindustries.com.

C. Perimeter/edge seal:
   1. Stego Crete Claw by Stego Industries LLC, (877) 464-7834 www.stegoindustries.com.
   2. Stego Term Bar by Stego Industries LLC, (877) 464-7834 www.stegoindustries.com.
   3. StegoTack Tape (double-sided sealant tape) by Stego Industries LLC, (877) 464-7834 www.stegoindustries.com.

D. Penetration Prevention:
   1. Beast Foot by Stego Industries LLC, (877) 464-7834 www.stegoindustries.com.

E. Vapor Barrier-Safe Screed System
   1. Beast Screed by Stego Industries, LLC, (877) 464-7834 www.stegoindustries.com.

PART 3 – EXECUTION

3.1 PREPARATION

A. Ensure that subsoil is approved by Architect or Geotechnical Engineer.
   1. Level and compact base material.

3.2 INSTALLATION

A. Install vapor barrier in accordance ASTM E1643.
   1. Unroll vapor barrier with the longest dimension parallel with the direction of the concrete placement and face laps away from the expected direction of the placement whenever possible.
   2. Extend vapor barrier to the perimeter of the slab. If practicable, terminate it at the top of the slab, otherwise (a) at a point acceptable to the structural engineer or (b) where obstructed by impediments, such as dowels, waterstops, or any other site condition requiring early termination of the vapor barrier. At the point of termination, seal vapor barrier to the foundation wall, grade beam or slab itself.
      [Specifier note: The perimeter seal can be handled several ways. When sealing to the slab, Crete Claw is the best option. When sealing to a stem wall or wall, the best option is to use StegoTack Tape or both StegoTack Tape and Stego Term Bar.]
      a. Seal vapor barrier to the entire slab perimeter using Stego Crete Claw, per manufacturer's instructions.

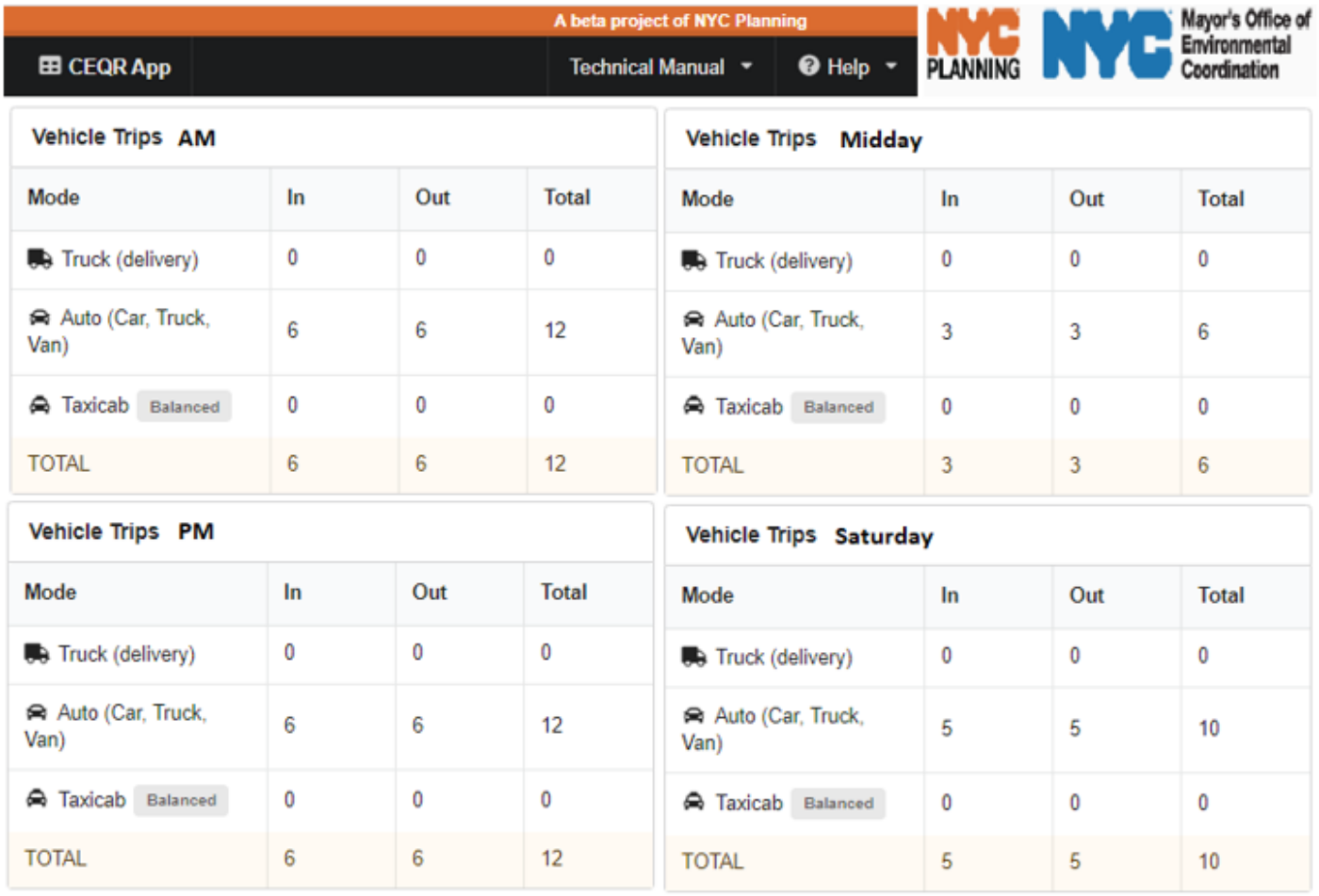
      OR

      b. Seal vapor barrier to the entire perimeter wall or footing/grade beam with double sided StegoTack Tape, or both Stego Term Bar and StegoTack Tape, per manufacturer's instructions. Ensure the concrete is clean and dry prior to adhering tape.
   3. Overlap joints 6 inches and seal with manufacturer's seam tape.
   4. Apply seam tape/Crete Claw to a clean and dry vapor barrier.
   5. Seal all penetrations (including pipes) per manufacturer's instructions.
   6. For interior forming applications, avoid the use of non-permanent stakes driven through vapor barrier. Use blunt-end and/or threaded nail stakes (screed pad posts) and insert them into Beast Foot. Ensure Beast Foot's peel-and-stick adhesive base is fully adhered to the vapor barrier
   7. If non-permanent stakes must be driven through vapor retarder, repair as recommended by vapor retarder manufacturer.
   8. Use reinforcing bar supports with base sections that eliminate or minimize the potential for puncture of the vapor barrier.
   9. Repair damaged areas with vapor barrier material of similar (or better) permeance, puncture and tensile.
   10. For vapor barrier-safe concrete screeding applications, install Beast Screed (vapor barrier-safe screed system) per manufacturer's instructions prior to placing concrete.

END OF SECTION

APPENDIX D
Air Quality

Figure 1: CEQR App – AM, MD, PM and Saturday Project-generated Traffic



Vehicle Trips AM

Mode	In	Out	Total
Truck (delivery)	0	0	0
Auto (Car, Truck, Van)	6	6	12
Taxicab Balanced	0	0	0
TOTAL	6	6	12

Vehicle Trips Midday

Mode	In	Out	Total
Truck (delivery)	0	0	0
Auto (Car, Truck, Van)	3	3	6
Taxicab Balanced	0	0	0
TOTAL	3	3	6

Vehicle Trips PM

Mode	In	Out	Total
Truck (delivery)	0	0	0
Auto (Car, Truck, Van)	6	6	12
Taxicab Balanced	0	0	0
TOTAL	6	6	12

Vehicle Trips Saturday

Mode	In	Out	Total
Truck (delivery)	0	0	0
Auto (Car, Truck, Van)	5	5	10
Taxicab Balanced	0	0	0
TOTAL	5	5	10

Figure 2: *CEQR Technical Manual* Equivalent Truck Calculations

48th Street – (Worst case traffic)				
Traffic			Source Type Population	
Period	Truck	P Car/Truck	County	Generic
AM	0	12	Source Type	Percent
MD	0	6	Passenger Car (21)	100.0%
PM	0	12	Passenger Truck (31)	100.0%
Sat MD	0	10		
Threshold EQU Truck			13	
Period	Truck	P Truck (LDGT1)	Etrucks (Paved Road)	Pass/Fail
AM	0	12	5.8	Pass
MD	0	6	2.9	Pass
PM	0	12	5.8	Pass
Sat MD	0	10	4.8	Pass

18 Avenue or 49th Street – (Worst case traffic)				
Traffic			Source Type Population	
Period	Truck	P Car/Truck	County	Generic
AM	0	12	Source Type	Percent
MD	0	6	Passenger Car (21)	100.0%
PM	0	12	Passenger Truck (31)	100.0%
Sat MD	0	10		
Threshold EQU Truck			23	
Period	Truck	P Truck (LDGT1)	Etrucks (Minor Arterial)	Pass/Fail
AM	0	12	0.5	Pass
MD	0	6	0.3	Pass
PM	0	12	0.5	Pass
Sat MD	0	10	0.4	Pass

APPENDIX E

Noise Meter Calibration Certification
And Back Up Data

Instrument Model	**CEL-633C**

LAeq	60 dB	Battery Low	No
LCpeak with Time	99.3 dB (6/5/2019 1:12:13 PM)	Duration	00:20:07 HH:MM:SS
Lepd(Projected)	60 dB	End Date & Time	6/5/2019 1:23:07 PM
Lex8h(Projected)	60 dB	Overload	No
LAFmax with Time	80.1 dB (6/5/2019 1:12:14 PM)	Pause Duration	00:00:00 HH:MM:SS
LAImax with Time	81.4 dB (6/5/2019 1:12:14 PM)	Response	Random
LAFmin with Time	48.3 dB (6/5/2019 1:09:53 PM)	Run Number	96
LAImin with Time	48.7 dB (6/5/2019 1:11:10 PM)	Serial Number	2670911
LZeq	74.4 dB	Start Date & Time	6/5/2019 1:03:00 PM
LCeq	71.8 dB	Site	Unallocated
LCeq-LAeq	11.8 dB	Location	Unallocated
LAIeq	62.4 dB	Person	Unallocated
LAE	90.8 dB	Process	Unallocated
Calibration (Before) Date	6/5/2019 1:01:14 PM	Result	Cumulative
Calibration (Before) SPL	114 dB	LAF 50%	54.5 dB
Calibration (After) Date	6/5/2019 1:23:34 PM	LAF 90%	50 dB
Calibration Drift	0.0 dB	LAF 95%	49.5 dB
LAF 10%	62.5 dB		
Notes			

Instrument Model	**CEL-633C**

LAeq	69.3 dB	Battery Low	No
LCpeak with Time	107.6 dB (6/5/2019 8:43:22 AM)	Duration	00:20:07 HH:MM:SS
Lepd(Projected)	69.3 dB	End Date & Time	6/5/2019 8:53:22 AM
Lex8h(Projected)	69.3 dB	Overload	No
LAFmax with Time	87.5 dB (6/5/2019 8:52:17 AM)	Pause Duration	00:00:00 HH:MM:SS
LAImax with Time	88.4 dB (6/5/2019 8:52:17 AM)	Response	Random
LAFmin with Time	50.4 dB (6/5/2019 8:53:06 AM)	Run Number	94
LAImin with Time	51.3 dB (6/5/2019 8:53:09 AM)	Serial Number	2670911
LZeq	79.2 dB	Start Date & Time	6/5/2019 8:33:15 AM
LCeq	78 dB	Site	Unallocated
LCeq-LAeq	8.7 dB	Location	Unallocated
LAIeq	71.4 dB	Person	Unallocated
LAE	100.2 dB	Process	Unallocated
Calibration (Before) Date	6/5/2019 8:33:04 AM	Result	Cumulative
Calibration (Before) SPL	114 dB	LAF 50%	59.5 dB
Calibration (After) Date	6/5/2019 8:54:34 AM	LAF 90%	54 dB
Calibration Drift	-0.1 dB	LAF 95%	53 dB
LAF 10%	72 dB		

Notes

Instrument Model	CEL-633C		
LAeq	67.8 dB	Battery Low	No
LCpeak with Time	104.6 dB (6/5/2019 5:39:08 PM)	Duration	00:20:05 HH:MM:SS
Lepd(Projected)	67.8 dB	End Date & Time	6/5/2019 5:52:21 PM
Lex8h(Projected)	67.8 dB	Overload	No
LAFmax with Time	97.5 dB (6/5/2019 5:39:08 PM)	Pause Duration	00:00:00 HH:MM:SS
LAImax with Time	99.1 dB (6/5/2019 5:39:08 PM)	Response	Random
LAFmin with Time	48.4 dB (6/5/2019 5:41:50 PM)	Run Number	98
LAImin with Time	48.7 dB (6/5/2019 5:41:50 PM)	Serial Number	2670911
LZeq	77.3 dB	Start Date & Time	6/5/2019 5:32:16 PM
LCeq	75.8 dB	Site	Unallocated
LCeq-LAeq	8 dB	Location	Unallocated
LAIeq	73 dB	Person	Unallocated
LAE	98.6 dB	Process	Unallocated
Calibration (Before) Date	6/5/2019 5:31:31 PM	Result	Cumulative
Calibration (Before) SPL	114 dB	LAF 50%	57.5 dB
Calibration (After) Date	6/5/2019 5:53:10 PM	LAF 90%	52 dB
Calibration Drift	-0.1 dB	LAF 95%	51 dB
LAF 10%	67 dB		

Notes

Instrument Model	**CEL-633C**		
LAeq	68.2 dB	Battery Low	No
LCpeak with Time	115.5 dB (6/5/2019 12:43:08 PM)	Duration	01:00:05 HH:MM:SS
Lepd(Projected)	68.2 dB	End Date & Time	6/5/2019 1:00:05 PM
Lex8h(Projected)	68.2 dB	Overload	No
LAFmax with Time	101.6 dB (6/5/2019 12:43:08 PM)	Pause Duration	00:00:00 HH:MM:SS
LAImax with Time	103.2 dB (6/5/2019 12:43:08 PM)	Response	Random
LAFmin with Time	51.5 dB (6/5/2019 12:39:49 PM)	Run Number	95
LAImin with Time	52.0 dB (6/5/2019 12:59:19 PM)	Serial Number	2670911
LZeq	79.5 dB	Start Date & Time	6/5/2019 12:00:00 PM
LCeq	77.7 dB	Site	Unallocated
LCeq-LAeq	9.5 dB	Location	Unallocated
LAIeq	73.5 dB	Person	Unallocated
LAE	103.8 dB	Process	Unallocated
Calibration (Before) Date	6/5/2019 11:35:46 AM	Result	Cumulative
Calibration (Before) SPL	114 dB	LAF 50%	61 dB
Calibration (After) Date	6/5/2019 1:01:14 PM	LAF 90%	56.5 dB
Calibration Drift	0.0 dB	LAF 95%	55.5 dB
LAF 10%	68.5 dB		
Notes			

Instrument Model	**CEL-633C**		
LAeq	72.8 dB	Battery Low	No
LCpeak with Time	115.4 dB (6/5/2019 4:46:46 PM)	Duration	01:00:06 HH:MM:SS
Lepd(Projected)	72.8 dB	End Date & Time	6/5/2019 5:30:15 PM
Lex8h(Projected)	72.8 dB	Overload	No
LAFmax with Time	103.4 dB (6/5/2019 4:46:47 PM)	Pause Duration	00:00:00 HH:MM:SS
LAImax with Time	104.7 dB (6/5/2019 4:46:46 PM)	Response	Random
LAFmin with Time	53.6 dB (6/5/2019 4:39:48 PM)	Run Number	97
LAImin with Time	54.0 dB (6/5/2019 4:31:35 PM)	Serial Number	2670911
LZeq	80 dB	Start Date & Time	6/5/2019 4:30:09 PM
LCeq	78.5 dB	Site	Unallocated
LCeq-LAeq	5.7 dB	Location	Unallocated
LAIeq	76.7 dB	Person	Unallocated
LAE	108.4 dB	Process	Unallocated
Calibration (Before) Date	6/5/2019 4:11:57 PM	Result	Cumulative
Calibration (Before) SPL	114 dB	LAF 50%	63 dB
Calibration (After) Date	6/5/2019 5:31:31 PM	LAF 90%	58 dB
Calibration Drift	-0.1 dB	LAF 95%	56.5 dB
LAF 10%	70 dB		

Notes

Instrument Model	CEL-633C		
LAeq	69.2 dB	Battery Low	No
LCpeak with Time	110.7 dB (6/5/2019 8:30:06 AM)	Duration	01:00:05 HH:MM:SS
Lepd(Projected)	69.2 dB	End Date & Time	6/5/2019 8:31:08 AM
Lex8h(Projected)	69.2 dB	Overload	No
LAFmax with Time	98.9 dB (6/5/2019 8:30:10 AM)	Pause Duration	00:00:00 HH:MM:SS
LAImax with Time	99.6 dB (6/5/2019 8:30:06 AM)	Response	Random
LAFmin with Time	51.3 dB (6/5/2019 7:40:44 AM)	Run Number	93
LAImin with Time	52.9 dB (6/5/2019 8:14:49 AM)	Serial Number	2670911
LZeq	80.5 dB	Start Date & Time	6/5/2019 7:31:03 AM
LCeq	79.1 dB	Site	Unallocated
LCeq-LAeq	9.9 dB	Location	Unallocated
LAIeq	72.8 dB	Person	Unallocated
LAE	104.8 dB	Process	Unallocated
Calibration (Before) Date	6/5/2019 6:43:45 AM	Result	Cumulative
Calibration (Before) SPL	114 dB	LAF 50%	63.5 dB
Calibration (After) Date	6/5/2019 8:33:04 AM	LAF 90%	58 dB
Calibration Drift	0.3 dB	LAF 95%	56 dB
LAF 10%	73 dB		

Notes

Summary				
Filename	LxT_Data.060			
Serial Number	2230			
Model	SoundTrack LxT®			
Firmware Version	2.302			
User				
Location				
Job Description				
Note				
Measurement Description				
Start	2019/05/30 17:00:04			
Stop	2019/05/30 18:00:04			
Duration	1:00:00.8			
Run Time	1:00:00.8			
Pause	0:00:00.0			
Pre Calibration	2019/05/30 16:53:50			
Post Calibration	None			
Calibration Deviation	---			
Overall Settings				
RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Fast			
Preamp	PRMLxT2			
Microphone Correction	Off			
Integration Method	Linear			
OBA Range	Low			
OBA Bandwidth	1/1 Octave			
OBA Freq. Weighting	Z Weighting			
OBA Max Spectrum	Bin Max			
Overload	148.3 dB			
	A	**C**	**Z**	
Under Range Peak	**104.6**	101.6	106.6 dB	
Under Range Limit	**53.6**	51.6	59.6 dB	
Noise Floor	40.4	41.1	48.7 dB	
Results				
LAeq	75.3 dB			
LAE	110.9 dB			
EA	13.616 mPa²h			
EA8	108.904 mPa²h			
EA40	544.522 mPa²h			
LApeak (max)	2019/05/30 17:17:21	113.6 dB		
LAFmax	2019/05/30 17:17:21	92.9 dB		
LAFmin	2019/05/30 17:49:32	52.8 dB		
SEA	-99.9 dB			
LAF > 85.0 dB (Exceedence Counts / Duration)	82	153.9 s		
LAF > 115.0 dB (Exceedence Counts / Duration)	0	0.0 s		
LApeak > 135.0 dB (Exceedence Counts / Duration)	0	0.0 s		
LApeak > 137.0 dB (Exceedence Counts / Duration)	0	0.0 s		
LApeak > 140.0 dB (Exceedence Counts / Duration)	0	0.0 s		

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	75.3	75.3	-99.9	75.3	75.3	-99.9	-99.9

LCeq	74.9 dB						
LAeq	75.3 dB						
LCeq - LAeq	-0.5 dB						
LAleq	78.8 dB						
LAeq	75.3 dB						
LAleq - LAeq	3.5 dB						
# Overloads	0						
Overload Duration	0.0 s						
# OBA Overloads	0						
OBA Overload Duration	0.0 s						
Dose Settings							
Dose Name	OSHA-1	OSHA-2					
Exch. Rate	5	5 dB					
Threshold	90	80 dB					
Criterion Level	90	90 dB					
Criterion Duration	8	8 h					
Results							
Dose	0.02	0.51 %					
Projected Dose	0.12	4.07 %					
TWA (Projected)	41.6	66.9 dB					
TWA (t)	26.6	51.9 dB					
Lep (t)	66.3	66.3 dB					
Statistics							
LAF5.00	83.2 dB						
LAF10.00	78.7 dB						
LAF33.30	67.8 dB						
LAF50.00	64.8 dB						
LAF66.60	62.1 dB						
LAF90.00	59.2 dB						

Calibration History

Preamp	**Date**	**dB re. 1V/Pa**	**6.3**	**8.0**	**10.0**	**12.5**	**16.0**	**20.0**	**25.0**	**31.5**	**40.0**	**50.0**	**63.0**	**80.0**	**100**	**125**	**160**	**200**	**250**	**315**	**400**	**500**	**630**	**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3150**	**4000**	**5000**	**6300**	**8000**	**10000**	**12500**	**16000**	**20000**
PRMLxT2	2019/05/30 16:53:50	-54.6	59.6	70.9	64.7	67.3	65.6	48.8	57.0	42.8	44.8	38.7	37.7	37.1	38.3	38.5	40.1	44.0	39.8	38.2	40.9	41.7	35.5	33.7	114.0	49.1	34.3	68.3	35.7	68.9	42.2	39.9	40.1	40.0	41.2	42.6	43.5	45.3
PRMLxT2	2019/05/30 16:53:15	-54.6	71.3	63.6	72.5	65.6	64.4	53.4	51.9	54.5	49.9	50.6	50.5	39.0	40.0	44.9	38.3	42.4	43.8	39.6	46.5	45.3	39.3	37.7	114.0	49.8	35.9	68.3	35.2	68.7	41.8	39.4	39.3	40.2	41.5	42.5	43.3	45.2
PRMLxT2	2019/05/30 11:55:27	-54.6	71.0	70.9	59.3	62.0	69.1	57.0	55.1	56.7	53.0	49.7	47.7	39.7	35.6	37.6	33.7	38.6	37.0	38.6	38.1	36.8	35.5	38.2	114.0	49.8	38.8	68.5	35.3	68.3	45.8	41.0	40.2	40.6	41.2	42.5	43.4	45.1
PRMLxT2	2019/05/30 7:27:19	-54.6	79.3	71.9	58.8	67.3	68.3	55.7	53.9	57.6	49.6	58.8	50.9	53.0	43.0	43.0	46.4	42.1	44.9	42.3	43.1	40.9	36.9	37.7	114.2	50.4	37.4	68.5	35.0	68.0	39.5	39.8	39.4	40.2	41.4	42.6	43.6	45.4
PRMLxT2	2019/05/29 16:24:41	-54.8	69.4	52.2	59.1	58.0	53.5	40.4	47.5	45.2	52.2	49.5	51.3	46.6	38.7	40.5	42.4	43.7	43.6	44.3	45.9	45.3	39.4	36.2	113.8	49.1	33.0	68.5	35.1	67.4	39.8	41.6	40.7	41.0	41.4	42.3	43.7	45.5
PRMLxT2	2019/05/29 12:05:27	-54.6	87.5	77.3	88.0	90.8	76.7	67.7	73.7	70.4	67.1	65.9	60.2	52.6	47.9	46.9	44.5	40.6	38.3	35.2	35.2	35.0	32.9	33.9	113.6	48.7	33.4	69.1	35.1	67.0	37.3	38.2	38.6	39.9	41.0	42.0	43.1	45.0
PRMLxT2	2019/05/29 7:38:57	-54.2	56.2	56.6	46.2	52.8	57.0	74.8	68.7	68.1	60.0	43.6	39.4	37.4	34.6	32.0	32.3	32.4	31.9	33.4	34.4	32.8	32.8	33.3	114.1	49.1	33.0	68.3	34.7	67.5	37.2	38.0	39.0	39.9	40.6	42.0	43.3	45.1
PRMLxT2	2019/05/23 16:26:07	-54.3	70.8	62.4	61.9	51.2	56.4	48.1	54.7	46.6	49.1	49.4	49.4	45.5	48.1	49.1	45.1	45.8	47.9	47.8	49.7	47.2	43.6	38.0	114.0	49.6	33.8	68.4	35.9	67.7	39.1	39.9	39.6	40.3	41.2	42.8	43.8	45.6
PRMLxT2	2019/05/23 11:56:23	-54.3	60.5	67.5	58.7	67.8	60.5	55.0	53.1	48.8	47.1	42.6	50.5	42.6	41.3	39.9	41.3	43.3	44.7	45.4	44.1	48.8	43.4	40.0	114.0	49.1	34.0	68.4	34.0	67.6	38.8	39.9	38.6	39.7	41.0	42.1	43.2	45.3
PRMLxT2	2019/05/23 7:26:03	-54.3	59.8	60.7	60.5	56.5	52.8	47.8	49.9	46.8	41.1	38.1	36.3	36.4	30.3	39.4	34.3	33.1	38.8	38.6	39.8	37.9	34.4	34.7	113.7	48.8	32.6	67.9	34.7	67.2	37.9	40.2	38.3	39.4	40.6	42.1	43.0	45.0
PRMLxT2	2019/05/22 17:39:09	-54.0	60.7	70.4	57.7	60.2	63.3	64.9	55.4	52.2	48.1	46.0	39.8	42.1	44.0	38.9	39.6	38.5	36.1	38.0	38.7	38.8	35.6	33.9	114.4	49.3	33.5	68.5	35.3	67.7	38.7	39.0	39.4	40.1	41.2	42.4	43.6	45.4

Summary	
Filename	LxT_Data.059
Serial Number	2230
Model	SoundTrack LxT®
Firmware Version	2.302
User	
Location	
Job Description	
Note	
Measurement Description	
Start	2019/05/30 12:00:14
Stop	2019/05/30 13:00:45
Duration	1:00:31.4
Run Time	1:00:31.4
Pause	0:00:00.0
Pre Calibration	2019/05/30 11:55:27
Post Calibration	None
Calibration Deviation	---
Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Fast
Preamp	PRMLxT2
Microphone Correction	Off
Integration Method	Linear
OBA Range	Low
OBA Bandwidth	1/1 Octave
OBA Freq. Weighting	Z Weighting
OBA Max Spectrum	Bin Max
Overload	148.3 dB

	A	C	Z
Under Range Peak	**104.6**	101.6	106.6 dB
Under Range Limit	**53.6**	51.6	59.6 dB
Noise Floor	40.4	41.1	48.7 dB

Results			
LAeq	74.0 dB		
LAE	109.6 dB		
EA	10.096 mPa²h		
EA8	80.066 mPa²h		
EA40	400.329 mPa²h		
LApeak (max)	2019/05/30 12:58:29	112.5 dB	
LAFmax	2019/05/30 12:41:52	94.1 dB	
LAFmin	2019/05/30 12:15:37	54.3 dB	
SEA	-99.9 dB		
LAF > 85.0 dB (Exceedence Counts / Duration)	68	66.3 s	
LAF > 115.0 dB (Exceedence Counts / Duration)	0	0.0 s	
LApeak > 135.0 dB (Exceedence Counts / Duration)	0	0.0 s	
LApeak > 137.0 dB (Exceedence Counts / Duration)	0	0.0 s	
LApeak > 140.0 dB (Exceedence Counts / Duration)	0	0.0 s	

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	74.0	74.0	-99.9	74.0	74.0	-99.9	-99.9

LCeq	73.4 dB
LAeq	74.0 dB
LCeq - LAeq	-0.5 dB
LAleq	78.4 dB
LAeq	74.0 dB
LAleq - LAeq	4.4 dB
# Overloads	0
Overload Duration	0.0 s
# OBA Overloads	0
OBA Overload Duration	0.0 s

Dose Settings		
Dose Name	OSHA-1	OSHA-2
Exch. Rate	5	5 dB
Threshold	90	80 dB
Criterion Level	90	90 dB
Criterion Duration	8	8 h
Results		
Dose	0.05	0.28 %
Projected Dose	0.36	2.19 %
TWA (Projected)	49.4	62.4 dB
TWA (t)	34.5	47.5 dB
Lep (t)	65.0	65.0 dB

Statistics	
LAF5.00	79.8 dB
LAF10.00	77.0 dB
LAF33.30	68.1 dB
LAF50.00	64.8 dB
LAF66.60	62.8 dB
LAF90.00	60.3 dB

Calibration History

Preamp	**Date**	**dB re. 1V/Pa**	**6.3**	**8.0**	**10.0**	**12.5**	**16.0**	**20.0**	**25.0**	**31.5**	**40.0**	**50.0**	**63.0**	**80.0**	**100**	**125**	**160**	**200**	**250**	**315**	**400**	**500**	**630**	**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3150**	**4000**	**5000**	**6300**	**8000**	**10000**	**12500**	**16000**	**20000**
PRMLxT2	2019/05/30 11:55:27	-54.6	71.0	70.9	59.3	62.0	69.1	57.0	55.1	56.7	53.0	49.7	47.7	39.7	35.6	37.6	33.7	38.6	37.0	38.6	38.1	36.8	35.5	38.2	114.0	49.8	38.8	68.5	35.3	68.3	45.8	41.0	40.2	40.6	41.2	42.5	43.4	45.1
PRMLxT2	2019/05/30 7:27:19	-54.6	79.3	71.9	58.8	67.3	68.3	55.7	53.9	57.6	49.6	58.8	50.9	53.0	43.0	43.0	46.4	42.1	44.9	42.3	43.1	40.9	36.9	37.7	114.2	50.4	37.4	68.9	35.0	68.0	39.5	39.8	39.4	40.2	41.4	42.6	43.6	45.4
PRMLxT2	2019/05/29 16:24:41	-54.8	69.4	52.2	59.1	58.0	53.5	40.4	47.5	45.2	52.2	49.5	51.3	46.6	38.7	40.5	42.4	43.7	43.6	44.3	45.9	45.3	39.4	36.2	113.8	49.1	33.0	68.5	35.1	67.4	39.8	41.6	40.7	41.0	41.4	42.3	43.7	45.5
PRMLxT2	2019/05/29 12:05:27	-54.6	87.5	77.3	88.0	90.8	76.7	67.7	73.7	70.4	67.1	65.9	60.2	52.6	47.9	46.9	44.5	40.6	38.3	35.2	35.0	32.9	33.9	113.6	48.7	33.4	69.1	35.1	67.0	37.3	38.2	38.6	39.9	41.0	42.0	43.1	45.0
PRMLxT2	2019/05/29 7:38:57	-54.2	56.2	56.6	46.2	52.8	57.0	74.8	68.7	68.1	60.0	43.6	39.4	37.4	34.6	32.0	32.3	32.4	31.9	33.4	34.4	32.8	32.8	33.3	114.1	49.1	33.0	68.3	34.7	67.5	37.2	38.0	39.0	39.9	40.6	42.0	43.3	45.1
PRMLxT2	2019/05/23 16:26:07	-54.3	70.8	62.4	61.9	51.2	56.4	48.1	54.7	46.6	49.1	49.4	49.4	45.5	48.1	49.1	45.1	45.8	47.9	47.8	49.7	47.2	43.6	38.0	114.0	49.6	33.8	68.4	35.9	67.7	39.1	39.9	39.6	40.3	41.2	42.8	43.8	45.6
PRMLxT2	2019/05/23 11:56:23	-54.3	60.5	67.5	58.7	67.8	60.5	55.0	53.1	48.8	47.1	42.6	50.5	42.6	41.3	39.9	41.3	43.3	44.7	45.4	44.1	48.8	43.4	40.0	114.0	49.1	34.0	68.4	34.0	67.6	38.8	39.9	38.6	39.7	41.0	42.1	43.2	45.3
PRMLxT2	2019/05/23 7:26:03	-54.3	59.8	60.7	60.5	56.5	52.8	47.8	49.9	46.8	41.1	38.1	36.3	36.4	30.3	39.4	34.3	33.1	38.8	38.6	39.8	37.9	34.4	34.7	113.7	48.8	32.6	67.9	34.7	67.2	37.9	40.2	38.3	39.4	40.6	42.1	43.0	45.0
PRMLxT2	2019/05/22 17:39:09	-54.0	60.7	70.4	57.7	60.2	63.3	64.9	55.4	52.2	48.1	46.0	39.8	42.1	44.0	38.9	39.6	38.5	36.1	38.0	38.7	38.8	35.6	33.9	114.4	49.3	33.5	68.5	35.3	67.7	38.7	39.0	39.4	40.1	41.2	42.4	43.6	45.4
PRMLxT2	2019/05/22 17:38:42	-54.4	35.9	27.5	48.7	60.1	67.7	71.1	87.5	86.1	79.3	73.7	70.1	74.6	71.7	63.8	59.3	54.5	50.1	49.8	48.8	48.2	42.3	39.5	113.9	49.1	35.8	68.4	35.1	67.6	37.7	38.1	38.8	39.9	41.6	42.1	43.2	45.3
PRMLxT2	2019/05/22 17:38:21	-54.3	51.9	48.8	31.1	38.1	48.3	41.0	54.8	65.8	65.3	59.3	47.5	48.4	57.7	53.9	50.5	48.8	51.1	53.7	50.2	43.8	41.0	41.6	113.9	49.1	35.8	68.1	35.2	67.4	38.2	39.6	38.8	39.9	41.0	42.2	43.3	45.2

Summary	
Filename	LxT_Data.058
Serial Number	2230
Model	SoundTrack LxT®
Firmware Version	2.302
User	
Location	
Job Description	
Note	
Measurement Description	
Start	2019/05/30 7:30:01
Stop	2019/05/30 8:30:01
Duration	1:00:00.7
Run Time	1:00:00.7
Pause	0:00:00.0
Pre Calibration	2019/05/30 7:27:19
Post Calibration	None
Calibration Deviation	---
Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Fast
Preamp	PRMLxT2
Microphone Correction	Off
Integration Method	Linear
OBA Range	Low
OBA Bandwidth	1/1 Octave
OBA Freq. Weighting	Z Weighting
OBA Max Spectrum	Bin Max
Overload	148.3 dB

	A	C	Z
Under Range Peak	**104.6**	101.6	106.6 dB
Under Range Limit	**53.6**	51.6	59.6 dB
Noise Floor	40.4	41.1	48.7 dB

Results		
LAeq	76.8 dB	
LAE	112.4 dB	
EA	19.143 mPa²h	
EA8	153.118 mPa²h	
EA40	765.591 mPa²h	
LApeak (max)	2019/05/30 8:18:29	113.8 dB
LAFmax	2019/05/30 8:18:30	105.2 dB
LAFmin	2019/05/30 7:55:59	56.5 dB
SEA	-99.9 dB	
LAF > 85.0 dB (Exceedence Counts / Duration)	124	176.1 s
LAF > 115.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 135.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 137.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 140.0 dB (Exceedence Counts / Duration)	0	0.0 s

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	76.8	76.8	-99.9	76.8	76.8	-99.9	-99.9

LCeq	76.2 dB
LAeq	76.8 dB
LCeq - LAeq	-0.6 dB
LAleq	80.9 dB
LAeq	76.8 dB
LAleq - LAeq	4.1 dB
# Overloads	0
Overload Duration	0.0 s
# OBA Overloads	0
OBA Overload Duration	0.0 s

Dose Settings		
Dose Name	OSHA-1	OSHA-2
Exch. Rate	5	5 dB
Threshold	90	80 dB
Criterion Level	90	90 dB
Criterion Duration	8	8 h
Results		
Dose	0.06	0.62 %
Projected Dose	0.51	4.92 %
TWA (Projected)	51.9	68.3 dB
TWA (t)	36.9	53.3 dB
Lep (t)	67.8	67.8 dB

Statistics	
LAF5.00	83.8 dB
LAF10.00	80.1 dB
LAF33.30	70.1 dB
LAF50.00	67.4 dB
LAF66.60	65.5 dB
LAF90.00	62.7 dB

Calibration History

Preamp	**Date**	**dB re. 1V/Pa**	**6.3**	**8.0**	**10.0**	**12.5**	**16.0**	**20.0**	**25.0**	**31.5**	**40.0**	**50.0**	**63.0**	**80.0**	**100**	**125**	**160**	**200**	**250**	**315**	**400**	**500**	**630**	**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3150**	**4000**	**5000**	**6300**	**8000**	**10000**	**12500**	**16000**	**20000**
PRMLxT2	2019/05/30 7:27:19	-54.6	79.3	71.9	58.8	67.3	68.3	55.7	53.9	57.6	49.6	58.8	50.9	53.0	43.0	43.0	46.4	42.1	44.9	42.3	43.1	40.9	36.9	37.7	114.2	50.4	37.4	68.9	35.0	68.0	39.5	39.8	39.4	40.2	41.4	42.6	43.6	45.4
PRMLxT2	2019/05/29 16:24:41	-54.8	69.4	52.2	59.1	58.0	53.5	40.4	47.5	45.2	52.2	49.5	51.3	46.6	38.7	40.5	42.4	43.7	43.6	44.3	45.9	45.3	39.4	36.2	113.8	49.1	33.0	68.5	35.1	67.4	39.8	41.6	40.7	41.0	41.4	42.3	43.7	45.5
PRMLxT2	2019/05/29 12:05:27	-54.6	87.5	77.3	88.0	90.8	76.7	67.7	73.7	70.4	67.1	65.9	60.2	52.6	47.9	46.9	44.5	40.6	38.3	35.2	35.2	35.0	32.9	33.9	113.6	48.7	33.4	69.1	35.1	67.0	37.3	38.2	38.6	39.9	41.0	42.0	43.1	45.0
PRMLxT2	2019/05/29 7:38:57	-54.2	56.2	56.6	46.2	52.8	57.0	74.8	68.7	68.1	60.0	43.6	39.4	37.4	34.6	32.0	32.3	32.4	31.9	33.4	34.4	32.8	32.8	33.3	114.1	49.1	33.0	68.3	34.7	67.5	37.2	38.0	39.0	39.9	40.6	42.0	43.3	45.1
PRMLxT2	2019/05/23 16:26:07	-54.3	70.8	62.4	61.9	51.2	56.4	48.1	54.7	46.6	49.1	49.4	49.4	45.5	48.1	49.1	45.1	45.8	47.9	47.8	49.7	47.2	43.6	38.0	114.0	49.6	33.8	68.4	35.9	67.7	39.1	39.9	39.6	40.3	41.2	42.8	43.8	45.6
PRMLxT2	2019/05/23 11:56:23	-54.3	60.5	67.5	58.7	67.8	60.5	55.0	53.1	48.8	47.1	42.6	50.5	42.6	41.3	39.9	41.3	43.3	44.7	45.4	44.1	48.8	43.4	40.0	114.0	49.1	34.0	68.4	34.0	67.6	38.8	39.9	38.6	39.7	41.0	42.1	43.2	45.3
PRMLxT2	2019/05/23 7:26:03	-54.3	59.8	60.7	60.5	56.5	52.8	47.8	49.9	46.8	41.1	38.1	36.3	36.4	30.3	39.4	34.3	33.1	38.8	38.6	39.8	37.9	34.4	34.7	113.7	48.8	32.6	67.9	34.7	67.2	37.9	40.2	38.3	39.4	40.6	42.1	43.0	45.0
PRMLxT2	2019/05/22 17:39:09	-54.0	60.7	70.4	57.7	60.2	63.3	64.9	55.4	52.2	48.1	46.0	39.8	42.1	44.0	38.9	39.6	38.5	36.1	38.0	38.7	38.8	35.6	33.9	114.4	49.3	33.5	68.5	35.3	67.7	38.7	39.0	39.4	40.1	41.2	42.4	43.6	45.4
PRMLxT2	2019/05/22 17:38:42	-54.4	35.9	27.5	48.7	60.1	67.7	71.1	87.5	86.1	79.3	73.7	70.1	74.6	71.7	63.8	59.3	54.5	50.1	49.8	48.8	48.2	42.3	39.5	113.9	49.1	35.8	68.4	35.1	67.6	37.7	38.1	38.8	39.9	41.6	42.1	43.2	45.3
PRMLxT2	2019/05/22 17:38:21	-54.3	51.9	48.8	31.1	38.1	48.3	41.0	54.8	65.8	65.3	59.3	47.5	48.4	57.7	53.9	50.5	48.8	51.1	53.7	50.2	43.8	41.0	41.6	113.9	49.1	35.8	68.1	35.2	67.4	38.2	39.6	38.8	39.9	41.0	42.2	43.3	45.2
PRMLxT2	2019/05/22 16:20:28	-54.3	39.4	37.6	73.2	61.2	57.0	60.2	61.5	62.2	61.1	55.3	54.9	48.9	52.3	52.4	50.5	55.6	54.8	58.0	62.3	49.7	43.9	36.1	114.0	49.1	34.7	68.5	34.8	67.0	39.2	39.5	38.5	39.9	41.0	42.1	43.1	45.1

Summary			
Filename	LxT_Data.061		
Serial Number	2230		
Model	SoundTrack LxT®		
Firmware Version	2.302		
User			
Location			
Job Description			
Note			
Measurement Description			
Start	2019/06/05 7:30:03		
Stop	2019/06/05 8:30:13		
Duration	1:00:09.8		
Run Time	1:00:09.8		
Pause	0:00:00.0		
Pre Calibration	2019/06/05 6:44:54		
Post Calibration	None		
Calibration Deviation	---		
Overall Settings			
RMS Weight	A Weighting		
Peak Weight	A Weighting		
Detector	Fast		
Preamp	PRMLxT2		
Microphone Correction	Off		
Integration Method	Linear		
OBA Range	Low		
OBA Bandwidth	1/1 Octave		
OBA Freq. Weighting	Z Weighting		
OBA Max Spectrum	Bin Max		
Overload	148.5 dB		
	A	**C**	**Z**
Under Range Peak	**104.7**	101.7	106.7 dB
Under Range Limit	**53.7**	51.7	59.7 dB
Noise Floor	40.6	41.2	48.9 dB
Results			
LAeq	70.2 dB		
LAE	105.8 dB		
EA	4.212 mPa²h		
EA8	33.608 mPa²h		
EA40	168.042 mPa²h		
LApeak (max)	2019/06/05 7:32:41	120.6 dB	
LAFmax	2019/06/05 7:32:41	103.3 dB	
LAFmin	2019/06/05 7:30:31	49.1 dB	
SEA	130.6 dB		
LAF > 85.0 dB (Exceedence Counts / Duration)	18	16.8 s	
LAF > 115.0 dB (Exceedence Counts / Duration)	0	0.0 s	
LApeak > 135.0 dB (Exceedence Counts / Duration)	0	0.0 s	
LApeak > 137.0 dB (Exceedence Counts / Duration)	0	0.0 s	
LApeak > 140.0 dB (Exceedence Counts / Duration)	0	0.0 s	

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	70.2	70.2	-99.9	70.2	70.2	-99.9	-99.9
LCeq	81.7 dB						
LAeq	70.2 dB						
LCeq - LAeq	11.5 dB						
LAleq	76.9 dB						
LAeq	70.2 dB						
LAleq - LAeq	6.7 dB						
# Overloads	0						
Overload Duration	0.0 s						
# OBA Overloads							
OBA Overload Duration	2.1 s						

Dose Settings		
Dose Name	OSHA-1	OSHA-2
Exch. Rate	5	5 dB
Threshold	90	80 dB
Criterion Level	90	90 dB
Criterion Duration	8	8 h
Results		
Dose	0.01	0.06 %
Projected Dose	0.10	0.48 %
TWA (Projected)	40.0	51.5 dB
TWA (t)	25.0	36.5 dB
Lep (t)	61.2	61.2 dB
Statistics		
LAF5.00	74.8 dB	
LAF10.00	72.7 dB	
LAF33.30	67.1 dB	
LAF50.00	64.6 dB	
LAF66.60	62.1 dB	
LAF90.00	57.3 dB	

Calibration History

Preamp	**Date**	**dB re. 1V/Pa**	**6.3**	**8.0**	**10.0**	**12.5**	**16.0**	**20.0**	**25.0**	**31.5**	**40.0**	**50.0**	**63.0**	**80.0**	**100**	**125**	**160**	**200**	**250**	**315**	**400**	**500**	**630**	**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3150**	**4000**	**5000**	**6300**	**8000**	**10000**	**12500**	**16000**	**20000**
PRMLxT2	2019/06/05 6:44:54	-54.8	80.2	70.4	56.8	55.1	66.6	56.1	48.0	47.7	47.9	51.8	47.1	40.9	36.0	35.4	32.1	31.6	35.0	34.0	37.2	34.0	32.7	32.8	113.8	49.0	33.1	67.7	35.0	67.9	40.1	38.8	39.2	40.5	41.2	42.3	43.6
PRMLxT2	2019/05/30 16:53:50	-54.6	59.6	70.9	64.7	67.3	65.6	48.8	57.0	42.8	44.8	38.7	37.7	37.1	38.3	38.5	40.1	44.0	39.8	38.2	40.9	41.7	35.5	33.7	114.0	49.1	34.3	68.3	35.7	68.9	42.2	39.9	40.1	40.0	41.2	42.6	43.5
PRMLxT2	2019/05/30 16:53:15	-54.6	71.3	63.6	72.5	65.6	64.4	53.4	51.9	54.5	49.9	50.6	50.5	39.0	40.0	44.9	38.3	42.4	43.8	39.6	46.5	45.3	39.3	37.7	114.0	49.8	35.9	68.3	35.2	68.7	41.8	39.4	39.3	40.2	41.5	42.5	43.3
PRMLxT2	2019/05/30 11:55:27	-54.6	71.0	70.9	59.3	62.0	69.1	57.0	55.1	56.7	53.0	49.7	47.7	39.7	35.6	37.6	33.7	38.6	37.0	38.6	38.1	36.8	35.5	38.2	114.0	49.8	38.8	68.5	35.3	68.3	45.8	41.0	40.2	40.6	41.2	42.5	43.4
PRMLxT2	2019/05/30 7:27:19	-54.6	79.3	71.9	58.8	67.3	68.3	55.7	53.9	57.6	49.6	58.8	50.9	53.0	43.0	43.0	46.4	42.1	44.9	42.3	43.1	40.9	36.9	37.7	114.2	50.4	37.4	68.9	35.0	68.0	39.5	39.8	39.4	40.2	41.4	42.6	43.6
PRMLxT2	2019/05/29 16:24:41	-54.8	69.4	52.2	59.1	58.0	53.5	40.4	47.5	45.2	52.2	49.5	51.3	46.6	38.7	40.5	42.4	43.7	43.6	44.3	45.9	45.3	39.4	36.2	113.8	49.1	33.0	68.5	35.1	67.4	39.8	41.6	40.7	41.0	41.4	42.3	43.7
PRMLxT2	2019/05/29 12:05:27	-54.6	87.5	77.3	88.0	90.8	76.7	67.7	73.7	70.4	67.1	65.9	60.2	52.6	47.9	46.9	44.5	40.6	38.3	35.2	35.2	35.0	32.9	33.9	113.6	48.7	33.4	69.1	35.1	67.0	37.3	38.2	38.6	39.9	41.0	42.0	43.1
PRMLxT2	2019/05/29 7:38:57	-54.2	56.2	56.6	46.2	52.8	57.0	74.8	68.7	68.1	60.0	43.6	39.4	37.4	34.6	32.0	32.3	32.4	31.9	33.4	34.4	32.8	32.8	33.3	114.1	49.1	33.0	68.3	34.7	67.5	37.2	38.0	39.0	39.9	40.6	42.0	43.3
PRMLxT2	2019/05/23 16:26:07	-54.3	70.8	62.4	61.9	51.2	56.4	48.1	54.7	46.6	49.1	49.4	49.4	45.5	48.1	49.1	45.1	45.8	47.9	47.8	49.7	47.2	43.6	38.0	114.0	49.6	33.8	68.4	35.9	67.7	39.1	39.9	39.6	40.3	41.2	42.8	43.8
PRMLxT2	2019/05/23 11:56:23	-54.3	60.5	67.5	58.7	67.8	60.5	55.0	53.1	48.8	47.1	42.6	50.5	42.6	41.3	39.9	41.3	43.3	44.7	45.4	44.1	48.8	43.4	40.0	114.0	49.1	34.0	68.4	34.0	67.6	38.8	39.9	38.6	39.7	41.0	42.1	43.2
PRMLxT2	2019/05/23 7:26:03	-54.3	59.8	60.7	60.5	56.5	52.8	47.8	49.9	46.8	41.1	38.1	36.3	36.4	30.3	39.4	34.3	33.1	38.8	38.6	39.8	37.9	34.4	34.7	113.7	48.8	32.6	67.9	34.7	67.2	37.9	40.2	38.3	39.4	40.6	42.1	43.0

Summary	
Filename	LxT_Data.062
Serial Number	2230
Model	SoundTrack LxT®
Firmware Version	2.302
User	
Location	
Job Description	
Note	
Measurement Description	
Start	2019/06/05 12:00:06
Stop	2019/06/05 13:00:14
Duration	1:00:07.7
Run Time	1:00:07.7
Pause	0:00:00.0
Pre Calibration	2019/06/05 11:38:55
Post Calibration	None
Calibration Deviation	---

Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Fast
Preamp	PRMLxT2
Microphone Correction	Off
Integration Method	Linear
OBA Range	Low
OBA Bandwidth	1/1 Octave
OBA Freq. Weighting	Z Weighting
OBA Max Spectrum	Bin Max
Overload	148.4 dB

	A	C	Z
Under Range Peak	**104.7**	101.7	106.7 dB
Under Range Limit	**53.7**	51.7	59.7 dB
Noise Floor	40.5	41.2	48.8 dB

Results		
LAeq	68.3	dB
LAE	103.9	dB
EA	2.707	mPa²h
EA8	21.606	mPa²h
EA40	108.030	mPa²h
LApeak (max)	2019/06/05 12:01:59	112.7 dB
LAFmax	2019/06/05 12:01:59	97.2 dB
LAFmin	2019/06/05 12:59:05	53.9 dB
SEA	-99.9	dB
LAF > 85.0 dB (Exceedence Counts / Duration)	15	11.8 s
LAF > 115.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 135.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 137.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 140.0 dB (Exceedence Counts / Duration)	0	0.0 s

Community Noise	Ldn	LDay 07:00-22:00	LNight 22:00-07:00	Lden	LDay 07:00-19:00	LEvening 19:00-22:00	LNight 22:00-07:00
	68.3	68.3	-99.9	68.3	68.3	-99.9	-99.9
LCeq	67.6 dB						
LAeq	68.3 dB						
LCeq - LAeq	-0.7 dB						
LAleq	73.6 dB						
LAeq	68.3 dB						
LAleq - LAeq	5.3 dB						
# Overloads	0						
Overload Duration	0.0 s						
# OBA Overloads	0						
OBA Overload Duration	0.0 s						

Dose Settings		
Dose Name	OSHA-1	OSHA-2
Exch. Rate	5	5 dB
Threshold	90	80 dB
Criterion Level	90	90 dB
Criterion Duration	8	8 h
Results		
Dose	0.02	0.05 %
Projected Dose	0.13	0.39 %
TWA (Projected)	41.9	50.0 dB
TWA (t)	27.0	35.0 dB
Lep (t)	59.3	59.3 dB

Statistics	
LAF5.00	70.3 dB
LAF10.00	67.7 dB
LAF33.30	63.9 dB
LAF50.00	62.7 dB
LAF66.60	61.6 dB
LAF90.00	59.1 dB

Calibration History

Preamp	Date	dB re. 1V/Pa	6.3	8.0	10.0	12.5	16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	12500	16000	20000
PRMLxT2	2019/06/05 11:38:55	-54.7	51.7	49.3	46.4	47.7	47.5	47.8	43.5	39.9	42.6	39.8	36.6	42.4	40.6	34.0	29.5	33.6	32.8	32.3	33.3	32.9	29.8	32.3	114.2	49.3	33.6	69.6	35.6	68.5	37.8	37.9	39.1	40.3	41.4	42.9	43.9	
PRMLxT2	2019/06/05 8:37:17	-54.9	64.9	70.5	69.2	65.2	79.2	105.5	96.0	81.8	74.0	59.4	60.9	55.8	44.7	41.4	39.9	42.6	45.4	42.3	44.3	44.0	38.8	34.4	113.9	49.2	34.7	69.7	35.9	67.7	37.9	39.1	38.9	40.2	41.5	42.5	43.6	
PRMLxT2	2019/06/05 6:44:54	-54.8	80.2	70.4	56.8	55.1	66.6	56.1	48.0	47.7	47.9	51.8	47.1	40.9	36.0	35.4	32.1	31.6	35.0	34.0	37.2	34.0	32.7	32.8	113.8	49.0	33.1	67.7	35.0	67.9	40.1	38.8	39.2	40.5	41.2	42.3	43.6	
PRMLxT2	2019/05/30 16:53:50	-54.6	59.6	70.9	64.7	67.3	65.6	48.8	57.0	42.8	44.8	38.7	37.7	37.1	38.3	38.5	40.1	44.0	39.8	38.2	40.9	41.7	35.5	33.7	114.0	49.1	34.3	68.3	35.7	68.9	42.2	39.9	40.1	40.0	41.2	42.6	43.5	
PRMLxT2	2019/05/30 16:53:15	-54.6	71.3	63.6	72.5	65.6	64.4	53.4	51.9	54.5	49.9	50.6	50.5	39.0	40.0	44.9	38.3	42.4	43.8	39.6	46.5	45.3	39.3	37.7	114.0	49.8	35.9	68.3	35.2	68.7	41.8	39.4	39.3	40.2	41.5	42.5	43.3	
PRMLxT2	2019/05/30 11:55:27	-54.6	71.0	70.9	59.3	62.0	69.1	57.0	55.1	56.7	53.0	49.7	47.7	39.7	35.6	37.6	33.7	38.6	37.0	38.6	38.1	36.8	35.5	38.2	114.0	49.8	38.8	68.5	35.3	68.3	45.8	41.0	40.2	40.6	41.2	42.5	43.4	
PRMLxT2	2019/05/30 7:27:19	-54.6	79.3	71.9	58.8	67.3	68.3	55.7	53.9	57.6	49.6	58.8	50.9	53.0	43.0	43.0	46.4	42.1	44.9	42.3	43.1	40.9	36.9	37.7	114.2	50.4	37.4	68.9	35.0	68.0	39.5	39.8	39.4	40.2	41.4	42.6	43.6	
PRMLxT2	2019/05/29 16:24:41	-54.8	69.4	52.2	59.1	58.0	53.5	40.4	47.5	45.2	52.2	49.5	51.3	46.6	38.7	40.5	42.4	43.7	43.6	44.3	45.9	45.3	39.4	36.2	113.8	49.1	33.0	68.5	35.1	67.4	39.8	41.6	40.7	41.0	41.4	42.3	43.7	
PRMLxT2	2019/05/29 12:05:27	-54.6	87.5	77.3	88.0	90.8	76.7	67.7	73.7	70.4	67.1	65.9	60.2	52.6	47.9	46.9	44.5	40.6	38.3	35.2	35.0	32.9	33.9	113.6	48.7	33.4	69.1	35.1	67.0	37.3	38.2	38.6	39.9	41.0	42.0	43.1		
PRMLxT2	2019/05/29 7:38:57	-54.2	56.2	56.6	46.2	52.8	57.0	74.8	68.7	68.1	60.0	43.6	39.4	37.4	34.6	32.0	32.3	32.4	31.9	33.4	34.4	32.8	32.8	33.3	114.1	49.1	33.0	68.3	34.7	67.5	37.2	38.0	39.0	39.9	40.6	42.0	43.3	
PRMLxT2	2019/05/23 16:26:07	-54.3	70.8	62.4	61.9	51.2	56.4	48.1	54.7	46.6	49.1	49.4	49.4	45.5	48.1	49.1	45.1	45.8	47.9	47.8	49.7	47.2	43.6	38.0	114.0	49.6	33.8	68.4	35.9	67.7	39.1	39.9	39.6	40.3	41.2	42.8	43.8	

Summary		
Filename	LxT_Data.063	
Serial Number	2230	
Model	SoundTrack LxT®	
Firmware Version	2.302	
User		
Location		
Job Description		
Note		
Measurement Description		
Start	2019/06/05	16:30:36
Stop	2019/06/05	17:30:36
Duration	1:00:00.5	
Run Time	1:00:00.5	
Pause	0:00:00.0	
Pre Calibration	2019/06/05	16:13:48
Post Calibration	None	
Calibration Deviation	---	
Overall Settings		
RMS Weight	A Weighting	
Peak Weight	A Weighting	
Detector	Fast	
Preamp	PRMLxT2	
Microphone Correction	Off	
Integration Method	Linear	
OBA Range	Low	
OBA Bandwidth	1/1 Octave	
OBA Freq. Weighting	Z Weighting	
OBA Max Spectrum	Bin Max	
Overload	148.6 dB	

	A	C	Z
Under Range Peak	**104.9**	101.9	106.9 dB
Under Range Limit	**53.9**	51.9	59.9 dB
Noise Floor	40.7	41.4	49.0 dB

Results			
LAeq	72.7 dB		
LAE	108.2 dB		
EA	7.380 mPa²h		
EA8	59.032 mPa²h		
EA40	295.162 mPa²h		
LApeak (max)	2019/06/05	16:46:09	107.6 dB
LAFmax	2019/06/05	17:27:11	95.4 dB
LAFmin	2019/06/05	17:23:11	53.0 dB
SEA	-99.9 dB		
LAF > 85.0 dB (Exceedence Counts / Duration)	29	32.2 s	
LAF > 115.0 dB (Exceedence Counts / Duration)	0	0.0 s	
LApeak > 135.0 dB (Exceedence Counts / Duration)	0	0.0 s	
LApeak > 137.0 dB (Exceedence Counts / Duration)	0	0.0 s	
LApeak > 140.0 dB (Exceedence Counts / Duration)	0	0.0 s	

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	72.7	72.7	-99.9	72.7	72.7	-99.9	-99.9
LCeq	71.7 dB						
LAeq	72.7 dB						
LCeq - LAeq	-1.0 dB						
LAleq	76.2 dB						
LAeq	72.7 dB						
LAleq - LAeq	3.5 dB						
# Overloads	0						
Overload Duration	0.0 s						
# OBA Overloads	0						
OBA Overload Duration	0.0 s						

Dose Settings		
Dose Name	OSHA-1	OSHA-2
Exch. Rate	5	5 dB
Threshold	90	80 dB
Criterion Level	90	90 dB
Criterion Duration	8	8 h
Results		
Dose	0.02	0.12 %
Projected Dose	0.19	0.95 %
TWA (Projected)	44.9	56.4 dB
TWA (t)	29.9	41.4 dB
Lep (t)	63.6	63.6 dB
Statistics		
LAF5.00	78.1 dB	
LAF10.00	76.4 dB	
LAF33.30	68.7 dB	
LAF50.00	65.6 dB	
LAF66.60	63.5 dB	
LAF90.00	60.1 dB	

Calibration History

Preamp	**Date**	**dB re. 1V/Pa**	**6.3**	**8.0**	**10.0**	**12.5**	**16.0**	**20.0**	**25.0**	**31.5**	**40.0**	**50.0**	**63.0**	**80.0**	**100**	**125**	**160**	**200**	**250**	**315**	**400**	**500**	**630**	**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3150**	**4000**	**5000**	**6300**	**8000**	**10000**	**12500**	**16000**	**20000**
PRMLxT2	2019/06/05	16:13:42	-54.9	56.0	56.7	56.0	48.2	43.2	42.9	47.2	49.8	46.7	41.2	44.1	57.3	55.6	54.0	55.0	50.3	56.1	59.8	60.7	58.2	54.7	41.4	113.8	48.9	36.6	68.9	36.0	67.8	37.1	38.4	39.1	40.1	41.7	42.8	43.7
PRMLxT2	2019/06/05	11:38:55	-54.7	51.7	49.3	46.4	47.7	47.5	47.8	43.5	39.9	42.6	39.8	36.6	42.4	40.6	34.0	29.5	33.6	32.8	32.3	33.3	32.9	29.8	32.3	114.2	49.3	33.6	69.6	35.6	68.5	37.8	37.9	39.1	40.3	41.4	42.9	43.9
PRMLxT2	2019/06/05	8:37:17	-54.9	64.9	70.5	69.2	65.2	79.2	105.5	96.0	81.8	74.0	59.4	60.9	55.8	44.7	41.4	39.9	42.6	45.4	42.3	44.3	44.0	38.8	34.4	113.9	49.2	34.7	69.7	35.9	67.7	37.9	39.1	38.9	40.2	41.5	42.5	43.6
PRMLxT2	2019/06/05	6:44:54	-54.8	80.2	70.4	56.8	55.1	66.6	56.1	48.0	47.7	47.9	51.8	47.1	40.9	36.0	35.4	32.1	31.6	35.0	34.0	37.2	34.0	32.7	32.8	113.8	49.0	33.1	67.7	35.0	67.9	40.1	38.8	39.2	40.5	41.2	42.3	43.6
PRMLxT2	2019/05/30	16:53:50	-54.6	59.6	70.9	64.7	67.3	65.6	48.8	57.0	42.8	44.8	38.7	37.7	37.1	38.3	38.5	40.1	44.0	39.8	38.2	40.9	41.7	35.5	33.7	114.0	49.1	34.3	68.3	35.7	68.9	42.2	39.9	40.1	40.0	41.2	42.6	43.5
PRMLxT2	2019/05/30	16:53:15	-54.6	71.3	63.6	72.5	65.6	64.4	53.4	51.9	54.5	49.9	50.6	50.5	39.0	40.0	44.9	38.3	42.4	43.8	39.6	46.5	45.3	39.3	37.7	114.0	49.8	35.9	68.3	35.2	68.7	41.8	39.4	39.3	40.2	41.5	42.5	43.3
PRMLxT2	2019/05/30	11:55:27	-54.6	71.0	70.9	59.3	62.0	69.1	57.0	55.1	56.7	53.0	49.7	47.7	39.7	35.6	37.6	33.7	38.6	37.0	38.6	38.1	36.8	35.5	38.2	114.0	49.8	38.8	68.5	35.3	68.3	45.8	41.0	40.2	40.6	41.2	42.5	43.4
PRMLxT2	2019/05/30	7:27:19	-54.6	79.3	71.9	58.8	67.3	68.3	55.7	53.9	57.6	49.6	58.8	50.9	53.0	43.0	43.0	46.4	42.1	44.9	42.3	43.1	40.9	36.9	37.7	114.2	50.4	37.4	68.9	35.0	68.0	39.5	39.8	39.4	40.2	41.4	42.6	43.6
PRMLxT2	2019/05/29	16:24:41	-54.8	69.4	52.2	59.1	58.0	53.5	40.4	47.5	45.2	52.2	49.5	51.3	46.6	38.7	40.5	42.4	43.7	43.6	44.3	45.9	45.3	39.4	36.2	113.8	49.1	33.0	68.5	35.1	67.4	39.8	41.6	40.7	41.0	41.4	42.3	43.7
PRMLxT2	2019/05/29	12:05:27	-54.6	87.5	77.3	88.0	90.8	76.7	67.7	73.7	70.4	67.1	65.9	60.2	52.6	47.9	46.9	44.5	40.6	38.3	35.2	35.2	35.0	32.9	33.9	113.6	48.7	33.4	69.1	35.1	67.0	37.3	38.2	38.6	39.9	41.0	42.0	43.1
PRMLxT2	2019/05/29	7:38:57	-54.2	56.2	56.6	46.2	52.8	57.0	74.8	68.7	68.1	60.0	43.6	39.4	37.4	34.6	32.0	32.3	32.4	31.9	33.4	34.4	32.8	32.8	33.3	114.1	49.1	33.0	68.3	34.7	67.5	37.2	38.0	39.0	39.9	40.6	42.0	43.3

Calibration Certificate

Certificate Number 2018007854
Customer:
Equity Environmental Eng
500 International Drive
Mount Olive, NJ 07828, United States

Model Number	PRMLxT2	***Procedure Number***	D0001.8383		
Serial Number	013562	***Technician***	Ron Harris		
Test Results	**Pass**	***Calibration Date***	3 Aug 2018		
Initial Condition	AS RECEIVED same as shipped	***Calibration Due***	3 Aug 2019		
		Temperature	23.29	°C	± 0.01 °C
Description	Larson Davis 1/2" Preamplifier for LxT Class 2 -15 dB	***Humidity***	49.6	%RH	± 0.5 %RH
		Static Pressure	86.47	kPa	± 0.03 kPa

Evaluation Method Tested electrically using an 18.0 pF capacitor to simulate microphone capacitance. Data reported in dB re 20 µPa assuming a microphone sensitivity of 50.0 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2008.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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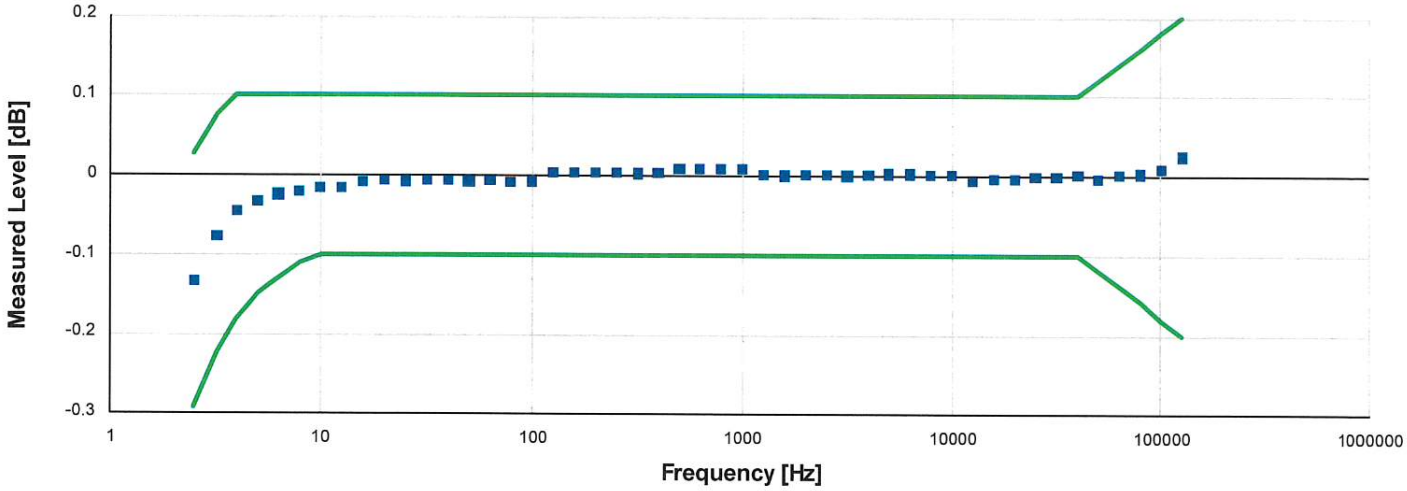
Standards Used

Description	Cal Date	Cal Due	Cal Standard
Larson Davis Model 2900 Real Time Analyzer	03/07/2018	03/07/2019	003003
Hart Scientific 2626-H Temperature Probe	02/02/2018	02/02/2019	006767
Agilent 34401A DMM	06/29/2018	06/29/2019	007165
SRS DS360 Ultra Low Distortion Generator	10/05/2017	10/05/2018	007167

Frequency Response



Frequency response electrically tested at 120.0 dB re 1 µV

Frequency [Hz]	Test Result [dB re 1 kHz]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
2.50	-0.13	-0.29	0.03	0.09	Pass
3.20	-0.08	-0.22	0.08	0.09	Pass
4.00	-0.05	-0.18	0.10	0.09	Pass
5.00	-0.03	-0.15	0.10	0.09	Pass
6.30	-0.02	-0.13	0.10	0.09	Pass
7.90	-0.02	-0.11	0.10	0.09	Pass
10.00	-0.02	-0.10	0.10	0.09	Pass
12.60	-0.01	-0.10	0.10	0.09	Pass
15.80	-0.01	-0.10	0.10	0.09	Pass
20.00	0.00	-0.10	0.10	0.09	Pass
25.10	-0.01	-0.10	0.10	0.09	Pass
31.60	-0.01	-0.10	0.10	0.09	Pass
39.80	-0.01	-0.10	0.10	0.09	Pass
50.10	-0.01	-0.10	0.10	0.09	Pass
63.10	0.00	-0.10	0.10	0.09	Pass
79.40	-0.01	-0.10	0.10	0.09	Pass
100.00	-0.01	-0.10	0.10	0.09	Pass
125.90	0.00	-0.10	0.10	0.09	Pass
158.50	0.00	-0.10	0.10	0.09	Pass
199.50	0.00	-0.10	0.10	0.09	Pass
251.20	0.00	-0.10	0.10	0.09	Pass
316.20	0.00	-0.10	0.10	0.09	Pass
398.10	0.00	-0.10	0.10	0.09	Pass
501.20	0.01	-0.10	0.10	0.09	Pass
631.00	0.01	-0.10	0.10	0.09	Pass
794.30	0.01	-0.10	0.10	0.09	Pass
1,000.00	0.01	-0.10	0.10	0.09	Pass
1,258.90	0.00	-0.10	0.10	0.09	Pass
1,584.90	0.00	-0.10	0.10	0.09	Pass
1,995.30	0.00	-0.10	0.10	0.09	Pass
2,511.90	0.00	-0.10	0.10	0.09	Pass
3,162.30	0.00	-0.10	0.10	0.09	Pass

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Provo, UT 84601, United States
716-684-0001

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Frequency [Hz]	Test Result [dB re 1 kHz]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
3,981.10	0.00	-0.10	0.10	0.09	Pass
5,011.90	0.00	-0.10	0.10	0.09	Pass
6,309.60	0.00	-0.10	0.10	0.09	Pass
7,943.30	0.00	-0.10	0.10	0.09	Pass
10,000.00	0.00	-0.10	0.10	0.09	Pass
12,589.30	0.00	-0.10	0.10	0.09	Pass
15,848.90	0.00	-0.10	0.10	0.09	Pass
19,952.60	0.00	-0.10	0.10	0.09	Pass
25,118.90	0.00	-0.10	0.10	0.09	Pass
31,622.80	0.00	-0.10	0.10	0.09	Pass
39,810.70	0.00	-0.10	0.10	0.09	Pass
50,118.70	0.00	-0.12	0.12	0.09	Pass
63,095.70	0.00	-0.14	0.14	0.09	Pass
79,432.80	0.00	-0.16	0.16	0.09	Pass
100,000.00	0.01	-0.18	0.18	0.09	Pass
125,892.50	0.03	-0.20	0.20	0.11	Pass

Gain Measurement

Measurement	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
Output Gain @ 1 kHz	-14.21	-15.40	-13.80	0.15	Pass

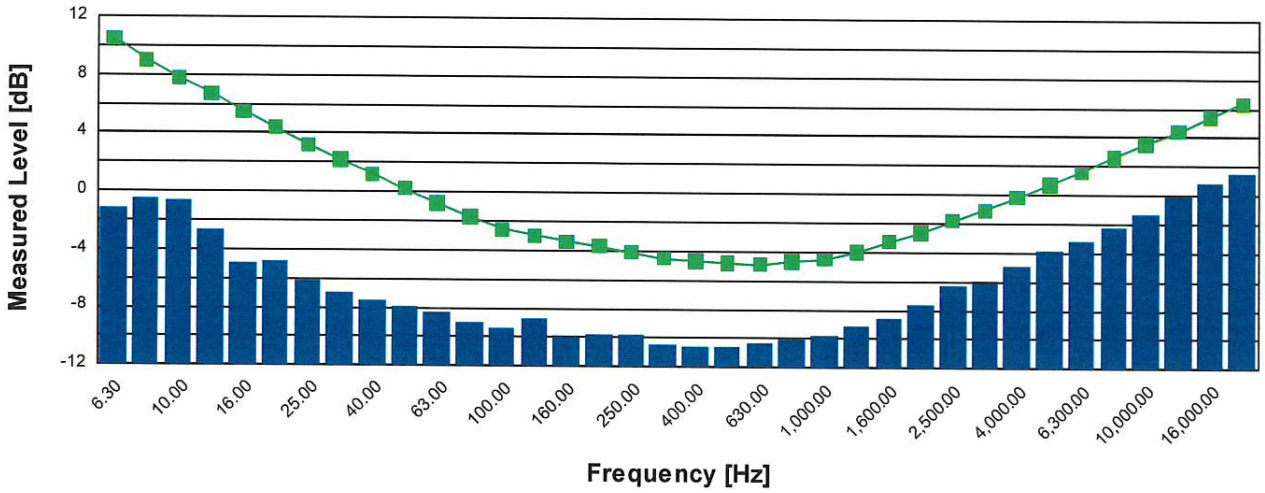
-- End of measurement results--

DC Bias Measurement

Measurement	Test Result [V]	Lower limit [V]	Upper limit [V]	Expanded Uncertainty [V]	Result
DC Voltage	3.54	2.90	3.80	0.02	Pass

-- End of measurement results--

1/3-Octave Self-Generated Noise



Frequency [Hz]	Test Result [dB re 1 µV]	Upper limit [dB re 1 µV]	Result
6.30	-1.18	10.50	Pass
8.00	-0.48	9.00	Pass
10.00	-0.68	7.80	Pass
12.50	-2.68	6.70	Pass
16.00	-4.98	5.50	Pass
20.00	-4.88	4.40	Pass
25.00	-6.18	3.20	Pass
31.50	-6.98	2.20	Pass
40.00	-7.58	1.20	Pass
50.00	-7.98	0.20	Pass
63.00	-8.28	-0.80	Pass
80.00	-8.98	-1.70	Pass
100.00	-9.38	-2.60	Pass
125.00	-8.78	-3.00	Pass
160.00	-9.98	-3.40	Pass
200.00	-9.78	-3.70	Pass
250.00	-9.78	-4.10	Pass
315.00	-10.48	-4.50	Pass
400.00	-10.58	-4.70	Pass
500.00	-10.68	-4.80	Pass
630.00	-10.38	-4.90	Pass
800.00	-10.08	-4.70	Pass
1,000.00	-9.78	-4.50	Pass
1,250.00	-9.18	-4.00	Pass
1,600.00	-8.58	-3.30	Pass
2,000.00	-7.68	-2.70	Pass
2,500.00	-6.28	-1.80	Pass
3,150.00	-5.98	-1.10	Pass
4,000.00	-4.98	-0.20	Pass
5,000.00	-3.88	0.70	Pass
6,300.00	-3.18	1.60	Pass
8,000.00	-2.28	2.60	Pass
10,000.00	-1.28	3.50	Pass
12,500.00	-0.18	4.40	Pass
16,000.00	0.82	5.40	Pass
20,000.00	1.52	6.30	Pass

-- End of measurement results--

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Self-generated Noise

Bandwidth	Test Result [µV]	Test Result [dB re 1 µV]	Upper limit [dB re 1 µV]	Result
A-weighted (1 Hz - 20 kHz)	2.12	6.52	9.50	Pass
Broadband (1 Hz - 20 kHz)	3.03	9.62	13.50	Pass

-- End of measurement results--

Signatory: *Ron Harris*

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Calibration Certificate

Certificate Number 2018007874

Customer:

Equity Environmental Eng
500 International Drive
Mount Olive, NJ 07828, United States

Model Number	LxT2
Serial Number	0002230
Test Results	**Pass**
Initial Condition	AS RECEIVED same as shipped
Description	SoundTrack LxT Class 2 Class 2 Sound Level Meter Firmware Revision: 2.302

Procedure Number	D0001.8384		
Technician	Ron Harris		
Calibration Date	3 Aug 2018		
Calibration Due	3 Aug 2019		
Temperature	23.55	°C	± 0.25 °C
Humidity	48.1	%RH	± 2.0 %RH
Static Pressure	86.44	kPa	± 0.13 kPa

Evaluation Method

Tested with:

Larson Davis PRMLxT2. S/N 013562
PCB 375A02. S/N 010193
Larson Davis CAL200. S/N 9079
Larson Davis CAL291. S/N 0108

Data reported in dB re 20 µPa.

Compliance Standards

Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8378:

IEC 60651:2001 Type 2	ANSI S1.4-2014 Class 2
IEC 60804:2000 Type 2	ANSI S1.4 (R2006) Type 2
IEC 61252:2002	ANSI S1.11 (R2009) Class 2
IEC 61260:2001 Class 2	ANSI S1.25 (R2007)
IEC 61672:2013 Class 2	ANSI S1.43 (R2007) Type 2

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2008.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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Correction data from Larson Davis LxT Manual for SoundTrack LxT & SoundExpert Lxt, I770.01 Rev J Supporting Firmware Version 2.301, 2015-04-30

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For 1/4" microphones, the Larson Davis ADP024 1/4" to 1/2" adaptor is used with the calibrators and the Larson Davis ADP043 1/4" to 1/2" adaptor is used with the preamplifier.

Calibration Check Frequency: 1000 Hz; Reference Sound Pressure Level: 114 dB re 20 µPa

Periodic tests were performed in accordance with precedures from IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part3.

No Pattern approval for IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 available.

The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part 3, for the environmental conditions under which the tests were performed. However, no general statement or conclusion can be made about conformance of the sound level meter to the full specifications of IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 because (a) evidence was not publicly available, from an independent testing organization responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the class 2 specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 or correction data for acoustical test of frequency weighting were not provided in the Instruction Manual and (b) because the periodic tests of IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part 3 cover only a limited subset of the specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Larson Davis CAL291 Residual Intensity Calibrator	2017-09-19	2018-09-19	001250
SRS DS360 Ultra Low Distortion Generator	2018-06-21	2019-06-21	006311
Hart Scientific 2626-H Temperature Probe	2018-02-02	2019-02-02	006767
Larson Davis CAL200 Acoustic Calibrator	2018-07-24	2019-07-24	007027
Larson Davis Model 831	2018-02-28	2019-02-28	007182
PCB 377A13 1/2 inch Prepolarized Pressure Microphone	2018-03-07	2019-03-07	007185

Acoustic Calibration

Measured according to IEC 61672-3:2013 10 and ANSI S1.4-2014 Part 3: 10

Measurement	Test Result [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
1000 Hz	114.00	113.80	114.20	0.14	Pass

As Received Level: 116.03
Adjusted Level: 114.00

-- End of measurement results--

Acoustic Signal Tests, C-weighting

Measured according to IEC 61672-3:2013 12 and ANSI S1.4-2014 Part 3: 12 using a comparison coupler with Unit Under Test (UUT) and reference SLM using slow time-weighted sound level for compliance to IEC 61672-1:2013 5.5; ANSI S1.4-2014 Part 1: 5.5

Frequency [Hz]	Test Result [dB]	Expected [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
125	-0.67	-0.20	-1.70	1.30	0.23	Pass
1000	0.21	0.00	-1.00	1.00	0.23	Pass
8000	-5.74	-3.00	-8.00	2.00	0.32	Pass

-- End of measurement results--

Self-generated Noise

Measured according to IEC 61672-3:2013 11.1 and ANSI S1.4-2014 Part 3: 11.1

Measurement	Test Result [dB]
A-weighted	39.99

-- End of measurement results--

-- End of Report--

Signatory: *Ron Harris*

Larson Davis, a division of PCB Piezotronics, Inc
1681 West 820 North
Provo, UT 84601, United States
716-684-0001

ACCREDITED Cert. #3622.01

LARSON DAVIS
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Calibration Certificate

Certificate Number 2018007860

Customer:
Equity Environmental Eng
500 International Drive
Mount Olive, NJ 07828, United States

Model Number	CAL200	***Procedure Number***	D0001.8386		
Serial Number	6755	***Technician***	Scott Montgomery		
Test Results	**Pass**	***Calibration Date***	3 Aug 2018		
Initial Condition	Adjusted	***Calibration Due***	3 Aug 2019		
		Temperature	24	°C	± 0.3 °C
Description	Larson Davis CAL200 Acoustic Calibrator	***Humidity***	40	%RH	± 3 %RH
		Static Pressure	101.3	kPa	± 1 kPa

Evaluation Method The data is aquired by the insert voltage calibration method using the reference microphone's open circuit sensitivity. Data reported in dB re 20 µPa.

Compliance Standards Compliant to Manufacturer Specifications per D0001.8190 and the following standards:
IEC 60942:2017 ANSI S1.40-2006

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2008.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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Standards Used

Description	Cal Date	Cal Due	Cal Standard
Agilent 34401A DMM	09/06/2017	09/06/2018	001021
Larson Davis Model 2900 Real Time Analyzer	04/10/2018	04/10/2019	001051
Microphone Calibration System	03/07/2018	03/07/2019	005446
1/2" Preamplifier	10/05/2017	10/05/2018	006506
Larson Davis 1/2" Preamplifier 7-pin LEMO	08/08/2017	08/08/2018	006507
1/2 inch Microphone - RI - 200V	10/23/2017	10/23/2018	006511
Pressure Transducer	10/20/2017	10/20/2018	007204

Output Level

Nominal Level [dB]	Pressure [kPa]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
114	101.3	114.02	113.80	114.20	0.14	Pass
94	101.3	94.01	93.80	94.20	0.14	Pass

-- End of measurement results--

Frequency

Nominal Level [dB]	Pressure [kPa]	Test Result [Hz]	Lower limit [Hz]	Upper limit [Hz]	Expanded Uncertainty [Hz]	Result
114	101.3	1,000.14	990.00	1,010.00	0.20	Pass
94	101.3	1,000.16	990.00	1,010.00	0.20	Pass

-- End of measurement results--

Total Harmonic Distortion + Noise (THD+N)

Nominal Level [dB]	Pressure [kPa]	Test Result [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
114	101.3	0.39	0.00	2.00	0.25	Pass
94	101.3	0.42	0.00	2.00	0.25	Pass

-- End of measurement results--

Level Change Over Pressure

Tested at: 114 dB, 23 °C, 41 %RH

Nominal Pressure [kPa]	Pressure [kPa]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
108.0	108.1	-0.02	-0.30	0.30	0.04 ‡	Pass
101.3	101.5	0.00	-0.30	0.30	0.04 ‡	Pass
92.0	92.0	0.02	-0.30	0.30	0.04 ‡	Pass
83.0	83.1	0.01	-0.30	0.30	0.04 ‡	Pass
74.0	74.2	-0.02	-0.30	0.30	0.04 ‡	Pass
65.0	65.0	-0.09	-0.30	0.30	0.04 ‡	Pass

-- End of measurement results--

Frequency Change Over Pressure

Tested at: 114 dB, 23 °C, 41 %RH

Nominal Pressure [kPa]	Pressure [kPa]	Test Result [Hz]	Lower limit [Hz]	Upper limit [Hz]	Expanded Uncertainty [Hz]	Result
108.0	108.1	0.00	-10.00	10.00	0.20 ‡	Pass
101.3	101.5	0.00	-10.00	10.00	0.20 ‡	Pass
92.0	92.0	0.00	-10.00	10.00	0.20 ‡	Pass
83.0	83.1	0.00	-10.00	10.00	0.20 ‡	Pass
74.0	74.2	0.00	-10.00	10.00	0.20 ‡	Pass
65.0	65.0	-0.01	-10.00	10.00	0.20 ‡	Pass

-- End of measurement results--

Certificate Number 2018007860

Total Harmonic Distortion + Noise (THD+N) Over Pressure

Tested at: 114 dB, 23 °C, 41 %RH

Nominal Pressure [kPa]	Pressure [kPa]	Test Result [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
108.0	108.1	0.39	0.00	2.00	0.25 ‡	Pass
101.3	101.5	0.39	0.00	2.00	0.25 ‡	Pass
92.0	92.0	0.40	0.00	2.00	0.25 ‡	Pass
83.0	83.1	0.42	0.00	2.00	0.25 ‡	Pass
74.0	74.2	0.45	0.00	2.00	0.25 ‡	Pass
65.0	65.0	0.48	0.00	2.00	0.25 ‡	Pass

-- End of measurement results--

Signatory: Scott Montgomery

Larson Davis, a division of PCB Piezotronics, Inc
1681 West 820 North
Provo, UT 84601, United States
716-684-0001

ACCREDITED Cert. #3622.01

LARSON DAVIS
A PCB PIEZOTRONICS DIV.

Initial Assessment

Certificate Number 2018007859

Customer:
Equity Environmental Eng
500 International Drive
Mount Olive, NJ 07828, United States

Model Number	CAL200	***Procedure Number***	D0001.8386		
Serial Number	6755	***Technician***	Scott Montgomery		
Test Results	**Pass**	***Calibration Date***	3 Aug 2018		
Initial Condition	As Received	***Calibration Due***	3 Aug 2019		
Description	Larson Davis CAL200 Acoustic Calibrator	***Temperature***	23	°C	± 0.3 °C
		Humidity	36	%RH	± 3 %RH
		Static Pressure	101.2	kPa	± 1 kPa

Evaluation Method The data is aquired by the insert voltage calibration method using the reference microphone's open circuit sensitivity. Data reported in dB re 20 µPa.

Compliance Standards Compliant to Manufacturer Specifications per D0001.8190 and the following standards:
IEC 60942:2017 ANSI S1.40-2006

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2008.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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Standards Used

Description	Cal Date	Cal Due	Cal Standard
Agilent 34401A DMM	09/06/2017	09/06/2018	001021
Larson Davis Model 2900 Real Time Analyzer	04/10/2018	04/10/2019	001051
Microphone Calibration System	03/07/2018	03/07/2019	005446
1/2" Preamplifier	10/05/2017	10/05/2018	006506
Larson Davis 1/2" Preamplifier 7-pin LEMO	08/08/2017	08/08/2018	006507
1/2 inch Microphone - RI - 200V	10/23/2017	10/23/2018	006511
Pressure Transducer	10/20/2017	10/20/2018	007204

Output Level

Nominal Level [dB]	Pressure [kPa]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
114	101.1	113.95	113.80	114.20	0.14	Pass
94	101.2	93.95	93.80	94.20	0.14	Pass

-- End of measurement results--

Frequency

Nominal Level [dB]	Pressure [kPa]	Test Result [Hz]	Lower limit [Hz]	Upper limit [Hz]	Expanded Uncertainty [Hz]	Result
114	101.1	1,000.15	990.00	1,010.00	0.20	Pass
94	101.2	1,000.17	990.00	1,010.00	0.20	Pass

-- End of measurement results--

Total Harmonic Distortion + Noise (THD+N)

Nominal Level [dB]	Pressure [kPa]	Test Result [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
114	101.1	0.39	0.00	2.00	0.25	Pass
94	101.2	0.43	0.00	2.00	0.25	Pass

-- End of measurement results--

Level Change Over Pressure

Tested at: 114 dB, 23 °C, 41 %RH

Nominal Pressure [kPa]	Pressure [kPa]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
108.0	108.1	-0.02	-0.30	0.30	0.04 ‡	Pass
101.3	101.5	0.00	-0.30	0.30	0.04 ‡	Pass
92.0	92.0	0.02	-0.30	0.30	0.04 ‡	Pass
83.0	83.1	0.01	-0.30	0.30	0.04 ‡	Pass
74.0	74.2	-0.02	-0.30	0.30	0.04 ‡	Pass
65.0	65.0	-0.09	-0.30	0.30	0.04 ‡	Pass

-- End of measurement results--

Frequency Change Over Pressure

Tested at: 114 dB, 23 °C, 41 %RH

Nominal Pressure [kPa]	Pressure [kPa]	Test Result [Hz]	Lower limit [Hz]	Upper limit [Hz]	Expanded Uncertainty [Hz]	Result
108.0	108.1	0.00	-10.00	10.00	0.20 ‡	Pass
101.3	101.5	0.00	-10.00	10.00	0.20 ‡	Pass
92.0	92.0	0.00	-10.00	10.00	0.20 ‡	Pass
83.0	83.1	0.00	-10.00	10.00	0.20 ‡	Pass
74.0	74.2	0.00	-10.00	10.00	0.20 ‡	Pass
65.0	65.0	-0.01	-10.00	10.00	0.20 ‡	Pass

-- End of measurement results--

Certificate Number 2018007859

Total Harmonic Distortion + Noise (THD+N) Over Pressure

Tested at: 114 dB, 23 °C, 41 %RH

Nominal Pressure [kPa]	Pressure [kPa]	Test Result [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
108.0	108.1	0.39	0.00	2.00	0.25 ‡	Pass
101.3	101.5	0.39	0.00	2.00	0.25 ‡	Pass
92.0	92.0	0.40	0.00	2.00	0.25 ‡	Pass
83.0	83.1	0.42	0.00	2.00	0.25 ‡	Pass
74.0	74.2	0.45	0.00	2.00	0.25 ‡	Pass
65.0	65.0	0.48	0.00	2.00	0.25 ‡	Pass

-- End of measurement results--

Signatory: *Scott Montgomery*

Larson Davis, a division of PCB Piezotronics, Inc
1681 West 820 North
Provo, UT 84601, United States
716-684-0001

ilac-MRA A2LA ACCREDITED Cert. #3522.01

LARSON DAVIS
A PCB PIEZOTRONICS DIV.

Calibration Certificate

Certificate Number 2018007856
Customer:
Equity Environmental Eng
500 International Drive
Mount Olive, NJ 07828, United States

Model Number	LxT2
Serial Number	0002230
Test Results	**Pass**
Initial Condition	AS RECEIVED same as shipped
Description	SoundTrack LxT Class 2 Class 2 Sound Level Meter Firmware Revision: 2.302

Procedure Number	D0001.8378		
Technician	Ron Harris		
Calibration Date	3 Aug 2018		
Calibration Due	3 Aug 2019		
Temperature	23.75	°C	± 0.25 °C
Humidity	51	%RH	± 2.0 %RH
Static Pressure	86.45	kPa	± 0.13 kPa

Evaluation Method Tested electrically using Larson Davis PRMLxT2 S/N 013562 and an 18.0 pF capacitor to simulate microphone capacitance. Data reported in dB re 20 µPa assuming a microphone sensitivity of 23.6 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8384:

IEC 60651:2001 Type 2	ANSI S1.4-2014 Class 2
IEC 60804:2000 Type 2	ANSI S1.4 (R2006) Type 2
IEC 61252:2002	ANSI S1.11 (R2009) Class 2
IEC 61260:2001 Class 2	ANSI S1.25 (R2007)
IEC 61672:2013 Class 2	ANSI S1.43 (R2007) Type 2

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005. **Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.**

The quality system is registered to ISO 9001:2008.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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Correction data from Larson Davis LxT Manual for SoundTrack LxT & SoundExpert Lxt, I770.01 Rev J Supporting Firmware Version 2.301, 2015-04-30

Calibration Check Frequency: 1000 Hz; Reference Sound Pressure Level: 114 dB re 20 µPa

Periodic tests were performed in accordance with precedures from IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part3.

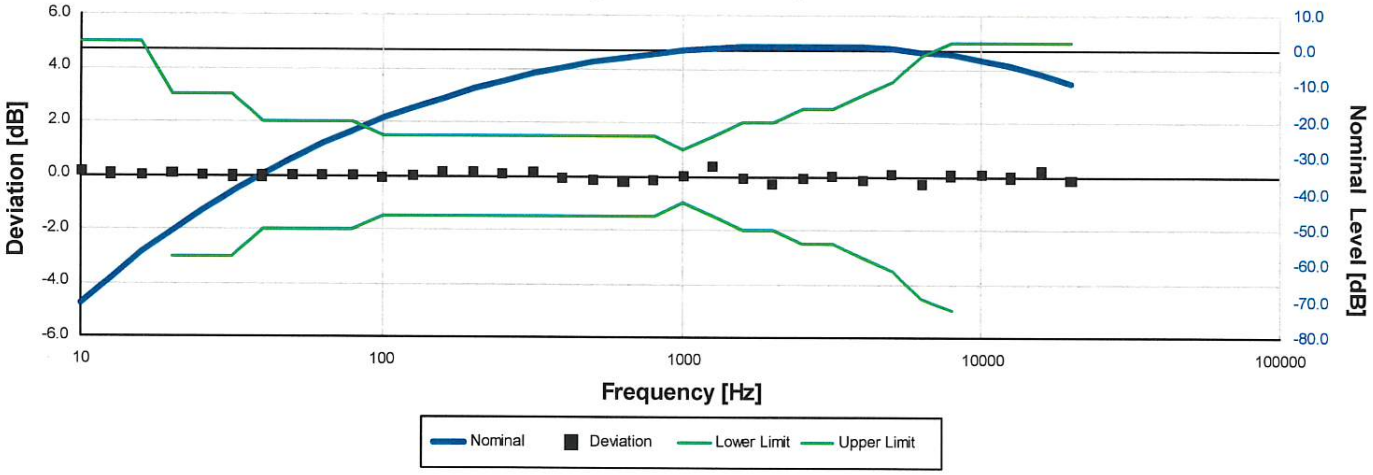
No Pattern approval for IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 available.

The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part 3, for the environmental conditions under which the tests were performed. However, no general statement or conclusion can be made about conformance of the sound level meter to the full specifications of IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 because (a) evidence was not publicly available, from an independent testing organization responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the class 2 specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 or correction data for acoustical test of frequency weighting were not provided in the Instruction Manual and (b) because the periodic tests of IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part 3 cover only a limited subset of the specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Hart Scientific 2626-H Temperature Probe	2018-02-02	2019-02-02	006767
SRS DS360 Ultra Low Distortion Generator	2018-06-28	2019-06-28	007118

A-weight Filter Response

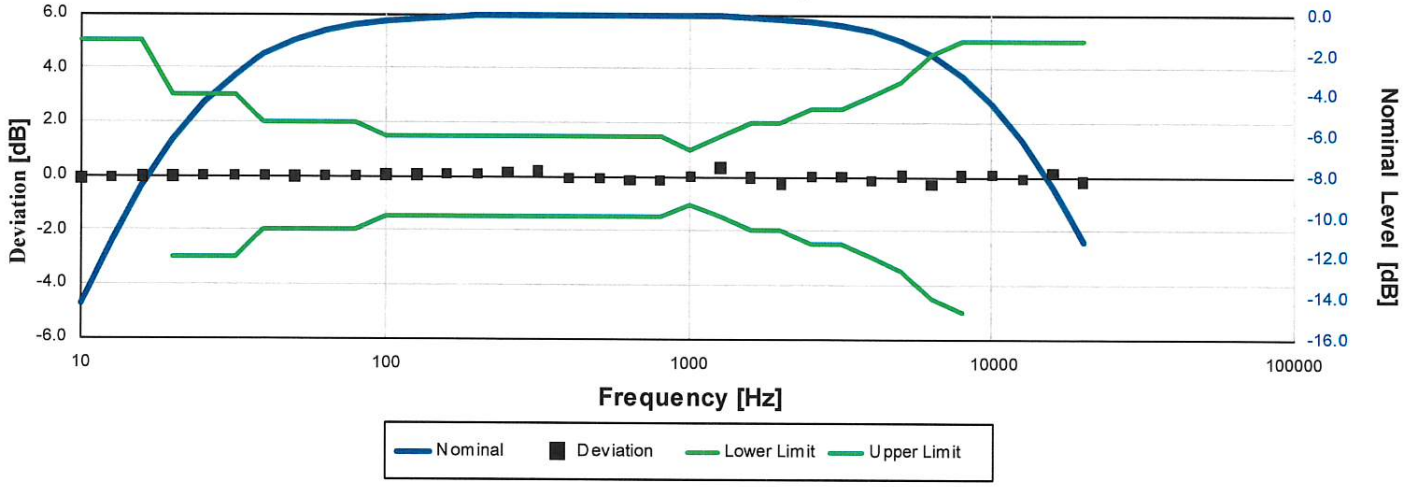


Electrical signal test of frequency weighting performed according to IEC 61672-3:2013 13 and ANSI S1.4-2014 Part 3: 13 for compliance to IEC 61672-1:2013 5.5; IEC 60651:2001 6.1 and 9.2.2; IEC 60804:2000 5; ANSI S1.4:1983 (R2006) 5.1 and 8.2.1; ANSI S1.4-2014 Part 1: 5.5

Frequency [Hz]	Test Result [dB]	Deviation [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
10.00	-70.27	0.13	-inf	5.00	0.22	Pass
12.59	-63.35	0.05	-inf	5.00	0.22	Pass
15.85	-56.68	0.02	-inf	5.00	0.22	Pass
19.95	-50.43	0.07	-3.00	3.00	0.22	Pass
25.12	-44.70	0.00	-3.00	3.00	0.22	Pass
31.62	-39.43	-0.03	-3.00	3.00	0.22	Pass
39.81	-34.63	-0.03	-2.00	2.00	0.22	Pass
50.12	-30.20	0.00	-2.00	2.00	0.22	Pass
63.10	-26.17	0.03	-2.00	2.00	0.22	Pass
79.43	-22.46	0.04	-2.00	2.00	0.22	Pass
100.00	-19.14	-0.04	-1.50	1.50	0.22	Pass
125.89	-16.08	0.02	-1.50	1.50	0.22	Pass
158.49	-13.27	0.13	-1.50	1.50	0.22	Pass
199.53	-10.76	0.14	-1.50	1.50	0.22	Pass
251.19	-8.49	0.11	-1.50	1.50	0.22	Pass
316.23	-6.43	0.17	-1.50	1.50	0.22	Pass
398.11	-4.88	-0.08	-1.50	1.50	0.22	Pass
501.19	-3.31	-0.11	-1.50	1.50	0.22	Pass
630.96	-2.08	-0.18	-1.50	1.50	0.22	Pass
794.33	-0.96	-0.16	-1.50	1.50	0.22	Pass
1,000.00	0.00	0.00	-1.00	1.00	0.22	Pass
1,258.93	0.95	0.35	-1.50	1.50	0.22	Pass
1,584.89	0.94	-0.06	-2.00	2.00	0.22	Pass
1,995.26	0.92	-0.28	-2.00	2.00	0.22	Pass
2,511.89	1.25	-0.05	-2.50	2.50	0.22	Pass
3,162.28	1.23	0.03	-2.50	2.50	0.22	Pass
3,981.07	0.83	-0.17	-3.00	3.00	0.22	Pass
5,011.87	0.59	0.09	-3.50	3.50	0.22	Pass
6,309.57	-0.41	-0.31	-4.50	4.50	0.22	Pass
7,943.28	-1.06	0.04	-5.00	5.00	0.22	Pass
10,000.00	-2.42	0.08	-inf	5.00	0.22	Pass
12,589.25	-4.33	-0.03	-inf	5.00	0.22	Pass
15,848.93	-6.41	0.19	-inf	5.00	0.22	Pass
19,952.62	-9.44	-0.14	-inf	5.00	0.22	Pass

-- End of measurement results--

C-weight Filter Response

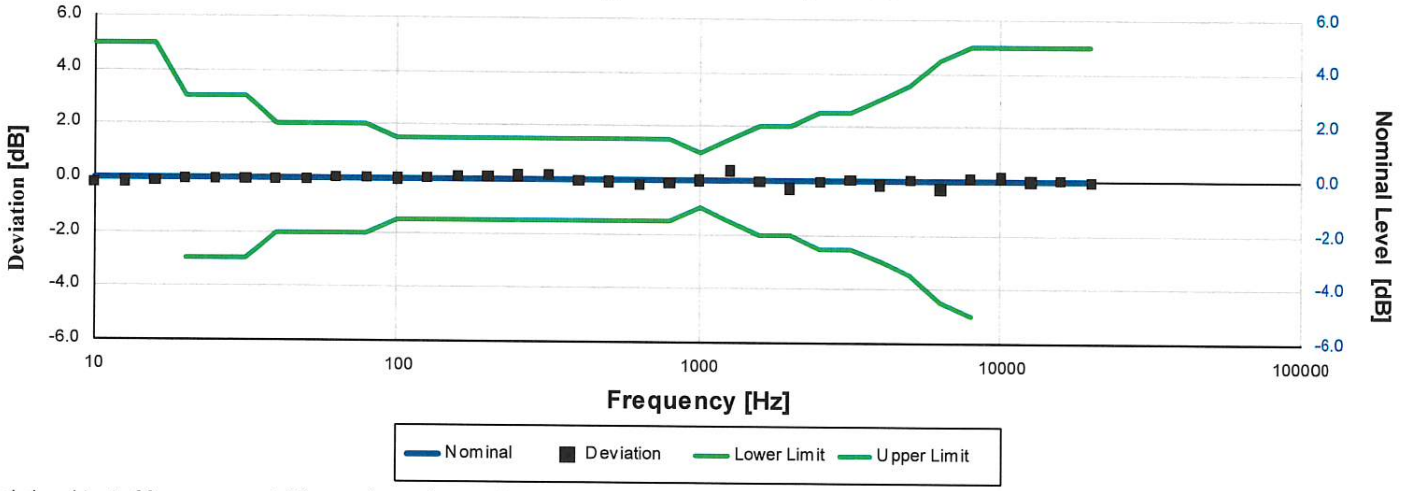


Electrical signal test of frequency weighting performed according to IEC 61672-3:2013 13 and ANSI S1.4-2014 Part 3: 13 for compliance to IEC 61672-1:2013 5.5; IEC 60651:2001 6.1 and 9.2.2; IEC 60804:2000 5; ANSI S1.4:1983 (R2006) 5.1 and 8.2.1; ANSI S1.4-2014 Part 1: 5.5

Frequency [Hz]	Test Result [dB]	Deviation [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
10.00	-14.39	-0.09	-inf	5.00	0.22	Pass
12.59	-11.27	-0.07	-inf	5.00	0.22	Pass
15.85	-8.53	-0.03	-inf	5.00	0.22	Pass
19.95	-6.22	-0.02	-3.00	3.00	0.22	Pass
25.12	-4.40	0.00	-3.00	3.00	0.22	Pass
31.62	-3.01	-0.01	-3.00	3.00	0.22	Pass
39.81	-1.99	0.01	-2.00	2.00	0.22	Pass
50.12	-1.33	-0.03	-2.00	2.00	0.22	Pass
63.10	-0.80	0.00	-2.00	2.00	0.22	Pass
79.43	-0.46	0.04	-2.00	2.00	0.22	Pass
100.00	-0.25	0.05	-1.50	1.50	0.22	Pass
125.89	-0.15	0.05	-1.50	1.50	0.22	Pass
158.49	0.00	0.10	-1.50	1.50	0.22	Pass
199.53	0.09	0.09	-1.50	1.50	0.22	Pass
251.19	0.13	0.13	-1.50	1.50	0.22	Pass
316.23	0.20	0.20	-1.50	1.50	0.22	Pass
398.11	-0.04	-0.05	-1.50	1.50	0.22	Pass
501.19	-0.04	-0.04	-1.50	1.50	0.22	Pass
630.96	-0.15	-0.15	-1.50	1.50	0.22	Pass
794.33	-0.11	-0.11	-1.50	1.50	0.22	Pass
1,000.00	0.00	0.00	-1.00	1.00	0.22	Pass
1,258.93	0.33	0.33	-1.50	1.50	0.22	Pass
1,584.89	-0.12	-0.02	-2.00	2.00	0.22	Pass
1,995.26	-0.45	-0.25	-2.00	2.00	0.22	Pass
2,511.89	-0.31	-0.01	-2.50	2.50	0.22	Pass
3,162.28	-0.47	0.03	-2.50	2.50	0.22	Pass
3,981.07	-0.95	-0.15	-3.00	3.00	0.22	Pass
5,011.87	-1.24	0.06	-3.50	3.50	0.22	Pass
6,309.57	-2.28	-0.28	-4.50	4.50	0.22	Pass
7,943.28	-2.95	0.05	-5.00	5.00	0.22	Pass
10,000.00	-4.33	0.07	-inf	5.00	0.22	Pass
12,589.25	-6.24	-0.04	-inf	5.00	0.22	Pass
15,848.93	-8.34	0.16	-inf	5.00	0.22	Pass
19,952.62	-11.37	-0.17	-inf	5.00	0.22	Pass

-- End of measurement results--

Z-weight Filter Response



Electrical signal test of frequency weighting performed according to IEC 61672-3:2013 13 and ANSI S1.4-2014 Part 3: 13 for compliance to IEC 61672-1:2013 5.5; IEC 60651:2001 6.1 and 9.2.2; IEC 60804:2000 5; ANSI S1.4:1983 (R2006) 5.1 and 8.2.1; ANSI S1.4-2014 Part 1: 5.5

Frequency [Hz]	Test Result [dB]	Deviation [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
10.00	-0.18	-0.18	-inf	5.00	0.22	Pass
12.59	-0.16	-0.16	-inf	5.00	0.22	Pass
15.85	-0.09	-0.09	-inf	5.00	0.22	Pass
19.95	-0.06	-0.06	-3.00	3.00	0.22	Pass
25.12	-0.06	-0.06	-3.00	3.00	0.22	Pass
31.62	-0.05	-0.05	-3.00	3.00	0.22	Pass
39.81	-0.03	-0.03	-2.00	2.00	0.22	Pass
50.12	-0.04	-0.04	-2.00	2.00	0.22	Pass
63.10	0.01	0.01	-2.00	2.00	0.22	Pass
79.43	0.03	0.03	-2.00	2.00	0.22	Pass
100.00	0.00	0.00	-1.50	1.50	0.22	Pass
125.89	0.01	0.01	-1.50	1.50	0.22	Pass
158.49	0.08	0.08	-1.50	1.50	0.22	Pass
199.53	0.11	0.11	-1.50	1.50	0.22	Pass
251.19	0.14	0.14	-1.50	1.50	0.22	Pass
316.23	0.18	0.18	-1.50	1.50	0.22	Pass
398.11	-0.07	-0.07	-1.50	1.50	0.22	Pass
501.19	-0.08	-0.08	-1.50	1.50	0.22	Pass
630.96	-0.18	-0.18	-1.50	1.50	0.22	Pass
794.33	-0.13	-0.13	-1.50	1.50	0.22	Pass
1,000.00	0.00	0.00	-1.00	1.00	0.22	Pass
1,258.93	0.36	0.36	-1.50	1.50	0.22	Pass
1,584.89	-0.04	-0.04	-2.00	2.00	0.22	Pass
1,995.26	-0.29	-0.29	-2.00	2.00	0.22	Pass
2,511.89	-0.03	-0.03	-2.50	2.50	0.22	Pass
3,162.28	0.02	0.02	-2.50	2.50	0.22	Pass
3,981.07	-0.15	-0.15	-3.00	3.00	0.22	Pass
5,011.87	0.03	0.03	-3.50	3.50	0.22	Pass
6,309.57	-0.29	-0.29	-4.50	4.50	0.22	Pass
7,943.28	0.08	0.08	-5.00	5.00	0.22	Pass
10,000.00	0.13	0.13	-inf	5.00	0.22	Pass
12,589.25	0.00	0.00	-inf	5.00	0.22	Pass
15,848.93	0.05	0.05	-inf	5.00	0.22	Pass
19,952.62	-0.04	-0.04	-inf	5.00	0.22	Pass

-- End of measurement results--

High Level Stability

Electrical signal test of high level stability performed according to IEC 61672-3:2013 21 and ANSI S1.4-2014 Part 3: 21 for compliance to IEC 61672-1:2013 5.15 and ANSI S1.4-2014 Part 1: 5.15

Measurement	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
High Level Stability	0.00	-0.30	0.30	0.01	Pass

-- End of measurement results--

Long-Term Stability

Electrical signal test of long term stability performed according to IEC 61672-3:2013 15 and ANSI S1.4-2014 Part 3: 15 for compliance to ISC 61672-1:2013 5.14 and ANSI S1.4-2014 Part 1: 5.14

Test Duration [min]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
36	0.00	-0.30	0.30	0.07	Pass

-- End of measurement results--

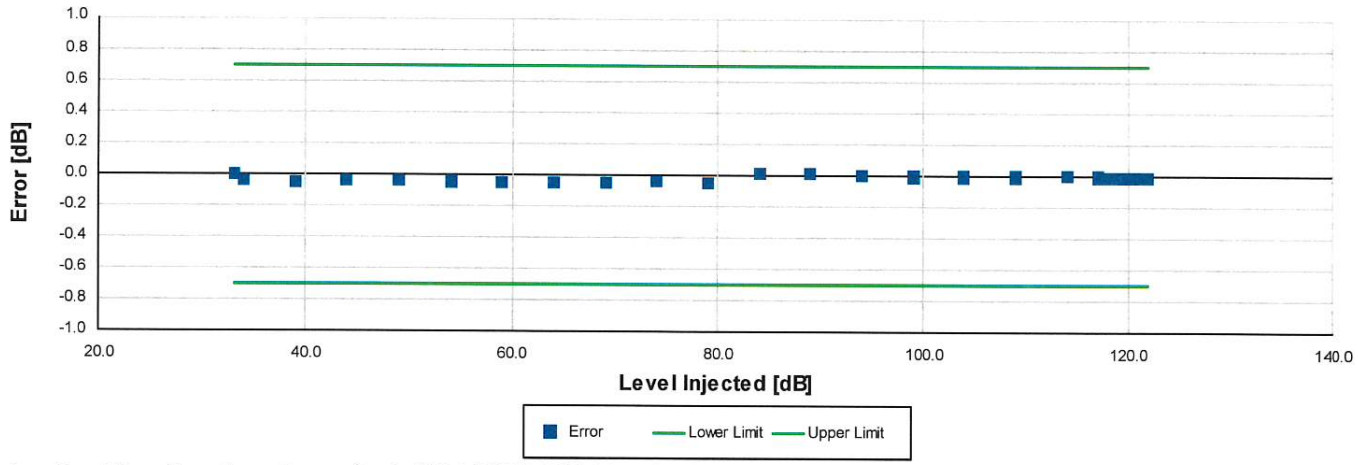
1 kHz Reference Levels

Frequency weightings and time weightings at 1 kHz (reference is A weighted Fast) performed according to IEC 61672-3:2013 14 and ANSI S1.4-2014 Part 3: 14 for compliance to IEC 61672-1:2013 5.5.9 and 5.8.3 and ANSI S1.4-2014 Part 1: 5.5.9 and 5.8.3

Measurement	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
C weight	105.80	105.60	106.00	0.09	Pass
Z weight	105.80	105.60	106.00	0.09	Pass
Slow	105.80	105.70	105.90	0.09	Pass
Impulse	105.80	105.70	105.90	0.09	Pass

-- End of measurement results--

A-weighted Broadband Log Linearity: 8,000.00 Hz

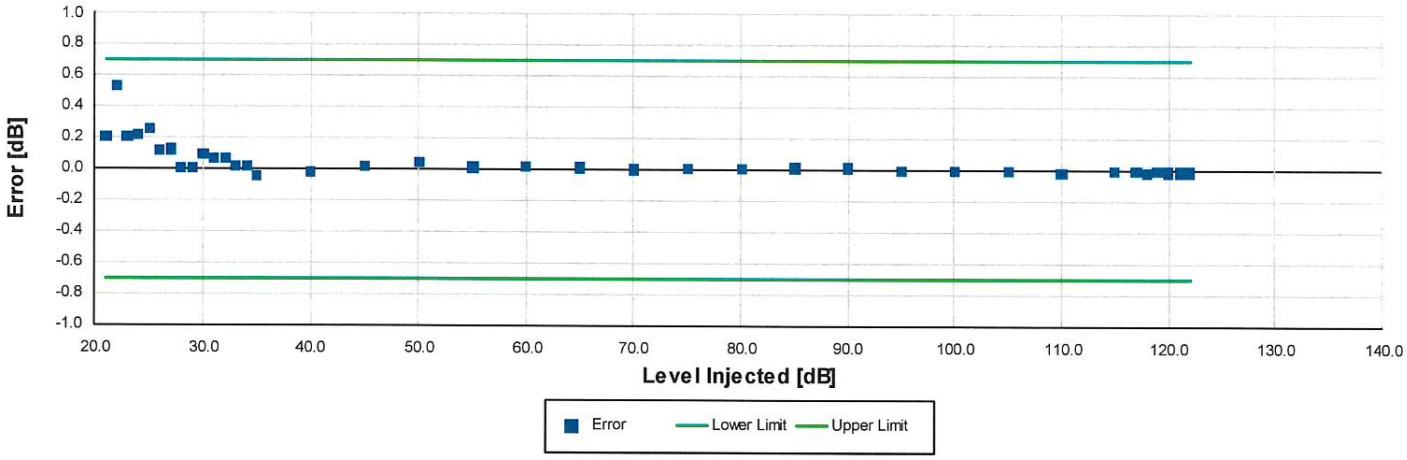


Broadband level linearity performed according to IEC 61672-3:2013 16 and ANSI S1.4-2014 Part 3: 16 for compliance to IEC 61672-1:2013 5.6, IEC 60804:2000 6.2, IEC 61252:2002 8, ANSI S1.4 (R2006) 6.9, ANSI S1.4-2014 Part 1: 5.6, ANSI S1.43 (R2007) 6.2

Level [dB]	Error [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
33.00	0.00	-0.70	0.70	0.09	Pass
34.00	-0.04	-0.70	0.70	0.09	Pass
39.00	-0.05	-0.70	0.70	0.09	Pass
44.00	-0.04	-0.70	0.70	0.09	Pass
49.00	-0.04	-0.70	0.70	0.09	Pass
54.00	-0.04	-0.70	0.70	0.09	Pass
59.00	-0.05	-0.70	0.70	0.09	Pass
64.00	-0.05	-0.70	0.70	0.09	Pass
69.00	-0.05	-0.70	0.70	0.09	Pass
74.00	-0.04	-0.70	0.70	0.09	Pass
79.00	-0.05	-0.70	0.70	0.09	Pass
84.00	0.01	-0.70	0.70	0.09	Pass
89.00	0.02	-0.70	0.70	0.09	Pass
94.00	0.00	-0.70	0.70	0.09	Pass
99.00	-0.01	-0.70	0.70	0.09	Pass
104.00	-0.01	-0.70	0.70	0.09	Pass
109.00	-0.01	-0.70	0.70	0.09	Pass
114.00	0.00	-0.70	0.70	0.09	Pass
117.00	-0.01	-0.70	0.70	0.09	Pass
118.00	-0.01	-0.70	0.70	0.09	Pass
119.00	-0.01	-0.70	0.70	0.09	Pass
120.00	-0.01	-0.70	0.70	0.09	Pass
121.00	-0.01	-0.70	0.70	0.09	Pass
122.00	-0.01	-0.70	0.70	0.09	Pass

-- End of measurement results--

1/1 Octave Log Linearity: 1,000.00 Hz



1/1 octave level linearity at normal range performed according to IEC 61260:2001 4.6, ANSI S.11 (R2009) 4.6

Level [dB]	Error [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
21.00	0.20	-0.70	0.70	0.09	Pass
22.00	0.53	-0.70	0.70	0.09	Pass
23.00	0.21	-0.70	0.70	0.09	Pass
24.00	0.22	-0.70	0.70	0.09	Pass
25.00	0.26	-0.70	0.70	0.09	Pass
26.00	0.12	-0.70	0.70	0.09	Pass
27.00	0.12	-0.70	0.70	0.09	Pass
28.00	0.00	-0.70	0.70	0.09	Pass
29.00	0.00	-0.70	0.70	0.10	Pass
30.00	0.10	-0.70	0.70	0.10	Pass
31.00	0.07	-0.70	0.70	0.09	Pass
32.00	0.07	-0.70	0.70	0.10	Pass
33.00	0.01	-0.70	0.70	0.09	Pass
34.00	0.02	-0.70	0.70	0.09	Pass
35.00	-0.04	-0.70	0.70	0.09	Pass
40.00	-0.01	-0.70	0.70	0.09	Pass
45.00	0.02	-0.70	0.70	0.09	Pass
50.00	0.05	-0.70	0.70	0.09	Pass
55.00	0.01	-0.70	0.70	0.09	Pass
60.00	0.02	-0.70	0.70	0.09	Pass
65.00	0.01	-0.70	0.70	0.09	Pass
70.00	0.00	-0.70	0.70	0.09	Pass
75.00	0.01	-0.70	0.70	0.09	Pass
80.00	0.01	-0.70	0.70	0.09	Pass
85.00	0.01	-0.70	0.70	0.09	Pass
90.00	0.01	-0.70	0.70	0.09	Pass
95.00	-0.01	-0.70	0.70	0.09	Pass
100.00	-0.01	-0.70	0.70	0.09	Pass
105.00	-0.01	-0.70	0.70	0.09	Pass
110.00	-0.02	-0.70	0.70	0.09	Pass
115.00	-0.01	-0.70	0.70	0.09	Pass
117.00	-0.01	-0.70	0.70	0.09	Pass
118.00	-0.02	-0.70	0.70	0.09	Pass
119.00	-0.01	-0.70	0.70	0.09	Pass
120.00	-0.01	-0.70	0.70	0.09	Pass
121.00	-0.01	-0.70	0.70	0.09	Pass

Level [dB]	Error [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
122.00	-0.01	-0.70	0.70	0.09	Pass

-- End of measurement results--

Slow Detector

Toneburst response performed according to IEC 61672-3:2013 18 and ANSI S1.4-2014 Part 3: 18 for compliance to IEC 61672-1:2013 5.9, IEC 60651:2001 9.4.2, ANSI S1.4:1983 (R2006) 8.4.2 and ANSI S1.4-2014 Part 1: 5.9

Amplitude [dB]	Duration [ms]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
136.00	200	-7.53	-8.42	-6.42	0.09	Pass
	2	-27.14	-31.99	-25.99	0.09	Pass

-- End of measurement results--

Fast Detector

Toneburst response performed according to IEC 61672-3:2013 18 and ANSI S1.4-2014 Part 3: 18 for compliance to IEC 61672-1:2013 5.9, IEC 60651:2001 9.4.2, ANSI S1.4:1983 (R2006) 8.4.2 and ANSI S1.4-2014 Part 1: 5.9

Amplitude [dB]	Duration [ms]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
136.00	200.00	-1.06	-1.98	0.02	0.23	Pass
	2.00	-18.44	-20.49	-16.99	0.09	Pass
	0.25	-27.22	-31.99	-25.49	0.09	Pass

-- End of measurement results--

Sound Exposure Level

Toneburst response performed according to IEC 61672-3:2013 18 and ANSI S1.4-2014 Part 3: 18 for compliance to IEC 61672-1:2013 5.9, IEC 60651:2001 9.4.2, ANSI S1.4:1983 (R2006) 8.4.2 and ANSI S1.4-2014 Part 1: 5.9

Amplitude [dB]	Duration [ms]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
136.00	200.00	-7.01	-7.99	-5.99	0.09	Pass
	2.00	-27.03	-29.49	-25.99	0.09	Pass
	0.25	-36.14	-41.02	-34.52	0.09	Pass

-- End of measurement results--

Peak C-weight

C-weighted peak sound level performed according to IEC 61672-3:2013 19 and ANSI S1.4-2014 Part 3: 19 for compliance to IEC 61672-1:2013 5.13 and ANSI S1.4-2014 Part 1: 5.13

Level [dB]	Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
134.00	31.50	137.18	133.50	139.50	0.09	Pass
134.00	500.00	137.56	135.50	139.50	0.09	Pass
134.00	8,000.00	136.73	134.40	140.40	0.10	Pass
134.00, Negative	500.00	136.18	134.40	138.40	0.09	Pass
134.00, Positive	500.00	136.18	134.40	138.40	0.09	Pass

-- End of measurement results--

Peak Z-weight

Z-weighted peak sound level performed according to IEC 60651:2001 9.4.4 and ANSI S1.4:1983 (R2006) 8.4.4

Amplitude [dB]	Duration[µs]		Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
135.20	100	Negative Pulse	127.34	125.00	129.00	0.09	Pass
	100	Positive Pulse	127.34	125.00	129.00	0.09	Pass
125.20	100	Negative Pulse	117.34	115.00	119.00	0.09	Pass
	100	Positive Pulse	117.33	115.01	119.01	0.09	Pass
115.20	100	Negative Pulse	107.33	104.99	108.99	0.09	Pass
	100	Positive Pulse	107.34	104.99	108.99	0.09	Pass
105.20	100	Negative Pulse	97.37	95.03	99.03	0.09	Pass
	100	Positive Pulse	97.36	95.04	99.04	0.09	Pass

-- End of measurement results--

Overload Detector

Overload indication performed according to IEC 61672-3:2013 20 and ANSI S1.4-2014 Part 3: 20 for compliance to IEC 61672-1:2013 5.11, IEC 60804:2000 9.3.5, IEC 61252:2002 11, ANSI S1.4 (R2006) 5.8, and ANSI S1.4-2014 Part 1: 5.11, ANSI S1.25 (R2007) 7.6, ANSI S1.43 (R2007) 7

Measurement	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
Positive	131.30	130.80	132.80	0.09	Pass
Negative	131.20	130.80	132.80	0.09	Pass
Difference	0.10	-1.50	1.50	0.09	Pass

-- End of measurement results--

Peak Rise Time

Peak rise time performed according to IEC 60651:2001 9.4.4 and ANSI S1.4:1983 (R2006) 8.4.4

Amplitude [dB]	Duration [µs]		Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
139.00	40	Negative Pulse	130.28	128.80	130.80	0.09	Pass
		Positive Pulse	130.28	128.80	130.80	0.09	Pass
	30	Negative Pulse	129.31	128.80	130.80	0.09	Pass
		Positive Pulse	129.34	128.80	130.80	0.09	Pass

-- End of measurement results--

Positive Pulse Crest Factor

200 µs pulse tests at 2.0, 12.0, 22.0, 32.0 dB below Overload Limit

Crest Factor measured according to IEC 60651:2001 9.4.2 and ANSI S1.4:1983 (R2006) 8.4.2

Amplitude [dB]	Crest Factor	Test Result [dB]	Limits [dB]	Expanded Uncertainty [dB]	Result
137.20	3	OVLD	± 1.00	0.09	Pass
	5	OVLD	± 1.00	0.09	Pass
127.20	3	-0.12	± 1.00	0.09	Pass
	5	-0.11	± 1.00	0.11	Pass
117.20	3	-0.14	± 1.00	0.09	Pass
	5	-0.11	± 1.00	0.09	Pass
107.20	3	-0.13	± 1.00	0.09	Pass
	5	-0.12	± 1.00	0.09	Pass

-- End of measurement results--

Negative Pulse Crest Factor

200 µs pulse tests at 2.0, 12.0, 22.0, 32.0 dB below Overload Limit

Crest Factor measured according to IEC 60651:2001 9.4.2 and ANSI S1.4:1983 (R2006) 8.4.2

Amplitude [dB]	Crest Factor	Test Result [dB]	Limits [dB]	Expanded Uncertainty [dB]	Result
137.20	3	OVLD	± 1.00	0.09	Pass
	5	OVLD	± 1.00	0.09	Pass
127.20	3	-0.11	± 1.00	0.09	Pass
	5	-0.12	± 1.00	0.09	Pass
117.20	3	-0.13	± 1.00	0.09	Pass
	5	-0.11	± 1.00	0.09	Pass
107.20	3	-0.14	± 1.00	0.09	Pass
	5	-0.13	± 1.00	0.09	Pass

-- End of measurement results--

Tone Burst

2kHz tone burst tests at 2.0, 12.0, 22.0, 32.0 dB below Overload Limit

Tone burst response measured according to IEC 60651:2001 9.4.2 and ANSI S1.4:1983 (R2006) 8.4.2

Amplitude [dB]	Crest Factor	Test Result [dB]	Limits [dB]	Expanded Uncertainty [dB]	Result
137.20	3	OVLD	± 1.00	0.09	Pass
	5	OVLD	± 1.00	0.09	Pass
127.20	3	-0.05	± 1.00	0.09	Pass
	5	-0.04	± 1.00	0.09	Pass
117.20	3	-0.07	± 1.00	0.09	Pass
	5	-0.03	± 1.00	0.09	Pass
107.20	3	-0.07	± 1.00	0.09	Pass
	5	-0.02	± 1.00	0.09	Pass

-- End of measurement results--

Impulse Detector - Repeat

Impulse Detector measured according to IEC 60651:2001 9.4.3 and ANSI S1.4:1983 (R2006) 8.4.3

Amplitude [dB]	Repitition Rate [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
139	100.00	-2.81	-4.71	-0.71	0.09	Pass
	20.00	-7.61	-9.57	-5.57	0.16	Pass
	2.00	-8.82	-11.76	-5.76	0.09	Pass
Step	2.00	4.97	4.00	6.00	0.09	Pass

-- End of measurement results--

Impulse Detector - Single

Impulse Detector measured according to IEC 60651:2001 9.4.3 and ANSI S1.4:1983 (R2006) 8.4.3

Amplitude [dB]	Duration [ms]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
139	20.00	-3.72	-5.61	-1.61	0.09	Pass
	5.00	-8.92	-11.76	-5.76	0.10	Pass
Step	5.00	5.05	4.00	6.00	0.10	Pass

-- End of measurement results--

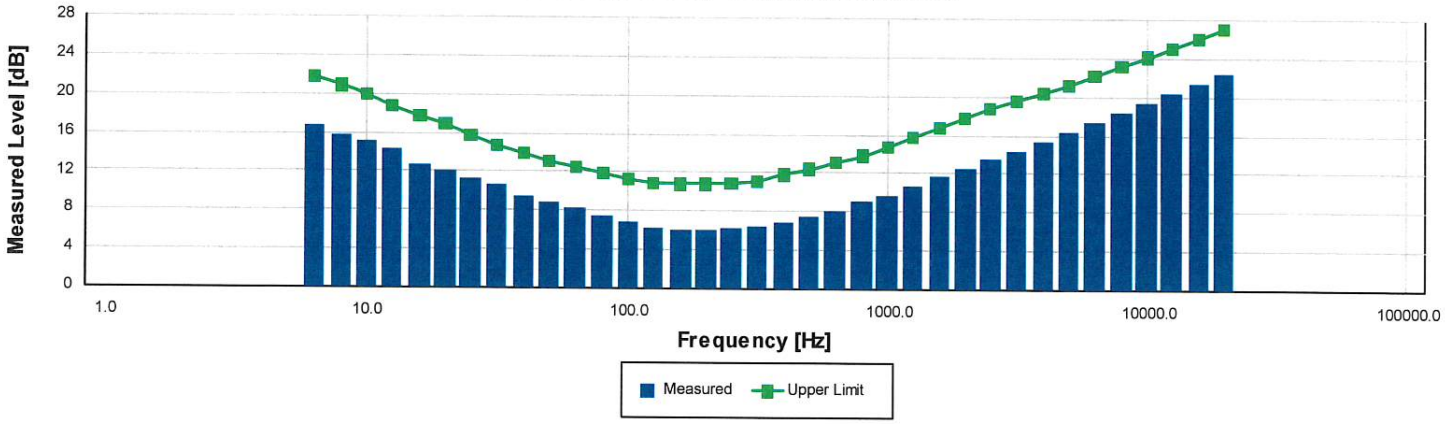
Gain

Gain measured according to IEC 61672-3:2013 17.3 and 17.4 and ANSI S1.4-2014 Part 3: 17.3 and 17.4

Measurement	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
0 dB Gain	104.02	103.90	104.10	0.09	Pass
0 dB Gain, Linearity	41.07	40.30	41.70	0.09	Pass
OBA Low Range	104.00	103.90	104.10	0.09	Pass
OBA Normal Range	104.00	103.20	104.80	0.09	Pass

-- End of measurement results--

1/3-Octave Self-Generated Noise



The SLM is set to low range.

Frequency [Hz]	Test Result [dB]	Upper limit [dB]	Result
6.30	16.72	21.80	Pass
8.00	15.67	20.90	Pass
10.00	15.07	20.00	Pass
12.50	14.29	18.80	Pass
16.00	12.68	17.80	Pass
20.00	12.09	16.90	Pass
25.00	11.24	15.70	Pass
31.50	10.63	14.80	Pass
40.00	9.54	13.90	Pass
50.00	8.84	13.10	Pass
63.00	8.16	12.50	Pass
80.00	7.55	11.90	Pass
100.00	6.88	11.30	Pass
125.00	6.31	10.90	Pass
160.00	6.00	10.80	Pass
200.00	6.03	10.80	Pass
250.00	6.26	10.90	Pass
315.00	6.40	11.10	Pass
400.00	6.92	11.80	Pass
500.00	7.44	12.40	Pass
630.00	8.09	13.10	Pass
800.00	8.98	13.80	Pass
1,000.00	9.77	14.80	Pass
1,250.00	10.70	15.70	Pass
1,600.00	11.65	16.70	Pass
2,000.00	12.56	17.70	Pass
2,500.00	13.52	18.70	Pass
3,150.00	14.40	19.50	Pass
4,000.00	15.38	20.30	Pass
5,000.00	16.34	21.20	Pass
6,300.00	17.43	22.20	Pass
8,000.00	18.27	23.20	Pass
10,000.00	19.34	24.10	Pass
12,500.00	20.30	25.10	Pass
16,000.00	21.35	26.10	Pass
20,000.00	22.31	27.10	Pass

-- End of measurement results--

Broadband Noise Floor

Self-generated noise measured according to IEC 61672-3:2013 11.2 and ANSI S1.4-2014 Part 3: 11.2

Measurement	Test Result [dB]	Upper limit [dB]	Result
A-weight Noise Floor	26.83	36.00	Pass
C-weight Noise Floor	26.05	35.00	Pass
Z-weight Noise Floor	33.30	39.00	Pass

-- End of measurement results--

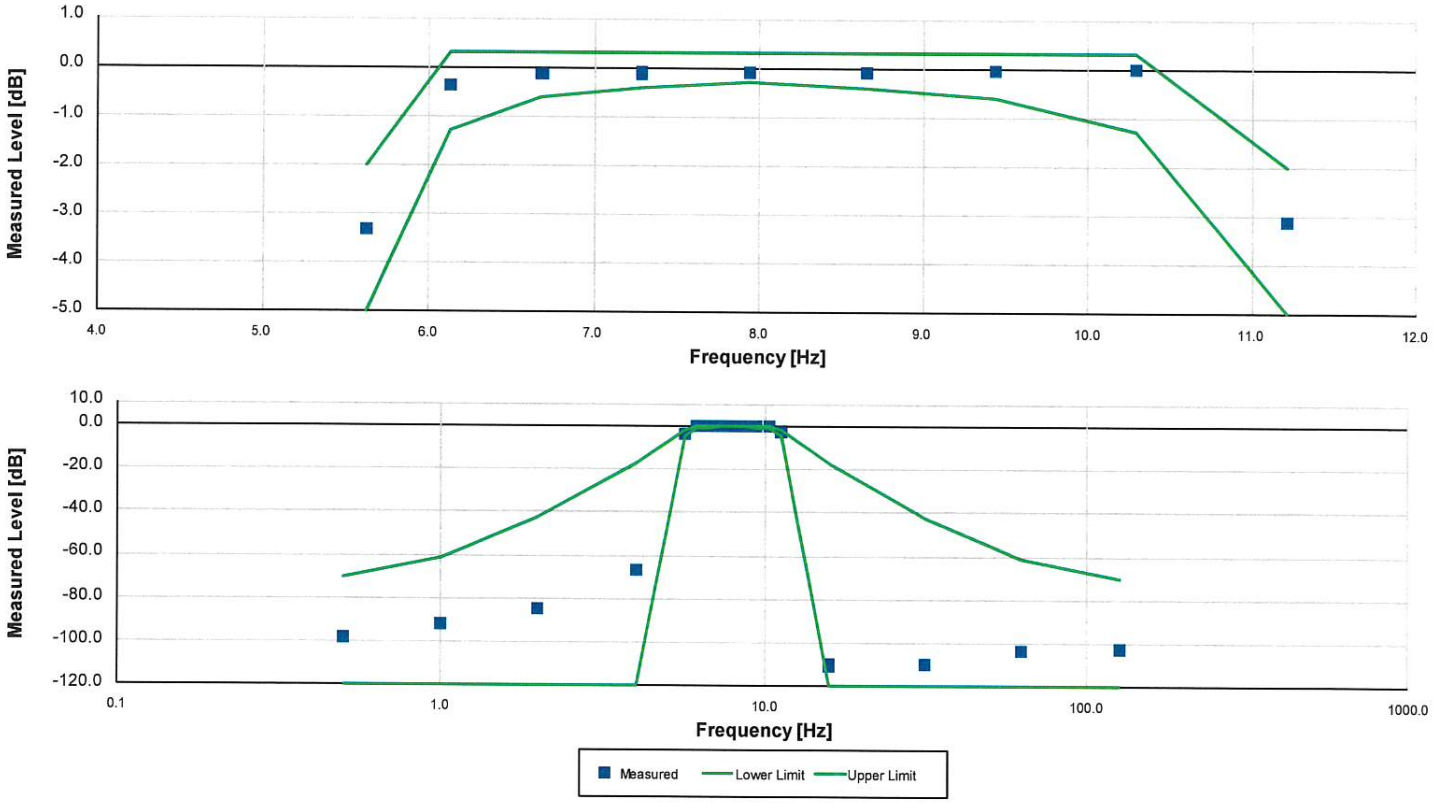
Total Harmonic Distortion

Measured using 1/3-Octave filters

Measurement	Test Result [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
10 Hz Signal	137.42	136.40	138.00	0.09	Pass
THD	-68.42		-58.00	0.01	Pass
THD+N	-63.87		-58.00	0.01	Pass

-- End of measurement results--

1/1 Octave Filter: 8.0 Hz

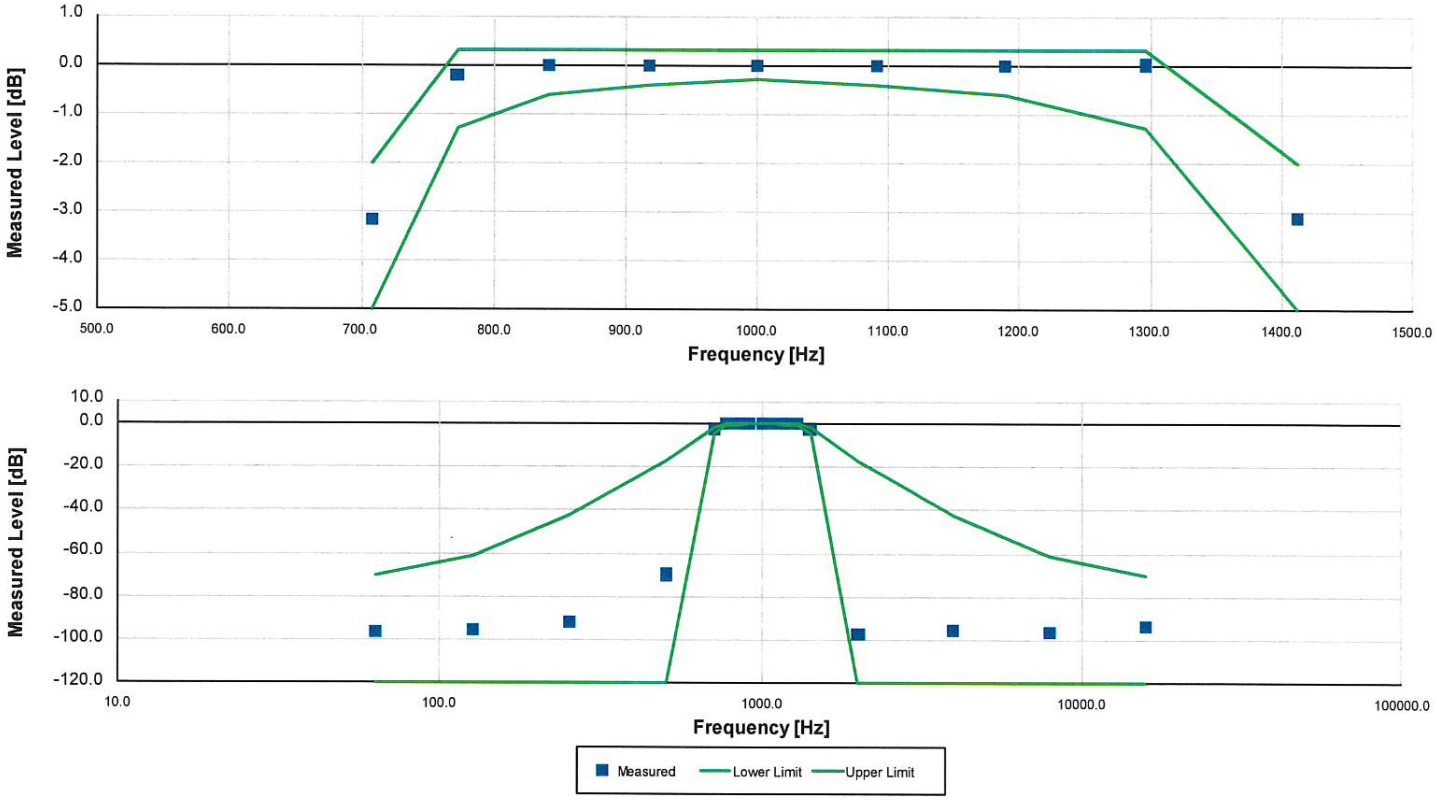


The SLM is set to normal range. Filter shape measured according to IEC 61260:2001 and ANSI S1.11:2004

Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
0.50	-98.36	-inf	-70.00	2.70	Pass
1.00	-91.70	-inf	-61.00	2.00	Pass
2.00	-84.24	-inf	-42.00	0.26	Pass
3.98	-66.99	-inf	-17.50	0.31	Pass
5.62	-3.32	-5.00	-2.00	0.09	Pass
6.13	-0.37	-1.30	0.30	0.09	Pass
6.68	-0.13	-0.60	0.30	0.09	Pass
7.29	-0.11	-0.40	0.30	0.09	Pass
7.94	-0.10	-0.30	0.30	0.09	Pass
8.66	-0.08	-0.40	0.30	0.09	Pass
9.44	-0.05	-0.60	0.30	0.09	Pass
10.29	-0.01	-1.30	0.30	0.09	Pass
11.22	-3.10	-5.00	-2.00	0.09	Pass
15.85	-110.26	-inf	-17.50	1.30	Pass
31.62	-109.99	-inf	-42.00	1.70	Pass
63.10	-103.64	-inf	-61.00	1.50	Pass
125.89	-102.78	-inf	-70.00	1.60	Pass

-- End of measurement results--

1/1 Octave Filter: 1 kHz

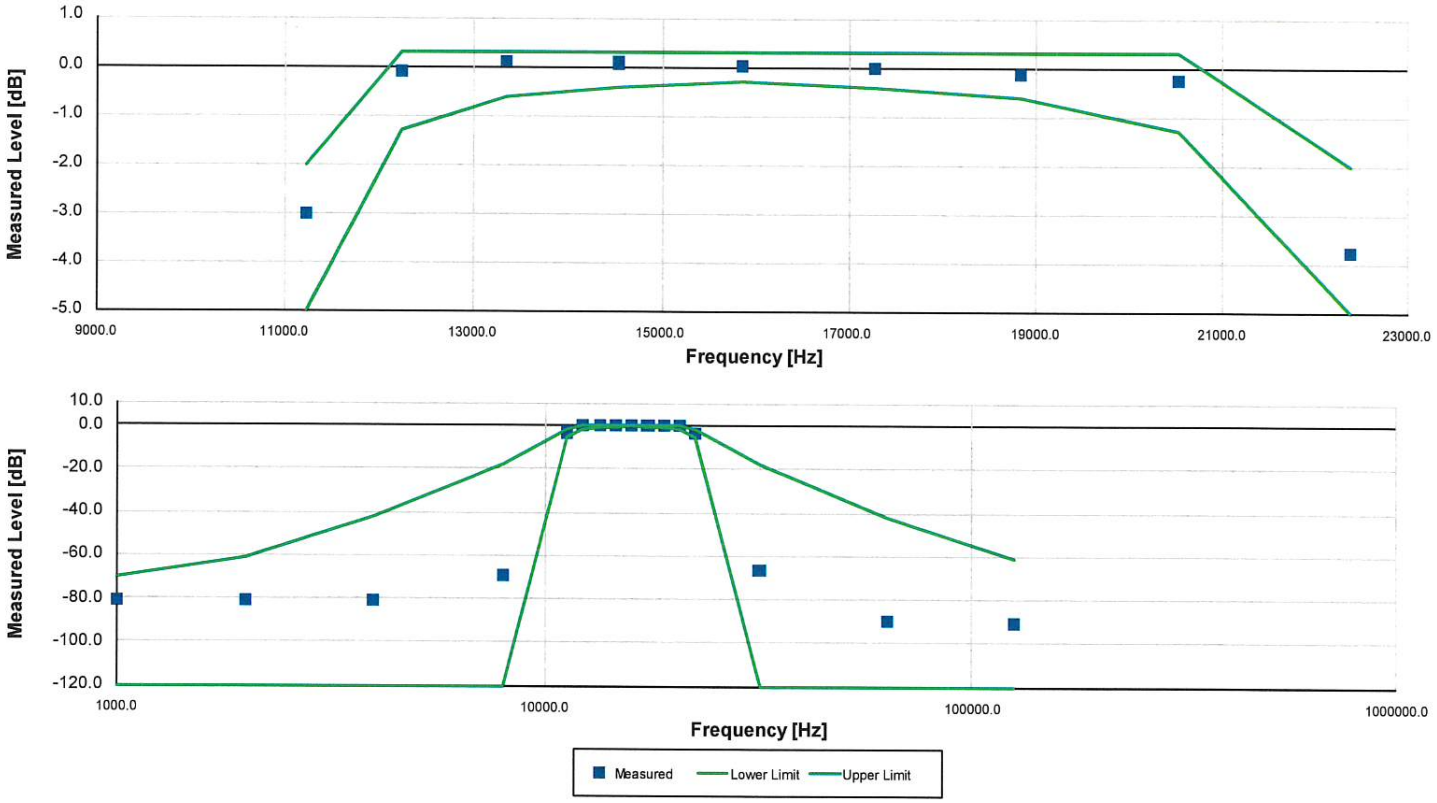


The SLM is set to normal range. Filter shape measured according to IEC 61260:2001 and ANSI S1.11:2004

Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
63.10	-96.28	-inf	-70.00	0.24	Pass
125.89	-95.48	-inf	-61.00	0.25	Pass
251.19	-92.08	-inf	-42.00	0.13	Pass
501.19	-69.79	-inf	-17.50	0.09	Pass
707.95	-3.15	-5.00	-2.00	0.09	Pass
771.79	-0.22	-1.30	0.30	0.09	Pass
841.40	-0.02	-0.60	0.30	0.09	Pass
917.28	-0.01	-0.40	0.30	0.09	Pass
1,000.00	0.00	-0.30	0.30	0.09	Pass
1,090.18	-0.02	-0.40	0.30	0.09	Pass
1,188.50	-0.02	-0.60	0.30	0.09	Pass
1,295.69	0.00	-1.30	0.30	0.09	Pass
1,412.54	-3.14	-5.00	-2.00	0.09	Pass
1,995.26	-96.82	-inf	-17.50	0.25	Pass
3,981.07	-95.79	-inf	-42.00	0.29	Pass
7,943.28	-96.01	-inf	-61.00	0.23	Pass
15,848.93	-93.42	-inf	-70.00	0.23	Pass

-- End of measurement results--

1/1 Octave Filter: 16 kHz



The SLM is set to normal range. Filter shape measured according to IEC 61260:2001 and ANSI S1.11:2004

Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
1,000.00	-80.95	-inf	-70.00	0.10	Pass
1,995.26	-80.73	-inf	-61.00	0.11	Pass
3,981.07	-80.59	-inf	-42.00	0.09	Pass
7,943.28	-69.20	-inf	-17.50	0.12	Pass
11,220.18	-3.00	-5.00	-2.00	0.09	Pass
12,232.07	-0.09	-1.30	0.30	0.09	Pass
13,335.21	0.12	-0.60	0.30	0.09	Pass
14,537.84	0.08	-0.40	0.30	0.09	Pass
15,848.93	0.04	-0.30	0.30	0.09	Pass
17,278.26	-0.02	-0.40	0.30	0.09	Pass
18,836.49	-0.13	-0.60	0.30	0.09	Pass
20,535.25	-0.26	-1.30	0.30	0.09	Pass
22,387.21	-3.76	-5.00	-2.00	0.09	Pass
31,622.78	-66.77	-inf	-17.50	0.09	Pass
63,095.73	-89.72	-inf	-42.00	0.10	Pass
125,892.54	-90.58	-inf	-61.00	0.10	Pass

-- End of measurement results--

-- End of Report--

Signatory: *Ron Harris*

Larson Davis, a division of PCB Piezotronics, Inc
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Provo, UT 84601, United States
716-684-0001

ACCREDITED Cert. #3622.01

LARSON DAVIS
A PCB PIEZOTRONICS DIV.

Certificate of Conformity and Calibration

Instrument Type:-	**CEL-633C**		
Serial Number	2670911		
Firmware revision	V006-03		
Microphone Type:-	**CEL-251**	Preamplifier Type:-	**CEL-495**
Serial Number	02540	Serial Number	004208
Instrument Class/Type:-	**1**		



Applicable standards:-

IEC 61672: 2002 / EN 60651 (Electroacoustics - Sound Level Meters)
IEC 60651 1979 (Sound Level Meters), ANSI S1.4: 1983 (Specifications For Sound Level Meters)

Note:- *The test sequences performed in this report are in accordance with the current Sound level meter Standard - IEC61672. The combination of tests performed are considered to confirm the products electro-acoustic performance to all applicable standards including superceeded Sound Level Meter Standards - IEC60651 and IEC60804.*

Test Conditions:-	19.8 °C	**Test Engineer:-**	Stephen Potten
	51.2 %RH	**Date of Issue:-**	November 26, 2018
	1020.2 mBar		

Declaration of conformity:-

This test certificate confirms that the instrument specified above has been successfully tested to comply with the manufacturer's published specifications. Tests are performed using equipment traceable to national standards in accordance with Casella's ISO 9001:2008 quality procedures. This product is certified as being compliant to the requirements of the CE Directive.

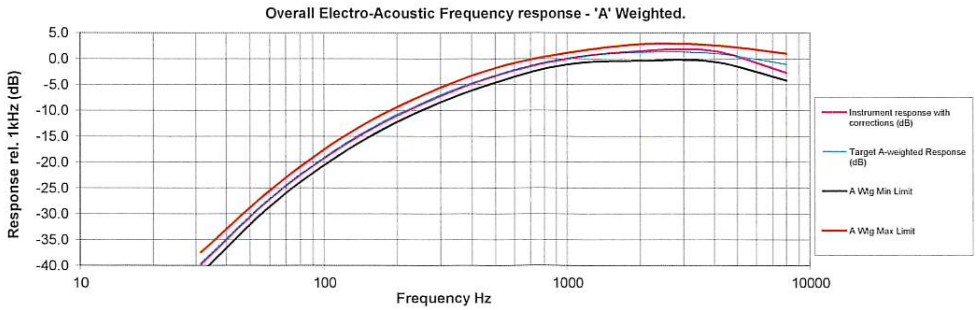
Test Summary:-

Self Generated Noise Test	**All Tests Pass**
Electrical Signal Test Of Frequency Weightings	**All Tests Pass**
Frequency & Time Weightings At 1 kHz	**All Tests Pass**
Level Linearity On The Reference Level Range	**All Tests Pass**
Toneburst Response Test	**All Tests Pass**
C-peak Sound Levels	**All Tests Pass**
Overload Indication	**All Tests Pass**
Acoustic Tests	**All Tests Pass**

Combined Electro-Acoustic Frequency Response - *A Weighted*

Combined Electro-Acoustic Frequency Response - A Weighted (IEC 61672-3:2006)

The following A-Weighted frequency response graph shows this instruments overall frequency response based upon the application of multi-frequency pressure field calibrations. The microphones Pressure to Free field correction coefficients are applied to pressure response. Reference level taken at 1kHz.



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