10-16 Beach 19th Street

Far Rockaway, Queens, New York

Remedial Action Work Plan

NY BCP Site Number: C241276

Prepared for:

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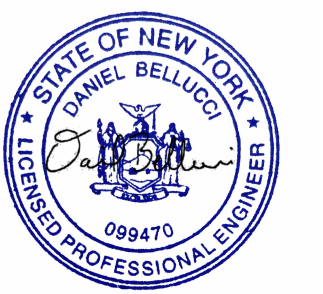
West Hartford, Connecticut

BELLUCCI ENGINEERING, PLLC

June 2026

CERTIFICATIONS

I, Daniel Bellucci, certify that I am currently a NYS registered professional engineer and that this Remedial Action Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and Green Remediation (DER-31).



099470	June 23, 2026	
NYS Professional Engineer Number	Date	Signature

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EXECUTIVE SUMMARY

10-16 Beach 19th Street LLC (the Volunteer) has established this plan to remediate the property known as 10-16 Beach 19th Street, Far Rockaway, Queens County, New York (the "site"). A Remedial Investigation (RI) was completed by Gallagher Bassett Technical Services (GBTS) in accordance with a New York State Department of Environmental Conservation (NYSDEC)-approved Remedial Investigation Work Plan (RIWP, October 2024) and Supplemental Remedial Investigation Work Plan (SRIWP, October 2025) to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP) in accordance with the requirements of the NYSDEC Brownfield Cleanup Program (BCP). 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 Description and Physical Setting

The site consists of an approximately 0.4-acre property in Far Rockaway, Queens County, New York (identified as Borough of Queens tax lot parcel Block 15560, Lot 8), located in a well-developed urban area comprised primarily of residential, commercial, and institutional uses. The site is a trapezoidal parcel with 103 feet of frontage on the eastern side of Beach 19th Street and a maximum east/west depth of approximately 197 feet. The site previously contained a one-story commercial building (approximately 13,000 square feet [sf]), formerly used for automotive sales and repair, and exterior parking areas. The site is adjoined to the north by an apartment building with a ground floor church, to the east by churches, to the south by retail uses, and to the West by Beach 19th Street followed by residential buildings and an undeveloped parking lot. Figure 1 shows the site location and Figure 2 shows site features and adjoining properties.

Summary of Proposed Redevelopment Plan

Development plans include construction of a new 9-story, 95-foot-tall senior affordable housing residence (178 housing units) with parking lot. The building will have a partial 5,308 sf cellar located beneath most of the first floor (6,754 sf offices/recreation, 10,695 sf covered roadway access and parking spaces), and a 1,200-sf garden patio.

The proposed use is consistent with existing zoning.

The project will result in the excavation and removal of contaminated soils, as well as potential subsurface debris, as regulated waste, and the proper closure (removal) of on-site storage tanks.

Based on known environmental conditions, the project is expected to be managed as a Track 2 Restricted-Residential Use property.

Site History and Areas of Concern

Site history is documented in the NYSDEC-approved Remedial Investigation Report (RIR), inclusive of the findings from Phase I Environmental Site Assessments (2019, 2020) and subsurface investigation reports (2020, 2023) conducted prior to site entry into the BCP. Subsurface conditions were also documented in a geotechnical report prepared to support the planned site development (maximum boring depth 102 feet below ground surface [bgs]).

Development occurred as early as circa 1900. Notable identified former commercial uses have included automotive repair activities from circa 1933 to July 2021, and the presence of associated on-site underground storage tanks (USTs). Geophysical surveys identified several likely USTs at the western portions of the property (gasoline, heating oil, and unknown uses), and potential inactive in-ground hydraulic lifts.

Recovered soil generally consisted of fill (typical range 0 to 5 feet bgs), overlying native glacial materials. Refusal encountered in several geotechnical borings (7 to 17 feet bgs) was attributed to cobbles or boulders (based on published USGS reports, bedrock is associated with the continental slope, located more than 1,000 feet below the surface). Groundwater was encountered in borings and temporary monitoring wells ranging from approximately 18 to 23 feet bgs. Only minimal field evidence of contamination (odors and/or photo-ionization detector [PID] readings) was noted.

Significant contamination was limited to elevated: polycyclic aromatic hydrocarbons (PAHs) and metals in soil (generally fill); volatile organic compounds (VOCs) related to gasoline, PAHs, and total metals in groundwater; and tetrachloroethylene (PCE; maximum value 4,360 micrograms per cubic meter [$\mu g/m^3$]) in soil vapor.

Trace VOCs were reported in multiple soil samples, including PCE and compounds related to gasoline in upper fill; a likely source area for PCE contamination in vapor, however, was not found.

The RIWP identified soil contamination, site-wide groundwater quality, and vapor contamination as three distinct Areas of Concern (AOC).

Summary of Remedial Investigation

The RI fieldwork was conducted by GBTS in March and April 2025, including: extension of thirty (30) soil borings; installation of six (6) permanent groundwater monitoring wells; installation of fourteen (14) soil vapor implants; and collection and laboratory analysis of soil, groundwater and soil vapor samples. Three to four soil samples were collected from each boring. Additional fieldwork was conducted under the SRIWP in October and November 2025, including extension of nine (9) additional soil borings to facilitate delineation of previously documented soil contamination in upper soils, and an assessment of potential tidal impacts to site groundwater.

Soil and water samples were analyzed for full Part 375 parameters, and vapor was analyzed for VOCs. All fieldwork activities, sample submission, and laboratory results (maximum values noted), are presented below. Data are reported in parts per million (ppm) for soil, parts per billion (ppb) and parts per trillion (ppt) for groundwater, and in $\mu g/m^3$ for vapor.

Summary of Environmental Findings

1. The site, located on coastal glacial outwash deposits close to the Atlantic Ocean, is level with an approximate elevation of 26 feet above mean sea level (amsl).
2. Depth to groundwater (from well casings) ranged from approximately 22.5 to 23.4 feet (elevation approximately 2.6 to 3.5 feet amsl), and does not appear to be subject to any significant tidal influence; groundwater flow appears to be overall northly at the western portion of the Site and easterly at the eastern portion (groundwater flow in the local area may be complex, due to the urban setting and tidal influences).
3. Bedrock was not encountered to a maximum geotechnical boring depth of approximately 102 feet bgs (the site is over the continental slope and bedrock is well over 1,000 feet below the surface).
4. Potential fill materials (containing fragmentary debris) were observed at several borings across the site, generally in the upper 0-5 feet boring interval. Underlying native materials were generally comprised of variable-texture sands and/or silty sands, often with inclusions of gravel or less frequently clay.

5. Field evidence of contamination (apparently weathered petroleum) was observed in a thin band of soil near the groundwater interface (typically ~24 to 25 feet bgs) at the western portion of the site, including elevated PID readings (60.3 to 1,488 ppm), mild to strong odors, and staining. The most significant impacts were in the southwestern quadrant of the site, east of suspect gasoline USTs. Nonaqueous-phase liquid (NAPL; evidence of free petroleum) was not observed. Slight odors and/or low grade PID readings (approximately 45 to 48 ppm) were recorded at monitoring wells at the western portion of the site.

6. A total of thirty (30) mechanized borings were initially extended during the RI in March 2025 and soil was collected at intervals of 5 feet to a maximum depth of 30 feet bgs (119 samples inclusive of duplicates). Initially, three soil samples were collected for laboratory analysis from each location (0-5, 11-13, and 22.5-25 feet, with one location sampling at 5-10 feet as the shallow interval) and an additional fourth sample was collected at three borings from within the 25-30 feet interval to screen for potential petroleum contamination. Nine (9) additional borings were extended in October 2025 at locations where soil exceeded RRU SCOs (typically two samples were collected from the upper 5 feet of soil to provide better depth resolution for known contaminants).

   Soil samples were analyzed for Target Compound List (TCL) VOCs and semi-volatile organic compounds (SVOCs) plus tentatively identified compounds (TICs), Target Analyte List (TAL) metals including Cr^{+6}, cyanide (CN), per- and polyfluoroalkyl substances (PFAS, NYSDEC target list), pesticides, herbicides, and polychlorinated biphenyls (PCBs). Results were compared to Part 375 Soil Cleanup Objectives (SCOs) for Unrestricted Use (UU) and Restricted-Residential Use (RRU), and to NYSDEC PFAS guidance.

   PAHs and metals were detected above RRU SCOs in fill soils from the upper 0 to 5 feet interval, and metals above RRU SCOs were reported in one sample at 5-10 feet bgs and one at 10-12 feet bgs. PAH impacts included: benzo(a)anthracene (12 ppm; RRU SCO 1.4 ppm); benzo(a)pyrene (13 ppm; RRU SCO 1 ppm); benzo(b)fluoranthene (16 ppm; RRU

SCO 1.4 ppm), chrysene (8.9 ppm, RRU SCO 4.9 ppm), dibenzo(a,h)anthracene (1.4 ppm, RRU SCO 0.33 ppm), and indeno(1,2,3-cd)pyrene (5.3 ppm; RRU SCO 1.4 ppm). Metal impacts included: arsenic (58.8 ppm, RRU SCO 16 ppm); barium (931 ppm; RRU SCO 410 ppm); lead (1,470 ppm; RRU SCO 400 ppm), and mercury (5.87 ppm; RRU SCO 0.3 ppm). Multiple locations (typically upper fill soils) had exceedances of UU SCOs for metals, and there were limited UU exceedances for PFAS (perfluorooctanesulfonic acid [PFOS]), pesticides, and VOCs (marginally elevated acetone at one location). Trace to low levels of VOCs were reported multiple samples, including cyclohexane and substituted benzenes associated with gasoline, in soil at the groundwater interface at several locations with field evidence of contamination. VOC TICs likely related to gasoline were reported in multiple samples at the groundwater interface, with total values up to approximately 14 ppm. PCE was reported at trace levels (0.01 ppm; UUSCO 1.3 ppm) in four samples (0-5 feet interval), primarily at the southwest of the site.

7. Groundwater samples from six (6) monitoring wells were analyzed for TCL VOCs and SVOCs plus TICs, TAL metals plus Cr^{+6}, CN, PFAS (NYSDEC target list), pesticides, herbicides, and PCBs. Results were compared to NYSDEC Ambient Water Quality Standards and Guidance Values (AWQS).

   No VOCs were detected above AWQS. Low levels of one or more VOCs were reported in all wells, for example PCE and trichloroethylene (TCE; 0.95 ppb and 0.46 ppb, respectively; AWQS 5 ppb), cyclohexane (9.11 ppb; AWQS not established), and sec-butylbenzene (4.42 ppb; AWQS 5 ppb). Total VOCs were reported up to 13 ppb. Detected SVOCs were limited to an elevated level of bis(2-ethylhexyl)phthalate (70.6 ppb; AWQS 5 ppb) and low levels of naphthalene (0.26 ppb, AWQS 10 ppb). Total VOC TICs ranged up to 294 ppb and SVOC TICs ranged up to 47.2 ppb.

   An elevated level of total mercury (1.9 ppb; AWQS 0.7 ppb) was detected in one well (dissolved levels, however, were non-detect); the only other “RCRA 8” metal in groundwater was trace total and dissolved barium at one well. Multiple metals were

reported in all groundwater samples, with elevated levels of both total and/or dissolved cobalt, iron, and/or sodium.

All wells contained elevated levels of PFOS (maximum 27.9 ppt; PFAS Guidance 2.7 ppt) and perfluorooctanoic acid (PFOA; maximum 33.8 ppt; PFAS Guidance 6.7 ppt), and relatively low levels of multiple other PFAS (most reported at less than 5 ppt, with a maximum value of 19.8 ppt). 1,4-Dioxane was not detected in any samples. One PCB was detected at a low level (0.058 ppb; AWQS 0.09 ppb); no other PCBs, or any pesticides or herbicides, were reported in groundwater samples.

8. Fourteen (14) vapor samples were analyzed for VOCs during the RI, supplementing data from eleven (11) previous samples, and results were compared to environmental investigation findings as a whole and to the applicable New York State Department of Health (NYSDOH) guidance for evaluating potential soil vapor intrusion.

   PCE was detected in all samples, with the highest values reported at 170 to 240 µg/m^3, and TCE was detected at a high value of 43 µg/m^3; all other PCE breakdown products were non-detect. Trace- to low-level contamination by multiple other VOCs was reported in all RI samples, at concentrations typically encountered in urban/commercial settings (no notable petroleum contamination was reported). PCE and TCE values are within the NYSDOH Decision Matrix ranges for monitor/mitigate, indicating an elevated potential for soil vapor intrusion.

Qualitative Human Health Exposure Assessment

The qualitative exposure assessment identified potential completed routes of exposure to construction and remediation workers, as well as trespassers (during construction), through inhalation, ingestion and/or dermal contact of organic and inorganic compounds (primarily PAHs and metals above RRU SCOs) in soil during excavation activities, and potential VOC vapor and dust exposure to off-site receptors and the public adjacent to the site (groundwater is located well below the surface and is not likely to be encountered during development activities).

There are no potential environmental impacts through groundwater to surface water discharge.

The Health and Safety Plan (CHASP) and the Community Air Monitoring Plan (CAMP) prepared for the site identify such exposures and provide instructions for on-site workers and the nearby community to minimize potential exposures during remediation and construction activities.

Fish and Wildlife Assessment

There are no surface waters, federal or state designated wetland areas, or other similar natural resource features, including fish and wildlife, on or within a half-mile radius of the Site. Based on these findings, the RIR concluded that a fish and wildlife resource impact analysis is not required for the site.

Summary of the Remedy

Based on known environmental conditions and physical constraints on construction activities, the Volunteer expects to complete a Track 2 Restricted-Residential Use cleanup requiring institutional and engineering controls (ICs and ECs).

The proposed remedial action plan achieves all the remedial action goals established for the project. The plan 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. A remedial program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows:
    - Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
    - Reducing direct and indirect greenhouse gases and other emissions;
    - Increasing energy efficiency and minimizing use of non-renewable energy;
    - Conserving and efficiently managing resources and materials;
    - Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
    - Maximizing habitat value and creating habitat when possible;

- Fostering green and healthy communities and working landscapes, which balance ecological, economic and social goals;
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and,
- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings shall be constructed, at a minimum, to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) to improve energy efficiency as an element of construction.

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

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

2. Performance of all required BCP Public Participation activities according to an approved Public Participation Plan.

3. Performance of a Community Air Monitoring Program for particulates and volatile organic compounds.
4. Selection of Track 2 Restricted-Residential Use SCOs (protection of public health) for soils to remain at the site.
5. Site preparation including setup of site security, equipment mobilization, utility mark outs and marking/staking excavation areas.
6. Completion of a Waste Characterization Study prior to excavation. Waste characterization soil samples will be collected at a frequency dictated by the disposal facility.
7. Removal of underground storage tanks and remaining hydraulic equipment encountered during construction activities in compliance with applicable local, State and Federal laws and regulations.
8. Removal of soils that exceed RRU SCOs from the upper 6 feet, and up to a maximum depth of 13 feet bgs at two locations, with increased excavation depth and/or areal extent based on confirmatory endpoint sampling. It is anticipated that approximately 1,750 cubic yards (cy) of soil will be removed.
9. Screening of excavated soil for indications of contamination by visual means, odor, and monitoring with a PID, and on-site segregation of excavated media (as needed).
10. Collection and analysis of end-point samples to evaluate the performance of the remedy with respect to attainment of Track 2 SCOs.
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. Transportation and off-site disposal of all soil material at licensed or permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media on-site.
13. Import of materials to be used for backfill in compliance with this plan and in accordance with applicable laws and regulations. If determined acceptable for re-use by the NYSDEC, existing fill soils that meet applicable SCOs may be relocated on the site for development.

14. Engineering controls will be implemented at the site following removal of contaminated soil, including installation and continuous operation of an active sub-slab depressurization system (SSDS) at the new building to address potential soil vapor intrusion and post-remediation sampling to document system efficacy.
15. Performance of all activities required for the remedial action, including acquisition of required permits and attainment of pretreatment requirements, in compliance with applicable laws and regulations.
16. Based on the depth to groundwater, dewatering of excavations is not expected. Should dewatering be required, all work will be in compliance with city, state, and federal laws and regulations. Extracted groundwater will either be containerized for off-site licensed or permitted disposal or will discharged to the local wastewater system in compliance with all municipal requirements, including pre-treatment if warranted.
17. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
18. Submission of a FER that describes the remedial activities, certifies that the remedial requirements have been achieved, defines site boundaries, lists any changes from this RAWP, and describes all institutional and engineering controls to be implemented.
19. Submission of an approved Site Management Plan (SMP) in the FER for the 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.
20. Recording of an environmental easement that includes a listing of institutional controls. Institutional controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater underlying the property is prohibited without the approval of the NYSDOH or the New York City Department of Health and Mental Hygiene, and the use of any necessary water quality treatment as determined by the applicable agency to render it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without NYSDEC approval. The environmental easement will include a listing of engineering controls and a requirement that management of these controls must be in compliance with an approved SMP.

REMEDIAL ACTION WORK PLAN

1 INTRODUCTION

10-16 Beach 19th Street LLC entered into a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) in June 2024 to investigate and remediate an approximately 0.4-acre property at 10-16 Beach 19th Street, Far Rockaway, Queens County, New York (the "site"). 10-16 Beach 19th Street LLC is a Volunteer in the Brownfield Cleanup Program (BCP). Restricted Residential use is proposed for the property. When completed, the Site will contain a new 9-story residential building. Refer to the BCP application for additional details.

This Remedial Action Work Plan (RAWP) summarizes the nature and extent of contamination as determined from data gathered during the Remedial Investigation (RI), performed in March, April, October, and November 2025 and provides an evaluation of a Track 1 cleanup and other applicable Remedial Action alternatives, their associated costs, and the recommended and preferred remedy. The remedy described in this document is consistent with the procedures defined in NYSDEC DER-10 and DER-31, and complies with all applicable standards, criteria and guidance. The remedy described in this document also complies with all applicable Federal, State and local laws, regulations and requirements. The NYSDEC and New York State Department of Health (NYSDOH) have determined that this Site does not pose a significant threat to human health and the environment. The RI for this Site did not identify fish and wildlife resources.

A formal Remedial Design document will not be prepared.

1.1 Site Location and Description

The site is located in the Far Rockaway neighborhood of Queens County, New York (identified as Borough of Queens tax lot parcel Block 15560, Lot 8). The site is a 0.429-acre vacant parcel with 103 feet of frontage on the eastern side of Beach 19th Street and a maximum east/west depth of approximately 197 feet; a one-story commercial building (approximately 13,000 square feet [sf]), formerly used for automotive sales and repair, was recently demolished and foundation slabs and paved exterior parking areas were left in place). Site boundaries are defined by the roadway to the west and by adjoining private properties to the north, east, and south.

The site is adjoined to the north by an apartment building with a ground floor church, to the east by churches, to the south by retail uses, and to the West by Beach 19th Street followed by residential buildings and an undeveloped parking lot.

Figure 1 shows the site location and Figure 2 shows site features and adjoining properties.

1.2 Proposed Redevelopment Plan

The Remedial Action to be performed under the RAWP is intended to make the site protective of human health and the environment consistent with the contemplated end use. The proposed redevelopment plan and end use is described here to provide the basis for this assessment. However, the Remedial Action contemplated under this RAWP may be implemented independent of the proposed redevelopment plan.

Development plans for the site (Appendix A) include construction of a new 9-story (95 feet) senior affordable housing residence (178 housing units) with a footprint of approximately 20,800 square feet and a parking lot. The building will have a partial 5,308 sf cellar located beneath most of the first floor (6,754 sf offices/recreation, 10,695 sf covered roadway access and parking spaces), and a 1,200-sf garden patio. The proposed use is consistent with existing zoning for the property (Residential Use District [R-6] with paired C2-4 [commercial] designations - DFR Special District) that allows the planned residential development.

Foundation construction includes excavation for the partial cellar (overall to approximately 15 feet below ground surface [bgs]), elevator pit (20 feet bgs), and additional footings (4 feet bgs). Excavation will not extend below the groundwater table. Approximately 5,000 cubic yards (cy) of soil will be removed during construction (additional soil may be removed if found to be unstable or otherwise unacceptable for development reasons).

The project will result in the excavation and removal of contaminated soils, as well as potential subsurface debris, as regulated waste. Based on known environmental conditions, the project is expected to be managed as a Track 2 Restricted-Residential Use property.

Figure 3 shows the construction excavation plan for site development.

1.3 Description of Surrounding Property

The Site is located within a densely developed urban setting and is adjoined to the north by an apartment building with a ground floor church, to the east by churches, to the south by retail uses, and to the West by Beach 19th Street followed by residential buildings and an undeveloped lot used for parking. Subsurface infrastructure typically associated with urban development, including utility lines and piping for sewers and stormwater systems, is present in adjoining and surrounding area roadways. Land use within a half-mile radius is residential (includes several adjoining properties), commercial, and institutional (churches, schools, day care facilities, and similar uses), with limited additional uses by transportation facilities.

Data from previous environmental reports as well as the NYSDEC online "DECinfo Locator" show no significant known contaminated properties, including NYSDEC remedial program sites and spills, in close proximity to the Site (note: 13-12 Beach Channel Drive [BCP ID: C241254], approximately 1,000 feet to the northwest, has documented chlorinated solvent contamination in groundwater).

The Remedial Investigation Work Plan (see Section 2) identified up to 42 potential sensitive environmental receptors within a half mile; the only site, however in close proximity (less than 500 feet from the site) is Sorrentino Recreation Center at 18-40 Cornaga Avenue, approximately 125 feet to the southeast.

2 DESCRIPTION OF REMEDIAL INVESTIGATION FINDINGS

The Site was investigated in accordance with the scope of work presented in the NYSDEC-approved Remedial Investigation Work Plan (RIWP, October 2024) and Supplemental Remedial Investigation Work Plan (SRIWP, October 2025). The initial investigation was conducted between March and April 2025 and the supplemental fieldwork was conducted in October and November 2025. The Remedial Investigation Report (RIR) was approved by NYSDEC in May 2026.

2.1 Site History

Site history is documented in the RIR, which summarized the findings from previous Phase I Environmental Site Assessments (2019, 2020), inclusive of a review of Sanborn Fire Insurance maps and other available historical documentation for the site.

Site development occurred as early as circa 1900. Notable identified former commercial uses have included automotive repair activities from circa 1933 to July 2021, and the presence of associated on-site underground storage tanks (USTs) containing fuel oil and gasoline. Geophysical surveys identified several likely USTs at the western portions of the property (gasoline, heating oil, and unknown uses), and potential inactive in-ground hydraulic lifts.

2.2 Summary of Remedial Investigation

2.2.1 Relevant Documents

The following relevant environmental work plans and reports were developed for the site:

- Gallagher Bassett Technical Services (GBTS), Remedial Investigation Work Plan (October 2024) and Supplemental Remedial Investigation Work Plan (October 2025); and,
- GBTS, Remedial Investigation Report (May 2026).

2.2.2 RI Scope of Work

The following work was performed during the RI:

1. Conducted an inspection to identify Areas of Concern and physical obstructions, including a geophysical survey to identify underground features;

2. Advanced thirty (39) mechanized borings and collected a total of one hundred-nineteen (119) soil samples inclusive of duplicates;
3. Installed and sampled six (6) permanent site monitoring wells (MW-04 to MW-09), measured depth to groundwater, and performed a tidal influence study; and,
4. Installed and sampled Fourteen (14) soil vapor probes (2SV-01 to 2SV-14).

Relevant analytical results from soil, groundwater, and soil vapor samples are shown on Figures 4 to 6 and complete data are provided in Tables 1 to 15. Data are reported in parts per million (ppm) for soil, parts per billion (ppb) and parts per trillion (ppt) for groundwater, and in micrograms per cubic meter ($\mu g/m^3$) for vapor.

2.2.3 Best Management Practices

Best Management Practices (BMPs) were implemented at the Site during the RI to reduce environmental impacts.

The core goals were to reduce total energy use, air pollutants/greenhouse gas emissions, water use, and waste, and additionally to preserve and protect water quality, material resources, and land and ecosystem services. To achieve these ends the following BMPs were implemented:

- Advance project planning was conducted to minimize the number of mobilizations to the site by environmental fieldwork personnel and related subcontractors, and the number of media samples requiring collection, transportation, and laboratory analysis;
- Remote communication was used as practical to minimize on-site meetings, reducing the impacts associated with transportation of site personnel (energy use, pollution, etc.);
- Fieldwork utilized minimally invasive technologies, such as locating utilities and clearing boring locations with ground penetrating radar, direct push borings verses extension of test pits, and use of direct-reading instruments to screen for volatile compounds;
- Permanent monitoring wells were installed to allow for future reuse if warranted (e.g., additional sample collection, conduits for in situ injections of treatment reagents, etc.); and,
- Boring spoils were used (where appropriate) to close abandoned borings and complete permanent wells, minimizing the need to use imported backfill materials.

2.3 Significant Threat

The NYSDEC and NYSDOH have determined that this site does not pose a significant threat to human health and the environment (documentation is provided in Appendix H).

2.4 Site Geology and Hydrogeology

Site geological and hydrogeological conditions, documented in the RIR, are summarized below:

1. The site, located on coastal glacial outwash deposits close to the Atlantic Ocean, is level with an approximate elevation of 26 feet above mean sea level (amsl). Surface grades near the site have gentle slopes.
2. Depth to groundwater (from well casings) ranged from 22.5 feet (MW-08) to 23.4 feet (MW-05), corresponding to elevations of approximately 2.6 to 3.5 feet amsl, and has been inferred to be overall northerly at the western portion of the site and easterly at the eastern portion. Local area groundwater flow may be complex due to multiple tidal influences (proximate coastal water bodies are Motts Basin to the north, Bannister Bay to the east, the Atlantic Ocean to the south, and Jamaica Bay to the west).
3. Bedrock was not encountered to a maximum geotechnical boring depth of approximately 102 feet bgs (the site is over the continental slope and bedrock is well over 1,000 feet below the surface).
4. Soil in the upper (0-5 feet) boring interval were comprised of variable texture sand and included several areas clearly identifiable as fill materials containing fragmentary debris (fill extended to 9 feet bgs at one location). Underlying native materials were generally comprised of variable-texture sands and/or silty sands, often with inclusions of gravel or less frequently clay.

2.5 Contamination Conditions

2.5.1 Conceptual Model of Site Contamination

Field evidence of petroleum was observed in soil at the groundwater interface, potentially from a release from USTs or historical repair activities (impacts could also be related to local groundwater conditions). No significant petroleum contamination, however, is present in on-Site

soils, suggesting that there have not been any recent releases at the Site and that encountered petroleum represents weathered material (TICs have been documented in both soil and groundwater at impacted areas). Removal of the USTs is expected to provide additional relevant information as to a likely source(s) of observed impacts.

Low levels of PCE in upper soils are likely related to historical on-Site use but are not indicative of any current significant source areas for PCE documented in soil vapor. Soil contamination above RRU SCOs by SVOCs (polycyclic aromatic hydrocarbons [PAHs]) or metals was reported in the upper 0-5 feet soil interval at six locations, and at one location at 5-10 feet bgs (metals only). Metals above UU SCOs were reported in multiple locations, typically in the upper soil interval, and there were limited exceedances of UU SCOs for VOCs (marginally elevated acetone), pesticides (DDT), and PFAS (perfluorooctanesulfonic acid [PFOS]). These findings are consistent with impacts from historical commercial uses and/or poor-quality urban fill.

Groundwater contamination from VOCs and SVOCs is limited to an isolated occurrence of one elevated phthalate at MW-07, low-level impacts from VOCs at all wells (including solvents and petroleum compounds). Notably, PCE was found in only three wells at concentrations below 1 ppb, and TCE was found in only two wells below 0.5 ppb. Overall, groundwater data are consistent with low-level impacts from on-Site fill and/or historical commercial uses. Low-grade PFAS and metals impacts are likely to be attributable to off-Site groundwater conditions in the surrounding urban area (PFOS is only minimally present in on-Site soil and is not likely to be contributing to groundwater contamination).

The presence of high levels of PCE in soil vapor, documented in two locations in 2020, was not confirmed during the 2023 subsurface investigation (SSI) and the subsequent RI, potentially indicating that the early results were from a localized condition (e.g., low PCE and TCE in groundwater) rather than a significant source area in soil (trace PCE was reported in only 3 of 93 RI samples and only 2 of 16 samples during the 2023 SSI); note, however, that while levels of PCE detected in soil vapor during the RI are not as high as those detected in earlier investigations, the RI soil vapor results continue to indicate elevated concentrations of PCE.

Impacts from petroleum and other VOCs are minimal (and typical of well-developed urban settings), providing further support for the conclusion that any on-Site releases (or impacts from off-Site conditions) are likely to be historical rather than recent events.

2.5.2 Description of Areas of Concern

The following Areas of Concern (AOC) are identified:

AOC 1 PAHs and metals in soil exceed RRU SCOs.

AOC 2 VOC levels in soil vapor indicate an elevated potential for soil vapor intrusion (SVI).

Contaminated groundwater, which exhibits low-grade impacts typical of urban settings and is located well below the surface, requires no response action at this time.

Based on an evaluation of the environmental data and historical information, disposal of significant amounts of hazardous waste is not suspected at the site.

2.5.3 Identification of Standards, Criteria and Guidance

The following standards, criteria, and guidance (SCG) were referenced during the RI:

- 6 NYCRR Part 182 – Endangered and Threatened Species of Fish and Wildlife
- 6 NYCRR Part 371 – Identification and Listing of Hazardous Wastes
- 6 NYCRR Part 375 – Environmental Remediation Programs;
- 6 NYCRR Part 608 – Use and Protection of Waters
- 6 NYCRR Part 661 – Tidal Wetlands – Land Use Regulations
- 6 NYCRR Part 663 – Freshwater Wetlands Maps and Classification
- 6 NYCRR Parts 700-706 – Water Quality Standards
- 29 CFR Part 1910.120 – Hazardous Waste Operations and Emergency Response
- NYSDEC DER-10 – Technical Guidance for Site Investigation and Remediation;
- NYSDEC DER-31 – Green Remediation (2010)
- NYSDEC Ambient – Water Quality Standards and Guidance Values – TOGS 1.1.1;
- NYSDEC CP-51 – Soil Cleanup Guidance (October 2010)
- NYSDOH Generic Community Air Monitoring Plan
- NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (GESVI)
- NYSDEC SPOTS #14 – Site Assessments at Bulk Storage Facilities
- NYSDEC Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites

2.5.4 Soil Contamination

Soil samples collected during the RI were analyzed for Target Compound List (TCL) VOCs and semi-volatile organic compounds (SVOCs) plus tentatively identified compounds (TICs), Target Analyte List (TAL) metals including Cr^{+6}, cyanide (CN), per- and polyfluoroalkyl substances (PFAS, NYSDEC target list), pesticides, herbicides, and polychlorinated biphenyls (PCBs). Results were compared to UU and RRU SCOs.

One-hundred-nineteen (119) samples inclusive of duplicates from thirty-nine (39) soil borings were submitted to the laboratory during the RI. Three soil samples were collected from each RI boring in March 2025 (typically 0-5, 11-13, and 22.5-25 feet), with a fourth at three borings from 25-30 feet (this depth corresponds to the approximate groundwater interface) to screen for potential petroleum contamination (analyzed for VOCs, SVOCs, and TICs only), and supplemental sampling in October 2025 was limited to VOCs and SVOCs plus TICs (4 samples only), and TAL metals (Cr^{+6} excluded), within the upper 0-5 feet bgs interval.

Submission of samples during the RI (excluding duplicates) is summarized below, and relevant results are discussed in the text as warranted (note: unless otherwise indicated, results represent maximum reported values).

Analyte Class	Number of Samples
VOCs and SVOCs	113
VOCs and SVOCs TICs	97
TAL metals	110
pesticides/PCBs	90
herbicides	90
PFAS	90

No VOCs were detected above RRU SCOs, and contamination was limited to one exceedance by acetone in SB-06 11-13 (0.054 ppm, UU SCO 0.03 ppm). Trace to low levels of VOCs were reported multiple samples, including cyclohexane and substituted benzenes associated with gasoline in soil at the groundwater interface at several of the locations with field evidence of contamination. PCE was reported at trace levels (0.01 ppm; UUSCO 1.3 ppm) in four samples (0-5 feet interval), primarily at the southwest of the site. VOC TICs likely related to gasoline were reported in multiple samples at the groundwater interface, with total values up to approximately 14 ppm.

PAHs (four samples) and metals (ten samples) were detected above RRU SCOs in fill soils from the upper 0 to 5 feet interval, and elevated metals were reported in one sample at 5-10 feet bgs and one at 10-12 feet bgs. PAH impacts included: benzo(a)anthracene (12 ppm; RRU SCO 1.4 ppm); benzo(a)pyrene (13 ppm; RRU SCO 1 ppm); benzo(b)fluoranthene (16 ppm; RRU SCO 1.4 ppm), chrysene (8.9 ppm, RRU SCO 4.9 ppm), dibenzo(a,h)anthracene (1.4 ppm, RRU SCO 0.33 ppm), and indeno(1,2,3-cd)pyrene (5.3 ppm; RRU SCO 1.4 ppm). Metal impacts included: arsenic (58.8 ppm, RRU SCO 16 ppm); barium (931 ppm; RRU SCO 410 ppm); lead (1,470 ppm; RRU SCO 400 ppm), and mercury (5.87 ppm; RRU SCO 0.3 ppm). Multiple locations (typically upper fill soils) had exceedances of UU SCOs for metals, and there were limited, low-level UU exceedances for PFAS (PFOS only), pesticides, and VOCs (marginally elevated acetone at one location).

Significant soil contamination is generally limited to the upper soil interval, and sampling of the deepest soil intervals (native soil at the groundwater interface and below) shows VOC and SVOC TICs but no exceedances of Part 375 parameters; these findings are consistent with general impacts from poor-quality fill, demolition debris, and/or former commercial uses (rather than from any localized source areas of soil contamination) and from historical degraded petroleum-contamination in groundwater.

Tables 1 through 7 provide laboratory results for all soil at the site, and Figure 4 is a spider map showing the location and summarizing exceedances of UU and RRU SCOs.

2.5.5 Groundwater Contamination

Groundwater samples from six (6) monitoring wells were analyzed for TCL VOCs and SVOCs plus TICs, TAL metals plus Cr^{+6}, CN, PFAS (NYSDEC target list), pesticides, herbicides, and PCBs. Results were compared to NYSDEC Ambient Water Quality Standards and Guidance Values (AWQS).

No VOCs were detected above AWQS. Low levels of one or more VOCs were reported in all wells, for example PCE and trichloroethylene (TCE; 0.95 ppb and 0.46 ppb, respectively; AWQS 5 ppb), cyclohexane (9.11 ppb; AWQS not established), and sec-butylbenzene (4.42 ppb; AWQS 5 ppb). Total VOCs were reported up to 13 ppb. Detected SVOCs were limited to an elevated level of bis(2-ethylhexyl)phthalate (70.6 ppb; AWQS 5 ppb) and low levels of naphthalene (0.26 ppb, AWQS 10 ppb). Total VOC TICs ranged up to 294 ppb and SVOC TICs ranged up to 47.2 ppb.

An elevated level of total mercury (1.9 ppb; AWQS 0.7 ppb) was detected in one well (dissolved levels, however, were non-detect); the only other "RCRA 8" metal in groundwater was trace total and dissolved barium at one well. Multiple metals were reported in all groundwater samples, with elevated levels of both total and/or dissolved cobalt, iron, and/or sodium (typical exceedances seen in the New York City region).

All wells contained elevated levels of PFOS (maximum 27.9 ppt; PFAS Guidance 2.7 ppt) and perfluorooctanoic acid (PFOA; maximum 33.8 ppt; PFAS Guidance 6.7 ppt), and relatively low levels of multiple other PFAS (most reported at less than 5 ppt, with a maximum value of 19.8 ppt). 1,4-Dioxane was not detected in any samples. One PCB was detected at a low level (0.058 ppb; AWQS 0.09 ppb); no other PCBs, or pesticides, herbicides or hexavalent chromium, were reported in groundwater samples.

Site-wide groundwater is impacted and/or contaminated by low-levels of petroleum VOCs related to gasoline, SVOCs, metals, and PFAS. Petroleum impacts are likely to be related to a historical on- or off-site release that has naturally degraded over time, and other contamination conditions may be related to the presence of on-site poor-quality fill and/or former commercial uses, or generally to poor-quality local groundwater (documented contamination is similar to conditions typically encountered in urban areas). Soil data are not consistent with any current significant on-site source areas for groundwater contamination.

Tables 8 through 14 provide laboratory results for all groundwater at the site and Figure 5 is a spider map showing the location and summarizing exceedances of applicable standards, criteria and guidance values (SCGs) for groundwater.

2.5.6 Soil Vapor Contamination

A vapor survey was completed during the RI to determine contamination conditions in the soil vadose zone. Fourteen (14) soil vapor samples were analyzed during the RI, supplementing data from eleven (11) vapor samples collected during the 2023 SSI. Vapor samples were analyzed for VOCs (USEPA Method TO-15). Results were compared to environmental investigation findings as a whole (New York does not have any standards, criteria or guidance values for volatile chemicals in subsurface vapors) and to the applicable New York State Department of Health (NYSDOH) guidance for evaluating potential soil vapor intrusion.

PCE was detected in all samples, with the highest values reported at 170 to 240 µg/m^3, and TCE was detected at a high value of 43 µg/m^3; all other PCE breakdown products were non-detect. Trace- to low-level contamination by multiple other VOCs was reported in all RI samples, at concentrations typically encountered in urban/commercial settings (no notable petroleum contamination was reported). PCE and TCE concentrations in soil vapor are present at levels indicating a potential for soil vapor intrusion.

Trace- to low-level contamination by multiple other VOCs was reported in all RI samples, at concentrations typically encountered in urban/commercial settings (no notable petroleum contamination was reported), potentially the result of on-site fill materials, historical commercial uses, and/or poor-quality local groundwater.

The presence of high levels of PCE in soil vapor documented in two locations in 2020 (up to 4,360 µg/m^3) was not confirmed during the subsequent 2023 investigation or during the RI. These findings support the conclusion that the early results were from a localized limited condition in soil or from documented low levels of PCE and TCE in groundwater (<1 ppb each) rather than a significant source area in soil (trace PCE [maximum value 0.01 ppm, UU SCO 1.3 ppm], found exclusively in upper soils, was reported in only 3 of 93 RI samples and 2 of 16 samples in 2023).

RI soil vapor results are provided in Table 15 and Figure 6.

2.6 Environmental and Public Health Assessments

2.6.1 Qualitative Human Health Exposure Assessment

An exposure assessment was conducted to qualitatively assess the potential impacts of known environmental contaminants associated with the site on human health, with attention to all possible exposure pathways (i.e. ingestion, inhalation and direct contact). Both current (existing conditions) and future use (proposed restricted-residential use) scenarios were considered. Contaminants were assessed relative to specific impacted media.

The primary contaminants of concern at the site are SVOCs (PAHs) and metals exceeding RRU SCOs in soil and VOCs in vapor (site groundwater is located well below the surface and is not likely to be encountered during development activities). On-site workers (or trespassers) present during remediation and/or future development activities are the most likely receptor population.

The following section evaluates the elements associated with exposure pathways and describes how each of these elements pertains to the site. For all media, the implementation of a Health and Safety Plan (CHASP) and the Community Air Monitoring Plan (CAMP) will mitigate possible impacts to on-site, off-site and nearby community receptor populations. Any development activities that involve disturbance, exposure or contact with contaminated media (soil, soil vapor or groundwater) will require monitoring and mitigation plans to address potential direct contact with media, dust generation and contaminant migration.

Soil

Direct contact, ingestion and/or inhalation (of particulate matter) are the primary exposure pathways for contaminated soils. People can come into contact if they participate in ground-intrusive work at the site or are exposed to dust generated during construction activities that disturb contaminated soil. Outside of excavation activities, there are no likely significant exposures to contaminated soil, either on the site or at off-site areas. The potential exists for contamination to be present after the completion of remediation and site development activities. All potential exposure pathways (direct contact, ingestion or inhalation) will likely be mitigated as soils would have been remediated and/or access to soils would be limited by installation of a cover system (including paved areas and building foundations). Based on election of a Track 2 Restricted Use remedy for the site, the implementation of institutional controls (ICs) will further eliminate potential direct contact with any contaminated soil once construction is complete.

Groundwater

Groundwater is located at approximately 22 to 23 feet below the surface and is unlikely to be encountered during the remedial action or site development. Should groundwater be encountered, direct contact and/or ingestion are the primary exposure pathways for people that participate in ground-intrusive work at the site. Impacted groundwater is not being used for drinking water (or any other purposes) at the site or at off-site areas, as the area is served by the public water supply. No known private wells exist in the vicinity of the site.

Soil Vapor

Potential exposure pathways include vapor intrusion within any new site structures and at off-site properties, and direct contact and/or inhalation of contaminated soil vapor generated during soil excavation or remedial construction. A CAMP would be implemented at the site (and as required, at off-site areas) to monitor air quality and minimize potential exposures to vapors for both construction works and the public. The potential for on-site and off-site exposure to soil vapor is expected to decrease after soils have been remediated; low levels of PCE and TCE in groundwater, however, even though documented at concentrations well below AWQS, may potentially contribute to soil vapor contamination. Based on historical and current levels of PCE and TCE in vapor, as well as low-grade residual impacts from a historical petroleum release (field evidence of contamination in soil and high VOC TICS in groundwater), a vapor control measure will initially be required at the new site building.

2.6.2 Fish and Wildlife Remedial Impact Analysis

The groundwater chemistry and surface water discharge pathway was evaluated. Based on existing data and distance to surface water, there are no expected impacts to surface water from contaminants migrating beneath the site. No relevant fish and wildlife resources were identified.

2.7 Interim Remedial Action

No Interim Remedial Measures (IRMs) have been performed at the site.

2.8 Remedial Action Objectives

The Remedial Action Objectives (RAOs) identified for the site are:

RAOs	RAOs for Public Health Protection	RAOs for Environmental Protection
Soil	• Prevent ingestion / direct contact with contaminated soil	• Prevent migration of contaminants that would result in groundwater or surface water contamination
Groundwater	• Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards	• Remove the source of groundwater contamination
Vapor	• Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at the site.	

3 DESCRIPTION OF REMEDIAL ACTION PLAN

This section includes a description of the remedial alternatives and provides a comparison and evaluation of the alternatives in terms of required threshold and balancing criteria. Both Track 1 Unrestricted Use (as required by the BCP) and a Track 2 Restricted-Residential Use scenarios are evaluated for the remedial action.

The goal of the remedy selection process is to select a remedy that is protective of human health and the environment taking into consideration the current, intended and reasonably anticipated future use of the property. The remedy selection process begins by establishing RAOs for media in which chemical constituents were found in exceedance of applicable standards, criteria and guidance values.

Remedial alternatives are then developed and evaluated based on the following nine criteria and sustainability:

Threshold Criteria

- Protection of human health and the environment;

Balancing Criteria

- Compliance with SCGs;
- Short-term effectiveness and impacts;
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, or volume of contaminated material;
- Implementability;
- Cost effectiveness;
- Community acceptance;
- Land Use; and,
- Green and Sustainable Remediation (GSR; including climate resiliency)

3.1 Summary of Remedial Alternatives

3.1.1 Common Green and Sustainable Remediation Components

All proposed remedial alternatives share the following GSR core components:

- Implementation of a remedial program to provide details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program, inclusive of DER-31 (Green Remediation) requirements and performance of an environmental footprint analysis. Progress with respect to green and sustainable remediation metrics will be tracked during implementation of the remedial action and fully documented;
- Use of Best Management Practices to reduce energy and water usage, minimize waste, reduce air and water pollution, and protect land and ecosystems during all phases of remediation; and,
- Performance of a climate change vulnerability assessment, to evaluate the impact of climate change on the project site and the proposed remedy.

3.1.2 Proposed Remedial Alternatives

Alternative 1: Site meets Track 1 Unrestricted Use SCOs, with short-term vapor controls as needed, consisting of the following:

1. Selection of NYSDEC 6NYCRR Part 375 Unrestricted Use (Track 1) SCOs.
2. All known underground storage tanks and remaining hydraulic equipment, and any unknown tanks or equipment encountered during site construction, will be removed and disposed off-site at a permitted facility, and site conditions will be properly documented.
3. Removal of all site soil exceeding Track 1 UU SCOs and confirmation that Track 1 UU SCOs have been achieved with post-excavation confirmatory sampling. The entire site will be excavated to approximately 6 feet bgs (or deeper if required based on confirmatory endpoint sampling), with the exception of a minimum of five discrete locations across the site that will require excavation to a maximum of 14 feet bgs, resulting in disposal of all material above bedrock containing contaminants above UU SCOs, estimated at approximately 3,600 cy (Figure 8), and the site will be restored to the elevation necessary for site redevelopment (if required) through importation of approved clean materials.

4. While this alternative is designed to achieve Track 1 conditions for soil, short-term Institutional or Engineering Controls (ECs) may be employed for the remediation of media other than soil. A sub-slab depressurization system (SSDS) will initially be implemented as an EC to mitigate potential vapor intrusion into the new on-site structures (Figures 10 and 11). The efficacy of the SSDS will be determined by post-remediation sampling to verify depressurization of the entire slab and that indoor air concentrations are within expected background ranges. The sampling program will include collection of indoor air analytical samples after the building envelope is complete with air handling systems in place and operating, prior to building occupancy. The active SSDS will operate continuously.
5. If ECs for soil vapor are determined to be unnecessary when the Certificate of Completion (CoC) is issued, the Volunteer will receive a Track 1 CoC; the presence of any active ECs at that time, however, will alternatively result in a Track 2 CoC. The volunteer may petition NYSDEC for a modification to the CoC at any time up until five years after issuance. If the volunteer demonstrates that the remedial objectives for soil vapor have been achieved and the applicable institutional or engineering controls are no longer necessary, then a modified Track 1 certificate of completion will be issued (the cleanup would be considered Track 2 until the date that it is successfully modified to Track 1).

Alternative 2: Site meets Track 2 Restricted-Residential Use SCOs, with short- or long-term vapor controls as needed, consisting of the following:

1. Selection of NYSDEC 6NYCRR Part 375 Restricted-Residential Use (Track 2) SCOs.
2. All known underground storage tanks and remaining hydraulic equipment, and any unknown tanks or equipment encountered during site construction, will be removed and disposed off-site at a permitted facility, and site conditions will be properly documented.
3. Removal of soils that exceed RRU SCOs from the upper 6 feet at eight (8) grid locations and to a maximum depth of 13 feet bgs at two locations (Figure 9), with increased excavation depth and/or areal extent based on confirmatory endpoint sampling. It is anticipated that approximately 1,750 cubic yards (cy) of soil will be removed.
4. Confirmation that applicable SCOs have been achieved with post-excavation confirmatory sampling.

5. Restoration of the site to the elevation necessary for site redevelopment (if required) through importation of approved clean materials.
6. Use of a SSDS as an engineering control to mitigate potential vapor intrusion into new on-site structures. The efficacy of the SSDS will be determined by post-remediation sampling to verify depressurization of the entire slab and that indoor air concentrations are within background ranges. The sampling program will include collection of indoor air analytical samples after the building envelope is complete with air handling systems in place and operating, prior to building occupancy. The active SSDS will operate continuously.
7. Other than remedies proposed to address media other than soil, no engineering controls are required for a Track 2 cleanup. A concrete slab underlying all new proposed buildings and a water-proofing membrane would be installed as part of standard building development and are not considered components of the remedy.
8. Establishment of use restrictions including: prohibitions on the use of site groundwater; prohibitions of restricted site uses, such as farming or vegetable gardening, to prevent future exposure pathways; and prohibition of a higher level of land use without NYSDEC approval.
9. Establishment of an approved Site Management Plan (SMP) to ensure the long-term management of these engineering and institutional controls including the performance of periodic inspections and certification that the controls are performing as they were intended.
10. The property would receive an environmental easement registered with the county clerk memorializing engineering and institutional controls, and the SMP.

3.1.3 Evaluation of Threshold Criteria

The threshold criterion is an evaluation of the remedy's ability to protect public health and the environment, and an assessment of how risks posed through each existing or potential pathway of exposure are eliminated, reduced or controlled through removal, treatment, and implementation of engineering controls or institutional controls. Protection of public health and the environment must be achieved for all approved remedial actions.

Alternative 1 would be more protective of human health and the environment by removing all soil exceeding Track 1 Unrestricted Use SCOs, thus eliminating the potential for direct contact with contaminated soil once construction is complete and eliminating the risk of contaminants leaching into groundwater from the site.

Alternative 2 would achieve comparable protections of human health and the environment by removing all soil exceeding Track 2 Restricted-Residential Use SCOs across the site, and by use of engineering controls (SSDS) to ensure that future residents are protected from any contaminated vapors. Implementing institutional controls including a SMP would ensure that the vapor control systems are operational, and that inappropriate site uses are prevented, ensuring that the remedy remains protective of public health in the future.

For both Alternatives, potential exposure to contaminated soil, groundwater, or vapor during construction would be minimized by implementing a CHASP, an approved Soil/Materials Management Plan (SoMP), and CAMP. Potential contact with any contaminated groundwater would be prevented as its use is prohibited by City laws and regulations.

3.1.4 Evaluation of Balancing Criteria

Compliance with Standards, Criteria and Guidance

This evaluation criterion assesses the ability of the alternative for conformance with SCGs that are applicable, relevant and appropriate. Conformance with the appropriate standards for remediation of contaminated soil is an important criterion in evaluating the remedial alternatives for the BCP site. Presently, in New York State 6 NYCRR Part 375 establishes the primary SCGs associated with remediation of contaminated soil at sites that are in the BCP (a comprehensive list of SCGs that are applicable, relevant and appropriate for evaluating the alternatives for remediation of this BCP are provided in Section 4.18).

If proposing remediation pursuant to a Track other than Track 1, Part 375 requires evaluation of at least one remedial alternative pursuant to Track I and one other alternative developed by the applicant for the proposed use of the BCP site. The proposed remedial alternatives have been prepared in conformance with this requirement.

Alternative 1 would achieve compliance with the remedial goals, chemical-specific SCGs and RAOs for soil through removal of soil to achieve Track 1 Unrestricted Use SCOs. Alternative 2

would achieve compliance through removal of soil to achieve Track 2 Restricted-Residential Use SCOs. Alternative 2 would impose institutional controls, including an environmental easement prohibiting any higher use of the site, and a SMP would ensure proper maintenance of the engineering control and compliance with institutional controls.

Health and safety measures contained in the CHASP and CAMP will be implemented during site redevelopment under this RAWP. For both Alternatives, focused attention on means and methods employed during the remedial action would ensure that handling and management of contaminated material would be in compliance with applicable SCGs. These measures will protect on-site workers and the surrounding community from exposure to site-related contaminants.

Short-Term Effectiveness and Impacts

This evaluation criterion assesses the effects of the alternative during the construction and implementation phase until remedial action objectives are met. Under this criterion, alternatives are evaluated with respect to their short-term effects during the remedial action on public health and the environment during implementation of the remedial action, including protection of the community, protection of onsite workers and environmental impacts.

Both Alternatives have similar short-term effectiveness during their implementation, as each requires excavation of historical urban fill material. Each alternative would result in short-term dust generation impacts associated with excavation, handling, load out of materials, and truck traffic. Short-term impacts could potentially be higher for Alternative 1 since the excavation of greater amounts of soil and fill could take place. However, focused attention to means and methods during a Track 1 removal action, including community air monitoring and appropriate truck routing, would minimize the overall impact of these activities.

An additional short-term adverse impact and risk to the community associated with each remedial alternative is increased truck traffic. Truck traffic would be routed on the most direct course using major thoroughfares where possible and flag persons would be used to protect pedestrians at site entrances and exits. The differences in total truck trips between Alternative 1 and Alternative 2, both export and import of materials, is expected to be limited.

The potential adverse impact to the community, workers and the environment for each alternative would be minimized through implementation of control plans including a CHASP, a CAMP and a SoMP, during soil disturbance activities and would minimize release of contaminants into the environment. Each alternative provides short-term effectiveness in protecting the surrounding community by decreasing the risk of contact with contaminants. Construction workers operating under appropriate management procedures and a CHASP would provide protection from on-site contaminants by using personal protective equipment (PPE) would be worn consistent with the documented risks within the respective work zones.

Long-Term Effectiveness and Permanence

This evaluation criterion addresses the results of a remedial action in terms of its permanence and the quantity and nature of waste and residual contamination at the site after response objectives have been met, such as permanence of the remedial alternative, magnitude of remaining contamination, adequacy of controls including the adequacy and suitability of engineering controls and institutional controls that may be used to manage remaining contamination and assessment of containment systems and institutional controls that are designed to eliminate exposures to contaminants, and long-term reliability of engineering controls.

Alternative 1 would achieve long-term effectiveness and permanence related to on-site contamination through removal of soil to achieve Track 1 Unrestricted Use SCOs. Alternative 2 would achieve compliance through removal of soil to achieve Track 2 Restricted-Residential Use SCOs. Alternative 2 would impose institutional controls, including an environmental easement prohibiting any higher use of the site, and a SMP would ensure proper maintenance of the engineering control and compliance with institutional controls.

Reduction of Toxicity, Mobility, or Volume of Contaminated Material

This evaluation criterion assesses the remedial alternative's use of remedial technologies that permanently and significantly reduce toxicity, mobility, or volume of contaminants as their principal element. The following is the hierarchy of source removal and control measures that are to be used to remediate a site, ranked from most preferable to least preferable: removal and/or treatment, containment, elimination of exposure and treatment of source at the point of exposure. It is preferred to use treatment or removal to eliminate contaminants at a site, reduce

the total mass of toxic contaminants, cause irreversible reduction in contaminants mobility, or reduce of total volume of contaminated media.

Alternative 1 would permanently eliminate the toxicity, mobility, and volume of contaminants from on-site soil by removing all soil in excess of Track 1 UU SCOs. Alternative 2 would remove impacted soils in excess of Track 2 RRU SCOs and will achieve the lowest of the three applicable contaminant-specific soil cleanup objectives for all soils above bedrock (in accordance with Part 375 sections 6.4 through 6.6) except as otherwise specified in Part 375-3.8(e)(2)(iii) as applicable for soils at a depth greater than 15 feet (e.g., soils below 15 feet may not represent a source of contamination). This Alternative would leave a minimal volume of contaminated material, which requires no cover system, but which would be practically inaccessible. The implementation of institutional controls and SMP will protect on-site residents, workers and the near-by community from exposure to site-related contaminants.

Implementability

This evaluation criterion addresses the technical and administrative feasibility of implementing an alternative and the availability of various services and materials required during its implementation, including technical feasibility of construction and operation, reliability of the selected technology, ease of undertaking remedial action, monitoring considerations, administrative feasibility (e.g. obtaining permits for remedial activities), and availability of services and materials. The techniques, materials and equipment to implement each Alternative are readily available and have been proven to be effective in remediating the contaminants present on the site. They use standard equipment and technologies that are well established in the industry. The reliability of each remedy is also high. Neither Alternative 1 nor Alternative 2 have meaningful implement-ability issues.

Cost Effectiveness

This evaluation criterion addresses the cost of alternatives, including capital costs (construction costs, equipment costs, and disposal costs, engineering expenses, etc.) and site management costs (costs incurred after remedial construction is complete) necessary to ensure the continued effectiveness of a remedial action. Short-term costs for Alternative 1 are higher than for Alternative 2 since an additional volume of soil must be removed. For comparison, approximately 3,600 cy of material would require removal to achieve Alternative 1, while approximately 1,750

cy of soil would require removal to meet Alternative 2. Long-term costs for Alternative 2 are higher than Alternative 1 since implementation of a SMP is required as part of Alternative 2. Cost estimates for each Remedial Alternative are included as Appendix B.

Community Acceptance

This evaluation criterion addresses community opinion and support for the remedial action (observations here will be supplemented by public comment received on the RAWP). This RAWP will be subject to a public review under the NYSDEC BCP and will provide the opportunity for detailed public input on the remedial alternatives and the selected remedy. Public comments will be considered by NYSDEC prior to approval of this plan. Under all alternatives, the overall goals of the remedial program, to protect public health and the environment and eliminate potential contaminant exposures, have been broadly supported by citizens in Queens and other New York City communities.

Land Use

This evaluation criterion addresses the proposed use of the property. This evaluation has considered reasonably anticipated future uses of the site and takes into account: current use and historical and/or recent development patterns; applicable zoning laws and maps; New York Department of State's Brownfield Opportunity Areas (BOA) pursuant to section 970-r of the general municipal law; applicable land use plans; proximity to real property currently used for residential use, and to commercial, industrial, agricultural, and/or recreational areas; environmental justice impacts, Federal or State land use designations; population growth patterns and projections; accessibility to existing infrastructure; proximity of the site to important cultural resources and natural resources, potential vulnerability of groundwater to contamination that might emanate from the site, proximity to flood plains, geography and geology; and current institutional controls applicable to the site.

The proposed development is consistent with existing zoning (Residential Use District [R-6] with paired C2-4 [commercial] designations - DFR Special District), which permits mixed residential and commercial uses).

The current, intended, and reasonably anticipated future land use of the site and its surroundings are compatible with the selected remedy of soil remediation. The proposed future use of the site

includes new construction for residential uses, consistent with overall uses in the neighborhood. All proposed Alternatives are protective of public health and the environment for the planned residential and commercial uses. The proposed use is consistent with recent development patterns. The surrounding area is urban and predominantly consists of commercial and mixed-use buildings, in zoning districts designated for residential and commercial uses. The planned development would remediate a contaminated parcel and provide a modern residential building. The proposed development would clean up the property and make it safer, create new employment opportunities, living space for city residents and associated societal benefits to the community, and other economic benefits from land revitalization.

Temporary short-term project impacts will be mitigated through site management controls and truck traffic controls during remediation activities.

The site is not in close proximity to important cultural resources, including federal or state historic or heritage sites or Native American religious sites, natural resources, waterways, wildlife refuges, wetlands, or critical habitats of endangered or threatened species.

The site is located in an urban area and not in proximity to fish or wildlife and neither alternative would result in any potential exposure pathways of contaminant migration affecting fish or wildlife. The remedial action is also protective of groundwater natural resources. The site does not lie in a Federal Emergency Management Agency (FEMA)-designated flood plain. Each alternative is equally protective of natural and cultural resources. Improvements in the current environmental condition of the property achieved by each considered Alternative are consistent with the City's goals for cleanup of contaminated land.

Green and Sustainable Remediation

Both proposed Alternatives were evaluated with respect to green and sustainable remediation principles and an environmental footprint analysis (EFA) was completed using SEFA (Spreadsheets for Environmental Footprint Analysis, USEPA), a NYSDEC-accepted environmental footprint analysis calculator. SEFA inputs included metrics for greenhouse gas (GHG) emissions, total energy usage, water consumption, electrical usage, onsite and offsite emissions of nitrous oxide (NOx), sulfur oxides (SOx), particulate matter under 10 microns (PM10), and hazardous air pollutants (HAPs). Both site preparation and the direct implementation remedy were evaluated.

The evaluation of site preparation was limited to impacts from initial waste characterization efforts and associated disposal of investigation-derived waste (IDW). Evaluation of the remedial action was based on excavation and off-site disposal of contaminated soil (estimated at 3,600 cy for Alternative 1 and 1,750 cy for Alternative 2), associated support of excavation (SOE), installation of required imported backfill, collection of confirmatory endpoint soil samples, and installation and operation of vapor control measures. Alternative 2 was estimated to require 5 months to complete (weekends and holidays were excluded from the calculations). Alternative 1 was estimated to require 2 additional months. A comparison of the EFA calculator output (see table below) shows the Track 1 environmental impact to be significantly higher than the Track 2 alternative due to the increased excavation volume requiring additional time and resource consumption. Marginally higher SO_x and significant increases in electricity usage for Alternative 2 are due to long-term (25 years) use of electricity to operate the SSDS under the Track 2 cleanup.

Alternative 1, Track 1 Cleanup		**Alternative 2, Track 2 Cleanup**	
EFA Component	**Result**	**EFA Component**	**Result**
GHG emissions	332.7	GHG emissions	226
Total energy used	4,170.3	Total energy used	3,150.4
Water consumed	294,049	Water consumed	204,049
Electricity used	-	Electricity used	33.3
On-site NOx emissions	0.827	On-site NOx emissions	0.576
On-site SOx emissions	0.0013	On-site SOx emissions	0.0010
On-site particulate <PM10	0.0732	On-site particulate <PM10	0.0508
On-site HAPs emissions	0.0003	On-site HAPs emissions	0.0002
Total NOx emissions	1.4	Total NOx emissions	0.9
Total SOx emissions	0.31	Total SOx emissions	0.32
Total PM10 emissions	0.14	Total PM10 emissions	0.11
Total HAPs emissions	0.05	Total HAPs emissions	0.04

Notes: GHG, NOx, SOx, PM10, and HAPs in metric tons; total energy used in million British thermal units (MMBTU); water consumed in gallons; and electricity used in megawatt hours (MWH)

Appendix G provides documentation for the SEFA EFA.

3.2 Selection of the Preferred Remedy

The preferred remedy for the site is Alternative 2. Data generated during the RI and previous investigations document soil contamination above RRU SCOs in twelve (12) locations in the 0-5 feet interval and two (2) as deep as 12 feet bgs; this material will be removed during construction and remedial excavation. All remaining soil will be managed under the Track 2 Restricted-Residential Use remedy following a SMP, and a SSDS will be utilized to address potential soil vapor intrusion.

These actions are considered protective of the health of both construction workers and future site residents. Institutional controls will be implemented to further prevent any potential exposures to residual contamination, and a SMP would ensure maintenance of the engineering controls and compliance with institutional controls.

Use restrictions will be imposed on the site (e.g., the use of groundwater from the site; prohibitions of restricted site uses, such as farming or vegetable gardening, to prevent future exposure pathways; and prohibition of a higher level of land use without NYSDEC approval).

The property would receive an environmental easement registered with the Queens County Clerk memorializing these institutional controls.

The following land use factor evaluation examines whether the selected alternative is acceptable based on the following criteria (below) as required by Article 27, Title 14 of the Environmental Conservation Law 27-1415.

Zoning

The site is located in a Residential Use District (R-6) with paired C2-4 (commercial) designations - DFR Special District, which permits the proposed use, consistent with applicable zoning laws. The implementation of Alternative 2 and the proposed final use are consistent with recent development in the surrounding area.

Applicable Community Master Plans or Land Use Plans

Implementation of Alternative 2 is consistent with: current use, and historical and recent development patterns; applicable zoning laws and maps; NYS Department of State's Brownfield Opportunity Areas (BOA) pursuant to section 970-r of the general municipal law; applicable land

use plans; and proximity to real property currently used for residential use, and to commercial, industrial, and recreational areas. The current, intended, and reasonably anticipated future land use of the site and surroundings are compatible with Alternative 2. The proposed future use of the site includes the construction of an on-site residential building, consistent with existing uses in the neighborhood.

Surrounding Property Uses

The site is located in an urban area comprised primarily of residential and mixed-use properties; the final use and the proposed remedial action are consistent with these surrounding property uses. One potential sensitive environmental receptor, the Sorrentino Recreation Center at 18-40 Cornaga Avenue, is located approximately 125 feet to the southeast. Impacts to adjoining/nearby properties during implementation of Alternative 2 will be minimized through strict adherence to local regulations governing construction activities, and implementation of site-specific plans (see Section 4.1, Governing Documents), including Health and Safety and Community Air Monitoring Plans.

Land Use Designations

There are no applicable federal or state land use designations.

Public Participation

This RAWP will be subject to a public review under the NYSDEC BCP and will provide the opportunity for detailed public input on the remedial alternatives and the selected remedy. This public comment will be considered by NYSDEC prior to approval of this plan. The project Public Participation Plan is provided in Appendix C. Observations here will be supplemented by public comment received on the RAWP. Under Alternative 2, the overall goals of the remedial program, to protect public health and the environment and eliminate potential contaminant exposures, have been broadly supported by citizens in Queens and other New York City communities.

Environmental Justice Concerns

Implementation of Alternative 2 would clean up the property and make it safer, create new employment opportunities, living space for future city residents and associated societal benefits to the community, and other economic benefits from land revitalization.

Population growth patterns

Implementation of Alternative 2 and the proposed use is compliant with the property's zoning and is consistent with recent development patterns.

Accessibility to Existing Infrastructure

The site has ready access to city infrastructure including roads, mass transit and public utilities. Implementation of Alternative 2 is compatible with current and future access and utilization of existing infrastructure.

Proximity to Cultural Resources

The site is not in close proximity to important cultural resources, including federal or state historic or heritage sites or Native American religious sites. Implementation of Alternative 2 would not negatively impact any important cultural resources.

Proximity to Natural Resources

The site is located in an urban area and is not near significant natural resources. Implementation of Alternative 2 would not result in any potential exposure pathways of contaminant migration affecting fish or wildlife.

Off-Site Groundwater Impacts

Alternative 2 is protective of groundwater natural resources. There are no known uses of groundwater in the vicinity of the site.

Proximity to Floodplains

The site does not lie in a Federal Emergency Management Agency (FEMA)-designated flood plain. Implementation of Alternative 2 would not introduce a receptor sensitive to flooding into an area susceptible to flooding.

Geography and Geology of the Site

Site geography and geology is described in Section 2.4; implementation of Alternative 2 is consistent with these site conditions.

Current Institutional Controls

The site is not currently encumbered with any institutional controls.

3.3 Summary of Selected Remedial Actions

Based on known environmental conditions and physical constraints on construction activities, the Volunteer expects to complete a Track 2 Restricted-Residential Use cleanup with residual contamination that requires Institutional Controls for Soil and Institutional and Engineering controls for soil vapor. The proposed remedial action plan achieves all of the remedial action goals established for the project. The plan 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. A remedial program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The core green remediation components are as follows:
    - Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
    - Reducing direct and indirect greenhouse gases and other emissions;
    - Increasing energy efficiency and minimizing use of non-renewable energy;
    - Conserving and efficiently managing resources and materials;
    - Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
    - Maximizing habitat value and creating habitat when possible;
    - Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals;
    - Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and,

- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the development at this site, any future on-site buildings shall be constructed (at a minimum) to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) and will utilize a 20-mil or thicker vapor barrier/waterproofing membrane on the foundation to improve energy efficiency as an element of construction.

As part of the remedial program, to evaluate the remedy with respect to green and sustainable remediation principles, an environmental footprint analysis will be completed. The environmental footprint analysis will be completed using an accepted environmental footprint analysis calculator such as SEFA (Spreadsheets for Environmental Footprint Analysis, USEPA), SiteWise™ (available in the Sustainable Remediation Forum [SURF] library) or similar NYSDEC accepted tool.

Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction and material use will be estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be incorporated into the remedial program, as appropriate. The project will include detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during implementation of the remedial action and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial program.

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

2. Performance of all required BCP Public Participation activities according to an approved Public Participation Plan.

3. Performance of a Community Air Monitoring Program for particulates and volatile organic compounds.
4. Selection of Track 2 Restricted-Residential Use SCOs (protection of public health) for soils to remain at the site.
5. Site preparation including setup of site security, equipment mobilization, utility mark outs and marking/staking excavation areas.
6. Completion of a Waste Characterization Study prior to excavation. Waste characterization soil samples will be collected at a frequency dictated by the disposal facility.
7. Removal of underground storage tanks and remaining hydraulic equipment encountered during construction activities in compliance with applicable local, State and Federal laws and regulations.
8. Removal of soils that exceed RRU SCOs from the upper 6 feet, and up to a maximum depth of 13 feet bgs at two locations, with increased excavation depth and/or areal extent based on confirmatory endpoint sampling. It is anticipated that approximately 1,750 cubic yards (cy) of soil will be removed.
9. Screening of excavated soil for indications of contamination by visual means, odor, and monitoring with a PID, and on-site segregation of excavated media (as needed).
10. Collection and analysis of end-point samples to evaluate the performance of the remedy with respect to attainment of Track 2 SCOs.
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. Transportation and off-site disposal of all soil material at licensed or permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media on-site.
13. Import of materials to be used for backfill in compliance with this plan and in accordance with applicable laws and regulations. If determined acceptable for re-use by the NYSDEC, existing fill soils that meet applicable SCOs may be relocated on the site for development.

14. Engineering controls (ECs) will be implemented at the site following removal of contaminated soil, including installation and continuous operation of an active sub-slab depressurization system (SSDS) at the new building to address potential soil vapor intrusion and post-remediation sampling to document system efficacy.
15. Performance of all activities required for the remedial action, including acquisition of required permits and attainment of pretreatment requirements, in compliance with applicable laws and regulations.
16. Based on the depth to groundwater, dewatering of excavations is not expected. Should dewatering be required, all work will be in compliance with city, state, and federal laws and regulations. Extracted groundwater will either be containerized for off-site licensed or permitted disposal or will discharged to the local wastewater system in compliance with all municipal requirements, including pre-treatment if warranted.
17. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
18. Submission of a Final Engineering Report that describes the remedial activities, certifies that the remedial requirements have been achieved, defines site boundaries, lists any changes from this RAWP, and describes all Engineering Controls (ECs) and Institutional Controls (ICs) to be implemented at the site.
19. Submission of an approved Site Management Plan in the FER for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of ECs and ICs, and reporting at a specified frequency.
20. Recording of an environmental easement that includes a listing of institutional controls. Institutional controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater underlying the property is prohibited without the approval of the NYSDOH or the New York City Department of Health and Mental Hygiene, and the use of any necessary water quality treatment as determined by the applicable agency to render it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without NYSDEC approval. The environmental easement will include a listing of engineering controls and a requirement that management of these controls must be in compliance with an approved SMP.

4 REMEDIAL ACTION PROGRAM

4.1 Governing Documents

All remedial work performed under this plan will be in full compliance with the governing documents described in this section of the RAWP.

4.1.1 Standards, Criteria and Guidance

Principal SCGs applicable to remedial program implementation include the following (additional regulations and guidance will be referenced as warranted during program implementation):

- 6 NYCRR Part 360 and Part 364 Solid Waste Management Requirements
- 6 NYCRR Part 364 Waste Transporter Permits
- 6 NYCRR Part 371, Identification and Listing of Hazardous Wastes
- 6 NYCRR Part 372, Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities
- 6 NYCRR Subpart 374-1, Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
- 6 NYCRR Part 375, Environmental Remediation, Subparts 375-1 (Remedial Program Requirements), 375-3 (Brownfield Cleanup Program), and 375-6 (Soil Cleanup Objectives)
- 6 NYCRR Part 376, Land Disposal Restrictions
- 6 NYCRR Part 608, Use and Protection of Waters
- 6 NYCRR Parts 700-706, Water Quality Standards
- 6 NYCRR Part 750 State Pollutant Discharge Elimination System (SPDES) Permits
- 10 NYCRR Part 67, Lead
- 29 CFR Part 1910.120, Hazardous Waste Operations and Emergency Response
- NYSDEC CP-51 Soil Cleanup Guidance (October 2010)
- NYSDEC DER-2, Making Changes to Selected Remedies (May 2008)
- NYSDEC DER-10, Technical Guidance for Site Investigation and Remediation (May 2010)
- NYSDEC DER-23, Citizen Participation Handbook for Remedial Programs (January 2010)
- NYSDEC DER-31, Green Remediation (September 2010)
- NYSDEC TAGM 3028, "Contained In" Criteria for Environmental Media (August 1997)
- NYSDEC TOGS 1.1.1 Ambient Water Quality Standards and Guidance Values, (June 2004)
- NYSDOH Generic Community Air Monitoring Plan (May 2010)
- USEPA OSWER Directive 9200.4-17, Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites (November 1997)

4.1.2 Public Participation Plan

A Public Participation Plan, including an overview of the BCP program, background of the site, a summary of the investigative findings for the site, and public participation activities is provided in Appendix C.

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

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

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

Queens Public Library – Far Rockaway Branch
1637 Central Avenue
Far Rockaway, NY 11691
(718) 327-2549
website - hours of operation:
queenslibrary.org/about-us/locations/far-rockaway

Queens Community Board 14
Felicia Johnson, District Manager
Environmental Committee Chair: David Shelborne
Chairperson: Dolores Orr
1931 Mott Avenue, Room 311
Far Rockaway, NY 11691
(718) 471-7300
qn14@cb.nyc.gov

4.1.3 Health and Safety Plan (HASP)

All remedial work performed under this plan will be in full compliance with regulatory requirements, including site and worker safety requirements mandated by Federal OSHA. The Volunteer and associated parties preparing the remedial documents submitted to the State and those performing the construction work, are completely responsible for the preparation of an appropriate Health and Safety Plan and for the appropriate performance of work according to that plan and applicable laws. The HASP and requirements defined in this Remedial Action Work Plan pertain to all remedial and invasive work performed at the site until the issuance of a Certificate of Completion. A copy of the HASP is provided as Appendix D.

The site-specific HASP will be reviewed with site personnel and appropriate sub-contractors prior to the initiation of fieldwork. All proposed work will be performed in "Level D" PPE unless field conditions warrant additional protection.

The Site Safety Coordinator will be Erick Salazar of GBTS unless otherwise specified and approved by the NYSDEC. A resume will be provided to NYSDEC prior to the start of remedial construction.

Confined space entry will comply with all OSHA requirements to address the potential risk posed by combustible and toxic gasses. Potential confined spaces on this project include utility trenches and other excavation areas.

4.1.4 Quality Assurance Project Plan (QAPP)

A QAPP, detailing procedures necessary to generate data of sufficient quality and quantity to represent successful performance of the Remedial Action, is provided as Appendix F. The QAPP includes a Sampling and Analysis Plan (SAP), detailing sampling and analysis of all media (confirmatory and/or endpoint samples, waste characterization samples, fill and soil cover samples, etc.), and which identifies methods for sample collection and handling.

4.1.5 Soil/Materials Management Plan (SoMP)

All soil removal will follow the SoMP plan as specified in Section 5.4, below. The SoMP includes detailed plans for managing all soils/materials that are disturbed at the site, including excavation, handling, storage, transport and disposal, and includes all controls that will be applied to these efforts to assure effective, nuisance-free performance in compliance with all applicable Federal, State and local laws and regulations. All contaminant source removal areas will be surveyed at the completion of excavation. This information will be provided on maps in the FER.

4.1.6 Storm-Water Pollution Prevention

The Volunteer is responsible for ensuring that construction activities are conducted according to a Plan that address all applicable New York State and New York City requirements for proper management of stormwater, including physical methods to control and/or divert surface water flows and to limit the potential for erosion and migration of site soils, via wind or water, and will accommodate construction sequencing and staging areas. A *Soil Erosion & Sediment Control Phase Plan* signed and stamped by a professional engineer is provided in Appendix I, which complies with New York State Guidelines for Urban Erosion and Sediment Control.

4.1.7 Community Air Monitoring Plan (CAMP)

The CAMP (provided in Appendix E) will be initiated during all ground intrusive activities, and during any other fieldwork that is reasonably likely to generate significant dust or vapors from known or suspected contaminated soils. 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. The implementation of the CAMP will document the presence or absence of VOCs and dust in the air surrounding the work zone, which may migrate off-site due to fieldwork activities. This plan provides guidance on the need for implementing more stringent dust and emission controls based on air quality data.

Mitigation measures may include reducing the surface area of contaminated soil being disturbed at one time, watering exposed soils to reduce fugitive dust and odors, or stopping excavation activities. Dust suppression will be conducted during construction activities that will disturb on-site soils and may include misting, reduction in soil movement, or cessation of excavation.

Real-time air monitoring for VOCs and particulate levels at the perimeter of the exclusion zone or work area will be performed. 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 CAMP will be reported to the NYSDEC Project Manager and included in the Daily Report.

VOC Monitoring, Response Levels, and Actions

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. 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 occupied 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 shut down.

All 15-minute readings must be recorded and be available for NYSDEC personnel 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 (µg/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 and work will continue provided that downwind PM-10 particulate levels do not exceed 150 µg/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 µg/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 µg/m^3 of the upwind level and in preventing visible dust migration.

All readings will be recorded and will be available for NYSDEC personnel to review.

4.1.8 Contractors Site Operations Plan (SOP)

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

4.1.9 Remedial Design in Compliance with DER-31

A remedial design program will be implemented in accordance with NYSDEC DER-31 Green Remediation to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program.

Green and Sustainable Remediation Components

GSR principles and techniques will be employed as feasible in the design, implementation, and site management of the remedy in general conformance with per DER-31. The major remediation components are as follows:

- Considering environmental impacts of treatment technologies and remedy stewardship over the long term;

- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, and increasing recycling and reuse of materials that would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes that support balancing ecological, economic and social goals;
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and,
- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the development at this site, any future on-site buildings shall be constructed (at a minimum) to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) and will utilize a 20-mil or thicker vapor barrier/waterproofing membrane on the foundation to improve energy efficiency as an element of construction.

An environmental footprint analysis performed for each proposed remedial alternative is provided in in Appendix G.

Best Management Practices

Best Management Practices in the context of GSR are specific actions to reduce energy and water usage, minimize waste, reduce air and water pollution, and protect land and ecosystems during all phases of remediation.

BMPs will be implemented during the remedial action in consultation with NYSDEC and in general conformance with NYSDEC *Green and Sustainable Remediation and Climate Resiliency Fact Sheet* (June 2023) and USEPA *Green Remediation Best Management Practices: Site Investigation and Environmental Monitoring* (September 2016). Examples of BMPs for remediation at the site are:

- Advance project planning to a) minimize mobilizations to the site by fieldwork personnel and related subcontractors, and b) avoid unnecessary/redundant media sampling and the associated impacts from collection, transportation, and laboratory analysis;
- Remote communication as practical to minimize on-site meetings, reducing the impacts associated with transportation of site personnel (energy use, pollution, etc.);

- Use of minimally invasive fieldwork technologies, such as direct-reading instruments;
- Use of existing on-site construction equipment as possible rather than mobilization of specialized off-site equipment (e.g., additional waste-characterization samples collected via an on-site excavator verses use of mechanized boring equipment brought to the site);
- Combining waste streams (where both practical and acceptable to the disposal facilities) to minimize both on-site handling and transportation costs; and,
- Optimization of any required Engineering Controls, including proper initial design, pilot testing, selection of correctly sized and energy efficient equipment, and periodic maintenance to ensure effective ongoing operation.

4.2 General Remedial Construction Information

4.2.1 Project Organization

Principal personnel who will participate in the remedial action include the Professional Engineer (PE), Daniel Bellucci and the Qualified Environmental Professional (QEP), Jay Jaros, PG. NYSDEC will be notified of any change to principal personnel. Resumes of key personnel are provided in the QAPP.

4.2.2 Remedial Engineer and Qualified Environmental Professional

Remedial Engineer

The Remedial Engineer for this project will be Daniel Bellucci of Bellucci Engineering, PLLC, a registered professional engineer licensed by the State of New York, who has contracted directly with 10-16 Beach 19th Street LLC (the Volunteer) to provide all engineering services under the BCP. The Remedial Engineer will have primary direct responsibility for implementation of the remedial program for the 10-16 Beach 19th Street site (No. C241276).

The Remedial Engineer will certify in the FER that the remedial activities were observed by qualified environmental professionals under their supervision and that the remediation requirements set forth in the Remedial Action Work Plan and any other relevant provisions of ECL 27-1419 have been achieved in full conformance with that Plan. Other Remedial Engineer certification requirements are listed later in this RAWP.

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

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

The Remedial Engineer will provide the certifications listed in Section 11.2 in the FER.

Qualified Environmental Professional

The Qualified Environmental Professional (QEP) for this project will be Erick Salazar, CHMM, of GBTS (which has contracted with the Volunteer to provide applicable environmental remediation services under the direct supervision of the Remedial Engineer). The QEP will oversee environmental remedial activities on the site, document the proper removal of contaminated soils, collect waste characterization as well as site integrity samples, inspect and certify the proper importation of approval fill soils, and assist the Remedial Engineer in the preparation of documents including the FER, the SMP, and periodic status reports.

4.2.3 Remedial Action Construction Schedule

A schedule for performance of the remedial work is provided in Section 10.

4.2.4 Work Hours

The hours for operation of remedial construction will be from 7 a.m. to 5 p.m. These hours conform to Queens, New York requirements or to specific variances issued by applicable City agencies (NYSDEC will be notified by the Volunteer of any variances). No remedial work will be conducted on weekend days (Saturday or Sunday) unless expressly permitted by NYSDEC. NYSDEC reserves the right to deny alternate remedial construction hours.

4.2.5 Site Security

The site will be secured at a minimum with a six-foot fence and locking gates to protect the public during all construction activities.

4.2.6 Traffic Control

Traffic control will be provided by the contractor during equipment entrance and egress from the site. Trucks will follow the approved truck route in Section 5.4.4. Drivers of trucks leaving the site with excavated soil will be instructed to proceed without stopping in the vicinity of the site to prevent neighborhood impacts.

4.2.7 Contingency Plan

If unknown conditions are encountered during sub-grade removal (e.g., discovery of unidentified UST), the Contingency Plan (provided in Section 5.5) and all applicable NYSDEC guidelines will be followed to address the condition(s).

4.2.8 Worker Training and Monitoring

The Volunteer is responsible for ensuring that all site contractors provide their workers with applicable training (i.e. HAZWOPER, site safety training and medical monitoring, as necessary).

4.2.9 Agency Approvals

The Volunteer has addressed all SEQRA requirements. All permits or government approvals required for remedial construction have been, or will be, obtained prior to the start of remedial construction. Acceptance of this RAWP by NYSDEC does not constitute satisfaction of these requirements and will not be a substitute for any required permit.

The site is located in a Residential Use District (R-6) with paired C2-4 (commercial) designations - DFR Special District, which permits residential uses, and the proposed use is consistent with applicable zoning laws. A Certificate of Completion will not be issued for the project unless conformance with zoning designation is demonstrated.

4.2.10 Pre-Construction Meeting with NYSDEC

A pre-construction meeting among NYSDEC, the Volunteer, the RE and QEP, and the General Contractor will take place prior to the start of remedial construction activities.

4.2.11 Emergency Contact Information

An emergency contact list with names and telephone numbers that will define the specific project contacts for use by NYSDEC and NYSDOH in the case of a day or night emergency is provided below.

Table: Emergency Contact Information

Emergency Agencies	Phone Numbers
EMERGENCY	911
St. John's Episcopal Hospital 327 Beach 19th Street, Far Rockaway	(718) 869-7000 or 911
Kings County Hospital 451 Clarkson Avenue, Brooklyn	(718) 245-3131 or 911
NYPD – 101st Precinct 16-12 Mott Avenue, Far Rockaway	(718) 868-3400 or 911
FDNY – Engine 264/Engine 328/Ladder 134 1617 Central Ave, Far Rockaway	911
New York City Services	311
Main Water and Sewer	(845) 451-4111
Site Health and Safety Officer, Erick Salazar - GBTS	(845) 867-4716
Remedial Engineer, Daniel Bellucci, PE	(845) 803-4347
Construction Manager	TBD

4.3 Site Preparation

4.3.1 Agency Notification and Mobilization

Notifications

The NYSDEC will be notified in writing at least five (5) business days prior to the initiation of any of the on-site work and during the course of the fieldwork. Changes to fieldwork scheduling will be provided via email. All applicable local agencies will also be notified prior to the initiation of site work. NYSDEC will have the opportunity to participate in all remediation project status meetings (adequate notice of these meetings will be provided).

Prior to the implementation of any ground intrusive activities, a request for a complete utility mark-out of the site will be submitted in conformance with New York State Department of Labor regulations. Confirmation of underground utility locations will be secured, and a field check of the utility mark-out will be conducted prior to the initiation of work. Site utilities will be protected (as necessary) by the contractor or Volunteer.

Site 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. Site mobilization will be conducted in a manner such that erosion and sedimentation control, utility marker and easement layout, and other site preparation tasks are fully instituted before construction begins.

4.3.2 Erosion and Sedimentation Controls

This section describes preventative measures that will be taken to protect the site from soil erosion and sedimentation during remedial activities. A *Soil Erosion & Sediment Control Phase Plan* (SESC Plan), which complies with New York State Guidelines for Urban Erosion and Sediment Control, is provided in Appendix I (any updates to this document required by changes in the final development plans or based on approved modifications to the scope of remedial work will be submitted to the NYSDEC for review and approval prior to the start of construction activities).

The SESC Plan includes the following elements:

- Maps and Plans including: Survey; Zoning and Tax Map; Existing Flow Paths; Demolition, SOE, and excavation; Proposed Buildings, Foundations, utilities; landscaping; and Stormwater Controls;
- Tables addressing the sequencing of the project; and,
- Detailed specifications for all erosion and sediment control measures (e.g., silt fence, hay bales, stabilized construction entrance).

The remediation will occur in such a way as to permit on-site stormwater to remain on the site.

4.3.3 Stabilized Construction Entrance(s)

Steps will be taken to ensure that trucks departing the site will not track soil, fill or debris off-site. Such actions may include use of 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.

4.3.4 Utility Marker and Easements Layout

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

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

4.3.5 Sheeting and Shoring

Appropriate management of structural stability of on-site or off-site structures during on-site activities including excavation is the sole responsibility of the Volunteer and its contractors. The Volunteer and its contractors are solely responsible for safe execution of all work performed under this Plan. The Volunteer and its contractors must obtain any local, State or Federal permits or approvals that may be required to perform work under this Plan. The Volunteer and its contractors are solely responsible for the implementation of all required, appropriate, or necessary health and safety measures during performance of work under the approved Plan.

4.3.6 Equipment and Material Staging

Equipment and materials will be stored and staged in a manner that complies with applicable laws and regulations. Specific site areas will be designated for the staging of equipment and materials. Staging areas will be located and managed such that: a) non-contaminated materials do not contact or become intermixed with contaminated materials; and b) the likelihood of worker and/or visitor exposures to contaminated media is minimized.

4.3.7 Decontamination Area

Decontamination of field equipment will be conducted to prevent site cross-contamination, minimize the potential for off-site contamination and to reduce exposures to contaminated media. All decontamination activities will be documented in field logbooks.

Trucks and other heavy equipment remaining on-site will be brushed to remove easily accessible gross accumulations of soil at the end of each workday, and prior to moving between excavation areas or moving toward the site exit. A dedicated decontamination area will be provided as part of the erosion and sedimentation control for vehicles exiting the site and will be designed such that there is continuity between the equipment wash area and the clean egress path. Heavy equipment will be brushed and sprayed with high-pressure water and/or steam to remove soil adhering to surfaces (including wheels and vehicle undercarriages), prior to exiting the site.

Decontamination of non-disposable equipment will be conducted on a decontamination line setup on plastic sheeting, proceeding from dirty to clean. All items (disassembled as needed) will be washed/brushed thoroughly in an Alconox (or similar) solution, then rinsed with clean water (and/or nitric acid and methanol, as appropriate) per established USEPA decontamination protocols. All down-hole gauging and pumping equipment will be allowed to run fully submerged in both soapy and clean water. Rinse blanks will be collected as per the requirements of the QAPP.

Equipment known or suspected to be impacted by petroleum or solvents, grossly contaminated media, or materials subject to conditions specified in the Contingency Plan (Section 5.5), will be decontaminated on an engineered pad designed to capture and contain wash water (to be containerized and characterized prior to off-site disposal at a permitted facility.

Based on known conditions, decontamination rinse water generated during other decontamination activities will be allowed to infiltrate into on-site soils, either directly to the surface (for minor quantities of water that are not likely to exhibit sheet flow) or to the subsurface via engineered discharge pits.

4.3.8 Site Fencing

Site fencing (6 feet minimum with locking gate) will be installed as needed.

4.3.9 Demobilization

Demobilization will include:

- Restoration of temporarily disturbed locations (e.g., access and storage areas);
- Removal of sediment from erosion control measures and truck wash areas, 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.

4.3.10 Well Decommissioning

Any monitoring wells located within construction areas will be properly decommissioned according to technical guidance provided in NYSDEC CP-43: Groundwater Monitoring Well Decommissioning Policy. The well casing will be exposed to a depth corresponding to the depth of planned excavation in the immediate vicinity of the well, the exposed casing will be cut off at the level of the excavation floor and the remaining subsurface portion of the casing will be grouted in-place, as per CP-43 Section 6.0.

4.4 Reporting

All daily and monthly Reports will be included in the FER.

4.4.1 Daily Reports

Daily reports will be submitted to NYSDEC and NYSDOH Project Managers by noon of the next business day after the end of the reporting period, and will include:

- An update of progress made during the reporting day;
- Locations of work and quantities of material imported and exported from the site;
- References to alpha-numeric map for site activities;
- A summary of any and all complaints with relevant details (names, phone numbers);

- A summary of CAMP finding, including excursions; and,
- An explanation of notable site conditions.

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

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

Figure 7 shows a predefined alpha-numeric grid for use in identifying all locations described in reports submitted to NYSDEC.

The NYSDEC assigned project number will appear on all reports.

4.4.2 Monthly Reports

Monthly reports prepared in accordance with DER-10 Section 5.7(b) will be submitted to NYSDEC and NYSDOH Project Managers within one week following the end of the month of the reporting period. Reports will include, at a minimum:

- Activities relative to the site during the previous reporting period and those anticipated for the next reporting period, including a quantitative presentation of work performed (i.e. tons of material exported and imported, etc.);
- Description of approved activity modifications, including changes of work scope and/or schedule;
- Sampling results received following internal data review and validation, as applicable; and,
- An update of the remedial schedule including the percentage of project completion, unresolved delays encountered or anticipated that may affect the future schedule, and efforts made to mitigate such delays.

4.4.3 Other Reporting

Representative photographs of all remedial program elements, in acceptable quality, will be submitted to NYSDEC in digital (JPEG) format. Photographs will include the site as a whole, each contaminant source area, and site structures, and will be taken before, during, and after remediation. Photographs will be included in the daily reports as needed, and a comprehensive chronological collection will be included in the FER.

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

4.4.4 Complaint Management Plan

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

Any public complaints regarding nuisances or other site conditions will be handled as follows:

- Information from the person making the complaint (name, phone number, address, etc.) will be obtained, if possible, so follow-up can be completed.
- The nature of the complaint, date, time, and weather conditions will be noted.
- The complaint will be addressed by on-site personnel.
- The person logging the complaint will be re-contacted (if contact information was provided), so that the resolution of the complaint can be documented.
- In the event that the complaint cannot be resolved, the NYSDEC project manager will be contacted in writing.

4.4.5 Deviations from the Remedial Action Work Plan

All changes to the RAWP will be reported to the NYSDEC Project Manager and will be documented in daily reports and reported in the FER.

The process to be followed if there are any deviations from the RAWP will include a request for approval for the change from NYSDEC noting the following:

- Reasons for deviating from the approved RAWP;
- 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.

Notification will be provided to NYSDEC by telephone for conditions requiring immediate action (e.g., conditions judged to be a danger to on-site personnel or the surrounding community).

5 DETAILS OF PROPOSED REMEDIAL ACTIONS

5.1 Tank and Soil Removal Activities

5.1.1 Removal of Known USTs and Hydraulic Equipment

All underground storage tanks previously identified at the western portion of the site and any remnant hydraulic equipment associated with former automotive repair activities, as well as any unknown USTs or equipment encountered during site construction, will be excavated, cleaned, and disposed off-site at a permitted facility. Tank and equipment removal will be sequenced to allow for efficient and safe remedial construction activities, with priority given to avoiding any actions likely to result in a release from the USTs. Known USTs and hydraulic equipment to be removed are shown on Figures 8 and 9.

Closure of USTs, hydraulic equipment, and related appurtenant piping at the site will be in accordance with the removal procedures and documentation requirements of DER-10, Section 3.9 (*Area Specific Requirements for Tanks, Storage Facilities, Water Treatment, Drainage Structures and Other Systems*) and with Section 5.5 (*Underground Storage Tank Closure*). A full assessment of conditions will be performed by the RE/QEP including evidence of a failure and related release(s), and evidence of spills will be promptly communicated to the NYSDEC Project Manager. All encountered equipment currently or formerly containing petroleum will be documented and then disposed off-site, pursuant to applicable Petroleum Bulk Storage (PBS) and/or hazardous waste regulations.

All USTs and hydraulic equipment will be visually inspected to determine if liquids are present, and any significant remaining quantities of liquid will be drummed on the site or removed by a properly licensed disposal company and the particular product (e.g., fuel oil, diesel, etc.) will be identified prior to off-site disposal at a permitted facility. Manifests of liquid waste management will be maintained by the RE/QEP and will be included in the FER. The tanks and all ancillary piping will be removed from the ground and inspected for evidence of failure. USTs and hydraulic reservoirs will be purged of petroleum/chemical vapors, properly stenciled as scrap metal, and transported to a metal recycling facility for destruction (a record of destruction will be secured by the RE/QEP and will be included in the FER).

Any surrounding soil exhibiting petroleum impacts will be excavated until soils no longer exhibit any significant field evidence of contamination. Confirmatory soil samples will be collected from the base and from the walls of the excavations (minimum of one bottom and four sidewall samples for each 15 linear feet of trench, biased toward the suspected locations of greatest contamination) and will be analyzed for both VOCs and SVOCs per CP-51 guidelines. Soil sampling may be waived by NYSDEC based on encountered conditions and/or other relevant circumstances, and additional sampling may be required as specified in Section 5.5 Contingency Plan.

Written field logs will be used to document all fieldwork activities and observations, including any evidence of tank failure and/or a release, and maps and a photographic record will be generated (all documentation will be provided in the FER).

5.1.2 Excavation of Contaminated Materials

All soils above RRU SCOs from of the upper 6 feet (or deeper if required based on confirmatory endpoint sampling) site-wide and up to 13 feet or more bgs at two locations will be excavated and transported off-site for disposal. Approximately 1,750 cubic yards of contaminated soil will be removed from the site. Collection and analysis of confirmation samples at the remedial excavation depth will be used to verify that RRU SCOs for the site have been achieved. If confirmation sampling indicates that RRU SCOs were not achieved at the stated remedial depth, the Volunteer must notify NYSDEC, submit the sample results, and in consultation with NYSDEC determine if further remedial excavation is necessary. Further excavation for development will proceed after confirmation samples demonstrate that RRU SCOs for the site have been achieved.

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

Remedial construction will include excavation and removal of any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination.

Figure 9 shows proposed remedial excavations to achieve a Track 2 cleanup.

No fill material will be re-used without approval by the NYSDEC and no on-site fill material will be used to regrade areas below the static water level.

5.1.3 Soil Cleanup Objectives

The Soil Cleanup Objectives for this site are Restricted Residential Use SCOs. Tables 1 through 7 show exceedances of both Unrestricted and Restricted-Residential SCOs for all soil at the site. Figure 4 is a spider map that shows exceedances of applicable Track 2 SCOs.

5.2 Remedial Performance Evaluation

5.2.1 Confirmatory Sampling Locations

The Track 2 remedy requires that all soils which exceed the restricted residential SCOs will be excavated and transported off-site for disposal. Confirmatory endpoint sampling is required at all remedial excavation depths. If NYSDEC determines that the existing RI data, as supplemented by any relevant data generated during the remedial action, does not provide sufficient documentation for soils that will remain beyond development depth, additional documentation samples will be required for inclusion in the SMP. Additional excavation and off-site disposal, along with applicable confirmation sampling, will be required for known USTs and hydraulic equipment, and any encountered previously unknown contamination source areas (e.g., grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u), underground drainage structures, storage tanks, etc.). Additional information can be found in Section 5.1 Tank and Soil Removal Activities and Section 5.5 Contingency Plan. Figures 12 and 13 show proposed endpoint sample locations for both remedial alternatives.

5.2.2 Confirmatory Sampling Frequency

Discrete confirmatory soil samples will be collected (at a minimum) from each 30 linear feet of wall (at least one sample per wall) and from every 900 square feet of excavation floor (at least one sample per floor) in excavation areas (the final number and location of samples will be determined in consultation with NYSDEC). All confirmatory samples will be analyzed for Part 375 parameters (TCL VOCs [with 1,4-dioxane via 8270 SIM] and TCL SVOCs, TAL metals including Cr^{+6}, pesticides, herbicides, PCBs, and cyanide) and PFAS.

Based on RI data and site conditions, the Volunteer may request that a portion of the confirmatory samples be analyzed for a reduced list of parameters.

5.2.3 Confirmatory Sampling Methodology

Underlying and surrounding soils will be visually inspected and screened with the PID after soil excavation. Soil samples will be collected using dedicated, disposable plastic trowels and latex gloves (collection for PFAS will follow methodology as specified in the QAPP).

Samples will be placed in laboratory-supplied containers, properly stored in coolers, and transported to a NYSDOH-certified laboratory within 48 hours under chain of custody procedures.

5.2.4 Reporting of Results

All data will be provided to the NYSDEC within 72 hours of receipt. Any recommendations for additional testing will be reviewed with the NYSDEC prior to commencing this fieldwork.

5.2.5 QA/QC

Quality Assurance / Quality Control protocols are fully specified in the QAPP (Appendix F). QA/QC methodology includes the following:

- One duplicate sample for every 20 samples collected will be submitted to the approved laboratory for analysis of the same parameters.
- Samples will be appropriately packaged, placed in coolers and transferred under proper Chain of Custody to the analytical laboratory. Samples will be containerized in appropriate laboratory provided glassware and shipped in plastic coolers. Samples will be preserved through the use of ice to maintain a temperature of 4^{o} C.
- Dedicated disposable sampling materials will be used for the collection of soil samples, eliminating the need to prepare equipment (rinsate) blanks. However, if non-disposable equipment is used, (stainless steel scoop, etc.) field rinsate blanks will be prepared at the rate of one for every eight samples collected.

5.2.6 Data Usability Summary Reports

Complete laboratory data packages will be provided to an independent, third-party data validator. A summary of the findings in the Data Usability Summary Reports (DUSRs) will be provided in the FER.

5.2.7 Reporting of Confirmatory Data in FER

Chemical analysis of confirmatory and contingency samples will be conducted by a NYSDOH ELAP certified laboratory. The FER will provide all confirmatory sample results and exceedances of SCOs. All data submitted as part of the FER will be in an electronic data deliverable (EDD) format that complies with the NYSDEC Electronic Data Warehouse Standards (EDWS).

5.3 Estimated Material Removal Quantities

The estimated quantity of soil to be removed from the site is 1,750 cubic yards.

5.4 Soil/Materials Management Plan

5.4.1 Soil Screening Methods

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

Grossly contaminated soil will be identified by the presence of: non-aqueous phase liquids (NAPL); visual indications of staining, discoloration or the presence of other obvious signs of contamination; noticeable odors associated with petroleum, solvents or other chemicals; and/or elevated PID readings compared to background levels.

Soil screening will be used to establish excavation endpoints by: 1) establishing the absence of soil exhibiting significant field evidence of contamination (grossly contaminated media) or debris materials likely to be associated with contaminants of concern (e.g., urban fill); and 2) identifying the presence of non-disturbed native soils. The use of direct-reading hand-held screening devices (e.g., PID) will be employed, as appropriate, to determine likely excavation boundaries; final endpoints, however, will only be established through laboratory analysis of confirmatory samples.

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

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

5.4.2 Stockpile Methods

All stockpile activities will be compliant with applicable laws and regulations. Stockpile areas will be appropriately graded to control run-off and will be located in areas not subject to flooding or excessive sheet flow during storm events. Material to be stockpiled will be placed within an area designed and constructed to contain the materials from all sides and prevent runoff and dispersion. Stockpiles of excavated soils and other materials shall be located at least of 50 feet from the property boundaries, where possible.

Excavated soil from known and/or suspected areas of contamination (e.g., petroleum spill areas, 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. Excavated soils will be stockpiled on, at minimum, double layers of 8-mil minimum sheeting. Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Stockpiles will be inspected daily. Results of inspections will be recorded in a logbook maintained at the site and available for inspection by NYSDEC.

Soil stockpiles will be continuously encircled with silt fences. Hay bales (or equivalent) will be used as needed near catch basins, surface waters and other discharge points.

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

5.4.3 Materials Excavation and Load Out

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

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

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

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

A truck wash will be operated on-site. The on-site Qualified Environmental Professional under the Remedial Engineer's directive will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the site until the remedial construction is complete.

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

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

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

The on-site Qualified Environmental Professional under the Remedial Engineer's directive will ensure that site development activities will not interfere with, or otherwise impair or compromise, remedial activities proposed in this Remedial Action Work Plan.

Each spill area or other significant site condition to be remediated (e.g., unknown USTs) will be removed and end-point remedial performance sampling completed before excavations related to site development commence proximal to the impacted area.

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

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

5.4.4 Materials Transport Off-Site

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Final truck transport routes will be determined based on the selected disposal facilities. All trucks will follow established NYS DOT Truck Routes, as available. At this time, it is expected that trucks will proceed north on Beach 19th Street to Mott Avenue and then to relevant DOT-designated routes to Interstate Highway I-678 (Van Wyck Expressway). All trucks loaded with site materials will exit the vicinity of the site using only these approved truck routes. This is the most appropriate approach and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off- site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport; and (g) community input.

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

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

Queuing of trucks will be performed on-site (as available) in order to minimize off-site disturbance (off-site queuing will be minimized).

Material transported by trucks exiting the site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used. All trucks will be washed prior to leaving the site. Truck wash waters will be collected and disposed of off-site in an appropriate manner.

5.4.5 Materials Disposal Off-Site

Waste disposal locations, to be established at a later date, will be reported to the NYSDEC Project Manager prior to the start of remedial excavation. The total quantity of material expected to be disposed off-site is anticipated to be 6,000 cubic yards of soil/urban fill. Several separate disposal facilities may be secured (as warranted), based on the expected composition of known contaminated soils. Information from the disposal facilities will be sent to the NYSDEC before the initiation of soil removal at the site.

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

Material that does not meet Track 1 unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility). No material potentially falling into this category is anticipated on this project.

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

Non-hazardous historical fill and contaminated soils taken off-site will be handled in accordance with 6NYCRR Part 360. Historical fill and contaminated soils from the site are prohibited from being disposed at Part 360-16 Registration Facilities (also known as Soil Recycling Facilities).

Soils that are contaminated but non-hazardous and are being removed from the site are considered by the Division of Materials Management (DMM) in NYSDEC to be Construction and Demolition (C/D) materials with contamination not typical of virgin soils. These soils may be sent to a permitted Part 360 landfill. They may be sent to a permitted C/D processing facility without permit modifications only upon prior notification of NYSDEC Region 3 DMM. This material is prohibited from being sent or redirected to a Part 360-16 Registration Facility. In this case, as dictated by DMM, special procedures will include, at a minimum, a letter to the C/D facility that provides a detailed explanation that the material is derived from a DER remediation site, that the soil material is contaminated and that it must not be redirected to on-site or off-site Soil Recycling Facilities. The letter will provide the project identity and the name and phone number of the Remedial Engineer. The letter will include as an attachment a summary of all chemical data for the material being transported.

The FER will include an accounting of the destination of all material removed from the site during this Remedial Action, including excavated soil, contaminated soil, historical fill, solid waste, and hazardous waste, non-regulated material, and fluids. Documentation associated with disposal of all material must also include records and approvals for receipt of the material. This information will also be presented in a tabular form in the FER.

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

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

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

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

5.4.6 Materials Reuse On-Site

Soil and fill that is derived from the property that meets the soil cleanup objectives established in this plan may be reused on-site. "Reuse on-site" means material that is excavated during the remedy or development, does not leave the property, and is relocated within the same property and on comparable soil material, and addressed pursuant to engineering controls. The on-site Qualified Environmental Professional under the Remedial Engineer's directive will ensure that procedures defined for materials reuse in this RAWP are followed and that unacceptable material will not remain on-site.

On-site soils and urban fill determined by the NYSDEC to be acceptable for on-site re-use will not be placed below the static water level.

Concrete crushing or processing on-site is prohibited.

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

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

5.4.7 Fluids Management

Based on the depth to groundwater, dewatering of excavations is not expected. Should dewatering be required, all work will be completed consistent with applicable local, State, and Federal regulations rules and regulations. All liquids to be removed from the site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. A City permit will be obtained for any liquids discharged into the municipal sewer system.

Discharge of water generated during remedial construction to surface waters (i.e. a local pond, stream or river) is prohibited without a SPDES permit. No such discharge is anticipated for this project.

5.4.8 Demarcation

Demarcation of remaining soil is not required for a Track 2 cleanup.

As a contingency, if the site fails to meet Track 2 SCOs and residual contamination exceeding RRU SCOs is present, demarcation will be required. After the completion of soil removal and any other invasive remedial activities and prior to backfilling, the top of the residual soil/fill will be defined by one of three methods: (1) Placement of a demarcation layer consisting of orange plastic fencing or equivalent on the surface of residual soil to provide an observable reference layer. A description or map of the approximate depth of the demarcation layer will be provided in the FER; or (2) a land survey of the top elevation of residual soil before the placement of cover soils, pavement and associated sub-soils, or other materials or structures; or, (3) all materials beneath the approved cover will be considered impacted and subject to site management after the remedy is complete (for this option, clean cover material comprised of soil must be underlain by a demarcation layer). Demarcation may be established by one or any combination of these three methods. As appropriate, a map showing the method of demarcation for the site and all associated documentation will be presented in the FER. This demarcation will constitute the top of the 'Residuals Management Zone', the zone that requires adherence to special conditions for disturbance of contaminated residual soils defined in the SMP.

5.4.9 Backfill from Off-Site Sources

Importation of gravel and subgrade aggregate for construction purposes (e.g., to be used under foundation components), or any other materials for required backfill, will be from a NYSDEC-approved source/facility (a properly completed soil import/reuse form will be submitted to the NYSDEC project manager for approval prior to importing material). The Remedial Engineer/QEP will ensure that the material does not include any prohibited material (e.g., solid waste) and does not exhibit field evidence of contamination. No other backfill materials are anticipated.

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

Should contingency conditions during construction require importation of additional materials, clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil, complete the backfilling of excavations, and/or establish design grades. All imported soils will meet NYSDEC approved backfill quality objectives for this site, which are the lower of the protection of groundwater or the protection of public health soil cleanup objectives

for Restricted-Residential Use as set forth in Table 375-6.8(b) of 6 NYCRR Part 375. Non-compliant soils will not be imported onto the site without prior approval by NYSDEC. Nothing in the approved Remedial Action Work Plan or its approval by NYSDEC should be construed as an approval for this purpose.

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

Solid waste will not be imported onto the site.

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

5.4.10 Stormwater Pollution Prevention

A Soil Erosion & Sediment Control Phase Plan (SESC Plan), which complies with New York State Guidelines for Urban Erosion and Sediment Control, is provided in Appendix I (any updates to this document required by changes in the final development plans or based on approved modifications to the scope of remedial work will be submitted to the NYSDEC for review and approval prior to the start of construction activities).

Silt fencing or hay bales will be installed around the entire perimeter of the remedial construction area and be inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

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

5.4.11 Community Air Monitoring Plan

A CAMP will be implemented during all ground intrusive activities. Exceedances observed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers and included in the Daily Report.

5.4.12 Odor, Dust and Nuisance Control Plan

Suppression of odors, dust and other nuisance conditions will be conducted during all invasive work performed during construction activities. The FER will include the following certification by the Remedial Engineer: "I certify that all invasive work during the remediation and all invasive development work were conducted in accordance with dust and odor suppression methodology defined in the Remedial Action Work Plan."

Odor Control Plan

This odor control plan is capable of controlling emissions of nuisance odors off-site. Specific odor control methods to be used on a routine basis will include minimizing the generation of vapors and/or odors. If nuisance odors are identified at the site boundary, or if odor complaints are received, work will be halted, and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of all other complaints about the project. Implementation of all odor controls, including the halt of work, will be the responsibility of the Volunteer's Remedial Engineer, who is responsible for certifying the FER.

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

Where odor nuisances have developed during remedial work and cannot be corrected, or where the release of nuisance odors cannot otherwise be avoided due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering excavation and

handling areas under tented containment structures equipped with appropriate air venting/filtering systems.

Dust Control Plan

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

- Dust suppression will be achieved through the use of a dedicated on-site water truck or other equivalent equipment for road wetting capable of spraying water directly onto off-road areas including excavations and stockpiles (water will be available on-site at suitable supply and pressure for use in dust control if a dedicated water truck is not utilized).
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, non-vegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water spraying.
- Materials will be hauled in properly tarped containers or vehicles, which will travel at restricted speeds while on-site.
- All reasonable attempts will be made to keep visible and/or fugitive dust to a minimum and adhere to particulate emissions limits identified in the CAMP.

Other Nuisances

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

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

5.5 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 site work will be promptly communicated to NYSDEC's Project Manager.

Petroleum spills will be reported to the NYSDEC Spill Hotline. These findings will be included in the daily report.

If previously unidentified contaminant sources are found during on-site remedial excavation or development-related excavation, sampling will be performed on contaminated source material and surrounding soils and reported to NYSDEC. Chemical analytical testing will be performed for TCL volatiles and semi-volatiles, pesticides/PCBs, and TAL metals, as appropriate.

This section describes actions that must occur upon the discovery of previously unknown contaminated material(s), USTs, demolition debris or other unknown unidentifiable material that requires special handling.

On-site personnel should be prepared to respond appropriately if the following previously unknown materials are encountered (if encountered, this material could result in a recommendation from the Remedial Engineer/QEP for an immediate, temporary shutdown of construction activities):

- Previously unknown tanks (including drums) containing a liquid product that is not likely to be water and is likely to present a threat to worker health or safety;
- Previously unknown demolition debris, which could contain significant quantities of asbestos, the disturbance of which is determined, based on field observations, to violate or likely to violate Federal, State, or local asbestos regulations; and,
- Material which cannot be readily identified.

5.5.1 Procedures for Encountered Underground Storage Tanks/Hydraulic Equipment

The procedures outlined in this Section will be adhered to if any previously unknown USTs or buried hydraulic equipment are encountered during the remedial action, inclusive of related contingency conditions (removal of known tanks and other equipment is discussed in Section 5.1.1). All response actions to contingency conditions at the site will be in accordance with the removal procedures and documentation requirements of DER-10, Sections 3.9 and 5.5. A full assessment of conditions will be performed by the RE/QEP including evidence of a failure and related release(s), and evidence of spills will be promptly communicated to the NYSDEC Project Manager. All encountered USTs will be disposed of pursuant to applicable Petroleum Bulk Storage (PBS) and hazardous waste regulations.

All USTs and hydraulic equipment will be visually inspected to determine if liquids are present, and any significant remaining quantities of liquid will be drummed on the site or removed by a properly licensed disposal company and the particular product (e.g., fuel oil, diesel, etc.) will be identified prior to off-site disposal at a permitted facility. Manifests of liquid waste management will be maintained by the RE/QEP and will be included in the FER. The tanks and all ancillary piping will be removed from the ground and inspected for evidence of failure. USTs and hydraulic reservoirs will be purged of petroleum/chemical vapors, properly stenciled as scrap metal, and transported to a metal recycling facility for destruction (a record of destruction will be secured by the RE/QEP and will be included in the FER).

Any surrounding soil exhibiting petroleum contamination will be excavated until soils no longer exhibit any significant field evidence of contamination. Confirmatory soil samples will be collected from the base and from the walls of the tank grave and will be analyzed for both VOCs and SVOCs per CP-51 guidelines (soil sampling may be waived by NYSDEC based on encountered conditions and/or other relevant circumstances).

Written field logs will be used to document all fieldwork activities and observations, including any evidence of tank failure and/or a release, and maps and a photographic record will be generated (all documentation will be provided in the FER).

5.5.2 Procedures for Encountered Demolition Debris

To the extent practical, all clearly identifiable material suspected of containing asbestos will be removed from the waste stream and handled separately (if encountered). The RE will recommend that asbestos material visible in the waste stream be separated and analyzed to determine the percent of asbestos present. All applicable Federal, State and local asbestos handling regulations will be followed.

Depending on the amount of asbestos material identified in the waste stream, the RE may recommend to the Volunteer's Representative that a licensed and accredited asbestos inspector be retained to manage the handling and disposition of asbestos material. Approval to retain an asbestos inspector will be made by the Volunteer's Representative. Samples will be collected by a properly licensed asbestos inspector and submitted to a NYSDOH ELAP- certified laboratory for analysis, depending on the amount and type of material encountered.

Minor amounts of asbestos may be removed from the waste stream and disposed of in accordance with applicable State and local asbestos remediation requirements. An asbestos abatement firm will be retained to properly handle and remove minor amounts of asbestos. The presence of significant quantities of asbestos will result in a temporary shutdown of the site.

5.5.3 Procedures for Encountered Unknown Material

Material which cannot be readily identified but which is considered, based on field observations, to be material that needs further investigation before disposal will be properly stockpiled (as per the SoMP) in an area separate from all other stockpiled material.

5.5.4 Screening and Laboratory Analysis

Unknown material will be screened with a PID, and all recorded levels will be documented. Samples will be collected and analyzed to identify the compounds present and to assist in determining appropriate disposal practices. Until determined by laboratory analysis otherwise, this material will be considered a hazardous substance. Specific materials known to require sampling and analysis prior to final disposition include all building components and debris containing painted surfaces and/or caulk. A plan to describe the handling and disposal of such materials will be submitted to NYSDEC for review and approval.

If previously unknown underground tanks or other previously unidentified contaminant sources are found during on-site remedial excavation or development related construction, sampling will be performed on product, sediment, and surrounding soils, etc. Chemical analytical work will be for full scan parameters (TAL metals, TCL volatiles and semi-volatiles, TCL pesticides, and PCBs). These analyses will not be limited to CP-51 petroleum list parameters where tanks are identified without prior approval by NYSDEC. Analyses will not be otherwise limited without NYSDEC approval.

6 MANAGEMENT OF RESIDUAL CONTAMINATION

The selected remedy is intended to achieve a Track 2, Restricted-Residential Use cleanup with residual contaminated soil and soil vapor remaining beneath the Site after the remedy is complete; Engineering and Institutional Controls are therefore required to protect human health and the environment. Long-term management of EC/ICs and of residual contamination will be executed under a site-specific Site Management Plan to be developed and included in the FER.

Engineering Controls

ECs will be implemented to protect public health and the environment by appropriately managing residual contamination. The Controlled Property (the Site) will have up to two primary EC systems:

- Sub-slab depressurization system (SSDS; Section 6.1), and,
- Cover system (as a contingency measure, only; Section 6.1)

All ECs will be designed, installed, and implemented in accordance with applicable GSR practices.

The FER will report residual contamination on the Site in tabular and map form, including all exceedances of SCOs, and document all applicable GSR metrics, including an EFA.

Institutional Controls

Imposition of ICs, in the form of an environmental easement for the controlled property, will be required (see Section 6.2). These ICS will:

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

6.1 ENGINEERING CONTROLS

The remedial action requires the use of Engineering Controls as described below. If NYSDEC and NYSDOH concur that post-remediation investigation and/or monitoring results show that there is no need for ongoing use of a specific EC, the system may be removed from the remedial program (e.g., shut down or converted to passive use; see Section 7 for a discussion on terminating remedial systems required by the final remedy).

Sub-Slab Depressurization System

A SSDS will be installed at the new site building beneath the cellar and interior portions of the slab-on-grade footprint as an engineering control to mitigate potential vapor intrusion (the location and conceptual design are shown in Figures 10 and 11, respectively, and the formal specification, certified by the Remedial Engineer, is provided in Appendix J); open air parking and hardscaped/landscaped areas at the ground floor are excluded from the SSDS footprint. The open air parking and hardscaped/ landscaped are locations not enclosed within the building envelope and thus are not subject SVI. The SSDS design may be amended based on updated development plans and provided to NYSDEC and NYSDOH for review and approval prior to system installation. The system design includes pressure monitoring points (throughout the basement and interior slab-on-grade footprints to allow for post-construction and on-going documentation of appropriate negative pressures beneath the slabs, indicating system effectiveness) and permanent vapor sample ports to document sub-slab vapor quality. As-built drawings will be provided in the FER and operation and maintenance (O&M) of the SSDS will be detailed in the SMP.

Green remediation BMPs for the design and installation of the SSDS include:

- Careful evaluation of site conditions and building plans in order to design an efficient system (limits piping runs and related materials, and labor for installation);
- Proper penetrations and sealing of the vapor barrier;
- Proper fan sizing to depressurize system components with minimal energy use; and,
- Use of telemetry (where applicable) for system monitoring.

Cover System

A cover system for soil is not required for a Track 2 cleanup. As a contingency, if the site fails to meet Track 2 SCOs and residual contamination is present, a cover system will be required in areas where the upper two feet of exposed surface soil will exceed RRU SCOs, to allow for future Restricted-Residential use of the site. Where a soil cover is to be used it will be a minimum of two (2) feet of soil placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetative layer. Soil cover material, including any fill material brought to the site, will meet the RRU SCOs for cover material for the use of the site as set forth in 6 NYCRR Part 375-6.7(d). Substitution of other materials and components may be allowed where such components already exist or are a component of the tangible property to be placed as part of site redevelopment. Such components may include, but are not necessarily limited to: pavement, concrete, paved surface parking areas, sidewalks, building foundations and building slabs.

All concrete foundation components of a cover system and any exterior pavement will have a minimum thickness of four (4) inches. Imported clean soil (or similar materials, e.g., gravel) at exterior areas will have a minimum thickness of two (2) feet. As part of site development, foundation components and any paved areas will be underlain by imported, clean stone subbase. The construction of a cover system will comply with the requirements for: a) demarcation as specified in Section 5.4.8; and b) importation of backfill from off-site sources as specified in Section 5.4.9. Maintenance of this cover system will be detailed in the SMP.

Green remediation BMPs for the design and installation of the cover system include:

- Development modifications (as possible) to use existing planned building foundations and paved areas as the main cover system component in place of bulk cover materials;
- Preferential use of existing uncontaminated on-site materials, or local sources for imported materials, to minimize impacts from transportation;
- Use of approved recycled materials where applicable, such as backfill, asphalt, and components for demarcation, drainage, and similar uses;
- Careful consideration of cover design to ensure durability and minimize impacts from climate change, including low-impact strategies for managing stormwater;
- As applicable, use of diverse native, drought-resistant plants and long-term natural soil amendments to minimize maintenance and preserve ecosystem services;

6.2 INSTITUTIONAL CONTROLS

A Track 2 remedial action is proposed, and institutional controls are therefore required. Institutional controls will be incorporated in this remedial action to manage residual soil and other media and render the site protective of public health and the environment. A site-specific Environmental Easement will be recorded with Queens County to provide an enforceable means of ensuring the continual and proper management of residual contamination and protection of public health and the environment in perpetuity or until released in writing by NYSDEC. It requires that the grantor of the Environmental Easement and the grantor's successors and assigns adhere to all institutional controls placed on this site by this NYSDEC-approved remedy.

The Environmental Easement would provide restrictions on site usage and mandate operation, maintenance, monitoring and reporting measures for all institutional and engineering controls. A SMP would be prepared describing appropriate methods and procedures to ensure compliance with all institutional and engineering controls required by the Environmental Easement. Once the SMP has been approved by the NYSDEC, compliance with the SMP is required by the grantor of the Environmental Easement and grantor's successors and assigns.

ENVIRONMENTAL EASEMENT

An Environmental Easement, as defined in Article 71 Title 36 of the Environmental Conservation Law, is required when residual contamination is left on-site after the Remedial Action is complete. An Environmental Easement approved by NYSDEC will be filed and recorded with the Queens County Clerk. The Environmental Easement would be submitted as part of the FER.

The Environmental Easement renders the site a Controlled Property. The Environmental Easement must be recorded with Queens County before the Certificate of Completion can be issued by NYSDEC. A series of institutional controls would be required under a Track 2 remedy to prevent future exposure to residual contamination by controlling disturbances of the subsurface soil and restricting the use of the site to Restricted-Residential Use only. These institutional controls are requirements or restrictions placed on the site that are listed in, and required by, the Environmental Easement.

The Controlled Property (site) would also have a series of institutional controls in the form of site restrictions and requirements. The site restrictions that apply to the Controlled Property may include:

- Vegetable gardens and farming on the Controlled Property are prohibited;
- Use of groundwater underlying the property is prohibited without the approval of the NYSDOH or the New York City Department of Health and Mental Hygiene, and the use of any necessary water quality treatment as determined by the applicable agency to render it safe for the intended use;
- All future activities on the Controlled Property that will disturb residual contaminated material are prohibited unless they are conducted in accordance with the soil management provisions in the SMP;
- The Controlled Property may be used for Restricted-Residential Use only, provided the long-term engineering and institutional controls included in the SMP are employed;
- The Controlled Property may not be used for a higher level of use, such as Unrestricted Use without an amendment or extinguishment of this Environmental Easement;
- Grantor agrees to submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow. This annual statement must be certified by an expert that the NYSDEC finds acceptable.

7 COMPLETION OF REMEDIATION/TERMINATION OF REMEDIAL SYSTEMS

No remedial systems will be discontinued without written approval by NYSDEC and NYSDOH. While a proposal to discontinue a specific system may be submitted any time based on confirmatory data that justifies such request, all systems will remain in place and operational until specific permission to discontinue use is granted in writing by NYSDEC and NYSDOH. All sampling/monitoring activities will be conducted in accordance with the SMP Monitoring Plan.

7.1 Sub-Slab Depressurization System

The active SSDS will operate continuously in order to minimize potential soil vapor intrusion into on-site structures and the integrity of this system will be documented at defined, regular intervals as specified in the SMP.

In order to either shut down the SSDS (permanently remove components), or convert the system from active to passive use, a proposal providing all available pre- and post-remedial information must be submitted to NYSDEC and NYSDOH for review. If these Agencies concur that a shutdown or conversion may be considered, a Work Plan inclusive of appropriate SVI sampling would then be submitted for review and approval prior to any system modifications.

7.2 Composite Cover System

A composite cover system may be required as a contingency if a Track 4 cleanup is obtained. The composite cover prevents exposures to remaining soil exceeding the RRU SCOs and is therefore a permanent control, which may not be terminated without removal of remaining contaminated materials or implementation of an alternative NYSDEC-approved remedy. The quality and integrity of this system will be inspected at defined, regular intervals in perpetuity.

8 FINAL ENGINEERING REPORT

A Final Engineering Report will be submitted to NYSDEC following implementation of the Remedial Action defined in this RAWP.

8.1 FER Elements

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

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

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

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

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

shows the location and summarizes exceedances from Track 1 Unrestricted SCOs for all soil/fill remaining at the Site after the Remedial Action will be included in the FER.

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

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

The FER must include a discussion of the green remediation practices/technologies employed throughout the remedial program. A final footprint analysis using a DER accepted model, and any tracking methods used through the construction including restoration activities.

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

8.2 Site Management Plan

A Site Management Plan is required, which includes an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional control remains in place and effective:

(1) Institutional Controls: The environmental easement discussed in Section 6.2.

(2) Engineering Controls: The soil cover and SSDS (if required by NYSDEC and NYSDOH after review of post-remediation investigation results) discussed in Section 6.1).

This plan includes, but may not be limited to:

- An Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;

- Descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
- A provision for evaluation of the potential for soil vapor intrusion for any occupied buildings on the site, including a provision for implementing actions recommended to address exposures related to soil vapor intrusion. Samples will be taken outside, sub-slab and co-located indoor locations, and in the basement/cellar and crawl spaces. DEC suggests adding sub-slab sampling ports during construction;
- A provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Section 6.1 will be placed in any areas where the upper two feet of exposed surface soil exceed the applicable soil cleanup objectives;
- Provisions for the management and inspection of the identified engineering controls; and,
- The steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

Implementation of the SMP will be the last phase of remediation and begins with the approval of the FER and issuance of the Certificate of Completion for the Remedial Action. The SMP is submitted as part of the FER but would be written in a manner that allows its removal and use as a complete and independent document. Site Management continues in perpetuity or until released in writing by NYSDEC. The property owner is responsible to ensure that all site management responsibilities defined in the Environmental Easement and the SMP are performed.

The SMP is intended to provide a detailed description of the procedures required to manage residual contamination left in place at the site following completion of the Remedial Action in accordance with the BCA with the NYSDEC. This includes (as appropriate following completion of the final remedy):

(1) Development, implementation, and management of all engineering and institutional controls;

(2) Development and implementation of monitoring systems and a Monitoring Plan;

(3) Development of a plan to operate and maintain any treatment, collection, containment, or recovery systems (including, where appropriate, preparation of an O&M Manual);

(4) Submittal of Site Management Reports, performance of inspections and certification of results, and demonstration of proper communication of site information to NYSDEC; and,

(5) Defining criteria for termination of treatment system operation.

To address these needs, this SMP would include the following plans (as warranted): Monitoring Plan for the implementation of site monitoring; Operation and Maintenance Plan for vapor interceptor systems; and Site Management Reporting Plan for submittal of data, information, recommendations, and certifications to NYSDEC.

The SMP will be prepared in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation and the guidelines provided by NYSDEC.

Site management activities, reporting, and EC/IC certification would be scheduled on a certification period basis. The certification period would be annually for the first three years; modifications to this frequency may be proposed in that third year. The SMP would be based on a calendar year and due for submission to NYSDEC by March 1 of the year following the reporting period.

No exclusions for handling of residual contaminated soils would be provided in the SMP. All handling of residual contaminated material would be subject to provisions contained in the SMP.

8.3 Certifications

The following certification will appear in front of the Executive Summary of the FER.

The certification will be signed by the Remedial Engineer Daniel Bellucci who is a Professional Engineer registered in New York State. This certification will be appropriately signed and stamped.

The certification will include the following statements (in *italics*) as required by DER-10 Section 1.5(b)4:

> *I Daniel Bellucci certify that I am currently a NYS registered professional engineer, I had primary direct responsibility for the implementation of the subject construction program, and I certify that the Remedial Work Plan was implemented and that all construction activities were completed in substantial conformance with the DER-approved Remedial Work Plan.*

If the Remedial Action Work Plan identifies time frames to be achieved by the remedial program, the certification must include:

The data submitted to DER demonstrates that the remediation requirements set forth in the Remedial Work Plan and all applicable statutes and regulations have been or will be achieved in accordance with the time frames, if any, established in the work plan.

If the remedial program requires ICs or ECs, the certification must include:

All use restrictions, institutional controls, engineering controls and/or any operation and maintenance requirements applicable to the site are contained in an environmental easement created and recorded pursuant to ECL 71-3605 and that any affected local governments, as defined in ECL 71-3603, have been notified that such easement has been recorded.

If the remedial program requires applicable SMP, the certification must include:

A Site Management Plan has been submitted for the continual and proper operation, maintenance, and monitoring of any engineering controls employed at the site including the proper maintenance of any remaining monitoring wells, and that such plan has been approved by DER.

If the remedial program requires financial assurance, the certification must include:

Any financial assurance mechanisms required by DEC pursuant to Environmental Conservation Law have been executed.

9 SCHEDULE

Site preparation and implementation of the remedial action will commence in July 2026. Currently, a nine-month soil excavation period is anticipated. If the schedule for remediation and development activities changes, it will be updated and submitted to NYSDEC.

The current project schedule is presented below:

Month	Action
April - June 2026	RAWP public comment period (April 17 through June 3)
June 2026	NYSDEC issues Decision Document
July 2026	Contractor mobilization; implementation of remedy begins
August 2027	Submission of draft SMP to NYSDEC
October 2027	Submission of draft FER to NYSDEC
November 2027	Final SMP and FER approved by NYSDEC
December 2027	Certificate of Completion Issued

FIGURES



0 200 400

SCALE IN FEET
(APPROXIMATELY)

All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

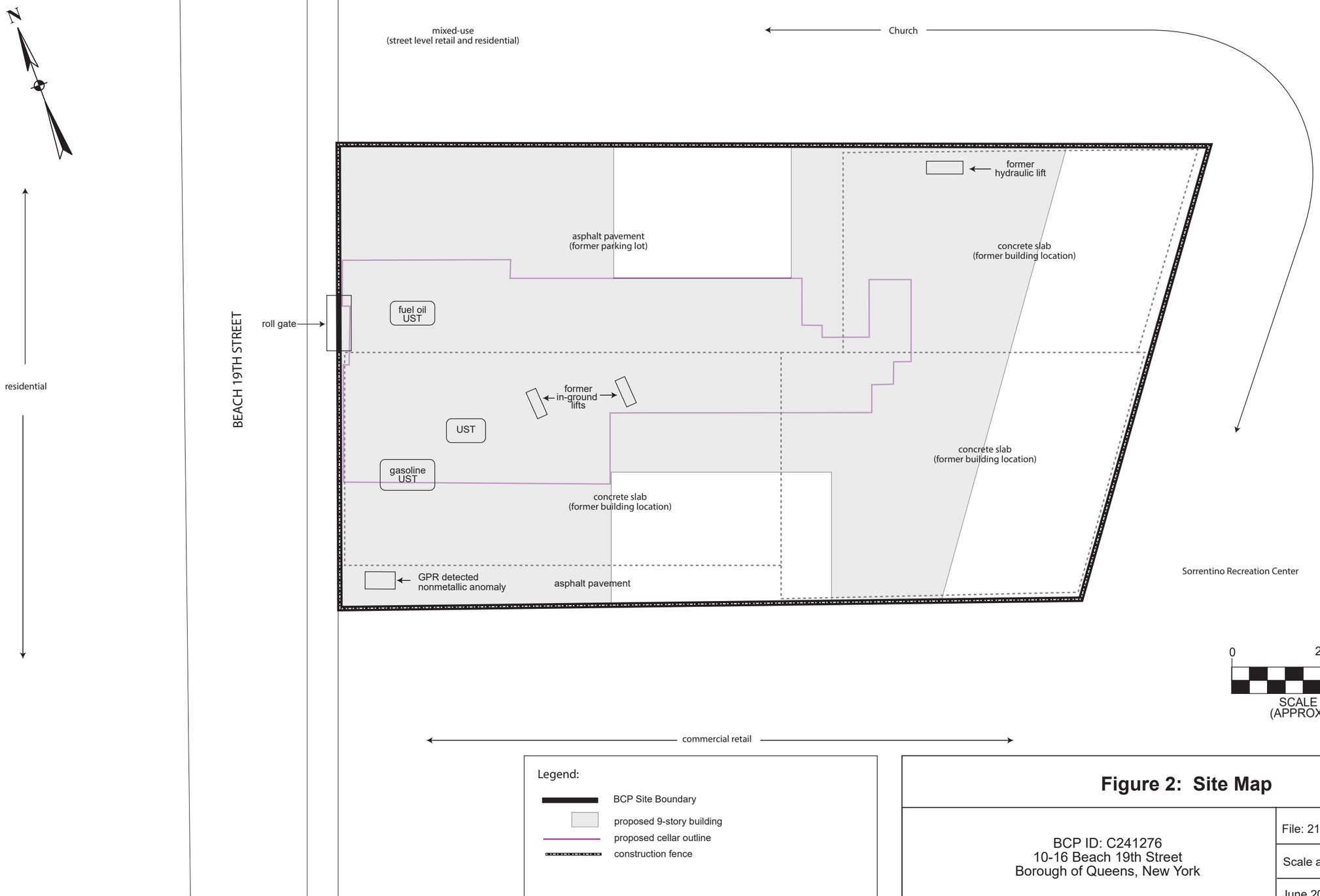
Figure 1: Site Location Map

BCP ID: C241276
10-16 Beach 19th Street
Borough of Queens, New York

Legend:

BCP Site Boundary

File: 21003-0004
June 2026
Scale as shown
Figures



Site Plan provided by Newman Design dated 8-1-24.

Legend:

- BCP Site Boundary
- proposed 9-story building
- proposed cellar outline
- construction fence

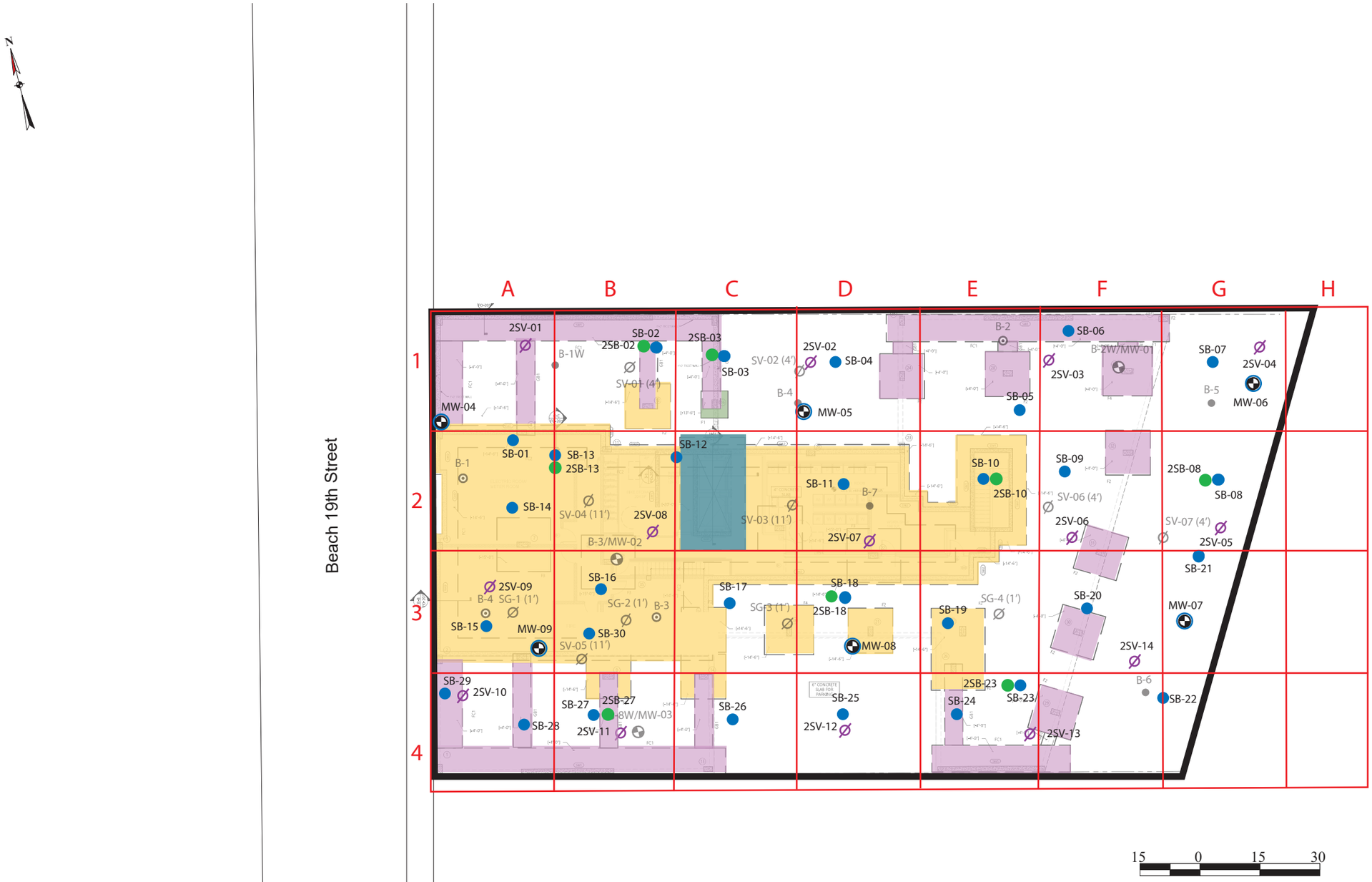
Figure 2: Site Map

BCP ID: C241276
10-16 Beach 19th Street
Borough of Queens, New York

File: 21003-0004

Scale as shown

June 2026 | Figures



All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

Figure 3: Proposed Construction Excavation Plan

BCP ID: C241276
10-16 Beach 19th Street
Borough of Queens, New York

Legend:

- BCP Site Boundary
- previous soil/groundwater sample location
- previous soil/groundwater monitoring well location
- previous soil boring location
- previous soil vapor location
- RI soil boring location
- RI soil vapor location
- RI monitoring well location
- supplemental soil boring location
- 4 feet bgs
- 13 feet bgs
- 14.5 feet bgs
- 20 feet bgs

File: 21003-0004
June 2026
Scale as shown
Figures

SB-03	
2025-03-25	
SVOCs	**0-5**
benzo(a)anthracene	3.7
benzo(a)pyrene	2.56
benzo(b)fluoranthene	2.96
benzo(k)fluoranthene	2.05
chrysene	4.37
dibenzo(a,h)anthracene	0.448
indeno(1,2,3-cd)pyrene	1.76
phenanthrene	11
TAL Metals	**0-5**
arsenic	58.8
chromium	65.9
chromium (hexavalent)	2.2
copper	239
lead	1,470
mercury	1.4
nickel	65.2
zinc	625
PFAS	**0-5**
perfluorooctanesulfonic acid (PFOS)	1.00

SB-13	
2025-03-21	
TAL Metals	**5-10**
lead	712
mercury	1.21
zinc	240
PFAS	**5-10**
perfluorooctanesulfonic acid (PFOS)	1.37

SB-14	
2025-03-21	
TAL Metals	**0-5**
lead	146
mercury	0.384

SB-15	
2025-03-20	
TAL Metals	**0-5**
lead	94.8

SB-16	
2025-03-21	
TAL Metals	**0-5**
lead	63.4
mercury	0.489

SB-29	
2025-03-20	
TAL Metals	**0-5**
lead	87.9
mercury	0.237

SB-27	
2025-03-20	
TAL Metals	**0-5**
lead	86.1

2SB-02	
2025-10-30	
SVOCs	**0-2.5**
benzo(a)anthracene	3.6
benzo(a)pyrene	3.3
benzo(b)fluoranthene	4.6
benzo(g,h,i)perylene	2
benzo(k)fluoranthene	1.6
chrysene	3.6
dibenzo(a,h)anthracene	0.45
indeno(1,2,3-cd)pyrene	2
phenanthrene	9.2
TAL Metals	**0-2.5**
lead	662
mercury	0.504
zinc	139

SB-02	
2025-03-25	
SVOCs	**0-5**
benzo(a)anthracene	2.9
benzo(a)pyrene	2.78
benzo(b)fluoranthene	2.78
benzo(g,h,i)perylene	2.58
benzo(k)fluoranthene	2.66
chrysene	3.13
dibenzo(a,h)anthracene	0.419
indeno(1,2,3-cd)pyrene	2.57
phenanthrene	9.81

2SB-03	
2025-10-30	
SVOCs	**0-2.5**
benzo(a)anthracene	12
benzo(a)pyrene	13
benzo(b)fluoranthene	16
benzo(g,h,i)perylene	4.4
benzo(k)fluoranthene	3
chrysene	8.9
dibenzo(a,h)anthracene	1.4
indeno(1,2,3-cd)pyrene	5.3
phenanthrene	3.3
TAL Metals	**0-2.5**
copper	64.3
lead	678
mercury	1.8
zinc	363

SB-12	
2025-03-21	
TAL Metals	**0-5**
lead	340
mercury	0.201

SB-10	
2025-03-19	
TAL Metals	**0-5**
barium	931
copper	109
lead	1,380
zinc	480

SB-06	
2025-03-19	
VOCS	**11-13**
acetone	0.054

2SB-10	
2025-10-30	
TAL Metals	**0-1**
lead	1,210
mercury	0.682
zinc	737

SB-09	
2025-03-19	
TAL Metals	**0-5**
barium	475
lead	1,320
zinc	341

2SB-08	
2025-10-30	
TAL Metals	**0-1**
lead	71.4
mercury	5.87
zinc	207

SB-08	
2025-03-19	
TAL Metals	**0-5**
copper	176
lead	629
mercury	0.295
zinc	363
Pesticides	**0-5**
4,4'-DDT	0.00467

SB-19	
2025-03-20	
TAL Metals	**0-5**
mercury	0.213

SB-20		
2025-03-20		
TAL Metals	**0-5**	**10-12**
lead	124	ND
mercury	0.275	0.736
zinc	132	ND
PFAS	**0-5**	**10-12**
perfluorooctanesulfonic acid (PFOS)	1.42	0.962

SB-23	
2025-03-20	
TAL Metals	**0-5**
mercury	0.233

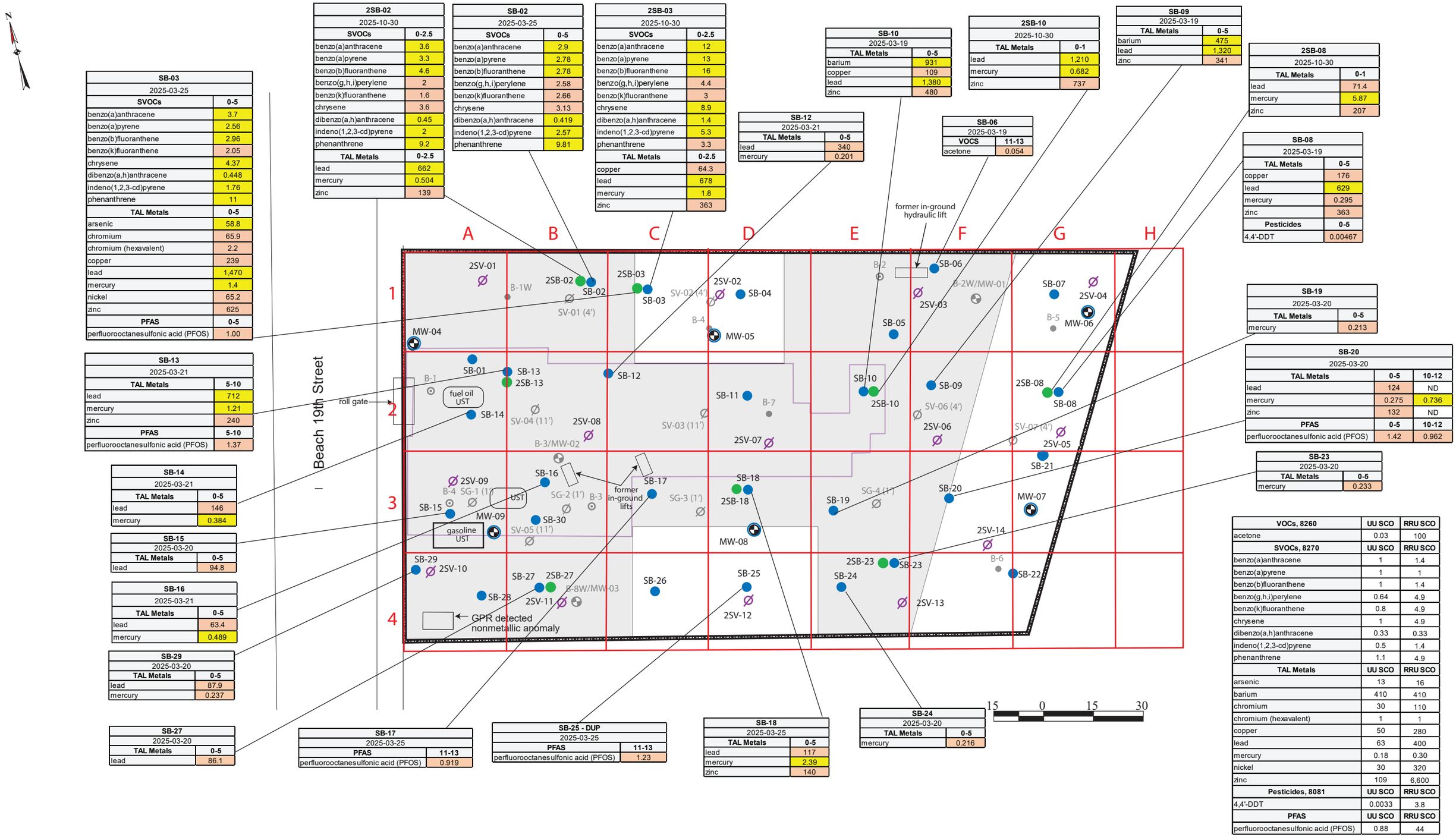
SB-17	
2025-03-25	
PFAS	**11-13**
perfluorooctanesulfonic acid (PFOS)	0.919

SB-25 - DUP	
2025-03-25	
PFAS	**11-13**
perfluorooctanesulfonic acid (PFOS)	1.23

SB-18	
2025-03-25	
TAL Metals	**0-5**
lead	117
mercury	2.39
zinc	140

SB-24	
2025-03-20	
TAL Metals	**0-5**
mercury	0.216

VOCs, 8260	UU SCO	RRU SCO
acetone	0.03	100
SVOCs, 8270	**UU SCO**	**RRU SCO**
benzo(a)anthracene	1	1.4
benzo(a)pyrene	1	1
benzo(b)fluoranthene	1	1.4
benzo(g,h,i)perylene	0.64	4.9
benzo(k)fluoranthene	0.8	4.9
chrysene	1	4.9
dibenzo(a,h)anthracene	0.33	0.33
indeno(1,2,3-cd)pyrene	0.5	1.4
phenanthrene	1.1	4.9
TAL Metals	**UU SCO**	**RRU SCO**
arsenic	13	16
barium	410	410
chromium	30	110
chromium (hexavalent)	1	1
copper	50	280
lead	63	400
mercury	0.18	0.30
nickel	30	320
zinc	109	6,600
Pesticides, 8081	**UU SCO**	**RRU SCO**
4,4'-DDT	0.0033	3.8
PFAS	**UU SCO**	**RRU SCO**
perfluorooctanesulfonic acid (PFOS)	0.88	44



The base map survey was provided by Erlandsen-Crowell & Shaw Civil Engineers and City Surveyors, date April 7, 2025. Sample locations and relevant Site features were measured and triangulated from fixed points shown on the base survey and are accurate to the nearest 0.5-foot.

Figure 4: Soil Contamination Exceeding SCOs

BCP ID: C241276
10-16 Beach 19th Street
Borough of Queens, New York

Legend:

- BCP Site boundary
- proposed 9-story building
- proposed cellar outline
- construction fence
- previous soil/groundwater sample location
- previous soil/groundwater monitoring well location
- previous soil boring location
- previous soil vapor location
- RI soil boring location
- RI soil vapor location
- RI monitoring well location
- supplemental soil boring location

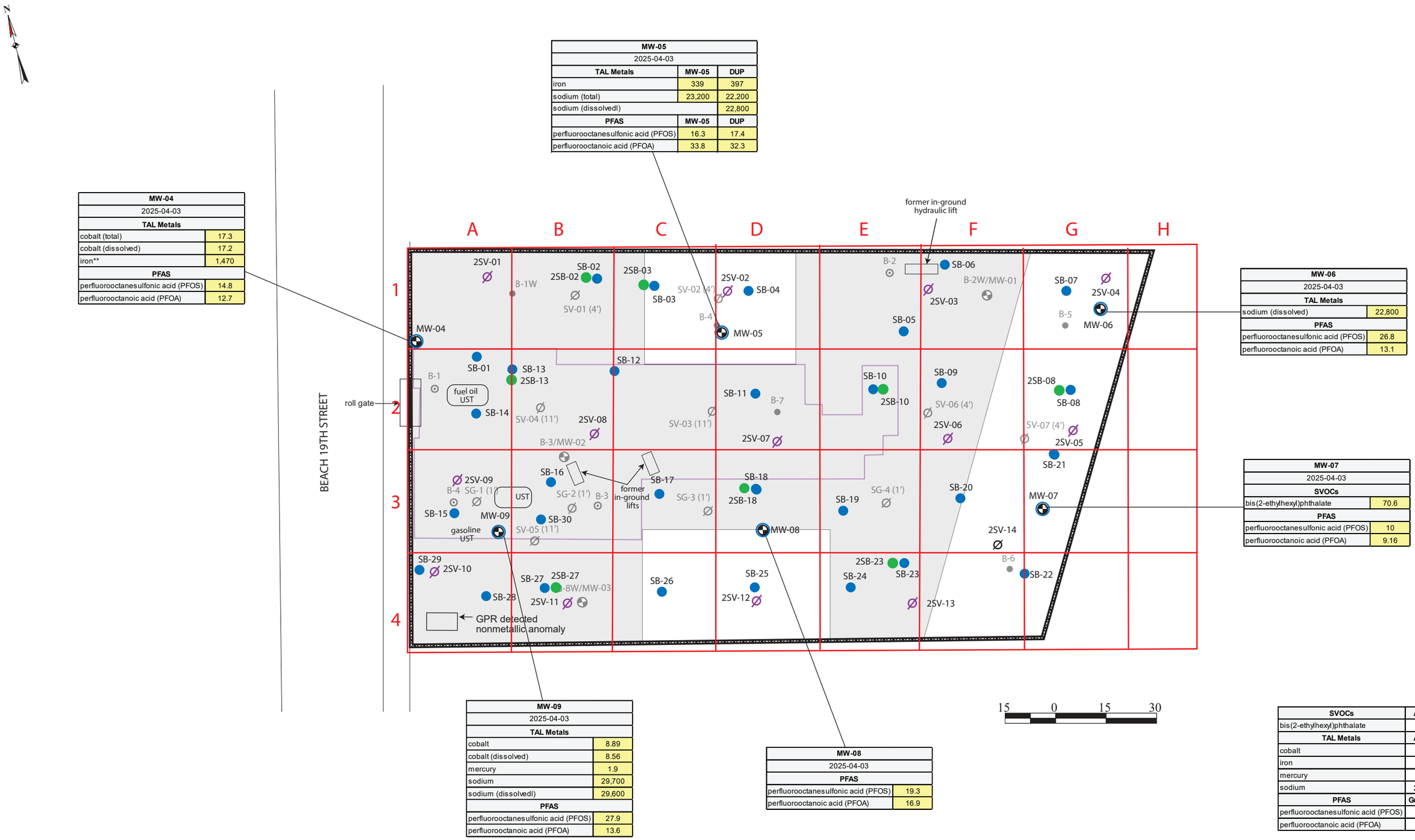
PFAS - data in µg/Kg (ppb)
Analyte Above UU Guidance/SCO
All other analytes - data in mg/Kg (ppm)
Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO
ND - non detect

File: 21003-0004

June 2026

Scale as shown

Figures



MW-05		
2025-04-03		
TAL Metals	**MW-05**	**DUP**
iron	339	397
sodium (total)	23,200	22,200
sodium (dissolvedl)		22,800
PFAS	**MW-05**	**DUP**
perfluorooctanesulfonic acid (PFOS)	16.3	17.4
perfluorooctanoic acid (PFOA)	33.8	32.3

MW-04	
2025-04-03	
TAL Metals	
cobalt (total)	17.3
cobalt (dissolved)	17.2
iron**	1,470
PFAS	
perfluorooctanesulfonic acid (PFOS)	14.8
perfluorooctanoic acid (PFOA)	12.7

MW-06	
2025-04-03	
TAL Metals	
sodium (dissolved)	22,800
PFAS	
perfluorooctanesulfonic acid (PFOS)	26.8
perfluorooctanoic acid (PFOA)	13.1

MW-07	
2025-04-03	
SVOCs	
bis(2-ethylhexyl)phthalate	70.6
PFAS	
perfluorooctanesulfonic acid (PFOS)	10
perfluorooctanoic acid (PFOA)	9.16

MW-09	
2025-04-03	
TAL Metals	
cobalt	8.89
cobalt (dissolved)	8.56
mercury	1.9
sodium	29,700
sodium (dissolvedl)	29,600
PFAS	
perfluorooctanesulfonic acid (PFOS)	27.9
perfluorooctanoic acid (PFOA)	13.6

MW-08	
2025-04-03	
PFAS	
perfluorooctanesulfonic acid (PFOS)	19.3
perfluorooctanoic acid (PFOA)	16.9

SVOCs	AWQS
bis(2-ethylhexyl)phthalate	5
TAL Metals	**AWQS**
cobalt	5
iron	300
mercury	0.7
sodium	20,000
PFAS	**Guidance**
perfluorooctanesulfonic acid (PFOS)	2.7
perfluorooctanoic acid (PFOA)	6.7

All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

Figure 5: Groundwater Contamination Exceeding SCGs

BCP ID: C241276
10-16 Beach 19th Street
Borough of Queens, New York

Legend:

- BCP Site boundary
- proposed 9-story building
- proposed cellar outline
- construction fence
- previous soil/groundwater sample location
- previous soil/groundwater monitoring well location
- previous soil boring location
- previous soil vapor location
- RI soil boring location
- RI soil vapor location
- RI monitoring well location
- supplemental soil boring location

SVOC and Metals Data in µg/L (parts per billion, ppb)
PFAS Data in ng/L (parts per trillion, ppt)
Analyte above AWQS (PFAS above SCG)

File: 21003-0004
June 2026
Scale as shown
Figures

2SV-09	
2025-04-03	
VOCs	
1,2,4-trimethylbenzene	2.6
1,2-dichlorotetrafluoroethane	1.2
1,3,5-trimethylbenzene	0.85
2,2,4-trimethylpentane	20
2-butanone	1.3
acetone	14
benzene	0.5
carbon disulfide	0.54
chloroform	13
cyclohexane	0.81
dichlorodifluoromethane	2.3
ethyl acetate	8.9
ethylbenzene	2.3
isopropanol	4.2
o-xylene	3.6
p/m-xylene	10
p-ethyltoluene	2.4
propylene	0.27
styrene	0.67
tetrachloroethene (PCE)	170
tetrahydrofuran	0.93
toluene	7
trans-1,2-dichloroethene (trans-DCE)	0.63
trans-1,3-dichloropropene	0.72
trichloroethene (TCE)	0.34

2SV-08	
2025-04-03	
VOCs	
1,2,4-trimethylbenzene	2.9
1,2-dichlorotetrafluoroethane	3.2
1,3,5-trimethylbenzene	0.87
2-butanone	1.5
acetone	18
carbon disulfide	0.75
carbon tetrachloride	0.51
chloroform	2
dichlorodifluoromethane	2.6
ethyl acetate	2.5
ethylbenzene	1.9
isopropanol	2.2
o-xylene	3.1
p/m-xylene	8.3
p-ethyltoluene	2.7
propylene	0.28
styrene	0.69
tetrachloroethene (PCE)	94
tetrahydrofuran	0.95
toluene	5.8
trans-1,2-dichloroethene (trans-DCE)	0.64
trans-1,3-dichloropropene	0.73
trichloroethene (TCE)	43

2SV-01	
2025-04-03	
VOCs	
1,2,4-trimethylbenzene	1
1,2-dichlorotetrafluoroethane	1.5
2-butanone	2.1
acetone	8.7
benzene	0.88
carbon disulfide	0.65
chloroform	0.87
dichlorodifluoromethane	2.5
ethylbenzene	1.9
o-xylene	2.8
tetrachloroethene (PCE)	2.3

2SV-07	
2025-04-03	
VOCs	
1,2,4-trimethylbenzene	1.8
1,2-dichlorotetrafluoroethane	2.5
2,2,4-trimethylpentane	4
2-butanone	1.4
acetone	10
carbon disulfide	1.6
chloroform	0.86
dichlorodifluoromethane	2.6
ethylbenzene	1.8
o-xylene	2.7
p/m-xylene	7.6
p-ethyltoluene	1.6
propylene	0.3
styrene	0.75
tetrachloroethene (PCE)	38
tetrahydrofuran	1
toluene	6.1
trans-1,2-dichloroethene (trans-DCE)	0.7
trans-1,3-dichloropropene	0.8
trichloroethene (TCE)	0.28

2SV-02	
2025-04-03	
VOCs	
1,2,4-trimethylbenzene	1.3
1,2-dichlorotetrafluoroethane	2.6
2,2,4-trimethylpentane	26
2-butanone	3.2
acetone	19
acrylonitrile	9
benzene	1.2
chloromethane	1.3
dichlorodifluoromethane	2.5
ethylbenzene	1.7
o-xylene	2.3
p/m-xylene	6.9
p-ethyltoluene	1.3
propylene	1.4
styrene	0.68
tetrachloroethene (PCE)	18
tetrahydrofuran	0.94
toluene	6.2
trans-1,2-dichloroethene (trans-DCE)	0.63
trans-1,3-dichloropropene	0.72

2SV-03	
2025-04-03	
VOCs	
1,2,4-trimethylbenzene	1.4
2-butanone	1.7
acetone	9.4
benzene	0.51
chloroform	9.2
dichlorodifluoromethane	2.5
ethylbenzene	1.6
o-xylene	2.4
p/m-xylene	6.4
p-ethyltoluene	1.5
propylene	1
styrene	0.68
tetrachloroethene (PCE)	130
tetrahydrofuran	0.94
toluene	4.3
trans-1,2-dichloroethene (trans-DCE)	0.63
trans-1,3-dichloropropene	0.73
trichloroethene (TCE)	9.5

2SV-04	
2025-04-03	
VOCs	
1,2,4-trimethylbenzene	1.8
2-butanone	4.7
4-methyl-2-pentanone	2.5
acetone	19
benzene	0.95
carbon tetrachloride	0.3
dichlorodifluoromethane	2.6
ethylbenzene	2.7
isopropanol	3.2
n-heptane	1.7
n-hexane	2.1
o-xylene	3.3
p/m-xylene	11
p-ethyltoluene	2
propylene	1.9
styrene	0.67
tetrachloroethene (PCE)	200
tetrahydrofuran	0.92
toluene	12
trans-1,2-dichloroethene (trans-DCE)	0.62
trans-1,3-dichloropropene	0.71
trichloroethene (TCE)	1.8

2SV-06	
2025-04-03	
VOCs	
1,2,4-trimethylbenzene	1
2,2,4-trimethylpentane	1.5
2-butanone	2.8
acetone	17
benzene	1.1
carbon tetrachloride	0.41
chloromethane	1.6
dichlorodifluoromethane	3.2
ethyl acetate	8.7
ethylbenzene	2.1
isopropanol	11
methylene chloride	2
n-heptane	0.67
n-hexane	0.92
o-xylene	2.3
p/m-xylene	8.2
p-ethyltoluene	0.97
propylene	1.6
styrene	0.7
tetrachloroethene (PCE)	6.2
tetrahydrofuran	0.97
toluene	17
trans-1,2-dichloroethene (trans-DCE)	0.65
trans-1,3-dichloropropene	0.74

2SV-10	
2025-04-03	
VOCs	
1,2,4-trimethylbenzene	2.9
1,3,5-trimethylbenzene	0.88
2-butanone	1.5
acetone	15
chloroform	9.9
dichlorodifluoromethane	2.4
ethyl acetate	3.9
ethylbenzene	3.2
isopropanol	3.5
methylene chloride	1.1
o-xylene	4.7
p/m-xylene	13
p-ethyltoluene	2.5
propylene	0.28
styrene	0.7
tetrachloroethene (PCE)	72
tetrahydrofuran	0.96
toluene	9.6
trans-1,2-dichloroethene (trans-DCE)	0.65
trans-1,3-dichloropropene	0.74

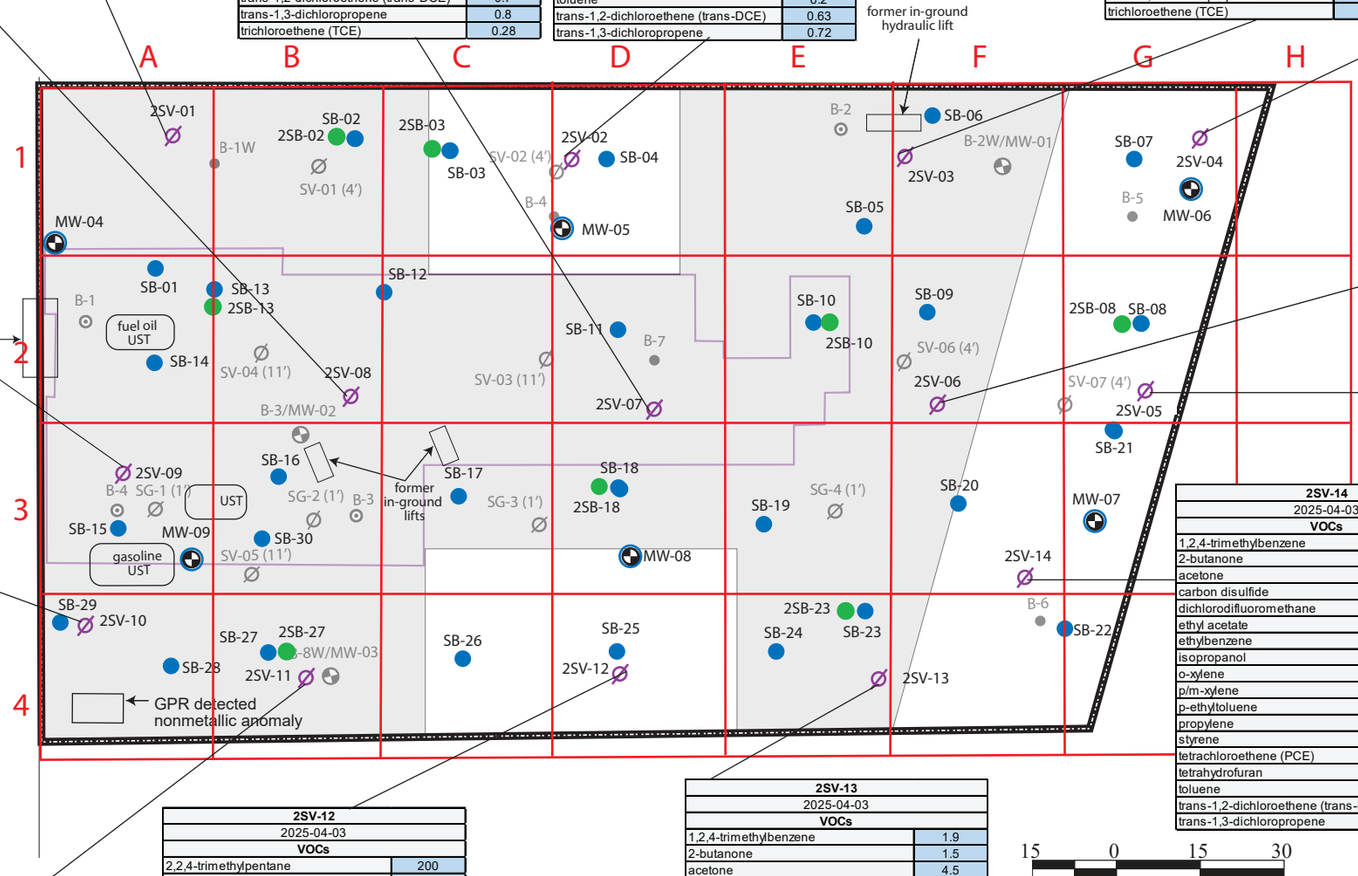
2SV-14	
2025-04-03	
VOCs	
1,2,4-trimethylbenzene	1.8
2-butanone	2.4
acetone	17
carbon disulfide	0.97
dichlorodifluoromethane	2.4
ethyl acetate	2.4
ethylbenzene	2
isopropanol	2.3
o-xylene	2.9
p/m-xylene	8.7
p-ethyltoluene	1.8
propylene	0.3
styrene	0.74
tetrachloroethene (PCE)	13
tetrahydrofuran	1
toluene	7.2
trans-1,2-dichloroethene (trans-DCE)	0.69
trans-1,3-dichloropropene	0.79

2SV-05	
2025-04-03	
VOCs	
1,2,4-trimethylbenzene	1.5
2-butanone	1.3
acetone	8.6
carbon disulfide	0.52
dichlorodifluoromethane	2.6
ethyl acetate	1.3
ethylbenzene	1.5
isopropanol	1.6
o-xylene	2.3
p/m-xylene	6.1
p-ethyltoluene	1.3
propylene	0.61
styrene	0.72
tetrachloroethene (PCE)	88
tetrahydrofuran	0.99
toluene	4.6
trans-1,2-dichloroethene (trans-DCE)	0.67
trans-1,3-dichloropropene	0.76
trichloroethene (TCE)	0.27

2SV-11	
2025-04-03	
VOCs	
1,2,4-trimethylbenzene	3.3
1,2-dichlorotetrafluoroethane	2.1
1,3,5-trimethylbenzene	0.84
2-butanone	1.2
acetone	11
benzene	0.5
carbon tetrachloride	0.29
chloroform	1.2
dichlorodifluoromethane	2.4
ethyl acetate	1.9
ethylbenzene	2.1
isopropanol	2.3
n-hexane	0.6
o-xylene	3.5
p/m-xylene	9.3
p-ethyltoluene	2.8
propylene	0.27
styrene	0.66
tetrachloroethene (PCE)	240
tetrahydrofuran	0.92
toluene	6.5
trans-1,2-dichloroethene (trans-DCE)	0.62
trans-1,3-dichloropropene	0.71
trichloroethene (TCE)	0.59

2SV-12	
2025-04-03	
VOCs	
2,2,4-trimethylpentane	200
acetone	2.4
cyclohexane	0.73
ethyl acetate	7.3
p/m-xylene	1.4
p-ethyltoluene	0.8
propylene	0.28
styrene	0.69
tetrachloroethene (PCE)	8.8
tetrahydrofuran	0.96
toluene	1.1
trans-1,2-dichloroethene (trans-DCE)	0.65
trans-1,3-dichloropropene	0.74

2SV-13	
2025-04-03	
VOCs	
1,2,4-trimethylbenzene	1.9
2-butanone	1.5
acetone	4.5
acrylonitrile	5.7
dichlorodifluoromethane	2.6
ethylbenzene	1.6
o-xylene	2.7
p/m-xylene	7.5
p-ethyltoluene	1.7
propylene	0.27
styrene	0.67
tetrachloroethene (PCE)	16
tetrahydrofuran	0.93
toluene	5.3
trans-1,2-dichloroethene (trans-DCE)	0.62
trans-1,3-dichloropropene	0.71



All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

Figure 6: Vapor Contamination

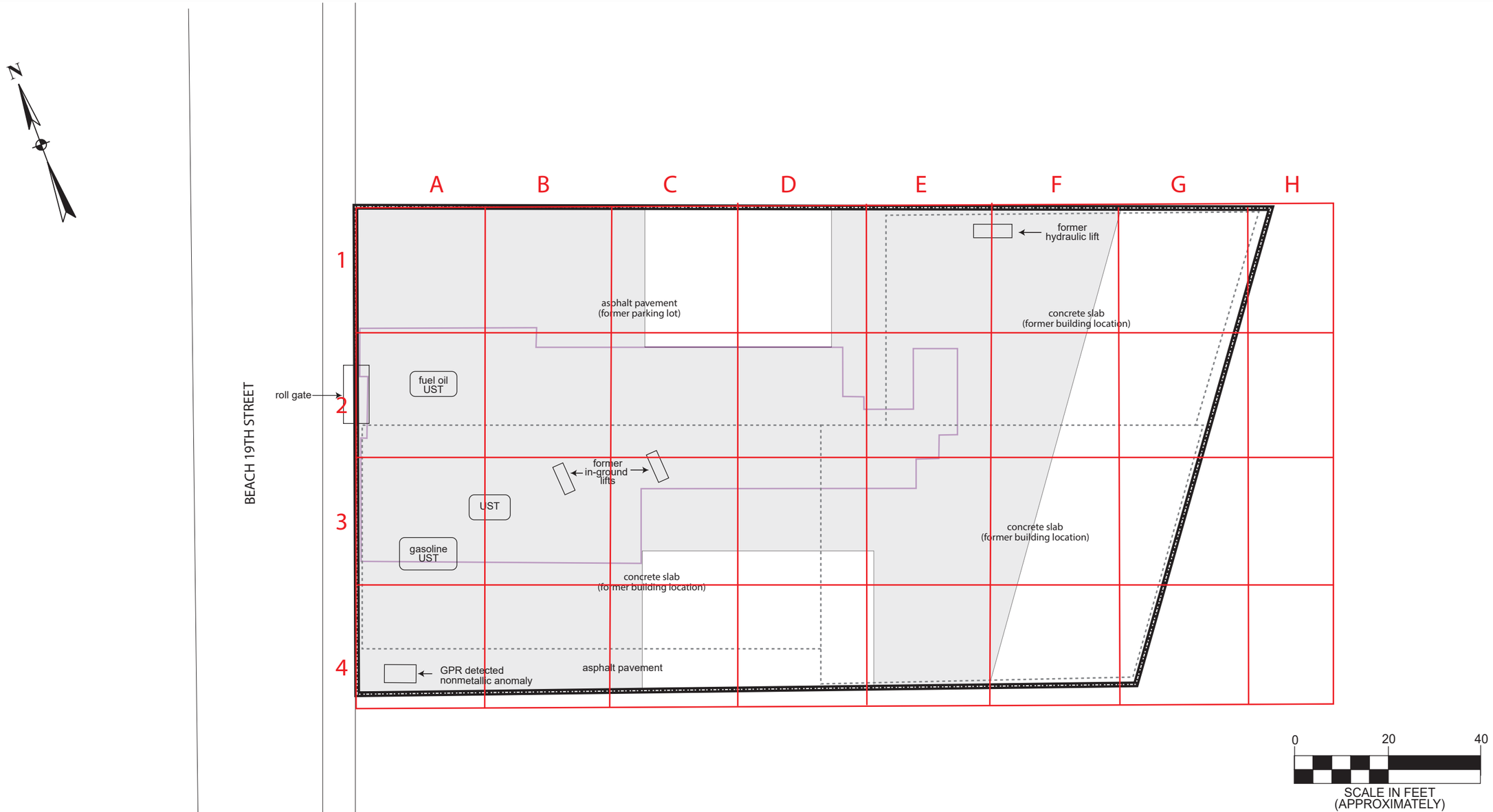
BCP ID: C241276
10-16 Beach 19th Street
Borough of Queens, New York

Legend:

- BCP Site boundary
- proposed 9-story building
- proposed cellar outline
- construction fence
- previous soil/groundwater sample location
- previous soil/groundwater monitoring well location
- previous soil boring location
- previous soil vapor location
- RI soil boring location
- RI soil vapor location
- RI monitoring well location
- supplemental soil boring location

All data in µg/m³
Detected concentrations

File: 21003-0004
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Scale as shown
Figures



Site Plan provided by Newman Design dated 8-1-24.

Legend:

- BCP Site Boundary
- proposed 9-story building
- proposed cellar outline
- construction fence

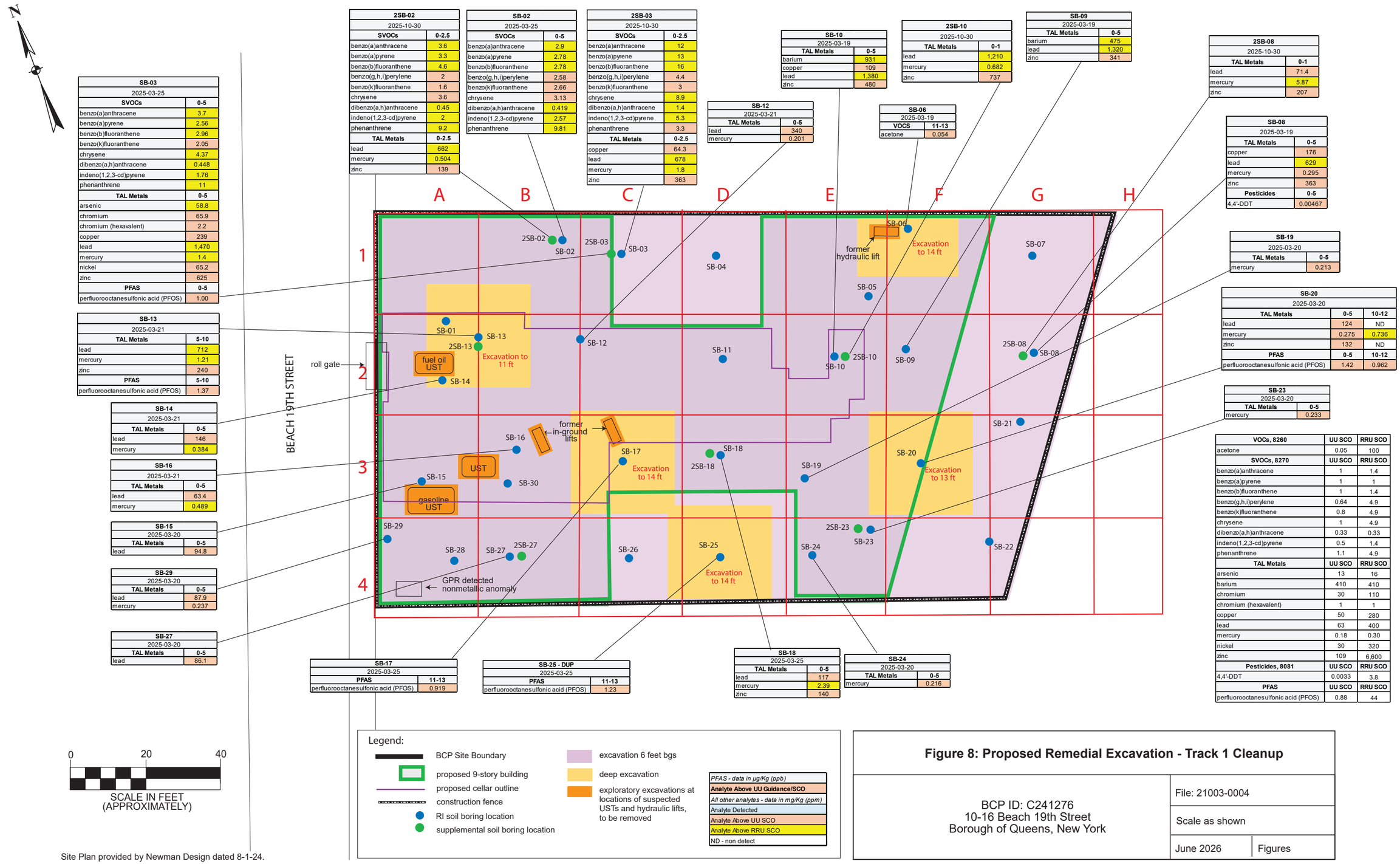
Figure 7: Grid Map

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10-16 Beach 19th Street
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File: 21003-0004

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June 2026 | Figures



SB-03	
2025-03-25	
SVOCs	**0-5**
benzo(a)anthracene	3.7
benzo(a)pyrene	2.56
benzo(b)fluoranthene	2.96
benzo(k)fluoranthene	2.05
chrysene	4.37
dibenzo(a,h)anthracene	0.448
indeno(1,2,3-cd)pyrene	1.76
phenanthrene	11
TAL Metals	**0-5**
arsenic	58.8
chromium	65.9
chromium (hexavalent)	2.2
copper	239
lead	1,470
mercury	1.4
nickel	65.2
zinc	625
PFAS	**0-5**
perfluorooctanesulfonic acid (PFOS)	1.00

SB-13	
2025-03-21	
TAL Metals	**5-10**
lead	712
mercury	1.21
zinc	240
PFAS	**5-10**
perfluorooctanesulfonic acid (PFOS)	1.37

SB-14	
2025-03-21	
TAL Metals	**0-5**
lead	146
mercury	0.384

SB-16	
2025-03-21	
TAL Metals	**0-5**
lead	63.4
mercury	0.489

SB-15	
2025-03-20	
TAL Metals	**0-5**
lead	94.8

SB-29	
2025-03-20	
TAL Metals	**0-5**
lead	87.9
mercury	0.237

SB-27	
2025-03-20	
TAL Metals	**0-5**
lead	86.1

2SB-02	
2025-10-30	
SVOCs	**0-2.5**
benzo(a)anthracene	3.6
benzo(a)pyrene	3.3
benzo(b)fluoranthene	4.6
benzo(g,h,i)perylene	2
benzo(k)fluoranthene	1.6
chrysene	3.6
dibenzo(a,h)anthracene	0.45
indeno(1,2,3-cd)pyrene	2
phenanthrene	9.2
TAL Metals	**0-2.5**
lead	662
mercury	0.504
zinc	139

SB-02	
2025-03-25	
SVOCs	**0-5**
benzo(a)anthracene	2.9
benzo(a)pyrene	2.78
benzo(b)fluoranthene	2.78
benzo(g,h,i)perylene	2.58
benzo(k)fluoranthene	2.66
chrysene	3.13
dibenzo(a,h)anthracene	0.419
indeno(1,2,3-cd)pyrene	2.57
phenanthrene	9.81

2SB-03	
2025-10-30	
SVOCs	**0-2.5**
benzo(a)anthracene	12
benzo(a)pyrene	13
benzo(b)fluoranthene	16
benzo(g,h,i)perylene	4.4
benzo(k)fluoranthene	3
chrysene	8.9
dibenzo(a,h)anthracene	1.4
indeno(1,2,3-cd)pyrene	5.3
phenanthrene	3.3
TAL Metals	**0-2.5**
copper	64.3
lead	678
mercury	1.8
zinc	363

SB-10	
2025-03-19	
TAL Metals	**0-5**
barium	931
copper	109
lead	1,380
zinc	480

SB-12	
2025-03-21	
TAL Metals	**0-5**
lead	340
mercury	0.201

SB-06	
2025-03-19	
VOCS	**11-13**
acetone	0.054

2SB-10	
2025-10-30	
TAL Metals	**0-1**
lead	1,210
mercury	0.682
zinc	737

SB-09	
2025-03-19	
TAL Metals	**0-5**
barium	475
lead	1,320
zinc	341

2SB-08	
2025-10-30	
TAL Metals	**0-1**
lead	71.4
mercury	5.87
zinc	207

SB-08	
2025-03-19	
TAL Metals	**0-5**
copper	176
lead	629
mercury	0.295
zinc	363
Pesticides	**0-5**
4,4'-DDT	0.00467

SB-19	
2025-03-20	
TAL Metals	**0-5**
mercury	0.213

SB-20		
2025-03-20		
TAL Metals	**0-5**	**10-12**
lead	124	ND
mercury	0.275	0.736
zinc	132	ND
PFAS	**0-5**	**10-12**
perfluorooctanesulfonic acid (PFOS)	1.42	0.962

SB-23	
2025-03-20	
TAL Metals	**0-5**
mercury	0.233

SB-17	
2025-03-25	
PFAS	**11-13**
perfluorooctanesulfonic acid (PFOS)	0.919

SB-25 - DUP	
2025-03-25	
PFAS	**11-13**
perfluorooctanesulfonic acid (PFOS)	1.23

SB-18	
2025-03-25	
TAL Metals	**0-5**
lead	117
mercury	2.39
zinc	140

SB-24	
2025-03-20	
TAL Metals	**0-5**
mercury	0.216

VOCs, 8260	UU SCO	RRU SCO
acetone	0.05	100
SVOCs, 8270	**UU SCO**	**RRU SCO**
benzo(a)anthracene	1	1.4
benzo(a)pyrene	1	1
benzo(b)fluoranthene	1	1.4
benzo(g,h,i)perylene	0.64	4.9
benzo(k)fluoranthene	0.8	4.9
chrysene	1	4.9
dibenzo(a,h)anthracene	0.33	0.33
indeno(1,2,3-cd)pyrene	0.5	1.4
phenanthrene	1.1	4.9
TAL Metals	**UU SCO**	**RRU SCO**
arsenic	13	16
barium	410	410
chromium	30	110
chromium (hexavalent)	1	1
copper	50	280
lead	63	400
mercury	0.18	0.30
nickel	30	320
zinc	109	6,600
Pesticides, 8081	**UU SCO**	**RRU SCO**
4,4'-DDT	0.0033	3.8
PFAS	**UU SCO**	**RRU SCO**
perfluorooctanesulfonic acid (PFOS)	0.88	44

Legend:

- BCP Site Boundary
- proposed 9-story building
- proposed cellar outline
- construction fence
- RI soil boring location
- supplemental soil boring location
- excavation 6 feet bgs
- deep excavation
- exploratory excavations at locations of suspected USTs and hydraulic lifts, to be removed

PFAS - data in µg/Kg (ppb)
Analyte Above UU Guidance/SCO
All other analytes - data in mg/Kg (ppm)
Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO
ND - non detect

Site Plan provided by Newman Design dated 8-1-24.

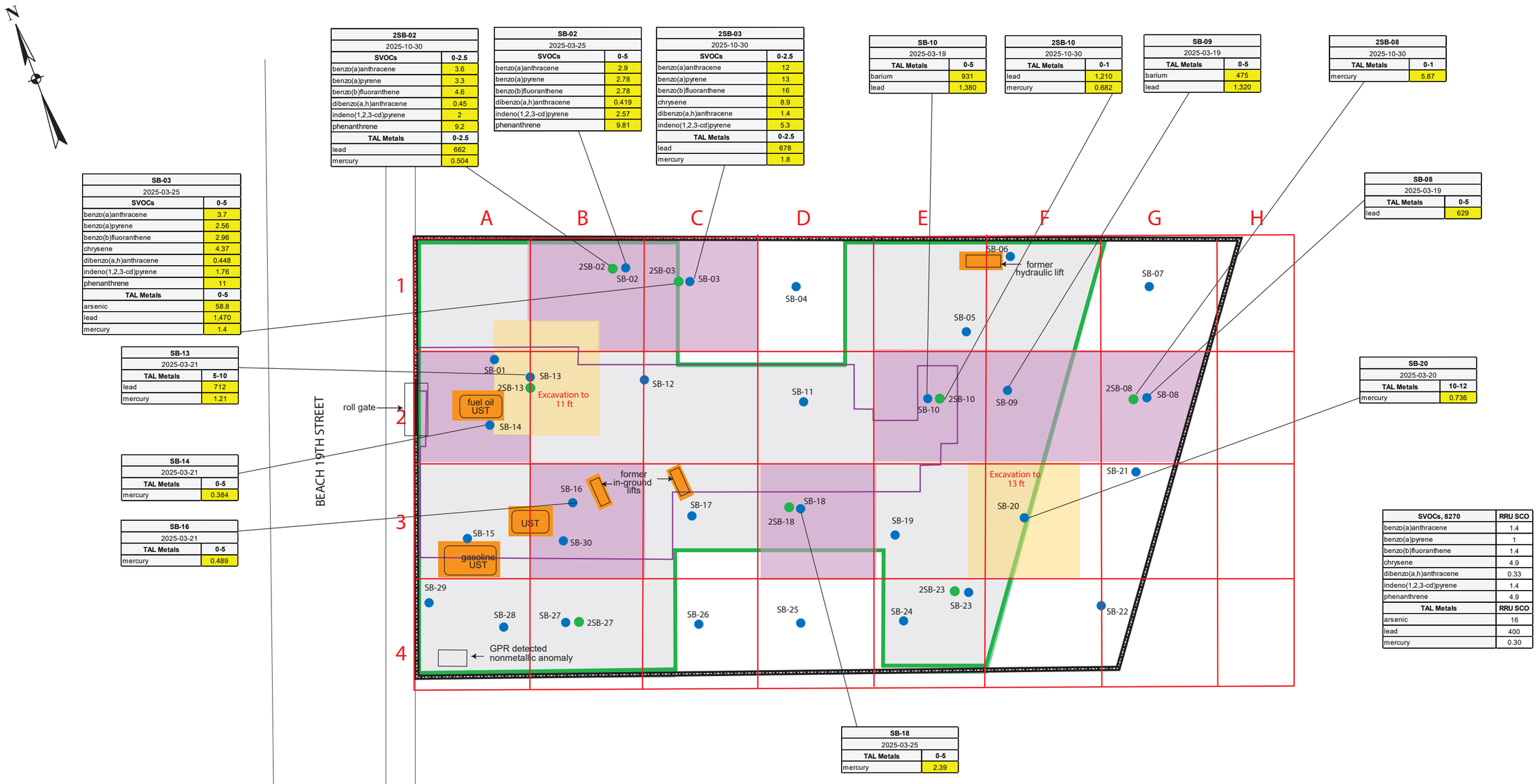
Figure 8: Proposed Remedial Excavation - Track 1 Cleanup

BCP ID: C241276
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Borough of Queens, New York

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Scale as shown

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2SB-02	
2025-10-30	
SVOCs	0-2.5
benzo(a)anthracene	3.6
benzo(a)pyrene	3.3
benzo(b)fluoranthene	4.6
dibenzo(a,h)anthracene	0.45
indeno(1,2,3-cd)pyrene	2
phenanthrene	9.2
TAL Metals	0-2.5
lead	662
mercury	0.504

SB-02	
2025-03-25	
SVOCs	0-5
benzo(a)anthracene	2.9
benzo(a)pyrene	2.78
benzo(b)fluoranthene	2.78
dibenzo(a,h)anthracene	0.419
indeno(1,2,3-cd)pyrene	2.57
phenanthrene	9.81

2SB-03	
2025-10-30	
SVOCs	0-2.5
benzo(a)anthracene	12
benzo(a)pyrene	13
benzo(b)fluoranthene	16
chrysene	8.9
dibenzo(a,h)anthracene	1.4
indeno(1,2,3-cd)pyrene	5.3
TAL Metals	0-2.5
lead	678
mercury	1.8

SB-10	
2025-03-19	
TAL Metals	0-5
barium	931
lead	1,380

2SB-10	
2025-10-30	
TAL Metals	0-1
lead	1,210
mercury	0.682

SB-09	
2025-03-19	
TAL Metals	0-5
barium	475
lead	1,320

2SB-08	
2025-10-30	
TAL Metals	0-1
mercury	5.87

SB-03	
2025-03-25	
SVOCs	0-5
benzo(a)anthracene	3.7
benzo(a)pyrene	2.56
benzo(b)fluoranthene	2.96
chrysene	4.37
dibenzo(a,h)anthracene	0.448
indeno(1,2,3-cd)pyrene	1.76
phenanthrene	11
TAL Metals	0-5
arsenic	58.8
lead	1,470
mercury	1.4

SB-08	
2025-03-19	
TAL Metals	0-5
lead	629

SB-13	
2025-03-21	
TAL Metals	5-10
lead	712
mercury	1.21

SB-20	
2025-03-20	
TAL Metals	10-12
mercury	0.736

SB-14	
2025-03-21	
TAL Metals	0-5
mercury	0.384

SB-16	
2025-03-21	
TAL Metals	0-5
mercury	0.489

SVOCs, 8270	RRU SCO
benzo(a)anthracene	1.4
benzo(a)pyrene	1
benzo(b)fluoranthene	1.4
chrysene	4.9
dibenzo(a,h)anthracene	0.33
indeno(1,2,3-cd)pyrene	1.4
phenanthrene	4.9
TAL Metals	RRU SCO
arsenic	16
lead	400
mercury	0.30

SB-18	
2025-03-25	
TAL Metals	0-5
mercury	2.39

Legend:

- BCP Site Boundary
- proposed 9-story building
- proposed cellar outline
- construction fence
- RI soil boring location
- supplemental soil boring location
- excavation 6 feet bgs
- deep excavation
- exploratory excavations at locations of suspected USTs and hydraulic lifts, to be removed

All analytes - data in mg/Kg (ppm)
Analyte Above RRU SCO

Site Plan provided by Newman Design dated 8-1-24.

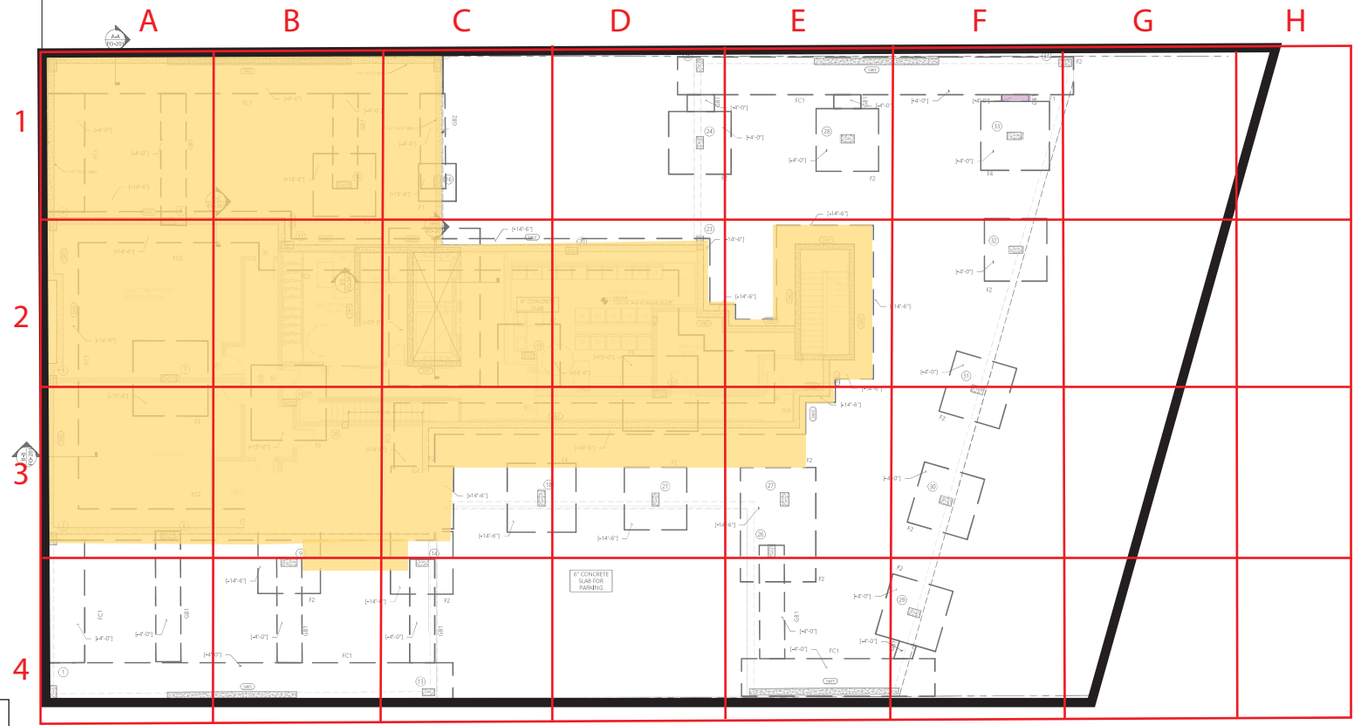
Figure 9: Proposed Remedial Excavation - Track 2 Cleanup

BCP ID: C241276
10-16 Beach 19th Street
Borough of Queens, New York

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Beach 19th Street

15 0 15 30

N

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STATE OF NEW YORK
DANIEL BELLUCCI
099470
LICENSED PROFESSIONAL ENGINEER

DANIEL BELLUCCI,
Licensed Professional Engineer
State of New York License #099470

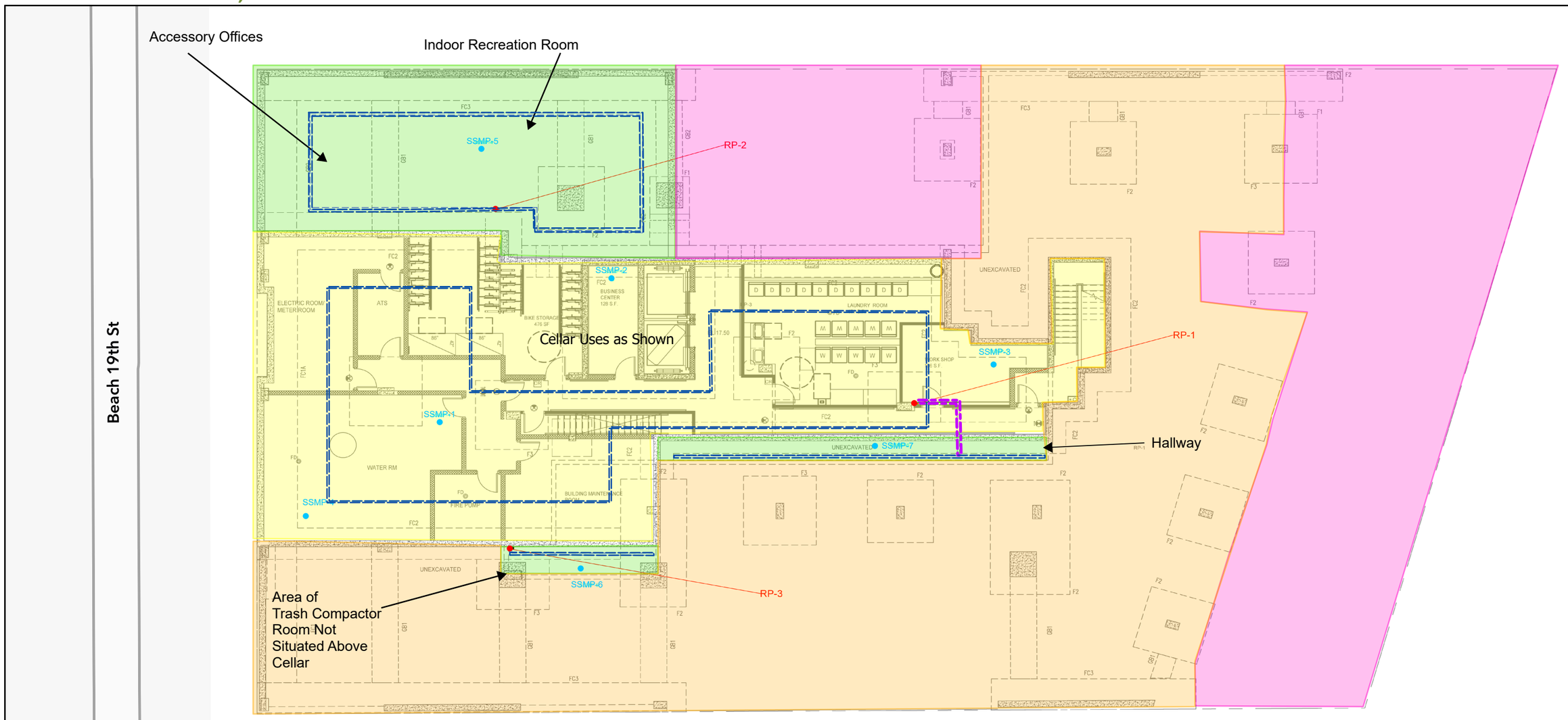
All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

Figure 10: Engineering Controls

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Legend:
- BCP Site Boundary
- location of SSDS

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DANIEL BELLUCCI,
Licensed Professional Engineer State of New York License #099470

0 10 20 30 40 50 Feet

Figure 11: SSDS Conceptual Design

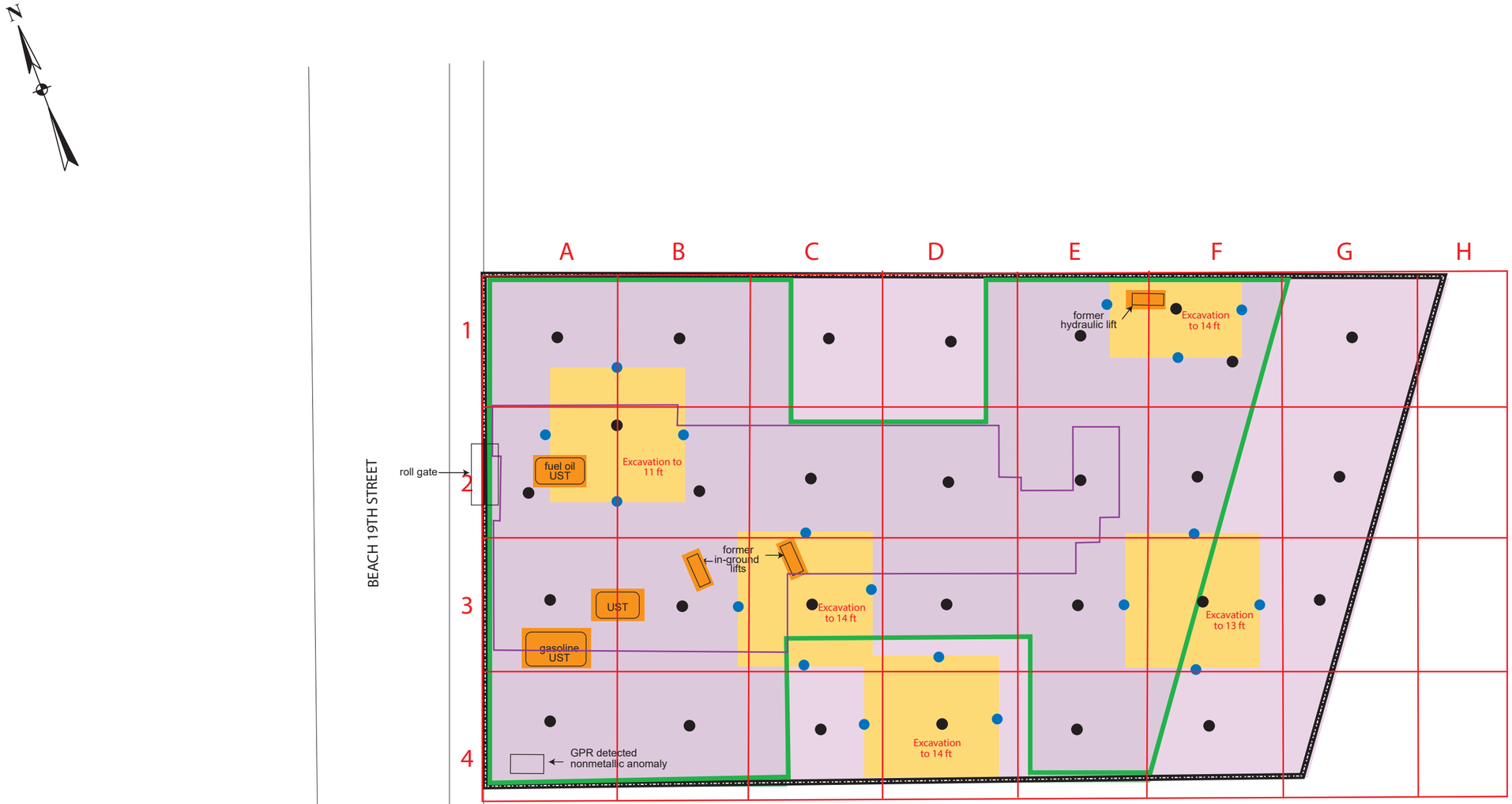
BCP ID: C241276
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- 4" Cast Iron/Galvanized Steel Pipe Run in Cellar Ceiling Under 1st Floor
- 4" Perforated Schedule 40 PVC Under Slab
- 4" Galvanized Steel or Cast Iron Rise Pipe from Below Slab to Roof
- Permanent Sub-slab Monitoring Point (SSMP)
- BCP Site Boundary

- Cellar Slab
- 1st Floor Slabs
- Open Air Asphalt Parking
- Exterior Landscaping/Hardscaping

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Scale as shown



Site Plan provided by Newman Design dated 8-1-24.

Legend:

- BCP Site Boundary
- proposed 9-story building
- proposed cellar outline
- construction fence
- excavation 6 feet bgs
- deep excavation
- exploratory excavations at locations of suspected USTs and hydraulic lifts, to be removed
- Note: If exploratory excavations extend below remedial excavation depths, additional endpoint sampling will be required
- proposed base of excavation endpoint sample locations
- proposed wall endpoint sample locations

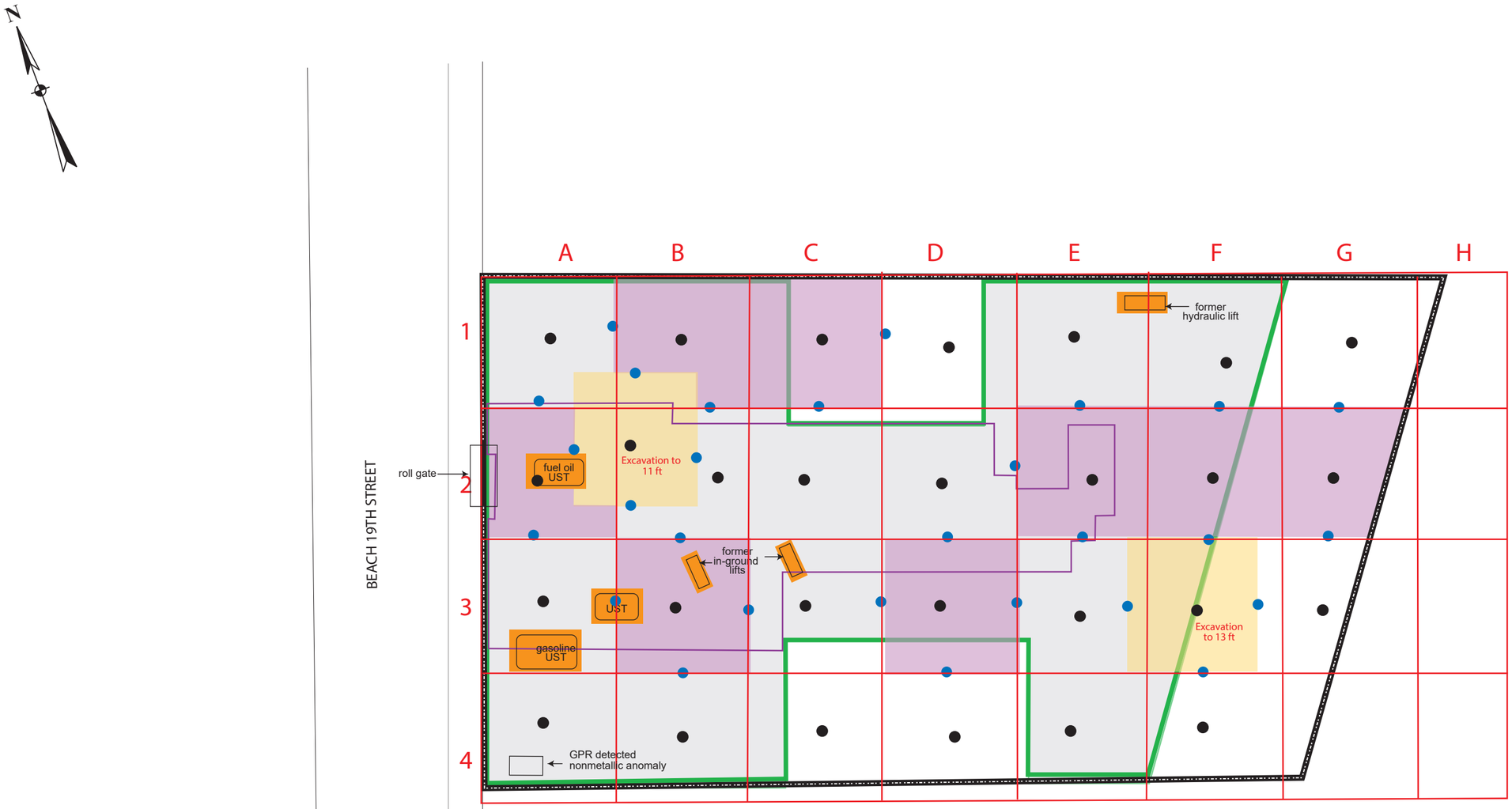
Figure 12: Proposed Endpoint Sample Locations - Track 1 Cleanup

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Borough of Queens, New York

File: 21003-0004

Scale as shown

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Site Plan provided by Newman Design dated 8-1-24.

Figure 13: Proposed Endpoint Sample Locations - Track 2 Cleanup

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10-16 Beach 19th Street
Borough of Queens, New York

File: 21003-0004

Scale as shown

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TABLES

Table 1: VOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-01 0-5		SB-01 11-13		DUPA-20250321		SB-01 22.5-25		SB-02 0-5		SB-02 11-13	
U= Not Detected ≥ value		Date	2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-25		2025-03-25	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1	
VOCs, 8260	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1,1,2-tetrachloroethane	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
1,1,1-trichloroethane	0.68	100	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
1,1,2,2-tetrachloroethane	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
1,1,2-trichloro-1,2,2-trifluoroethane	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
1,1,2-trichloroethane	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
1,1-dichloroethane	0.27	47	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
1,1-dichloroethylene (1,1-DCE)	0.24	1	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
1,2,3-trichlorobenzene	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
1,2,3-trichloropropane	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
1,2,4-trichlorobenzene	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
1,2,4-trimethylbenzene	5.9	100	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
1,2-dibromo-3-chloropropane	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
1,2-dibromoethane	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
1,2-dichlorobenzene	1.1	100	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
1,2-dichloroethane	0.02	5.8	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
1,2-dichloropropane	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
1,3,5-trimethylbenzene	3.1	100	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
1,3-dichlorobenzene	2.6	38	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
1,4-dichlorobenzene	1.8	24	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
1,4-dioxane	0.1	5.7	0.043	*U*	0.043	*U*	0.05	*U*	0.059	*U*	0.045	*U*	0.052	*U*
2-butanone (MEK)	0.1	100	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
2-hexanone	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
4-methyl-2-pentanone	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
acetone	0.03	100	0.0043	*U*	0.0043	*U*	0.005	*U*	0.0059	*U*	0.0045	*U*	0.0052	*U*
acrolein	NA	NA	0.0043	*U*	0.0043	*U*	0.005	*U*	0.0059	*U*	0.0045	*U*	0.0052	*U*
acrylonitrile	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
benzene	0.06	3.7	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
bromochloromethane	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
bromodichloromethane	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
bromoform	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
bromomethane	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
carbon disulfide	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
carbon tetrachloride	0.76	7.1	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
chlorobenzene	4.5	100	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
chloroethane	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
chloroform	0.37	24	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
chloromethane	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
cis-1,2-dichloroethylene (cis-DCE)	0.19	41	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
cis-1,3-dichloropropylene	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
cyclohexane	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
dibromochloromethane	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
dibromomethane	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
dichlorodifluoromethane	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
ethyl benzene	1	76	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
hexachlorobutadiene	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
isopropylbenzene	2.3	100	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
methyl acetate	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
methyl tert-butyl ether (MTBE)	0.1	100	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
methylcyclohexane	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
methylene chloride	0.05	81	0.0043	*U*	0.0043	*U*	0.005	*U*	0.0059	*U*	0.0045	*U*	0.0052	*U*
n-butylbenzene	18	100	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
n-propylbenzene	5	100	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
o-xylene	0.26	100	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
p- & m- xylenes	0.26	100	0.0043	*U*	0.0043	*U*	0.005	*U*	0.0059	*U*	0.0045	*U*	0.0052	*U*
p-isopropyltoluene	10	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
sec-butylbenzene	25	100	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
styrene	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
tert-butyl alcohol (TBA)	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
tert-butylbenzene	11	100	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
tetrachloroethylene (PCE)	1.3	18	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
toluene	0.7	100	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
trans-1,2-dichloroethylene (trans-DCE	0.19	100	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
trans-1,3-dichloropropylene	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
trichloroethylene (TCE)	0.47	6.4	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
trichlorofluoromethane	NA	NA	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
vinyl chloride (VC)	0.03	0.48	0.0021	*U*	0.0022	*U*	0.0025	*U*	0.0029	*U*	0.0022	*U*	0.0026	*U*
xylenes, total	0.26	100	0.0064	*U*	0.0065	*U*	0.0076	*U*	0.0088	*U*	0.0067	*U*	0.0079	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 1: VOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-02 22.5-25		SB-03 0-5		SB-03 11-13		SB-03 22.5-25		SB-04 0-5		SB-04 11-13	
U= Not Detected ≥ value		Date	2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-25	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1	
VOCs, 8260	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1,1,2-tetrachloroethane	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
1,1,1-trichloroethane	0.68	100	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
1,1,2,2-tetrachloroethane	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
1,1,2-trichloro-1,2,2-trifluoroethane	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
1,1,2-trichloroethane	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
1,1-dichloroethane	0.27	47	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
1,1-dichloroethylene (1,1-DCE)	0.24	1	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
1,2,3-trichlorobenzene	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
1,2,3-trichloropropane	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
1,2,4-trichlorobenzene	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
1,2,4-trimethylbenzene	5.9	100	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
1,2-dibromo-3-chloropropane	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
1,2-dibromoethane	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
1,2-dichlorobenzene	1.1	100	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
1,2-dichloroethane	0.02	5.8	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
1,2-dichloropropane	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
1,3,5-trimethylbenzene	3.1	100	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
1,3-dichlorobenzene	2.6	38	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
1,4-dichlorobenzene	1.8	24	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
1,4-dioxane	0.1	5.7	0.059	*U*	0.052	*U*	0.051	*U*	0.048	*U*	0.041	*U*	0.056	*U*
2-butanone (MEK)	0.1	100	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
2-hexanone	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
4-methyl-2-pentanone	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
acetone	0.03	100	0.0059	*U*	0.0052	*U*	0.0051	*U*	0.0048	*U*	0.0041	*U*	0.0056	*U*
acrolein	NA	NA	0.0059	*U*	0.0052	*U*	0.0051	*U*	0.0048	*U*	0.0041	*U*	0.0056	*U*
acrylonitrile	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
benzene	0.06	3.7	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
bromochloromethane	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
bromodichloromethane	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
bromoform	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
bromomethane	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
carbon disulfide	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
carbon tetrachloride	0.76	7.1	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
chlorobenzene	4.5	100	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
chloroethane	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
chloroform	0.37	24	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
chloromethane	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
cis-1,2-dichloroethylene (cis-DCE)	0.19	41	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
cis-1,3-dichloropropylene	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
cyclohexane	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
dibromochloromethane	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
dibromomethane	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
dichlorodifluoromethane	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
ethyl benzene	1	76	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
hexachlorobutadiene	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
isopropylbenzene	2.3	100	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
methyl acetate	NA	NA	0.013		0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
methyl tert-butyl ether (MTBE)	0.1	100	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
methylcyclohexane	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
methylene chloride	0.05	81	0.0059	*U*	0.0052	*U*	0.0051	*U*	0.0048	*U*	0.0041	*U*	0.0056	*U*
n-butylbenzene	18	100	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
n-propylbenzene	5	100	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
o-xylene	0.26	100	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
p- & m- xylenes	0.26	100	0.0059	*U*	0.0052	*U*	0.0051	*U*	0.0048	*U*	0.0041	*U*	0.0056	*U*
p-isopropyltoluene	10	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
sec-butylbenzene	25	100	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
styrene	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
tert-butyl alcohol (TBA)	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
tert-butylbenzene	11	100	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
tetrachloroethylene (PCE)	1.3	18	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
toluene	0.7	100	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
trans-1,2-dichloroethylene (trans-DCE	0.19	100	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
trans-1,3-dichloropropylene	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
trichloroethylene (TCE)	0.47	6.4	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
trichlorofluoromethane	NA	NA	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
vinyl chloride (VC)	0.03	0.48	0.003	*U*	0.0026	*U*	0.0026	*U*	0.0024	*U*	0.0021	*U*	0.0028	*U*
xylenes, total	0.26	100	0.0089	*U*	0.0077	*U*	0.0077	*U*	0.0071	*U*	0.0062	*U*	0.0083	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 1: VOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-04 22.5-25		SB-05 0-5		SB-05 11-13		SB-05 22.5-25		SB-06 0-5		SB-06 11-13	
U= Not Detected ≥ value		Date	2025-03-25		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1	
VOCs, 8260	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1,1,2-tetrachloroethane	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
1,1,1-trichloroethane	0.68	100	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
1,1,2,2-tetrachloroethane	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
1,1,2-trichloro-1,2,2-trifluoroethane	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
1,1,2-trichloroethane	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
1,1-dichloroethane	0.27	47	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
1,1-dichloroethylene (1,1-DCE)	0.24	1	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
1,2,3-trichlorobenzene	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
1,2,3-trichloropropane	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
1,2,4-trichlorobenzene	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
1,2,4-trimethylbenzene	5.9	100	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
1,2-dibromo-3-chloropropane	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
1,2-dibromoethane	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
1,2-dichlorobenzene	1.1	100	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
1,2-dichloroethane	0.02	5.8	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
1,2-dichloropropane	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
1,3,5-trimethylbenzene	3.1	100	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
1,3-dichlorobenzene	2.6	38	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
1,4-dichlorobenzene	1.8	24	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
1,4-dioxane	0.1	5.7	0.057	*U*	0.06	*U*	0.049	*U*	0.054	*U*	0.056	*U*	0.056	*U*
2-butanone (MEK)	0.1	100	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.019	
2-hexanone	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
4-methyl-2-pentanone	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
acetone	0.03	100	0.0057	*U*	0.006	*U*	0.0049	*U*	0.0054	*U*	0.0056	*U*	0.054	
acrolein	NA	NA	0.0057	*U*	0.006	*U*	0.0049	*U*	0.0054	*U*	0.0056	*U*	0.0056	*U*
acrylonitrile	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
benzene	0.06	3.7	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
bromochloromethane	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
bromodichloromethane	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
bromoform	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
bromomethane	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
carbon disulfide	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
carbon tetrachloride	0.76	7.1	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
chlorobenzene	4.5	100	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
chloroethane	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
chloroform	0.37	24	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
chloromethane	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
cis-1,2-dichloroethylene (cis-DCE)	0.19	41	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
cis-1,3-dichloropropylene	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
cyclohexane	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
dibromochloromethane	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
dibromomethane	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
dichlorodifluoromethane	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
ethyl benzene	1	76	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
hexachlorobutadiene	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
isopropylbenzene	2.3	100	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
methyl acetate	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
methyl tert-butyl ether (MTBE)	0.1	100	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
methylcyclohexane	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
methylene chloride	0.05	81	0.0057	*U*	0.006	*U*	0.0049	*U*	0.0054	*U*	0.0056	*U*	0.0056	*U*
n-butylbenzene	18	100	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
n-propylbenzene	5	100	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
o-xylene	0.26	100	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
p- & m- xylenes	0.26	100	0.0057	*U*	0.006	*U*	0.0049	*U*	0.0054	*U*	0.0056	*U*	0.0056	*U*
p-isopropyltoluene	10	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
sec-butylbenzene	25	100	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
styrene	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
tert-butyl alcohol (TBA)	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
tert-butylbenzene	11	100	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
tetrachloroethylene (PCE)	1.3	18	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
toluene	0.7	100	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
trans-1,2-dichloroethylene (trans-DCE	0.19	100	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
trans-1,3-dichloropropylene	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
trichloroethylene (TCE)	0.47	6.4	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
trichlorofluoromethane	NA	NA	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
vinyl chloride (VC)	0.03	0.48	0.0029	*U*	0.003	*U*	0.0025	*U*	0.0027	*U*	0.0028	*U*	0.0028	*U*
xylenes, total	0.26	100	0.0086	*U*	0.009	*U*	0.0074	*U*	0.0081	*U*	0.0085	*U*	0.0084	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 1: VOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-06 22.5-25		SB-07 0-5		SB-07 11-13		SB-07 22.5-25		SB-08 0-5		SB-08 11-13	
U= Not Detected ≥ value		Date	2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1	
VOCs, 8260	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1,1,2-tetrachloroethane	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
1,1,1-trichloroethane	0.68	100	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
1,1,2,2-tetrachloroethane	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
1,1,2-trichloro-1,2,2-trifluoroethane	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
1,1,2-trichloroethane	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
1,1-dichloroethane	0.27	47	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
1,1-dichloroethylene (1,1-DCE)	0.24	1	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
1,2,3-trichlorobenzene	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
1,2,3-trichloropropane	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
1,2,4-trichlorobenzene	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
1,2,4-trimethylbenzene	5.9	100	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
1,2-dibromo-3-chloropropane	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
1,2-dibromoethane	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
1,2-dichlorobenzene	1.1	100	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
1,2-dichloroethane	0.02	5.8	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
1,2-dichloropropane	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
1,3,5-trimethylbenzene	3.1	100	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
1,3-dichlorobenzene	2.6	38	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
1,4-dichlorobenzene	1.8	24	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
1,4-dioxane	0.1	5.7	0.057	*U*	0.05	*U*	0.05	*U*	0.057	*U*	0.058	*U*	0.057	*U*
2-butanone (MEK)	0.1	100	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
2-hexanone	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
4-methyl-2-pentanone	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
acetone	0.03	100	0.0057	*U*	0.005	*U*	0.005	*U*	0.0057	*U*	0.02		0.0057	*U*
acrolein	NA	NA	0.0057	*U*	0.005	*U*	0.005	*U*	0.0057	*U*	0.0058	*U*	0.0057	*U*
acrylonitrile	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
benzene	0.06	3.7	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
bromochloromethane	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
bromodichloromethane	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
bromoform	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
bromomethane	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
carbon disulfide	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
carbon tetrachloride	0.76	7.1	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
chlorobenzene	4.5	100	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
chloroethane	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
chloroform	0.37	24	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
chloromethane	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
cis-1,2-dichloroethylene (cis-DCE)	0.19	41	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
cis-1,3-dichloropropylene	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
cyclohexane	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
dibromochloromethane	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
dibromomethane	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
dichlorodifluoromethane	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
ethyl benzene	1	76	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
hexachlorobutadiene	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
isopropylbenzene	2.3	100	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
methyl acetate	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
methyl tert-butyl ether (MTBE)	0.1	100	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
methylcyclohexane	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
methylene chloride	0.05	81	0.0057	*U*	0.005	*U*	0.005	*U*	0.0057	*U*	0.0058	*U*	0.0057	*U*
n-butylbenzene	18	100	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
n-propylbenzene	5	100	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
o-xylene	0.26	100	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
p- & m- xylenes	0.26	100	0.0057	*U*	0.005	*U*	0.005	*U*	0.0057	*U*	0.0058	*U*	0.0057	*U*
p-isopropyltoluene	10	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
sec-butylbenzene	25	100	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
styrene	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
tert-butyl alcohol (TBA)	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
tert-butylbenzene	11	100	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
tetrachloroethylene (PCE)	1.3	18	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0072		0.0028	*U*
toluene	0.7	100	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
trans-1,2-dichloroethylene (trans-DCE	0.19	100	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
trans-1,3-dichloropropylene	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
trichloroethylene (TCE)	0.47	6.4	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
trichlorofluoromethane	NA	NA	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
vinyl chloride (VC)	0.03	0.48	0.0029	*U*	0.0025	*U*	0.0025	*U*	0.0029	*U*	0.0029	*U*	0.0028	*U*
xylenes, total	0.26	100	0.0086	*U*	0.0075	*U*	0.0075	*U*	0.0086	*U*	0.0087	*U*	0.0085	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 1: VOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-08 22.5-25		SB-09 0-5		SB-09 11-13		SB-09 22.5-25		DUP-20250319		SB-10 0-5	
U= Not Detected ≥ value		Date	2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1	
VOCs, 8260	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1,1,2-tetrachloroethane	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
1,1,1-trichloroethane	0.68	100	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
1,1,2,2-tetrachloroethane	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
1,1,2-trichloro-1,2,2-trifluoroethane	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
1,1,2-trichloroethane	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
1,1-dichloroethane	0.27	47	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
1,1-dichloroethylene (1,1-DCE)	0.24	1	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
1,2,3-trichlorobenzene	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
1,2,3-trichloropropane	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
1,2,4-trichlorobenzene	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
1,2,4-trimethylbenzene	5.9	100	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
1,2-dibromo-3-chloropropane	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
1,2-dibromoethane	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
1,2-dichlorobenzene	1.1	100	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
1,2-dichloroethane	0.02	5.8	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
1,2-dichloropropane	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
1,3,5-trimethylbenzene	3.1	100	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
1,3-dichlorobenzene	2.6	38	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
1,4-dichlorobenzene	1.8	24	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
1,4-dioxane	0.1	5.7	0.059	*U*	0.058	*U*	0.056	*U*	0.054	*U*	0.059	*U*	0.064	*U*
2-butanone (MEK)	0.1	100	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
2-hexanone	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
4-methyl-2-pentanone	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
acetone	0.03	100	0.0059	*U*	0.0058	*U*	0.0056	*U*	0.0054	*U*	0.0059	*U*	0.013	
acrolein	NA	NA	0.0059	*U*	0.0058	*U*	0.0056	*U*	0.0054	*U*	0.0059	*U*	0.0064	*U*
acrylonitrile	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
benzene	0.06	3.7	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
bromochloromethane	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
bromodichloromethane	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
bromoform	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
bromomethane	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
carbon disulfide	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
carbon tetrachloride	0.76	7.1	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
chlorobenzene	4.5	100	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
chloroethane	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
chloroform	0.37	24	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
chloromethane	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
cis-1,2-dichloroethylene (cis-DCE)	0.19	41	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
cis-1,3-dichloropropylene	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
cyclohexane	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
dibromochloromethane	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
dibromomethane	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
dichlorodifluoromethane	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
ethyl benzene	1	76	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
hexachlorobutadiene	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
isopropylbenzene	2.3	100	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
methyl acetate	NA	NA	0.003	*U*	0.0042	*J*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
methyl tert-butyl ether (MTBE)	0.1	100	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
methylcyclohexane	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
methylene chloride	0.05	81	0.0059	*U*	0.0058	*U*	0.0056	*U*	0.0054	*U*	0.0059	*U*	0.0064	*U*
n-butylbenzene	18	100	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
n-propylbenzene	5	100	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
o-xylene	0.26	100	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
p- & m- xylenes	0.26	100	0.0059	*U*	0.0058	*U*	0.0056	*U*	0.0054	*U*	0.0059	*U*	0.0064	*U*
p-isopropyltoluene	10	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
sec-butylbenzene	25	100	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
styrene	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
tert-butyl alcohol (TBA)	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
tert-butylbenzene	11	100	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
tetrachloroethylene (PCE)	1.3	18	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
toluene	0.7	100	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
trans-1,2-dichloroethylene (trans-DCE	0.19	100	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
trans-1,3-dichloropropylene	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
trichloroethylene (TCE)	0.47	6.4	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
trichlorofluoromethane	NA	NA	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
vinyl chloride (VC)	0.03	0.48	0.003	*U*	0.0029	*U*	0.0028	*U*	0.0027	*U*	0.0029	*U*	0.0032	*U*
xylenes, total	0.26	100	0.0089	*U*	0.0087	*U*	0.0084	*U*	0.0082	*U*	0.0088	*U*	0.0096	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 1: VOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-10 11-13		SB-10 22.5-25		SB-11 0-5		SB-11 11-13		SB-11 22.5-25		SB-12 0-5	
U= Not Detected ≥ value		Date	2025-03-19		2025-03-19		2025-03-25		2025-03-25		2025-03-25		2025-03-21	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1	
VOCs, 8260	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1,1,2-tetrachloroethane	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
1,1,1-trichloroethane	0.68	100	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
1,1,2,2-tetrachloroethane	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
1,1,2-trichloro-1,2,2-trifluoroethane	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
1,1,2-trichloroethane	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
1,1-dichloroethane	0.27	47	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
1,1-dichloroethylene (1,1-DCE)	0.24	1	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
1,2,3-trichlorobenzene	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
1,2,3-trichloropropane	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
1,2,4-trichlorobenzene	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
1,2,4-trimethylbenzene	5.9	100	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
1,2-dibromo-3-chloropropane	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
1,2-dibromoethane	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
1,2-dichlorobenzene	1.1	100	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
1,2-dichloroethane	0.02	5.8	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
1,2-dichloropropane	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
1,3,5-trimethylbenzene	3.1	100	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
1,3-dichlorobenzene	2.6	38	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
1,4-dichlorobenzene	1.8	24	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
1,4-dioxane	0.1	5.7	0.05	*U*	0.052	*U*	0.053	*U*	0.051	*U*	0.063	*U*	0.05	*U*
2-butanone (MEK)	0.1	100	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
2-hexanone	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
4-methyl-2-pentanone	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
acetone	0.03	100	0.005	*U*	0.0052	*U*	0.0053	*U*	0.0051	*U*	0.0063	*U*	0.005	*U*
acrolein	NA	NA	0.005	*U*	0.0052	*U*	0.0053	*U*	0.0051	*U*	0.0063	*U*	0.005	*U*
acrylonitrile	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
benzene	0.06	3.7	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
bromochloromethane	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
bromodichloromethane	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
bromoform	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
bromomethane	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
carbon disulfide	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
carbon tetrachloride	0.76	7.1	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
chlorobenzene	4.5	100	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
chloroethane	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
chloroform	0.37	24	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
chloromethane	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
cis-1,2-dichloroethylene (cis-DCE)	0.19	41	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
cis-1,3-dichloropropylene	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
cyclohexane	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
dibromochloromethane	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
dibromomethane	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
dichlorodifluoromethane	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
ethyl benzene	1	76	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
hexachlorobutadiene	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
isopropylbenzene	2.3	100	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
methyl acetate	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
methyl tert-butyl ether (MTBE)	0.1	100	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
methylcyclohexane	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
methylene chloride	0.05	81	0.005	*U*	0.0052	*U*	0.0053	*U*	0.0051	*U*	0.0063	*U*	0.005	*U*
n-butylbenzene	18	100	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
n-propylbenzene	5	100	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
o-xylene	0.26	100	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
p- & m- xylenes	0.26	100	0.005	*U*	0.0052	*U*	0.0053	*U*	0.0051	*U*	0.0063	*U*	0.005	*U*
p-isopropyltoluene	10	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
sec-butylbenzene	25	100	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
styrene	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
tert-butyl alcohol (TBA)	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
tert-butylbenzene	11	100	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
tetrachloroethylene (PCE)	1.3	18	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
toluene	0.7	100	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
trans-1,2-dichloroethylene (trans-DCE	0.19	100	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
trans-1,3-dichloropropylene	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
trichloroethylene (TCE)	0.47	6.4	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
trichlorofluoromethane	NA	NA	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
vinyl chloride (VC)	0.03	0.48	0.0025	*U*	0.0026	*U*	0.0026	*U*	0.0025	*U*	0.0031	*U*	0.0025	*U*
xylenes, total	0.26	100	0.0075	*U*	0.0078	*U*	0.0079	*U*	0.0076	*U*	0.0094	*U*	0.0075	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 1: VOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-12 11-13		SB-12 22.5-25		DUPB-20250321		SB-13 5-10		SB-13 11-13		SB-13 22.5-25	
U= Not Detected ≥ value		Date	2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-21	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1	
VOCs, 8260	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1,1,2-tetrachloroethane	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
1,1,1-trichloroethane	0.68	100	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
1,1,2,2-tetrachloroethane	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
1,1,2-trichloro-1,2,2-trifluoroethane	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
1,1,2-trichloroethane	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
1,1-dichloroethane	0.27	47	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
1,1-dichloroethylene (1,1-DCE)	0.24	1	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
1,2,3-trichlorobenzene	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
1,2,3-trichloropropane	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
1,2,4-trichlorobenzene	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
1,2,4-trimethylbenzene	5.9	100	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
1,2-dibromo-3-chloropropane	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
1,2-dibromoethane	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
1,2-dichlorobenzene	1.1	100	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
1,2-dichloroethane	0.02	5.8	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
1,2-dichloropropane	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
1,3,5-trimethylbenzene	3.1	100	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
1,3-dichlorobenzene	2.6	38	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
1,4-dichlorobenzene	1.8	24	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
1,4-dioxane	0.1	5.7	0.054	*U*	0.06	*U*	0.054	*U*	0.063	*U*	0.048	*U*	0.043	*U*
2-butanone (MEK)	0.1	100	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
2-hexanone	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
4-methyl-2-pentanone	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
acetone	0.03	100	0.0054	*U*	0.006	*U*	0.0054	*U*	0.0063	*U*	0.017		0.0067	*J*
acrolein	NA	NA	0.0054	*U*	0.006	*U*	0.0054	*U*	0.0063	*U*	0.0048	*U*	0.0043	*U*
acrylonitrile	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
benzene	0.06	3.7	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
bromochloromethane	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
bromodichloromethane	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
bromoform	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
bromomethane	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
carbon disulfide	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
carbon tetrachloride	0.76	7.1	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
chlorobenzene	4.5	100	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
chloroethane	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
chloroform	0.37	24	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
chloromethane	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
cis-1,2-dichloroethylene (cis-DCE)	0.19	41	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
cis-1,3-dichloropropylene	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
cyclohexane	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0048	
dibromochloromethane	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
dibromomethane	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
dichlorodifluoromethane	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
ethyl benzene	1	76	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
hexachlorobutadiene	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
isopropylbenzene	2.3	100	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
methyl acetate	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0039	*J*	0.0068	
methyl tert-butyl ether (MTBE)	0.1	100	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
methylcyclohexane	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
methylene chloride	0.05	81	0.0054	*U*	0.006	*U*	0.0054	*U*	0.0063	*U*	0.0048	*U*	0.0043	*U*
n-butylbenzene	18	100	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
n-propylbenzene	5	100	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
o-xylene	0.26	100	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
p- & m- xylenes	0.26	100	0.0054	*U*	0.006	*U*	0.0054	*U*	0.0063	*U*	0.0048	*U*	0.0043	*U*
p-isopropyltoluene	10	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
sec-butylbenzene	25	100	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
styrene	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
tert-butyl alcohol (TBA)	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
tert-butylbenzene	11	100	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
tetrachloroethylene (PCE)	1.3	18	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
toluene	0.7	100	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
trans-1,2-dichloroethylene (trans-DCE	0.19	100	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
trans-1,3-dichloropropylene	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
trichloroethylene (TCE)	0.47	6.4	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
trichlorofluoromethane	NA	NA	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
vinyl chloride (VC)	0.03	0.48	0.0027	*U*	0.003	*U*	0.0027	*U*	0.0032	*U*	0.0024	*U*	0.0022	*U*
xylenes, total	0.26	100	0.008	*U*	0.0091	*U*	0.0081	*U*	0.0095	*U*	0.0072	*U*	0.0065	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 1: VOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-13 25-27		SB-14 0-5		SB-14 11-13		SB-14 22.5-25		SB-15 0-5		SB-15 11-13	
U= Not Detected ≥ value		Date	2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-20		2025-03-20	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1	
VOCs, 8260	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1,1,2-tetrachloroethane	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
1,1,1-trichloroethane	0.68	100	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
1,1,2,2-tetrachloroethane	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
1,1,2-trichloro-1,2,2-trifluoroethane	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
1,1,2-trichloroethane	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
1,1-dichloroethane	0.27	47	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
1,1-dichloroethylene (1,1-DCE)	0.24	1	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
1,2,3-trichlorobenzene	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
1,2,3-trichloropropane	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
1,2,4-trichlorobenzene	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
1,2,4-trimethylbenzene	5.9	100	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
1,2-dibromo-3-chloropropane	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
1,2-dibromoethane	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
1,2-dichlorobenzene	1.1	100	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
1,2-dichloroethane	0.02	5.8	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
1,2-dichloropropane	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
1,3,5-trimethylbenzene	3.1	100	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
1,3-dichlorobenzene	2.6	38	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
1,4-dichlorobenzene	1.8	24	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
1,4-dioxane	0.1	5.7	0.044	*U*	0.045	*U*	0.048	*U*	0.056	*U*	0.049	*U*	0.048	*U*
2-butanone (MEK)	0.1	100	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
2-hexanone	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
4-methyl-2-pentanone	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
acetone	0.03	100	0.012		0.0045	*U*	0.0063	*J*	0.0056	*U*	0.0049	*U*	0.0048	*U*
acrolein	NA	NA	0.0044	*U*	0.0045	*U*	0.0048	*U*	0.0056	*U*	0.0049	*U*	0.0048	*U*
acrylonitrile	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
benzene	0.06	3.7	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
bromochloromethane	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
bromodichloromethane	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
bromoform	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
bromomethane	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
carbon disulfide	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
carbon tetrachloride	0.76	7.1	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
chlorobenzene	4.5	100	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
chloroethane	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
chloroform	0.37	24	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
chloromethane	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
cis-1,2-dichloroethylene (cis-DCE)	0.19	41	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
cis-1,3-dichloropropylene	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
cyclohexane	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
dibromochloromethane	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
dibromomethane	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
dichlorodifluoromethane	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
ethyl benzene	1	76	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
hexachlorobutadiene	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
isopropylbenzene	2.3	100	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
methyl acetate	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
methyl tert-butyl ether (MTBE)	0.1	100	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
methylcyclohexane	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
methylene chloride	0.05	81	0.0044	*U*	0.0045	*U*	0.0048	*U*	0.0056	*U*	0.0049	*U*	0.0048	*U*
n-butylbenzene	18	100	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
n-propylbenzene	5	100	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
o-xylene	0.26	100	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
p- & m- xylenes	0.26	100	0.0044	*U*	0.0045	*U*	0.0048	*U*	0.0056	*U*	0.0049	*U*	0.0048	*U*
p-isopropyltoluene	10	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
sec-butylbenzene	25	100	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
styrene	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
tert-butyl alcohol (TBA)	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
tert-butylbenzene	11	100	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
tetrachloroethylene (PCE)	1.3	18	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
toluene	0.7	100	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
trans-1,2-dichloroethylene (trans-DCE	0.19	100	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
trans-1,3-dichloropropylene	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
trichloroethylene (TCE)	0.47	6.4	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
trichlorofluoromethane	NA	NA	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
vinyl chloride (VC)	0.03	0.48	0.0022	*U*	0.0022	*U*	0.0024	*U*	0.0028	*U*	0.0025	*U*	0.0024	*U*
xylenes, total	0.26	100	0.0065	*U*	0.0067	*U*	0.0072	*U*	0.0084	*U*	0.0074	*U*	0.0071	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 1: VOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-15 22.5-25		SB-16 0-5		SB-16 11-13		SB-16 22.5-25		SB-16 25-27		SB-17 0-5	
U= Not Detected ≥ value		Date	2025-03-20		2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-25	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1	
VOCs, 8260	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1,1,2-tetrachloroethane	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
1,1,1-trichloroethane	0.68	100	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
1,1,2,2-tetrachloroethane	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
1,1,2-trichloro-1,2,2-trifluoroethane	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
1,1,2-trichloroethane	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
1,1-dichloroethane	0.27	47	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
1,1-dichloroethylene (1,1-DCE)	0.24	1	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
1,2,3-trichlorobenzene	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
1,2,3-trichloropropane	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
1,2,4-trichlorobenzene	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
1,2,4-trimethylbenzene	5.9	100	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.035		0.0025	*U*	0.0023	*U*
1,2-dibromo-3-chloropropane	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
1,2-dibromoethane	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
1,2-dichlorobenzene	1.1	100	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
1,2-dichloroethane	0.02	5.8	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
1,2-dichloropropane	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
1,3,5-trimethylbenzene	3.1	100	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
1,3-dichlorobenzene	2.6	38	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
1,4-dichlorobenzene	1.8	24	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
1,4-dioxane	0.1	5.7	0.041	*U*	0.055	*U*	0.052	*U*	0.054	*U*	0.05	*U*	0.047	*U*
2-butanone (MEK)	0.1	100	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
2-hexanone	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
4-methyl-2-pentanone	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
acetone	0.03	100	0.0041	*U*	0.015		0.0052	*U*	0.028		0.026		0.0047	*U*
acrolein	NA	NA	0.0041	*U*	0.0055	*U*	0.0052	*U*	0.0054	*U*	0.005	*U*	0.0047	*U*
acrylonitrile	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
benzene	0.06	3.7	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
bromochloromethane	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
bromodichloromethane	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
bromoform	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
bromomethane	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
carbon disulfide	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
carbon tetrachloride	0.76	7.1	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
chlorobenzene	4.5	100	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
chloroethane	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
chloroform	0.37	24	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
chloromethane	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
cis-1,2-dichloroethylene (cis-DCE)	0.19	41	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
cis-1,3-dichloropropylene	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
cyclohexane	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
dibromochloromethane	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
dibromomethane	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
dichlorodifluoromethane	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
ethyl benzene	1	76	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
hexachlorobutadiene	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
isopropylbenzene	2.3	100	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
methyl acetate	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
methyl tert-butyl ether (MTBE)	0.1	100	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
methylcyclohexane	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
methylene chloride	0.05	81	0.0041	*U*	0.0055	*U*	0.0052	*U*	0.0054	*U*	0.005	*U*	0.0047	*U*
n-butylbenzene	18	100	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.28		0.0025	*U*	0.0023	*U*
n-propylbenzene	5	100	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.15		0.0025	*U*	0.0023	*U*
o-xylene	0.26	100	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
p- & m- xylenes	0.26	100	0.0041	*U*	0.0055	*U*	0.0052	*U*	0.0054	*U*	0.005	*U*	0.0047	*U*
p-isopropyltoluene	10	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.45	*E*	0.0025	*U*	0.0023	*U*
sec-butylbenzene	25	100	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.69	*D*	0.0025	*U*	0.0023	*U*
styrene	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
tert-butyl alcohol (TBA)	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
tert-butylbenzene	11	100	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
tetrachloroethylene (PCE)	1.3	18	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
toluene	0.7	100	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
trans-1,2-dichloroethylene (trans-DCE	0.19	100	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
trans-1,3-dichloropropylene	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
trichloroethylene (TCE)	0.47	6.4	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
trichlorofluoromethane	NA	NA	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
vinyl chloride (VC)	0.03	0.48	0.0021	*U*	0.0027	*U*	0.0026	*U*	0.0027	*U*	0.0025	*U*	0.0023	*U*
xylenes, total	0.26	100	0.0062	*U*	0.0082	*U*	0.0078	*U*	0.0081	*U*	0.0075	*U*	0.007	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 1: VOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-17 11-13		SB-17 22.5-25		SB-18 0-5		SB-18 11-13		SB-18 22.5-25		SB-18 25-30	
U= Not Detected ≥ value		Date	2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-25	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		100	
VOCs, 8260	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1,1,2-tetrachloroethane	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
1,1,1-trichloroethane	0.68	100	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
1,1,2,2-tetrachloroethane	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
1,1,2-trichloro-1,2,2-trifluoroethane	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
1,1,2-trichloroethane	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
1,1-dichloroethane	0.27	47	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
1,1-dichloroethylene (1,1-DCE)	0.24	1	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
1,2,3-trichlorobenzene	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
1,2,3-trichloropropane	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
1,2,4-trichlorobenzene	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
1,2,4-trimethylbenzene	5.9	100	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
1,2-dibromo-3-chloropropane	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
1,2-dibromoethane	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
1,2-dichlorobenzene	1.1	100	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
1,2-dichloroethane	0.02	5.8	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
1,2-dichloropropane	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
1,3,5-trimethylbenzene	3.1	100	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
1,3-dichlorobenzene	2.6	38	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
1,4-dichlorobenzene	1.8	24	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
1,4-dioxane	0.1	5.7	0.047	*U*	0.05	*U*	0.047	*U*	0.057	*U*	0.052	*U*	0.05	*U*
2-butanone (MEK)	0.1	100	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
2-hexanone	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
4-methyl-2-pentanone	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
acetone	0.03	100	0.0074	*J*	0.005	*U*	0.0047	*U*	0.011		0.0052	*U*	0.0079	*J*
acrolein	NA	NA	0.0047	*U*	0.005	*U*	0.0047	*U*	0.0057	*U*	0.0052	*U*	0.005	*U*
acrylonitrile	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
benzene	0.06	3.7	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
bromochloromethane	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
bromodichloromethane	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
bromoform	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
bromomethane	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
carbon disulfide	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
carbon tetrachloride	0.76	7.1	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
chlorobenzene	4.5	100	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
chloroethane	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
chloroform	0.37	24	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
chloromethane	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
cis-1,2-dichloroethylene (cis-DCE)	0.19	41	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
cis-1,3-dichloropropylene	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
cyclohexane	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	1.2	*D*
dibromochloromethane	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
dibromomethane	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
dichlorodifluoromethane	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
ethyl benzene	1	76	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
hexachlorobutadiene	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
isopropylbenzene	2.3	100	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
methyl acetate	NA	NA	0.0068		0.0025	*U*	0.0024	*U*	0.0097		0.0038	*J*	0.0025	*U*
methyl tert-butyl ether (MTBE)	0.1	100	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
methylcyclohexane	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
methylene chloride	0.05	81	0.0047	*U*	0.005	*U*	0.0047	*U*	0.0057	*U*	0.0052	*U*	0.005	*U*
n-butylbenzene	18	100	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.028		0.0025	*U*
n-propylbenzene	5	100	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.026		0.0026	*J*
o-xylene	0.26	100	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
p- & m- xylenes	0.26	100	0.0047	*U*	0.005	*U*	0.0047	*U*	0.0057	*U*	0.0052	*U*	0.005	*U*
p-isopropyltoluene	10	NA	0.0024	*U*	0.0093		0.0024	*U*	0.0028	*U*	0.019		0.0025	*U*
sec-butylbenzene	25	100	0.0024	*U*	0.12		0.0024	*U*	0.0028	*U*	0.12		0.016	
styrene	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
tert-butyl alcohol (TBA)	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
tert-butylbenzene	11	100	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
tetrachloroethylene (PCE)	1.3	18	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
toluene	0.7	100	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
trans-1,2-dichloroethylene (trans-DCE	0.19	100	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
trans-1,3-dichloropropylene	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
trichloroethylene (TCE)	0.47	6.4	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
trichlorofluoromethane	NA	NA	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
vinyl chloride (VC)	0.03	0.48	0.0024	*U*	0.0025	*U*	0.0024	*U*	0.0028	*U*	0.0026	*U*	0.0025	*U*
xylenes, total	0.26	100	0.0071	*U*	0.0075	*U*	0.0071	*U*	0.0085	*U*	0.0077	*U*	0.0075	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 1: VOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-19 0-5		SB-19 11-13		SB-19 22.5-25		SB-20 0-5		SB-20 10-12		SB-20 22.5-25	
U= Not Detected ≥ value		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1	
VOCs, 8260	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1,1,2-tetrachloroethane	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
1,1,1-trichloroethane	0.68	100	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
1,1,2,2-tetrachloroethane	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
1,1,2-trichloro-1,2,2-trifluoroethane	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
1,1,2-trichloroethane	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
1,1-dichloroethane	0.27	47	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
1,1-dichloroethylene (1,1-DCE)	0.24	1	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
1,2,3-trichlorobenzene	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
1,2,3-trichloropropane	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
1,2,4-trichlorobenzene	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
1,2,4-trimethylbenzene	5.9	100	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
1,2-dibromo-3-chloropropane	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
1,2-dibromoethane	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
1,2-dichlorobenzene	1.1	100	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
1,2-dichloroethane	0.02	5.8	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
1,2-dichloropropane	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
1,3,5-trimethylbenzene	3.1	100	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
1,3-dichlorobenzene	2.6	38	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
1,4-dichlorobenzene	1.8	24	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
1,4-dioxane	0.1	5.7	0.046	U	0.045	U	0.06	U	0.047	U	0.046	U	0.06	U
2-butanone (MEK)	0.1	100	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
2-hexanone	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
4-methyl-2-pentanone	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
acetone	0.03	100	0.0046	U	0.017		0.015		0.011		0.0099		0.023	
acrolein	NA	NA	0.0046	U	0.0045	U	0.006	U	0.0047	U	0.0046	U	0.006	U
acrylonitrile	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
benzene	0.06	3.7	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
bromochloromethane	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
bromodichloromethane	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
bromoform	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
bromomethane	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
carbon disulfide	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
carbon tetrachloride	0.76	7.1	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
chlorobenzene	4.5	100	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
chloroethane	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
chloroform	0.37	24	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
chloromethane	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
cis-1,2-dichloroethylene (cis-DCE)	0.19	41	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
cis-1,3-dichloropropylene	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
cyclohexane	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
dibromochloromethane	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
dibromomethane	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
dichlorodifluoromethane	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
ethyl benzene	1	76	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
hexachlorobutadiene	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
isopropylbenzene	2.3	100	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
methyl acetate	NA	NA	0.0023	U	0.0023	U	0.0057	J	0.0024	U	0.0023	U	0.003	U
methyl tert-butyl ether (MTBE)	0.1	100	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
methylcyclohexane	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
methylene chloride	0.05	81	0.0046	U	0.0045	U	0.006	U	0.0047	U	0.0046	U	0.006	U
n-butylbenzene	18	100	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
n-propylbenzene	5	100	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
o-xylene	0.26	100	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
p- & m- xylenes	0.26	100	0.0046	U	0.0045	U	0.006	U	0.0047	U	0.0046	U	0.006	U
p-isopropyltoluene	10	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
sec-butylbenzene	25	100	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
styrene	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
tert-butyl alcohol (TBA)	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
tert-butylbenzene	11	100	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
tetrachloroethylene (PCE)	1.3	18	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
toluene	0.7	100	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
trans-1,2-dichloroethylene (trans-DCE	0.19	100	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
trans-1,3-dichloropropylene	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
trichloroethylene (TCE)	0.47	6.4	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
trichlorofluoromethane	NA	NA	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
vinyl chloride (VC)	0.03	0.48	0.0023	U	0.0023	U	0.003	U	0.0024	U	0.0023	U	0.003	U
xylenes, total	0.26	100	0.0069	U	0.0068	U	0.009	U	0.0071	U	0.0068	U	0.009	U

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 1: VOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-21 0-5		SB-21 11-13		SB-21 22.5-25		SB-22 0-5		SB-22 11-13		SB-22 22.5-25	
U= Not Detected ≥ value		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1	
VOCs, 8260	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1,1,2-tetrachloroethane	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
1,1,1-trichloroethane	0.68	100	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
1,1,2,2-tetrachloroethane	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
1,1,2-trichloro-1,2,2-trifluoroethane	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
1,1,2-trichloroethane	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
1,1-dichloroethane	0.27	47	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
1,1-dichloroethylene (1,1-DCE)	0.24	1	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
1,2,3-trichlorobenzene	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
1,2,3-trichloropropane	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
1,2,4-trichlorobenzene	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
1,2,4-trimethylbenzene	5.9	100	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
1,2-dibromo-3-chloropropane	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
1,2-dibromoethane	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
1,2-dichlorobenzene	1.1	100	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
1,2-dichloroethane	0.02	5.8	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
1,2-dichloropropane	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
1,3,5-trimethylbenzene	3.1	100	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
1,3-dichlorobenzene	2.6	38	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
1,4-dichlorobenzene	1.8	24	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
1,4-dioxane	0.1	5.7	0.045	*U*	0.051	*U*	0.064	*U*	0.049	*U*	0.045	*U*	0.054	*U*
2-butanone (MEK)	0.1	100	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
2-hexanone	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
4-methyl-2-pentanone	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
acetone	0.03	100	0.0045	*U*	0.017		0.0064	*U*	0.0049	*U*	0.0053	*J*	0.0095	*J*
acrolein	NA	NA	0.0045	*U*	0.0051	*U*	0.0064	*U*	0.0049	*U*	0.0045	*U*	0.0054	*U*
acrylonitrile	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
benzene	0.06	3.7	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
bromochloromethane	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
bromodichloromethane	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
bromoform	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
bromomethane	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
carbon disulfide	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
carbon tetrachloride	0.76	7.1	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
chlorobenzene	4.5	100	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
chloroethane	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
chloroform	0.37	24	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
chloromethane	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
cis-1,2-dichloroethylene (cis-DCE)	0.19	41	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
cis-1,3-dichloropropylene	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
cyclohexane	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
dibromochloromethane	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
dibromomethane	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
dichlorodifluoromethane	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
ethyl benzene	1	76	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
hexachlorobutadiene	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
isopropylbenzene	2.3	100	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
methyl acetate	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
methyl tert-butyl ether (MTBE)	0.1	100	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
methylcyclohexane	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
methylene chloride	0.05	81	0.0045	*U*	0.0051	*U*	0.0064	*U*	0.0049	*U*	0.0045	*U*	0.0054	*U*
n-butylbenzene	18	100	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
n-propylbenzene	5	100	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
o-xylene	0.26	100	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
p- & m- xylenes	0.26	100	0.0045	*U*	0.0051	*U*	0.0064	*U*	0.0049	*U*	0.0045	*U*	0.0054	*U*
p-isopropyltoluene	10	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
sec-butylbenzene	25	100	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
styrene	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
tert-butyl alcohol (TBA)	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
tert-butylbenzene	11	100	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
tetrachloroethylene (PCE)	1.3	18	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
toluene	0.7	100	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
trans-1,2-dichloroethylene (trans-DCE	0.19	100	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
trans-1,3-dichloropropylene	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
trichloroethylene (TCE)	0.47	6.4	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
trichlorofluoromethane	NA	NA	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
vinyl chloride (VC)	0.03	0.48	0.0022	*U*	0.0026	*U*	0.0032	*U*	0.0025	*U*	0.0022	*U*	0.0027	*U*
xylenes, total	0.26	100	0.0067	*U*	0.0077	*U*	0.0096	*U*	0.002536	*U*	0.002242	*U*	0.002752	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 1: VOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-23 0-5		SB-23 13-15		SB-23 22.5-25		SB-24 0-5		SB-24 11-13		SB-24 22.5-25	
U= Not Detected ≥ value		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1	
VOCs, 8260	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1,1,2-tetrachloroethane	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
1,1,1-trichloroethane	0.68	100	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
1,1,2,2-tetrachloroethane	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
1,1,2-trichloro-1,2,2-trifluoroethane	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
1,1,2-trichloroethane	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
1,1-dichloroethane	0.27	47	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
1,1-dichloroethylene (1,1-DCE)	0.24	1	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
1,2,3-trichlorobenzene	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
1,2,3-trichloropropane	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
1,2,4-trichlorobenzene	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
1,2,4-trimethylbenzene	5.9	100	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
1,2-dibromo-3-chloropropane	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
1,2-dibromoethane	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
1,2-dichlorobenzene	1.1	100	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
1,2-dichloroethane	0.02	5.8	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
1,2-dichloropropane	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
1,3,5-trimethylbenzene	3.1	100	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
1,3-dichlorobenzene	2.6	38	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
1,4-dichlorobenzene	1.8	24	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
1,4-dioxane	0.1	5.7	0.044	*U*	0.053	*U*	0.055	*U*	0.056	*U*	0.061	*U*	0.057	*U*
2-butanone (MEK)	0.1	100	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
2-hexanone	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
4-methyl-2-pentanone	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
acetone	0.03	100	0.0064	*J*	0.016		0.01	*J*	0.0056	*U*	0.0096	*J*	0.011	
acrolein	NA	NA	0.0044	*U*	0.0053	*U*	0.0055	*U*	0.0056	*U*	0.0061	*U*	0.0057	*U*
acrylonitrile	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
benzene	0.06	3.7	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
bromochloromethane	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
bromodichloromethane	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
bromoform	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
bromomethane	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
carbon disulfide	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
carbon tetrachloride	0.76	7.1	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
chlorobenzene	4.5	100	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
chloroethane	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
chloroform	0.37	24	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
chloromethane	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
cis-1,2-dichloroethylene (cis-DCE)	0.19	41	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
cis-1,3-dichloropropylene	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
cyclohexane	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
dibromochloromethane	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
dibromomethane	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
dichlorodifluoromethane	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
ethyl benzene	1	76	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
hexachlorobutadiene	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
isopropylbenzene	2.3	100	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
methyl acetate	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
methyl tert-butyl ether (MTBE)	0.1	100	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
methylcyclohexane	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
methylene chloride	0.05	81	0.0044	*U*	0.0053	*U*	0.0055	*U*	0.0056	*U*	0.0061	*U*	0.0057	*U*
n-butylbenzene	18	100	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
n-propylbenzene	5	100	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
o-xylene	0.26	100	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
p- & m- xylenes	0.26	100	0.0044	*U*	0.0053	*U*	0.0055	*U*	0.0056	*U*	0.0061	*U*	0.0057	*U*
p-isopropyltoluene	10	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
sec-butylbenzene	25	100	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
styrene	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
tert-butyl alcohol (TBA)	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
tert-butylbenzene	11	100	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
tetrachloroethylene (PCE)	1.3	18	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
toluene	0.7	100	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
trans-1,2-dichloroethylene (trans-DCE	0.19	100	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
trans-1,3-dichloropropylene	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
trichloroethylene (TCE)	0.47	6.4	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
trichlorofluoromethane	NA	NA	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
vinyl chloride (VC)	0.03	0.48	0.0022	*U*	0.0027	*U*	0.0027	*U*	0.0028	*U*	0.003	*U*	0.0028	*U*
xylenes, total	0.26	100	0.0066	*U*	0.008	*U*	0.0082	*U*	0.0084	*U*	0.0091	*U*	0.0085	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 1: VOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-25 0-5		SB-25 11-13		DUP-20250325		SB-25 22.5-25		SB-26 0-5		SB-26 11-13	
U= Not Detected ≥ value		Date	2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-21		2025-03-21	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1	
VOCs, 8260	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1,1,2-tetrachloroethane	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
1,1,1-trichloroethane	0.68	100	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
1,1,2,2-tetrachloroethane	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
1,1,2-trichloro-1,2,2-trifluoroethane	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
1,1,2-trichloroethane	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
1,1-dichloroethane	0.27	47	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
1,1-dichloroethylene (1,1-DCE)	0.24	1	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
1,2,3-trichlorobenzene	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
1,2,3-trichloropropane	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
1,2,4-trichlorobenzene	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
1,2,4-trimethylbenzene	5.9	100	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
1,2-dibromo-3-chloropropane	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
1,2-dibromoethane	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
1,2-dichlorobenzene	1.1	100	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
1,2-dichloroethane	0.02	5.8	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
1,2-dichloropropane	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
1,3,5-trimethylbenzene	3.1	100	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
1,3-dichlorobenzene	2.6	38	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
1,4-dichlorobenzene	1.8	24	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
1,4-dioxane	0.1	5.7	0.041	*U*	0.057	*U*	0.065	*U*	0.065	*U*	0.047	*U*	0.052	*U*
2-butanone (MEK)	0.1	100	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
2-hexanone	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
4-methyl-2-pentanone	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
acetone	0.03	100	0.0041	*U*	0.0069	*J*	0.0065	*U*	0.0065	*U*	0.0094	*J*	0.015	
acrolein	NA	NA	0.0041	*U*	0.0057	*U*	0.0065	*U*	0.0065	*U*	0.0047	*U*	0.0052	*U*
acrylonitrile	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
benzene	0.06	3.7	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
bromochloromethane	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
bromodichloromethane	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
bromoform	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
bromomethane	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
carbon disulfide	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
carbon tetrachloride	0.76	7.1	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
chlorobenzene	4.5	100	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
chloroethane	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
chloroform	0.37	24	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
chloromethane	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
cis-1,2-dichloroethylene (cis-DCE)	0.19	41	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
cis-1,3-dichloropropylene	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
cyclohexane	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
dibromochloromethane	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
dibromomethane	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
dichlorodifluoromethane	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
ethyl benzene	1	76	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
hexachlorobutadiene	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
isopropylbenzene	2.3	100	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
methyl acetate	NA	NA	0.0021	*U*	0.0048	*J*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0056	
methyl tert-butyl ether (MTBE)	0.1	100	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
methylcyclohexane	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
methylene chloride	0.05	81	0.0041	*U*	0.0057	*U*	0.0065	*U*	0.0065	*U*	0.0047	*U*	0.0052	*U*
n-butylbenzene	18	100	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
n-propylbenzene	5	100	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
o-xylene	0.26	100	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
p- & m- xylenes	0.26	100	0.0041	*U*	0.0057	*U*	0.0065	*U*	0.0065	*U*	0.0047	*U*	0.0052	*U*
p-isopropyltoluene	10	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
sec-butylbenzene	25	100	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
styrene	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
tert-butyl alcohol (TBA)	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
tert-butylbenzene	11	100	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
tetrachloroethylene (PCE)	1.3	18	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
toluene	0.7	100	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
trans-1,2-dichloroethylene (trans-DCE	0.19	100	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
trans-1,3-dichloropropylene	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
trichloroethylene (TCE)	0.47	6.4	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
trichlorofluoromethane	NA	NA	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
vinyl chloride (VC)	0.03	0.48	0.0021	*U*	0.0028	*U*	0.0032	*U*	0.0033	*U*	0.0024	*U*	0.0026	*U*
xylenes, total	0.26	100	0.0062	*U*	0.0085	*U*	0.0097	*U*	0.0098	*U*	0.0071	*U*	0.0078	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 1: VOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-26 22.5-25		SB-27 0-5		SB-27 11-13		SB-27 22.5-25		SB-28 0-5		SB-28 11-13	
U= Not Detected ≥ value		Date	2025-03-21		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1	
VOCs, 8260	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1,1,2-tetrachloroethane	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
1,1,1-trichloroethane	0.68	100	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
1,1,2,2-tetrachloroethane	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
1,1,2-trichloro-1,2,2-trifluoroethane	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
1,1,2-trichloroethane	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
1,1-dichloroethane	0.27	47	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
1,1-dichloroethylene (1,1-DCE)	0.24	1	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
1,2,3-trichlorobenzene	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
1,2,3-trichloropropane	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
1,2,4-trichlorobenzene	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
1,2,4-trimethylbenzene	5.9	100	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
1,2-dibromo-3-chloropropane	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
1,2-dibromoethane	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
1,2-dichlorobenzene	1.1	100	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
1,2-dichloroethane	0.02	5.8	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
1,2-dichloropropane	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
1,3,5-trimethylbenzene	3.1	100	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
1,3-dichlorobenzene	2.6	38	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
1,4-dichlorobenzene	1.8	24	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
1,4-dioxane	0.1	5.7	0.053	*U*	0.057	*U*	0.05	*U*	0.051	*U*	0.065	*U*	0.055	*U*
2-butanone (MEK)	0.1	100	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
2-hexanone	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
4-methyl-2-pentanone	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
acetone	0.03	100	0.0053	*U*	0.0057	*U*	0.005	*U*	0.0059	*J*	0.0065	*U*	0.0055	*U*
acrolein	NA	NA	0.0053	*U*	0.0057	*U*	0.005	*U*	0.0051	*U*	0.0065	*U*	0.0055	*U*
acrylonitrile	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
benzene	0.06	3.7	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
bromochloromethane	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
bromodichloromethane	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
bromoform	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
bromomethane	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
carbon disulfide	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
carbon tetrachloride	0.76	7.1	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
chlorobenzene	4.5	100	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
chloroethane	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
chloroform	0.37	24	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
chloromethane	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
cis-1,2-dichloroethylene (cis-DCE)	0.19	41	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
cis-1,3-dichloropropylene	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
cyclohexane	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.88	*D*	0.0032	*U*	0.0028	*U*
dibromochloromethane	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
dibromomethane	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
dichlorodifluoromethane	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
ethyl benzene	1	76	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
hexachlorobutadiene	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
isopropylbenzene	2.3	100	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
methyl acetate	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
methyl tert-butyl ether (MTBE)	0.1	100	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
methylcyclohexane	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
methylene chloride	0.05	81	0.0053	*U*	0.0057	*U*	0.005	*U*	0.0051	*U*	0.0065	*U*	0.0055	*U*
n-butylbenzene	18	100	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
n-propylbenzene	5	100	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
o-xylene	0.26	100	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
p- & m- xylenes	0.26	100	0.0053	*U*	0.0057	*U*	0.005	*U*	0.0051	*U*	0.0065	*U*	0.0055	*U*
p-isopropyltoluene	10	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.02		0.0032	*U*	0.0028	*U*
sec-butylbenzene	25	100	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.068		0.0032	*U*	0.0028	*U*
styrene	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
tert-butyl alcohol (TBA)	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
tert-butylbenzene	11	100	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
tetrachloroethylene (PCE)	1.3	18	0.0026	*U*	0.0053	*J*	0.0025	*U*	0.0025	*U*	0.0095		0.0028	*U*
toluene	0.7	100	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
trans-1,2-dichloroethylene (trans-DCE	0.19	100	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
trans-1,3-dichloropropylene	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
trichloroethylene (TCE)	0.47	6.4	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
trichlorofluoromethane	NA	NA	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
vinyl chloride (VC)	0.03	0.48	0.0026	*U*	0.0028	*U*	0.0025	*U*	0.0025	*U*	0.0032	*U*	0.0028	*U*
xylenes, total	0.26	100	0.0079	*U*	0.0085	*U*	0.0075	*U*	0.0076	*U*	0.0097	*U*	0.0083	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 1: VOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	DUP-20250320		SB-28 22.5-25		SB-29 0-5		SB-29 11-13		SB-29 22.5-25		SB-30 0-5	
U= Not Detected ≥ value		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-21	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1	
VOCs, 8260	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1,1,2-tetrachloroethane	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
1,1,1-trichloroethane	0.68	100	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
1,1,2,2-tetrachloroethane	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
1,1,2-trichloro-1,2,2-trifluoroethane	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
1,1,2-trichloroethane	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
1,1-dichloroethane	0.27	47	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
1,1-dichloroethylene (1,1-DCE)	0.24	1	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
1,2,3-trichlorobenzene	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
1,2,3-trichloropropane	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
1,2,4-trichlorobenzene	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
1,2,4-trimethylbenzene	5.9	100	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
1,2-dibromo-3-chloropropane	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
1,2-dibromoethane	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
1,2-dichlorobenzene	1.1	100	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
1,2-dichloroethane	0.02	5.8	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
1,2-dichloropropane	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
1,3,5-trimethylbenzene	3.1	100	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
1,3-dichlorobenzene	2.6	38	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
1,4-dichlorobenzene	1.8	24	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
1,4-dioxane	0.1	5.7	0.047	*U*	0.043	*U*	0.062	*U*	0.054	*U*	0.048	*U*	0.047	*U*
2-butanone (MEK)	0.1	100	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
2-hexanone	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
4-methyl-2-pentanone	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
acetone	0.03	100	0.0047	*U*	0.0043	*U*	0.0062	*U*	0.0054	*U*	0.0048	*U*	0.0047	*U*
acrolein	NA	NA	0.0047	*U*	0.0043	*U*	0.0062	*U*	0.0054	*U*	0.0048	*U*	0.0047	*U*
acrylonitrile	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
benzene	0.06	3.7	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
bromochloromethane	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
bromodichloromethane	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
bromoform	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
bromomethane	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
carbon disulfide	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
carbon tetrachloride	0.76	7.1	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
chlorobenzene	4.5	100	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
chloroethane	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
chloroform	0.37	24	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
chloromethane	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
cis-1,2-dichloroethylene (cis-DCE)	0.19	41	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
cis-1,3-dichloropropylene	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
cyclohexane	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
dibromochloromethane	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
dibromomethane	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
dichlorodifluoromethane	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
ethyl benzene	1	76	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
hexachlorobutadiene	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
isopropylbenzene	2.3	100	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
methyl acetate	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
methyl tert-butyl ether (MTBE)	0.1	100	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
methylcyclohexane	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
methylene chloride	0.05	81	0.0047	*U*	0.0043	*U*	0.0062	*U*	0.0054	*U*	0.0048	*U*	0.0047	*U*
n-butylbenzene	18	100	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
n-propylbenzene	5	100	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
o-xylene	0.26	100	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
p- & m- xylenes	0.26	100	0.0047	*U*	0.0043	*U*	0.0062	*U*	0.0054	*U*	0.0048	*U*	0.0047	*U*
p-isopropyltoluene	10	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
sec-butylbenzene	25	100	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
styrene	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
tert-butyl alcohol (TBA)	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
tert-butylbenzene	11	100	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
tetrachloroethylene (PCE)	1.3	18	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.01	
toluene	0.7	100	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
trans-1,2-dichloroethylene (trans-DCE	0.19	100	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
trans-1,3-dichloropropylene	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
trichloroethylene (TCE)	0.47	6.4	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
trichlorofluoromethane	NA	NA	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
vinyl chloride (VC)	0.03	0.48	0.0023	*U*	0.0022	*U*	0.0031	*U*	0.0027	*U*	0.0024	*U*	0.0023	*U*
xylenes, total	0.26	100	0.007	*U*	0.0065	*U*	0.0093	*U*	0.008	*U*	0.0073	*U*	0.007	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 1: VOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-30 11-13		SB-30 22.5-25		2SB-02 0-2.5		2SB-02 2.5-5		2SB-03 0-2.5		2SB-03 2.5-5	
U= Not Detected ≥ value		Date	2025-03-21		2025-03-21		2025-10-30		2025-10-30		2025-10-30		2025-10-30	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1	
VOCs, 8260	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1,1,2-tetrachloroethane	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
1,1,1-trichloroethane	0.68	100	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
1,1,2,2-tetrachloroethane	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
1,1,2-trichloro-1,2,2-trifluoroethane	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
1,1,2-trichloroethane	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
1,1-dichloroethane	0.27	47	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
1,1-dichloroethylene (1,1-DCE)	0.24	1	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
1,2,3-trichlorobenzene	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
1,2,3-trichloropropane	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
1,2,4-trichlorobenzene	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
1,2,4-trimethylbenzene	5.9	100	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
1,2-dibromo-3-chloropropane	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
1,2-dibromoethane	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
1,2-dichlorobenzene	1.1	100	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
1,2-dichloroethane	0.02	5.8	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
1,2-dichloropropane	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
1,3,5-trimethylbenzene	3.1	100	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
1,3-dichlorobenzene	2.6	38	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
1,4-dichlorobenzene	1.8	24	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
1,4-dioxane	0.1	5.7	0.047	*U*	0.053	*U*	0.24	*U*	0.068	*U*	0.086	*U*	0.084	*U*
2-butanone (MEK)	0.1	100	0.0023	*U*	0.0026	*U*	0.097	*U*	0.027	*U*	0.035	*U*	0.034	*U*
2-hexanone	NA	NA	0.0023	*U*	0.0026	*U*	0.08	*U*	0.023	*U*	0.029	*U*	0.028	*U*
4-methyl-2-pentanone	NA	NA	0.0023	*U*	0.0026	*U*	0.08	*U*	0.023	*U*	0.029	*U*	0.028	*U*
acetone	0.03	100	0.0062	*J*	0.0053	*U*	0.16	*U*	0.045	*U*	0.058	*U*	0.056	*U*
acrolein	NA	NA	0.0047	*U*	0.0053	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
acrylonitrile	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
benzene	0.06	3.7	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
bromochloromethane	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
bromodichloromethane	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
bromoform	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
bromomethane	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
carbon disulfide	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
carbon tetrachloride	0.76	7.1	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
chlorobenzene	4.5	100	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
chloroethane	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
chloroform	0.37	24	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
chloromethane	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
cis-1,2-dichloroethylene (cis-DCE)	0.19	41	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
cis-1,3-dichloropropylene	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
cyclohexane	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
dibromochloromethane	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
dibromomethane	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
dichlorodifluoromethane	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
ethyl benzene	1	76	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
hexachlorobutadiene	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
isopropylbenzene	2.3	100	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
methyl acetate	NA	NA	0.0023	*U*	0.0026	*U*	0.16	*U*	0.045	*U*	0.058	*U*	0.056	*U*
methyl tert-butyl ether (MTBE)	0.1	100	0.0023	*U*	0.0026	*U*	0.032	*U*	0.0091	*U*	0.012	*U*	0.011	*U*
methylcyclohexane	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
methylene chloride	0.05	81	0.0047	*U*	0.0053	*U*	0.08	*U*	0.023	*U*	0.029	*U*	0.028	*U*
n-butylbenzene	18	100	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
n-propylbenzene	5	100	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
o-xylene	0.26	100	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
p- & m- xylenes	0.26	100	0.0047	*U*	0.0053	*U*	0.016	*U*	0.0045	*U*	0.0012	*J*	0.0056	*U*
p-isopropyltoluene	10	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
sec-butylbenzene	25	100	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
styrene	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
tert-butyl alcohol (TBA)	NA	NA	0.0023	*U*	0.0026	*U*	0.16	*U*	0.045	*U*	0.058	*U*	0.056	*U*
tert-butylbenzene	11	100	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
tetrachloroethylene (PCE)	1.3	18	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
toluene	0.7	100	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
trans-1,2-dichloroethylene (trans-DCE	0.19	100	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
trans-1,3-dichloropropylene	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
trichloroethylene (TCE)	0.47	6.4	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
trichlorofluoromethane	NA	NA	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
vinyl chloride (VC)	0.03	0.48	0.0023	*U*	0.0026	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*
xylenes, total	0.26	100	0.007	*U*	0.0079	*U*	0.016	*U*	0.0045	*U*	0.0058	*U*	0.0056	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 1: VOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	2SB-08 0-1		2SB-08 4-5		2SB-09 0-1		DUPA-20251030		2SB-09 1-3		2SB-09 3-5	
U= Not Detected ≥ value		Date	2025-10-30		2025-10-30		2025-10-30		2025-10-30		2025-10-30		2025-10-30	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1	
VOCs, 8260	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1,1,2-tetrachloroethane	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
1,1,1-trichloroethane	0.68	100	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
1,1,2,2-tetrachloroethane	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
1,1,2-trichloro-1,2,2-trifluoroethane	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
1,1,2-trichloroethane	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
1,1-dichloroethane	0.27	47	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
1,1-dichloroethylene (1,1-DCE)	0.24	1	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
1,2,3-trichlorobenzene	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
1,2,3-trichloropropane	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
1,2,4-trichlorobenzene	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
1,2,4-trimethylbenzene	5.9	100	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
1,2-dibromo-3-chloropropane	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
1,2-dibromoethane	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
1,2-dichlorobenzene	1.1	100	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
1,2-dichloroethane	0.02	5.8	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
1,2-dichloropropane	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
1,3,5-trimethylbenzene	3.1	100	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
1,3-dichlorobenzene	2.6	38	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
1,4-dichlorobenzene	1.8	24	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
1,4-dioxane	0.1	5.7	0.074	*U*	0.07	*U*	0.073	*U*	0.074	*U*	0.11	*U*	0.09	*U*
2-butanone (MEK)	0.1	100	0.03	*U*	0.028	*U*	0.029	*U*	0.03	*U*	0.042	*U*	0.036	*U*
2-hexanone	NA	NA	0.025	*U*	0.023	*U*	0.024	*U*	0.025	*U*	0.035	*U*	0.03	*U*
4-methyl-2-pentanone	NA	NA	0.025	*U*	0.023	*U*	0.024	*U*	0.025	*U*	0.035	*U*	0.03	*U*
acetone	0.03	100	0.049	*U*	0.047	*U*	0.049	*U*	0.049	*U*	0.07	*U*	0.06	*U*
acrolein	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
acrylonitrile	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
benzene	0.06	3.7	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
bromochloromethane	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
bromodichloromethane	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
bromoform	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
bromomethane	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
carbon disulfide	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
carbon tetrachloride	0.76	7.1	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
chlorobenzene	4.5	100	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
chloroethane	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
chloroform	0.37	24	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
chloromethane	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
cis-1,2-dichloroethylene (cis-DCE)	0.19	41	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
cis-1,3-dichloropropylene	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
cyclohexane	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
dibromochloromethane	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
dibromomethane	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
dichlorodifluoromethane	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
ethyl benzene	1	76	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
hexachlorobutadiene	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
isopropylbenzene	2.3	100	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
methyl acetate	NA	NA	0.049	*U*	0.047	*U*	0.049	*U*	0.049	*U*	0.07	*U*	0.06	*U*
methyl tert-butyl ether (MTBE)	0.1	100	0.0099	*U*	0.0093	*U*	0.0098	*U*	0.0099	*U*	0.014	*U*	0.012	*U*
methylcyclohexane	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
methylene chloride	0.05	81	0.025	*U*	0.023	*U*	0.024	*U*	0.025	*U*	0.035	*U*	0.03	*U*
n-butylbenzene	18	100	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
n-propylbenzene	5	100	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
o-xylene	0.26	100	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
p- & m- xylenes	0.26	100	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
p-isopropyltoluene	10	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
sec-butylbenzene	25	100	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
styrene	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
tert-butyl alcohol (TBA)	NA	NA	0.049	*U*	0.047	*U*	0.049	*U*	0.049	*U*	0.07	*U*	0.06	*U*
tert-butylbenzene	11	100	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
tetrachloroethylene (PCE)	1.3	18	0.0035	*J*	0.0028	*J*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
toluene	0.7	100	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
trans-1,2-dichloroethylene (trans-DCE	0.19	100	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
trans-1,3-dichloropropylene	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
trichloroethylene (TCE)	0.47	6.4	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
trichlorofluoromethane	NA	NA	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
vinyl chloride (VC)	0.03	0.48	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*
xylenes, total	0.26	100	0.0049	*U*	0.0047	*U*	0.0049	*U*	0.0049	*U*	0.007	*U*	0.006	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 1: VOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	2SB-10 0-1		2SB-10 4-5		2SB-13 0-3.5		2SB-13 4-5		2SB-13 9-10		2SB-18 0-2.5	
U= Not Detected ≥ value		Date	2025-10-30		2025-10-30		2025-10-30		2025-10-30		2025-10-30		2025-10-30	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1	
VOCs, 8260	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1,1,2-tetrachloroethane	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
1,1,1-trichloroethane	0.68	100	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
1,1,2,2-tetrachloroethane	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
1,1,2-trichloro-1,2,2-trifluoroethane	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
1,1,2-trichloroethane	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
1,1-dichloroethane	0.27	47	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
1,1-dichloroethylene (1,1-DCE)	0.24	1	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
1,2,3-trichlorobenzene	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
1,2,3-trichloropropane	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
1,2,4-trichlorobenzene	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
1,2,4-trimethylbenzene	5.9	100	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
1,2-dibromo-3-chloropropane	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
1,2-dibromoethane	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
1,2-dichlorobenzene	1.1	100	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
1,2-dichloroethane	0.02	5.8	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
1,2-dichloropropane	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
1,3,5-trimethylbenzene	3.1	100	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
1,3-dichlorobenzene	2.6	38	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
1,4-dichlorobenzene	1.8	24	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
1,4-dioxane	0.1	5.7	0.11	*U*	0.096	*U*	0.08	*U*	0.078	*U*	0.11	*U*	0.075	*U*
2-butanone (MEK)	0.1	100	0.046	*U*	0.038	*U*	0.032	*U*	0.031	*U*	0.045	*U*	0.03	*U*
2-hexanone	NA	NA	0.038	*U*	0.032	*U*	0.027	*U*	0.026	*U*	0.037	*U*	0.025	*U*
4-methyl-2-pentanone	NA	NA	0.038	*U*	0.032	*U*	0.027	*U*	0.026	*U*	0.037	*U*	0.025	*U*
acetone	0.03	100	0.077	*U*	0.064	*U*	0.053	*U*	0.052	*U*	0.075	*U*	0.05	*U*
acrolein	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
acrylonitrile	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
benzene	0.06	3.7	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
bromochloromethane	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
bromodichloromethane	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
bromoform	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
bromomethane	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
carbon disulfide	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
carbon tetrachloride	0.76	7.1	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
chlorobenzene	4.5	100	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
chloroethane	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
chloroform	0.37	24	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
chloromethane	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
cis-1,2-dichloroethylene (cis-DCE)	0.19	41	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
cis-1,3-dichloropropylene	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
cyclohexane	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
dibromochloromethane	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
dibromomethane	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
dichlorodifluoromethane	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
ethyl benzene	1	76	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
hexachlorobutadiene	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
isopropylbenzene	2.3	100	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
methyl acetate	NA	NA	0.077	*U*	0.064	*U*	0.053	*U*	0.052	*U*	0.075	*U*	0.05	*U*
methyl tert-butyl ether (MTBE)	0.1	100	0.015	*U*	0.013	*U*	0.011	*U*	0.01	*U*	0.015	*U*	0.01	*U*
methylcyclohexane	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
methylene chloride	0.05	81	0.038	*U*	0.032	*U*	0.027	*U*	0.026	*U*	0.037	*U*	0.025	*U*
n-butylbenzene	18	100	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
n-propylbenzene	5	100	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
o-xylene	0.26	100	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
p- & m- xylenes	0.26	100	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
p-isopropyltoluene	10	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
sec-butylbenzene	25	100	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
styrene	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
tert-butyl alcohol (TBA)	NA	NA	0.077	*U*	0.064	*U*	0.053	*U*	0.052	*U*	0.075	*U*	0.05	*U*
tert-butylbenzene	11	100	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
tetrachloroethylene (PCE)	1.3	18	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.0014	*J*
toluene	0.7	100	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
trans-1,2-dichloroethylene (trans-DCE	0.19	100	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
trans-1,3-dichloropropylene	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
trichloroethylene (TCE)	0.47	6.4	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
trichlorofluoromethane	NA	NA	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
vinyl chloride (VC)	0.03	0.48	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*
xylenes, total	0.26	100	0.0077	*U*	0.0064	*U*	0.0053	*U*	0.0052	*U*	0.0075	*U*	0.005	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 1: VOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	2SB-18 2.5-5		2SB-23 0-2.5		2SB-23 2.5-5		2SB-27 0-2.5		2SB-27 2.5-5	
U= Not Detected ≥ value		Date	2025-10-30		2025-10-30		2025-10-30		2025-10-30		2025-10-30	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1	
VOCs, 8260	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1,1,2-tetrachloroethane	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
1,1,1-trichloroethane	0.68	100	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
1,1,2,2-tetrachloroethane	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
1,1,2-trichloro-1,2,2-trifluoroethane	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
1,1,2-trichloroethane	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
1,1-dichloroethane	0.27	47	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
1,1-dichloroethylene (1,1-DCE)	0.24	1	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
1,2,3-trichlorobenzene	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
1,2,3-trichloropropane	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
1,2,4-trichlorobenzene	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
1,2,4-trimethylbenzene	5.9	100	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
1,2-dibromo-3-chloropropane	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
1,2-dibromoethane	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
1,2-dichlorobenzene	1.1	100	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
1,2-dichloroethane	0.02	5.8	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
1,2-dichloropropane	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
1,3,5-trimethylbenzene	3.1	100	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
1,3-dichlorobenzene	2.6	38	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
1,4-dichlorobenzene	1.8	24	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
1,4-dioxane	0.1	5.7	0.1	*U*	0.082	*U*	0.084	*U*	0.08	*U*	0.068	*U*
2-butanone (MEK)	0.1	100	0.041	*U*	0.033	*U*	0.033	*U*	0.032	*U*	0.027	*U*
2-hexanone	NA	NA	0.034	*U*	0.027	*U*	0.028	*U*	0.027	*U*	0.023	*U*
4-methyl-2-pentanone	NA	NA	0.034	*U*	0.027	*U*	0.028	*U*	0.027	*U*	0.023	*U*
acetone	0.03	100	0.069	*U*	0.054	*U*	0.056	*U*	0.053	*U*	0.046	*U*
acrolein	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
acrylonitrile	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
benzene	0.06	3.7	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
bromochloromethane	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
bromodichloromethane	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
bromoform	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
bromomethane	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
carbon disulfide	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
carbon tetrachloride	0.76	7.1	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
chlorobenzene	4.5	100	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
chloroethane	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
chloroform	0.37	24	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
chloromethane	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
cis-1,2-dichloroethylene (cis-DCE)	0.19	41	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
cis-1,3-dichloropropylene	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
cyclohexane	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
dibromochloromethane	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
dibromomethane	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
dichlorodifluoromethane	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
ethyl benzene	1	76	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
hexachlorobutadiene	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
isopropylbenzene	2.3	100	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
methyl acetate	NA	NA	0.069	*U*	0.054	*U*	0.056	*U*	0.053	*U*	0.046	*U*
methyl tert-butyl ether (MTBE)	0.1	100	0.014	*U*	0.011	*U*	0.011	*U*	0.011	*U*	0.0091	*U*
methylcyclohexane	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
methylene chloride	0.05	81	0.034	*U*	0.027	*U*	0.028	*U*	0.027	*U*	0.023	*U*
n-butylbenzene	18	100	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
n-propylbenzene	5	100	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
o-xylene	0.26	100	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
p- & m- xylenes	0.26	100	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
p-isopropyltoluene	10	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
sec-butylbenzene	25	100	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
styrene	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
tert-butyl alcohol (TBA)	NA	NA	0.069	*U*	0.054	*U*	0.056	*U*	0.053	*U*	0.046	*U*
tert-butylbenzene	11	100	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
tetrachloroethylene (PCE)	1.3	18	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0027	*J*	0.0046	*U*
toluene	0.7	100	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
trans-1,2-dichloroethylene (trans-DCE	0.19	100	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
trans-1,3-dichloropropylene	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
trichloroethylene (TCE)	0.47	6.4	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
trichlorofluoromethane	NA	NA	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
vinyl chloride (VC)	0.03	0.48	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*
xylenes, total	0.26	100	0.0069	*U*	0.0054	*U*	0.0056	*U*	0.0053	*U*	0.0046	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 2: VOC TICs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

Sample	SB-01 22.5-25		SB-13 22.5-25		SB-13 25-27		SB-14 22.5-25		SB-16 11-13		SB-16 22.5-25		SB-16 25-27	
Date	2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-21	
All data in mg/Kg (ppm) Dilution	1		1		1		1		1		1		1	
VOC TICs	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
Benzene diethylmethyl isomer													0.022	J
Benzene diethylmethyl isomer													0.024	J
Benzene ethyldimethyl isomer											0.03	J		
Benzene methyl isomer													0.034	J
Benzene methylbutenyl isomer													0.038	J
Benzene methylpropyl isomer											0.097	J		
Benzene methylpropyl isomer													0.034	J
Benzeneethyldimethylisomer													0.02	J
Butane tetramethyl isomer	0.96	J												
Butane trimethyl isomer														
Butane-tetramethyl isomer							0.056	J						
Butanetetramethylisomer													0.086	J
butyladamantane isomer							0.051	J						
Cyclohexane butyl trimethyl isomer														
Cyclohexane dimethyl trans isomer (01)														
Cyclohexane dimethyl trans isomer (02)														
Cyclohexane trimethyl isomer					0.045	J								
Cyclohexene ethyl isomer							0.073	J						
Cyclohexene trimethyl acetomethyl isomer									0.013	J				
CyclоPentaneethylmethyl isomer											0.16	J		
Cyclopentene trimethyl isomer											0.16	J		
Decahydro pentamethylnaphthalene isomer														
Decahydro pentamethylnaphthalene isomer (01)									0.055	J				
Decahydro pentamethylnaphthalene isomer (02)									0.019	J				
Decahydro pentamethylnaphthalene isomer (03)									0.025	J				
Decane dimethyl isomer							0.18	J						
Decane dimethyl isomer (01)	0.044	J												
Decane dimethyl isomer (02)	0.052	J												
Decane dimethylisomer			0.043	J										
decane isomer														
Decane methyl isomer											0.047	J		
Decane trimethyl isomer	0.039	J												
diethylbenzene isomer													0.019	J
dimethyl Hexane isomer											0.034	J		
Dimethylcyclooctene isomer											0.047	J		
Dimethyldecane isomer							0.21	J						
Dodecane isomer														
Dodecane tetramethyl isomer							0.28	J						
Dodecane trimethyl isomer			0.047	J			0.051	J						
Heptadecane isomer			0.13	J										
Heptadecane methyl isomer	0.14	J												
Heptane dimethyl isomer														
Heptane ethyl isomer														
Heptane hexamethyl isomer	0.03	J												
Heptane methyl isomer														
Heptane methyl isomer													0.033	J
Heptane pentamethyl isomer			0.05	J										
Heptane pentamethyl isomer							0.14	J						
Heptane tetramethyl isomer			0.17	J	0.044	J								
Heptane trimethyl isomer			0.031	J	0.037	J								
Heptane trimethylisomer			0.029	J			0.84	J						
Hexane dimethyl isomer											0.068	J		
Hexane dimethyl isomer														
Hexane ethyl-ethylhexane isomer											0.083	J		
Hexane methyl isomer													0.019	J
Hexane tetramethyl isomer							0.14	J						
Hexane trimethyl isomer	0.25	J												
Hexane trimethyl isomer					0.059	J								
Hexane trimethyl isomer														
Hexane trimethylisomer			0.041	J									0.019	J
Hexyl n-valerate isomer														
Indene dihydro dimethyl isomer														
Indene dihydro isomer													0.02	J
Methylnonane isomer											0.064	J		
nonane isomer														
Nonane methyl isomer														
Nonane methyl-propyl isomer							0.74	J						
Nonynol isomer														
ocenynol isomer														
Octane dimethyl isomer							0.052	J			0.086	J		
Octane dimethyl isomer							0.16	J						
Octane dimethyl isomer (01)	0.17	J												
Octane dimethyl isomer (01)														
Octane dimethyl isomer (02)	0.039	J												
Octane dimethyl isomer (02)														
Octane dimethylisomer			0.029	J										
Octane ethyl isomer														
Octane ethyl methyl isomer	0.04	J												
Octane methyl isomer														
Octane methyl isomer														
Octane methyl isomer (01)														
Octane methyl isomer (02)														
Octane trimethyl isomer							0.15	J						
Octane trimethyl isomer														
Octanedimethyloctane isomer			0.079	J										
Octanetrimethylisomer			0.046	J										
Octenone isomer											0.1	J		
Oxalic acid diiohexyl ester isomer														
Pentane dimethyl isomer														
Pentane dimethyl isomer											0.034	J		
Pentane dimethyl isomer (01)														
Pentane dimethyl isomer (02)														
Pentane ethyl dimethyl isomer														
Pentane trimethyl isomer			0.043	J							0.059	J	0.091	J
Pentane trimethyl isomer			0.032	J			0.057	J					0.068	J
Pentane trimethyl isomer (01)	0.039	J			0.044	J								
Pentane trimethyl isomer (02)	0.87	J			0.033	J								
Pentane trimethyl isomer (03)	0.12	J												
Pentane trimethyl isomer (04)														
Pentane trimethylisomer											0.054	J		
Pentanoic acid isomer					0.032	J								
p-Tolyl ethylamine isomer													0.019	J
Tetradecane dimethyl isomer			0.043	J										
tetramethylcyclopentane isomer														
Tetramethylheptane isomer			0.033	J										
Tetramethyloctane isomer					0.055	J								
Tridecane isomer					0.034	J								
Undecane dimethyl isomer	0.027	J												
Undecane isomer														
Undecane methyl isomer	0.065	J												
TOTAL TICS	**2.89**		**0.85**		**0.38**		**3.18**		**0.11**		**1.12**		**0.55**	

Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 2: VOC TICs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

Sample	SB-17 22.5-25		SB-18 22.5-25		SB-18 25-30		SB-20 22.5-25		SB-23 13-15		SB-27 22.5-25	
Date	2025-03-25		2025-03-25		2025-03-25		2025-03-20		2025-03-20		2025-03-20	
All data in mg/Kg (ppm) Dilution	1		1		1		1		1		1	
VOC TICs	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
Benzene diethylmethyl isomer												
Benzene diethylmethyl isomer												
Benzene ethyldimethyl isomer												
Benzene methyl isomer												
Benzene methylbutenyl isomer			0.23	J								
Benzene methylpropyl isomer											0.38	J
Benzene methylpropyl isomer												
Benzeneethyldimethylisomer												
Butane tetramethyl isomer												
Butane trimethyl isomer											0.86	J
Butane-tetramethyl isomer												
Butanetetramethylisomer												
butyladamantane isomer												
Cyclohexane butyl trimethyl isomer							0.026	J				
Cyclohexane dimethyl trans isomer (01)					0.14	J					0.49	J
Cyclohexane dimethyl trans isomer (02)					0.11	J					0.4	J
Cyclohexane trimethyl isomer												
Cyclohexene ethyl isomer												
Cyclohexene trimethyl acetomethyl isomer												
CycloPentaneethylmethyl isomer												
Cyclopentene trimethyl isomer					0.15	J					0.44	J
Decahydro pentamethylnaphthalene isomer									0.011	J		
Decahydro pentamethylnaphthalene isomer (01)												
Decahydro pentamethylnaphthalene isomer (02)												
Decahydro pentamethylnaphthalene isomer (03)												
Decane dimethyl isomer												
Decane dimethyl isomer (01)												
Decane dimethyl isomer (02)												
Decane dimethylisomer												
decane isomer	0.061	J										
Decane methyl isomer	0.072	J										
Decane trimethyl isomer												
diethylbenzene isomer												
dimethyl Hexane isomer												
Dimethylcyclooctene isomer												
Dimethyldecane isomer												
Dodecane isomer							0.045	J				
Dodecane tetramethyl isomer												
Dodecane trimethyl isomer												
Heptadecane isomer												
Heptadecane methyl isomer												
Heptane dimethyl isomer	0.14	J			0.12	J					0.56	J
Heptane ethyl isomer	0.057	J										
Heptane hexamethyl isomer												
Heptane methyl isomer											0.75	J
Heptane methyl isomer			0.47	J	0.26	J						
Heptane pentamethyl isomer												
Heptane pentamethyl isomer												
Heptane tetramethyl isomer	0.079	J										
Heptane trimethyl isomer												
Heptane trimethylisomer												
Hexane dimethyl isomer			0.35	J	0.49	J					0.99	J
Hexane dimethyl isomer			0.31	J								
Hexane ethyl-ethylhexane isomer												
Hexane methyl isomer					0.51	J						
Hexane tetramethyl isomer												
Hexane trimethyl isomer												
Hexane trimethyl isomer			0.38	J								
Hexane trimethyl isomer			0.24	J								
Hexane trimethylisomer	0.11	J										
Hexyl n-valerate isomer					0.39	J						
Indene dihydro dimethyl isomer			0.27	J								
Indene dihydro isomer												
Methylnonane isomer												
nonane isomer	0.11	J										
Nonane methyl isomer	0.062	J										
Nonane methyl-propyl isomer												
Nonynol isomer	0.06	J										
ocenynol isomer							0.026	J				
Octane dimethyl isomer												
Octane dimethyl isomer												
Octane dimethyl isomer (01)	0.1	J										
Octane dimethyl isomer (01)											1.2	J
Octane dimethyl isomer (02)	0.074	J										
Octane dimethyl isomer (02)											0.35	J
Octane dimethylisomer												
Octane ethyl isomer	0.068	J										
Octane ethyl methyl isomer												
Octane methyl isomer	0.13	J			0.13	J						
Octane methyl isomer											0.56	J
Octane methyl isomer (01)			0.32	J								
Octane methyl isomer (02)			0.27	J								
Octane trimethyl isomer												
Octane trimethyl isomer							0.046	J				
Octanedimethyloctane isomer												
Octanetrimethylisomer												
Octenone isomer												
Oxalic acid diiohexyl ester isomer											1.1	J
Pentane dimethyl isomer					0.23	J						
Pentane dimethyl isomer												
Pentane dimethyl isomer (01)			0.24	J								
Pentane dimethyl isomer (02)			0.46	J								
Pentane ethyl dimethyl isomer					0.46	J						
Pentane trimethyl isomer												
Pentane trimethyl isomer												
Pentane trimethyl isomer (01)			1.8	J	1.7	J					1.5	J
Pentane trimethyl isomer (02)			1.1	J	0.14	J					2.2	J
Pentane trimethyl isomer (03)			1.6	J	1.3	J					2.3	J
Pentane trimethyl isomer (04)					1.5	J						
Pentane trimethylisomer												
Pentanoic acid isomer												
p-Tolyl ethylamine isomer												
Tetradecane dimethyl isomer												
tetramethylcyclopentane isomer	0.06	J										
Tetramethylheptane isomer												
Tetramethyloctane isomer	0.061	J										
Tridecane isomer												
Undecane dimethyl isomer												
Undecane isomer							0.029	J				
Undecane methyl isomer												
TOTAL TICS	**1.24**		**8.04**		**7.63**		**0.17**		**0.01**		**14.1**	

Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 3: SVOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-01 0-5		SB-01 11-13		DUPA-20250321		SB-01 22.5-25		SB-02 0-5		SB-02 11-13	
U= Not Detected ≥ value		Date	2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-25		2025-03-25	
All data in mg/Kg (ppm)		Dilution	2		2		2		2		20		2	
SVOCs, 8270	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1'-biphenyl	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.21	*D*	0.0424	*U*
1,2,4,5-tetrachlorobenzene	NA	NA	0.0858	*U*	0.086	*U*	0.0846	*U*	0.09	*U*	0.0866	*U*	0.0846	*U*
1,2,4-trichlorobenzene	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
1,2-dichlorobenzene	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
1,2-diphenylhydrazine (azobenzene)	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
1,3-dichlorobenzene	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
1,4-dichlorobenzene	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
2,3,4,6-tetrachlorophenol	NA	NA	0.0858	*U*	0.086	*U*	0.0846	*U*	0.09	*U*	0.0866	*U*	0.0846	*U*
2,4,5-trichlorophenol	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
2,4,6-trichlorophenol	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
2,4-dichlorophenol	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
2,4-dimethylphenol	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
2,4-dinitrophenol	NA	NA	0.0858	*U*	0.086	*U*	0.0846	*U*	0.09	*U*	0.0866	*U*	0.0846	*U*
2,4-dinitrotoluene	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
2,6-dinitrotoluene	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
2-chloronaphthalene	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
2-chlorophenol	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
2-methylnaphthalene	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.496	*D*	0.0424	*U*
2-methylphenol	0.33	100	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
2-nitroaniline	NA	NA	0.0858	*U*	0.086	*U*	0.0846	*U*	0.09	*U*	0.0866	*U*	0.0846	*U*
2-nitrophenol	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
3- & 4-methylphenols	0.33	100	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
3,3'-dichlorobenzidine	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
3-nitroaniline	NA	NA	0.0858	*U*	0.086	*U*	0.0846	*U*	0.09	*U*	0.0866	*U*	0.0846	*U*
4,6-dinitro-2-methylphenol	NA	NA	0.0858	*U*	0.086	*U*	0.0846	*U*	0.09	*U*	0.0866	*U*	0.0846	*U*
4-bromophenyl phenyl ether	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
4-chloro-3-methylphenol	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
4-chloroaniline	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
4-chlorophenyl phenyl ether	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
4-nitroaniline	NA	NA	0.0858	*U*	0.086	*U*	0.0846	*U*	0.09	*U*	0.0866	*U*	0.0846	*U*
4-nitrophenol	NA	NA	0.0858	*U*	0.086	*U*	0.0846	*U*	0.09	*U*	0.0866	*U*	0.0846	*U*
acenaphthene	20	100	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.878	*D*	0.0424	*U*
acenaphthylene	100	100	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.58	*D*	0.0424	*U*
acetophenone	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
aniline	0.04	8.1	0.172	*U*	0.172	*U*	0.169	*U*	0.18	*U*	0.173	*U*	0.169	*U*
anthracene	100	100	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	2.63	*D*	0.0424	*U*
atrazine	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
benzaldehyde	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
benzidine	NA	NA	0.172	*U*	0.172	*U*	0.169	*U*	0.18	*U*	0.173	*U*	0.169	*U*
benzo(a)anthracene	1	1.4	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	**2.9**	*D*	0.0424	*U*
benzo(a)pyrene	1	1	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	**2.78**	*D*	0.0424	*U*
benzo(b)fluoranthene	1	1.4	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	**2.78**	*D*	0.0424	*U*
benzo(g,h,i)perylene	0.64	4.9	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	2.58	*D*	0.0424	*U*
benzo(k)fluoranthene	0.8	4.9	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	2.66	*D*	0.0424	*U*
benzoic acid	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
benzyl alcohol	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
benzyl butyl phthalate	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
bis(2-chloroethoxy)methane	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
bis(2-chloroethyl)ether	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
bis(2-chloroisopropyl)ether	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
bis(2-ethylhexyl)phthalate	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
caprolactam	NA	NA	0.0858	*U*	0.086	*U*	0.0846	*U*	0.09	*U*	0.0866	*U*	0.0846	*U*
carbazole	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	1.77	*D*	0.0424	*U*
chrysene	1	4.9	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	3.13	*D*	0.0424	*U*
dibenzo(a,h)anthracene	0.33	0.33	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	**0.419**	*D*	0.0424	*U*
dibenzofuran	2.1	18	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	1.36	*D*	0.0424	*U*
diethyl phthalate	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
dimethyl phthalate	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
di-n-butyl phthalate	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
di-n-octyl phthalate	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
fluoranthene	85	100	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	9.14	*D*	0.0424	*U*
fluorene	30	100	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	1.88	*D*	0.0424	*U*
hexachlorobenzene	0.33	0.33	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
hexachlorobutadiene	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
hexachlorocyclopentadiene	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
hexachloroethane	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
indeno(1,2,3-cd)pyrene	0.5	1.4	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	**2.57**	*D*	0.0424	*U*
isophorone	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
naphthalene	12	100	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	1.98	*D*	0.0424	*U*
nitrobenzene	0.08	1.8	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
n-nitrosodimethylamine	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
n-nitroso-di-n-propylamine	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
n-nitrosodiphenylamine	NA	NA	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
pentachlorophenol	0.8	1.3	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
phenanthrene	1.1	4.9	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	**9.81**	*D*	0.0424	*U*
phenol	0.33	100	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	0.0434	*U*	0.0424	*U*
pyrene	64	100	0.043	*U*	0.0431	*U*	0.0424	*U*	0.0451	*U*	6.55	*D*	0.0424	*U*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 3: SVOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-02 22.5-25		SB-03 0-5		SB-03 11-13		SB-03 22.5-25		SB-04 0-5		SB-04 11-13	
U= Not Detected ≥ value		Date	2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-25	
All data in mg/Kg (ppm)		Dilution	2		20		2		2		2		2	
SVOCs, 8270	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1'-biphenyl	NA	NA	0.0451	U	0.162	D	0.0432	U	0.0469	U	0.0432	U	0.0432	U
1,2,4,5-tetrachlorobenzene	NA	NA	0.09	U	0.0932	U	0.0862	U	0.0935	U	0.0863	U	0.0861	U
1,2,4-trichlorobenzene	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
1,2-dichlorobenzene	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
1,2-diphenylhydrazine (azobenzene)	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
1,3-dichlorobenzene	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
1,4-dichlorobenzene	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
2,3,4,6-tetrachlorophenol	NA	NA	0.09	U	0.0932	U	0.0862	U	0.0935	U	0.0863	U	0.0861	U
2,4,5-trichlorophenol	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
2,4,6-trichlorophenol	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
2,4-dichlorophenol	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
2,4-dimethylphenol	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
2,4-dinitrophenol	NA	NA	0.09	U	0.0932	U	0.0862	U	0.0935	U	0.0863	U	0.0861	U
2,4-dinitrotoluene	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
2,6-dinitrotoluene	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
2-chloronaphthalene	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
2-chlorophenol	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
2-methylnaphthalene	NA	NA	0.0451	U	0.558	D	0.0432	U	0.0469	U	0.0432	U	0.0432	U
2-methylphenol	0.33	100	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
2-nitroaniline	NA	NA	0.09	U	0.0932	U	0.0862	U	0.0935	U	0.0863	U	0.0861	U
2-nitrophenol	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
3- & 4-methylphenols	0.33	100	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
3,3'-dichlorobenzidine	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
3-nitroaniline	NA	NA	0.09	U	0.0932	U	0.0862	U	0.0935	U	0.0863	U	0.0861	U
4,6-dinitro-2-methylphenol	NA	NA	0.09	U	0.0932	U	0.0862	U	0.0935	U	0.0863	U	0.0861	U
4-bromophenyl phenyl ether	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
4-chloro-3-methylphenol	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
4-chloroaniline	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
4-chlorophenyl phenyl ether	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
4-nitroaniline	NA	NA	0.09	U	0.0932	U	0.0862	U	0.0935	U	0.0863	U	0.0861	U
4-nitrophenol	NA	NA	0.09	U	0.0932	U	0.0862	U	0.0935	U	0.0863	U	0.0861	U
acenaphthene	20	100	0.0451	U	0.887	D	0.0432	U	0.0469	U	0.0432	U	0.0432	U
acenaphthylene	100	100	0.0451	U	0.984	D	0.0432	U	0.0469	U	0.0432	U	0.0432	U
acetophenone	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
aniline	0.04	8.1	0.18	U	0.187	U	0.173	U	0.187	U	0.173	U	0.172	U
anthracene	100	100	0.0451	U	2.5	D	0.0432	U	0.0469	U	0.0432	U	0.0432	U
atrazine	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
benzaldehyde	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
benzidine	NA	NA	0.18	U	0.187	U	0.173	U	0.187	U	0.173	U	0.172	U
benzo(a)anthracene	1	1.4	0.0451	U	**3.7**	D	0.0432	U	0.0469	U	0.0432	U	0.0432	U
benzo(a)pyrene	1	1	0.0451	U	**2.56**	D	0.0432	U	0.0469	U	0.0432	U	0.0432	U
benzo(b)fluoranthene	1	1.4	0.0451	U	**2.96**	D	0.0432	U	0.0469	U	0.0432	U	0.0432	U
benzo(g,h,i)perylene	0.64	4.9	0.0451	U	1.84	D	0.0432	U	0.0469	U	0.0432	U	0.0432	U
benzo(k)fluoranthene	0.8	4.9	0.0451	U	2.05	D	0.0432	U	0.0469	U	0.0432	U	0.0432	U
benzoic acid	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
benzyl alcohol	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
benzyl butyl phthalate	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
bis(2-chloroethoxy)methane	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
bis(2-chloroethyl)ether	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
bis(2-chloroisopropyl)ether	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
bis(2-ethylhexyl)phthalate	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
caprolactam	NA	NA	0.09	U	0.0932	U	0.0862	U	0.0935	U	0.0863	U	0.0861	U
carbazole	NA	NA	0.0451	U	0.843	D	0.0432	U	0.0469	U	0.0432	U	0.0432	U
chrysene	1	4.9	0.0451	U	4.37	D	0.0432	U	0.0469	U	0.0432	U	0.0432	U
dibenzo(a,h)anthracene	0.33	0.33	0.0451	U	**0.448**	D	0.0432	U	0.0469	U	0.0432	U	0.0432	U
dibenzofuran	2.1	18	0.0451	U	0.623	D	0.0432	U	0.0469	U	0.0432	U	0.0432	U
diethyl phthalate	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
dimethyl phthalate	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
di-n-butyl phthalate	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
di-n-octyl phthalate	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
fluoranthene	85	100	0.0451	U	8.55	D	0.0432	U	0.0469	U	0.0432	U	0.0432	U
fluorene	30	100	0.0451	U	1.35	D	0.0432	U	0.0469	U	0.0432	U	0.0432	U
hexachlorobenzene	0.33	0.33	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
hexachlorobutadiene	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
hexachlorocyclopentadiene	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
hexachloroethane	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
indeno(1,2,3-cd)pyrene	0.5	1.4	0.0451	U	**1.76**	D	0.0432	U	0.0469	U	0.0432	U	0.0432	U
isophorone	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
naphthalene	12	100	0.0451	U	1.3	D	0.0432	U	0.0469	U	0.0432	U	0.0432	U
nitrobenzene	0.08	1.8	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
n-nitrosodimethylamine	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
n-nitroso-di-n-propylamine	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
n-nitrosodiphenylamine	NA	NA	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
pentachlorophenol	0.8	1.3	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
phenanthrene	1.1	4.9	0.0451	U	**11**	D	0.0432	U	0.0469	U	0.0432	U	0.0432	U
phenol	0.33	100	0.0451	U	0.0467	U	0.0432	U	0.0469	U	0.0432	U	0.0432	U
pyrene	64	100	0.0451	U	8.23	D	0.0432	U	0.0469	U	0.0432	U	0.0432	U

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 3: SVOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-04 22.5-25		SB-05 0-5		SB-05 11-13		SB-05 22.5-25		SB-06 0-5		SB-06 11-13	
U= Not Detected ≥ value		Date	2025-03-25		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19	
All data in mg/Kg (ppm)		Dilution	2		2		2		2		2		2	
SVOCs, 8270	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1'-biphenyl	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
1,2,4,5-tetrachlorobenzene	NA	NA	0.0929	*U*	0.0863	*U*	0.0841	*U*	0.0937	*U*	0.0914	*U*	0.0819	*U*
1,2,4-trichlorobenzene	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
1,2-dichlorobenzene	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
1,2-diphenylhydrazine (azobenzene)	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
1,3-dichlorobenzene	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
1,4-dichlorobenzene	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
2,3,4,6-tetrachlorophenol	NA	NA	0.0929	*U*	0.0863	*U*	0.0841	*U*	0.0937	*U*	0.0914	*U*	0.0819	*U*
2,4,5-trichlorophenol	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
2,4,6-trichlorophenol	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
2,4-dichlorophenol	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
2,4-dimethylphenol	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
2,4-dinitrophenol	NA	NA	0.0929	*U*	0.0863	*U*	0.0841	*U*	0.0937	*U*	0.0914	*U*	0.0819	*U*
2,4-dinitrotoluene	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
2,6-dinitrotoluene	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
2-chloronaphthalene	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
2-chlorophenol	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
2-methylnaphthalene	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
2-methylphenol	0.33	100	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
2-nitroaniline	NA	NA	0.0929	*U*	0.0863	*U*	0.0841	*U*	0.0937	*U*	0.0914	*U*	0.0819	*U*
2-nitrophenol	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
3- & 4-methylphenols	0.33	100	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
3,3'-dichlorobenzidine	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
3-nitroaniline	NA	NA	0.0929	*U*	0.0863	*U*	0.0841	*U*	0.0937	*U*	0.0914	*U*	0.0819	*U*
4,6-dinitro-2-methylphenol	NA	NA	0.0929	*U*	0.0863	*U*	0.0841	*U*	0.0937	*U*	0.0914	*U*	0.0819	*U*
4-bromophenyl phenyl ether	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
4-chloro-3-methylphenol	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
4-chloroaniline	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
4-chlorophenyl phenyl ether	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
4-nitroaniline	NA	NA	0.0929	*U*	0.0863	*U*	0.0841	*U*	0.0937	*U*	0.0914	*U*	0.0819	*U*
4-nitrophenol	NA	NA	0.0929	*U*	0.0863	*U*	0.0841	*U*	0.0937	*U*	0.0914	*U*	0.0819	*U*
acenaphthene	20	100	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
acenaphthylene	100	100	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
acetophenone	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
aniline	0.04	8.1	0.186	*U*	0.173	*U*	0.168	*U*	0.188	*U*	0.183	*U*	0.164	*U*
anthracene	100	100	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
atrazine	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
benzaldehyde	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
benzidine	NA	NA	0.186	*U*	0.173	*U*	0.168	*U*	0.188	*U*	0.183	*U*	0.164	*U*
benzo(a)anthracene	1	1.4	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
benzo(a)pyrene	1	1	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
benzo(b)fluoranthene	1	1.4	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
benzo(g,h,i)perylene	0.64	4.9	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
benzo(k)fluoranthene	0.8	4.9	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
benzoic acid	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
benzyl alcohol	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
benzyl butyl phthalate	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
bis(2-chloroethoxy)methane	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
bis(2-chloroethyl)ether	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
bis(2-chloroisopropyl)ether	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
bis(2-ethylhexyl)phthalate	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
caprolactam	NA	NA	0.0929	*U*	0.0863	*U*	0.0841	*U*	0.0937	*U*	0.0914	*U*	0.0819	*U*
carbazole	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
chrysene	1	4.9	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
dibenzo(a,h)anthracene	0.33	0.33	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
dibenzofuran	2.1	18	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
diethyl phthalate	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
dimethyl phthalate	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
di-n-butyl phthalate	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
di-n-octyl phthalate	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
fluoranthene	85	100	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
fluorene	30	100	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
hexachlorobenzene	0.33	0.33	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
hexachlorobutadiene	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
hexachlorocyclopentadiene	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
hexachloroethane	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
indeno(1,2,3-cd)pyrene	0.5	1.4	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
isophorone	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
naphthalene	12	100	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
nitrobenzene	0.08	1.8	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
n-nitrosodimethylamine	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
n-nitroso-di-n-propylamine	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
n-nitrosodiphenylamine	NA	NA	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
pentachlorophenol	0.8	1.3	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
phenanthrene	1.1	4.9	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
phenol	0.33	100	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*
pyrene	64	100	0.0465	*U*	0.0433	*U*	0.0422	*U*	0.047	*U*	0.0458	*U*	0.0411	*U*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 3: SVOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-06 22.5-25		SB-07 0-5		SB-07 11-13		SB-07 22.5-25		SB-08 0-5		SB-08 11-13	
U= Not Detected ≥ value		Date	2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19	
All data in mg/Kg (ppm)		Dilution	2		2		2		2		2		2	
SVOCs, 8270	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1'-biphenyl	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
1,2,4,5-tetrachlorobenzene	NA	NA	0.0856	*U*	0.0842	*U*	0.0848	*U*	0.0974	*U*	0.0906	*U*	0.0858	*U*
1,2,4-trichlorobenzene	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
1,2-dichlorobenzene	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
1,2-diphenylhydrazine (azobenzene)	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
1,3-dichlorobenzene	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
1,4-dichlorobenzene	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
2,3,4,6-tetrachlorophenol	NA	NA	0.0856	*U*	0.0842	*U*	0.0848	*U*	0.0974	*U*	0.0906	*U*	0.0858	*U*
2,4,5-trichlorophenol	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
2,4,6-trichlorophenol	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
2,4-dichlorophenol	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
2,4-dimethylphenol	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
2,4-dinitrophenol	NA	NA	0.0856	*U*	0.0842	*U*	0.0848	*U*	0.0974	*U*	0.0906	*U*	0.0858	*U*
2,4-dinitrotoluene	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
2,6-dinitrotoluene	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
2-chloronaphthalene	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
2-chlorophenol	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
2-methylnaphthalene	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
2-methylphenol	0.33	100	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
2-nitroaniline	NA	NA	0.0856	*U*	0.0842	*U*	0.0848	*U*	0.0974	*U*	0.0906	*U*	0.0858	*U*
2-nitrophenol	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
3- & 4-methylphenols	0.33	100	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
3,3'-dichlorobenzidine	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
3-nitroaniline	NA	NA	0.0856	*U*	0.0842	*U*	0.0848	*U*	0.0974	*U*	0.0906	*U*	0.0858	*U*
4,6-dinitro-2-methylphenol	NA	NA	0.0856	*U*	0.0842	*U*	0.0848	*U*	0.0974	*U*	0.0906	*U*	0.0858	*U*
4-bromophenyl phenyl ether	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
4-chloro-3-methylphenol	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
4-chloroaniline	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
4-chlorophenyl phenyl ether	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
4-nitroaniline	NA	NA	0.0856	*U*	0.0842	*U*	0.0848	*U*	0.0974	*U*	0.0906	*U*	0.0858	*U*
4-nitrophenol	NA	NA	0.0856	*U*	0.0842	*U*	0.0848	*U*	0.0974	*U*	0.0906	*U*	0.0858	*U*
acenaphthene	20	100	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
acenaphthylene	100	100	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
acetophenone	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
aniline	0.04	8.1	0.171	*U*	0.169	*U*	0.17	*U*	0.195	*U*	0.181	*U*	0.172	*U*
anthracene	100	100	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
atrazine	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
benzaldehyde	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
benzidine	NA	NA	0.171	*U*	0.169	*U*	0.17	*U*	0.195	*U*	0.181	*U*	0.172	*U*
benzo(a)anthracene	1	1.4	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0485	*JD*	0.043	*U*
benzo(a)pyrene	1	1	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0601	*JD*	0.043	*U*
benzo(b)fluoranthene	1	1.4	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0818	*JD*	0.043	*U*
benzo(g,h,i)perylene	0.64	4.9	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.119	*D*	0.043	*U*
benzo(k)fluoranthene	0.8	4.9	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0702	*JD*	0.043	*U*
benzoic acid	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
benzyl alcohol	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
benzyl butyl phthalate	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
bis(2-chloroethoxy)methane	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
bis(2-chloroethyl)ether	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
bis(2-chloroisopropyl)ether	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
bis(2-ethylhexyl)phthalate	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
caprolactam	NA	NA	0.0856	*U*	0.0842	*U*	0.0848	*U*	0.0974	*U*	0.0906	*U*	0.0858	*U*
carbazole	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
chrysene	1	4.9	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0948	*D*	0.043	*U*
dibenzo(a,h)anthracene	0.33	0.33	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
dibenzofuran	2.1	18	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
diethyl phthalate	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
dimethyl phthalate	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
di-n-butyl phthalate	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0586	*JD*	0.043	*U*
di-n-octyl phthalate	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
fluoranthene	85	100	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.258	*D*	0.043	*U*
fluorene	30	100	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
hexachlorobenzene	0.33	0.33	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
hexachlorobutadiene	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
hexachlorocyclopentadiene	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
hexachloroethane	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
indeno(1,2,3-cd)pyrene	0.5	1.4	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0681	*JD*	0.043	*U*
isophorone	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
naphthalene	12	100	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
nitrobenzene	0.08	1.8	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
n-nitrosodimethylamine	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
n-nitroso-di-n-propylamine	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
n-nitrosodiphenylamine	NA	NA	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
pentachlorophenol	0.8	1.3	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
phenanthrene	1.1	4.9	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.18	*D*	0.043	*U*
phenol	0.33	100	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.0454	*U*	0.043	*U*
pyrene	64	100	0.0429	*U*	0.0422	*U*	0.0425	*U*	0.0488	*U*	0.143	*D*	0.043	*U*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 3: SVOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-08 22.5-25		SB-09 0-5		SB-09 11-13		SB-09 22.5-25		DUP-20250319		SB-10 0-5	
U= Not Detected ≥ value		Date	2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19	
All data in mg/Kg (ppm)		Dilution	2		2		2		2		2		2	
SVOCs, 8270	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1'-biphenyl	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
1,2,4,5-tetrachlorobenzene	NA	NA	0.104	*U*	0.0884	*U*	0.0834	*U*	0.0941	*U*	0.104	*U*	0.0892	*U*
1,2,4-trichlorobenzene	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
1,2-dichlorobenzene	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
1,2-diphenylhydrazine (azobenzene)	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
1,3-dichlorobenzene	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
1,4-dichlorobenzene	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
2,3,4,6-tetrachlorophenol	NA	NA	0.104	*U*	0.0884	*U*	0.0834	*U*	0.0941	*U*	0.104	*U*	0.0892	*U*
2,4,5-trichlorophenol	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
2,4,6-trichlorophenol	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
2,4-dichlorophenol	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
2,4-dimethylphenol	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
2,4-dinitrophenol	NA	NA	0.104	*U*	0.0884	*U*	0.0834	*U*	0.0941	*U*	0.104	*U*	0.0892	*U*
2,4-dinitrotoluene	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
2,6-dinitrotoluene	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
2-chloronaphthalene	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
2-chlorophenol	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
2-methylnaphthalene	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
2-methylphenol	0.33	100	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
2-nitroaniline	NA	NA	0.104	*U*	0.0884	*U*	0.0834	*U*	0.0941	*U*	0.104	*U*	0.0892	*U*
2-nitrophenol	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
3- & 4-methylphenols	0.33	100	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
3,3'-dichlorobenzidine	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
3-nitroaniline	NA	NA	0.104	*U*	0.0884	*U*	0.0834	*U*	0.0941	*U*	0.104	*U*	0.0892	*U*
4,6-dinitro-2-methylphenol	NA	NA	0.104	*U*	0.0884	*U*	0.0834	*U*	0.0941	*U*	0.104	*U*	0.0892	*U*
4-bromophenyl phenyl ether	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
4-chloro-3-methylphenol	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
4-chloroaniline	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
4-chlorophenyl phenyl ether	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
4-nitroaniline	NA	NA	0.104	*U*	0.0884	*U*	0.0834	*U*	0.0941	*U*	0.104	*U*	0.0892	*U*
4-nitrophenol	NA	NA	0.104	*U*	0.0884	*U*	0.0834	*U*	0.0941	*U*	0.104	*U*	0.0892	*U*
acenaphthene	20	100	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
acenaphthylene	100	100	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
acetophenone	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
aniline	0.04	8.1	0.209	*U*	0.177	*U*	0.167	*U*	0.188	*U*	0.209	*U*	0.179	*U*
anthracene	100	100	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
atrazine	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
benzaldehyde	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
benzidine	NA	NA	0.209	*U*	0.177	*U*	0.167	*U*	0.188	*U*	0.209	*U*	0.179	*U*
benzo(a)anthracene	1	1.4	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0763	*JD*
benzo(a)pyrene	1	1	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0499	*JD*
benzo(b)fluoranthene	1	1.4	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0606	*JD*
benzo(g,h,i)perylene	0.64	4.9	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.047	*JD*
benzo(k)fluoranthene	0.8	4.9	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0506	*JD*
benzoic acid	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
benzyl alcohol	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
benzyl butyl phthalate	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
bis(2-chloroethoxy)methane	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
bis(2-chloroethyl)ether	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
bis(2-chloroisopropyl)ether	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
bis(2-ethylhexyl)phthalate	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
caprolactam	NA	NA	0.104	*U*	0.0884	*U*	0.0834	*U*	0.0941	*U*	0.104	*U*	0.0892	*U*
carbazole	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
chrysene	1	4.9	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0834	*JD*
dibenzo(a,h)anthracene	0.33	0.33	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
dibenzofuran	2.1	18	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
diethyl phthalate	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
dimethyl phthalate	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
di-n-butyl phthalate	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
di-n-octyl phthalate	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
fluoranthene	85	100	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.11	*D*
fluorene	30	100	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
hexachlorobenzene	0.33	0.33	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
hexachlorobutadiene	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
hexachlorocyclopentadiene	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
hexachloroethane	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
indeno(1,2,3-cd)pyrene	0.5	1.4	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
isophorone	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
naphthalene	12	100	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
nitrobenzene	0.08	1.8	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
n-nitrosodimethylamine	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
n-nitroso-di-n-propylamine	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
n-nitrosodiphenylamine	NA	NA	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
pentachlorophenol	0.8	1.3	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
phenanthrene	1.1	4.9	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0812	*JD*
phenol	0.33	100	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.0447	*U*
pyrene	64	100	0.0523	*U*	0.0443	*U*	0.0418	*U*	0.0472	*U*	0.0523	*U*	0.128	*D*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 3: SVOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-10 11-13		SB-10 22.5-25		SB-11 0-5		SB-11 11-13		SB-11 22.5-25		SB-12 0-5	
U= Not Detected ≥ value		Date	2025-03-19		2025-03-19		2025-03-25		2025-03-25		2025-03-25		2025-03-21	
All data in mg/Kg (ppm)		Dilution	2		2		2		2		2		2	
SVOCs, 8270	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1'-biphenyl	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
1,2,4,5-tetrachlorobenzene	NA	NA	0.0841	*U*	0.0952	*U*	0.0879	*U*	0.086	*U*	0.093	*U*	0.0888	*U*
1,2,4-trichlorobenzene	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
1,2-dichlorobenzene	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
1,2-diphenylhydrazine (azobenzene)	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
1,3-dichlorobenzene	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
1,4-dichlorobenzene	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
2,3,4,6-tetrachlorophenol	NA	NA	0.0841	*U*	0.0952	*U*	0.0879	*U*	0.086	*U*	0.093	*U*	0.0888	*U*
2,4,5-trichlorophenol	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
2,4,6-trichlorophenol	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
2,4-dichlorophenol	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
2,4-dimethylphenol	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
2,4-dinitrophenol	NA	NA	0.0841	*U*	0.0952	*U*	0.0879	*U*	0.086	*U*	0.093	*U*	0.0888	*U*
2,4-dinitrotoluene	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
2,6-dinitrotoluene	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
2-chloronaphthalene	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
2-chlorophenol	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
2-methylnaphthalene	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
2-methylphenol	0.33	100	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
2-nitroaniline	NA	NA	0.0841	*U*	0.0952	*U*	0.0879	*U*	0.086	*U*	0.093	*U*	0.0888	*U*
2-nitrophenol	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
3- & 4-methylphenols	0.33	100	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
3,3'-dichlorobenzidine	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
3-nitroaniline	NA	NA	0.0841	*U*	0.0952	*U*	0.0879	*U*	0.086	*U*	0.093	*U*	0.0888	*U*
4,6-dinitro-2-methylphenol	NA	NA	0.0841	*U*	0.0952	*U*	0.0879	*U*	0.086	*U*	0.093	*U*	0.0888	*U*
4-bromophenyl phenyl ether	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
4-chloro-3-methylphenol	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
4-chloroaniline	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
4-chlorophenyl phenyl ether	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
4-nitroaniline	NA	NA	0.0841	*U*	0.0952	*U*	0.0879	*U*	0.086	*U*	0.093	*U*	0.0888	*U*
4-nitrophenol	NA	NA	0.0841	*U*	0.0952	*U*	0.0879	*U*	0.086	*U*	0.093	*U*	0.0888	*U*
acenaphthene	20	100	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
acenaphthylene	100	100	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
acetophenone	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
aniline	0.04	8.1	0.168	*U*	0.191	*U*	0.176	*U*	0.172	*U*	0.186	*U*	0.178	*U*
anthracene	100	100	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
atrazine	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
benzaldehyde	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
benzidine	NA	NA	0.168	*U*	0.191	*U*	0.176	*U*	0.172	*U*	0.186	*U*	0.178	*U*
benzo(a)anthracene	1	1.4	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
benzo(a)pyrene	1	1	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
benzo(b)fluoranthene	1	1.4	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
benzo(g,h,i)perylene	0.64	4.9	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
benzo(k)fluoranthene	0.8	4.9	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
benzoic acid	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
benzyl alcohol	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
benzyl butyl phthalate	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
bis(2-chloroethoxy)methane	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
bis(2-chloroethyl)ether	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
bis(2-chloroisopropyl)ether	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
bis(2-ethylhexyl)phthalate	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
caprolactam	NA	NA	0.0841	*U*	0.0952	*U*	0.0879	*U*	0.086	*U*	0.093	*U*	0.0888	*U*
carbazole	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
chrysene	1	4.9	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
dibenzo(a,h)anthracene	0.33	0.33	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
dibenzofuran	2.1	18	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
diethyl phthalate	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
dimethyl phthalate	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
di-n-butyl phthalate	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
di-n-octyl phthalate	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
fluoranthene	85	100	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
fluorene	30	100	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
hexachlorobenzene	0.33	0.33	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
hexachlorobutadiene	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
hexachlorocyclopentadiene	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
hexachloroethane	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
indeno(1,2,3-cd)pyrene	0.5	1.4	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
isophorone	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
naphthalene	12	100	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
nitrobenzene	0.08	1.8	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
n-nitrosodimethylamine	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
n-nitroso-di-n-propylamine	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
n-nitrosodiphenylamine	NA	NA	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
pentachlorophenol	0.8	1.3	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
phenanthrene	1.1	4.9	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
phenol	0.33	100	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0445	*U*
pyrene	64	100	0.0422	*U*	0.0477	*U*	0.0441	*U*	0.0431	*U*	0.0466	*U*	0.0525	*JD*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 3: SVOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-12 11-13		SB-12 22.5-25		DUPB-20250321		SB-13 5-10		SB-13 11-13		SB-13 22.5-25	
U= Not Detected ≥ value		Date	2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-21	
All data in mg/Kg (ppm)		Dilution	2		2		2		2		2		2	
SVOCs, 8270	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1'-biphenyl	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
1,2,4,5-tetrachlorobenzene	NA	NA	0.0856	*U*	0.0957	*U*	0.0873	*U*	0.089	*U*	0.0846	*U*	0.0864	*U*
1,2,4-trichlorobenzene	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
1,2-dichlorobenzene	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
1,2-diphenylhydrazine (azobenzene)	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
1,3-dichlorobenzene	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
1,4-dichlorobenzene	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
2,3,4,6-tetrachlorophenol	NA	NA	0.0856	*U*	0.0957	*U*	0.0873	*U*	0.089	*U*	0.0846	*U*	0.0864	*U*
2,4,5-trichlorophenol	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
2,4,6-trichlorophenol	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
2,4-dichlorophenol	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
2,4-dimethylphenol	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
2,4-dinitrophenol	NA	NA	0.0856	*U*	0.0957	*U*	0.0873	*U*	0.089	*U*	0.0846	*U*	0.0864	*U*
2,4-dinitrotoluene	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
2,6-dinitrotoluene	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
2-chloronaphthalene	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
2-chlorophenol	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
2-methylnaphthalene	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
2-methylphenol	0.33	100	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
2-nitroaniline	NA	NA	0.0856	*U*	0.0957	*U*	0.0873	*U*	0.089	*U*	0.0846	*U*	0.0864	*U*
2-nitrophenol	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
3- & 4-methylphenols	0.33	100	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
3,3'-dichlorobenzidine	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
3-nitroaniline	NA	NA	0.0856	*U*	0.0957	*U*	0.0873	*U*	0.089	*U*	0.0846	*U*	0.0864	*U*
4,6-dinitro-2-methylphenol	NA	NA	0.0856	*U*	0.0957	*U*	0.0873	*U*	0.089	*U*	0.0846	*U*	0.0864	*U*
4-bromophenyl phenyl ether	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
4-chloro-3-methylphenol	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
4-chloroaniline	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
4-chlorophenyl phenyl ether	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
4-nitroaniline	NA	NA	0.0856	*U*	0.0957	*U*	0.0873	*U*	0.089	*U*	0.0846	*U*	0.0864	*U*
4-nitrophenol	NA	NA	0.0856	*U*	0.0957	*U*	0.0873	*U*	0.089	*U*	0.0846	*U*	0.0864	*U*
acenaphthene	20	100	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
acenaphthylene	100	100	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
acetophenone	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
aniline	0.04	8.1	0.171	*U*	0.192	*U*	0.175	*U*	0.178	*U*	0.17	*U*	0.173	*U*
anthracene	100	100	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
atrazine	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
benzaldehyde	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
benzidine	NA	NA	0.171	*U*	0.192	*U*	0.175	*U*	0.178	*U*	0.17	*U*	0.173	*U*
benzo(a)anthracene	1	1.4	0.0429	*U*	0.048	*U*	0.0437	*U*	0.102	*D*	0.0424	*U*	0.0433	*U*
benzo(a)pyrene	1	1	0.0429	*U*	0.048	*U*	0.0437	*U*	0.133	*D*	0.0424	*U*	0.0433	*U*
benzo(b)fluoranthene	1	1.4	0.0429	*U*	0.048	*U*	0.0437	*U*	0.131	*D*	0.0424	*U*	0.0433	*U*
benzo(g,h,i)perylene	0.64	4.9	0.0429	*U*	0.048	*U*	0.0437	*U*	0.112	*D*	0.0424	*U*	0.0433	*U*
benzo(k)fluoranthene	0.8	4.9	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0903	*D*	0.0424	*U*	0.0433	*U*
benzoic acid	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
benzyl alcohol	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
benzyl butyl phthalate	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
bis(2-chloroethoxy)methane	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
bis(2-chloroethyl)ether	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
bis(2-chloroisopropyl)ether	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
bis(2-ethylhexyl)phthalate	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
caprolactam	NA	NA	0.0856	*U*	0.0957	*U*	0.0873	*U*	0.089	*U*	0.0846	*U*	0.0864	*U*
carbazole	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
chrysene	1	4.9	0.0429	*U*	0.048	*U*	0.0437	*U*	0.116	*D*	0.0424	*U*	0.0433	*U*
dibenzo(a,h)anthracene	0.33	0.33	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
dibenzofuran	2.1	18	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
diethyl phthalate	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
dimethyl phthalate	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
di-n-butyl phthalate	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
di-n-octyl phthalate	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
fluoranthene	85	100	0.0429	*U*	0.048	*U*	0.0437	*U*	0.188	*D*	0.0424	*U*	0.0433	*U*
fluorene	30	100	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
hexachlorobenzene	0.33	0.33	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
hexachlorobutadiene	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
hexachlorocyclopentadiene	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
hexachloroethane	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
indeno(1,2,3-cd)pyrene	0.5	1.4	0.0429	*U*	0.048	*U*	0.0437	*U*	0.11	*D*	0.0424	*U*	0.0433	*U*
isophorone	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
naphthalene	12	100	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
nitrobenzene	0.08	1.8	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
n-nitrosodimethylamine	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
n-nitroso-di-n-propylamine	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
n-nitrosodiphenylamine	NA	NA	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
pentachlorophenol	0.8	1.3	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
phenanthrene	1.1	4.9	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0875	*JD*	0.0424	*U*	0.0433	*U*
phenol	0.33	100	0.0429	*U*	0.048	*U*	0.0437	*U*	0.0446	*U*	0.0424	*U*	0.0433	*U*
pyrene	64	100	0.0429	*U*	0.048	*U*	0.0437	*U*	0.154	*D*	0.0424	*U*	0.0433	*U*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 3: SVOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-13 25-27		SB-14 0-5		SB-14 11-13		SB-14 22.5-25		SB-15 0-5		SB-15 11-13	
U= Not Detected ≥ value		Date	2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-20		2025-03-20	
All data in mg/Kg (ppm)		Dilution	2		2		2		2		2		2	
SVOCs, 8270	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1'-biphenyl	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
1,2,4,5-tetrachlorobenzene	NA	NA	0.0884	*U*	0.088	*U*	0.0873	*U*	0.0894	*U*	0.0953	*U*	0.085	*U*
1,2,4-trichlorobenzene	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
1,2-dichlorobenzene	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
1,2-diphenylhydrazine (azobenzene)	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
1,3-dichlorobenzene	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
1,4-dichlorobenzene	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
2,3,4,6-tetrachlorophenol	NA	NA	0.0884	*U*	0.088	*U*	0.0873	*U*	0.0894	*U*	0.0953	*U*	0.085	*U*
2,4,5-trichlorophenol	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
2,4,6-trichlorophenol	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
2,4-dichlorophenol	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
2,4-dimethylphenol	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
2,4-dinitrophenol	NA	NA	0.0884	*U*	0.088	*U*	0.0873	*U*	0.0894	*U*	0.0953	*U*	0.085	*U*
2,4-dinitrotoluene	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
2,6-dinitrotoluene	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
2-chloronaphthalene	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
2-chlorophenol	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
2-methylnaphthalene	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
2-methylphenol	0.33	100	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
2-nitroaniline	NA	NA	0.0884	*U*	0.088	*U*	0.0873	*U*	0.0894	*U*	0.0953	*U*	0.085	*U*
2-nitrophenol	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
3- & 4-methylphenols	0.33	100	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
3,3'-dichlorobenzidine	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
3-nitroaniline	NA	NA	0.0884	*U*	0.088	*U*	0.0873	*U*	0.0894	*U*	0.0953	*U*	0.085	*U*
4,6-dinitro-2-methylphenol	NA	NA	0.0884	*U*	0.088	*U*	0.0873	*U*	0.0894	*U*	0.0953	*U*	0.085	*U*
4-bromophenyl phenyl ether	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
4-chloro-3-methylphenol	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
4-chloroaniline	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
4-chlorophenyl phenyl ether	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
4-nitroaniline	NA	NA	0.0884	*U*	0.088	*U*	0.0873	*U*	0.0894	*U*	0.0953	*U*	0.085	*U*
4-nitrophenol	NA	NA	0.0884	*U*	0.088	*U*	0.0873	*U*	0.0894	*U*	0.0953	*U*	0.085	*U*
acenaphthene	20	100	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
acenaphthylene	100	100	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
acetophenone	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
aniline	0.04	8.1	0.177	*U*	0.176	*U*	0.175	*U*	0.179	*U*	0.191	*U*	0.17	*U*
anthracene	100	100	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
atrazine	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
benzaldehyde	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
benzidine	NA	NA	0.177	*U*	0.176	*U*	0.175	*U*	0.179	*U*	0.191	*U*	0.17	*U*
benzo(a)anthracene	1	1.4	0.0443	*U*	0.0795	*JD*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
benzo(a)pyrene	1	1	0.0443	*U*	0.0774	*JD*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
benzo(b)fluoranthene	1	1.4	0.0443	*U*	0.0746	*JD*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
benzo(g,h,i)perylene	0.64	4.9	0.0443	*U*	0.0471	*JD*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
benzo(k)fluoranthene	0.8	4.9	0.0443	*U*	0.0753	*JD*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
benzoic acid	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
benzyl alcohol	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
benzyl butyl phthalate	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
bis(2-chloroethoxy)methane	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
bis(2-chloroethyl)ether	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
bis(2-chloroisopropyl)ether	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
bis(2-ethylhexyl)phthalate	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
caprolactam	NA	NA	0.0884	*U*	0.088	*U*	0.0873	*U*	0.0894	*U*	0.0953	*U*	0.085	*U*
carbazole	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
chrysene	1	4.9	0.0443	*U*	0.0774	*JD*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
dibenzo(a,h)anthracene	0.33	0.33	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
dibenzofuran	2.1	18	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
diethyl phthalate	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
dimethyl phthalate	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
di-n-butyl phthalate	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
di-n-octyl phthalate	NA	NA	0.0443	*U*	0.071	*JD*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
fluoranthene	85	100	0.0443	*U*	0.136	*D*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
fluorene	30	100	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
hexachlorobenzene	0.33	0.33	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
hexachlorobutadiene	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
hexachlorocyclopentadiene	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
hexachloroethane	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
indeno(1,2,3-cd)pyrene	0.5	1.4	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
isophorone	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
naphthalene	12	100	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
nitrobenzene	0.08	1.8	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
n-nitrosodimethylamine	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
n-nitroso-di-n-propylamine	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
n-nitrosodiphenylamine	NA	NA	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
pentachlorophenol	0.8	1.3	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
phenanthrene	1.1	4.9	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
phenol	0.33	100	0.0443	*U*	0.0441	*U*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*
pyrene	64	100	0.0443	*U*	0.0936	*D*	0.0437	*U*	0.0448	*U*	0.0478	*U*	0.0426	*U*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 3: SVOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-15 22.5-25		SB-16 0-5		SB-16 11-13		SB-16 22.5-25		SB-16 25-27		SB-17 0-5	
U= Not Detected ≥ value		Date	2025-03-20		2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-25	
All data in mg/Kg (ppm)		Dilution	2		2		2		2		2		2	
SVOCs, 8270	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1'-biphenyl	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
1,2,4,5-tetrachlorobenzene	NA	NA	0.0853	*U*	0.0901	*U*	0.0843	*U*	0.101	*U*	0.0906	*U*	0.0846	*U*
1,2,4-trichlorobenzene	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
1,2-dichlorobenzene	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
1,2-diphenylhydrazine (azobenzene)	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
1,3-dichlorobenzene	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
1,4-dichlorobenzene	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
2,3,4,6-tetrachlorophenol	NA	NA	0.0853	*U*	0.0901	*U*	0.0843	*U*	0.101	*U*	0.0906	*U*	0.0846	*U*
2,4,5-trichlorophenol	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
2,4,6-trichlorophenol	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
2,4-dichlorophenol	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
2,4-dimethylphenol	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
2,4-dinitrophenol	NA	NA	0.0853	*U*	0.0901	*U*	0.0843	*U*	0.101	*U*	0.0906	*U*	0.0846	*U*
2,4-dinitrotoluene	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
2,6-dinitrotoluene	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
2-chloronaphthalene	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
2-chlorophenol	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
2-methylnaphthalene	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
2-methylphenol	0.33	100	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
2-nitroaniline	NA	NA	0.0853	*U*	0.0901	*U*	0.0843	*U*	0.101	*U*	0.0906	*U*	0.0846	*U*
2-nitrophenol	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
3- & 4-methylphenols	0.33	100	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
3,3'-dichlorobenzidine	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
3-nitroaniline	NA	NA	0.0853	*U*	0.0901	*U*	0.0843	*U*	0.101	*U*	0.0906	*U*	0.0846	*U*
4,6-dinitro-2-methylphenol	NA	NA	0.0853	*U*	0.0901	*U*	0.0843	*U*	0.101	*U*	0.0906	*U*	0.0846	*U*
4-bromophenyl phenyl ether	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
4-chloro-3-methylphenol	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
4-chloroaniline	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
4-chlorophenyl phenyl ether	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
4-nitroaniline	NA	NA	0.0853	*U*	0.0901	*U*	0.0843	*U*	0.101	*U*	0.0906	*U*	0.0846	*U*
4-nitrophenol	NA	NA	0.0853	*U*	0.0901	*U*	0.0843	*U*	0.101	*U*	0.0906	*U*	0.0846	*U*
acenaphthene	20	100	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
acenaphthylene	100	100	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
acetophenone	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
aniline	0.04	8.1	0.171	*U*	0.181	*U*	0.169	*U*	0.202	*U*	0.181	*U*	0.169	*U*
anthracene	100	100	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
atrazine	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
benzaldehyde	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
benzidine	NA	NA	0.171	*U*	0.181	*U*	0.169	*U*	0.202	*U*	0.181	*U*	0.169	*U*
benzo(a)anthracene	1	1.4	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
benzo(a)pyrene	1	1	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
benzo(b)fluoranthene	1	1.4	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
benzo(g,h,i)perylene	0.64	4.9	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
benzo(k)fluoranthene	0.8	4.9	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
benzoic acid	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
benzyl alcohol	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
benzyl butyl phthalate	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
bis(2-chloroethoxy)methane	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
bis(2-chloroethyl)ether	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
bis(2-chloroisopropyl)ether	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
bis(2-ethylhexyl)phthalate	NA	NA	0.0504	*JD*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
caprolactam	NA	NA	0.0853	*U*	0.0901	*U*	0.0843	*U*	0.101	*U*	0.0906	*U*	0.0846	*U*
carbazole	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
chrysene	1	4.9	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
dibenzo(a,h)anthracene	0.33	0.33	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
dibenzofuran	2.1	18	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
diethyl phthalate	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
dimethyl phthalate	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
di-n-butyl phthalate	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
di-n-octyl phthalate	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
fluoranthene	85	100	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
fluorene	30	100	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
hexachlorobenzene	0.33	0.33	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
hexachlorobutadiene	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
hexachlorocyclopentadiene	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
hexachloroethane	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
indeno(1,2,3-cd)pyrene	0.5	1.4	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
isophorone	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
naphthalene	12	100	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
nitrobenzene	0.08	1.8	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
n-nitrosodimethylamine	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
n-nitroso-di-n-propylamine	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
n-nitrosodiphenylamine	NA	NA	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
pentachlorophenol	0.8	1.3	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
phenanthrene	1.1	4.9	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
phenol	0.33	100	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*
pyrene	64	100	0.0427	*U*	0.0452	*U*	0.0422	*U*	0.0506	*U*	0.0454	*U*	0.0424	*U*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 3: SVOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-17 11-13		SB-17 22.5-25		SB-18 0-5		SB-18 11-13		SB-18 22.5-25		SB-18 25-30	
U= Not Detected ≥ value		Date	2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-25	
All data in mg/Kg (ppm)		Dilution	2		2		2		2		2		2	
SVOCs, 8270	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1'-biphenyl	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
1,2,4,5-tetrachlorobenzene	NA	NA	0.0856	U	0.0884	U	0.0876	U	0.0828	U	0.106	U	0.09	U
1,2,4-trichlorobenzene	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
1,2-dichlorobenzene	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
1,2-diphenylhydrazine (azobenzene)	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
1,3-dichlorobenzene	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
1,4-dichlorobenzene	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
2,3,4,6-tetrachlorophenol	NA	NA	0.0856	U	0.0884	U	0.0876	U	0.0828	U	0.106	U	0.09	U
2,4,5-trichlorophenol	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
2,4,6-trichlorophenol	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
2,4-dichlorophenol	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
2,4-dimethylphenol	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
2,4-dinitrophenol	NA	NA	0.0856	U	0.0884	U	0.0876	U	0.0828	U	0.106	U	0.09	U
2,4-dinitrotoluene	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
2,6-dinitrotoluene	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
2-chloronaphthalene	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
2-chlorophenol	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
2-methylnaphthalene	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
2-methylphenol	0.33	100	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
2-nitroaniline	NA	NA	0.0856	U	0.0884	U	0.0876	U	0.0828	U	0.106	U	0.09	U
2-nitrophenol	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
3- & 4-methylphenols	0.33	100	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
3,3'-dichlorobenzidine	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
3-nitroaniline	NA	NA	0.0856	U	0.0884	U	0.0876	U	0.0828	U	0.106	U	0.09	U
4,6-dinitro-2-methylphenol	NA	NA	0.0856	U	0.0884	U	0.0876	U	0.0828	U	0.106	U	0.09	U
4-bromophenyl phenyl ether	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
4-chloro-3-methylphenol	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
4-chloroaniline	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
4-chlorophenyl phenyl ether	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
4-nitroaniline	NA	NA	0.0856	U	0.0884	U	0.0876	U	0.0828	U	0.106	U	0.09	U
4-nitrophenol	NA	NA	0.0856	U	0.0884	U	0.0876	U	0.0828	U	0.106	U	0.09	U
acenaphthene	20	100	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
acenaphthylene	100	100	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
acetophenone	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
aniline	0.04	8.1	0.171	U	0.177	U	0.175	U	0.166	U	0.213	U	0.18	U
anthracene	100	100	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
atrazine	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
benzaldehyde	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
benzidine	NA	NA	0.171	U	0.177	U	0.175	U	0.166	U	0.213	U	0.18	U
benzo(a)anthracene	1	1.4	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
benzo(a)pyrene	1	1	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
benzo(b)fluoranthene	1	1.4	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
benzo(g,h,i)perylene	0.64	4.9	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
benzo(k)fluoranthene	0.8	4.9	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
benzoic acid	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
benzyl alcohol	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
benzyl butyl phthalate	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
bis(2-chloroethoxy)methane	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
bis(2-chloroethyl)ether	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
bis(2-chloroisopropyl)ether	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
bis(2-ethylhexyl)phthalate	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
caprolactam	NA	NA	0.0856	U	0.0884	U	0.0876	U	0.0828	U	0.106	U	0.09	U
carbazole	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
chrysene	1	4.9	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
dibenzo(a,h)anthracene	0.33	0.33	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
dibenzofuran	2.1	18	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
diethyl phthalate	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
dimethyl phthalate	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
di-n-butyl phthalate	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
di-n-octyl phthalate	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
fluoranthene	85	100	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
fluorene	30	100	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
hexachlorobenzene	0.33	0.33	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
hexachlorobutadiene	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
hexachlorocyclopentadiene	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
hexachloroethane	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
indeno(1,2,3-cd)pyrene	0.5	1.4	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
isophorone	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
naphthalene	12	100	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
nitrobenzene	0.08	1.8	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
n-nitrosodimethylamine	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
n-nitroso-di-n-propylamine	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
n-nitrosodiphenylamine	NA	NA	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
pentachlorophenol	0.8	1.3	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
phenanthrene	1.1	4.9	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
phenol	0.33	100	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U
pyrene	64	100	0.0429	U	0.0443	U	0.0439	U	0.0415	U	0.0533	U	0.0451	U

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 3: SVOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-19 0-5		SB-19 11-13		SB-19 22.5-25		SB-20 0-5		SB-20 10-12		SB-20 22.5-25	
U= Not Detected ≥ value		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
All data in mg/Kg (ppm)		Dilution	2		2		2		2		2		2	
SVOCs, 8270	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1'-biphenyl	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
1,2,4,5-tetrachlorobenzene	NA	NA	0.0882	*U*	0.0856	*U*	0.103	*U*	0.0899	*U*	0.0838	*U*	0.0934	*U*
1,2,4-trichlorobenzene	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
1,2-dichlorobenzene	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
1,2-diphenylhydrazine (azobenzene)	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
1,3-dichlorobenzene	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
1,4-dichlorobenzene	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
2,3,4,6-tetrachlorophenol	NA	NA	0.0882	*U*	0.0856	*U*	0.103	*U*	0.0899	*U*	0.0838	*U*	0.0934	*U*
2,4,5-trichlorophenol	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
2,4,6-trichlorophenol	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
2,4-dichlorophenol	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
2,4-dimethylphenol	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
2,4-dinitrophenol	NA	NA	0.0882	*U*	0.0856	*U*	0.103	*U*	0.0899	*U*	0.0838	*U*	0.0934	*U*
2,4-dinitrotoluene	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
2,6-dinitrotoluene	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
2-chloronaphthalene	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
2-chlorophenol	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
2-methylnaphthalene	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
2-methylphenol	0.33	100	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
2-nitroaniline	NA	NA	0.0882	*U*	0.0856	*U*	0.103	*U*	0.0899	*U*	0.0838	*U*	0.0934	*U*
2-nitrophenol	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
3- & 4-methylphenols	0.33	100	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
3,3'-dichlorobenzidine	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
3-nitroaniline	NA	NA	0.0882	*U*	0.0856	*U*	0.103	*U*	0.0899	*U*	0.0838	*U*	0.0934	*U*
4,6-dinitro-2-methylphenol	NA	NA	0.0882	*U*	0.0856	*U*	0.103	*U*	0.0899	*U*	0.0838	*U*	0.0934	*U*
4-bromophenyl phenyl ether	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
4-chloro-3-methylphenol	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
4-chloroaniline	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
4-chlorophenyl phenyl ether	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
4-nitroaniline	NA	NA	0.0882	*U*	0.0856	*U*	0.103	*U*	0.0899	*U*	0.0838	*U*	0.0934	*U*
4-nitrophenol	NA	NA	0.0882	*U*	0.0856	*U*	0.103	*U*	0.0899	*U*	0.0838	*U*	0.0934	*U*
acenaphthene	20	100	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
acenaphthylene	100	100	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
acetophenone	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
aniline	0.04	8.1	0.177	*U*	0.171	*U*	0.206	*U*	0.18	*U*	0.168	*U*	0.187	*U*
anthracene	100	100	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
atrazine	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
benzaldehyde	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
benzidine	NA	NA	0.177	*U*	0.171	*U*	0.206	*U*	0.18	*U*	0.168	*U*	0.187	*U*
benzo(a)anthracene	1	1.4	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
benzo(a)pyrene	1	1	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
benzo(b)fluoranthene	1	1.4	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
benzo(g,h,i)perylene	0.64	4.9	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0503	*JD*	0.042	*U*	0.0468	*U*
benzo(k)fluoranthene	0.8	4.9	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.046	*JD*	0.042	*U*	0.0468	*U*
benzoic acid	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
benzyl alcohol	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
benzyl butyl phthalate	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
bis(2-chloroethoxy)methane	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
bis(2-chloroethyl)ether	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
bis(2-chloroisopropyl)ether	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
bis(2-ethylhexyl)phthalate	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
caprolactam	NA	NA	0.0882	*U*	0.0856	*U*	0.103	*U*	0.0899	*U*	0.0838	*U*	0.0934	*U*
carbazole	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
chrysene	1	4.9	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
dibenzo(a,h)anthracene	0.33	0.33	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
dibenzofuran	2.1	18	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
diethyl phthalate	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
dimethyl phthalate	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
di-n-butyl phthalate	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
di-n-octyl phthalate	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
fluoranthene	85	100	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0748	*JD*	0.042	*U*	0.0468	*U*
fluorene	30	100	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
hexachlorobenzene	0.33	0.33	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
hexachlorobutadiene	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
hexachlorocyclopentadiene	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
hexachloroethane	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
indeno(1,2,3-cd)pyrene	0.5	1.4	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
isophorone	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
naphthalene	12	100	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
nitrobenzene	0.08	1.8	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
n-nitrosodimethylamine	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
n-nitroso-di-n-propylamine	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
n-nitrosodiphenylamine	NA	NA	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
pentachlorophenol	0.8	1.3	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
phenanthrene	1.1	4.9	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
phenol	0.33	100	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0451	*U*	0.042	*U*	0.0468	*U*
pyrene	64	100	0.0442	*U*	0.0429	*U*	0.0515	*U*	0.0726	*JD*	0.042	*U*	0.0468	*U*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 3: SVOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-21 0-5		SB-21 11-13		SB-21 22.5-25		SB-22 0-5		SB-22 11-13		SB-22 22.5-25	
U= Not Detected ≥ value		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
All data in mg/Kg (ppm)		Dilution	2		2		2		2		2		2	
SVOCs, 8270	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1'-biphenyl	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
1,2,4,5-tetrachlorobenzene	NA	NA	0.0839	*U*	0.0875	*U*	0.112	*U*	0.0848	*U*	0.083	*U*	0.091	*U*
1,2,4-trichlorobenzene	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
1,2-dichlorobenzene	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
1,2-diphenylhydrazine (azobenzene)	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
1,3-dichlorobenzene	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
1,4-dichlorobenzene	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
2,3,4,6-tetrachlorophenol	NA	NA	0.0839	*U*	0.0875	*U*	0.112	*U*	0.0848	*U*	0.083	*U*	0.091	*U*
2,4,5-trichlorophenol	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
2,4,6-trichlorophenol	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
2,4-dichlorophenol	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
2,4-dimethylphenol	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
2,4-dinitrophenol	NA	NA	0.0839	*U*	0.0875	*U*	0.112	*U*	0.0848	*U*	0.083	*U*	0.091	*U*
2,4-dinitrotoluene	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
2,6-dinitrotoluene	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
2-chloronaphthalene	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
2-chlorophenol	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
2-methylnaphthalene	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
2-methylphenol	0.33	100	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
2-nitroaniline	NA	NA	0.0839	*U*	0.0875	*U*	0.112	*U*	0.0848	*U*	0.083	*U*	0.091	*U*
2-nitrophenol	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
3- & 4-methylphenols	0.33	100	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
3,3'-dichlorobenzidine	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
3-nitroaniline	NA	NA	0.0839	*U*	0.0875	*U*	0.112	*U*	0.0848	*U*	0.083	*U*	0.091	*U*
4,6-dinitro-2-methylphenol	NA	NA	0.0839	*U*	0.0875	*U*	0.112	*U*	0.0848	*U*	0.083	*U*	0.091	*U*
4-bromophenyl phenyl ether	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
4-chloro-3-methylphenol	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
4-chloroaniline	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
4-chlorophenyl phenyl ether	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
4-nitroaniline	NA	NA	0.0839	*U*	0.0875	*U*	0.112	*U*	0.0848	*U*	0.083	*U*	0.091	*U*
4-nitrophenol	NA	NA	0.0839	*U*	0.0875	*U*	0.112	*U*	0.0848	*U*	0.083	*U*	0.091	*U*
acenaphthene	20	100	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
acenaphthylene	100	100	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
acetophenone	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
aniline	0.04	8.1	0.168	*U*	0.175	*U*	0.223	*U*	0.17	*U*	0.166	*U*	0.182	*U*
anthracene	100	100	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
atrazine	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
benzaldehyde	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
benzidine	NA	NA	0.168	*U*	0.175	*U*	0.223	*U*	0.17	*U*	0.166	*U*	0.182	*U*
benzo(a)anthracene	1	1.4	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0841	*JD*	0.0416	*U*	0.0456	*U*
benzo(a)pyrene	1	1	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0787	*JD*	0.0416	*U*	0.0456	*U*
benzo(b)fluoranthene	1	1.4	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0644	*JD*	0.0416	*U*	0.0456	*U*
benzo(g,h,i)perylene	0.64	4.9	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0522	*JD*	0.0416	*U*	0.0456	*U*
benzo(k)fluoranthene	0.8	4.9	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0827	*JD*	0.0416	*U*	0.0456	*U*
benzoic acid	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
benzyl alcohol	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
benzyl butyl phthalate	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
bis(2-chloroethoxy)methane	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
bis(2-chloroethyl)ether	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
bis(2-chloroisopropyl)ether	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
bis(2-ethylhexyl)phthalate	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
caprolactam	NA	NA	0.0839	*U*	0.0875	*U*	0.112	*U*	0.0848	*U*	0.083	*U*	0.091	*U*
carbazole	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
chrysene	1	4.9	0.042	*U*	0.0439	*U*	0.0559	*U*	0.111	*D*	0.0416	*U*	0.0456	*U*
dibenzo(a,h)anthracene	0.33	0.33	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
dibenzofuran	2.1	18	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
diethyl phthalate	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
dimethyl phthalate	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
di-n-butyl phthalate	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
di-n-octyl phthalate	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
fluoranthene	85	100	0.042	*U*	0.0439	*U*	0.0559	*U*	0.157	*D*	0.0416	*U*	0.0456	*U*
fluorene	30	100	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
hexachlorobenzene	0.33	0.33	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
hexachlorobutadiene	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
hexachlorocyclopentadiene	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
hexachloroethane	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
indeno(1,2,3-cd)pyrene	0.5	1.4	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0454	*JD*	0.0416	*U*	0.0456	*U*
isophorone	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
naphthalene	12	100	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
nitrobenzene	0.08	1.8	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
n-nitrosodimethylamine	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
n-nitroso-di-n-propylamine	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
n-nitrosodiphenylamine	NA	NA	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
pentachlorophenol	0.8	1.3	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
phenanthrene	1.1	4.9	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0651	*JD*	0.0416	*U*	0.0456	*U*
phenol	0.33	100	0.042	*U*	0.0439	*U*	0.0559	*U*	0.0425	*U*	0.0416	*U*	0.0456	*U*
pyrene	64	100	0.042	*U*	0.0439	*U*	0.0559	*U*	0.138	*D*	0.0416	*U*	0.0456	*U*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 3: SVOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-23 0-5		SB-23 13-15		SB-23 22.5-25		SB-24 0-5		SB-24 11-13		SB-24 22.5-25	
U= Not Detected ≥ value		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
All data in mg/Kg (ppm)		Dilution	2		2		2		2		2		2	
SVOCs, 8270	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1'-biphenyl	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
1,2,4,5-tetrachlorobenzene	NA	NA	0.0833	U	0.0838	U	0.0908	U	0.0876	U	0.0835	U	0.103	U
1,2,4-trichlorobenzene	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
1,2-dichlorobenzene	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
1,2-diphenylhydrazine (azobenzene)	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
1,3-dichlorobenzene	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
1,4-dichlorobenzene	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
2,3,4,6-tetrachlorophenol	NA	NA	0.0833	U	0.0838	U	0.0908	U	0.0876	U	0.0835	U	0.103	U
2,4,5-trichlorophenol	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
2,4,6-trichlorophenol	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
2,4-dichlorophenol	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
2,4-dimethylphenol	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
2,4-dinitrophenol	NA	NA	0.0833	U	0.0838	U	0.0908	U	0.0876	U	0.0835	U	0.103	U
2,4-dinitrotoluene	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
2,6-dinitrotoluene	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
2-chloronaphthalene	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
2-chlorophenol	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
2-methylnaphthalene	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
2-methylphenol	0.33	100	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
2-nitroaniline	NA	NA	0.0833	U	0.0838	U	0.0908	U	0.0876	U	0.0835	U	0.103	U
2-nitrophenol	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
3- & 4-methylphenols	0.33	100	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
3,3'-dichlorobenzidine	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
3-nitroaniline	NA	NA	0.0833	U	0.0838	U	0.0908	U	0.0876	U	0.0835	U	0.103	U
4,6-dinitro-2-methylphenol	NA	NA	0.0833	U	0.0838	U	0.0908	U	0.0876	U	0.0835	U	0.103	U
4-bromophenyl phenyl ether	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
4-chloro-3-methylphenol	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
4-chloroaniline	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
4-chlorophenyl phenyl ether	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
4-nitroaniline	NA	NA	0.0833	U	0.0838	U	0.0908	U	0.0876	U	0.0835	U	0.103	U
4-nitrophenol	NA	NA	0.0833	U	0.0838	U	0.0908	U	0.0876	U	0.0835	U	0.103	U
acenaphthene	20	100	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
acenaphthylene	100	100	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
acetophenone	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
aniline	0.04	8.1	0.167	U	0.168	U	0.182	U	0.175	U	0.167	U	0.206	U
anthracene	100	100	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
atrazine	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
benzaldehyde	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
benzidine	NA	NA	0.167	U	0.168	U	0.182	U	0.175	U	0.167	U	0.206	U
benzo(a)anthracene	1	1.4	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
benzo(a)pyrene	1	1	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
benzo(b)fluoranthene	1	1.4	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
benzo(g,h,i)perylene	0.64	4.9	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
benzo(k)fluoranthene	0.8	4.9	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
benzoic acid	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
benzyl alcohol	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
benzyl butyl phthalate	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
bis(2-chloroethoxy)methane	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
bis(2-chloroethyl)ether	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
bis(2-chloroisopropyl)ether	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
bis(2-ethylhexyl)phthalate	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
caprolactam	NA	NA	0.0833	U	0.0838	U	0.0908	U	0.0876	U	0.0835	U	0.103	U
carbazole	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
chrysene	1	4.9	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
dibenzo(a,h)anthracene	0.33	0.33	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
dibenzofuran	2.1	18	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
diethyl phthalate	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
dimethyl phthalate	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
di-n-butyl phthalate	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
di-n-octyl phthalate	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
fluoranthene	85	100	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
fluorene	30	100	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
hexachlorobenzene	0.33	0.33	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
hexachlorobutadiene	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
hexachlorocyclopentadiene	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
hexachloroethane	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
indeno(1,2,3-cd)pyrene	0.5	1.4	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
isophorone	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
naphthalene	12	100	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
nitrobenzene	0.08	1.8	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
n-nitrosodimethylamine	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
n-nitroso-di-n-propylamine	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
n-nitrosodiphenylamine	NA	NA	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
pentachlorophenol	0.8	1.3	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
phenanthrene	1.1	4.9	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
phenol	0.33	100	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U
pyrene	64	100	0.0417	U	0.042	U	0.0455	U	0.0439	U	0.0418	U	0.0515	U

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 3: SVOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-25 0-5		SB-25 11-13		DUP-20250325		SB-25 22.5-25		SB-26 0-5		SB-26 11-13	
U= Not Detected ≥ value		Date	2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-21		2025-03-21	
All data in mg/Kg (ppm)		Dilution	2		2		2		2		2		2	
SVOCs, 8270	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1'-biphenyl	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
1,2,4,5-tetrachlorobenzene	NA	NA	0.0841	*U*	0.0857	*U*	0.0851	*U*	0.0942	*U*	0.0859	*U*	0.0845	*U*
1,2,4-trichlorobenzene	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
1,2-dichlorobenzene	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
1,2-diphenylhydrazine (azobenzene)	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
1,3-dichlorobenzene	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
1,4-dichlorobenzene	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
2,3,4,6-tetrachlorophenol	NA	NA	0.0841	*U*	0.0857	*U*	0.0851	*U*	0.0942	*U*	0.0859	*U*	0.0845	*U*
2,4,5-trichlorophenol	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
2,4,6-trichlorophenol	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
2,4-dichlorophenol	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
2,4-dimethylphenol	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
2,4-dinitrophenol	NA	NA	0.0841	*U*	0.0857	*U*	0.0851	*U*	0.0942	*U*	0.0859	*U*	0.0845	*U*
2,4-dinitrotoluene	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
2,6-dinitrotoluene	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
2-chloronaphthalene	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
2-chlorophenol	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
2-methylnaphthalene	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
2-methylphenol	0.33	100	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
2-nitroaniline	NA	NA	0.0841	*U*	0.0857	*U*	0.0851	*U*	0.0942	*U*	0.0859	*U*	0.0845	*U*
2-nitrophenol	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
3- & 4-methylphenols	0.33	100	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
3,3'-dichlorobenzidine	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
3-nitroaniline	NA	NA	0.0841	*U*	0.0857	*U*	0.0851	*U*	0.0942	*U*	0.0859	*U*	0.0845	*U*
4,6-dinitro-2-methylphenol	NA	NA	0.0841	*U*	0.0857	*U*	0.0851	*U*	0.0942	*U*	0.0859	*U*	0.0845	*U*
4-bromophenyl phenyl ether	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
4-chloro-3-methylphenol	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
4-chloroaniline	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
4-chlorophenyl phenyl ether	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
4-nitroaniline	NA	NA	0.0841	*U*	0.0857	*U*	0.0851	*U*	0.0942	*U*	0.0859	*U*	0.0845	*U*
4-nitrophenol	NA	NA	0.0841	*U*	0.0857	*U*	0.0851	*U*	0.0942	*U*	0.0859	*U*	0.0845	*U*
acenaphthene	20	100	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
acenaphthylene	100	100	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
acetophenone	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
aniline	0.04	8.1	0.168	*U*	0.172	*U*	0.17	*U*	0.189	*U*	0.172	*U*	0.169	*U*
anthracene	100	100	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
atrazine	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
benzaldehyde	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
benzidine	NA	NA	0.168	*U*	0.172	*U*	0.17	*U*	0.189	*U*	0.172	*U*	0.169	*U*
benzo(a)anthracene	1	1.4	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
benzo(a)pyrene	1	1	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
benzo(b)fluoranthene	1	1.4	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
benzo(g,h,i)perylene	0.64	4.9	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
benzo(k)fluoranthene	0.8	4.9	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
benzoic acid	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
benzyl alcohol	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
benzyl butyl phthalate	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
bis(2-chloroethoxy)methane	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
bis(2-chloroethyl)ether	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
bis(2-chloroisopropyl)ether	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
bis(2-ethylhexyl)phthalate	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
caprolactam	NA	NA	0.0841	*U*	0.0857	*U*	0.0851	*U*	0.0942	*U*	0.0859	*U*	0.0845	*U*
carbazole	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
chrysene	1	4.9	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
dibenzo(a,h)anthracene	0.33	0.33	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
dibenzofuran	2.1	18	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
diethyl phthalate	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
dimethyl phthalate	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
di-n-butyl phthalate	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
di-n-octyl phthalate	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
fluoranthene	85	100	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
fluorene	30	100	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
hexachlorobenzene	0.33	0.33	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
hexachlorobutadiene	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
hexachlorocyclopentadiene	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
hexachloroethane	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
indeno(1,2,3-cd)pyrene	0.5	1.4	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
isophorone	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
naphthalene	12	100	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
nitrobenzene	0.08	1.8	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
n-nitrosodimethylamine	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
n-nitroso-di-n-propylamine	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
n-nitrosodiphenylamine	NA	NA	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
pentachlorophenol	0.8	1.3	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
phenanthrene	1.1	4.9	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
phenol	0.33	100	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*
pyrene	64	100	0.0421	*U*	0.0429	*U*	0.0427	*U*	0.0472	*U*	0.043	*U*	0.0424	*U*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 3: SVOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-26 22.5-25		SB-27 0-5		SB-27 11-13		SB-27 22.5-25		SB-28 0-5		SB-28 11-13	
U= Not Detected ≥ value		Date	2025-03-21		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
All data in mg/Kg (ppm)		Dilution	2		2		2		2		2		2	
SVOCs, 8270	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1'-biphenyl	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
1,2,4,5-tetrachlorobenzene	NA	NA	0.106	*U*	0.0929	*U*	0.0841	*U*	0.0853	*U*	0.0884	*U*	0.0825	*U*
1,2,4-trichlorobenzene	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
1,2-dichlorobenzene	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
1,2-diphenylhydrazine (azobenzene)	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
1,3-dichlorobenzene	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
1,4-dichlorobenzene	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
2,3,4,6-tetrachlorophenol	NA	NA	0.106	*U*	0.0929	*U*	0.0841	*U*	0.0853	*U*	0.0884	*U*	0.0825	*U*
2,4,5-trichlorophenol	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
2,4,6-trichlorophenol	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
2,4-dichlorophenol	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
2,4-dimethylphenol	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
2,4-dinitrophenol	NA	NA	0.106	*U*	0.0929	*U*	0.0841	*U*	0.0853	*U*	0.0884	*U*	0.0825	*U*
2,4-dinitrotoluene	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
2,6-dinitrotoluene	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
2-chloronaphthalene	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
2-chlorophenol	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
2-methylnaphthalene	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
2-methylphenol	0.33	100	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
2-nitroaniline	NA	NA	0.106	*U*	0.0929	*U*	0.0841	*U*	0.0853	*U*	0.0884	*U*	0.0825	*U*
2-nitrophenol	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
3- & 4-methylphenols	0.33	100	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
3,3'-dichlorobenzidine	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
3-nitroaniline	NA	NA	0.106	*U*	0.0929	*U*	0.0841	*U*	0.0853	*U*	0.0884	*U*	0.0825	*U*
4,6-dinitro-2-methylphenol	NA	NA	0.106	*U*	0.0929	*U*	0.0841	*U*	0.0853	*U*	0.0884	*U*	0.0825	*U*
4-bromophenyl phenyl ether	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
4-chloro-3-methylphenol	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
4-chloroaniline	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
4-chlorophenyl phenyl ether	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
4-nitroaniline	NA	NA	0.106	*U*	0.0929	*U*	0.0841	*U*	0.0853	*U*	0.0884	*U*	0.0825	*U*
4-nitrophenol	NA	NA	0.106	*U*	0.0929	*U*	0.0841	*U*	0.0853	*U*	0.0884	*U*	0.0825	*U*
acenaphthene	20	100	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
acenaphthylene	100	100	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
acetophenone	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
aniline	0.04	8.1	0.212	*U*	0.186	*U*	0.168	*U*	0.171	*U*	0.177	*U*	0.165	*U*
anthracene	100	100	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
atrazine	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
benzaldehyde	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
benzidine	NA	NA	0.212	*U*	0.186	*U*	0.168	*U*	0.171	*U*	0.177	*U*	0.165	*U*
benzo(a)anthracene	1	1.4	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
benzo(a)pyrene	1	1	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
benzo(b)fluoranthene	1	1.4	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
benzo(g,h,i)perylene	0.64	4.9	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
benzo(k)fluoranthene	0.8	4.9	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
benzoic acid	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
benzyl alcohol	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
benzyl butyl phthalate	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
bis(2-chloroethoxy)methane	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
bis(2-chloroethyl)ether	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
bis(2-chloroisopropyl)ether	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
bis(2-ethylhexyl)phthalate	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
caprolactam	NA	NA	0.106	*U*	0.0929	*U*	0.0841	*U*	0.0853	*U*	0.0884	*U*	0.0825	*U*
carbazole	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
chrysene	1	4.9	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
dibenzo(a,h)anthracene	0.33	0.33	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
dibenzofuran	2.1	18	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
diethyl phthalate	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
dimethyl phthalate	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
di-n-butyl phthalate	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
di-n-octyl phthalate	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
fluoranthene	85	100	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
fluorene	30	100	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
hexachlorobenzene	0.33	0.33	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
hexachlorobutadiene	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
hexachlorocyclopentadiene	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
hexachloroethane	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
indeno(1,2,3-cd)pyrene	0.5	1.4	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
isophorone	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
naphthalene	12	100	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
nitrobenzene	0.08	1.8	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
n-nitrosodimethylamine	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
n-nitroso-di-n-propylamine	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
n-nitrosodiphenylamine	NA	NA	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
pentachlorophenol	0.8	1.3	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
phenanthrene	1.1	4.9	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
phenol	0.33	100	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*
pyrene	64	100	0.053	*U*	0.0466	*U*	0.0421	*U*	0.0428	*U*	0.0443	*U*	0.0414	*U*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 3: SVOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	DUP-20250320		SB-28 22.5-25		SB-29 0-5		SB-29 11-13		SB-29 22.5-25		SB-30 0-5	
U= Not Detected ≥ value		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-21	
All data in mg/Kg (ppm)		Dilution	2		2		2		2		2		2	
SVOCs, 8270	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1'-biphenyl	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
1,2,4,5-tetrachlorobenzene	NA	NA	0.0841	U	0.09	U	0.094	U	0.0838	U	0.0868	U	0.0874	U
1,2,4-trichlorobenzene	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
1,2-dichlorobenzene	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
1,2-diphenylhydrazine (azobenzene)	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
1,3-dichlorobenzene	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
1,4-dichlorobenzene	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
2,3,4,6-tetrachlorophenol	NA	NA	0.0841	U	0.09	U	0.094	U	0.0838	U	0.0868	U	0.0874	U
2,4,5-trichlorophenol	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
2,4,6-trichlorophenol	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
2,4-dichlorophenol	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
2,4-dimethylphenol	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
2,4-dinitrophenol	NA	NA	0.0841	U	0.09	U	0.094	U	0.0838	U	0.0868	U	0.0874	U
2,4-dinitrotoluene	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
2,6-dinitrotoluene	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
2-chloronaphthalene	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
2-chlorophenol	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
2-methylnaphthalene	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
2-methylphenol	0.33	100	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
2-nitroaniline	NA	NA	0.0841	U	0.09	U	0.094	U	0.0838	U	0.0868	U	0.0874	U
2-nitrophenol	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
3- & 4-methylphenols	0.33	100	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
3,3'-dichlorobenzidine	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
3-nitroaniline	NA	NA	0.0841	U	0.09	U	0.094	U	0.0838	U	0.0868	U	0.0874	U
4,6-dinitro-2-methylphenol	NA	NA	0.0841	U	0.09	U	0.094	U	0.0838	U	0.0868	U	0.0874	U
4-bromophenyl phenyl ether	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
4-chloro-3-methylphenol	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
4-chloroaniline	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
4-chlorophenyl phenyl ether	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
4-nitroaniline	NA	NA	0.0841	U	0.09	U	0.094	U	0.0838	U	0.0868	U	0.0874	U
4-nitrophenol	NA	NA	0.0841	U	0.09	U	0.094	U	0.0838	U	0.0868	U	0.0874	U
acenaphthene	20	100	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
acenaphthylene	100	100	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
acetophenone	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
aniline	0.04	8.1	0.168	U	0.18	U	0.188	U	0.168	U	0.174	U	0.175	U
anthracene	100	100	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
atrazine	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
benzaldehyde	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
benzidine	NA	NA	0.168	U	0.18	U	0.188	U	0.168	U	0.174	U	0.175	U
benzo(a)anthracene	1	1.4	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
benzo(a)pyrene	1	1	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
benzo(b)fluoranthene	1	1.4	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
benzo(g,h,i)perylene	0.64	4.9	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
benzo(k)fluoranthene	0.8	4.9	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
benzoic acid	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
benzyl alcohol	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
benzyl butyl phthalate	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
bis(2-chloroethoxy)methane	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
bis(2-chloroethyl)ether	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
bis(2-chloroisopropyl)ether	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
bis(2-ethylhexyl)phthalate	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
caprolactam	NA	NA	0.0841	U	0.09	U	0.094	U	0.0838	U	0.0868	U	0.0874	U
carbazole	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
chrysene	1	4.9	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
dibenzo(a,h)anthracene	0.33	0.33	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
dibenzofuran	2.1	18	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
diethyl phthalate	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
dimethyl phthalate	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
di-n-butyl phthalate	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
di-n-octyl phthalate	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
fluoranthene	85	100	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
fluorene	30	100	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
hexachlorobenzene	0.33	0.33	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
hexachlorobutadiene	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
hexachlorocyclopentadiene	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
hexachloroethane	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
indeno(1,2,3-cd)pyrene	0.5	1.4	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
isophorone	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
naphthalene	12	100	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
nitrobenzene	0.08	1.8	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
n-nitrosodimethylamine	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
n-nitroso-di-n-propylamine	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
n-nitrosodiphenylamine	NA	NA	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
pentachlorophenol	0.8	1.3	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
phenanthrene	1.1	4.9	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
phenol	0.33	100	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U
pyrene	64	100	0.0421	U	0.0451	U	0.0471	U	0.042	U	0.0435	U	0.0438	U

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 3: SVOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-30 11-13		SB-30 22.5-25		2SB-02 0-2.5		2SB-02 2.5-5		2SB-03 0-2.5		2SB-03 2.5-5	
U= Not Detected ≥ value		Date	2025-03-21		2025-03-21		2025-10-30		2025-10-30		2025-10-30		2025-10-30	
All data in mg/Kg (ppm)		Dilution	2		2		1		1		1		1	
SVOCs, 8270	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1'-biphenyl	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
1,2,4,5-tetrachlorobenzene	NA	NA	0.084	*U*	0.0912	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
1,2,4-trichlorobenzene	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
1,2-dichlorobenzene	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
1,2-diphenylhydrazine (azobenzene)	NA	NA	0.0421	*U*	0.0457	*U*	0.36	*U*	0.33	*U*	0.36	*U*	0.34	*U*
1,3-dichlorobenzene	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
1,4-dichlorobenzene	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
2,3,4,6-tetrachlorophenol	NA	NA	0.084	*U*	0.0912	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
2,4,5-trichlorophenol	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
2,4,6-trichlorophenol	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
2,4-dichlorophenol	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
2,4-dimethylphenol	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
2,4-dinitrophenol	NA	NA	0.084	*U*	0.0912	*U*	0.58	*U*	0.54	*U*	0.58	*U*	0.55	*U*
2,4-dinitrotoluene	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
2,6-dinitrotoluene	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
2-chloronaphthalene	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
2-chlorophenol	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
2-methylnaphthalene	NA	NA	0.0421	*U*	0.0457	*U*	0.21	*J*	0.23	*U*	0.17	*J*	0.24	*U*
2-methylphenol	0.33	100	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
2-nitroaniline	NA	NA	0.084	*U*	0.0912	*U*	0.58	*U*	0.54	*U*	0.58	*U*	0.55	*U*
2-nitrophenol	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
3- & 4-methylphenols	0.33	100	0.0421	*U*	0.0457	*U*	0.36	*U*	0.33	*U*	0.075	*J*	0.34	*U*
3,3'-dichlorobenzidine	NA	NA	0.0421	*U*	0.0457	*U*	0.43	*U*	0.4	*U*	0.43	*U*	0.41	*U*
3-nitroaniline	NA	NA	0.084	*U*	0.0912	*U*	0.58	*U*	0.54	*U*	0.58	*U*	0.55	*U*
4,6-dinitro-2-methylphenol	NA	NA	0.084	*U*	0.0912	*U*	1	*U*	0.97	*U*	1	*U*	1	*U*
4-bromophenyl phenyl ether	NA	NA	0.0421	*U*	0.0457	*U*	0.36	*U*	0.33	*U*	0.36	*U*	0.34	*U*
4-chloro-3-methylphenol	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
4-chloroaniline	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
4-chlorophenyl phenyl ether	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
4-nitroaniline	NA	NA	0.084	*U*	0.0912	*U*	0.58	*U*	0.54	*U*	0.58	*U*	0.55	*U*
4-nitrophenol	NA	NA	0.084	*U*	0.0912	*U*	1	*U*	0.97	*U*	1	*U*	1	*U*
acenaphthene	20	100	0.0421	*U*	0.0457	*U*	0.38		0.23	*U*	0.22	*J*	0.24	*U*
acenaphthylene	100	100	0.0421	*U*	0.0457	*U*	0.44		0.23	*U*	2		0.24	*U*
acetophenone	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
aniline	0.04	8.1	0.168	*U*	0.183	*U*	0.36	*U*	0.33	*U*	0.36	*U*	0.34	*U*
anthracene	100	100	0.0421	*U*	0.0457	*U*	1.6		0.23	*U*	1.8		0.24	*U*
atrazine	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
benzaldehyde	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
benzidine	NA	NA	0.168	*U*	0.183	*U*	0.36	*U*	0.33	*U*	0.36	*U*	0.34	*U*
benzo(a)anthracene	1	1.4	0.0421	*U*	0.0457	*U*	**3.6**		0.23	*U*	**12**		0.24	*U*
benzo(a)pyrene	1	1	0.0421	*U*	0.0457	*U*	**3.3**		0.23	*U*	**13**		0.24	*U*
benzo(b)fluoranthene	1	1.4	0.0421	*U*	0.0457	*U*	**4.6**		0.23	*U*	**16**		0.24	*U*
benzo(g,h,i)perylene	0.64	4.9	0.0421	*U*	0.0457	*U*	2		0.23	*U*	4.4		0.24	*U*
benzo(k)fluoranthene	0.8	4.9	0.0421	*U*	0.0457	*U*	1.6		0.23	*U*	3		0.24	*U*
benzoic acid	NA	NA	0.0421	*U*	0.0457	*U*	0.72	*U*	0.67	*U*	0.72	*U*	0.69	*U*
benzyl alcohol	NA	NA	0.0421	*U*	0.0457	*U*	0.36	*U*	0.33	*U*	0.36	*U*	0.34	*U*
benzyl butyl phthalate	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
bis(2-chloroethoxy)methane	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
bis(2-chloroethyl)ether	NA	NA	0.0421	*U*	0.0457	*U*	0.36	*U*	0.33	*U*	0.36	*U*	0.34	*U*
bis(2-chloroisopropyl)ether	NA	NA	0.0421	*U*	0.0457	*U*	NA		NA		NA		NA	
bis(2-ethylhexyl)phthalate	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
caprolactam	NA	NA	0.084	*U*	0.0912	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
carbazole	NA	NA	0.0421	*U*	0.0457	*U*	1.2		0.33	*U*	0.53		0.34	*U*
chrysene	1	4.9	0.0421	*U*	0.0457	*U*	3.6		0.23	*U*	**8.9**		0.24	*U*
dibenzo(a,h)anthracene	0.33	0.33	0.0421	*U*	0.0457	*U*	**0.45**		0.17	*U*	**1.4**		0.17	*U*
dibenzofuran	2.1	18	0.0421	*U*	0.0457	*U*	0.54		0.23	*U*	0.2	*J*	0.24	*U*
diethyl phthalate	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
dimethyl phthalate	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
di-n-butyl phthalate	NA	NA	0.0421	*U*	0.0457	*U*	0.72	*U*	0.67	*U*	0.72	*U*	0.69	*U*
di-n-octyl phthalate	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
fluoranthene	85	100	0.0421	*U*	0.0457	*U*	9.5		0.23	*U*	5.3		0.24	*U*
fluorene	30	100	0.0421	*U*	0.0457	*U*	0.7		0.23	*U*	0.42		0.24	*U*
hexachlorobenzene	0.33	0.33	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
hexachlorobutadiene	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
hexachlorocyclopentadiene	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
hexachloroethane	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
indeno(1,2,3-cd)pyrene	0.5	1.4	0.0421	*U*	0.0457	*U*	**2**		0.23	*U*	**5.3**		0.24	*U*
isophorone	NA	NA	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
naphthalene	12	100	0.0421	*U*	0.0457	*U*	0.68		0.23	*U*	0.38		0.24	*U*
nitrobenzene	0.08	1.8	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
n-nitrosodimethylamine	NA	NA	0.0421	*U*	0.0457	*U*	0.36	*U*	0.33	*U*	0.36	*U*	0.34	*U*
n-nitroso-di-n-propylamine	NA	NA	0.0421	*U*	0.0457	*U*	0.18	*U*	0.17	*U*	0.18	*U*	0.17	*U*
n-nitrosodiphenylamine	NA	NA	0.0421	*U*	0.0457	*U*	0.36	*U*	0.33	*U*	0.36	*U*	0.34	*U*
pentachlorophenol	0.8	1.3	0.0421	*U*	0.0457	*U*	0.36	*U*	0.33	*U*	0.36	*U*	0.34	*U*
phenanthrene	1.1	4.9	0.0421	*U*	0.0457	*U*	**9.2**		0.23	*U*	3.3		0.24	*U*
phenol	0.33	100	0.0421	*U*	0.0457	*U*	0.25	*U*	0.23	*U*	0.25	*U*	0.24	*U*
pyrene	64	100	0.0421	*U*	0.0457	*U*	7		0.23	*U*	5		0.24	*U*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 3: SVOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	2SB-08 0-1		2SB-08 4-5		2SB-09 0-1		DUPA-20251030		2SB-09 1-3		2SB-09 3-5	
U= Not Detected ≥ value		Date	2025-10-30		2025-10-30		2025-10-30		2025-10-30		2025-10-30		2025-10-30	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1	
SVOCs, 8270	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1'-biphenyl	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
1,2,4,5-tetrachlorobenzene	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
1,2,4-trichlorobenzene	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
1,2-dichlorobenzene	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
1,2-diphenylhydrazine (azobenzene)	NA	NA	0.36	U	0.38	U	0.35	U	0.35	U	0.34	U	0.36	U
1,3-dichlorobenzene	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
1,4-dichlorobenzene	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
2,3,4,6-tetrachlorophenol	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
2,4,5-trichlorophenol	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
2,4,6-trichlorophenol	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
2,4-dichlorophenol	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
2,4-dimethylphenol	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
2,4-dinitrophenol	NA	NA	0.58	U	0.6	U	0.56	U	0.55	U	0.54	U	0.58	U
2,4-dinitrotoluene	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
2,6-dinitrotoluene	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
2-chloronaphthalene	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
2-chlorophenol	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
2-methylnaphthalene	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
2-methylphenol	0.33	100	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
2-nitroaniline	NA	NA	0.58	U	0.6	U	0.56	U	0.55	U	0.54	U	0.58	U
2-nitrophenol	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
3- & 4-methylphenols	0.33	100	0.36	U	0.38	U	0.35	U	0.35	U	0.34	U	0.36	U
3,3'-dichlorobenzidine	NA	NA	0.44	U	0.45	U	0.42	U	0.42	U	0.41	U	0.43	U
3-nitroaniline	NA	NA	0.58	U	0.6	U	0.56	U	0.55	U	0.54	U	0.58	U
4,6-dinitro-2-methylphenol	NA	NA	1.1	U	1.1	U	1	U	1	U	0.98	U	1	U
4-bromophenyl phenyl ether	NA	NA	0.36	U	0.38	U	0.35	U	0.35	U	0.34	U	0.36	U
4-chloro-3-methylphenol	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
4-chloroaniline	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
4-chlorophenyl phenyl ether	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
4-nitroaniline	NA	NA	0.58	U	0.6	U	0.56	U	0.55	U	0.54	U	0.58	U
4-nitrophenol	NA	NA	1.1	U	1.1	U	1	U	1	U	0.98	U	1	U
acenaphthene	20	100	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
acenaphthylene	100	100	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
acetophenone	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
aniline	0.04	8.1	0.36	U	0.38	U	0.35	U	0.35	U	0.34	U	0.36	U
anthracene	100	100	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
atrazine	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
benzaldehyde	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
benzidine	NA	NA	0.36	U	0.38	U	0.35	U	0.35	U	0.34	U	0.36	U
benzo(a)anthracene	1	1.4	0.16	J	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
benzo(a)pyrene	1	1	0.16	J	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
benzo(b)fluoranthene	1	1.4	0.19	J	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
benzo(g,h,i)perylene	0.64	4.9	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
benzo(k)fluoranthene	0.8	4.9	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
benzoic acid	NA	NA	0.73	U	0.75	U	0.7	U	0.69	U	0.68	U	0.72	U
benzyl alcohol	NA	NA	0.36	U	0.38	U	0.35	U	0.35	U	0.34	U	0.36	U
benzyl butyl phthalate	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
bis(2-chloroethoxy)methane	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
bis(2-chloroethyl)ether	NA	NA	0.36	U	0.38	U	0.35	U	0.35	U	0.34	U	0.36	U
bis(2-chloroisopropyl)ether	NA	NA	NA		NA		NA		NA		NA		NA	
bis(2-ethylhexyl)phthalate	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
caprolactam	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
carbazole	NA	NA	0.36	U	0.38	U	0.35	U	0.35	U	0.34	U	0.36	U
chrysene	1	4.9	0.18	J	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
dibenzo(a,h)anthracene	0.33	0.33	0.18	U	0.19	U	0.17	U	0.17	U	0.17	U	0.18	U
dibenzofuran	2.1	18	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
diethyl phthalate	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
dimethyl phthalate	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
di-n-butyl phthalate	NA	NA	0.73	U	0.75	U	0.7	U	0.69	U	0.68	U	0.72	U
di-n-octyl phthalate	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
fluoranthene	85	100	0.35		0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
fluorene	30	100	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
hexachlorobenzene	0.33	0.33	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
hexachlorobutadiene	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
hexachlorocyclopentadiene	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
hexachloroethane	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
indeno(1,2,3-cd)pyrene	0.5	1.4	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
isophorone	NA	NA	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
naphthalene	12	100	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
nitrobenzene	0.08	1.8	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
n-nitrosodimethylamine	NA	NA	0.36	U	0.38	U	0.35	U	0.35	U	0.34	U	0.36	U
n-nitroso-di-n-propylamine	NA	NA	0.18	U	0.19	U	0.17	U	0.17	U	0.17	U	0.18	U
n-nitrosodiphenylamine	NA	NA	0.36	U	0.38	U	0.35	U	0.35	U	0.34	U	0.36	U
pentachlorophenol	0.8	1.3	0.36	U	0.38	U	0.35	U	0.35	U	0.34	U	0.36	U
phenanthrene	1.1	4.9	0.22	J	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
phenol	0.33	100	0.25	U	0.26	U	0.24	U	0.24	U	0.24	U	0.25	U
pyrene	64	100	0.33		0.26	U	0.24	U	0.24	U	0.24	U	0.25	U

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 3: SVOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	2SB-10 0-1		2SB-10 4-5		2SB-13 0-3.5		2SB-13 4-5		2SB-13 9-10		2SB-18 0-2.5	
U= Not Detected ≥ value		Date	2025-10-30		2025-10-30		2025-10-30		2025-10-30		2025-10-30		2025-10-30	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1	
SVOCs, 8270	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1'-biphenyl	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
1,2,4,5-tetrachlorobenzene	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
1,2,4-trichlorobenzene	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
1,2-dichlorobenzene	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
1,2-diphenylhydrazine (azobenzene)	NA	NA	0.36	U	0.37	U	0.35	U	0.34	U	0.34	U	0.37	U
1,3-dichlorobenzene	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
1,4-dichlorobenzene	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
2,3,4,6-tetrachlorophenol	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
2,4,5-trichlorophenol	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
2,4,6-trichlorophenol	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
2,4-dichlorophenol	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
2,4-dimethylphenol	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
2,4-dinitrophenol	NA	NA	0.57	U	0.59	U	0.57	U	0.54	U	0.55	U	0.59	U
2,4-dinitrotoluene	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
2,6-dinitrotoluene	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
2-chloronaphthalene	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
2-chlorophenol	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
2-methylnaphthalene	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
2-methylphenol	0.33	100	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
2-nitroaniline	NA	NA	0.57	U	0.59	U	0.57	U	0.54	U	0.55	U	0.59	U
2-nitrophenol	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
3- & 4-methylphenols	0.33	100	0.36	U	0.37	U	0.35	U	0.34	U	0.34	U	0.37	U
3,3'-dichlorobenzidine	NA	NA	0.43	U	0.44	U	0.43	U	0.4	U	0.41	U	0.44	U
3-nitroaniline	NA	NA	0.57	U	0.59	U	0.57	U	0.54	U	0.55	U	0.59	U
4,6-dinitro-2-methylphenol	NA	NA	1	U	1.1	U	1	U	0.97	U	0.99	U	1.1	U
4-bromophenyl phenyl ether	NA	NA	0.36	U	0.37	U	0.35	U	0.34	U	0.34	U	0.37	U
4-chloro-3-methylphenol	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
4-chloroaniline	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
4-chlorophenyl phenyl ether	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
4-nitroaniline	NA	NA	0.57	U	0.59	U	0.57	U	0.54	U	0.55	U	0.59	U
4-nitrophenol	NA	NA	1	U	1.1	U	1	U	0.97	U	0.99	U	1.1	U
acenaphthene	20	100	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
acenaphthylene	100	100	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
acetophenone	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
aniline	0.04	8.1	0.36	U	0.37	U	0.35	U	0.34	U	0.34	U	0.37	U
anthracene	100	100	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
atrazine	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
benzaldehyde	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
benzidine	NA	NA	0.36	U	0.37	U	0.35	U	0.34	U	0.34	U	0.37	U
benzo(a)anthracene	1	1.4	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
benzo(a)pyrene	1	1	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
benzo(b)fluoranthene	1	1.4	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
benzo(g,h,i)perylene	0.64	4.9	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
benzo(k)fluoranthene	0.8	4.9	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
benzoic acid	NA	NA	0.71	U	0.73	U	0.71	U	0.67	U	0.68	U	0.38	J
benzyl alcohol	NA	NA	0.36	U	0.37	U	0.35	U	0.34	U	0.34	U	0.37	U
benzyl butyl phthalate	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
bis(2-chloroethoxy)methane	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
bis(2-chloroethyl)ether	NA	NA	0.36	U	0.37	U	0.35	U	0.34	U	0.34	U	0.37	U
bis(2-chloroisopropyl)ether	NA	NA	NA		NA		NA		NA		NA		NA	
bis(2-ethylhexyl)phthalate	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
caprolactam	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
carbazole	NA	NA	0.36	U	0.37	U	0.35	U	0.34	U	0.34	U	0.37	U
chrysene	1	4.9	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
dibenzo(a,h)anthracene	0.33	0.33	0.18	U	0.18	U	0.18	U	0.17	U	0.17	U	0.18	U
dibenzofuran	2.1	18	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
diethyl phthalate	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
dimethyl phthalate	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
di-n-butyl phthalate	NA	NA	0.71	U	0.73	U	0.71	U	0.67	U	0.68	U	0.73	U
di-n-octyl phthalate	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
fluoranthene	85	100	0.12	J	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
fluorene	30	100	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
hexachlorobenzene	0.33	0.33	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
hexachlorobutadiene	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
hexachlorocyclopentadiene	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
hexachloroethane	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
indeno(1,2,3-cd)pyrene	0.5	1.4	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
isophorone	NA	NA	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
naphthalene	12	100	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
nitrobenzene	0.08	1.8	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
n-nitrosodimethylamine	NA	NA	0.36	U	0.37	U	0.35	U	0.34	U	0.34	U	0.37	U
n-nitroso-di-n-propylamine	NA	NA	0.18	U	0.18	U	0.18	U	0.17	U	0.17	U	0.18	U
n-nitrosodiphenylamine	NA	NA	0.36	U	0.37	U	0.35	U	0.34	U	0.34	U	0.37	U
pentachlorophenol	0.8	1.3	0.36	U	0.37	U	0.35	U	0.34	U	0.34	U	0.37	U
phenanthrene	1.1	4.9	0.1	J	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
phenol	0.33	100	0.25	U	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U
pyrene	64	100	0.13	J	0.26	U	0.25	U	0.24	U	0.24	U	0.26	U

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 3: SVOCs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	2SB-18 2.5-5		2SB-23 0-2.5		2SB-23 2.5-5		2SB-27 0-2.5		2SB-27 2.5-5	
U= Not Detected ≥ value		Date	2025-10-30		2025-10-30		2025-10-30		2025-10-30		2025-10-30	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1	
SVOCs, 8270	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1'-biphenyl	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
1,2,4,5-tetrachlorobenzene	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
1,2,4-trichlorobenzene	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
1,2-dichlorobenzene	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
1,2-diphenylhydrazine (azobenzene)	NA	NA	0.34	U	0.35	U	0.39	U	0.36	U	0.35	U
1,3-dichlorobenzene	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
1,4-dichlorobenzene	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
2,3,4,6-tetrachlorophenol	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
2,4,5-trichlorophenol	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
2,4,6-trichlorophenol	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
2,4-dichlorophenol	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
2,4-dimethylphenol	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
2,4-dinitrophenol	NA	NA	0.55	U	0.57	U	0.62	U	0.58	U	0.57	U
2,4-dinitrotoluene	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
2,6-dinitrotoluene	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
2-chloronaphthalene	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
2-chlorophenol	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
2-methylnaphthalene	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
2-methylphenol	0.33	100	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
2-nitroaniline	NA	NA	0.55	U	0.57	U	0.62	U	0.58	U	0.57	U
2-nitrophenol	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
3- & 4-methylphenols	0.33	100	0.34	U	0.35	U	0.39	U	0.36	U	0.35	U
3,3'-dichlorobenzidine	NA	NA	0.41	U	0.42	U	0.46	U	0.44	U	0.43	U
3-nitroaniline	NA	NA	0.55	U	0.57	U	0.62	U	0.58	U	0.57	U
4,6-dinitro-2-methylphenol	NA	NA	1	U	1	U	1.1	U	1.1	U	1	U
4-bromophenyl phenyl ether	NA	NA	0.34	U	0.35	U	0.39	U	0.36	U	0.35	U
4-chloro-3-methylphenol	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
4-chloroaniline	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
4-chlorophenyl phenyl ether	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
4-nitroaniline	NA	NA	0.55	U	0.57	U	0.62	U	0.58	U	0.57	U
4-nitrophenol	NA	NA	1	U	1	U	1.1	U	1.1	U	1	U
acenaphthene	20	100	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
acenaphthylene	100	100	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
acetophenone	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
aniline	0.04	8.1	0.34	U	0.35	U	0.39	U	0.36	U	0.35	U
anthracene	100	100	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
atrazine	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
benzaldehyde	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
benzidine	NA	NA	0.34	U	0.35	U	0.39	U	0.36	U	0.35	U
benzo(a)anthracene	1	1.4	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
benzo(a)pyrene	1	1	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
benzo(b)fluoranthene	1	1.4	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
benzo(g,h,i)perylene	0.64	4.9	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
benzo(k)fluoranthene	0.8	4.9	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
benzoic acid	NA	NA	0.69	U	0.71	U	0.77	U	0.73	U	0.71	U
benzyl alcohol	NA	NA	0.34	U	0.35	U	0.39	U	0.36	U	0.35	U
benzyl butyl phthalate	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
bis(2-chloroethoxy)methane	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
bis(2-chloroethyl)ether	NA	NA	0.34	U	0.35	U	0.39	U	0.36	U	0.35	U
bis(2-chloroisopropyl)ether	NA	NA	NA		NA		NA		NA		NA	
bis(2-ethylhexyl)phthalate	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
caprolactam	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
carbazole	NA	NA	0.34	U	0.35	U	0.39	U	0.36	U	0.35	U
chrysene	1	4.9	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
dibenzo(a,h)anthracene	0.33	0.33	0.17	U	0.18	U	0.19	U	0.18	U	0.18	U
dibenzofuran	2.1	18	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
diethyl phthalate	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
dimethyl phthalate	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
di-n-butyl phthalate	NA	NA	0.69	U	0.71	U	0.77	U	0.73	U	0.71	U
di-n-octyl phthalate	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
fluoranthene	85	100	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
fluorene	30	100	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
hexachlorobenzene	0.33	0.33	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
hexachlorobutadiene	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
hexachlorocyclopentadiene	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
hexachloroethane	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
indeno(1,2,3-cd)pyrene	0.5	1.4	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
isophorone	NA	NA	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
naphthalene	12	100	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
nitrobenzene	0.08	1.8	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
n-nitrosodimethylamine	NA	NA	0.34	U	0.35	U	0.39	U	0.36	U	0.35	U
n-nitroso-di-n-propylamine	NA	NA	0.17	U	0.18	U	0.19	U	0.18	U	0.18	U
n-nitrosodiphenylamine	NA	NA	0.34	U	0.35	U	0.39	U	0.36	U	0.35	U
pentachlorophenol	0.8	1.3	0.34	U	0.35	U	0.39	U	0.36	U	0.35	U
phenanthrene	1.1	4.9	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
phenol	0.33	100	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U
pyrene	64	100	0.24	U	0.25	U	0.27	U	0.26	U	0.25	U

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 4: SVOC TICs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

Sample	SB-01 22.5-25		SB-02 0-5		SB-03 0-5		SB-08 0-5		SB-16 22.5-25	
Date	2025-03-21		2025-03-25		2025-03-25		2025-03-19		2025-03-21	
All data in mg/Kg (ppm) Dilution	2		2		2		2		2	
SVOC TICs	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
11H-Benzo[a]fluorene isomer...					4.25	JD				
11H-Benzo[b]fluorene isomer... (01)			1.42	JD						
11H-Benzo[b]fluorene isomer... (02)			0.929	JD						
1H-Indene isomer RT11.31					2.35	JD				
1-Nonadecene										
1-Octadecene										
1,2:7,8-Dibenzophenanthrene										
2,4,5,5,8a-Pentamethyl isomer							1.89	JD		
[2-(Biphenyl-4-yl)vinyl]-methyl su										
2-Pentanone, 4-hydroxy-4-methyl-										
2-Phenylnaphthalene										
2-Phenylnaphthalene isomer ...					1.53	JD				
4H-Cyclopenta[def]phenanthr...			1.81	JDN						
5-Eicosene, (E)-										
5-Octadecene, (E)-										
7H-Benz[de]anthracen-7-one ... (01)					2.02	JDN				
7H-Benz[de]anthracen-7-one ... (02)					2	JDN				
9H-Fluoren-9-one										
9,10-Anthracenedione										
9,10-Anthracenedione Isomer...					2.39	JD				
Anthracene isomer RT11.13					3.63	JD				
Anthracene isomer RT11.28					4.73	JD				
Benzo[a]pyrene										
Benzo[b]naphtho[2,1-d]thiop...					1.48	JDN				
Benzo[b]naphtho[2,3-d]thiop...			0.777	JDN						
Benzo[c]phenanthrene isomer...					2.37	JD				
Benzo[e]pyrene										
Benzo[e]pyrene isomer RT18.18			2.13	JD	2.16	JD				
Benzo[ghi]perylene										
Benzo[k]fluoranthene										
Benzo[k]fluoranthene isomer...			0.703	JD						
Benzoic acid, 4-ethoxy-, ethyl est										
Cyclopenta(def)phenanthreno...					1.37	JDN				
Decane isomer RT5.705									0.989	JD
Dibenzothiophene isomer RT1...			0.928	JD						
Fluoranthene isomer RT13.21					2.14	JD				
Heptane, 5-ethyl-2,2,3-trim...	0.799	JDN								
Indeno[1,2,3-cd]pyrene										
Naphthalene, 2-phenyl-										
Pentaphene										
Perylene										
Phenanthrene isomer RT11.09					3.46	JD				
Phenanthrene isomer RT12.05					2.09	JD				
Phenanthrene isomer RT12.10					1.28	JD				
Phenanthrene, 1-methyl-isom...			0.743	JD						
Phenanthrene, 2,5-dimethyl-										
Phenanthrene, 2-methyl-										
Pyrene isomer RT13.65					2.5	JD				
Pyrene isomer RT13.85					1.68	JD				
Pyrene isomer RT13.90					1.7	JD				
unknown hydrocarbon										
TOTAL TICS	**0.80**		**9.44**		**45.1**		**1.89**		**0.99**	

Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 4: SVOC TICs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

Sample	2SB-02 0-2.5		2SB-02 2.5-5		2SB-03 0-2.5		2SB-03 2.5-5	
Date	2025-10-30		2025-10-30		2025-10-30		2025-10-30	
All data in mg/Kg (ppm) Dilution	1		1		1		1	
SVOC TICs	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
11H-Benzo[a]fluorene isomer...								
11H-Benzo[b]fluorene isomer... (01)								
11H-Benzo[b]fluorene isomer... (02)								
1H-Indene isomer RT11.31								
1-Nonadecene							0.9	JN
1-Octadecene	1	JN	0.83	JN				
1,2:7,8-Dibenzophenanthrene					1.7	JN		
2,4,5,5,8a-Pentamethyl isomer								
[2-(Biphenyl-4-yl)vinyl]-methyl su					1.5	JN		
2-Pentanone, 4-hydroxy-4-methyl-	1.7	JNA	1.5	JNA	8.1	JNA	1.1	JNA
2-Phenylnaphthalene					0.95	JN		
2-Phenylnaphthalene isomer ...								
4H-Cyclopenta[def]phenanthr...								
5-Eicosene, (E)-			1	JN				
5-Octadecene, (E)-							0.78	JN
7H-Benz[de]anthracen-7-one ... (01)								
7H-Benz[de]anthracen-7-one ... (02)								
9H-Fluoren-9-one	0.49	JN						
9,10-Anthracenedione	0.83	JN						
9,10-Anthracenedione Isomer...								
Anthracene isomer RT11.13								
Anthracene isomer RT11.28								
Benzo[a]pyrene	0.97	JN						
Benzo[b]naphtho[2,1-d]thiop...								
Benzo[b]naphtho[2,3-d]thiop...								
Benzo[c]phenanthrene isomer...								
Benzo[e]pyrene	0.75	JN			6.4	JN		
Benzo[e]pyrene isomer RT18.18	2.6	JN						
Benzo[ghi]perylene	0.51	JN			2	JN		
Benzo[k]fluoranthene					2.8	JN		
Benzo[k]fluoranthene isomer...								
Benzoic acid, 4-ethoxy-, ethyl est	1.5	JNC	1.3	JNC	1.3	JNC	1.1	JNC
Cyclopenta(def)phenanthreno...	0.59	JN			1.6	JN		
Decane isomer RT5.705								
Dibenzothiophene isomer RT1...								
Fluoranthene isomer RT13.21								
Heptane, 5-ethyl-2,2,3-trim...								
Indeno[1,2,3-cd]pyrene					2.6	JN		
Naphthalene, 2-phenyl-	0.6	JN						
Pentaphene					1.4	JN		
Perylene					3.1	JN		
Phenanthrene isomer RT11.09								
Phenanthrene isomer RT12.05								
Phenanthrene isomer RT12.10								
Phenanthrene, 1-methyl-isom...	0.95	JN						
Phenanthrene, 2,5-dimethyl-					0.94	JN		
Phenanthrene, 2-methyl-	1	JN			1.1	JN		
Pyrene isomer RT13.65								
Pyrene isomer RT13.85								
Pyrene isomer RT13.90								
unknown hydrocarbon	1.3	J			1.7	J		
TOTAL TICS	**13.5**		**4.63**		**35.5**		**3.88**	

Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 5: TAL Metals in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-01 0-5		SB-01 11-13		DUPA-20250321		SB-01 22.5-25		SB-02 0-5		SB-02 11-13		SB-02 22.5-25	
U= Not Detected ≥ value		Date	2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-25		2025-03-25		2025-03-25	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1		1	
Metals, 6010 and 7473	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
aluminum	NA	NA	2,770		1,750		2,340		1,090		6,490		867		720	
antimony	NA	NA	2.15	*U*	2.15	*U*	2.13	*U*	2.26	*U*	2.17	*U*	2.14	*U*	2.3	*U*
arsenic	13	16	2.5		2.59		2.16		2.36		2.72		1.28	*U*	1.38	*U*
barium	410	410	3.68		8.98		9.94		3.25		12.8		2.13	*U*	2.48	
beryllium	4.4	43	0.078		0.128		0.084		0.097		0.153		0.045		0.051	
cadmium	2.5	2.5	0.258	*U*	0.259	*U*	0.256	*U*	0.271	*U*	0.26	*U*	0.256	*U*	0.276	*U*
calcium	NA	NA	140		3,380		964		57.3		385		56.5		43.3	
chromium	30	110	3.54		7.19		23.6		9.21		8.77		4.06		2.33	
chromium (hexavalent)	1	1	0.516	*U*	0.517	*U*	0.512	*U*	0.542	*U*	0.521	*U*	0.513	*U*	0.552	*U*
cobalt	NA	NA	0.714		2.76		1.41		1.11		2.59		0.581		0.368	
copper	50	280	1.72	*U*	2.86		4.14		1.81	*U*	3.42		1.71	*U*	1.84	*U*
iron	NA	NA	6,210		3,710		5,040		4,850		9,620		1,320		1,680	
lead	63	400	1.97		14.9		18.4		4.92		6.06		0.871		1.14	
magnesium	NA	NA	119		974		291		91.6		536		31.6		81.5	
manganese	1,600	2,000	17		46.2		46.5		7.15		55.2		33.5		9.28	
mercury	0.18	0.30	0.0333		0.031	*U*	0.0307	*U*	0.0325	*U*	0.0701		0.0308	*U*	0.0331	*U*
nickel	30	320	1.55		3.84		3.31		1.07		6.08		0.851	*U*	0.916	*U*
potassium	NA	NA	88.2		197		171		94.6		287		40.6		101	
selenium	3.9	110	2.15	*U*	2.15	*U*	2.13	*U*	2.26	*U*	2.17	*U*	2.14	*U*	2.3	*U*
silver	2	110	0.434	*U*	0.434	*U*	0.43	*U*	0.455	*U*	0.438	*U*	0.431	*U*	0.464	*U*
sodium	NA	NA	43	*U*	43.1	*U*	42.7	*U*	45.1	*U*	43.4	*U*	42.7	*U*	46	*U*
thallium	NA	NA	1.72	*U*	1.73	*U*	1.71	*U*	1.81	*U*	1.74	*U*	1.71	*U*	1.84	*U*
vanadium	NA	NA	5.51		6.14		5.9		7.15		11.3		2.02		3.1	
zinc	109	6,600	4.88		14		9.36		4.15		11.8		6.17		3.19	
cyanide (total)	2	13	0.516	*U*	0.517	*U*	0.512	*U*	0.542	*U*	0.521	*U*	0.513	*U*	0.552	*U*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 5: TAL Metals in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-03 0-5		SB-03 11-13		SB-03 22.5-25		SB-04 0-5		SB-04 11-13		SB-04 22.5-25		SB-05 0-5	
U= Not Detected ≥ value		Date	2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-19	
All data in mg/Kg (ppm)		Dilution	10		1		1		1		1		1		1	
Metals, 6010 and 7473	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
aluminum	NA	NA	5,900		492		2,190		3,030		578		1,250		7,870	
antimony	NA	NA	2.35	*U*	2.17	*U*	2.35	*U*	2.17	*U*	2.17	*U*	2.33	*U*	2.18	*U*
arsenic	13	16	**58.8**		1.6		2.83		1.78		1.68		1.74		4.1	
barium	410	410	362		2.17	*U*	7.17		7.25		2.16	*U*	4.95		25.2	
beryllium	4.4	43	0.273		0.09		0.132		0.091		0.05		0.069		0.254	
cadmium	2.5	2.5	0.348		0.261	*U*	0.282	*U*	0.26	*U*	0.26	*U*	0.28	*U*	0.262	*U*
calcium	NA	NA	10,100		25.4		145		196		50.4		140		1,980	
chromium	30	110	65.9		1.94		4.7		4.63		3.73		3.87		13.4	
chromium (hexavalent)	1	1	**2.2**		0.522	*U*	0.564	*U*	0.521	*U*	0.52	*U*	0.56	*U*	0.524	*U*
cobalt	NA	NA	23.4		0.452		1.02		3.59		0.71		0.757		1.87	
copper	50	280	239		1.74	*U*	1.88	*U*	3		1.73	*U*	1.87	*U*	4.81	
iron	NA	NA	300,000	*D*	1,600		3,560		2,700		2,320		2,700		12,800	
lead	63	400	**1,470**		1.29		2.26		2.61		1.12		1.94		56.1	
magnesium	NA	NA	1,220		43.3		343		268		45.3		136		651	
manganese	1,600	2,000	1,030		18.5		31.9		97.9		15.2		26.3		47.1	
mercury	0.18	0.30	**1.4**		0.0313	*U*	0.0339	*U*	0.0312	*U*	0.0312	*U*	0.0336	*U*	0.0405	
nickel	30	320	65.2		0.866	*U*	1.99		3.28		0.962		1.2		5.87	
potassium	NA	NA	317		49.4		303		207		60.5		169		329	
selenium	3.9	110	2.35	*U*	2.17	*U*	2.35	*U*	2.17	*U*	2.17	*U*	2.33	*U*	2.18	*U*
silver	2	110	0.474	*U*	0.438	*U*	0.474	*U*	0.437	*U*	0.437	*U*	0.471	*U*	0.441	*U*
sodium	NA	NA	155		43.5	*U*	47	*U*	43.4	*U*	43.3	*U*	46.7	*U*	64.7	
thallium	NA	NA	1.89	*U*	1.74	*U*	1.88	*U*	1.74	*U*	1.74	*U*	1.87	*U*	1.75	*U*
vanadium	NA	NA	12.2		2.34		7.3		4.31		3.01		5.1		17	
zinc	109	6,600	625		2.43		9.23		5.13		3.63		9.83		31	
cyanide (total)	2	13	0.564	*U*	0.522	*U*	0.564	*U*	0.521	*U*	0.52	*U*	0.56	*U*	0.524	*U*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 5: TAL Metals in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-05 11-13		SB-05 22.5-25		SB-06 0-5		SB-06 11-13		SB-06 22.5-25		SB-07 0-5		SB-07 11-13	
U= Not Detected ≥ value		Date	2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1		1	
Metals, 6010 and 7473	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
aluminum	NA	NA	1,310		1,730		8,820		1,270		775		1,840		1,110	
antimony	NA	NA	2.14	*U*	2.36	*U*	2.29	*U*	2.11	*U*	2.19	*U*	2.14	*U*	2.13	*U*
arsenic	13	16	4.98		1.75		11.8		2.17		1.32	*U*	2.28		2.05	
barium	410	410	2.18		3.42		20.5		4.14		2.72		5.27		5.86	
beryllium	4.4	43	0.449		0.087		0.325		0.056		0.051		0.115		0.083	
cadmium	2.5	2.5	0.256	*U*	0.283	*U*	0.275	*U*	0.253	*U*	0.263	*U*	0.257	*U*	0.255	*U*
calcium	NA	NA	52.9		81.6		554		158		46.9		81.9		1,580	
chromium	30	110	12.6		4.83		27.4		8.58		2.83		5.19		8.63	
chromium (hexavalent)	1	1	0.513	*U*	0.566	*U*	0.55	*U*	0.506	*U*	0.527	*U*	0.513	*U*	0.51	*U*
cobalt	NA	NA	0.966		0.877		1.68		0.59		0.527		1.46		0.655	
copper	50	280	1.71	*U*	1.89	*U*	3.83		2.27		1.76	*U*	1.93		1.82	
iron	NA	NA	20,100		2,950		24,200		2,290		1,890		4,920		4,020	
lead	63	400	1.45		1.72		23.2		2.99		0.869		1.81		6.54	
magnesium	NA	NA	44.3		195		535		80.7		75.2		137		157	
manganese	1,600	2,000	23.7		11.2		44.1		16		17.5		40		22.4	
mercury	0.18	0.30	0.0308	*U*	0.0339	*U*	0.033	*U*	0.0304	*U*	0.0316	*U*	0.0308	*U*	0.0306	*U*
nickel	30	320	1.87		1.56		4.99		1.64		1.04		2.21		1.88	
potassium	NA	NA	56.7		223		306		78.9		85.1		120		82.7	*B*
selenium	3.9	110	2.14	*U*	2.36	*U*	2.29	*U*	2.11	*U*	2.19	*U*	2.14	*U*	2.13	*U*
silver	2	110	0.431	*U*	0.475	*U*	0.462	*U*	0.425	*U*	0.442	*U*	0.431	*U*	0.429	*U*
sodium	NA	NA	42.7	*U*	47.1	*U*	83.4		42.2	*U*	43.9	*U*	42.8	*U*	42.5	*U*
thallium	NA	NA	1.71	*U*	1.89	*U*	1.84	*U*	1.69	*U*	1.76	*U*	1.71	*U*	1.7	*U*
vanadium	NA	NA	12		5.74		66.5		2.56		2.98		6.86		3.39	
zinc	109	6,600	14.1		4.59		30.2		4.69		13.2		3.66		12.1	
cyanide (total)	2	13	0.513	*U*	0.566	*U*	0.55	*U*	0.506	*U*	0.527	*U*	0.513	*U*	0.51	*U*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 5: TAL Metals in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-07 22.5-25		SB-08 0-5		SB-08 11-13		SB-08 22.5-25		SB-09 0-5		SB-09 11-13		SB-09 22.5-25	
U= Not Detected ≥ value		Date	2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1		1	
Metals, 6010 and 7473	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
aluminum	NA	NA	1,030		4,840		1,010		1,070		10,300		764		724	
antimony	NA	NA	2.46	*U*	2.32	*U*	2.16	*U*	2.67	*U*	2.27	*U*	2.14	*U*	2.41	*U*
arsenic	13	16	1.48	*U*	3.17		5.54		1.6	*U*	4.34		1.91		1.45	*U*
barium	410	410	6.49		133		3.73		2.71		**475**		2.14	*U*	3.74	
beryllium	4.4	43	0.072		0.163		0.048		0.066		0.182		0.056		0.054	
cadmium	2.5	2.5	0.296	*U*	1.81		0.26	*U*	0.321	*U*	0.272		0.257	*U*	0.29	*U*
calcium	NA	NA	41		22,700		610		64.7		1,140		44.8		43.3	
chromium	30	110	3.41		9.77		6.15		3.11		13.2		2.96		2.88	
chromium (hexavalent)	1	1	0.592	*U*	0.557	*U*	0.519	*U*	0.642	*U*	0.544	*U*	0.513	*U*	0.579	*U*
cobalt	NA	NA	0.572		2.16		0.485		0.652		2.57		0.548		0.386	
copper	50	280	1.97	*U*	176		2.55		2.14	*U*	37.5		1.71	*U*	1.93	*U*
iron	NA	NA	2,440		7,010		2,370		2,000		10,800		2,150		1,800	
lead	63	400	1.19		**629**		6.78		1.13		**1,320**		1.16		1.76	
magnesium	NA	NA	97.9		1,430		92.6		128		611		35.2		66.8	
manganese	1,600	2,000	16.1		87.3		19		6.34		137		25.7		7.94	
mercury	0.18	0.30	0.0355	*U*	0.295		0.0312	*U*	0.0385	*U*	0.125		0.0308	*U*	0.0347	*U*
nickel	30	320	1.14		6.47		1.27		1.24		6.88		1.04		0.994	
potassium	NA	NA	140	*B*	385	*B*	83.1	*B*	171	*B*	338	*B*	50.5	*B*	107	*B*
selenium	3.9	110	2.46	*U*	2.32	*U*	2.16	*U*	2.67	*U*	2.27	*U*	2.14	*U*	2.41	*U*
silver	2	110	0.497	*U*	0.468	*U*	0.436	*U*	0.539	*U*	0.457	*U*	0.431	*U*	0.486	*U*
sodium	NA	NA	49.3	*U*	168		43.3	*U*	53.5	*U*	89.6		42.8	*U*	48.3	*U*
thallium	NA	NA	1.98	*U*	1.86	*U*	1.73	*U*	2.14	*U*	1.82	*U*	1.71	*U*	1.93	*U*
vanadium	NA	NA	3.8		10.5		2.46		3.8		14.1		2.31		3.19	
zinc	109	6,600	11.5		363		7.45		4.37		341		4.41		3.09	
cyanide (total)	2	13	0.592	*U*	0.557	*U*	0.519	*U*	0.642	*U*	0.544	*U*	0.513	*U*	0.579	*U*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 5: TAL Metals in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	DUP-20250319		SB-10 0-5		SB-10 11-13		SB-10 22.5-25		SB-11 0-5		SB-11 11-13		SB-11 22.5-25	
U= Not Detected ≥ value		Date	2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-25		2025-03-25		2025-03-25	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1		1	
Metals, 6010 and 7473	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
aluminum	NA	NA	1,120		5,240		1,240		1,160		8,140		925		1,350	
antimony	NA	NA	2.66	*U*	2.29	*U*	2.13	*U*	2.41	*U*	2.21	*U*	2.16	*U*	2.34	*U*
arsenic	13	16	1.6	*U*	3.82		2.14		1.45	*U*	2.85		1.42		1.53	
barium	410	410	2.7		**931**		2.61		2.57		19.2		2.65		3.26	
beryllium	4.4	43	0.082		0.207		0.068		0.082		0.207		0.056		0.077	
cadmium	2.5	2.5	0.319	*U*	0.762		0.256	*U*	0.289	*U*	0.265	*U*	0.26	*U*	0.281	*U*
calcium	NA	NA	64.9		42,500		59.8		71.5		503		56		90.9	
chromium	30	110	3.31		15.5		3.77		3.43		10.4		4.87		4.82	
chromium (hexavalent)	1	1	0.639	*U*	0.551	*U*	0.511	*U*	0.578	*U*	0.531	*U*	0.519	*U*	0.561	*U*
cobalt	NA	NA	0.702		2.7		0.656		0.511		2.24		0.761		0.627	
copper	50	280	2.13	*U*	109		1.7	*U*	1.93	*U*	4.32		1.73	*U*	1.87	*U*
iron	NA	NA	2,290		8,490		2,250		2,220		10,600		2,270		2,660	
lead	63	400	1.21		**1,380**		1.4		1.46		25.6		1.41		1.44	
magnesium	NA	NA	117		12,700		37.5		108		738		87.5		168	
manganese	1,600	2,000	14.3		121		25.8		6.23		46.2		25.1		12.2	
mercury	0.18	0.30	0.0383	*U*	**1.52**		0.0307	*U*	0.0347	*U*	0.0427		0.0311	*U*	0.0337	*U*
nickel	30	320	1.18		8.76		1.34		1.19		6.68		1.49		1.37	
potassium	NA	NA	135	*B*	397	*B*	51.1	*B*	182	*B*	449		111		209	
selenium	3.9	110	2.66	*U*	2.29	*U*	2.13	*U*	2.41	*U*	2.21	*U*	2.16	*U*	2.34	*U*
silver	2	110	0.536	*U*	0.462	*U*	0.429	*U*	0.486	*U*	0.446	*U*	0.436	*U*	0.471	*U*
sodium	NA	NA	53.2	*U*	174		42.6	*U*	48.2	*U*	167		43.3	*U*	46.8	*U*
thallium	NA	NA	2.13	*U*	1.84	*U*	1.71	*U*	1.93	*U*	1.77	*U*	1.73	*U*	1.87	*U*
vanadium	NA	NA	3.96		26.5		2.31		4.18		14.3		3.03		5.84	
zinc	109	6,600	4.08		480		2.44		3.68		22.3		3.27		3.31	
cyanide (total)	2	13	0.639	*U*	0.551	*U*	0.511	*U*	0.578	*U*	0.531	*U*	0.519	*U*	0.561	*U*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 5: TAL Metals in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-12 0-5		SB-12 11-13		SB-12 22.5-25		DUPB-20250321		SB-13 5-10		SB-13 11-13		SB-13 22.5-25	
U= Not Detected ≥ value		Date	2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-21	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1		1	
Metals, 6010 and 7473	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
aluminum	NA	NA	7,130		596		1,490		800		7,950		650		965	
antimony	NA	NA	2.23	*U*	2.15	*U*	2.41	*U*	2.21	*U*	2.24	*U*	2.14	*U*	2.18	*U*
arsenic	13	16	3.59		1.29	*U*	1.59		1.37		5.5		1.28	*U*	2.43	
barium	410	410	31.8		2.14	*U*	3.8		2.27		176		2.13	*U*	3.43	
beryllium	4.4	43	0.214		0.044		0.097		0.057		0.678		0.043	*U*	0.123	
cadmium	2.5	2.5	0.267	*U*	0.257	*U*	0.289	*U*	0.265	*U*	0.277		0.256	*U*	0.262	*U*
calcium	NA	NA	2,770		1,450		114		62.6		3,880		33.5		55.5	
chromium	30	110	14.8		7.17		11.2		4.19		14		2.25		6	
chromium (hexavalent)	1	1	0.534	*U*	0.515	*U*	0.578	*U*	0.53	*U*	0.537	*U*	0.513	*U*	0.523	*U*
cobalt	NA	NA	2.18		0.343	*U*	0.732		0.557		4.73		0.342		0.671	
copper	50	280	6.99		1.72	*U*	1.98		1.77	*U*	38.7		1.71	*U*	1.74	*U*
iron	NA	NA	13,000		2,130		3,280		2,270		11,300		1,700		4,920	
lead	63	400	340		10.3		1.6		1.01		**712**		0.589		2.28	
magnesium	NA	NA	621		468		185		66.7		824		22.5		72.1	
manganese	1,600	2,000	54.4		22.6		16.8		14.1		111		16.9		18.3	
mercury	0.18	0.30	0.201		0.0309	*U*	0.0347	*U*	0.0318	*U*	**1.21**		0.0308	*U*	0.0314	*U*
nickel	30	320	5.34		1.13		1.4		0.88	*U*	11.2		0.851	*U*	1.12	
potassium	NA	NA	262		46.8		200		89.2		599		24.1		77.8	
selenium	3.9	110	2.23	*U*	2.15	*U*	2.41	*U*	2.21	*U*	2.24	*U*	2.14	*U*	2.18	*U*
silver	2	110	0.449	*U*	0.433	*U*	0.485	*U*	0.445	*U*	0.451	*U*	0.431	*U*	0.439	*U*
sodium	NA	NA	44.5	*U*	42.9	*U*	48.2	*U*	44.2	*U*	186		42.7	*U*	43.6	*U*
thallium	NA	NA	1.78	*U*	1.72	*U*	1.93	*U*	1.77	*U*	1.79	*U*	1.71	*U*	1.75	*U*
vanadium	NA	NA	14.1		2.43		5.81		3.52		19.8		1.6		4.19	
zinc	109	6,600	104		6.11		4.21		2.95		240		3.07		15.8	
cyanide (total)	2	13	0.534	*U*	0.515	*U*	0.578	*U*	0.53	*U*	0.537	*U*	0.513	*U*	0.523	*U*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 5: TAL Metals in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-14 0-5		SB-14 11-13		SB-14 22.5-25		SB-15 0-5		SB-15 11-13		SB-15 22.5-25		SB-16 0-5	
U= Not Detected ≥ value		Date	2025-03-21		2025-03-21		2025-03-21		2025-03-20		2025-03-20		2025-03-20		2025-03-21	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1		1	
Metals, 6010 and 7473	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
aluminum	NA	NA	5,570		1,940		700		12,200		1,130		718		11,500	
antimony	NA	NA	2.23	*U*	2.21	*U*	2.25	*U*	2.39	*U*	2.13	*U*	2.17	*U*	2.29	*U*
arsenic	13	16	2.66		1.33	*U*	1.35	*U*	3.52		2.37		1.42		3.09	
barium	410	410	24.2		9.15		2.89		26.3		2.22		2.23		39.6	
beryllium	4.4	43	0.19		0.064		0.053		0.203		0.076		0.069		0.201	
cadmium	2.5	2.5	0.268	*U*	0.265	*U*	0.27	*U*	0.287	*U*	0.256	*U*	0.261	*U*	0.275	*U*
calcium	NA	NA	1,310		1,230		30.9		1,010		72.4		52.9		1,290	
chromium	30	110	8.12		9.11		4.22		13.6		2.83		3.94		13.2	
chromium (hexavalent)	1	1	0.675		0.53	*U*	0.539	*U*	0.573	*U*	0.511	*U*	0.521	*U*	0.549	*U*
cobalt	NA	NA	2.1		0.919		0.467		2.2		0.665		0.513		2.05	
copper	50	280	24.5		10.3		1.8	*U*	7.43		1.7	*U*	1.74	*U*	8.32	
iron	NA	NA	6,340		2,870		2,270		13,400		3,350		2,790		10,600	
lead	63	400	146		43.1		2.37		94.8		1.01		1.75		63.4	
magnesium	NA	NA	1,310		488		58.1		790		61.7		67.8		761	
manganese	1,600	2,000	80.2		36.8		5.6		66.3		16.1		7.34		59.9	
mercury	0.18	0.30	**0.384**		0.0641		0.0324	*U*	0.176		0.0307	*U*	0.0313	*U*	**0.489**	
nickel	30	320	5.91		2.79		0.895	*U*	6.92		1.07		0.865	*U*	6.86	
potassium	NA	NA	210		121		78.6		480	*B*	68.1	*B*	90.9	*B*	354	
selenium	3.9	110	2.23	*U*	2.21	*U*	2.25	*U*	2.39	*U*	2.13	*U*	2.17	*U*	2.29	*U*
silver	2	110	0.451	*U*	0.445	*U*	0.453	*U*	0.481	*U*	0.43	*U*	0.438	*U*	0.462	*U*
sodium	NA	NA	48.4		44.2	*U*	44.9	*U*	250		42.6	*U*	43.4	*U*	52.4	
thallium	NA	NA	1.79	*U*	1.77	*U*	1.8	*U*	1.91	*U*	1.71	*U*	1.74	*U*	1.84	*U*
vanadium	NA	NA	10.7		4.05		3.09		21.2		2.94		3.38		18.6	
zinc	109	6,600	80.8		28.5		6.33		31.4		3.23		2.76		46.4	
cyanide (total)	2	13	0.536	*U*	0.53	*U*	0.539	*U*	0.573	*U*	0.511	*U*	0.521	*U*	0.549	*U*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 5: TAL Metals in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-16 11-13		SB-16 22.5-25		SB-17 0-5		SB-17 11-13		SB-17 22.5-25		SB-18 0-5		SB-18 11-13	
U= Not Detected ≥ value		Date	2025-03-21		2025-03-21		2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-25	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1		1	
Metals, 6010 and 7473	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
aluminum	NA	NA	640		1,510		3,690		671		819		8,050		748	
antimony	NA	NA	2.13	*U*	2.53	*U*	2.15	*U*	2.17	*U*	2.24	*U*	2.22	*U*	2.1	*U*
arsenic	13	16	3.09		8.32		2.01		2.48		1.97		3.56		1.45	
barium	410	410	2.12	*U*	2.69		10.6		2.17	*U*	2.25		30.5		2.11	
beryllium	4.4	43	0.086		0.184		0.114		0.077		0.057		0.217		0.08	
cadmium	2.5	2.5	0.255	*U*	0.304	*U*	0.258	*U*	0.261	*U*	0.269	*U*	0.267	*U*	0.252	*U*
calcium	NA	NA	44.7		64.8		139		31.8		39.2		982		104	
chromium	30	110	2.99		10.4		5.47		5.24		5.68		11.7		3.04	
chromium (hexavalent)	1	1	0.51	*U*	0.608	*U*	0.516	*U*	0.522	*U*	0.539	*U*	0.534	*U*	0.505	*U*
cobalt	NA	NA	0.468		0.922		2.61		0.348	*U*	0.727		2.37		0.463	
copper	50	280	1.7	*U*	6.03		4.24		1.74	*U*	1.8	*U*	7.47		1.68	*U*
iron	NA	NA	5,080		10,800		3,790		5,820		5,330		8,880		2,040	
lead	63	400	1.05		3.76		5.06		0.878		5.04		117		1.23	
magnesium	NA	NA	30.8		115		430		33.2		62.5		636		59	
manganese	1,600	2,000	27.3		18.9		52.2		24		5.65		65.5		25.3	
mercury	0.18	0.30	0.0306	*U*	0.0365	*U*	0.0309	*U*	0.0313	*U*	0.0323	*U*	**2.39**		0.0303	*U*
nickel	30	320	0.847	*U*	1.01	*U*	4.83		0.896		0.894	*U*	6.34		1.05	
potassium	NA	NA	28.7		143		292		51.6		77.3		266		38.4	
selenium	3.9	110	2.13	*U*	2.53	*U*	2.15	*U*	2.17	*U*	2.24	*U*	2.22	*U*	2.1	*U*
silver	2	110	0.429	*U*	0.511	*U*	0.433	*U*	0.438	*U*	0.452	*U*	0.448	*U*	0.424	*U*
sodium	NA	NA	42.5	*U*	50.7	*U*	43	*U*	43.5	*U*	44.9	*U*	44.5	*U*	42.1	*U*
thallium	NA	NA	1.7	*U*	2.03	*U*	1.72	*U*	1.74	*U*	1.8	*U*	1.78	*U*	1.69	*U*
vanadium	NA	NA	4.29		11.8		6.84		3.57		5.88		15.1		2.68	
zinc	109	6,600	3.38		6.65		35.4		3.64		4.5		140		5.35	
cyanide (total)	2	13	0.51	*U*	0.608	*U*	0.516	*U*	0.522	*U*	0.539	*U*	0.534	*U*	0.505	*U*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 5: TAL Metals in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-18 22.5-25		SB-19 0-5		SB-19 11-13		SB-19 22.5-25		SB-20 0-5		SB-20 10-12		SB-20 22.5-25	
U= Not Detected ≥ value		Date	2025-03-25		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1		1	
Metals, 6010 and 7473	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
aluminum	NA	NA	1,950		8,170		709		1,100		5,190		896		848	
antimony	NA	NA	2.7	*U*	2.23	*U*	2.16	*U*	2.61	*U*	2.26	*U*	2.14	*U*	2.38	*U*
arsenic	13	16	3.27		2.8		2.96		1.57	*U*	2.65		2.26		1.43	*U*
barium	410	410	4.92		19.1		2.16	*U*	2.79		44.7		5.25		2.38	*U*
beryllium	4.4	43	0.194		0.163		0.09		0.066		0.179		0.06		0.048	*U*
cadmium	2.5	2.5	0.324	*U*	0.268	*U*	0.259	*U*	0.313	*U*	0.416		0.256	*U*	0.286	*U*
calcium	NA	NA	126		384		31.4		53		22,100		601		45.3	
chromium	30	110	6.95		10.4		8.32		3.16		8.62		7.64		2.74	
chromium (hexavalent)	1	1	0.648	*U*	0.536	*U*	0.518	*U*	0.626	*U*	0.543	*U*	0.513	*U*	0.571	*U*
cobalt	NA	NA	1.03		1.52		0.76		0.459		1.88		0.632		0.648	
copper	50	280	3.71		4.87		1.73	*U*	2.09	*U*	27.9		1.84		1.91	*U*
iron	NA	NA	5,900		7,910		5,630		2,090		6,830		3,010		1,590	
lead	63	400	2.44		52.6		1.51		1.46		124		8.01		1.05	
magnesium	NA	NA	288		585		57.4		113		1,340		79.8		67.9	
manganese	1,600	2,000	20.9		37.6		40.6		15		70.5		31.2		23.9	
mercury	0.18	0.30	0.0389	*U*	0.213		0.0311	*U*	0.0376	*U*	0.275		**0.736**		0.0343	*U*
nickel	30	320	1.97		5.33		1.04		1.1		5.17		1.44		0.949	*U*
potassium	NA	NA	221		312	*B*	42.7	*B*	168	*B*	335		75.4		94.8	
selenium	3.9	110	2.7	*U*	2.23	*U*	2.16	*U*	2.61	*U*	2.26	*U*	2.14	*U*	2.38	*U*
silver	2	110	0.544	*U*	0.45	*U*	0.435	*U*	0.526	*U*	0.456	*U*	0.431	*U*	0.48	*U*
sodium	NA	NA	54	*U*	44.7	*U*	43.2	*U*	52.2	*U*	73.7		42.7	*U*	47.6	*U*
thallium	NA	NA	2.16	*U*	1.79	*U*	1.73	*U*	2.09	*U*	1.81	*U*	1.71	*U*	1.91	*U*
vanadium	NA	NA	9.09		13.8		5.92		3.98		8.48		2.61		2.94	
zinc	109	6,600	12.5		26.5		4.46		9.08		132		26.7		7.65	
cyanide (total)	2	13	0.648	*U*	0.536	*U*	0.518	*U*	0.626	*U*	0.543	*U*	0.513	*U*	0.571	*U*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 5: TAL Metals in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-21 0-5		SB-21 11-13		SB-21 22.5-25		SB-22 0-5		SB-22 11-13		SB-22 22.5-25		SB-23 0-5	
U= Not Detected ≥ value		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1		1	
Metals, 6010 and 7473	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
aluminum	NA	NA	1,690		1,040		1,140		4,220		1,310		984		1,570	
antimony	NA	NA	2.14	*U*	2.23	*U*	2.79	*U*	2.14	*U*	2.14	*U*	2.33	*U*	2.11	*U*
arsenic	13	16	1.29	*U*	1.72		1.68	*U*	7.07		2.52		3.74		1.39	
barium	410	410	6.1		3.78		4.94		9.5		3.77		2.62		3.25	
beryllium	4.4	43	0.055		0.067		0.098		0.286		0.094		0.115		0.067	
cadmium	2.5	2.5	0.257	*U*	0.268	*U*	0.335	*U*	0.257	*U*	0.256	*U*	0.279	*U*	0.253	*U*
calcium	NA	NA	179		623		67.2		78.8		1,690		33.3		11.6	
chromium	30	110	2.84		25.9		7.17		8.95		6.28		10.4		2.86	
chromium (hexavalent)	1	1	0.515	*U*	0.535	*U*	0.671	*U*	0.514	*U*	0.513	*U*	0.558	*U*	0.506	*U*
cobalt	NA	NA	1.2		0.624		0.704		1.16		0.692		0.977		1.03	
copper	50	280	1.72	*U*	3.42		2.24	*U*	2.95		1.71	*U*	1.86	*U*	1.69	*U*
iron	NA	NA	1,810		3,980		4,790		24,600		4,650		5,300		2,480	
lead	63	400	1.76		1.54		1.45		7.66		1.9		0.903		0.919	
magnesium	NA	NA	173		98.5		118		274		175		71.3		102	
manganese	1,600	2,000	33.1		30.6		17.9		36.4		29.4		30.5		24.3	
mercury	0.18	0.30	0.0309	*U*	0.0321	*U*	0.0403	*U*	0.0551		0.0308	*U*	0.0335	*U*	0.233	
nickel	30	320	1.96		3.41		1.11	*U*	3.39		1.66		1.13		1.69	
potassium	NA	NA	135		93.5		166		156		99.8		85.6		94.7	
selenium	3.9	110	2.14	*U*	2.23	*U*	2.79	*U*	2.14	*U*	2.14	*U*	2.33	*U*	2.11	*U*
silver	2	110	0.432	*U*	0.449	*U*	0.564	*U*	0.432	*U*	0.431	*U*	0.469	*U*	0.425	*U*
sodium	NA	NA	42.9	*U*	44.6	*U*	55.9	*U*	42.8	*U*	42.7	*U*	46.5	*U*	42.2	*U*
thallium	NA	NA	1.72	*U*	1.79	*U*	2.24	*U*	1.72	*U*	1.71	*U*	1.86	*U*	1.69	*U*
vanadium	NA	NA	2.84		3.85		6.7		12.7		6.3		7		3.53	
zinc	109	6,600	2.87		3.4		4.56		16.9		9.51		17		4.64	
cyanide (total)	2	13	0.515	*U*	0.535	*U*	0.671	*U*	0.514	*U*	0.513	*U*	0.558	*U*	0.506	*U*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 5: TAL Metals in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-23 13-15		SB-23 22.5-25		SB-24 0-5		SB-24 11-13		SB-24 22.5-25		SB-25 0-5		SB-25 11-13	
U= Not Detected ≥ value		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-25		2025-03-25	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1		1	
Metals, 6010 and 7473	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
aluminum	NA	NA	1,290		1,670		5,940		1,200		1,020		2,880		624	
antimony	NA	NA	2.13	*U*	2.33	*U*	2.2	*U*	2.13	*U*	2.58	*U*	2.13	*U*	2.18	*U*
arsenic	13	16	3.02		1.82		2.06		2.76		1.55	*U*	1.57		2.06	
barium	410	410	2.13	*U*	3.85		13.8		2.13	*U*	2.57	*U*	6.37		2.17	*U*
beryllium	4.4	43	0.072		0.072		0.12		0.074		0.059		0.085		0.063	
cadmium	2.5	2.5	0.256	*U*	0.279	*U*	0.264	*U*	0.256	*U*	0.309	*U*	0.256	*U*	0.261	*U*
calcium	NA	NA	32.3		74.1		328		43.3		45.9		67.5		27.1	
chromium	30	110	3.56		3.94		7.2		3.27		3.43		5.07		4.92	
chromium (hexavalent)	1	1	0.512	*U*	0.559	*U*	0.527	*U*	0.512	*U*	0.618	*U*	0.512	*U*	0.522	*U*
cobalt	NA	NA	0.538		0.931		1.46		0.93		0.896		2.13		0.47	
copper	50	280	1.71	*U*	2.04		3.83		1.71	*U*	3.1		2.72		1.74	*U*
iron	NA	NA	3,350		2,650		6,000		3,100		2,150		3,130		3,110	
lead	63	400	0.965		1.37		57.8		0.64		1.56		2.63		0.975	
magnesium	NA	NA	28.8		187		424		50.9		94.3		271		48.4	
manganese	1,600	2,000	23.6		25.7		35.9		48.4		33.7		46.2		22.5	
mercury	0.18	0.30	0.0307	*U*	0.0335	*U*	0.216		0.0307	*U*	0.0371	*U*	0.0382		0.0313	*U*
nickel	30	320	0.93		1.5		4.13		0.905		1.03	*U*	3.4		1.02	
potassium	NA	NA	38.1		185		238		64.8		135		125		31.9	
selenium	3.9	110	2.13	*U*	2.33	*U*	2.2	*U*	2.13	*U*	2.58	*U*	2.13	*U*	2.18	*U*
silver	2	110	0.43	*U*	0.469	*U*	0.443	*U*	0.43	*U*	0.519	*U*	0.43	*U*	0.439	*U*
sodium	NA	NA	42.7	*U*	46.6	*U*	62		42.7	*U*	51.5	*U*	42.7	*U*	43.5	*U*
thallium	NA	NA	1.71	*U*	1.87	*U*	1.76	*U*	1.71	*U*	2.06	*U*	1.71	*U*	1.74	*U*
vanadium	NA	NA	3.02		4.81		10.7		3.22		4.11		5.31		3.42	
zinc	109	6,600	4.82		7.15		25.2		4.03		5.14		9.74		3.95	
cyanide (total)	2	13	0.512	*U*	0.559	*U*	0.527	*U*	0.512	*U*	0.618	*U*	0.512	*U*	0.522	*U*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 5: TAL Metals in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	DUP-20250325		SB-25 22.5-25		SB-26 0-5		SB-26 11-13		SB-26 22.5-25		SB-27 0-5		SB-27 11-13	
U= Not Detected ≥ value		Date	2025-03-25		2025-03-25		2025-03-21		2025-03-21		2025-03-21		2025-03-20		2025-03-20	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1		1	
Metals, 6010 and 7473	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
aluminum	NA	NA	572		1,120		4,830		532		1,830		10,900		446	
antimony	NA	NA	2.16	*U*	2.39	*U*	2.18	*U*	2.13	*U*	2.67	*U*	2.34	*U*	2.11	*U*
arsenic	13	16	1.3	*U*	1.66		2.02		2.24		4.6		3.53		1.77	
barium	410	410	4.47		3.04		8.47		2.13	*U*	4.91		39.9		2.1	*U*
beryllium	4.4	43	0.044	*U*	0.072		0.09		0.044		0.145		0.166		0.042	*U*
cadmium	2.5	2.5	0.259	*U*	0.287	*U*	0.262	*U*	0.256	*U*	0.32	*U*	0.281	*U*	0.253	*U*
calcium	NA	NA	1,400		85.2		324		122		68.3		2,100		12.3	
chromium	30	110	3.87		4.07		6.19		8.52		26.4		13.5		2.23	
chromium (hexavalent)	1	1	0.519	*U*	0.574	*U*	0.523	*U*	0.512	*U*	0.64	*U*	0.563	*U*	0.506	*U*
cobalt	NA	NA	0.346	*U*	0.517		1.09		0.469		0.715		2.58		0.337	*U*
copper	50	280	1.73	*U*	1.91	*U*	2.34		1.71	*U*	2.14	*U*	44.6		1.69	*U*
iron	NA	NA	2,180		2,470		5,060		2,660		15,100		11,700		2,050	
lead	63	400	18.1		1.54		5.11		0.751		2.8		86.1		0.531	
magnesium	NA	NA	93.2		177		378		82.5		150		812		17.5	
manganese	1,600	2,000	16.4		16.6		30.8		25		53.4		68		11.9	
mercury	0.18	0.30	0.0311	*U*	0.0344	*U*	0.0522		0.0307	*U*	0.0384	*U*	0.118		0.0304	*U*
nickel	30	320	0.861	*U*	1.43		3.32		0.939		1.06	*U*	6.94		0.84	*U*
potassium	NA	NA	27.8		127		148		38.3		139		366		34.5	
selenium	3.9	110	2.16	*U*	2.39	*U*	2.18	*U*	2.13	*U*	2.67	*U*	2.34	*U*	2.11	*U*
silver	2	110	0.436	*U*	0.482	*U*	0.44	*U*	0.43	*U*	0.538	*U*	0.947		0.425	*U*
sodium	NA	NA	43.2	*U*	47.8	*U*	96.4		42.7	*U*	53.4	*U*	49.5		42.2	*U*
thallium	NA	NA	1.73	*U*	1.92	*U*	1.75	*U*	1.71	*U*	2.14	*U*	1.88	*U*	1.69	*U*
vanadium	NA	NA	2		4.9		8.12		2.44		29.5		19.1		2.08	
zinc	109	6,600	4.15		4.64		10.5		3.85		8.67		53.8		2.1	*U*
cyanide (total)	2	13	0.519	*U*	0.574	*U*	0.523	*U*	0.512	*U*	0.64	*U*	0.563	*U*	0.506	*U*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 5: TAL Metals in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-27 22.5-25		SB-28 0-5		SB-28 11-13		DUP-20250320		SB-28 22.5-25		SB-29 0-5		SB-29 11-13	
U= Not Detected ≥ value		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1		1	
Metals, 6010 and 7473	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
aluminum	NA	NA	1,090		9,040		713		465		821		9,260		935	
antimony	NA	NA	2.19	*U*	2.27	*U*	2.12	*U*	2.13	*U*	2.26	*U*	2.39	*U*	2.11	*U*
arsenic	13	16	2.8		3.23		3.93		1.28	*U*	3.14		3.1		4.12	
barium	410	410	2.98		17		2.12	*U*	2.13	*U*	2.3		33.2		2.11	*U*
beryllium	4.4	43	0.102		0.178		0.085		0.043	*U*	0.093		0.174		0.077	
cadmium	2.5	2.5	0.263	*U*	0.273	*U*	0.255	*U*	0.255	*U*	0.271	*U*	0.287	*U*	0.254	*U*
calcium	NA	NA	46.4		858		38.4		32.5		81.9		1,310		58	
chromium	30	110	5.86		11.2		3.06		4.48		3.7		10.8		2.98	
chromium (hexavalent)	1	1	0.527	*U*	0.546	*U*	0.51	*U*	0.511	*U*	0.541	*U*	0.575	*U*	0.507	*U*
cobalt	NA	NA	0.685		3.09		0.569		0.349		0.695		2.28		0.913	
copper	50	280	1.76	*U*	4.58		1.7	*U*	1.7	*U*	1.81	*U*	13.9		1.69	*U*
iron	NA	NA	5,100		10,200		3,590		1,610		2,650		8,940		7,490	
lead	63	400	1.84		32.1		0.79		0.571		0.911		87.9		1.72	
magnesium	NA	NA	84		707		33.7		21.2		111		699		33.8	
manganese	1,600	2,000	12.8		66.9		35.3		21		11.1		67.3		7.45	
mercury	0.18	0.30	0.0316	*U*	0.0327	*U*	0.0306	*U*	0.0307	*U*	0.0325	*U*	0.237		0.0304	*U*
nickel	30	320	0.875	*U*	6.99		0.846	*U*	1.23		0.899	*U*	6.34		1.92	
potassium	NA	NA	101		315		42.8		24.5		113		375		46.1	
selenium	3.9	110	2.19	*U*	2.27	*U*	2.12	*U*	2.13	*U*	2.26	*U*	2.39	*U*	2.11	*U*
silver	2	110	0.443	*U*	0.458	*U*	0.428	*U*	0.429	*U*	0.455	*U*	0.483	*U*	0.426	*U*
sodium	NA	NA	43.9	*U*	69.8		42.5	*U*	42.6	*U*	45.1	*U*	78.2		42.3	*U*
thallium	NA	NA	1.76	*U*	1.82	*U*	1.7	*U*	1.71	*U*	1.81	*U*	1.92	*U*	1.69	*U*
vanadium	NA	NA	5.37		14.8		3.54		1.63		4.34		15		3.58	
zinc	109	6,600	7.83		37.1		2.32		2.12	*U*	4.25		47.1		4.99	
cyanide (total)	2	13	0.527	*U*	0.546	*U*	0.51	*U*	0.511	*U*	0.541	*U*	0.575	*U*	0.507	*U*

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 5: TAL Metals in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-29 22.5-25		SB-30 0-5		SB-30 11-13		SB-30 22.5-25		2SB-02 0-2.5		2SB-02 2.5-5		2SB-03 0-2.5	
U= Not Detected ≥ value		Date	2025-03-20		2025-03-21		2025-03-21		2025-03-21		2025-10-30		2025-10-30		2025-10-30	
All data in mg/Kg (ppm)		Dilution	1		1		1		1		10		1		10	
Metals, 6010 and 7473	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
aluminum	NA	NA	766		10,700		925		532		8,850		2,830		8,390	
antimony	NA	NA	2.23	*U*	2.2	*U*	2.12	*U*	2.3	*U*	3.9	*U*	3.3	*U*	3.8	*U*
arsenic	13	16	2.76		2.48		2.75		1.38	*U*	3.26		0.85		6.87	
barium	410	410	2.34		23		2.12	*U*	2.3	*U*	109		9.7		174	
beryllium	4.4	43	0.084		0.183		0.079		0.046	*U*	0.22	*J*	0.26	*U*	0.29	*J*
cadmium	2.5	2.5	0.268	*U*	0.265	*U*	0.254	*U*	0.276	*U*	0.39	*U*	0.33	*U*	1.03	
calcium	NA	NA	53.7		8,390		39.8		27.9		8,820		179		21,900	
chromium	30	110	5.61		22.1		4.32		2.96		17		3.52		16.6	
chromium (hexavalent)	1	1	0.536	*U*	0.529	*U*	0.509	*U*	0.552	*U*	**NA**		**NA**		**NA**	
cobalt	NA	NA	1.14		2.58		0.492		0.773		2.73		2.75		4.64	
copper	50	280	1.79	*U*	5.08		1.7	*U*	1.84	*U*	13.9		3.7		64.3	
iron	NA	NA	4,320		9,600		5,410		1,970		11,000		2,720		26,200	
lead	63	400	2.16		20.9		1.09		3.03		**662**		1.9		**678**	
magnesium	NA	NA	54.4		1,080		47.2		42.1		1,370		339		2,750	
manganese	1,600	2,000	12.3		67.2		28		4.64		79.3		89.1		190	
mercury	0.18	0.30	0.0322	*U*	0.0318	*U*	0.0305	*U*	0.0331	*U*	**0.504**		0.077	*U*	**1.8**	
nickel	30	320	0.965		6.85		1.04		0.916	*U*	10.6		3.51		11.9	
potassium	NA	NA	87.4		491		41.4		98.2		347		211		510	
selenium	3.9	110	2.23	*U*	2.2	*U*	2.12	*U*	2.3	*U*	1.6	*U*	1.3	*U*	1.5	*U*
silver	2	110	0.45	*U*	0.445	*U*	0.427	*U*	0.464	*U*	0.39	*U*	0.33	*U*	0.38	*U*
sodium	NA	NA	44.7	*U*	209		42.4	*U*	46	*U*	59		17		154	
thallium	NA	NA	1.79	*U*	1.77	*U*	1.7	*U*	1.84	*U*	1.6	*U*	1.3	*U*	1.5	*U*
vanadium	NA	NA	4.25		18		3.56		3.54		19.6		4.18		20.8	
zinc	109	6,600	3.75		15.9		4.23		2.29	*U*	139		5.2		363	
cyanide (total)	2	13	0.536	*U*	0.529	*U*	0.509	*U*	0.552	*U*	**NA**		**NA**		**NA**	

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 5: TAL Metals in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	2SB-03 2.5-5		2SB-08 0-1		2SB-08 4-5		2SB-09 0-1		DUPA-20251030		2SB-09 1-3		2SB-09 3-5	
U= Not Detected ≥ value		Date	2025-10-30		2025-10-30		2025-10-30		2025-10-30		2025-10-30		2025-10-30		2025-10-30	
All data in mg/Kg (ppm)		Dilution	1		10		1		1		1		1		1	
Metals, 6010 and 7473	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
aluminum	NA	NA	2,430		9,520		1,400		7,080		5,390		2,600		1,240	
antimony	NA	NA	3.7	*U*	3.5	*U*	3.6	*U*	3.8	*U*	3.3	*U*	3.1	*U*	3.6	*U*
arsenic	13	16	3.71		2.98		1.1		1.88		2.57		0.96		1.61	
barium	410	410	5.4		44.3		5.7		22.3		16.2		6.3		2.8	
beryllium	4.4	43	0.3	*U*	0.2	*J*	0.28	*U*	0.17	*J*	0.15	*J*	0.25	*U*	0.29	*U*
cadmium	2.5	2.5	0.37	*U*	0.35	*U*	0.36	*U*	0.38	*U*	0.33	*U*	0.31	*U*	0.36	*U*
calcium	NA	NA	119		862		70.9		6,710		512		168		53.7	
chromium	30	110	4.53		12.3		2.63		10.9		8.84		4.09		7.91	
chromium (hexavalent)	1	1	**NA**		**NA**		**NA**		**NA**		**NA**		**NA**		**NA**	
cobalt	NA	NA	2.78		2.37		0.74		1.91		1.31		2.41		1.04	
copper	50	280	2.6		7.7		1.6		3.8		4.4		2.2		1.4	
iron	NA	NA	8,200		11,600		2,620		8,960		9,330		3,270		3,360	
lead	63	400	2		71.4		24.7		42.5		31.7		2.3		1.5	
magnesium	NA	NA	204		761		122		816		454		236		111	
manganese	1,600	2,000	52.2		81.9		28.2		53.6		30.2		34.4		19.4	
mercury	0.18	0.30	0.079	*U*	**5.87**		0.085	*U*	0.08	*U*	0.0864		0.078	*U*	0.083	*U*
nickel	30	320	3.44		7.49		1.85		5.6		4.12		3.92		1.69	
potassium	NA	NA	153		368		88		268		214		152		93	
selenium	3.9	110	1.5	*U*	1.4	*U*	1.4	*U*	1.5	*U*	1.3	*U*	1.2	*U*	1.4	*U*
silver	2	110	0.37	*U*	0.35	*U*	0.36	*U*	0.38	*U*	0.33	*U*	0.31	*U*	0.36	*U*
sodium	NA	NA	9		53		12		38		31.8		12		23	
thallium	NA	NA	1.5	*U*	1.4	*U*	1.4	*U*	1.5	*U*	3	*U*	1.2	*U*	1.4	*U*
vanadium	NA	NA	4.36		18.4		4.06		15.1		11.7		4.69		4.48	
zinc	109	6,600	7		207		7.2		18.8		21.6		5.2		2.9	
cyanide (total)	2	13	**NA**		**NA**		**NA**		**NA**		**NA**		**NA**		**NA**	

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 5: TAL Metals in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	2SB-10 0-1		2SB-10 4-5		2SB-13 0-3.5		2SB-13 4-5		2SB-13 9-10		2SB-18 0-2.5		2SB-18 2.5-5	
U= Not Detected ≥ value		Date	2025-10-30		2025-10-30		2025-10-30		2025-10-30		2025-10-30		2025-10-30		2025-10-30	
All data in mg/Kg (ppm)		Dilution	1		1		10		1		1		10		1	
Metals, 6010 and 7473	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
aluminum	NA	NA	5,650		6,450		14,500		1,580		501		9,380		1,520	
antimony	NA	NA	3.4	*U*	3.4	*U*	3.7	*U*	3.5	*U*	3.3	*U*	3.3	*U*	3.7	*U*
arsenic	13	16	2.71		1.78		3.98		2.03		0.65	*U*	2.43		2.24	
barium	410	410	215		16.7		57.6		5.2		1.8		17.6		4.3	
beryllium	4.4	43	0.15	*J*	0.27	*U*	0.28	*J*	0.16	*J*	0.26	*U*	0.18	*J*	0.3	*U*
cadmium	2.5	2.5	0.48		0.34	*U*	0.37	*U*	0.35	*U*	0.33	*U*	0.33	*U*	0.37	*U*
calcium	NA	NA	1,280		737		3,890		139		30.5		2,190		31.7	
chromium	30	110	10.4		8.32		20.4		6.03		1.23		12.7		5.09	
chromium (hexavalent)	1	1	**NA**		**NA**		**NA**		**NA**		**NA**		**NA**		**NA**	
cobalt	NA	NA	2.46		1.74		3.99		0.85		0.36		1.91		1.28	
copper	50	280	30.5		4.2		9		2.2		0.7		4.7		2	
iron	NA	NA	11,100		7,400		17,200		8,880		1,130		11,100		3,320	
lead	63	400	**1,210**		42.4		50.5		9.2		0.7	*J*	51.7		1.3	
magnesium	NA	NA	593		543		1,340		137		46.2		751		148	
manganese	1,600	2,000	137		35.5		141		16.6		23.7		50.8		22.1	
mercury	0.18	0.30	**0.682**		0.083	*U*	0.082	*U*	0.077	*U*	0.077	*U*	0.084	*U*	0.08	*U*
nickel	30	320	6.75		4.84		11.4		2.02		0.79		6.54		2.39	
potassium	NA	NA	267		233		518		123		43		322		95	
selenium	3.9	110	1.4	*U*	1.4	*U*	1.5	*U*	1.4	*U*	1.3	*U*	1.3	*U*	1.5	*U*
silver	2	110	0.34	*U*	0.34	*U*	0.37	*U*	0.35	*U*	0.33	*U*	0.33	*U*	0.37	*U*
sodium	NA	NA	47		47		94		8		3	*J*	37		7	
thallium	NA	NA	1.4	*U*	1.4	*U*	1.5	*U*	1.4	*U*	1.3	*U*	1.3	*U*	1.5	*U*
vanadium	NA	NA	11.9		12.8		29.5		6.66		1.38		18.9		4.66	
zinc	109	6,600	737		26.3		39.5		15.6		3.1		65.1		9.7	
cyanide (total)	2	13	**NA**		**NA**		**NA**		**NA**		**NA**		**NA**		**NA**	

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 5: TAL Metals in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	2SB-23 0-2.5		2SB-23 2.5-5		2SB-27 0-2.5		2SB-27 2.5-5	
U= Not Detected ≥ value		Date	2025-10-30		2025-10-30		2025-10-30		2025-10-30	
All data in mg/Kg (ppm)		Dilution	10		1		10		1	
Metals, 6010 and 7473	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
aluminum	NA	NA	7,750		1,150		10,000		1,440	
antimony	NA	NA	3.7	*U*	4.1	*U*	3.8	*U*	3.8	*U*
arsenic	13	16	1.81		1.26		2.62		0.77	*U*
barium	410	410	18.3		2.96		32.6		4.2	
beryllium	4.4	43	0.3	*U*	0.33	*U*	0.18	*J*	0.31	*U*
cadmium	2.5	2.5	0.37	*U*	0.41	*U*	0.38	*U*	0.38	*U*
calcium	NA	NA	2,220		71.8		548		67.9	
chromium	30	110	9.08		5.84		11.7		2.91	
chromium (hexavalent)	1	1	**NA**		**NA**		**NA**		**NA**	
cobalt	NA	NA	1.74		1.33		2.17		0.67	
copper	50	280	4.4		1.6		22.9		1.6	
iron	NA	NA	7,900		3,960		11,500		1,570	
lead	63	400	23.8		1.42		91.6		1.2	
magnesium	NA	NA	621		122		718		127	
manganese	1,600	2,000	52.4		40.1		58.1		10.6	
mercury	0.18	0.30	0.082	*U*	0.087	*U*	0.211		0.082	*U*
nickel	30	320	5.45		1.79		6.37		1.62	
potassium	NA	NA	270		92.6		244		73	
selenium	3.9	110	1.5	*U*	1.6	*U*	1.5	*U*	1.5	*U*
silver	2	110	0.37	*U*	0.41	*U*	0.38	*U*	0.38	*U*
sodium	NA	NA	88		13.2		46.5		12	
thallium	NA	NA	1.5	*U*	3.7	*U*	3.4	*U*	1.5	*U*
vanadium	NA	NA	14.5		4.52		19.1		2.2	
zinc	109	6,600	17.6		3.2		29.4		2.4	
cyanide (total)	2	13	**NA**		**NA**		**NA**		**NA**	

Analyte Detected
Analyte Above UU SCO
Analyte Above RRU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 6: Pesticides, Herbicides, and PCBs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-01 0-5		SB-01 11-13		DUPA-20250321		SB-01 22.5-25		SB-02 0-5		SB-02 11-13		SB-02 22.5-25		SB-03 0-5	
U= Not Detected ≥ value		Date	2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-25		2025-03-25		2025-03-25		2025-03-25	
All data in mg/Kg (ppm)		Dilution	5		5		5		5		5		5		5		5	
Pesticides, 8081	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
4,4'-DDD	0.0033	5	0.0017	*U*	0.00169	*U*	0.00167	*U*	0.00177	*U*	0.00171	*U*	0.00168	*U*	0.00181	*U*	0.00181	*U*
4,4'-DDE	0.0033	3.4	0.0017	*U*	0.00169	*U*	0.00167	*U*	0.00177	*U*	0.00171	*U*	0.00168	*U*	0.00181	*U*	0.00181	*U*
4,4'-DDT	0.0033	3.8	0.0017	*U*	0.00169	*U*	0.00167	*U*	0.00177	*U*	0.00171	*U*	0.00168	*U*	0.00181	*U*	0.00181	*U*
aldrin	0.0048	0.044	0.0017	*U*	0.00169	*U*	0.00167	*U*	0.00177	*U*	0.00171	*U*	0.00168	*U*	0.00181	*U*	0.00181	*U*
alpha-BHC	0.02	0.18	0.0017	*U*	0.00169	*U*	0.00167	*U*	0.00177	*U*	0.00171	*U*	0.00168	*U*	0.00181	*U*	0.00181	*U*
alpha-chlordane	0.014	0.65	0.0017	*U*	0.00169	*U*	0.00167	*U*	0.00177	*U*	0.00171	*U*	0.00168	*U*	0.00181	*U*	0.00181	*U*
beta-BHC	0.021	0.18	0.0017	*U*	0.00169	*U*	0.00167	*U*	0.00177	*U*	0.00171	*U*	0.00168	*U*	0.00181	*U*	0.00181	*U*
chlordane (total)	NA	NA	0.034	*U*	0.0338	*U*	0.0335	*U*	0.0354	*U*	0.0341	*U*	0.0336	*U*	0.0362	*U*	0.0363	*U*
delta-BHC	0.04	100	0.0017	*U*	0.00169	*U*	0.00167	*U*	0.00177	*U*	0.00171	*U*	0.00168	*U*	0.00181	*U*	0.00181	*U*
dieldrin	0.005	0.075	0.0017	*U*	0.00169	*U*	0.00167	*U*	0.00177	*U*	0.00171	*U*	0.00168	*U*	0.00181	*U*	0.00181	*U*
endosulfan I	4.3	35	0.0017	*U*	0.00169	*U*	0.00167	*U*	0.00177	*U*	0.00171	*U*	0.00168	*U*	0.00181	*U*	0.00181	*U*
endosulfan ii	4.3	35	0.0017	*U*	0.00169	*U*	0.00167	*U*	0.00177	*U*	0.00171	*U*	0.00168	*U*	0.00181	*U*	0.00181	*U*
endosulfan sulfate	4.3	35	0.0017	*U*	0.00169	*U*	0.00167	*U*	0.00177	*U*	0.00171	*U*	0.00168	*U*	0.00181	*U*	0.00181	*U*
endrin	0.014	5.3	0.0017	*U*	0.00169	*U*	0.00167	*U*	0.00177	*U*	0.00171	*U*	0.00168	*U*	0.00181	*U*	0.00181	*U*
endrin aldehyde	NA	NA	0.0017	*U*	0.00169	*U*	0.00167	*U*	0.00177	*U*	0.00171	*U*	0.00168	*U*	0.00181	*U*	0.00181	*U*
endrin ketone	NA	NA	0.0017	*U*	0.00169	*U*	0.00167	*U*	0.00177	*U*	0.00171	*U*	0.00168	*U*	0.00181	*U*	0.00181	*U*
gamma-bhc (lindane)	0.025	0.21	0.0017	*U*	0.00169	*U*	0.00167	*U*	0.00177	*U*	0.00171	*U*	0.00168	*U*	0.00181	*U*	0.00181	*U*
gamma-chlordane	NA	NA	0.0017	*U*	0.00169	*U*	0.00167	*U*	0.00177	*U*	0.00171	*U*	0.00168	*U*	0.00181	*U*	0.00181	*U*
heptachlor	0.013	0.53	0.0017	*U*	0.00169	*U*	0.00167	*U*	0.00177	*U*	0.00171	*U*	0.00168	*U*	0.00181	*U*	0.00181	*U*
heptachlor epoxide	NA	NA	0.0017	*U*	0.00169	*U*	0.00167	*U*	0.00177	*U*	0.00171	*U*	0.00168	*U*	0.00181	*U*	0.00181	*U*
methoxychlor	NA	NA	0.0017	*U*	0.00169	*U*	0.00167	*U*	0.00177	*U*	0.00171	*U*	0.00168	*U*	0.00181	*U*	0.00181	*U*
toxaphene	NA	NA	0.17	*U*	0.169	*U*	0.167	*U*	0.177	*U*	0.171	*U*	0.168	*U*	0.181	*U*	0.181	*U*

		Sample	SB-01 0-5		SB-01 11-13		DUPA-20250321		SB-01 22.5-25		SB-02 0-5		SB-02 11-13		SB-02 22.5-25		SB-03 0-5	
		Date	2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-25		2025-03-25		2025-03-25		2025-03-25	
		Dilution	1		1		1		1		1		1		1		1	
PCBs, 8082	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
Aroclor 1016	0.1	1.00	0.0171	*U*	0.0171	*U*	0.0169	*U*	0.0179	*U*	0.0172	*U*	0.017	*U*	0.0183	*U*	0.0183	*U*
Aroclor 1221	0.1	1.00	0.0171	*U*	0.0171	*U*	0.0169	*U*	0.0179	*U*	0.0172	*U*	0.017	*U*	0.0183	*U*	0.0183	*U*
Aroclor 1232	0.1	1.00	0.0171	*U*	0.0171	*U*	0.0169	*U*	0.0179	*U*	0.0172	*U*	0.017	*U*	0.0183	*U*	0.0183	*U*
Aroclor 1242	0.1	1.00	0.0171	*U*	0.0171	*U*	0.0169	*U*	0.0179	*U*	0.0172	*U*	0.017	*U*	0.0183	*U*	0.0183	*U*
Aroclor 1248	0.1	1.00	0.0171	*U*	0.0171	*U*	0.0169	*U*	0.0179	*U*	0.0172	*U*	0.017	*U*	0.0183	*U*	0.0183	*U*
Aroclor 1254	0.1	1.00	0.0171	*U*	0.0171	*U*	0.0169	*U*	0.0179	*U*	0.0172	*U*	0.017	*U*	0.0183	*U*	0.0183	*U*
Aroclor 1260	0.1	1.00	0.0171	*U*	0.0171	*U*	0.0169	*U*	0.0179	*U*	0.0172	*U*	0.017	*U*	0.0183	*U*	0.0183	*U*
Total PCBs	0.1	1.00	0.0171	*U*	0.0171	*U*	0.0169	*U*	0.0179	*U*	0.0172	*U*	0.017	*U*	0.0183	*U*	0.0183	*U*

		Sample	SB-01 0-5		SB-01 11-13		DUPA-20250321		SB-01 22.5-25		SB-02 0-5		SB-02 11-13		SB-02 22.5-25		SB-03 0-5	
		Date	2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-25		2025-03-25		2025-03-25		2025-03-25	
		Dilution	1		1		1		1		1		1		1		1	
Herbicides, 8151	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
2,4,5-T	NA	NA	0.0201	*U*	0.0202	*U*	0.0203	*U*	0.0214	*U*	0.0208	*U*	0.0204	*U*	0.022	*U*	0.0225	*U*
2,4,5-TP (Silvex)	NA	NA	0.0201	*U*	0.0202	*U*	0.0203	*U*	0.0214	*U*	0.0208	*U*	0.0204	*U*	0.022	*U*	0.0225	*U*
2,4-D	NA	NA	0.0201	*U*	0.0202	*U*	0.0203	*U*	0.0214	*U*	0.0208	*U*	0.0204	*U*	0.022	*U*	0.0225	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 6: Pesticides, Herbicides, and PCBs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-03 11-13		SB-03 22.5-25		SB-04 0-5		SB-04 11-13		SB-04 22.5-25		SB-05 0-5		SB-05 11-13		SB-05 22.5-25	
U= Not Detected ≥ value		Date	2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-19		2025-03-19		2025-03-19	
All data in mg/Kg (ppm)		Dilution	5		5		5		5		5		5		5		5	
Pesticides, 8081	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
4,4'-DDD	0.0033	5	0.00168	*U*	0.00181	*U*	0.00171	*U*	0.0017	*U*	0.00183	*U*	0.00172	*U*	0.00168	*U*	0.00185	*U*
4,4'-DDE	0.0033	3.4	0.00168	*U*	0.00181	*U*	0.00171	*U*	0.0017	*U*	0.00183	*U*	0.00172	*U*	0.00168	*U*	0.00185	*U*
4,4'-DDT	0.0033	3.8	0.00168	*U*	0.00181	*U*	0.00171	*U*	0.0017	*U*	0.00183	*U*	0.00172	*U*	0.00168	*U*	0.00185	*U*
aldrin	0.0048	0.044	0.00168	*U*	0.00181	*U*	0.00171	*U*	0.0017	*U*	0.00183	*U*	0.00172	*U*	0.00168	*U*	0.00185	*U*
alpha-BHC	0.02	0.18	0.00168	*U*	0.00181	*U*	0.00171	*U*	0.0017	*U*	0.00183	*U*	0.00172	*U*	0.00168	*U*	0.00185	*U*
alpha-chlordane	0.014	0.65	0.00168	*U*	0.00181	*U*	0.00171	*U*	0.0017	*U*	0.00183	*U*	0.00172	*U*	0.00168	*U*	0.00185	*U*
beta-BHC	0.021	0.18	0.00168	*U*	0.00181	*U*	0.00171	*U*	0.0017	*U*	0.00183	*U*	0.00172	*U*	0.00168	*U*	0.00185	*U*
chlordane (total)	NA	NA	0.0335	*U*	0.0362	*U*	0.0342	*U*	0.034	*U*	0.0366	*U*	0.0344	*U*	0.0336	*U*	0.0371	*U*
delta-BHC	0.04	100	0.00168	*U*	0.00181	*U*	0.00171	*U*	0.0017	*U*	0.00183	*U*	0.00172	*U*	0.00168	*U*	0.00185	*U*
dieldrin	0.005	0.075	0.00168	*U*	0.00181	*U*	0.00171	*U*	0.0017	*U*	0.00183	*U*	0.00172	*U*	0.00168	*U*	0.00185	*U*
endosulfan I	4.3	35	0.00168	*U*	0.00181	*U*	0.00171	*U*	0.0017	*U*	0.00183	*U*	0.00172	*U*	0.00168	*U*	0.00185	*U*
endosulfan ii	4.3	35	0.00168	*U*	0.00181	*U*	0.00171	*U*	0.0017	*U*	0.00183	*U*	0.00172	*U*	0.00168	*U*	0.00185	*U*
endosulfan sulfate	4.3	35	0.00168	*U*	0.00181	*U*	0.00171	*U*	0.0017	*U*	0.00183	*U*	0.00172	*U*	0.00168	*U*	0.00185	*U*
endrin	0.014	5.3	0.00168	*U*	0.00181	*U*	0.00171	*U*	0.0017	*U*	0.00183	*U*	0.00172	*U*	0.00168	*U*	0.00185	*U*
endrin aldehyde	NA	NA	0.00168	*U*	0.00181	*U*	0.00171	*U*	0.0017	*U*	0.00183	*U*	0.00172	*U*	0.00168	*U*	0.00185	*U*
endrin ketone	NA	NA	0.00168	*U*	0.00181	*U*	0.00171	*U*	0.0017	*U*	0.00183	*U*	0.00172	*U*	0.00168	*U*	0.00185	*U*
gamma-bhc (lindane)	0.025	0.21	0.00168	*U*	0.00181	*U*	0.00171	*U*	0.0017	*U*	0.00183	*U*	0.00172	*U*	0.00168	*U*	0.00185	*U*
gamma-chlordane	NA	NA	0.00168	*U*	0.00181	*U*	0.00171	*U*	0.0017	*U*	0.00183	*U*	0.00172	*U*	0.00168	*U*	0.00185	*U*
heptachlor	0.013	0.53	0.00168	*U*	0.00181	*U*	0.00171	*U*	0.0017	*U*	0.00183	*U*	0.00172	*U*	0.00168	*U*	0.00185	*U*
heptachlor epoxide	NA	NA	0.00168	*U*	0.00181	*U*	0.00171	*U*	0.0017	*U*	0.00183	*U*	0.00172	*U*	0.00168	*U*	0.00185	*U*
methoxychlor	NA	NA	0.00168	*U*	0.00181	*U*	0.00171	*U*	0.0017	*U*	0.00183	*U*	0.00172	*U*	0.00168	*U*	0.00185	*U*
toxaphene	NA	NA	0.168	*U*	0.181	*U*	0.171	*U*	0.17	*U*	0.183	*U*	0.172	*U*	0.168	*U*	0.185	*U*

		Sample	SB-03 11-13		SB-03 22.5-25		SB-04 0-5		SB-04 11-13		SB-04 22.5-25		SB-05 0-5		SB-05 11-13		SB-05 22.5-25	
		Date	2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-19		2025-03-19		2025-03-19	
		Dilution	1		1		1		1		1		1		1		1	
PCBs, 8082	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
Aroclor 1016	0.1	1.00	0.0169	*U*	0.0183	*U*	0.0173	*U*	0.0171	*U*	0.0185	*U*	0.0174	*U*	0.017	*U*	0.0187	*U*
Aroclor 1221	0.1	1.00	0.0169	*U*	0.0183	*U*	0.0173	*U*	0.0171	*U*	0.0185	*U*	0.0174	*U*	0.017	*U*	0.0187	*U*
Aroclor 1232	0.1	1.00	0.0169	*U*	0.0183	*U*	0.0173	*U*	0.0171	*U*	0.0185	*U*	0.0174	*U*	0.017	*U*	0.0187	*U*
Aroclor 1242	0.1	1.00	0.0169	*U*	0.0183	*U*	0.0173	*U*	0.0171	*U*	0.0185	*U*	0.0174	*U*	0.017	*U*	0.0187	*U*
Aroclor 1248	0.1	1.00	0.0169	*U*	0.0183	*U*	0.0173	*U*	0.0171	*U*	0.0185	*U*	0.0174	*U*	0.017	*U*	0.0187	*U*
Aroclor 1254	0.1	1.00	0.0169	*U*	0.0183	*U*	0.0173	*U*	0.0171	*U*	0.0185	*U*	0.0174	*U*	0.017	*U*	0.0187	*U*
Aroclor 1260	0.1	1.00	0.0169	*U*	0.0183	*U*	0.0173	*U*	0.0171	*U*	0.0185	*U*	0.0174	*U*	0.017	*U*	0.0187	*U*
Total PCBs	0.1	1.00	0.0169	*U*	0.0183	*U*	0.0173	*U*	0.0171	*U*	0.0185	*U*	0.0174	*U*	0.017	*U*	0.0187	*U*

		Sample	SB-03 11-13		SB-03 22.5-25		SB-04 0-5		SB-04 11-13		SB-04 22.5-25		SB-05 0-5		SB-05 11-13		SB-05 22.5-25	
		Date	2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-19		2025-03-19		2025-03-19	
		Dilution	1		1		1		1		1		1		1		1	
Herbicides, 8151	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
2,4,5-T	NA	NA	0.0208	*U*	0.0225	*U*	0.0208	*U*	0.0207	*U*	0.0223	*U*	0.0208	*U*	0.0204	*U*	0.0224	*U*
2,4,5-TP (Silvex)	NA	NA	0.0208	*U*	0.0225	*U*	0.0208	*U*	0.0207	*U*	0.0223	*U*	0.0208	*U*	0.0204	*U*	0.0224	*U*
2,4-D	NA	NA	0.0208	*U*	0.0225	*U*	0.0208	*U*	0.0207	*U*	0.0223	*U*	0.0208	*U*	0.0204	*U*	0.0224	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 6: Pesticides, Herbicides, and PCBs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-06 0-5		SB-06 11-13		SB-06 22.5-25		SB-07 0-5		SB-07 11-13		SB-07 22.5-25		SB-08 0-5		SB-08 11-13	
U= Not Detected ≥ value		Date	2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19	
All data in mg/Kg (ppm)		Dilution	5		5		5		5		5		5		5		5	
Pesticides, 8081	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
4,4'-DDD	0.0033	5	0.00177	*U*	0.00163	*U*	0.0017	*U*	0.00169	*U*	0.00166	*U*	0.00195	*U*	0.0018	*U*	0.00168	*U*
4,4'-DDE	0.0033	3.4	0.00177	*U*	0.00163	*U*	0.0017	*U*	0.00169	*U*	0.00166	*U*	0.00195	*U*	0.0018	*U*	0.00168	*U*
4,4'-DDT	0.0033	3.8	0.00177	*U*	0.00163	*U*	0.0017	*U*	0.00169	*U*	0.00166	*U*	0.00195	*U*	0.00467	*D*	0.00168	*U*
aldrin	0.0048	0.044	0.00177	*U*	0.00163	*U*	0.0017	*U*	0.00169	*U*	0.00166	*U*	0.00195	*U*	0.0018	*U*	0.00168	*U*
alpha-BHC	0.02	0.18	0.00177	*U*	0.00163	*U*	0.0017	*U*	0.00169	*U*	0.00166	*U*	0.00195	*U*	0.0018	*U*	0.00168	*U*
alpha-chlordane	0.014	0.65	0.00177	*U*	0.00163	*U*	0.0017	*U*	0.00169	*U*	0.00166	*U*	0.00195	*U*	0.0018	*U*	0.00168	*U*
beta-BHC	0.021	0.18	0.00177	*U*	0.00163	*U*	0.0017	*U*	0.00169	*U*	0.00166	*U*	0.00195	*U*	0.0018	*U*	0.00168	*U*
chlordane (total)	NA	NA	0.0355	*U*	0.0326	*U*	0.034	*U*	0.0338	*U*	0.0331	*U*	0.0389	*U*	0.0361	*U*	0.0336	*U*
delta-BHC	0.04	100	0.00177	*U*	0.00163	*U*	0.0017	*U*	0.00169	*U*	0.00166	*U*	0.00195	*U*	0.0018	*U*	0.00168	*U*
dieldrin	0.005	0.075	0.00177	*U*	0.00163	*U*	0.0017	*U*	0.00169	*U*	0.00166	*U*	0.00195	*U*	0.0018	*U*	0.00168	*U*
endosulfan I	4.3	35	0.00177	*U*	0.00163	*U*	0.0017	*U*	0.00169	*U*	0.00166	*U*	0.00195	*U*	0.0018	*U*	0.00168	*U*
endosulfan ii	4.3	35	0.00177	*U*	0.00163	*U*	0.0017	*U*	0.00169	*U*	0.00166	*U*	0.00195	*U*	0.0018	*U*	0.00168	*U*
endosulfan sulfate	4.3	35	0.00177	*U*	0.00163	*U*	0.0017	*U*	0.00169	*U*	0.00166	*U*	0.00195	*U*	0.0018	*U*	0.00168	*U*
endrin	0.014	5.3	0.00177	*U*	0.00163	*U*	0.0017	*U*	0.00169	*U*	0.00166	*U*	0.00195	*U*	0.0018	*U*	0.00168	*U*
endrin aldehyde	NA	NA	0.00177	*U*	0.00163	*U*	0.0017	*U*	0.00169	*U*	0.00166	*U*	0.00195	*U*	0.0018	*U*	0.00168	*U*
endrin ketone	NA	NA	0.00177	*U*	0.00163	*U*	0.0017	*U*	0.00169	*U*	0.00166	*U*	0.00195	*U*	0.0018	*U*	0.00168	*U*
gamma-bhc (lindane)	0.025	0.21	0.00177	*U*	0.00163	*U*	0.0017	*U*	0.00169	*U*	0.00166	*U*	0.00195	*U*	0.0018	*U*	0.00168	*U*
gamma-chlordane	NA	NA	0.00177	*U*	0.00163	*U*	0.0017	*U*	0.00169	*U*	0.00166	*U*	0.00195	*U*	0.0018	*U*	0.00168	*U*
heptachlor	0.013	0.53	0.00177	*U*	0.00163	*U*	0.0017	*U*	0.00169	*U*	0.00166	*U*	0.00195	*U*	0.0018	*U*	0.00168	*U*
heptachlor epoxide	NA	NA	0.00177	*U*	0.00163	*U*	0.0017	*U*	0.00169	*U*	0.00166	*U*	0.00195	*U*	0.0018	*U*	0.00168	*U*
methoxychlor	NA	NA	0.00177	*U*	0.00163	*U*	0.0017	*U*	0.00169	*U*	0.00166	*U*	0.00195	*U*	0.0018	*U*	0.00168	*U*
toxaphene	NA	NA	0.177	*U*	0.163	*U*	0.17	*U*	0.169	*U*	0.166	*U*	0.195	*U*	0.18	*U*	0.168	*U*

		Sample	SB-06 0-5		SB-06 11-13		SB-06 22.5-25		SB-07 0-5		SB-07 11-13		SB-07 22.5-25		SB-08 0-5		SB-08 11-13	
		Date	2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19	
		Dilution	1		1		1		1		1		1		1		1	
PCBs, 8082	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
Aroclor 1016	0.1	1.00	0.0179	*U*	0.0165	*U*	0.0171	*U*	0.017	*U*	0.0167	*U*	0.0196	*U*	0.0182	*U*	0.017	*U*
Aroclor 1221	0.1	1.00	0.0179	*U*	0.0165	*U*	0.0171	*U*	0.017	*U*	0.0167	*U*	0.0196	*U*	0.0182	*U*	0.017	*U*
Aroclor 1232	0.1	1.00	0.0179	*U*	0.0165	*U*	0.0171	*U*	0.017	*U*	0.0167	*U*	0.0196	*U*	0.0182	*U*	0.017	*U*
Aroclor 1242	0.1	1.00	0.0179	*U*	0.0165	*U*	0.0171	*U*	0.017	*U*	0.0167	*U*	0.0196	*U*	0.0182	*U*	0.017	*U*
Aroclor 1248	0.1	1.00	0.0179	*U*	0.0165	*U*	0.0171	*U*	0.017	*U*	0.0167	*U*	0.0196	*U*	0.0182	*U*	0.017	*U*
Aroclor 1254	0.1	1.00	0.0179	*U*	0.0165	*U*	0.0171	*U*	0.017	*U*	0.0167	*U*	0.0196	*U*	0.0294		0.017	*U*
Aroclor 1260	0.1	1.00	0.0179	*U*	0.0165	*U*	0.0171	*U*	0.017	*U*	0.0167	*U*	0.0196	*U*	0.0182	*U*	0.017	*U*
Total PCBs	0.1	1.00	0.0179	*U*	0.0165	*U*	0.0171	*U*	0.017	*U*	0.0167	*U*	0.0196	*U*	0.0294		0.017	*U*

		Sample	SB-06 0-5		SB-06 11-13		SB-06 22.5-25		SB-07 0-5		SB-07 11-13		SB-07 22.5-25		SB-08 0-5		SB-08 11-13	
		Date	2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19	
		Dilution	1		1		1		1		1		1		1		1	
Herbicides, 8151	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
2,4,5-T	NA	NA	0.0217	*U*	0.02	*U*	0.0205	*U*	0.0204	*U*	0.0201	*U*	0.0232	*U*	0.0221	*U*	0.0205	*U*
2,4,5-TP (Silvex)	NA	NA	0.0217	*U*	0.02	*U*	0.0205	*U*	0.0204	*U*	0.0201	*U*	0.0232	*U*	0.0221	*U*	0.0205	*U*
2,4-D	NA	NA	0.0217	*U*	0.02	*U*	0.0205	*U*	0.0204	*U*	0.0201	*U*	0.0232	*U*	0.0221	*U*	0.0205	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 6: Pesticides, Herbicides, and PCBs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-08 22.5-25		SB-09 0-5		SB-09 11-13		SB-09 22.5-25		DUP-20250319		SB-10 0-5		SB-10 11-13		SB-10 22.5-25	
U= Not Detected ≥ value		Date	2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19	
All data in mg/Kg (ppm)		Dilution	5		5		5		5		5		5		5		5	
Pesticides, 8081	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
4,4'-DDD	0.0033	5	0.00208	*U*	0.00176	*U*	0.00165	*U*	0.00187	*U*	0.00209	*U*	0.00177	*U*	0.00166	*U*	0.00189	*U*
4,4'-DDE	0.0033	3.4	0.00208	*U*	0.00176	*U*	0.00165	*U*	0.00187	*U*	0.00209	*U*	0.00177	*U*	0.00166	*U*	0.00189	*U*
4,4'-DDT	0.0033	3.8	0.00208	*U*	0.00176	*U*	0.00165	*U*	0.00187	*U*	0.00209	*U*	0.00177	*U*	0.00166	*U*	0.00189	*U*
aldrin	0.0048	0.044	0.00208	*U*	0.00176	*U*	0.00165	*U*	0.00187	*U*	0.00209	*U*	0.00177	*U*	0.00166	*U*	0.00189	*U*
alpha-BHC	0.02	0.18	0.00208	*U*	0.00176	*U*	0.00165	*U*	0.00187	*U*	0.00209	*U*	0.00177	*U*	0.00166	*U*	0.00189	*U*
alpha-chlordane	0.014	0.65	0.00208	*U*	0.00176	*U*	0.00165	*U*	0.00187	*U*	0.00209	*U*	0.00177	*U*	0.00166	*U*	0.00189	*U*
beta-BHC	0.021	0.18	0.00208	*U*	0.00176	*U*	0.00165	*U*	0.00187	*U*	0.00209	*U*	0.00177	*U*	0.00166	*U*	0.00189	*U*
chlordane (total)	NA	NA	0.0415	*U*	0.0352	*U*	0.033	*U*	0.0375	*U*	0.0417	*U*	0.0354	*U*	0.0333	*U*	0.0378	*U*
delta-BHC	0.04	100	0.00208	*U*	0.00176	*U*	0.00165	*U*	0.00187	*U*	0.00209	*U*	0.00177	*U*	0.00166	*U*	0.00189	*U*
dieldrin	0.005	0.075	0.00208	*U*	0.00176	*U*	0.00165	*U*	0.00187	*U*	0.00209	*U*	0.00177	*U*	0.00166	*U*	0.00189	*U*
endosulfan I	4.3	35	0.00208	*U*	0.00176	*U*	0.00165	*U*	0.00187	*U*	0.00209	*U*	0.00177	*U*	0.00166	*U*	0.00189	*U*
endosulfan ii	4.3	35	0.00208	*U*	0.00176	*U*	0.00165	*U*	0.00187	*U*	0.00209	*U*	0.00177	*U*	0.00166	*U*	0.00189	*U*
endosulfan sulfate	4.3	35	0.00208	*U*	0.00176	*U*	0.00165	*U*	0.00187	*U*	0.00209	*U*	0.00177	*U*	0.00166	*U*	0.00189	*U*
endrin	0.014	5.3	0.00208	*U*	0.00176	*U*	0.00165	*U*	0.00187	*U*	0.00209	*U*	0.00177	*U*	0.00166	*U*	0.00189	*U*
endrin aldehyde	NA	NA	0.00208	*U*	0.00176	*U*	0.00165	*U*	0.00187	*U*	0.00209	*U*	0.00177	*U*	0.00166	*U*	0.00189	*U*
endrin ketone	NA	NA	0.00208	*U*	0.00176	*U*	0.00165	*U*	0.00187	*U*	0.00209	*U*	0.00177	*U*	0.00166	*U*	0.00189	*U*
gamma-bhc (lindane)	0.025	0.21	0.00208	*U*	0.00176	*U*	0.00165	*U*	0.00187	*U*	0.00209	*U*	0.00177	*U*	0.00166	*U*	0.00189	*U*
gamma-chlordane	NA	NA	0.00208	*U*	0.00176	*U*	0.00165	*U*	0.00187	*U*	0.00209	*U*	0.00177	*U*	0.00166	*U*	0.00189	*U*
heptachlor	0.013	0.53	0.00208	*U*	0.00176	*U*	0.00165	*U*	0.00187	*U*	0.00209	*U*	0.00177	*U*	0.00166	*U*	0.00189	*U*
heptachlor epoxide	NA	NA	0.00208	*U*	0.00176	*U*	0.00165	*U*	0.00187	*U*	0.00209	*U*	0.00177	*U*	0.00166	*U*	0.00189	*U*
methoxychlor	NA	NA	0.00208	*U*	0.00176	*U*	0.00165	*U*	0.00187	*U*	0.00209	*U*	0.00177	*U*	0.00166	*U*	0.00189	*U*
toxaphene	NA	NA	0.208	*U*	0.176	*U*	0.165	*U*	0.187	*U*	0.209	*U*	0.177	*U*	0.166	*U*	0.189	*U*

		Sample	SB-08 22.5-25		SB-09 0-5		SB-09 11-13		SB-09 22.5-25		DUP-20250319		SB-10 0-5		SB-10 11-13		SB-10 22.5-25	
		Date	2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19	
		Dilution	1		1		1		1		1		1		1		1	
PCBs, 8082	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
Aroclor 1016	0.1	1.00	0.021	*U*	0.0178	*U*	0.0167	*U*	0.0189	*U*	0.0211	*U*	0.0179	*U*	0.0168	*U*	0.0191	*U*
Aroclor 1221	0.1	1.00	0.021	*U*	0.0178	*U*	0.0167	*U*	0.0189	*U*	0.0211	*U*	0.0179	*U*	0.0168	*U*	0.0191	*U*
Aroclor 1232	0.1	1.00	0.021	*U*	0.0178	*U*	0.0167	*U*	0.0189	*U*	0.0211	*U*	0.0179	*U*	0.0168	*U*	0.0191	*U*
Aroclor 1242	0.1	1.00	0.021	*U*	0.0178	*U*	0.0167	*U*	0.0189	*U*	0.0211	*U*	0.0179	*U*	0.0168	*U*	0.0191	*U*
Aroclor 1248	0.1	1.00	0.021	*U*	0.0178	*U*	0.0167	*U*	0.0189	*U*	0.0211	*U*	0.0179	*U*	0.0168	*U*	0.0191	*U*
Aroclor 1254	0.1	1.00	0.021	*U*	0.0178	*U*	0.0167	*U*	0.0189	*U*	0.0211	*U*	0.0179	*U*	0.0168	*U*	0.0191	*U*
Aroclor 1260	0.1	1.00	0.021	*U*	0.0178	*U*	0.0167	*U*	0.0189	*U*	0.0211	*U*	0.0179	*U*	0.0168	*U*	0.0191	*U*
Total PCBs	0.1	1.00	0.021	*U*	0.0178	*U*	0.0167	*U*	0.0189	*U*	0.0211	*U*	0.0179	*U*	0.0168	*U*	0.0191	*U*

		Sample	SB-08 22.5-25		SB-09 0-5		SB-09 11-13		SB-09 22.5-25		DUP-20250319		SB-10 0-5		SB-10 11-13		SB-10 22.5-25	
		Date	2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19	
		Dilution	1		1		1		1		1		1		1		1	
Herbicides, 8151	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
2,4,5-T	NA	NA	0.0256	*U*	0.0213	*U*	0.0204	*U*	0.0228	*U*	0.0255	*U*	0.0219	*U*	0.0203	*U*	0.023	*U*
2,4,5-TP (Silvex)	NA	NA	0.0256	*U*	0.0213	*U*	0.0204	*U*	0.0228	*U*	0.0255	*U*	0.0219	*U*	0.0203	*U*	0.023	*U*
2,4-D	NA	NA	0.0256	*U*	0.0213	*U*	0.0204	*U*	0.0228	*U*	0.0255	*U*	0.0219	*U*	0.0203	*U*	0.023	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 6: Pesticides, Herbicides, and PCBs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-11 0-5		SB-11 11-13		SB-11 22.5-25		SB-12 0-5		SB-12 11-13		SB-12 22.5-25		DUPB-20250321		SB-13 5-10	
U= Not Detected ≥ value		Date	2025-03-25		2025-03-25		2025-03-25		2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-21	
All data in mg/Kg (ppm)		Dilution	5		5		5		5		5		5		5		5	
Pesticides, 8081	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
4,4'-DDD	0.0033	5	0.00173	*U*	0.0017	*U*	0.00183	*U*	0.00175	*U*	0.00168	*U*	0.00189	*U*	0.00173	*U*	0.00175	*U*
4,4'-DDE	0.0033	3.4	0.00173	*U*	0.0017	*U*	0.00183	*U*	0.00175	*U*	0.00168	*U*	0.00189	*U*	0.00173	*U*	0.00175	*U*
4,4'-DDT	0.0033	3.8	0.00173	*U*	0.0017	*U*	0.00183	*U*	0.00175	*U*	0.00168	*U*	0.00189	*U*	0.00173	*U*	0.00175	*U*
aldrin	0.0048	0.044	0.00173	*U*	0.0017	*U*	0.00183	*U*	0.00175	*U*	0.00168	*U*	0.00189	*U*	0.00173	*U*	0.00175	*U*
alpha-BHC	0.02	0.18	0.00173	*U*	0.0017	*U*	0.00183	*U*	0.00175	*U*	0.00168	*U*	0.00189	*U*	0.00173	*U*	0.00175	*U*
alpha-chlordane	0.014	0.65	0.00173	*U*	0.0017	*U*	0.00183	*U*	0.00175	*U*	0.00168	*U*	0.00189	*U*	0.00173	*U*	0.00175	*U*
beta-BHC	0.021	0.18	0.00173	*U*	0.0017	*U*	0.00183	*U*	0.00175	*U*	0.00168	*U*	0.00189	*U*	0.00173	*U*	0.00175	*U*
chlordane (total)	NA	NA	0.0347	*U*	0.0339	*U*	0.0367	*U*	0.0349	*U*	0.0337	*U*	0.0379	*U*	0.0346	*U*	0.035	*U*
delta-BHC	0.04	100	0.00173	*U*	0.0017	*U*	0.00183	*U*	0.00175	*U*	0.00168	*U*	0.00189	*U*	0.00173	*U*	0.00175	*U*
dieldrin	0.005	0.075	0.00173	*U*	0.0017	*U*	0.00183	*U*	0.00175	*U*	0.00168	*U*	0.00189	*U*	0.00173	*U*	0.00175	*U*
endosulfan I	4.3	35	0.00173	*U*	0.0017	*U*	0.00183	*U*	0.00175	*U*	0.00168	*U*	0.00189	*U*	0.00173	*U*	0.00175	*U*
endosulfan ii	4.3	35	0.00173	*U*	0.0017	*U*	0.00183	*U*	0.00175	*U*	0.00168	*U*	0.00189	*U*	0.00173	*U*	0.00175	*U*
endosulfan sulfate	4.3	35	0.00173	*U*	0.0017	*U*	0.00183	*U*	0.00175	*U*	0.00168	*U*	0.00189	*U*	0.00173	*U*	0.00175	*U*
endrin	0.014	5.3	0.00173	*U*	0.0017	*U*	0.00183	*U*	0.00175	*U*	0.00168	*U*	0.00189	*U*	0.00173	*U*	0.00175	*U*
endrin aldehyde	NA	NA	0.00173	*U*	0.0017	*U*	0.00183	*U*	0.00175	*U*	0.00168	*U*	0.00189	*U*	0.00173	*U*	0.00175	*U*
endrin ketone	NA	NA	0.00173	*U*	0.0017	*U*	0.00183	*U*	0.00175	*U*	0.00168	*U*	0.00189	*U*	0.00173	*U*	0.00175	*U*
gamma-bhc (lindane)	0.025	0.21	0.00173	*U*	0.0017	*U*	0.00183	*U*	0.00175	*U*	0.00168	*U*	0.00189	*U*	0.00173	*U*	0.00175	*U*
gamma-chlordane	NA	NA	0.00173	*U*	0.0017	*U*	0.00183	*U*	0.00175	*U*	0.00168	*U*	0.00189	*U*	0.00173	*U*	0.00175	*U*
heptachlor	0.013	0.53	0.00173	*U*	0.0017	*U*	0.00183	*U*	0.00175	*U*	0.00168	*U*	0.00189	*U*	0.00173	*U*	0.00175	*U*
heptachlor epoxide	NA	NA	0.00173	*U*	0.0017	*U*	0.00183	*U*	0.00175	*U*	0.00168	*U*	0.00189	*U*	0.00173	*U*	0.00175	*U*
methoxychlor	NA	NA	0.00173	*U*	0.0017	*U*	0.00183	*U*	0.00175	*U*	0.00168	*U*	0.00189	*U*	0.00173	*U*	0.00175	*U*
toxaphene	NA	NA	0.173	*U*	0.17	*U*	0.183	*U*	0.175	*U*	0.168	*U*	0.189	*U*	0.173	*U*	0.175	*U*

		Sample	SB-11 0-5		SB-11 11-13		SB-11 22.5-25		SB-12 0-5		SB-12 11-13		SB-12 22.5-25		DUPB-20250321		SB-13 5-10	
		Date	2025-03-25		2025-03-25		2025-03-25		2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-21	
		Dilution	1		1		1		1		1		1		1		1	
PCBs, 8082	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
Aroclor 1016	0.1	1.00	0.0175	*U*	0.0171	*U*	0.0185	*U*	0.0176	*U*	0.017	*U*	0.0191	*U*	0.0175	*U*	0.0177	*U*
Aroclor 1221	0.1	1.00	0.0175	*U*	0.0171	*U*	0.0185	*U*	0.0176	*U*	0.017	*U*	0.0191	*U*	0.0175	*U*	0.0177	*U*
Aroclor 1232	0.1	1.00	0.0175	*U*	0.0171	*U*	0.0185	*U*	0.0176	*U*	0.017	*U*	0.0191	*U*	0.0175	*U*	0.0177	*U*
Aroclor 1242	0.1	1.00	0.0175	*U*	0.0171	*U*	0.0185	*U*	0.0176	*U*	0.017	*U*	0.0191	*U*	0.0175	*U*	0.0177	*U*
Aroclor 1248	0.1	1.00	0.0175	*U*	0.0171	*U*	0.0185	*U*	0.0176	*U*	0.017	*U*	0.0191	*U*	0.0175	*U*	0.0177	*U*
Aroclor 1254	0.1	1.00	0.0175	*U*	0.0171	*U*	0.0185	*U*	0.0176	*U*	0.017	*U*	0.0191	*U*	0.0175	*U*	0.0177	*U*
Aroclor 1260	0.1	1.00	0.0175	*U*	0.0171	*U*	0.0185	*U*	0.0176	*U*	0.017	*U*	0.0191	*U*	0.0175	*U*	0.0177	*U*
Total PCBs	0.1	1.00	0.0175	*U*	0.0171	*U*	0.0185	*U*	0.0176	*U*	0.017	*U*	0.0191	*U*	0.0175	*U*	0.0177	*U*

		Sample	SB-11 0-5		SB-11 11-13		SB-11 22.5-25		SB-12 0-5		SB-12 11-13		SB-12 22.5-25		DUPB-20250321		SB-13 5-10	
		Date	2025-03-25		2025-03-25		2025-03-25		2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-21	
		Dilution	1		1		1		1		1		1		1		1	
Herbicides, 8151	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
2,4,5-T	NA	NA	0.0211	*U*	0.0206	*U*	0.0223	*U*	0.0213	*U*	0.0205	*U*	0.0226	*U*	0.021	*U*	0.0213	*U*
2,4,5-TP (Silvex)	NA	NA	0.0211	*U*	0.0206	*U*	0.0223	*U*	0.0213	*U*	0.0205	*U*	0.0226	*U*	0.021	*U*	0.0213	*U*
2,4-D	NA	NA	0.0211	*U*	0.0206	*U*	0.0223	*U*	0.0213	*U*	0.0205	*U*	0.0226	*U*	0.021	*U*	0.0213	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 6: Pesticides, Herbicides, and PCBs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-13 11-13		SB-13 22.5-25		SB-14 0-5		SB-14 11-13		SB-14 22.5-25		SB-15 0-5		SB-15 11-13		SB-15 22.5-25	
U= Not Detected ≥ value		Date	2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-20		2025-03-20		2025-03-20	
All data in mg/Kg (ppm)		Dilution	5		5		5		5		5		5		5		5	
Pesticides, 8081	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
4,4'-DDD	0.0033	5	0.00167	*U*	0.00168	*U*	0.00172	*U*	0.00173	*U*	0.00176	*U*	0.00186	*U*	0.00165	*U*	0.00168	*U*
4,4'-DDE	0.0033	3.4	0.00167	*U*	0.00168	*U*	0.00172	*U*	0.00173	*U*	0.00176	*U*	0.00186	*U*	0.00165	*U*	0.00168	*U*
4,4'-DDT	0.0033	3.8	0.00167	*U*	0.00168	*U*	0.00172	*U*	0.00173	*U*	0.00176	*U*	0.00186	*U*	0.00165	*U*	0.00168	*U*
aldrin	0.0048	0.044	0.00167	*U*	0.00168	*U*	0.00172	*U*	0.00173	*U*	0.00176	*U*	0.00186	*U*	0.00165	*U*	0.00168	*U*
alpha-BHC	0.02	0.18	0.00167	*U*	0.00168	*U*	0.00172	*U*	0.00173	*U*	0.00176	*U*	0.00186	*U*	0.00165	*U*	0.00168	*U*
alpha-chlordane	0.014	0.65	0.00167	*U*	0.00168	*U*	0.00172	*U*	0.00173	*U*	0.00176	*U*	0.00186	*U*	0.00165	*U*	0.00168	*U*
beta-BHC	0.021	0.18	0.00167	*U*	0.00168	*U*	0.00172	*U*	0.00173	*U*	0.00176	*U*	0.00186	*U*	0.00165	*U*	0.00168	*U*
chlordane (total)	NA	NA	0.0334	*U*	0.0336	*U*	0.0345	*U*	0.0345	*U*	0.0351	*U*	0.0372	*U*	0.0331	*U*	0.0336	*U*
delta-BHC	0.04	100	0.00167	*U*	0.00168	*U*	0.00172	*U*	0.00173	*U*	0.00176	*U*	0.00186	*U*	0.00165	*U*	0.00168	*U*
dieldrin	0.005	0.075	0.00167	*U*	0.00168	*U*	0.00172	*U*	0.00173	*U*	0.00176	*U*	0.00186	*U*	0.00165	*U*	0.00168	*U*
endosulfan I	4.3	35	0.00167	*U*	0.00168	*U*	0.00172	*U*	0.00173	*U*	0.00176	*U*	0.00186	*U*	0.00165	*U*	0.00168	*U*
endosulfan ii	4.3	35	0.00167	*U*	0.00168	*U*	0.00172	*U*	0.00173	*U*	0.00176	*U*	0.00186	*U*	0.00165	*U*	0.00168	*U*
endosulfan sulfate	4.3	35	0.00167	*U*	0.00168	*U*	0.00172	*U*	0.00173	*U*	0.00176	*U*	0.00186	*U*	0.00165	*U*	0.00168	*U*
endrin	0.014	5.3	0.00167	*U*	0.00168	*U*	0.00172	*U*	0.00173	*U*	0.00176	*U*	0.00186	*U*	0.00165	*U*	0.00168	*U*
endrin aldehyde	NA	NA	0.00167	*U*	0.00168	*U*	0.00172	*U*	0.00173	*U*	0.00176	*U*	0.00186	*U*	0.00165	*U*	0.00168	*U*
endrin ketone	NA	NA	0.00167	*U*	0.00168	*U*	0.00172	*U*	0.00173	*U*	0.00176	*U*	0.00186	*U*	0.00165	*U*	0.00168	*U*
gamma-bhc (lindane)	0.025	0.21	0.00167	*U*	0.00168	*U*	0.00172	*U*	0.00173	*U*	0.00176	*U*	0.00186	*U*	0.00165	*U*	0.00168	*U*
gamma-chlordane	NA	NA	0.00167	*U*	0.00168	*U*	0.00172	*U*	0.00173	*U*	0.00176	*U*	0.00186	*U*	0.00165	*U*	0.00168	*U*
heptachlor	0.013	0.53	0.00167	*U*	0.00168	*U*	0.00172	*U*	0.00173	*U*	0.00176	*U*	0.00186	*U*	0.00165	*U*	0.00168	*U*
heptachlor epoxide	NA	NA	0.00167	*U*	0.00168	*U*	0.00172	*U*	0.00173	*U*	0.00176	*U*	0.00186	*U*	0.00165	*U*	0.00168	*U*
methoxychlor	NA	NA	0.00167	*U*	0.00168	*U*	0.00172	*U*	0.00173	*U*	0.00176	*U*	0.00186	*U*	0.00165	*U*	0.00168	*U*
toxaphene	NA	NA	0.167	*U*	0.168	*U*	0.172	*U*	0.173	*U*	0.176	*U*	0.186	*U*	0.165	*U*	0.168	*U*

		Sample	SB-13 11-13		SB-13 22.5-25		SB-14 0-5		SB-14 11-13		SB-14 22.5-25		SB-15 0-5		SB-15 11-13		SB-15 22.5-25	
		Date	2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-20		2025-03-20		2025-03-20	
		Dilution	1		1		1		1		1		1		1		1	
PCBs, 8082	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
Aroclor 1016	0.1	1.00	0.0169	*U*	0.017	*U*	0.0174	*U*	0.0174	*U*	0.0177	*U*	0.0188	*U*	0.0167	*U*	0.017	*U*
Aroclor 1221	0.1	1.00	0.0169	*U*	0.017	*U*	0.0174	*U*	0.0174	*U*	0.0177	*U*	0.0188	*U*	0.0167	*U*	0.017	*U*
Aroclor 1232	0.1	1.00	0.0169	*U*	0.017	*U*	0.0174	*U*	0.0174	*U*	0.0177	*U*	0.0188	*U*	0.0167	*U*	0.017	*U*
Aroclor 1242	0.1	1.00	0.0169	*U*	0.017	*U*	0.0174	*U*	0.0174	*U*	0.0177	*U*	0.0188	*U*	0.0167	*U*	0.017	*U*
Aroclor 1248	0.1	1.00	0.0169	*U*	0.017	*U*	0.0174	*U*	0.0174	*U*	0.0177	*U*	0.0188	*U*	0.0167	*U*	0.017	*U*
Aroclor 1254	0.1	1.00	0.0169	*U*	0.017	*U*	0.0174	*U*	0.0174	*U*	0.0177	*U*	0.0188	*U*	0.0167	*U*	0.017	*U*
Aroclor 1260	0.1	1.00	0.0169	*U*	0.017	*U*	0.0174	*U*	0.0174	*U*	0.0177	*U*	0.0188	*U*	0.0167	*U*	0.017	*U*
Total PCBs	0.1	1.00	0.0169	*U*	0.017	*U*	0.0174	*U*	0.0174	*U*	0.0177	*U*	0.0188	*U*	0.0167	*U*	0.017	*U*

		Sample	SB-13 11-13		SB-13 22.5-25		SB-14 0-5		SB-14 11-13		SB-14 22.5-25		SB-15 0-5		SB-15 11-13		SB-15 22.5-25	
		Date	2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-20		2025-03-20		2025-03-20	
		Dilution	1		1		1		1		1		1		1		1	
Herbicides, 8151	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
2,4,5-T	NA	NA	0.02	*U*	0.0206	*U*	0.0211	*U*	0.0209	*U*	0.0212	*U*	0.0225	*U*	0.0199	*U*	0.0206	*U*
2,4,5-TP (Silvex)	NA	NA	0.02	*U*	0.0206	*U*	0.0211	*U*	0.0209	*U*	0.0212	*U*	0.0225	*U*	0.0199	*U*	0.0206	*U*
2,4-D	NA	NA	0.02	*U*	0.0206	*U*	0.0211	*U*	0.0209	*U*	0.0212	*U*	0.0225	*U*	0.0199	*U*	0.0206	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 6: Pesticides, Herbicides, and PCBs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-16 0-5		SB-16 11-13		SB-16 22.5-25		SB-17 0-5		SB-17 11-13		SB-17 22.5-25		SB-18 0-5		SB-18 11-13	
U= Not Detected ≥ value		Date	2025-03-21		2025-03-21		2025-03-21		2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-25	
All data in mg/Kg (ppm)		Dilution	5		5		5		5		5		5		5		5	
Pesticides, 8081	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
4,4'-DDD	0.0033	5	0.00178	*U*	0.00165	*U*	0.002	*U*	0.00168	*U*	0.00171	*U*	0.00176	*U*	0.00174	*U*	0.00165	*U*
4,4'-DDE	0.0033	3.4	0.00178	*U*	0.00165	*U*	0.002	*U*	0.00168	*U*	0.00171	*U*	0.00176	*U*	0.00174	*U*	0.00165	*U*
4,4'-DDT	0.0033	3.8	0.00178	*U*	0.00165	*U*	0.002	*U*	0.00168	*U*	0.00171	*U*	0.00176	*U*	0.00174	*U*	0.00165	*U*
aldrin	0.0048	0.044	0.00178	*U*	0.00165	*U*	0.002	*U*	0.00168	*U*	0.00171	*U*	0.00176	*U*	0.00174	*U*	0.00165	*U*
alpha-BHC	0.02	0.18	0.00178	*U*	0.00165	*U*	0.002	*U*	0.00168	*U*	0.00171	*U*	0.00176	*U*	0.00174	*U*	0.00165	*U*
alpha-chlordane	0.014	0.65	0.00178	*U*	0.00165	*U*	0.002	*U*	0.00168	*U*	0.00171	*U*	0.00176	*U*	0.00174	*U*	0.00165	*U*
beta-BHC	0.021	0.18	0.00178	*U*	0.00165	*U*	0.002	*U*	0.00168	*U*	0.00171	*U*	0.00176	*U*	0.00174	*U*	0.00165	*U*
chlordane (total)	NA	NA	0.0356	*U*	0.033	*U*	0.04	*U*	0.0337	*U*	0.0341	*U*	0.0352	*U*	0.0349	*U*	0.033	*U*
delta-BHC	0.04	100	0.00178	*U*	0.00165	*U*	0.002	*U*	0.00168	*U*	0.00171	*U*	0.00176	*U*	0.00174	*U*	0.00165	*U*
dieldrin	0.005	0.075	0.00178	*U*	0.00165	*U*	0.002	*U*	0.00168	*U*	0.00171	*U*	0.00176	*U*	0.00174	*U*	0.00165	*U*
endosulfan I	4.3	35	0.00178	*U*	0.00165	*U*	0.002	*U*	0.00168	*U*	0.00171	*U*	0.00176	*U*	0.00174	*U*	0.00165	*U*
endosulfan ii	4.3	35	0.00178	*U*	0.00165	*U*	0.002	*U*	0.00168	*U*	0.00171	*U*	0.00176	*U*	0.00174	*U*	0.00165	*U*
endosulfan sulfate	4.3	35	0.00178	*U*	0.00165	*U*	0.002	*U*	0.00168	*U*	0.00171	*U*	0.00176	*U*	0.00174	*U*	0.00165	*U*
endrin	0.014	5.3	0.00178	*U*	0.00165	*U*	0.002	*U*	0.00168	*U*	0.00171	*U*	0.00176	*U*	0.00174	*U*	0.00165	*U*
endrin aldehyde	NA	NA	0.00178	*U*	0.00165	*U*	0.002	*U*	0.00168	*U*	0.00171	*U*	0.00176	*U*	0.00174	*U*	0.00165	*U*
endrin ketone	NA	NA	0.00178	*U*	0.00165	*U*	0.002	*U*	0.00168	*U*	0.00171	*U*	0.00176	*U*	0.00174	*U*	0.00165	*U*
gamma-bhc (lindane)	0.025	0.21	0.00178	*U*	0.00165	*U*	0.002	*U*	0.00168	*U*	0.00171	*U*	0.00176	*U*	0.00174	*U*	0.00165	*U*
gamma-chlordane	NA	NA	0.00178	*U*	0.00165	*U*	0.002	*U*	0.00168	*U*	0.00171	*U*	0.00176	*U*	0.00174	*U*	0.00165	*U*
heptachlor	0.013	0.53	0.00178	*U*	0.00165	*U*	0.002	*U*	0.00168	*U*	0.00171	*U*	0.00176	*U*	0.00174	*U*	0.00165	*U*
heptachlor epoxide	NA	NA	0.00178	*U*	0.00165	*U*	0.002	*U*	0.00168	*U*	0.00171	*U*	0.00176	*U*	0.00174	*U*	0.00165	*U*
methoxychlor	NA	NA	0.00178	*U*	0.00165	*U*	0.002	*U*	0.00168	*U*	0.00171	*U*	0.00176	*U*	0.00174	*U*	0.00165	*U*
toxaphene	NA	NA	0.178	*U*	0.165	*U*	0.2	*U*	0.168	*U*	0.171	*U*	0.176	*U*	0.174	*U*	0.165	*U*

		Sample	SB-16 0-5		SB-16 11-13		SB-16 22.5-25		SB-17 0-5		SB-17 11-13		SB-17 22.5-25		SB-18 0-5		SB-18 11-13	
		Date	2025-03-21		2025-03-21		2025-03-21		2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-25	
		Dilution	1		1		1		1		1		1		1		1	
PCBs, 8082	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
Aroclor 1016	0.1	1.00	0.0179	*U*	0.0167	*U*	0.0202	*U*	0.017	*U*	0.0172	*U*	0.0178	*U*	0.0176	*U*	0.0167	*U*
Aroclor 1221	0.1	1.00	0.0179	*U*	0.0167	*U*	0.0202	*U*	0.017	*U*	0.0172	*U*	0.0178	*U*	0.0176	*U*	0.0167	*U*
Aroclor 1232	0.1	1.00	0.0179	*U*	0.0167	*U*	0.0202	*U*	0.017	*U*	0.0172	*U*	0.0178	*U*	0.0176	*U*	0.0167	*U*
Aroclor 1242	0.1	1.00	0.0179	*U*	0.0167	*U*	0.0202	*U*	0.017	*U*	0.0172	*U*	0.0178	*U*	0.0176	*U*	0.0167	*U*
Aroclor 1248	0.1	1.00	0.0179	*U*	0.0167	*U*	0.0202	*U*	0.017	*U*	0.0172	*U*	0.0178	*U*	0.0176	*U*	0.0167	*U*
Aroclor 1254	0.1	1.00	0.0179	*U*	0.0167	*U*	0.0202	*U*	0.017	*U*	0.0172	*U*	0.0178	*U*	0.0176	*U*	0.0167	*U*
Aroclor 1260	0.1	1.00	0.0179	*U*	0.0167	*U*	0.0202	*U*	0.017	*U*	0.0172	*U*	0.0178	*U*	0.0176	*U*	0.0167	*U*
Total PCBs	0.1	1.00	0.0179	*U*	0.0167	*U*	0.0202	*U*	0.017	*U*	0.0172	*U*	0.0178	*U*	0.0176	*U*	0.0167	*U*

		Sample	SB-16 0-5		SB-16 11-13		SB-16 22.5-25		SB-17 0-5		SB-17 11-13		SB-17 22.5-25		SB-18 0-5		SB-18 11-13	
		Date	2025-03-21		2025-03-21		2025-03-21		2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-25	
		Dilution	1		1		1		1		1		1		1		1	
Herbicides, 8151	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
2,4,5-T	NA	NA	0.0216	*U*	0.0201	*U*	0.0239	*U*	0.0205	*U*	0.0207	*U*	0.0213	*U*	0.0211	*U*	0.0197	*U*
2,4,5-TP (Silvex)	NA	NA	0.0216	*U*	0.0201	*U*	0.0239	*U*	0.0205	*U*	0.0207	*U*	0.0213	*U*	0.0211	*U*	0.0197	*U*
2,4-D	NA	NA	0.0216	*U*	0.0201	*U*	0.0239	*U*	0.0205	*U*	0.0207	*U*	0.0213	*U*	0.0211	*U*	0.0197	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 6: Pesticides, Herbicides, and PCBs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-18 22.5-25		SB-19 0-5		SB-19 11-13		SB-19 22.5-25		SB-20 0-5		SB-20 10-12		SB-20 22.5-25		SB-21 0-5	
U= Not Detected ≥ value		Date	2025-03-25		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
All data in mg/Kg (ppm)		Dilution	5		5		5		5		5		5		5		5	
Pesticides, 8081	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
4,4'-DDD	0.0033	5	0.00212	*U*	0.00175	*U*	0.00167	*U*	0.00206	*U*	0.00177	*U*	0.00167	*U*	0.00188	*U*	0.00165	*U*
4,4'-DDE	0.0033	3.4	0.00212	*U*	0.00175	*U*	0.00167	*U*	0.00206	*U*	0.00177	*U*	0.00167	*U*	0.00188	*U*	0.00165	*U*
4,4'-DDT	0.0033	3.8	0.00212	*U*	0.00175	*U*	0.00167	*U*	0.00206	*U*	0.00177	*U*	0.00167	*U*	0.00188	*U*	0.00165	*U*
aldrin	0.0048	0.044	0.00212	*U*	0.00175	*U*	0.00167	*U*	0.00206	*U*	0.00177	*U*	0.00167	*U*	0.00188	*U*	0.00165	*U*
alpha-BHC	0.02	0.18	0.00212	*U*	0.00175	*U*	0.00167	*U*	0.00206	*U*	0.00177	*U*	0.00167	*U*	0.00188	*U*	0.00165	*U*
alpha-chlordane	0.014	0.65	0.00212	*U*	0.00175	*U*	0.00167	*U*	0.00206	*U*	0.00177	*U*	0.00167	*U*	0.00188	*U*	0.00165	*U*
beta-BHC	0.021	0.18	0.00212	*U*	0.00175	*U*	0.00167	*U*	0.00206	*U*	0.00177	*U*	0.00167	*U*	0.00188	*U*	0.00165	*U*
chlordane (total)	NA	NA	0.0423	*U*	0.035	*U*	0.0333	*U*	0.0412	*U*	0.0353	*U*	0.0334	*U*	0.0376	*U*	0.033	*U*
delta-BHC	0.04	100	0.00212	*U*	0.00175	*U*	0.00167	*U*	0.00206	*U*	0.00177	*U*	0.00167	*U*	0.00188	*U*	0.00165	*U*
dieldrin	0.005	0.075	0.00212	*U*	0.00175	*U*	0.00167	*U*	0.00206	*U*	0.00177	*U*	0.00167	*U*	0.00188	*U*	0.00165	*U*
endosulfan I	4.3	35	0.00212	*U*	0.00175	*U*	0.00167	*U*	0.00206	*U*	0.00177	*U*	0.00167	*U*	0.00188	*U*	0.00165	*U*
endosulfan ii	4.3	35	0.00212	*U*	0.00175	*U*	0.00167	*U*	0.00206	*U*	0.00177	*U*	0.00167	*U*	0.00188	*U*	0.00165	*U*
endosulfan sulfate	4.3	35	0.00212	*U*	0.00175	*U*	0.00167	*U*	0.00206	*U*	0.00177	*U*	0.00167	*U*	0.00188	*U*	0.00165	*U*
endrin	0.014	5.3	0.00212	*U*	0.00175	*U*	0.00167	*U*	0.00206	*U*	0.00177	*U*	0.00167	*U*	0.00188	*U*	0.00165	*U*
endrin aldehyde	NA	NA	0.00212	*U*	0.00175	*U*	0.00167	*U*	0.00206	*U*	0.00177	*U*	0.00167	*U*	0.00188	*U*	0.00165	*U*
endrin ketone	NA	NA	0.00212	*U*	0.00175	*U*	0.00167	*U*	0.00206	*U*	0.00177	*U*	0.00167	*U*	0.00188	*U*	0.00165	*U*
gamma-bhc (lindane)	0.025	0.21	0.00212	*U*	0.00175	*U*	0.00167	*U*	0.00206	*U*	0.00177	*U*	0.00167	*U*	0.00188	*U*	0.00165	*U*
gamma-chlordane	NA	NA	0.00212	*U*	0.00175	*U*	0.00167	*U*	0.00206	*U*	0.00177	*U*	0.00167	*U*	0.00188	*U*	0.00165	*U*
heptachlor	0.013	0.53	0.00212	*U*	0.00175	*U*	0.00167	*U*	0.00206	*U*	0.00177	*U*	0.00167	*U*	0.00188	*U*	0.00165	*U*
heptachlor epoxide	NA	NA	0.00212	*U*	0.00175	*U*	0.00167	*U*	0.00206	*U*	0.00177	*U*	0.00167	*U*	0.00188	*U*	0.00165	*U*
methoxychlor	NA	NA	0.00212	*U*	0.00175	*U*	0.00167	*U*	0.00206	*U*	0.00177	*U*	0.00167	*U*	0.00188	*U*	0.00165	*U*
toxaphene	NA	NA	0.212	*U*	0.175	*U*	0.167	*U*	0.206	*U*	0.177	*U*	0.167	*U*	0.188	*U*	0.165	*U*

		Sample	SB-18 22.5-25		SB-19 0-5		SB-19 11-13		SB-19 22.5-25		SB-20 0-5		SB-20 10-12		SB-20 22.5-25		SB-21 0-5	
		Date	2025-03-25		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
		Dilution	1		1		1		1		1		1		1		1	
PCBs, 8082	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
Aroclor 1016	0.1	1.00	0.0214	*U*	0.0177	*U*	0.0168	*U*	0.0208	*U*	0.0178	*U*	0.0169	*U*	0.019	*U*	0.0166	*U*
Aroclor 1221	0.1	1.00	0.0214	*U*	0.0177	*U*	0.0168	*U*	0.0208	*U*	0.0178	*U*	0.0169	*U*	0.019	*U*	0.0166	*U*
Aroclor 1232	0.1	1.00	0.0214	*U*	0.0177	*U*	0.0168	*U*	0.0208	*U*	0.0178	*U*	0.0169	*U*	0.019	*U*	0.0166	*U*
Aroclor 1242	0.1	1.00	0.0214	*U*	0.0177	*U*	0.0168	*U*	0.0208	*U*	0.0178	*U*	0.0169	*U*	0.019	*U*	0.0166	*U*
Aroclor 1248	0.1	1.00	0.0214	*U*	0.0177	*U*	0.0168	*U*	0.0208	*U*	0.0178	*U*	0.0169	*U*	0.019	*U*	0.0166	*U*
Aroclor 1254	0.1	1.00	0.0214	*U*	0.0177	*U*	0.0168	*U*	0.0208	*U*	0.0178	*U*	0.0169	*U*	0.019	*U*	0.0166	*U*
Aroclor 1260	0.1	1.00	0.0214	*U*	0.0177	*U*	0.0168	*U*	0.0208	*U*	0.0178	*U*	0.0169	*U*	0.019	*U*	0.0166	*U*
Total PCBs	0.1	1.00	0.0214	*U*	0.0177	*U*	0.0168	*U*	0.0208	*U*	0.0178	*U*	0.0169	*U*	0.019	*U*	0.0166	*U*

		Sample	SB-18 22.5-25		SB-19 0-5		SB-19 11-13		SB-19 22.5-25		SB-20 0-5		SB-20 10-12		SB-20 22.5-25		SB-21 0-5	
		Date	2025-03-25		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
		Dilution	1		1		1		1		1		1		1		1	
Herbicides, 8151	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
2,4,5-T	NA	NA	0.0252	*U*	0.0211	*U*	0.0201	*U*	0.025	*U*	0.0211	*U*	0.0203	*U*	0.0223	*U*	0.0201	*U*
2,4,5-TP (Silvex)	NA	NA	0.0252	*U*	0.0211	*U*	0.0201	*U*	0.025	*U*	0.0211	*U*	0.0203	*U*	0.0223	*U*	0.0201	*U*
2,4-D	NA	NA	0.0252	*U*	0.0211	*U*	0.0201	*U*	0.025	*U*	0.0211	*U*	0.0203	*U*	0.0223	*U*	0.0201	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 6: Pesticides, Herbicides, and PCBs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-21 11-13		SB-21 22.5-25		SB-22 0-5		SB-22 11-13		SB-22 22.5-25		SB-23 0-5		SB-23 13-15		SB-23 22.5-25	
U= Not Detected ≥ value		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
All data in mg/Kg (ppm)		Dilution	5		5		5		5		5		5		5		5	
Pesticides, 8081	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
4,4'-DDD	0.0033	5	0.00172	*U*	0.0022	*U*	0.00166	*U*	0.00168	*U*	0.00181	*U*	0.00166	*U*	0.00167	*U*	0.00183	*U*
4,4'-DDE	0.0033	3.4	0.00172	*U*	0.0022	*U*	0.00166	*U*	0.00168	*U*	0.00181	*U*	0.00166	*U*	0.00167	*U*	0.00183	*U*
4,4'-DDT	0.0033	3.8	0.00172	*U*	0.0022	*U*	0.00166	*U*	0.00168	*U*	0.00181	*U*	0.00166	*U*	0.00167	*U*	0.00183	*U*
aldrin	0.0048	0.044	0.00172	*U*	0.0022	*U*	0.00166	*U*	0.00168	*U*	0.00181	*U*	0.00166	*U*	0.00167	*U*	0.00183	*U*
alpha-BHC	0.02	0.18	0.00172	*U*	0.0022	*U*	0.00166	*U*	0.00168	*U*	0.00181	*U*	0.00166	*U*	0.00167	*U*	0.00183	*U*
alpha-chlordane	0.014	0.65	0.00172	*U*	0.0022	*U*	0.00166	*U*	0.00168	*U*	0.00181	*U*	0.00166	*U*	0.00167	*U*	0.00183	*U*
beta-BHC	0.021	0.18	0.00172	*U*	0.0022	*U*	0.00166	*U*	0.00168	*U*	0.00181	*U*	0.00166	*U*	0.00167	*U*	0.00183	*U*
chlordane (total)	NA	NA	0.0344	*U*	0.044	*U*	0.0331	*U*	0.0336	*U*	0.0362	*U*	0.0332	*U*	0.0335	*U*	0.0366	*U*
delta-BHC	0.04	100	0.00172	*U*	0.0022	*U*	0.00166	*U*	0.00168	*U*	0.00181	*U*	0.00166	*U*	0.00167	*U*	0.00183	*U*
dieldrin	0.005	0.075	0.00172	*U*	0.0022	*U*	0.00166	*U*	0.00168	*U*	0.00181	*U*	0.00166	*U*	0.00167	*U*	0.00183	*U*
endosulfan I	4.3	35	0.00172	*U*	0.0022	*U*	0.00166	*U*	0.00168	*U*	0.00181	*U*	0.00166	*U*	0.00167	*U*	0.00183	*U*
endosulfan ii	4.3	35	0.00172	*U*	0.0022	*U*	0.00166	*U*	0.00168	*U*	0.00181	*U*	0.00166	*U*	0.00167	*U*	0.00183	*U*
endosulfan sulfate	4.3	35	0.00172	*U*	0.0022	*U*	0.00166	*U*	0.00168	*U*	0.00181	*U*	0.00166	*U*	0.00167	*U*	0.00183	*U*
endrin	0.014	5.3	0.00172	*U*	0.0022	*U*	0.00166	*U*	0.00168	*U*	0.00181	*U*	0.00166	*U*	0.00167	*U*	0.00183	*U*
endrin aldehyde	NA	NA	0.00172	*U*	0.0022	*U*	0.00166	*U*	0.00168	*U*	0.00181	*U*	0.00166	*U*	0.00167	*U*	0.00183	*U*
endrin ketone	NA	NA	0.00172	*U*	0.0022	*U*	0.00166	*U*	0.00168	*U*	0.00181	*U*	0.00166	*U*	0.00167	*U*	0.00183	*U*
gamma-bhc (lindane)	0.025	0.21	0.00172	*U*	0.0022	*U*	0.00166	*U*	0.00168	*U*	0.00181	*U*	0.00166	*U*	0.00167	*U*	0.00183	*U*
gamma-chlordane	NA	NA	0.00172	*U*	0.0022	*U*	0.00166	*U*	0.00168	*U*	0.00181	*U*	0.00166	*U*	0.00167	*U*	0.00183	*U*
heptachlor	0.013	0.53	0.00172	*U*	0.0022	*U*	0.00166	*U*	0.00168	*U*	0.00181	*U*	0.00166	*U*	0.00167	*U*	0.00183	*U*
heptachlor epoxide	NA	NA	0.00172	*U*	0.0022	*U*	0.00166	*U*	0.00168	*U*	0.00181	*U*	0.00166	*U*	0.00167	*U*	0.00183	*U*
methoxychlor	NA	NA	0.00172	*U*	0.0022	*U*	0.00166	*U*	0.00168	*U*	0.00181	*U*	0.00166	*U*	0.00167	*U*	0.00183	*U*
toxaphene	NA	NA	0.172	*U*	0.22	*U*	0.166	*U*	0.168	*U*	0.181	*U*	0.166	*U*	0.167	*U*	0.183	*U*

		Sample	SB-21 11-13		SB-21 22.5-25		SB-22 0-5		SB-22 11-13		SB-22 22.5-25		SB-23 0-5		SB-23 13-15		SB-23 22.5-25	
		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
		Dilution	1		1		1		1		1		1		1		1	
PCBs, 8082	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
Aroclor 1016	0.1	1.00	0.0174	*U*	0.0222	*U*	0.0167	*U*	0.017	*U*	0.0183	*U*	0.0167	*U*	0.0169	*U*	0.0185	*U*
Aroclor 1221	0.1	1.00	0.0174	*U*	0.0222	*U*	0.0167	*U*	0.017	*U*	0.0183	*U*	0.0167	*U*	0.0169	*U*	0.0185	*U*
Aroclor 1232	0.1	1.00	0.0174	*U*	0.0222	*U*	0.0167	*U*	0.017	*U*	0.0183	*U*	0.0167	*U*	0.0169	*U*	0.0185	*U*
Aroclor 1242	0.1	1.00	0.0174	*U*	0.0222	*U*	0.0167	*U*	0.017	*U*	0.0183	*U*	0.0167	*U*	0.0169	*U*	0.0185	*U*
Aroclor 1248	0.1	1.00	0.0174	*U*	0.0222	*U*	0.0167	*U*	0.017	*U*	0.0183	*U*	0.0167	*U*	0.0169	*U*	0.0185	*U*
Aroclor 1254	0.1	1.00	0.0174	*U*	0.0222	*U*	0.0167	*U*	0.017	*U*	0.0183	*U*	0.0167	*U*	0.0169	*U*	0.0185	*U*
Aroclor 1260	0.1	1.00	0.0174	*U*	0.0222	*U*	0.0167	*U*	0.017	*U*	0.0183	*U*	0.0167	*U*	0.0169	*U*	0.0185	*U*
Total PCBs	0.1	1.00	0.0174	*U*	0.0222	*U*	0.0167	*U*	0.017	*U*	0.0183	*U*	0.0167	*U*	0.0169	*U*	0.0185	*U*

		Sample	SB-21 11-13		SB-21 22.5-25		SB-22 0-5		SB-22 11-13		SB-22 22.5-25		SB-23 0-5		SB-23 13-15		SB-23 22.5-25	
		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
		Dilution	1		1		1		1		1		1		1		1	
Herbicides, 8151	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
2,4,5-T	NA	NA	0.0213	*U*	0.0261	*U*	0.02	*U*	0.0203	*U*	0.022	*U*	0.02	*U*	0.0204	*U*	0.0221	*U*
2,4,5-TP (Silvex)	NA	NA	0.0213	*U*	0.0261	*U*	0.02	*U*	0.0203	*U*	0.022	*U*	0.02	*U*	0.0204	*U*	0.0221	*U*
2,4-D	NA	NA	0.0213	*U*	0.0261	*U*	0.02	*U*	0.0203	*U*	0.022	*U*	0.02	*U*	0.0204	*U*	0.0221	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 6: Pesticides, Herbicides, and PCBs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-24 0-5		SB-24 11-13		SB-24 22.5-25		SB-25 0-5		SB-25 11-13		DUP-20250325		SB-25 22.5-25		SB-26 0-5	
U= Not Detected ≥ value		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-21	
All data in mg/Kg (ppm)		Dilution	5		5		5		5		5		5		5		5	
Pesticides, 8081	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
4,4'-DDD	0.0033	5	0.00172	*U*	0.00168	*U*	0.00202	*U*	0.00167	*U*	0.00168	*U*	0.00167	*U*	0.00185	*U*	0.0017	*U*
4,4'-DDE	0.0033	3.4	0.00172	*U*	0.00168	*U*	0.00202	*U*	0.00167	*U*	0.00168	*U*	0.00167	*U*	0.00185	*U*	0.0017	*U*
4,4'-DDT	0.0033	3.8	0.00172	*U*	0.00168	*U*	0.00202	*U*	0.00167	*U*	0.00168	*U*	0.00167	*U*	0.00185	*U*	0.0017	*U*
aldrin	0.0048	0.044	0.00172	*U*	0.00168	*U*	0.00202	*U*	0.00167	*U*	0.00168	*U*	0.00167	*U*	0.00185	*U*	0.0017	*U*
alpha-BHC	0.02	0.18	0.00172	*U*	0.00168	*U*	0.00202	*U*	0.00167	*U*	0.00168	*U*	0.00167	*U*	0.00185	*U*	0.0017	*U*
alpha-chlordane	0.014	0.65	0.00172	*U*	0.00168	*U*	0.00202	*U*	0.00167	*U*	0.00168	*U*	0.00167	*U*	0.00185	*U*	0.0017	*U*
beta-BHC	0.021	0.18	0.00172	*U*	0.00168	*U*	0.00202	*U*	0.00167	*U*	0.00168	*U*	0.00167	*U*	0.00185	*U*	0.0017	*U*
chlordane (total)	NA	NA	0.0343	*U*	0.0337	*U*	0.0404	*U*	0.0335	*U*	0.0337	*U*	0.0335	*U*	0.037	*U*	0.034	*U*
delta-BHC	0.04	100	0.00172	*U*	0.00168	*U*	0.00202	*U*	0.00167	*U*	0.00168	*U*	0.00167	*U*	0.00185	*U*	0.0017	*U*
dieldrin	0.005	0.075	0.00172	*U*	0.00168	*U*	0.00202	*U*	0.00167	*U*	0.00168	*U*	0.00167	*U*	0.00185	*U*	0.0017	*U*
endosulfan I	4.3	35	0.00172	*U*	0.00168	*U*	0.00202	*U*	0.00167	*U*	0.00168	*U*	0.00167	*U*	0.00185	*U*	0.0017	*U*
endosulfan ii	4.3	35	0.00172	*U*	0.00168	*U*	0.00202	*U*	0.00167	*U*	0.00168	*U*	0.00167	*U*	0.00185	*U*	0.0017	*U*
endosulfan sulfate	4.3	35	0.00172	*U*	0.00168	*U*	0.00202	*U*	0.00167	*U*	0.00168	*U*	0.00167	*U*	0.00185	*U*	0.0017	*U*
endrin	0.014	5.3	0.00172	*U*	0.00168	*U*	0.00202	*U*	0.00167	*U*	0.00168	*U*	0.00167	*U*	0.00185	*U*	0.0017	*U*
endrin aldehyde	NA	NA	0.00172	*U*	0.00168	*U*	0.00202	*U*	0.00167	*U*	0.00168	*U*	0.00167	*U*	0.00185	*U*	0.0017	*U*
endrin ketone	NA	NA	0.00172	*U*	0.00168	*U*	0.00202	*U*	0.00167	*U*	0.00168	*U*	0.00167	*U*	0.00185	*U*	0.0017	*U*
gamma-bhc (lindane)	0.025	0.21	0.00172	*U*	0.00168	*U*	0.00202	*U*	0.00167	*U*	0.00168	*U*	0.00167	*U*	0.00185	*U*	0.0017	*U*
gamma-chlordane	NA	NA	0.00172	*U*	0.00168	*U*	0.00202	*U*	0.00167	*U*	0.00168	*U*	0.00167	*U*	0.00185	*U*	0.0017	*U*
heptachlor	0.013	0.53	0.00172	*U*	0.00168	*U*	0.00202	*U*	0.00167	*U*	0.00168	*U*	0.00167	*U*	0.00185	*U*	0.0017	*U*
heptachlor epoxide	NA	NA	0.00172	*U*	0.00168	*U*	0.00202	*U*	0.00167	*U*	0.00168	*U*	0.00167	*U*	0.00185	*U*	0.0017	*U*
methoxychlor	NA	NA	0.00172	*U*	0.00168	*U*	0.00202	*U*	0.00167	*U*	0.00168	*U*	0.00167	*U*	0.00185	*U*	0.0017	*U*
toxaphene	NA	NA	0.172	*U*	0.168	*U*	0.202	*U*	0.167	*U*	0.168	*U*	0.167	*U*	0.185	*U*	0.17	*U*

		Sample	SB-24 0-5		SB-24 11-13		SB-24 22.5-25		SB-25 0-5		SB-25 11-13		DUP-20250325		SB-25 22.5-25		SB-26 0-5	
		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-21	
		Dilution	1		1		1		1		1		1		1		1	
PCBs, 8082	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
Aroclor 1016	0.1	1.00	0.0173	*U*	0.017	*U*	0.0204	*U*	0.0169	*U*	0.017	*U*	0.0169	*U*	0.0187	*U*	0.0172	*U*
Aroclor 1221	0.1	1.00	0.0173	*U*	0.017	*U*	0.0204	*U*	0.0169	*U*	0.017	*U*	0.0169	*U*	0.0187	*U*	0.0172	*U*
Aroclor 1232	0.1	1.00	0.0173	*U*	0.017	*U*	0.0204	*U*	0.0169	*U*	0.017	*U*	0.0169	*U*	0.0187	*U*	0.0172	*U*
Aroclor 1242	0.1	1.00	0.0173	*U*	0.017	*U*	0.0204	*U*	0.0169	*U*	0.017	*U*	0.0169	*U*	0.0187	*U*	0.0172	*U*
Aroclor 1248	0.1	1.00	0.0173	*U*	0.017	*U*	0.0204	*U*	0.0169	*U*	0.017	*U*	0.0169	*U*	0.0187	*U*	0.0172	*U*
Aroclor 1254	0.1	1.00	0.0173	*U*	0.017	*U*	0.0204	*U*	0.0169	*U*	0.017	*U*	0.0169	*U*	0.0187	*U*	0.0172	*U*
Aroclor 1260	0.1	1.00	0.0173	*U*	0.017	*U*	0.0204	*U*	0.0169	*U*	0.017	*U*	0.0169	*U*	0.0187	*U*	0.0172	*U*
Total PCBs	0.1	1.00	0.0173	*U*	0.017	*U*	0.0204	*U*	0.0169	*U*	0.017	*U*	0.0169	*U*	0.0187	*U*	0.0172	*U*

		Sample	SB-24 0-5		SB-24 11-13		SB-24 22.5-25		SB-25 0-5		SB-25 11-13		DUP-20250325		SB-25 22.5-25		SB-26 0-5	
		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-21	
		Dilution	1		1		1		1		1		1		1		1	
Herbicides, 8151	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
2,4,5-T	NA	NA	0.021	*U*	0.0201	*U*	0.0241	*U*	0.0202	*U*	0.0205	*U*	0.0204	*U*	0.0227	*U*	0.0207	*U*
2,4,5-TP (Silvex)	NA	NA	0.021	*U*	0.0201	*U*	0.0241	*U*	0.0202	*U*	0.0205	*U*	0.0204	*U*	0.0227	*U*	0.0207	*U*
2,4-D	NA	NA	0.021	*U*	0.0201	*U*	0.0241	*U*	0.0202	*U*	0.0205	*U*	0.0204	*U*	0.0227	*U*	0.0207	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 6: Pesticides, Herbicides, and PCBs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-26 11-13		SB-26 22.5-25		SB-27 0-5		SB-27 11-13		SB-27 22.5-25		SB-28 0-5		SB-28 11-13		DUP-20250320	
U= Not Detected ≥ value		Date	2025-03-21		2025-03-21		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
All data in mg/Kg (ppm)		Dilution	5		5		5		5		5		5		5		5	
Pesticides, 8081	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
4,4'-DDD	0.0033	5	0.00168	*U*	0.00207	*U*	0.00183	*U*	0.00164	*U*	0.00172	*U*	0.00177	*U*	0.00165	*U*	0.00164	*U*
4,4'-DDE	0.0033	3.4	0.00168	*U*	0.00207	*U*	0.00183	*U*	0.00164	*U*	0.00172	*U*	0.00177	*U*	0.00165	*U*	0.00164	*U*
4,4'-DDT	0.0033	3.8	0.00168	*U*	0.00207	*U*	0.00183	*U*	0.00164	*U*	0.00172	*U*	0.00177	*U*	0.00165	*U*	0.00164	*U*
aldrin	0.0048	0.044	0.00168	*U*	0.00207	*U*	0.00183	*U*	0.00164	*U*	0.00172	*U*	0.00177	*U*	0.00165	*U*	0.00164	*U*
alpha-BHC	0.02	0.18	0.00168	*U*	0.00207	*U*	0.00183	*U*	0.00164	*U*	0.00172	*U*	0.00177	*U*	0.00165	*U*	0.00164	*U*
alpha-chlordane	0.014	0.65	0.00168	*U*	0.00207	*U*	0.00183	*U*	0.00164	*U*	0.00172	*U*	0.00177	*U*	0.00165	*U*	0.00164	*U*
beta-BHC	0.021	0.18	0.00168	*U*	0.00207	*U*	0.00183	*U*	0.00164	*U*	0.00172	*U*	0.00177	*U*	0.00165	*U*	0.00164	*U*
chlordane (total)	NA	NA	0.0336	*U*	0.0414	*U*	0.0366	*U*	0.0328	*U*	0.0344	*U*	0.0354	*U*	0.0331	*U*	0.0327	*U*
delta-BHC	0.04	100	0.00168	*U*	0.00207	*U*	0.00183	*U*	0.00164	*U*	0.00172	*U*	0.00177	*U*	0.00165	*U*	0.00164	*U*
dieldrin	0.005	0.075	0.00168	*U*	0.00207	*U*	0.00183	*U*	0.00164	*U*	0.00172	*U*	0.00177	*U*	0.00165	*U*	0.00164	*U*
endosulfan I	4.3	35	0.00168	*U*	0.00207	*U*	0.00183	*U*	0.00164	*U*	0.00172	*U*	0.00177	*U*	0.00165	*U*	0.00164	*U*
endosulfan ii	4.3	35	0.00168	*U*	0.00207	*U*	0.00183	*U*	0.00164	*U*	0.00172	*U*	0.00177	*U*	0.00165	*U*	0.00164	*U*
endosulfan sulfate	4.3	35	0.00168	*U*	0.00207	*U*	0.00183	*U*	0.00164	*U*	0.00172	*U*	0.00177	*U*	0.00165	*U*	0.00164	*U*
endrin	0.014	5.3	0.00168	*U*	0.00207	*U*	0.00183	*U*	0.00164	*U*	0.00172	*U*	0.00177	*U*	0.00165	*U*	0.00164	*U*
endrin aldehyde	NA	NA	0.00168	*U*	0.00207	*U*	0.00183	*U*	0.00164	*U*	0.00172	*U*	0.00177	*U*	0.00165	*U*	0.00164	*U*
endrin ketone	NA	NA	0.00168	*U*	0.00207	*U*	0.00183	*U*	0.00164	*U*	0.00172	*U*	0.00177	*U*	0.00165	*U*	0.00164	*U*
gamma-bhc (lindane)	0.025	0.21	0.00168	*U*	0.00207	*U*	0.00183	*U*	0.00164	*U*	0.00172	*U*	0.00177	*U*	0.00165	*U*	0.00164	*U*
gamma-chlordane	NA	NA	0.00168	*U*	0.00207	*U*	0.00183	*U*	0.00164	*U*	0.00172	*U*	0.00177	*U*	0.00165	*U*	0.00164	*U*
heptachlor	0.013	0.53	0.00168	*U*	0.00207	*U*	0.00183	*U*	0.00164	*U*	0.00172	*U*	0.00177	*U*	0.00165	*U*	0.00164	*U*
heptachlor epoxide	NA	NA	0.00168	*U*	0.00207	*U*	0.00183	*U*	0.00164	*U*	0.00172	*U*	0.00177	*U*	0.00165	*U*	0.00164	*U*
methoxychlor	NA	NA	0.00168	*U*	0.00207	*U*	0.00183	*U*	0.00164	*U*	0.00172	*U*	0.00177	*U*	0.00165	*U*	0.00164	*U*
toxaphene	NA	NA	0.168	*U*	0.207	*U*	0.183	*U*	0.164	*U*	0.172	*U*	0.177	*U*	0.165	*U*	0.164	*U*

		Sample	SB-26 11-13		SB-26 22.5-25		SB-27 0-5		SB-27 11-13		SB-27 22.5-25		SB-28 0-5		SB-28 11-13		DUP-20250320	
		Date	2025-03-21		2025-03-21		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
		Dilution	1		1		1		1		1		1		1		1	
PCBs, 8082	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
Aroclor 1016	0.1	1.00	0.0169	*U*	0.0209	*U*	0.0185	*U*	0.0166	*U*	0.0174	*U*	0.0179	*U*	0.0167	*U*	0.0165	*U*
Aroclor 1221	0.1	1.00	0.0169	*U*	0.0209	*U*	0.0185	*U*	0.0166	*U*	0.0174	*U*	0.0179	*U*	0.0167	*U*	0.0165	*U*
Aroclor 1232	0.1	1.00	0.0169	*U*	0.0209	*U*	0.0185	*U*	0.0166	*U*	0.0174	*U*	0.0179	*U*	0.0167	*U*	0.0165	*U*
Aroclor 1242	0.1	1.00	0.0169	*U*	0.0209	*U*	0.0185	*U*	0.0166	*U*	0.0174	*U*	0.0179	*U*	0.0167	*U*	0.0165	*U*
Aroclor 1248	0.1	1.00	0.0169	*U*	0.0209	*U*	0.0185	*U*	0.0166	*U*	0.0174	*U*	0.0179	*U*	0.0167	*U*	0.0165	*U*
Aroclor 1254	0.1	1.00	0.0169	*U*	0.0209	*U*	0.0185	*U*	0.0166	*U*	0.0174	*U*	0.0179	*U*	0.0167	*U*	0.0165	*U*
Aroclor 1260	0.1	1.00	0.0169	*U*	0.0209	*U*	0.0185	*U*	0.0166	*U*	0.0174	*U*	0.0179	*U*	0.0167	*U*	0.0165	*U*
Total PCBs	0.1	1.00	0.0169	*U*	0.0209	*U*	0.0185	*U*	0.0166	*U*	0.0174	*U*	0.0179	*U*	0.0167	*U*	0.0165	*U*

		Sample	SB-26 11-13		SB-26 22.5-25		SB-27 0-5		SB-27 11-13		SB-27 22.5-25		SB-28 0-5		SB-28 11-13		DUP-20250320	
		Date	2025-03-21		2025-03-21		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
		Dilution	1		1		1		1		1		1		1		1	
Herbicides, 8151	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
2,4,5-T	NA	NA	0.0203	*U*	0.0254	*U*	0.0222	*U*	0.02	*U*	0.0209	*U*	0.0214	*U*	0.0201	*U*	0.0203	*U*
2,4,5-TP (Silvex)	NA	NA	0.0203	*U*	0.0254	*U*	0.0222	*U*	0.02	*U*	0.0209	*U*	0.0214	*U*	0.0201	*U*	0.0203	*U*
2,4-D	NA	NA	0.0203	*U*	0.0254	*U*	0.0222	*U*	0.02	*U*	0.0209	*U*	0.0214	*U*	0.0201	*U*	0.0203	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 6: Pesticides, Herbicides, and PCBs in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-28 22.5-25		SB-29 0-5		SB-29 11-13		SB-29 22.5-25		SB-30 0-5		SB-30 11-13		SB-30 22.5-25	
U= Not Detected ≥ value		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-21		2025-03-21		2025-03-21	
All data in mg/Kg (ppm)		Dilution	5		5		5		5		5		5		5	
Pesticides, 8081	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
4,4'-DDD	0.0033	5	0.00173	*U*	0.00187	*U*	0.00165	*U*	0.00175	*U*	0.00174	*U*	0.00164	*U*	0.00179	*U*
4,4'-DDE	0.0033	3.4	0.00173	*U*	0.00187	*U*	0.00165	*U*	0.00175	*U*	0.00174	*U*	0.00164	*U*	0.00179	*U*
4,4'-DDT	0.0033	3.8	0.00173	*U*	0.00187	*U*	0.00165	*U*	0.00175	*U*	0.00174	*U*	0.00164	*U*	0.00179	*U*
aldrin	0.0048	0.044	0.00173	*U*	0.00187	*U*	0.00165	*U*	0.00175	*U*	0.00174	*U*	0.00164	*U*	0.00179	*U*
alpha-BHC	0.02	0.18	0.00173	*U*	0.00187	*U*	0.00165	*U*	0.00175	*U*	0.00174	*U*	0.00164	*U*	0.00179	*U*
alpha-chlordane	0.014	0.65	0.00173	*U*	0.00187	*U*	0.00165	*U*	0.00175	*U*	0.00174	*U*	0.00164	*U*	0.00179	*U*
beta-BHC	0.021	0.18	0.00173	*U*	0.00187	*U*	0.00165	*U*	0.00175	*U*	0.00174	*U*	0.00164	*U*	0.00179	*U*
chlordane (total)	NA	NA	0.0347	*U*	0.0374	*U*	0.033	*U*	0.035	*U*	0.0348	*U*	0.0328	*U*	0.0358	*U*
delta-BHC	0.04	100	0.00173	*U*	0.00187	*U*	0.00165	*U*	0.00175	*U*	0.00174	*U*	0.00164	*U*	0.00179	*U*
dieldrin	0.005	0.075	0.00173	*U*	0.00187	*U*	0.00165	*U*	0.00175	*U*	0.00174	*U*	0.00164	*U*	0.00179	*U*
endosulfan I	4.3	35	0.00173	*U*	0.00187	*U*	0.00165	*U*	0.00175	*U*	0.00174	*U*	0.00164	*U*	0.00179	*U*
endosulfan ii	4.3	35	0.00173	*U*	0.00187	*U*	0.00165	*U*	0.00175	*U*	0.00174	*U*	0.00164	*U*	0.00179	*U*
endosulfan sulfate	4.3	35	0.00173	*U*	0.00187	*U*	0.00165	*U*	0.00175	*U*	0.00174	*U*	0.00164	*U*	0.00179	*U*
endrin	0.014	5.3	0.00173	*U*	0.00187	*U*	0.00165	*U*	0.00175	*U*	0.00174	*U*	0.00164	*U*	0.00179	*U*
endrin aldehyde	NA	NA	0.00173	*U*	0.00187	*U*	0.00165	*U*	0.00175	*U*	0.00174	*U*	0.00164	*U*	0.00179	*U*
endrin ketone	NA	NA	0.00173	*U*	0.00187	*U*	0.00165	*U*	0.00175	*U*	0.00174	*U*	0.00164	*U*	0.00179	*U*
gamma-bhc (lindane)	0.025	0.21	0.00173	*U*	0.00187	*U*	0.00165	*U*	0.00175	*U*	0.00174	*U*	0.00164	*U*	0.00179	*U*
gamma-chlordane	NA	NA	0.00173	*U*	0.00187	*U*	0.00165	*U*	0.00175	*U*	0.00174	*U*	0.00164	*U*	0.00179	*U*
heptachlor	0.013	0.53	0.00173	*U*	0.00187	*U*	0.00165	*U*	0.00175	*U*	0.00174	*U*	0.00164	*U*	0.00179	*U*
heptachlor epoxide	NA	NA	0.00173	*U*	0.00187	*U*	0.00165	*U*	0.00175	*U*	0.00174	*U*	0.00164	*U*	0.00179	*U*
methoxychlor	NA	NA	0.00173	*U*	0.00187	*U*	0.00165	*U*	0.00175	*U*	0.00174	*U*	0.00164	*U*	0.00179	*U*
toxaphene	NA	NA	0.173	*U*	0.187	*U*	0.165	*U*	0.175	*U*	0.174	*U*	0.164	*U*	0.179	*U*

		Sample	SB-28 22.5-25		SB-29 0-5		SB-29 11-13		SB-29 22.5-25		SB-30 0-5		SB-30 11-13		SB-30 22.5-25	
		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-21		2025-03-21		2025-03-21	
		Dilution	1		1		1		1		1		1		1	
PCBs, 8082	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
Aroclor 1016	0.1	1.00	0.0175	*U*	0.0189	*U*	0.0167	*U*	0.0177	*U*	0.0176	*U*	0.0166	*U*	0.0181	*U*
Aroclor 1221	0.1	1.00	0.0175	*U*	0.0189	*U*	0.0167	*U*	0.0177	*U*	0.0176	*U*	0.0166	*U*	0.0181	*U*
Aroclor 1232	0.1	1.00	0.0175	*U*	0.0189	*U*	0.0167	*U*	0.0177	*U*	0.0176	*U*	0.0166	*U*	0.0181	*U*
Aroclor 1242	0.1	1.00	0.0175	*U*	0.0189	*U*	0.0167	*U*	0.0177	*U*	0.0176	*U*	0.0166	*U*	0.0181	*U*
Aroclor 1248	0.1	1.00	0.0175	*U*	0.0189	*U*	0.0167	*U*	0.0177	*U*	0.0176	*U*	0.0166	*U*	0.0181	*U*
Aroclor 1254	0.1	1.00	0.0175	*U*	0.0189	*U*	0.0167	*U*	0.0177	*U*	0.0176	*U*	0.0166	*U*	0.0181	*U*
Aroclor 1260	0.1	1.00	0.0175	*U*	0.0189	*U*	0.0167	*U*	0.0177	*U*	0.0176	*U*	0.0166	*U*	0.0181	*U*
Total PCBs	0.1	1.00	0.0175	*U*	0.0189	*U*	0.0167	*U*	0.0177	*U*	0.0176	*U*	0.0166	*U*	0.0181	*U*

		Sample	SB-28 22.5-25		SB-29 0-5		SB-29 11-13		SB-29 22.5-25		SB-30 0-5		SB-30 11-13		SB-30 22.5-25	
		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-21		2025-03-21		2025-03-21	
		Dilution	1		1		1		1		1		1		1	
Herbicides, 8151	**UU SCO**	**RRU SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
2,4,5-T	NA	NA	0.0212	*U*	0.0228	*U*	0.02	*U*	0.0212	*U*	0.021	*U*	0.0201	*U*	0.0219	*U*
2,4,5-TP (Silvex)	NA	NA	0.0212	*U*	0.0228	*U*	0.02	*U*	0.0212	*U*	0.021	*U*	0.0201	*U*	0.0219	*U*
2,4-D	NA	NA	0.0212	*U*	0.0228	*U*	0.02	*U*	0.0212	*U*	0.021	*U*	0.0201	*U*	0.0219	*U*

Analyte Detected
Analyte Above UU SCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 7: PFAS and 1,4-Dioxane in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-01 0-5		SB-01 11-13		DUPA-20250321		SB-01 22.5-25		SB-02 0-5		SB-02 11-13		SB-02 22.5-25		SB-03 0-5	
U= Not Detected ≥ value		Date	2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-25		2025-03-25		2025-03-25		2025-03-25	
Data in µg/Kg (ppb)		Dilution	1		1		1		1		1		1		1		1	
PFAS, 1633	**UU**	**RRU**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
11CL-PF3OUdS	NA	NA	0.317	*U*	0.322	*U*	0.317	*U*	0.334	*U*	0.323	*U*	0.318	*U*	0.343	*U*	0.349	*U*
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2 FTS)	NA	NA	0.771	*U*	0.781	*U*	0.770	*U*	0.810	*U*	0.783	*U*	0.772	*U*	0.834	*U*	0.847	*U*
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2 FTS)	NA	NA	0.607	*U*	0.615	*U*	0.607	*U*	0.638	*U*	0.617	*U*	0.609	*U*	0.657	*U*	0.668	*U*
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2 FTS)	NA	NA	0.765	*U*	0.776	*U*	0.765	*U*	0.804	*U*	0.778	*U*	0.767	*U*	0.828	*U*	0.842	*U*
3-perfluoroheptyl propanoic acid (FHpPA)	NA	NA	1.530	*U*	1.550	*U*	1.530	*U*	1.610	*U*	1.560	*U*	1.530	*U*	1.660	*U*	1.680	*U*
3-perfluoropentyl propanoic acid (FPePA)	NA	NA	2.140	*U*	2.170	*U*	2.140	*U*	2.250	*U*	2.180	*U*	2.150	*U*	2.320	*U*	2.350	*U*
3-perfluoropropyl propanoic acid (FPrPA)	NA	NA	0.647	*U*	0.656	*U*	0.647	*U*	0.680	*U*	0.658	*U*	0.649	*U*	0.700	*U*	0.711	*U*
9CL-PF3ONS	NA	NA	0.251	*U*	0.254	*U*	0.251	*U*	0.264	*U*	0.255	*U*	0.252	*U*	0.272	*U*	0.276	*U*
ADONA	NA	NA	0.178	*U*	0.180	*U*	0.178	*U*	0.187	*U*	0.181	*U*	0.178	*U*	0.192	*U*	0.195	*U*
HFPO-DA (Gen-X)	NA	NA	0.620	*U*	0.629	*U*	0.620	*U*	0.652	*U*	0.631	*U*	0.622	*U*	0.671	*U*	0.682	*U*
N-EtFOSA	NA	NA	0.202	*U*	0.205	*U*	0.202	*U*	0.212	*U*	0.205	*U*	0.203	*U*	0.219	*U*	0.222	*U*
N-EtFOSAA	NA	NA	0.198	*U*	0.201	*U*	0.198	*U*	0.208	*U*	0.201	*U*	0.198	*U*	0.214	*U*	0.218	*U*
N-EtFOSE	NA	NA	0.711	*U*	0.721	*U*	0.711	*U*	0.747	*U*	0.723	*U*	0.713	*U*	0.770	*U*	0.782	*U*
N-MeFOSA	NA	NA	0.184	*U*	0.186	*U*	0.184	*U*	0.193	*U*	0.187	*U*	0.184	*U*	0.199	*U*	0.202	*U*
N-MeFOSAA	NA	NA	0.151	*U*	0.153	*U*	0.151	*U*	0.159	*U*	0.154	*U*	0.151	*U*	0.163	*U*	0.166	*U*
N-MeFOSE	NA	NA	0.624	*U*	0.632	*U*	0.623	*U*	0.655	*U*	0.634	*U*	0.625	*U*	0.675	*U*	0.686	*U*
perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NA	NA	0.142	*U*	0.144	*U*	0.142	*U*	0.149	*U*	0.144	*U*	0.142	*U*	0.153	*U*	0.156	*U*
perfluoro-1-decanesulfonic acid (PFDS)	NA	NA	0.195	*U*	0.198	*U*	0.195	*U*	0.205	*U*	0.198	*U*	0.195	*U*	0.211	*U*	0.214	*U*
perfluoro-1-heptanesulfonic acid (PFHpS)	NA	NA	0.158	*U*	0.160	*U*	0.158	*U*	0.166	*U*	0.161	*U*	0.159	*U*	0.171	*U*	0.174	*U*
perfluoro-1-nonanesulfonic acid (PFNS)	NA	NA	0.127	*U*	0.128	*U*	0.127	*U*	0.133	*U*	0.129	*U*	0.127	*U*	0.137	*U*	0.139	*U*
perfluoro-1-octanesulfonamide (FOSA)	NA	NA	0.149	*U*	0.151	*U*	0.149	*U*	0.157	*U*	0.151	*U*	0.149	*U*	0.161	*U*	0.164	*U*
perfluoro-1-pentanesulfonate (PFPeS)	NA	NA	0.160	*U*	0.162	*U*	0.160	*U*	0.168	*U*	0.163	*U*	0.161	*U*	0.173	*U*	0.176	*U*
perfluoro-3,6-dioxaheptanoic acid (NFDHA)	NA	NA	0.197	*U*	0.200	*U*	0.197	*U*	0.207	*U*	0.200	*U*	0.197	*U*	0.213	*U*	0.217	*U*
perfluoro-4-oxapentanoic acid (PFMPA)	NA	NA	0.063	*U*	0.064	*U*	0.063	*U*	0.067	*U*	0.064	*U*	0.063	*U*	0.069	*U*	0.070	*U*
perfluoro-5-oxahexanoic acid (PFMBA)	NA	NA	0.098	*U*	0.099	*U*	0.098	*U*	0.103	*U*	0.100	*U*	0.098	*U*	0.106	*U*	0.108	*U*
perfluorobutanesulfonic acid (PFBS)	NA	NA	0.113	*U*	0.115	*U*	0.113	*U*	0.119	*U*	0.115	*U*	0.114	*U*	0.123	*U*	0.125	*U*
perfluorodecanoic acid (PFDA)	NA	NA	0.195	*U*	0.198	*U*	0.195	*U*	0.205	*U*	0.198	*U*	0.195	*U*	0.211	*U*	0.214	*U*
perfluorododecanesulfonic acid (PFDoS)	NA	NA	0.172	*U*	0.175	*U*	0.172	*U*	0.181	*U*	0.175	*U*	0.173	*U*	0.187	*U*	0.190	*U*
perfluorododecanoic acid (PFDoA)	NA	NA	0.166	*U*	0.169	*U*	0.166	*U*	0.175	*U*	0.169	*U*	0.167	*U*	0.180	*U*	0.183	*U*
perfluoroheptanoic acid (PFHpA)	NA	NA	0.107	*U*	0.109	*U*	0.107	*U*	0.113	*U*	0.109	*U*	0.107	*U*	0.116	*U*	0.118	*U*
perfluorohexanesulfonic acid (PFHxS)	NA	NA	0.183	*U*	0.185	*U*	0.183	*U*	0.192	*U*	0.186	*U*	0.183	*U*	0.198	*U*	0.201	*U*
perfluorohexanoic acid (PFHxA)	NA	NA	0.054	*U*	0.055	*U*	0.054	*U*	0.057	*U*	0.055	*U*	0.054	*U*	0.059	*U*	0.060	*U*
perfluoro-n-butanoic acid (PFBA)	NA	NA	0.111	*U*	0.113	*U*	0.111	*U*	0.117	*U*	0.113	*U*	0.112	*U*	0.120	*U*	0.122	*U*
perfluorononanoic acid (PFNA)	NA	NA	0.193	*U*	0.195	*U*	0.193	*U*	0.203	*U*	0.196	*U*	0.193	*U*	0.209	*U*	0.212	*U*
perfluorooctanesulfonic acid (PFOS)	0.88	44	0.576		0.173	*U*	0.507		0.179	*U*	0.391		0.171	*U*	0.184	*U*	1.000	
perfluorooctanoic acid (PFOA)	0.66	33	0.176	*U*	0.178	*U*	0.175	*U*	0.184	*U*	0.178	*U*	0.176	*U*	0.190	*U*	0.201	*J*
perfluoropentanoic acid (PFPeA)	NA	NA	0.111	*U*	0.113	*U*	0.111	*U*	0.117	*U*	0.113	*U*	0.112	*U*	0.120	*U*	0.122	*U*
perfluorotetradecanoic acid (PFTA)	NA	NA	0.105	*U*	0.107	*U*	0.105	*U*	0.110	*U*	0.107	*U*	0.105	*U*	0.114	*U*	0.116	*U*
perfluorotridecanoic acid (PFTrDA)	NA	NA	0.128	*U*	0.129	*U*	0.128	*U*	0.134	*U*	0.130	*U*	0.128	*U*	0.138	*U*	0.140	*U*
perfluoroundecanoic acid (PFUnA)	NA	NA	0.202	*U*	0.205	*U*	0.202	*U*	0.212	*U*	0.205	*U*	0.203	*U*	0.219	*U*	0.222	*U*

		Sample	SB-01 0-5		SB-01 11-13		DUPA-20250321		SB-01 22.5-25		SB-02 0-5		SB-02 11-13		SB-02 22.5-25		SB-03 0-5	
		Date	2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-25		2025-03-25		2025-03-25		2025-03-25	
Data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1		1		1	
1,4-Dioxane, 8270 SIM	**UU SCO**	**SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,4-dioxane	0.1	13	0.0192	*U*	0.0192	*U*	0.0196	*U*	0.019	*U*	0.0198	*U*	0.0198	*U*	0.0198	*U*	0.0198	*U*

Analyte Detected
Analyte Above UU Guidance/SCO

Notes: SCOs/guidance values based on NYSDEC Part 375-6.8 and current NYSDEC guidance NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 7: PFAS and 1,4-Dioxane in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-03 11-13		SB-03 22.5-25		SB-04 0-5		SB-04 11-13		SB-04 22.5-25		SB-05 0-5		SB-05 11-13		SB-05 22.5-25	
U= Not Detected ≥ value		Date	2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-19		2025-03-19		2025-03-19	
Data in µg/Kg (ppb)		Dilution	1		1		1		1		1		1		1		1	
PFAS, 1633	**UU**	**RRU**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
11CL-PF3OUdS	NA	NA	0.324	*U*	0.350	*U*	0.324	*U*	0.323	*U*	0.348	*U*	0.326	*U*	0.316	*U*	0.348	*U*
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2 FTS)	NA	NA	0.786	*U*	0.849	*U*	0.786	*U*	0.785	*U*	0.845	*U*	0.790	*U*	0.768	*U*	0.844	*U*
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2 FTS)	NA	NA	0.620	*U*	0.669	*U*	0.619	*U*	0.619	*U*	0.666	*U*	0.623	*U*	0.605	*U*	0.665	*U*
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2 FTS)	NA	NA	0.781	*U*	0.843	*U*	0.781	*U*	0.780	*U*	0.839	*U*	0.785	*U*	0.763	*U*	0.838	*U*
3-perfluoroheptyl propanoic acid (FHpPA)	NA	NA	1.560	*U*	1.690	*U*	1.560	*U*	1.560	*U*	1.680	*U*	1.570	*U*	1.530	*U*	1.680	*U*
3-perfluoropentyl propanoic acid (FPePA)	NA	NA	2.190	*U*	2.360	*U*	2.180	*U*	2.180	*U*	2.350	*U*	2.200	*U*	2.130	*U*	2.340	*U*
3-perfluoropropyl propanoic acid (FPrPA)	NA	NA	0.660	*U*	0.713	*U*	0.660	*U*	0.659	*U*	0.709	*U*	0.664	*U*	0.645	*U*	0.709	*U*
9CL-PF3ONS	NA	NA	0.256	*U*	0.277	*U*	0.256	*U*	0.256	*U*	0.275	*U*	0.258	*U*	0.250	*U*	0.275	*U*
ADONA	NA	NA	0.181	*U*	0.196	*U*	0.181	*U*	0.181	*U*	0.195	*U*	0.182	*U*	0.177	*U*	0.194	*U*
HFPO-DA (Gen-X)	NA	NA	0.633	*U*	0.683	*U*	0.633	*U*	0.632	*U*	0.680	*U*	0.636	*U*	0.619	*U*	0.680	*U*
N-EtFOSA	NA	NA	0.206	*U*	0.223	*U*	0.206	*U*	0.206	*U*	0.221	*U*	0.207	*U*	0.201	*U*	0.221	*U*
N-EtFOSAA	NA	NA	0.202	*U*	0.218	*U*	0.202	*U*	0.202	*U*	0.217	*U*	0.203	*U*	0.197	*U*	0.217	*U*
N-EtFOSE	NA	NA	0.726	*U*	0.783	*U*	0.726	*U*	0.725	*U*	0.780	*U*	0.730	*U*	0.709	*U*	0.779	*U*
N-MeFOSA	NA	NA	0.187	*U*	0.202	*U*	0.187	*U*	0.187	*U*	0.201	*U*	0.188	*U*	0.183	*U*	0.201	*U*
N-MeFOSAA	NA	NA	0.154	*U*	0.166	*U*	0.154	*U*	0.154	*U*	0.166	*U*	0.155	*U*	0.151	*U*	0.165	*U*
N-MeFOSE	NA	NA	0.636	*U*	0.687	*U*	0.636	*U*	0.635	*U*	0.683	*U*	0.640	*U*	0.622	*U*	0.683	*U*
perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NA	NA	0.145	*U*	0.156	*U*	0.145	*U*	0.145	*U*	0.155	*U*	0.146	*U*	0.141	*U*	0.155	*U*
perfluoro-1-decanesulfonic acid (PFDS)	NA	NA	0.199	*U*	0.215	*U*	0.199	*U*	0.199	*U*	0.214	*U*	0.200	*U*	0.194	*U*	0.213	*U*
perfluoro-1-heptanesulfonic acid (PFHpS)	NA	NA	0.161	*U*	0.174	*U*	0.161	*U*	0.161	*U*	0.173	*U*	0.162	*U*	0.158	*U*	0.173	*U*
perfluoro-1-nonanesulfonic acid (PFNS)	NA	NA	0.129	*U*	0.139	*U*	0.129	*U*	0.129	*U*	0.139	*U*	0.130	*U*	0.126	*U*	0.139	*U*
perfluoro-1-octanesulfonamide (FOSA)	NA	NA	0.152	*U*	0.164	*U*	0.152	*U*	0.152	*U*	0.163	*U*	0.153	*U*	0.149	*U*	0.163	*U*
perfluoro-1-pentanesulfonate (PFPeS)	NA	NA	0.164	*U*	0.176	*U*	0.163	*U*	0.163	*U*	0.176	*U*	0.164	*U*	0.160	*U*	0.175	*U*
perfluoro-3,6-dioxaheptanoic acid (NFDHA)	NA	NA	0.201	*U*	0.217	*U*	0.201	*U*	0.201	*U*	0.216	*U*	0.202	*U*	0.196	*U*	0.216	*U*
perfluoro-4-oxapentanoic acid (PFMPA)	NA	NA	0.065	*U*	0.070	*U*	0.065	*U*	0.065	*U*	0.069	*U*	0.065	*U*	0.063	*U*	0.069	*U*
perfluoro-5-oxahexanoic acid (PFMBA)	NA	NA	0.100	*U*	0.108	*U*	0.100	*U*	0.100	*U*	0.107	*U*	0.100	*U*	0.098	*U*	0.107	*U*
perfluorobutanesulfonic acid (PFBS)	NA	NA	0.116	*U*	0.125	*U*	0.116	*U*	0.115	*U*	0.124	*U*	0.116	*U*	0.113	*U*	0.124	*U*
perfluorodecanoic acid (PFDA)	NA	NA	0.199	*U*	0.215	*U*	0.199	*U*	0.199	*U*	0.214	*U*	0.200	*U*	0.194	*U*	0.213	*U*
perfluorododecanesulfonic acid (PFDoS)	NA	NA	0.176	*U*	0.190	*U*	0.176	*U*	0.176	*U*	0.189	*U*	0.177	*U*	0.172	*U*	0.189	*U*
perfluorododecanoic acid (PFDoA)	NA	NA	0.170	*U*	0.183	*U*	0.170	*U*	0.169	*U*	0.182	*U*	0.171	*U*	0.166	*U*	0.182	*U*
perfluoroheptanoic acid (PFHpA)	NA	NA	0.109	*U*	0.118	*U*	0.109	*U*	0.109	*U*	0.117	*U*	0.110	*U*	0.107	*U*	0.117	*U*
perfluorohexanesulfonic acid (PFHxS)	NA	NA	0.186	*U*	0.201	*U*	0.186	*U*	0.186	*U*	0.200	*U*	0.187	*U*	0.182	*U*	0.200	*U*
perfluorohexanoic acid (PFHxA)	NA	NA	0.055	*U*	0.060	*U*	0.055	*U*	0.055	*U*	0.059	*U*	0.056	*U*	0.054	*U*	0.059	*U*
perfluoro-n-butanoic acid (PFBA)	NA	NA	0.114	*U*	0.123	*U*	0.113	*U*	0.113	*U*	0.122	*U*	0.114	*U*	0.111	*U*	0.122	*U*
perfluorononanoic acid (PFNA)	NA	NA	0.197	*U*	0.212	*U*	0.197	*U*	0.196	*U*	0.211	*U*	0.198	*U*	0.192	*U*	0.211	*U*
perfluorooctanesulfonic acid (PFOS)	0.88	44	0.174	*U*	0.188	*U*	0.711		0.174	*U*	0.187	*U*	0.175	*U*	0.170	*U*	0.187	*U*
perfluorooctanoic acid (PFOA)	0.66	33	0.424		0.193	*U*	0.179	*U*	0.179	*U*	0.192	*U*	0.180	*U*	0.175	*U*	0.192	*U*
perfluoropentanoic acid (PFPeA)	NA	NA	0.114	*U*	0.123	*U*	0.113	*U*	0.113	*U*	0.122	*U*	0.114	*U*	0.111	*U*	0.122	*U*
perfluorotetradecanoic acid (PFTA)	NA	NA	0.107	*U*	0.116	*U*	0.107	*U*	0.107	*U*	0.115	*U*	0.108	*U*	0.105	*U*	0.115	*U*
perfluorotridecanoic acid (PFTrDA)	NA	NA	0.130	*U*	0.141	*U*	0.130	*U*	0.130	*U*	0.140	*U*	0.131	*U*	0.127	*U*	0.140	*U*
perfluoroundecanoic acid (PFUnA)	NA	NA	0.206	*U*	0.223	*U*	0.206	*U*	0.206	*U*	0.221	*U*	0.207	*U*	0.201	*U*	0.221	*U*

		Sample	SB-03 11-13		SB-03 22.5-25		SB-04 0-5		SB-04 11-13		SB-04 22.5-25		SB-05 0-5		SB-05 11-13		SB-05 22.5-25	
		Date	2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-19		2025-03-19		2025-03-19	
Data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1		1		1	
1,4-Dioxane, 8270 SIM	**UU SCO**	**SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,4-dioxane	0.1	13	0.0194	*U*	0.0194	*U*	0.0196	*U*	0.0196	*U*	0.0196	*U*	0.0187	*U*	0.0196	*U*	0.0187	*U*

Analyte Detected
Analyte Above UU Guidance/SCO

Notes: SCOs/guidance values based on NYSDEC Part 375-6.8 and current NYSDEC guidance NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 7: PFAS and 1,4-Dioxane in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-06 0-5		SB-06 11-13		SB-06 22.5-25		SB-07 0-5		SB-07 11-13		SB-07 22.5-25		SB-08 0-5		SB-08 11-13	
U= Not Detected ≥ value		Date	2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19	
Data in µg/Kg (ppb)		Dilution	1		1		1		1		1		1		1		1	
PFAS, 1633	**UU**	**RRU**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
11CL-PF3OUdS	NA	NA	0.340	*U*	0.313	*U*	0.327	*U*	0.318	*U*	0.315	*U*	0.365	*U*	0.346	*U*	0.321	*U*
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2 FTS)	NA	NA	0.825	*U*	0.759	*U*	0.794	*U*	0.772	*U*	0.764	*U*	0.886	*U*	0.840	*U*	0.780	*U*
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2 FTS)	NA	NA	0.650	*U*	0.599	*U*	0.625	*U*	0.608	*U*	0.602	*U*	0.698	*U*	0.662	*U*	0.614	*U*
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2 FTS)	NA	NA	0.820	*U*	0.754	*U*	0.788	*U*	0.767	*U*	0.759	*U*	0.880	*U*	0.835	*U*	0.774	*U*
3-perfluoroheptyl propanoic acid (FHpPA)	NA	NA	1.640	*U*	1.510	*U*	1.580	*U*	1.530	*U*	1.520	*U*	1.760	*U*	1.670	*U*	1.550	*U*
3-perfluoropentyl propanoic acid (FPePA)	NA	NA	2.290	*U*	2.110	*U*	2.210	*U*	2.140	*U*	2.120	*U*	2.460	*U*	2.330	*U*	2.170	*U*
3-perfluoropropyl propanoic acid (FPrPA)	NA	NA	0.693	*U*	0.638	*U*	0.666	*U*	0.648	*U*	0.642	*U*	0.744	*U*	0.705	*U*	0.655	*U*
9CL-PF3ONS	NA	NA	0.269	*U*	0.247	*U*	0.259	*U*	0.252	*U*	0.249	*U*	0.289	*U*	0.274	*U*	0.254	*U*
ADONA	NA	NA	0.190	*U*	0.175	*U*	0.183	*U*	0.178	*U*	0.176	*U*	0.204	*U*	0.194	*U*	0.180	*U*
HFPO-DA (Gen-X)	NA	NA	0.665	*U*	0.612	*U*	0.639	*U*	0.622	*U*	0.615	*U*	0.714	*U*	0.677	*U*	0.628	*U*
N-EtFOSA	NA	NA	0.216	*U*	0.199	*U*	0.208	*U*	0.202	*U*	0.200	*U*	0.232	*U*	0.220	*U*	0.204	*U*
N-EtFOSAA	NA	NA	0.212	*U*	0.195	*U*	0.204	*U*	0.198	*U*	0.196	*U*	0.228	*U*	0.216	*U*	0.200	*U*
N-EtFOSE	NA	NA	0.762	*U*	0.701	*U*	0.733	*U*	0.713	*U*	0.706	*U*	0.818	*U*	0.776	*U*	0.720	*U*
N-MeFOSA	NA	NA	0.197	*U*	0.181	*U*	0.189	*U*	0.184	*U*	0.182	*U*	0.211	*U*	0.200	*U*	0.186	*U*
N-MeFOSAA	NA	NA	0.162	*U*	0.149	*U*	0.156	*U*	0.151	*U*	0.150	*U*	0.174	*U*	0.165	*U*	0.153	*U*
N-MeFOSE	NA	NA	0.668	*U*	0.615	*U*	0.642	*U*	0.625	*U*	0.619	*U*	0.717	*U*	0.680	*U*	0.631	*U*
perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NA	NA	0.152	*U*	0.140	*U*	0.146	*U*	0.142	*U*	0.141	*U*	0.163	*U*	0.155	*U*	0.144	*U*
perfluoro-1-decanesulfonic acid (PFDS)	NA	NA	0.209	*U*	0.192	*U*	0.201	*U*	0.195	*U*	0.193	*U*	0.224	*U*	0.213	*U*	0.197	*U*
perfluoro-1-heptanesulfonic acid (PFHpS)	NA	NA	0.169	*U*	0.156	*U*	0.163	*U*	0.158	*U*	0.157	*U*	0.182	*U*	0.172	*U*	0.160	*U*
perfluoro-1-nonanesulfonic acid (PFNS)	NA	NA	0.136	*U*	0.125	*U*	0.130	*U*	0.127	*U*	0.126	*U*	0.146	*U*	0.138	*U*	0.128	*U*
perfluoro-1-octanesulfonamide (FOSA)	NA	NA	0.160	*U*	0.147	*U*	0.153	*U*	0.149	*U*	0.148	*U*	0.171	*U*	0.162	*U*	0.151	*U*
perfluoro-1-pentanesulfonate (PFPeS)	NA	NA	0.172	*U*	0.158	*U*	0.165	*U*	0.161	*U*	0.159	*U*	0.184	*U*	0.175	*U*	0.162	*U*
perfluoro-3,6-dioxaheptanoic acid (NFDHA)	NA	NA	0.211	*U*	0.194	*U*	0.203	*U*	0.197	*U*	0.195	*U*	0.227	*U*	0.215	*U*	0.199	*U*
perfluoro-4-oxapentanoic acid (PFMPA)	NA	NA	0.068	*U*	0.062	*U*	0.065	*U*	0.063	*U*	0.063	*U*	0.073	*U*	0.069	*U*	0.064	*U*
perfluoro-5-oxahexanoic acid (PFMBA)	NA	NA	0.105	*U*	0.097	*U*	0.101	*U*	0.098	*U*	0.097	*U*	0.113	*U*	0.107	*U*	0.099	*U*
perfluorobutanesulfonic acid (PFBS)	NA	NA	0.121	*U*	0.112	*U*	0.117	*U*	0.113	*U*	0.112	*U*	0.130	*U*	0.124	*U*	0.115	*U*
perfluorodecanoic acid (PFDA)	NA	NA	0.209	*U*	0.192	*U*	0.201	*U*	0.195	*U*	0.193	*U*	0.224	*U*	0.213	*U*	0.197	*U*
perfluorododecanesulfonic acid (PFDoS)	NA	NA	0.185	*U*	0.170	*U*	0.178	*U*	0.173	*U*	0.171	*U*	0.198	*U*	0.188	*U*	0.175	*U*
perfluorododecanoic acid (PFDoA)	NA	NA	0.178	*U*	0.164	*U*	0.171	*U*	0.167	*U*	0.165	*U*	0.191	*U*	0.181	*U*	0.168	*U*
perfluoroheptanoic acid (PFHpA)	NA	NA	0.115	*U*	0.106	*U*	0.110	*U*	0.107	*U*	0.106	*U*	0.123	*U*	0.117	*U*	0.108	*U*
perfluorohexanesulfonic acid (PFHxS)	NA	NA	0.196	*U*	0.180	*U*	0.188	*U*	0.183	*U*	0.181	*U*	0.210	*U*	0.199	*U*	0.185	*U*
perfluorohexanoic acid (PFHxA)	NA	NA	0.058	*U*	0.053	*U*	0.056	*U*	0.054	*U*	0.054	*U*	0.062	*U*	0.059	*U*	0.055	*U*
perfluoro-n-butanoic acid (PFBA)	NA	NA	0.119	*U*	0.110	*U*	0.115	*U*	0.111	*U*	0.110	*U*	0.128	*U*	0.121	*U*	0.113	*U*
perfluorononanoic acid (PFNA)	NA	NA	0.207	*U*	0.190	*U*	0.199	*U*	0.193	*U*	0.191	*U*	0.222	*U*	0.210	*U*	0.195	*U*
perfluorooctanesulfonic acid (PFOS)	0.88	44	0.183	*U*	0.168	*U*	0.176	*U*	0.171	*U*	0.169	*U*	0.196	*U*	0.186	*U*	0.172	*U*
perfluorooctanoic acid (PFOA)	0.66	33	0.188	*U*	0.173	*U*	0.181	*U*	0.176	*U*	0.174	*U*	0.202	*U*	0.191	*U*	0.178	*U*
perfluoropentanoic acid (PFPeA)	NA	NA	0.119	*U*	0.110	*U*	0.115	*U*	0.111	*U*	0.110	*U*	0.128	*U*	0.121	*U*	0.113	*U*
perfluorotetradecanoic acid (PFTA)	NA	NA	0.113	*U*	0.104	*U*	0.108	*U*	0.105	*U*	0.104	*U*	0.121	*U*	0.115	*U*	0.106	*U*
perfluorotridecanoic acid (PFTrDA)	NA	NA	0.137	*U*	0.126	*U*	0.131	*U*	0.128	*U*	0.127	*U*	0.147	*U*	0.139	*U*	0.129	*U*
perfluoroundecanoic acid (PFUnA)	NA	NA	0.216	*U*	0.199	*U*	0.208	*U*	0.202	*U*	0.200	*U*	0.232	*U*	0.220	*U*	0.204	*U*

		Sample	SB-06 0-5		SB-06 11-13		SB-06 22.5-25		SB-07 0-5		SB-07 11-13		SB-07 22.5-25		SB-08 0-5		SB-08 11-13	
		Date	2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19	
Data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1		1		1	
1,4-Dioxane, 8270 SIM	**UU SCO**	**SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,4-dioxane	0.1	13	0.0192	*U*	0.0196	*U*	0.0187	*U*	0.0196	*U*	0.0198	*U*	0.0194	*U*	0.0196	*U*	0.0189	*U*

Analyte Detected
Analyte Above UU Guidance/SCO

Notes: SCOs/guidance values based on NYSDEC Part 375-6.8 and current NYSDEC guidance NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 7: PFAS and 1,4-Dioxane in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-08 22.5-25		SB-09 0-5		SB-09 11-13		SB-09 22.5-25		DUP-20250319		SB-10 0-5		SB-10 11-13		SB-10 22.5-25	
U= Not Detected ≥ value		Date	2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19	
Data in µg/Kg (ppb)		Dilution	1		1		1		1		1		1		1		1	
PFAS, 1633	**UU**	**RRU**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
11CL-PF3OUdS	NA	NA	0.394	U	0.337	U	0.317	U	0.357	U	0.394	U	0.338	U	0.313	U	0.356	U
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2 FTS)	NA	NA	0.958	U	0.819	U	0.771	U	0.868	U	0.957	U	0.820	U	0.760	U	0.864	U
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2 FTS)	NA	NA	0.755	U	0.645	U	0.607	U	0.684	U	0.754	U	0.646	U	0.599	U	0.681	U
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2 FTS)	NA	NA	0.951	U	0.813	U	0.765	U	0.862	U	0.950	U	0.814	U	0.755	U	0.859	U
3-perfluoroheptyl propanoic acid (FHpPA)	NA	NA	1.900	U	1.630	U	1.530	U	1.720	U	1.900	U	1.630	U	1.510	U	1.720	U
3-perfluoropentyl propanoic acid (FPePA)	NA	NA	2.660	U	2.280	U	2.140	U	2.410	U	2.660	U	2.280	U	2.110	U	2.400	U
3-perfluoropropyl propanoic acid (FPrPA)	NA	NA	0.804	U	0.688	U	0.647	U	0.729	U	0.803	U	0.688	U	0.638	U	0.726	U
9CL-PF3ONS	NA	NA	0.312	U	0.267	U	0.251	U	0.283	U	0.312	U	0.267	U	0.247	U	0.282	U
ADONA	NA	NA	0.221	U	0.189	U	0.178	U	0.200	U	0.220	U	0.189	U	0.175	U	0.199	U
HFPO-DA (Gen-X)	NA	NA	0.771	U	0.659	U	0.621	U	0.699	U	0.770	U	0.660	U	0.612	U	0.696	U
N-EtFOSA	NA	NA	0.251	U	0.215	U	0.202	U	0.228	U	0.251	U	0.215	U	0.199	U	0.227	U
N-EtFOSAA	NA	NA	0.246	U	0.210	U	0.198	U	0.223	U	0.246	U	0.211	U	0.195	U	0.222	U
N-EtFOSE	NA	NA	0.884	U	0.756	U	0.711	U	0.801	U	0.883	U	0.757	U	0.701	U	0.798	U
N-MeFOSA	NA	NA	0.228	U	0.195	U	0.184	U	0.207	U	0.228	U	0.195	U	0.181	U	0.206	U
N-MeFOSAA	NA	NA	0.188	U	0.160	U	0.151	U	0.170	U	0.188	U	0.161	U	0.149	U	0.169	U
N-MeFOSE	NA	NA	0.775	U	0.663	U	0.624	U	0.702	U	0.774	U	0.663	U	0.615	U	0.700	U
perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NA	NA	0.176	U	0.151	U	0.142	U	0.160	U	0.176	U	0.151	U	0.140	U	0.159	U
perfluoro-1-decanesulfonic acid (PFDS)	NA	NA	0.242	U	0.207	U	0.195	U	0.219	U	0.242	U	0.207	U	0.192	U	0.219	U
perfluoro-1-heptanesulfonic acid (PFHpS)	NA	NA	0.197	U	0.168	U	0.158	U	0.178	U	0.196	U	0.168	U	0.156	U	0.177	U
perfluoro-1-nonanesulfonic acid (PFNS)	NA	NA	0.157	U	0.134	U	0.127	U	0.142	U	0.157	U	0.135	U	0.125	U	0.142	U
perfluoro-1-octanesulfonamide (FOSA)	NA	NA	0.185	U	0.158	U	0.149	U	0.168	U	0.185	U	0.159	U	0.147	U	0.167	U
perfluoro-1-pentanesulfonate (PFPeS)	NA	NA	0.199	U	0.170	U	0.160	U	0.180	U	0.199	U	0.170	U	0.158	U	0.180	U
perfluoro-3,6-dioxaheptanoic acid (NFDHA)	NA	NA	0.245	U	0.209	U	0.197	U	0.222	U	0.245	U	0.210	U	0.194	U	0.221	U
perfluoro-4-oxapentanoic acid (PFMPA)	NA	NA	0.079	U	0.067	U	0.063	U	0.071	U	0.079	U	0.067	U	0.062	U	0.071	U
perfluoro-5-oxahexanoic acid (PFMBA)	NA	NA	0.122	U	0.104	U	0.098	U	0.110	U	0.122	U	0.104	U	0.097	U	0.110	U
perfluorobutanesulfonic acid (PFBS)	NA	NA	0.141	U	0.120	U	0.113	U	0.128	U	0.141	U	0.121	U	0.112	U	0.127	U
perfluorodecanoic acid (PFDA)	NA	NA	0.242	U	0.207	U	0.195	U	0.219	U	0.242	U	0.207	U	0.192	U	0.219	U
perfluorododecanesulfonic acid (PFDoS)	NA	NA	0.214	U	0.183	U	0.172	U	0.194	U	0.214	U	0.184	U	0.170	U	0.193	U
perfluorododecanoic acid (PFDoA)	NA	NA	0.207	U	0.177	U	0.166	U	0.187	U	0.207	U	0.177	U	0.164	U	0.187	U
perfluoroheptanoic acid (PFHpA)	NA	NA	0.133	U	0.114	U	0.107	U	0.121	U	0.133	U	0.114	U	0.106	U	0.120	U
perfluorohexanesulfonic acid (PFHxS)	NA	NA	0.227	U	0.194	U	0.183	U	0.206	U	0.227	U	0.194	U	0.180	U	0.205	U
perfluorohexanoic acid (PFHxA)	NA	NA	0.067	U	0.058	U	0.054	U	0.061	U	0.067	U	0.058	U	0.053	U	0.061	U
perfluoro-n-butanoic acid (PFBA)	NA	NA	0.138	U	0.118	U	0.111	U	0.125	U	0.138	U	0.118	U	0.110	U	0.125	U
perfluorononanoic acid (PFNA)	NA	NA	0.240	U	0.205	U	0.193	U	0.217	U	0.239	U	0.205	U	0.190	U	0.216	U
perfluorooctanesulfonic acid (PFOS)	0.88	44	0.212	U	0.181	U	0.170	U	0.192	U	0.212	U	0.587		0.578		0.191	U
perfluorooctanoic acid (PFOA)	0.66	33	0.218	U	0.187	U	0.176	U	0.198	U	0.218	U	0.187	U	0.173	U	0.197	U
perfluoropentanoic acid (PFPeA)	NA	NA	0.138	U	0.118	U	0.111	U	0.125	U	0.138	U	0.118	U	0.110	U	0.125	U
perfluorotetradecanoic acid (PFTA)	NA	NA	0.131	U	0.112	U	0.105	U	0.118	U	0.131	U	0.112	U	0.104	U	0.118	U
perfluorotridecanoic acid (PFTrDA)	NA	NA	0.159	U	0.136	U	0.128	U	0.144	U	0.158	U	0.136	U	0.126	U	0.143	U
perfluoroundecanoic acid (PFUnA)	NA	NA	0.251	U	0.215	U	0.202	U	0.228	U	0.251	U	0.215	U	0.199	U	0.227	U

		Sample	SB-08 22.5-25		SB-09 0-5		SB-09 11-13		SB-09 22.5-25		DUP-20250319		SB-10 0-5		SB-10 11-13		SB-10 22.5-25	
		Date	2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19		2025-03-19	
Data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1		1		1	
1,4-Dioxane, 8270 SIM	**UU SCO**	**SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,4-dioxane	0.1	13	0.0189	U	0.0189	U	0.0189	U	0.0189	U	0.0189	U	0.0189	U	0.0189	U	0.0189	U

Analyte Detected
Analyte Above UU Guidance/SCO

Notes: SCOs/guidance values based on NYSDEC Part 375-6.8 and current NYSDEC guidance NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 7: PFAS and 1,4-Dioxane in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-11 0-5		SB-11 11-13		SB-11 22.5-25		SB-12 0-5		SB-12 11-13		SB-12 22.5-25		DUPB-20250321		SB-13 5-10	
U= Not Detected ≥ value		Date	2025-03-25		2025-03-25		2025-03-25		2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-21	
Data in µg/Kg (ppb)		Dilution	1		1		1		2		1		1		1		1	
PFAS, 1633	**UU**	**RRU**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
11CL-PF3OUdS	NA	NA	0.330	U	0.321	U	0.348	U	0.658	U	0.315	U	0.357	U	0.330	U	0.333	U
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2 FTS)	NA	NA	0.801	U	0.779	U	0.846	U	1.600	U	0.765	U	0.867	U	0.801	U	0.809	U
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2 FTS)	NA	NA	0.631	U	0.614	U	0.666	U	1.260	U	0.603	U	0.683	U	0.631	U	0.638	U
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2 FTS)	NA	NA	0.796	U	0.774	U	0.840	U	1.590	U	0.760	U	0.862	U	0.795	U	0.804	U
3-perfluoroheptyl propanoic acid (FHpPA)	NA	NA	1.590	U	1.550	U	1.680	U	3.170	U	1.520	U	1.720	U	1.590	U	1.610	U
3-perfluoropentyl propanoic acid (FPePA)	NA	NA	2.230	U	2.170	U	2.350	U	4.440	U	2.130	U	2.410	U	2.220	U	2.250	U
3-perfluoropropyl propanoic acid (FPrPA)	NA	NA	0.673	U	0.654	U	0.710	U	1.340	U	0.643	U	0.728	U	0.672	U	0.680	U
9CL-PF3ONS	NA	NA	0.261	U	0.254	U	0.275	U	0.521	U	0.249	U	0.283	U	0.261	U	0.264	U
ADONA	NA	NA	0.185	U	0.180	U	0.195	U	0.368	U	0.176	U	0.200	U	0.185	U	0.187	U
HFPO-DA (Gen-X)	NA	NA	0.645	U	0.627	U	0.681	U	1.290	U	0.616	U	0.698	U	0.645	U	0.652	U
N-EtFOSA	NA	NA	0.210	U	0.204	U	0.222	U	0.419	U	0.201	U	0.227	U	0.210	U	0.212	U
N-EtFOSAA	NA	NA	0.206	U	0.200	U	0.217	U	0.411	U	0.197	U	0.223	U	0.206	U	0.208	U
N-EtFOSE	NA	NA	0.740	U	0.719	U	0.781	U	1.470	U	0.707	U	0.801	U	0.739	U	0.747	U
N-MeFOSA	NA	NA	0.191	U	0.186	U	0.202	U	0.381	U	0.182	U	0.207	U	0.191	U	0.193	U
N-MeFOSAA	NA	NA	0.157	U	0.153	U	0.166	U	0.313	U	0.150	U	0.170	U	0.157	U	0.159	U
N-MeFOSE	NA	NA	0.648	U	0.631	U	0.684	U	1.290	U	0.619	U	0.702	U	0.648	U	0.655	U
perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NA	NA	0.147	U	0.143	U	0.156	U	0.294	U	0.141	U	0.160	U	0.147	U	0.149	U
perfluoro-1-decanesulfonic acid (PFDS)	NA	NA	0.203	U	0.197	U	0.214	U	0.404	U	0.194	U	0.219	U	0.203	U	0.205	U
perfluoro-1-heptanesulfonic acid (PFHpS)	NA	NA	0.164	U	0.160	U	0.174	U	0.328	U	0.157	U	0.178	U	0.164	U	0.166	U
perfluoro-1-nonanesulfonic acid (PFNS)	NA	NA	0.132	U	0.128	U	0.139	U	0.262	U	0.126	U	0.142	U	0.132	U	0.133	U
perfluoro-1-octanesulfonamide (FOSA)	NA	NA	0.155	U	0.151	U	0.164	U	0.309	U	0.148	U	0.168	U	0.155	U	0.156	U
perfluoro-1-pentanesulfonate (PFPeS)	NA	NA	0.167	U	0.162	U	0.176	U	0.332	U	0.159	U	0.180	U	0.166	U	0.168	U
perfluoro-3,6-dioxaheptanoic acid (NFDHA)	NA	NA	0.205	U	0.199	U	0.216	U	0.408	U	0.196	U	0.222	U	0.205	U	0.207	U
perfluoro-4-oxapentanoic acid (PFMPA)	NA	NA	0.066	U	0.064	U	0.069	U	0.131	U	0.063	U	0.071	U	0.066	U	0.067	U
perfluoro-5-oxahexanoic acid (PFMBA)	NA	NA	0.102	U	0.099	U	0.108	U	0.203	U	0.097	U	0.110	U	0.102	U	0.103	U
perfluorobutanesulfonic acid (PFBS)	NA	NA	0.118	U	0.115	U	0.124	U	0.235	U	0.113	U	0.128	U	0.118	U	0.119	U
perfluorodecanoic acid (PFDA)	NA	NA	0.203	U	0.197	U	0.214	U	0.404	U	0.194	U	0.219	U	0.203	U	0.205	U
perfluorododecanesulfonic acid (PFDoS)	NA	NA	0.179	U	0.174	U	0.189	U	0.358	U	0.171	U	0.194	U	0.179	U	0.181	U
perfluorododecanoic acid (PFDoA)	NA	NA	0.173	U	0.168	U	0.183	U	0.345	U	0.165	U	0.187	U	0.173	U	0.175	U
perfluoroheptanoic acid (PFHpA)	NA	NA	0.111	U	0.108	U	0.118	U	0.222	U	0.106	U	0.121	U	0.111	U	0.113	U
perfluorohexanesulfonic acid (PFHxS)	NA	NA	0.190	U	0.185	U	0.200	U	0.379	U	0.181	U	0.206	U	0.190	U	0.192	U
perfluorohexanoic acid (PFHxA)	NA	NA	0.056	U	0.055	U	0.059	U	0.112	U	0.054	U	0.061	U	0.056	U	0.057	U
perfluoro-n-butanoic acid (PFBA)	NA	NA	0.116	U	0.112	U	0.122	U	0.231	U	0.110	U	0.327	J	0.116	U	0.117	U
perfluorononanoic acid (PFNA)	NA	NA	0.201	U	0.195	U	0.212	U	0.400	U	0.192	U	0.217	U	0.200	U	0.203	U
perfluorooctanesulfonic acid (PFOS)	0.88	44	0.177	U	0.172	U	0.187	U	0.353	U	0.169	U	0.192	U	0.177	U	1.370	
perfluorooctanoic acid (PFOA)	0.66	33	0.182	U	0.178	U	0.193	U	0.364	U	0.174	U	0.198	U	0.182	U	0.184	U
perfluoropentanoic acid (PFPeA)	NA	NA	0.116	U	0.112	U	0.122	U	0.231	U	0.110	U	0.125	U	0.116	U	0.117	U
perfluorotetradecanoic acid (PFTA)	NA	NA	0.109	U	0.106	U	0.115	U	0.218	U	0.104	U	0.118	U	0.109	U	0.110	U
perfluorotridecanoic acid (PFTrDA)	NA	NA	0.133	U	0.129	U	0.140	U	0.265	U	0.127	U	0.144	U	0.133	U	0.134	U
perfluoroundecanoic acid (PFUnA)	NA	NA	0.210	U	0.204	U	0.222	U	0.419	U	0.201	U	0.227	U	0.210	U	0.212	U

		Sample	SB-11 0-5		SB-11 11-13		SB-11 22.5-25		SB-12 0-5		SB-12 11-13		SB-12 22.5-25		DUPB-20250321		SB-13 5-10	
		Date	2025-03-25		2025-03-25		2025-03-25		2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-21	
Data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1		1		1	
1,4-Dioxane, 8270 SIM	**UU SCO**	**SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,4-dioxane	0.1	13	0.0192	U	0.0192	U	0.0192	U	0.019	U	0.019	U	0.019	U	0.0198	U	0.019	U

Analyte Detected
Analyte Above UU Guidance/SCO

Notes: SCOs/guidance values based on NYSDEC Part 375-6.8 and current NYSDEC guidance NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 7: PFAS and 1,4-Dioxane in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-13 11-13		SB-13 22.5-25		SB-14 0-5		SB-14 11-13		SB-14 22.5-25		SB-15 0-5		SB-15 11-13		SB-15 22.5-25	
U= Not Detected ≥ value		Date	2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-20		2025-03-20		2025-03-20	
Data in µg/Kg (ppb)		Dilution	1		1		2		1		1		1		1		1	
PFAS, 1633	**UU**	**RRU**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
11CL-PF3OUdS	NA	NA	0.319	*U*	0.323	*U*	0.662	*U*	0.326	*U*	0.334	*U*	0.352	*U*	0.317	*U*	0.320	*U*
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2 FTS)	NA	NA	0.774	*U*	0.783	*U*	1.610	*U*	0.791	*U*	0.811	*U*	0.855	*U*	0.769	*U*	0.776	*U*
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2 FTS)	NA	NA	0.610	*U*	0.617	*U*	1.270	*U*	0.624	*U*	0.639	*U*	0.674	*U*	0.606	*U*	0.612	*U*
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2 FTS)	NA	NA	0.769	*U*	0.778	*U*	1.600	*U*	0.786	*U*	0.806	*U*	0.850	*U*	0.764	*U*	0.771	*U*
3-perfluoroheptyl propanoic acid (FHpPA)	NA	NA	1.540	*U*	1.560	*U*	3.190	*U*	1.570	*U*	1.610	*U*	1.700	*U*	1.530	*U*	1.540	*U*
3-perfluoropentyl propanoic acid (FPePA)	NA	NA	2.150	*U*	2.180	*U*	4.470	*U*	2.200	*U*	2.250	*U*	2.380	*U*	2.140	*U*	2.160	*U*
3-perfluoropropyl propanoic acid (FPrPA)	NA	NA	0.650	*U*	0.658	*U*	1.350	*U*	0.664	*U*	0.681	*U*	0.718	*U*	0.646	*U*	0.652	*U*
9CL-PF3ONS	NA	NA	0.252	*U*	0.255	*U*	0.524	*U*	0.258	*U*	0.264	*U*	0.279	*U*	0.251	*U*	0.253	*U*
ADONA	NA	NA	0.178	*U*	0.181	*U*	0.370	*U*	0.182	*U*	0.187	*U*	0.197	*U*	0.177	*U*	0.179	*U*
HFPO-DA (Gen-X)	NA	NA	0.623	*U*	0.631	*U*	1.290	*U*	0.637	*U*	0.653	*U*	0.689	*U*	0.619	*U*	0.625	*U*
N-EtFOSA	NA	NA	0.203	*U*	0.205	*U*	0.421	*U*	0.208	*U*	0.213	*U*	0.224	*U*	0.202	*U*	0.204	*U*
N-EtFOSAA	NA	NA	0.199	*U*	0.201	*U*	0.413	*U*	0.203	*U*	0.208	*U*	0.220	*U*	0.198	*U*	0.199	*U*
N-EtFOSE	NA	NA	0.715	*U*	0.723	*U*	1.480	*U*	0.730	*U*	0.749	*U*	0.790	*U*	0.710	*U*	0.717	*U*
N-MeFOSA	NA	NA	0.185	*U*	0.187	*U*	0.383	*U*	0.189	*U*	0.193	*U*	0.204	*U*	0.183	*U*	0.185	*U*
N-MeFOSAA	NA	NA	0.152	*U*	0.154	*U*	0.315	*U*	0.155	*U*	0.159	*U*	0.168	*U*	0.151	*U*	0.152	*U*
N-MeFOSE	NA	NA	0.626	*U*	0.634	*U*	1.300	*U*	0.640	*U*	0.656	*U*	0.692	*U*	0.622	*U*	0.628	*U*
perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NA	NA	0.142	*U*	0.144	*U*	0.296	*U*	0.146	*U*	0.149	*U*	0.157	*U*	0.142	*U*	0.143	*U*
perfluoro-1-decanesulfonic acid (PFDS)	NA	NA	0.196	*U*	0.198	*U*	0.407	*U*	0.200	*U*	0.205	*U*	0.216	*U*	0.195	*U*	0.196	*U*
perfluoro-1-heptanesulfonic acid (PFHpS)	NA	NA	0.159	*U*	0.161	*U*	0.330	*U*	0.162	*U*	0.167	*U*	0.176	*U*	0.158	*U*	0.159	*U*
perfluoro-1-nonanesulfonic acid (PFNS)	NA	NA	0.127	*U*	0.129	*U*	0.264	*U*	0.130	*U*	0.133	*U*	0.140	*U*	0.126	*U*	0.128	*U*
perfluoro-1-octanesulfonamide (FOSA)	NA	NA	0.150	*U*	0.152	*U*	0.311	*U*	0.153	*U*	0.157	*U*	0.165	*U*	0.149	*U*	0.150	*U*
perfluoro-1-pentanesulfonate (PFPeS)	NA	NA	0.161	*U*	0.163	*U*	0.334	*U*	0.165	*U*	0.169	*U*	0.178	*U*	0.160	*U*	0.161	*U*
perfluoro-3,6-dioxaheptanoic acid (NFDHA)	NA	NA	0.198	*U*	0.200	*U*	0.411	*U*	0.202	*U*	0.207	*U*	0.219	*U*	0.197	*U*	0.198	*U*
perfluoro-4-oxapentanoic acid (PFMPA)	NA	NA	0.064	*U*	0.064	*U*	0.132	*U*	0.065	*U*	0.067	*U*	0.070	*U*	0.063	*U*	0.064	*U*
perfluoro-5-oxahexanoic acid (PFMBA)	NA	NA	0.098	*U*	0.100	*U*	0.204	*U*	0.101	*U*	0.103	*U*	0.109	*U*	0.098	*U*	0.099	*U*
perfluorobutanesulfonic acid (PFBS)	NA	NA	0.114	*U*	0.115	*U*	0.236	*U*	0.116	*U*	0.119	*U*	0.126	*U*	0.113	*U*	0.114	*U*
perfluorodecanoic acid (PFDA)	NA	NA	0.196	*U*	0.198	*U*	0.407	*U*	0.200	*U*	0.205	*U*	0.216	*U*	0.195	*U*	0.196	*U*
perfluorododecanesulfonic acid (PFDoS)	NA	NA	0.173	*U*	0.175	*U*	0.360	*U*	0.177	*U*	0.182	*U*	0.191	*U*	0.172	*U*	0.174	*U*
perfluorododecanoic acid (PFDoA)	NA	NA	0.167	*U*	0.169	*U*	0.347	*U*	0.171	*U*	0.175	*U*	0.185	*U*	0.166	*U*	0.168	*U*
perfluoroheptanoic acid (PFHpA)	NA	NA	0.108	*U*	0.109	*U*	0.223	*U*	0.110	*U*	0.113	*U*	0.119	*U*	0.107	*U*	0.108	*U*
perfluorohexanesulfonic acid (PFHxS)	NA	NA	0.183	*U*	0.186	*U*	0.381	*U*	0.188	*U*	0.192	*U*	0.203	*U*	0.182	*U*	0.184	*U*
perfluorohexanoic acid (PFHxA)	NA	NA	0.054	*U*	0.055	*U*	0.113	*U*	0.056	*U*	0.057	*U*	0.060	*U*	0.054	*U*	0.055	*U*
perfluoro-n-butanoic acid (PFBA)	NA	NA	0.112	*U*	0.113	*U*	0.232	*U*	0.114	*U*	0.117	*U*	0.123	*U*	0.111	*U*	0.112	*U*
perfluorononanoic acid (PFNA)	NA	NA	0.194	*U*	0.196	*U*	0.402	*U*	0.198	*U*	0.203	*U*	0.214	*U*	0.193	*U*	0.194	*U*
perfluorooctanesulfonic acid (PFOS)	0.88	44	0.582		0.173	*U*	0.355	*U*	0.175	*U*	0.179	*U*	0.189	*U*	0.170	*U*	0.172	*U*
perfluorooctanoic acid (PFOA)	0.66	33	0.176	*U*	0.178	*U*	0.366	*U*	0.180	*U*	0.185	*U*	0.195	*U*	0.175	*U*	0.177	*U*
perfluoropentanoic acid (PFPeA)	NA	NA	0.112	*U*	0.113	*U*	0.232	*U*	0.114	*U*	0.117	*U*	0.123	*U*	0.111	*U*	0.112	*U*
perfluorotetradecanoic acid (PFTA)	NA	NA	0.106	*U*	0.107	*U*	0.219	*U*	0.108	*U*	0.111	*U*	0.117	*U*	0.105	*U*	0.106	*U*
perfluorotridecanoic acid (PFTrDA)	NA	NA	0.128	*U*	0.130	*U*	0.266	*U*	0.131	*U*	0.134	*U*	0.142	*U*	0.127	*U*	0.129	*U*
perfluoroundecanoic acid (PFUnA)	NA	NA	0.203	*U*	0.205	*U*	0.421	*U*	0.208	*U*	0.213	*U*	0.224	*U*	0.202	*U*	0.204	*U*

		Sample	SB-13 11-13		SB-13 22.5-25		SB-14 0-5		SB-14 11-13		SB-14 22.5-25		SB-15 0-5		SB-15 11-13		SB-15 22.5-25	
		Date	2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-21		2025-03-20		2025-03-20		2025-03-20	
Data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1		1		1	
1,4-Dioxane, 8270 SIM	**UU SCO**	**SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,4-dioxane	0.1	13	0.019	*U*	0.019	*U*	0.019	*U*	0.019	*U*	0.019	*U*	0.0189	*U*	0.0189	*U*	0.0189	*U*

Analyte Detected
Analyte Above UU Guidance/SCO

Notes: SCOs/guidance values based on NYSDEC Part 375-6.8 and current NYSDEC guidance NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 7: PFAS and 1,4-Dioxane in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-16 0-5		SB-16 11-13		SB-16 22.5-25		SB-17 0-5		SB-17 11-13		SB-17 22.5-25		SB-18 0-5		SB-18 11-13	
U= Not Detected ≥ value		Date	2024-03-03		2024-03-03		2024-03-03		2024-03-03		2024-03-03		2024-03-03		2024-03-03		2024-03-03	
Data in µg/Kg (ppb)		Dilution	1		1		1		1		1		1		1		1	
PFAS, 1633	**UU**	**RRU**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
11CL-PF3OUdS	NA	NA	0.341	U	0.314	U	0.377	U	0.319	U	0.323	U	0.332	U	0.330	U	0.313	U
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2 FTS)	NA	NA	0.828	U	0.761	U	0.914	U	0.775	U	0.785	U	0.807	U	0.801	U	0.759	U
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2 FTS)	NA	NA	0.653	U	0.600	U	0.720	U	0.611	U	0.619	U	0.636	U	0.632	U	0.598	U
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2 FTS)	NA	NA	0.823	U	0.756	U	0.908	U	0.770	U	0.780	U	0.801	U	0.796	U	0.754	U
3-perfluoroheptyl propanoic acid (FHpPA)	NA	NA	1.650	U	1.510	U	1.820	U	1.540	U	1.560	U	1.600	U	1.590	U	1.510	U
3-perfluoropentyl propanoic acid (FPePA)	NA	NA	2.300	U	2.120	U	2.540	U	2.150	U	2.180	U	2.240	U	2.230	U	2.110	U
3-perfluoropropyl propanoic acid (FPrPA)	NA	NA	0.695	U	0.639	U	0.768	U	0.651	U	0.659	U	0.678	U	0.673	U	0.638	U
9CL-PF3ONS	NA	NA	0.270	U	0.248	U	0.298	U	0.253	U	0.256	U	0.263	U	0.261	U	0.247	U
ADONA	NA	NA	0.191	U	0.175	U	0.211	U	0.179	U	0.181	U	0.186	U	0.185	U	0.175	U
HFPO-DA (Gen-X)	NA	NA	0.667	U	0.613	U	0.736	U	0.624	U	0.632	U	0.650	U	0.645	U	0.612	U
N-EtFOSA	NA	NA	0.217	U	0.200	U	0.240	U	0.203	U	0.206	U	0.212	U	0.210	U	0.199	U
N-EtFOSAA	NA	NA	0.213	U	0.196	U	0.235	U	0.199	U	0.202	U	0.207	U	0.206	U	0.195	U
N-EtFOSE	NA	NA	0.764	U	0.703	U	0.844	U	0.716	U	0.725	U	0.745	U	0.740	U	0.701	U
N-MeFOSA	NA	NA	0.197	U	0.182	U	0.218	U	0.185	U	0.187	U	0.192	U	0.191	U	0.181	U
N-MeFOSAA	NA	NA	0.162	U	0.149	U	0.179	U	0.152	U	0.154	U	0.158	U	0.157	U	0.149	U
N-MeFOSE	NA	NA	0.670	U	0.616	U	0.740	U	0.628	U	0.635	U	0.653	U	0.649	U	0.615	U
perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NA	NA	0.152	U	0.140	U	0.168	U	0.143	U	0.144	U	0.149	U	0.148	U	0.140	U
perfluoro-1-decanesulfonic acid (PFDS)	NA	NA	0.209	U	0.193	U	0.231	U	0.196	U	0.199	U	0.204	U	0.203	U	0.192	U
perfluoro-1-heptanesulfonic acid (PFHpS)	NA	NA	0.170	U	0.156	U	0.188	U	0.159	U	0.161	U	0.166	U	0.165	U	0.156	U
perfluoro-1-nonanesulfonic acid (PFNS)	NA	NA	0.136	U	0.125	U	0.150	U	0.127	U	0.129	U	0.133	U	0.132	U	0.125	U
perfluoro-1-octanesulfonamide (FOSA)	NA	NA	0.160	U	0.147	U	0.177	U	0.150	U	0.152	U	0.156	U	0.155	U	0.147	U
perfluoro-1-pentanesulfonate (PFPeS)	NA	NA	0.172	U	0.158	U	0.190	U	0.161	U	0.163	U	0.168	U	0.167	U	0.158	U
perfluoro-3,6-dioxaheptanoic acid (NFDHA)	NA	NA	0.212	U	0.195	U	0.234	U	0.198	U	0.201	U	0.206	U	0.205	U	0.194	U
perfluoro-4-oxapentanoic acid (PFMPA)	NA	NA	0.068	U	0.063	U	0.075	U	0.064	U	0.065	U	0.066	U	0.066	U	0.062	U
perfluoro-5-oxahexanoic acid (PFMBA)	NA	NA	0.105	U	0.097	U	0.116	U	0.099	U	0.100	U	0.103	U	0.102	U	0.097	U
perfluorobutanesulfonic acid (PFBS)	NA	NA	0.122	U	0.112	U	0.134	U	0.114	U	0.115	U	0.119	U	0.118	U	0.112	U
perfluorodecanoic acid (PFDA)	NA	NA	0.209	U	0.193	U	0.231	U	0.196	U	0.199	U	0.204	U	0.203	U	0.192	U
perfluorododecanesulfonic acid (PFDoS)	NA	NA	0.185	U	0.170	U	0.205	U	0.174	U	0.176	U	0.181	U	0.179	U	0.170	U
perfluorododecanoic acid (PFDoA)	NA	NA	0.179	U	0.164	U	0.197	U	0.167	U	0.169	U	0.174	U	0.173	U	0.164	U
perfluoroheptanoic acid (PFHpA)	NA	NA	0.115	U	0.106	U	0.127	U	0.108	U	0.109	U	0.112	U	0.111	U	0.106	U
perfluorohexanesulfonic acid (PFHxS)	NA	NA	0.196	U	0.181	U	0.217	U	0.184	U	0.186	U	0.191	U	0.190	U	0.180	U
perfluorohexanoic acid (PFHxA)	NA	NA	0.058	U	0.053	U	0.064	U	0.054	U	0.055	U	0.057	U	0.056	U	0.053	U
perfluoro-n-butanoic acid (PFBA)	NA	NA	0.120	U	0.110	U	0.132	U	0.112	U	0.113	U	0.116	U	0.116	U	0.110	U
perfluorononanoic acid (PFNA)	NA	NA	0.207	U	0.191	U	0.229	U	0.194	U	0.196	U	0.202	U	0.201	U	0.190	U
perfluorooctanesulfonic acid (PFOS)	0.88	44	0.583		0.168	U	0.202	U	0.172	U	0.919		0.178	U	0.177	U	0.168	U
perfluorooctanoic acid (PFOA)	0.66	33	0.189	U	0.173	U	0.208	U	0.177	U	0.179	U	0.184	U	0.183	U	0.173	U
perfluoropentanoic acid (PFPeA)	NA	NA	0.120	U	0.110	U	0.132	U	0.112	U	0.113	U	0.116	U	0.116	U	0.110	U
perfluorotetradecanoic acid (PFTA)	NA	NA	0.113	U	0.104	U	0.125	U	0.106	U	0.107	U	0.110	U	0.109	U	0.104	U
perfluorotridecanoic acid (PFTrDA)	NA	NA	0.137	U	0.126	U	0.151	U	0.128	U	0.130	U	0.134	U	0.133	U	0.126	U
perfluoroundecanoic acid (PFUnA)	NA	NA	0.217	U	0.200	U	0.240	U	0.203	U	0.206	U	0.212	U	0.210	U	0.199	U

		Sample	SB-16 0-5		SB-16 11-13		SB-16 22.5-25		SB-17 0-5		SB-17 11-13		SB-17 22.5-25		SB-18 0-5		SB-18 11-13	
		Date	2024-03-03		2024-03-03		2024-03-03		2024-03-03		2024-03-03		2024-03-03		2024-03-03		2024-03-03	
Data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1		1		1	
1,4-Dioxane, 8270 SIM	**UU SCO**	**SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,4-dioxane	0.1	13	0.019	U	0.0196	U	0.0196	U	0.0192	U	0.0192	U	0.0192	U	0.0192	U	0.0192	U

Analyte Detected
Analyte Above UU Guidance/SCO

Notes: SCOs/guidance values based on NYSDEC Part 375-6.8 and current NYSDEC guidance NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 7: PFAS and 1,4-Dioxane in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-18 22.5-25		SB-19 0-5		SB-19 11-13		SB-19 22.5-25		SB-20 0-5		SB-20 10-12		SB-20 22.5-25		SB-21 0-5	
U= Not Detected ≥ value		Date	2024-03-03		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
Data in µg/Kg (ppb)		Dilution	1		1		1		1		1		1		1		1	
PFAS, 1633	**UU**	**RRU**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
11CL-PF3OUdS	NA	NA	0.403	U	0.327	U	0.321	U	0.388	U	0.334	U	0.317	U	0.349	U	0.317	U
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2 FTS)	NA	NA	0.978	U	0.795	U	0.780	U	0.942	U	0.810	U	0.769	U	0.848	U	0.769	U
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2 FTS)	NA	NA	0.771	U	0.626	U	0.614	U	0.743	U	0.638	U	0.606	U	0.668	U	0.606	U
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2 FTS)	NA	NA	0.972	U	0.790	U	0.774	U	0.936	U	0.804	U	0.764	U	0.842	U	0.764	U
3-perfluoroheptyl propanoic acid (FHpPA)	NA	NA	1.940	U	1.580	U	1.550	U	1.870	U	1.610	U	1.530	U	1.680	U	1.530	U
3-perfluoropentyl propanoic acid (FPePA)	NA	NA	2.720	U	2.210	U	2.170	U	2.620	U	2.250	U	2.140	U	2.360	U	2.140	U
3-perfluoropropyl propanoic acid (FPrPA)	NA	NA	0.822	U	0.668	U	0.655	U	0.791	U	0.680	U	0.646	U	0.712	U	0.646	U
9CL-PF3ONS	NA	NA	0.319	U	0.259	U	0.254	U	0.307	U	0.264	U	0.251	U	0.276	U	0.251	U
ADONA	NA	NA	0.225	U	0.183	U	0.180	U	0.217	U	0.187	U	0.177	U	0.195	U	0.177	U
HFPO-DA (Gen-X)	NA	NA	0.788	U	0.640	U	0.628	U	0.759	U	0.652	U	0.620	U	0.683	U	0.620	U
N-EtFOSA	NA	NA	0.257	U	0.208	U	0.204	U	0.247	U	0.212	U	0.202	U	0.222	U	0.202	U
N-EtFOSAA	NA	NA	0.251	U	0.204	U	0.200	U	0.242	U	0.208	U	0.198	U	0.218	U	0.198	U
N-EtFOSE	NA	NA	0.903	U	0.734	U	0.720	U	0.870	U	0.748	U	0.710	U	0.782	U	0.710	U
N-MeFOSA	NA	NA	0.233	U	0.190	U	0.186	U	0.225	U	0.193	U	0.183	U	0.202	U	0.183	U
N-MeFOSAA	NA	NA	0.192	U	0.156	U	0.153	U	0.185	U	0.159	U	0.151	U	0.166	U	0.151	U
N-MeFOSE	NA	NA	0.792	U	0.643	U	0.631	U	0.763	U	0.655	U	0.623	U	0.686	U	0.623	U
perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NA	NA	0.180	U	0.146	U	0.144	U	0.173	U	0.149	U	0.142	U	0.156	U	0.142	U
perfluoro-1-decanesulfonic acid (PFDS)	NA	NA	0.247	U	0.201	U	0.197	U	0.238	U	0.205	U	0.195	U	0.214	U	0.195	U
perfluoro-1-heptanesulfonic acid (PFHpS)	NA	NA	0.201	U	0.163	U	0.160	U	0.193	U	0.166	U	0.158	U	0.174	U	0.158	U
perfluoro-1-nonanesulfonic acid (PFNS)	NA	NA	0.161	U	0.131	U	0.128	U	0.155	U	0.133	U	0.126	U	0.139	U	0.126	U
perfluoro-1-octanesulfonamide (FOSA)	NA	NA	0.189	U	0.154	U	0.151	U	0.182	U	0.157	U	0.149	U	0.164	U	0.149	U
perfluoro-1-pentanesulfonate (PFPeS)	NA	NA	0.203	U	0.165	U	0.162	U	0.196	U	0.168	U	0.160	U	0.176	U	0.160	U
perfluoro-3,6-dioxaheptanoic acid (NFDHA)	NA	NA	0.250	U	0.203	U	0.199	U	0.241	U	0.207	U	0.197	U	0.217	U	0.197	U
perfluoro-4-oxapentanoic acid (PFMPA)	NA	NA	0.080	U	0.065	U	0.064	U	0.077	U	0.067	U	0.063	U	0.070	U	0.063	U
perfluoro-5-oxahexanoic acid (PFMBA)	NA	NA	0.124	U	0.101	U	0.099	U	0.120	U	0.103	U	0.098	U	0.108	U	0.098	U
perfluorobutanesulfonic acid (PFBS)	NA	NA	0.144	U	0.117	U	0.115	U	0.139	U	0.119	U	0.113	U	0.125	U	0.113	U
perfluorodecanoic acid (PFDA)	NA	NA	0.247	U	0.201	U	0.197	U	0.238	U	0.205	U	0.195	U	0.214	U	0.195	U
perfluorododecanesulfonic acid (PFDoS)	NA	NA	0.219	U	0.178	U	0.175	U	0.211	U	0.181	U	0.172	U	0.190	U	0.172	U
perfluorododecanoic acid (PFDoA)	NA	NA	0.211	U	0.172	U	0.168	U	0.203	U	0.175	U	0.166	U	0.183	U	0.166	U
perfluoroheptanoic acid (PFHpA)	NA	NA	0.136	U	0.111	U	0.108	U	0.131	U	0.113	U	0.107	U	0.118	U	0.107	U
perfluorohexanesulfonic acid (PFHxS)	NA	NA	0.232	U	0.188	U	0.185	U	0.223	U	0.192	U	0.182	U	0.201	U	0.182	U
perfluorohexanoic acid (PFHxA)	NA	NA	0.069	U	0.056	U	0.055	U	0.066	U	0.057	U	0.054	U	0.060	U	0.054	U
perfluoro-n-butanoic acid (PFBA)	NA	NA	0.141	U	0.115	U	0.113	U	0.136	U	0.117	U	0.111	U	0.122	U	0.111	U
perfluorononanoic acid (PFNA)	NA	NA	0.245	U	0.199	U	0.195	U	0.236	U	0.203	U	0.193	U	0.212	U	0.193	U
perfluorooctanesulfonic acid (PFOS)	0.88	44	0.216	U	0.421		0.176	J	0.208	U	1.420		0.962		0.187	U	0.170	U
perfluorooctanoic acid (PFOA)	0.66	33	0.223	U	0.181	U	0.178	U	0.215	U	0.184	U	0.175	U	0.193	U	0.175	U
perfluoropentanoic acid (PFPeA)	NA	NA	0.141	U	0.115	U	0.113	U	0.136	U	0.117	U	0.111	U	0.122	U	0.111	U
perfluorotetradecanoic acid (PFTA)	NA	NA	0.133	U	0.108	U	0.106	U	0.129	U	0.110	U	0.105	U	0.116	U	0.105	U
perfluorotridecanoic acid (PFTrDA)	NA	NA	0.162	U	0.132	U	0.129	U	0.156	U	0.134	U	0.127	U	0.140	U	0.127	U
perfluoroundecanoic acid (PFUnA)	NA	NA	0.257	U	0.208	U	0.204	U	0.247	U	0.212	U	0.202	U	0.222	U	0.202	U

		Sample	SB-18 22.5-25		SB-19 0-5		SB-19 11-13		SB-19 22.5-25		SB-20 0-5		SB-20 10-12		SB-20 22.5-25		SB-21 0-5	
		Date	2024-03-03		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
Data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1		1		1	
1,4-Dioxane, 8270 SIM	**UU SCO**	**SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,4-dioxane	0.1	13	0.0192	U	0.0189	U	0.019	U	0.019	U	0.019	U	0.019	U	0.019	U	0.019	U

Analyte Detected
Analyte Above UU Guidance/SCO

Notes: SCOs/guidance values based on NYSDEC Part 375-6.8 and current NYSDEC guidance NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 7: PFAS and 1,4-Dioxane in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-21 11-13		SB-21 22.5-25		SB-22 0-5		SB-22 11-13		SB-22 22.5-25		SB-23 0-5		SB-23 13-15		SB-23 22.5-25	
U= Not Detected ≥ value		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
Data in µg/Kg (ppb)		Dilution	1		1		1		1		1		1		1		1	
PFAS, 1633	**UU**	**RRU**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
11CL-PF3OUdS	NA	NA	0.331	*U*	0.414	*U*	0.315	*U*	0.313	*U*	0.346	*U*	0.317	*U*	0.319	*U*	0.347	*U*
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2 FTS)	NA	NA	0.803	*U*	1.000	*U*	0.765	*U*	0.760	*U*	0.840	*U*	0.769	*U*	0.775	*U*	0.844	*U*
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2 FTS)	NA	NA	0.633	*U*	0.792	*U*	0.603	*U*	0.599	*U*	0.662	*U*	0.606	*U*	0.611	*U*	0.665	*U*
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2 FTS)	NA	NA	0.798	*U*	0.998	*U*	0.760	*U*	0.755	*U*	0.834	*U*	0.764	*U*	0.770	*U*	0.838	*U*
3-perfluoroheptyl propanoic acid (FHpPA)	NA	NA	1.600	*U*	2.000	*U*	1.520	*U*	1.510	*U*	1.670	*U*	1.530	*U*	1.540	*U*	1.680	*U*
3-perfluoropentyl propanoic acid (FPePA)	NA	NA	2.230	*U*	2.790	*U*	2.130	*U*	2.110	*U*	2.330	*U*	2.140	*U*	2.150	*U*	2.340	*U*
3-perfluoropropyl propanoic acid (FPrPA)	NA	NA	0.674	*U*	0.844	*U*	0.642	*U*	0.638	*U*	0.705	*U*	0.645	*U*	0.651	*U*	0.708	*U*
9CL-PF3ONS	NA	NA	0.262	*U*	0.327	*U*	0.249	*U*	0.248	*U*	0.274	*U*	0.250	*U*	0.252	*U*	0.275	*U*
ADONA	NA	NA	0.185	*U*	0.232	*U*	0.176	*U*	0.175	*U*	0.194	*U*	0.177	*U*	0.179	*U*	0.194	*U*
HFPO-DA (Gen-X)	NA	NA	0.647	*U*	0.809	*U*	0.616	*U*	0.612	*U*	0.676	*U*	0.619	*U*	0.624	*U*	0.679	*U*
N-EtFOSA	NA	NA	0.211	*U*	0.264	*U*	0.201	*U*	0.199	*U*	0.220	*U*	0.202	*U*	0.203	*U*	0.221	*U*
N-EtFOSAA	NA	NA	0.206	*U*	0.258	*U*	0.197	*U*	0.195	*U*	0.216	*U*	0.198	*U*	0.199	*U*	0.217	*U*
N-EtFOSE	NA	NA	0.741	*U*	0.928	*U*	0.706	*U*	0.702	*U*	0.775	*U*	0.710	*U*	0.715	*U*	0.779	*U*
N-MeFOSA	NA	NA	0.191	*U*	0.240	*U*	0.182	*U*	0.181	*U*	0.200	*U*	0.183	*U*	0.185	*U*	0.201	*U*
N-MeFOSAA	NA	NA	0.157	*U*	0.197	*U*	0.150	*U*	0.149	*U*	0.165	*U*	0.151	*U*	0.152	*U*	0.165	*U*
N-MeFOSE	NA	NA	0.650	*U*	0.813	*U*	0.619	*U*	0.615	*U*	0.680	*U*	0.622	*U*	0.627	*U*	0.683	*U*
perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NA	NA	0.148	*U*	0.185	*U*	0.141	*U*	0.140	*U*	0.155	*U*	0.142	*U*	0.143	*U*	0.155	*U*
perfluoro-1-decanesulfonic acid (PFDS)	NA	NA	0.203	*U*	0.254	*U*	0.194	*U*	0.192	*U*	0.212	*U*	0.194	*U*	0.196	*U*	0.213	*U*
perfluoro-1-heptanesulfonic acid (PFHpS)	NA	NA	0.165	*U*	0.206	*U*	0.157	*U*	0.156	*U*	0.172	*U*	0.158	*U*	0.159	*U*	0.173	*U*
perfluoro-1-nonanesulfonic acid (PFNS)	NA	NA	0.132	*U*	0.165	*U*	0.126	*U*	0.125	*U*	0.138	*U*	0.126	*U*	0.127	*U*	0.139	*U*
perfluoro-1-octanesulfonamide (FOSA)	NA	NA	0.155	*U*	0.194	*U*	0.148	*U*	0.147	*U*	0.162	*U*	0.149	*U*	0.150	*U*	0.163	*U*
perfluoro-1-pentanesulfonate (PFPeS)	NA	NA	0.167	*U*	0.209	*U*	0.159	*U*	0.158	*U*	0.175	*U*	0.160	*U*	0.161	*U*	0.175	*U*
perfluoro-3,6-dioxaheptanoic acid (NFDHA)	NA	NA	0.205	*U*	0.257	*U*	0.196	*U*	0.194	*U*	0.215	*U*	0.196	*U*	0.198	*U*	0.216	*U*
perfluoro-4-oxapentanoic acid (PFMPA)	NA	NA	0.066	*U*	0.083	*U*	0.063	*U*	0.062	*U*	0.069	*U*	0.063	*U*	0.064	*U*	0.069	*U*
perfluoro-5-oxahexanoic acid (PFMBA)	NA	NA	0.102	*U*	0.128	*U*	0.097	*U*	0.097	*U*	0.107	*U*	0.098	*U*	0.099	*U*	0.107	*U*
perfluorobutanesulfonic acid (PFBS)	NA	NA	0.118	*U*	0.148	*U*	0.112	*U*	0.112	*U*	0.123	*U*	0.113	*U*	0.114	*U*	0.124	*U*
perfluorodecanoic acid (PFDA)	NA	NA	0.203	*U*	0.254	*U*	0.194	*U*	0.192	*U*	0.212	*U*	0.194	*U*	0.196	*U*	0.213	*U*
perfluorododecanesulfonic acid (PFDoS)	NA	NA	0.180	*U*	0.225	*U*	0.171	*U*	0.170	*U*	0.188	*U*	0.172	*U*	0.173	*U*	0.189	*U*
perfluorododecanoic acid (PFDoA)	NA	NA	0.173	*U*	0.217	*U*	0.165	*U*	0.164	*U*	0.181	*U*	0.166	*U*	0.167	*U*	0.182	*U*
perfluoroheptanoic acid (PFHpA)	NA	NA	0.112	*U*	0.140	*U*	0.106	*U*	0.106	*U*	0.117	*U*	0.107	*U*	0.108	*U*	0.117	*U*
perfluorohexanesulfonic acid (PFHxS)	NA	NA	0.190	*U*	0.238	*U*	0.181	*U*	0.180	*U*	0.199	*U*	0.182	*U*	0.184	*U*	0.200	*U*
perfluorohexanoic acid (PFHxA)	NA	NA	0.056	*U*	0.071	*U*	0.054	*U*	0.053	*U*	0.059	*U*	0.054	*U*	0.054	*U*	0.059	*U*
perfluoro-n-butanoic acid (PFBA)	NA	NA	0.116	*U*	0.145	*U*	0.110	*U*	0.110	*U*	0.121	*U*	0.111	*U*	0.112	*U*	0.122	*U*
perfluorononanoic acid (PFNA)	NA	NA	0.201	*U*	0.252	*U*	0.192	*U*	0.190	*U*	0.210	*U*	0.192	*U*	0.194	*U*	0.211	*U*
perfluorooctanesulfonic acid (PFOS)	0.88	44	0.178	*U*	0.222	*U*	0.269		0.168	*U*	0.186	*U*	0.170	*U*	0.171	*U*	0.187	*U*
perfluorooctanoic acid (PFOA)	0.66	33	0.183	*U*	0.229	*U*	0.174	*U*	0.173	*U*	0.191	*U*	0.175	*U*	0.177	*U*	0.192	*U*
perfluoropentanoic acid (PFPeA)	NA	NA	0.116	*U*	0.145	*U*	0.110	*U*	0.110	*U*	0.121	*U*	0.111	*U*	0.112	*U*	0.122	*U*
perfluorotetradecanoic acid (PFTA)	NA	NA	0.110	*U*	0.137	*U*	0.104	*U*	0.104	*U*	0.115	*U*	0.105	*U*	0.106	*U*	0.115	*U*
perfluorotridecanoic acid (PFTrDA)	NA	NA	0.133	*U*	0.166	*U*	0.127	*U*	0.126	*U*	0.139	*U*	0.127	*U*	0.128	*U*	0.140	*U*
perfluoroundecanoic acid (PFUnA)	NA	NA	0.211	*U*	0.264	*U*	0.201	*U*	0.199	*U*	0.220	*U*	0.202	*U*	0.203	*U*	0.221	*U*

		Sample	SB-21 11-13		SB-21 22.5-25		SB-22 0-5		SB-22 11-13		SB-22 22.5-25		SB-23 0-5		SB-23 13-15		SB-23 22.5-25	
		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
Data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1		1		1	
1,4-Dioxane, 8270 SIM	**UU SCO**	**SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,4-dioxane	0.1	13	0.019	*U*	0.0183	*U*	0.0192	*U*	0.019	*U*	0.0198	*U*	0.0196	*U*	0.0189	*U*	0.0198	*U*

Analyte Detected
Analyte Above UU Guidance/SCO

Notes: SCOs/guidance values based on NYSDEC Part 375-6.8 and current NYSDEC guidance NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 7: PFAS and 1,4-Dioxane in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-24 0-5		SB-24 11-13		SB-24 22.5-25		SB-25 0-5		SB-25 11-13		DUP-20250325		SB-25 22.5-25		SB-26 0-5	
U= Not Detected ≥ value		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-25		2025-03-25		2025-03-25		2025-03-25		2025-03-21	
Data in µg/Kg (ppb)		Dilution	1		1		1		1		1		1		1		2	
PFAS, 1633	**UU**	**RRU**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
11CL-PF3OUdS	NA	NA	0.330	*U*	0.319	*U*	0.384	*U*	0.319	*U*	0.324	*U*	0.323	*U*	0.355	*U*	0.649	*U*
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2 FTS)	NA	NA	0.801	*U*	0.773	*U*	0.933	*U*	0.774	*U*	0.787	*U*	0.783	*U*	0.862	*U*	1.570	*U*
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2 FTS)	NA	NA	0.631	*U*	0.609	*U*	0.736	*U*	0.610	*U*	0.620	*U*	0.617	*U*	0.679	*U*	1.240	*U*
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2 FTS)	NA	NA	0.796	*U*	0.768	*U*	0.927	*U*	0.769	*U*	0.782	*U*	0.778	*U*	0.856	*U*	1.560	*U*
3-perfluoroheptyl propanoic acid (FHpPA)	NA	NA	1.590	*U*	1.540	*U*	1.850	*U*	1.540	*U*	1.560	*U*	1.560	*U*	1.710	*U*	3.130	*U*
3-perfluoropentyl propanoic acid (FPePA)	NA	NA	2.230	*U*	2.150	*U*	2.590	*U*	2.150	*U*	2.190	*U*	2.180	*U*	2.390	*U*	4.370	*U*
3-perfluoropropyl propanoic acid (FPrPA)	NA	NA	0.672	*U*	0.649	*U*	0.784	*U*	0.650	*U*	0.661	*U*	0.658	*U*	0.724	*U*	1.320	*U*
9CL-PF3ONS	NA	NA	0.261	*U*	0.252	*U*	0.304	*U*	0.252	*U*	0.256	*U*	0.255	*U*	0.281	*U*	0.513	*U*
ADONA	NA	NA	0.185	*U*	0.178	*U*	0.215	*U*	0.178	*U*	0.181	*U*	0.181	*U*	0.199	*U*	0.363	*U*
HFPO-DA (Gen-X)	NA	NA	0.645	*U*	0.623	*U*	0.752	*U*	0.623	*U*	0.634	*U*	0.631	*U*	0.694	*U*	1.270	*U*
N-EtFOSA	NA	NA	0.210	*U*	0.203	*U*	0.245	*U*	0.203	*U*	0.206	*U*	0.205	*U*	0.226	*U*	0.413	*U*
N-EtFOSAA	NA	NA	0.206	*U*	0.199	*U*	0.240	*U*	0.199	*U*	0.202	*U*	0.201	*U*	0.221	*U*	0.405	*U*
N-EtFOSE	NA	NA	0.739	*U*	0.714	*U*	0.862	*U*	0.714	*U*	0.727	*U*	0.723	*U*	0.795	*U*	1.450	*U*
N-MeFOSA	NA	NA	0.191	*U*	0.184	*U*	0.223	*U*	0.184	*U*	0.188	*U*	0.187	*U*	0.205	*U*	0.375	*U*
N-MeFOSAA	NA	NA	0.157	*U*	0.152	*U*	0.183	*U*	0.152	*U*	0.154	*U*	0.154	*U*	0.169	*U*	0.309	*U*
N-MeFOSE	NA	NA	0.648	*U*	0.626	*U*	0.755	*U*	0.626	*U*	0.637	*U*	0.634	*U*	0.697	*U*	1.270	*U*
perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NA	NA	0.147	*U*	0.142	*U*	0.172	*U*	0.142	*U*	0.145	*U*	0.144	*U*	0.159	*U*	0.290	*U*
perfluoro-1-decanesulfonic acid (PFDS)	NA	NA	0.203	*U*	0.196	*U*	0.236	*U*	0.196	*U*	0.199	*U*	0.198	*U*	0.218	*U*	0.398	*U*
perfluoro-1-heptanesulfonic acid (PFHpS)	NA	NA	0.164	*U*	0.159	*U*	0.192	*U*	0.159	*U*	0.162	*U*	0.161	*U*	0.177	*U*	0.323	*U*
perfluoro-1-nonanesulfonic acid (PFNS)	NA	NA	0.132	*U*	0.127	*U*	0.153	*U*	0.127	*U*	0.129	*U*	0.129	*U*	0.142	*U*	0.259	*U*
perfluoro-1-octanesulfonamide (FOSA)	NA	NA	0.155	*U*	0.150	*U*	0.180	*U*	0.150	*U*	0.152	*U*	0.152	*U*	0.167	*U*	0.304	*U*
perfluoro-1-pentanesulfonate (PFPeS)	NA	NA	0.167	*U*	0.161	*U*	0.194	*U*	0.161	*U*	0.164	*U*	0.163	*U*	0.179	*U*	0.327	*U*
perfluoro-3,6-dioxaheptanoic acid (NFDHA)	NA	NA	0.205	*U*	0.198	*U*	0.239	*U*	0.198	*U*	0.201	*U*	0.200	*U*	0.220	*U*	0.402	*U*
perfluoro-4-oxapentanoic acid (PFMPA)	NA	NA	0.066	*U*	0.064	*U*	0.077	*U*	0.064	*U*	0.065	*U*	0.064	*U*	0.071	*U*	0.129	*U*
perfluoro-5-oxahexanoic acid (PFMBA)	NA	NA	0.102	*U*	0.098	*U*	0.119	*U*	0.098	*U*	0.100	*U*	0.100	*U*	0.110	*U*	0.200	*U*
perfluorobutanesulfonic acid (PFBS)	NA	NA	0.118	*U*	0.114	*U*	0.137	*U*	0.114	*U*	0.116	*U*	0.115	*U*	0.127	*U*	0.231	*U*
perfluorodecanoic acid (PFDA)	NA	NA	0.203	*U*	0.196	*U*	0.236	*U*	0.196	*U*	0.199	*U*	0.198	*U*	0.218	*U*	0.398	*U*
perfluorododecanesulfonic acid (PFDoS)	NA	NA	0.179	*U*	0.173	*U*	0.209	*U*	0.173	*U*	0.176	*U*	0.175	*U*	0.193	*U*	0.352	*U*
perfluorododecanoic acid (PFDoA)	NA	NA	0.173	*U*	0.167	*U*	0.202	*U*	0.167	*U*	0.170	*U*	0.169	*U*	0.186	*U*	0.340	*U*
perfluoroheptanoic acid (PFHpA)	NA	NA	0.111	*U*	0.108	*U*	0.130	*U*	0.108	*U*	0.109	*U*	0.109	*U*	0.120	*U*	0.219	*U*
perfluorohexanesulfonic acid (PFHxS)	NA	NA	0.190	*U*	0.183	*U*	0.221	*U*	0.183	*U*	0.187	*U*	0.186	*U*	0.204	*U*	0.373	*U*
perfluorohexanoic acid (PFHxA)	NA	NA	0.056	*U*	0.054	*U*	0.066	*U*	0.054	*U*	0.055	*U*	0.055	*U*	0.061	*U*	0.111	*U*
perfluoro-n-butanoic acid (PFBA)	NA	NA	0.116	*U*	0.112	*U*	0.135	*U*	0.112	*U*	0.114	*U*	0.113	*U*	0.124	*U*	0.227	*U*
perfluorononanoic acid (PFNA)	NA	NA	0.200	*U*	0.194	*U*	0.234	*U*	0.194	*U*	0.197	*U*	0.196	*U*	0.216	*U*	0.394	*U*
perfluorooctanesulfonic acid (PFOS)	0.88	44	0.177	*U*	0.171	*U*	0.206	*U*	0.171	*U*	0.174	*U*	1.230		0.191	*U*	0.348	*U*
perfluorooctanoic acid (PFOA)	0.66	33	0.182	*U*	0.176	*U*	0.213	*U*	0.176	*U*	0.179	*U*	0.178	*U*	0.196	*U*	0.359	*U*
perfluoropentanoic acid (PFPeA)	NA	NA	0.116	*U*	0.112	*U*	0.135	*U*	0.112	*U*	0.114	*U*	0.113	*U*	0.124	*U*	0.227	*U*
perfluorotetradecanoic acid (PFTA)	NA	NA	0.109	*U*	0.105	*U*	0.127	*U*	0.106	*U*	0.107	*U*	0.107	*U*	0.118	*U*	0.215	*U*
perfluorotridecanoic acid (PFTrDA)	NA	NA	0.133	*U*	0.128	*U*	0.155	*U*	0.128	*U*	0.130	*U*	0.130	*U*	0.143	*U*	0.261	*U*
perfluoroundecanoic acid (PFUnA)	NA	NA	0.210	*U*	0.203	*U*	0.245	*U*	0.203	*U*	0.206	*U*	0.205	*U*	0.226	*U*	0.413	*U*

		Sample	SB-24 0-5		SB-24 11-13		SB-24 22.5-25		SB-25 0-5		SB-25 11-13		DUP-20250325		SB-25 22.5-25		SB-26 0-5	
		Date	2025-03-20		2025-03-20		2025-03-20		2024-03-03		2024-03-03		2025-03-25		2024-03-03		2024-03-03	
Data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1		1		1	
1,4-Dioxane, 8270 SIM	**UU SCO**	**SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,4-dioxane	0.1	13	0.0187	*U*	0.0189	*U*	0.0198	*U*	0.0192	*U*	0.0187	*U*	0.0187	*U*	0.0187	*U*	0.0196	*U*

Analyte Detected
Analyte Above UU Guidance/SCO

Notes: SCOs/guidance values based on NYSDEC Part 375-6.8 and current NYSDEC guidance NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 7: PFAS and 1,4-Dioxane in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-26 11-13		SB-26 22.5-25		SB-27 0-5		SB-27 11-13		SB-27 22.5-25		SB-28 0-5		SB-28 11-13		DUP-20250320	
U= Not Detected ≥ value		Date	2025-03-21		2025-03-21		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
Data in µg/Kg (ppb)		Dilution	1		1		1		1		1		1		1		1	
PFAS, 1633	**UU**	**RRU**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
11CL-PF3OUdS	NA	NA	0.317	*U*	0.397	*U*	0.351	*U*	0.315	*U*	0.330	*U*	0.338	*U*	0.318	*U*	0.318	*U*
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2 FTS)	NA	NA	0.770	*U*	0.963	*U*	0.853	*U*	0.764	*U*	0.802	*U*	0.821	*U*	0.772	*U*	0.771	*U*
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2 FTS)	NA	NA	0.607	*U*	0.759	*U*	0.672	*U*	0.602	*U*	0.632	*U*	0.647	*U*	0.609	*U*	0.608	*U*
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2 FTS)	NA	NA	0.765	*U*	0.957	*U*	0.847	*U*	0.759	*U*	0.797	*U*	0.815	*U*	0.767	*U*	0.766	*U*
3-perfluoroheptyl propanoic acid (FHpPA)	NA	NA	1.530	*U*	1.910	*U*	1.690	*U*	1.520	*U*	1.590	*U*	1.630	*U*	1.530	*U*	1.530	*U*
3-perfluoropentyl propanoic acid (FPePA)	NA	NA	2.140	*U*	2.680	*U*	2.370	*U*	2.120	*U*	2.230	*U*	2.280	*U*	2.150	*U*	2.140	*U*
3-perfluoropropyl propanoic acid (FPrPA)	NA	NA	0.647	*U*	0.809	*U*	0.716	*U*	0.641	*U*	0.673	*U*	0.689	*U*	0.649	*U*	0.648	*U*
9CL-PF3ONS	NA	NA	0.251	*U*	0.314	*U*	0.278	*U*	0.249	*U*	0.261	*U*	0.267	*U*	0.252	*U*	0.251	*U*
ADONA	NA	NA	0.177	*U*	0.222	*U*	0.197	*U*	0.176	*U*	0.185	*U*	0.189	*U*	0.178	*U*	0.178	*U*
HFPO-DA (Gen-X)	NA	NA	0.620	*U*	0.776	*U*	0.687	*U*	0.615	*U*	0.646	*U*	0.661	*U*	0.622	*U*	0.621	*U*
N-EtFOSA	NA	NA	0.202	*U*	0.253	*U*	0.224	*U*	0.200	*U*	0.210	*U*	0.215	*U*	0.203	*U*	0.202	*U*
N-EtFOSAA	NA	NA	0.198	*U*	0.247	*U*	0.219	*U*	0.196	*U*	0.206	*U*	0.211	*U*	0.198	*U*	0.198	*U*
N-EtFOSE	NA	NA	0.711	*U*	0.889	*U*	0.787	*U*	0.705	*U*	0.740	*U*	0.758	*U*	0.713	*U*	0.712	*U*
N-MeFOSA	NA	NA	0.184	*U*	0.230	*U*	0.203	*U*	0.182	*U*	0.191	*U*	0.196	*U*	0.184	*U*	0.184	*U*
N-MeFOSAA	NA	NA	0.151	*U*	0.189	*U*	0.167	*U*	0.150	*U*	0.157	*U*	0.161	*U*	0.151	*U*	0.151	*U*
N-MeFOSE	NA	NA	0.623	*U*	0.779	*U*	0.690	*U*	0.618	*U*	0.649	*U*	0.664	*U*	0.625	*U*	0.624	*U*
perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NA	NA	0.142	*U*	0.177	*U*	0.157	*U*	0.141	*U*	0.148	*U*	0.151	*U*	0.142	*U*	0.142	*U*
perfluoro-1-decanesulfonic acid (PFDS)	NA	NA	0.195	*U*	0.244	*U*	0.216	*U*	0.193	*U*	0.203	*U*	0.208	*U*	0.195	*U*	0.195	*U*
perfluoro-1-heptanesulfonic acid (PFHpS)	NA	NA	0.158	*U*	0.198	*U*	0.175	*U*	0.157	*U*	0.165	*U*	0.168	*U*	0.159	*U*	0.158	*U*
perfluoro-1-nonanesulfonic acid (PFNS)	NA	NA	0.126	*U*	0.158	*U*	0.140	*U*	0.125	*U*	0.132	*U*	0.135	*U*	0.127	*U*	0.127	*U*
perfluoro-1-octanesulfonamide (FOSA)	NA	NA	0.149	*U*	0.186	*U*	0.165	*U*	0.148	*U*	0.155	*U*	0.159	*U*	0.149	*U*	0.149	*U*
perfluoro-1-pentanesulfonate (PFPeS)	NA	NA	0.160	*U*	0.200	*U*	0.177	*U*	0.159	*U*	0.167	*U*	0.171	*U*	0.161	*U*	0.160	*U*
perfluoro-3,6-dioxaheptanoic acid (NFDHA)	NA	NA	0.197	*U*	0.246	*U*	0.218	*U*	0.195	*U*	0.205	*U*	0.210	*U*	0.197	*U*	0.197	*U*
perfluoro-4-oxapentanoic acid (PFMPA)	NA	NA	0.063	*U*	0.079	*U*	0.070	*U*	0.063	*U*	0.066	*U*	0.067	*U*	0.063	*U*	0.063	*U*
perfluoro-5-oxahexanoic acid (PFMBA)	NA	NA	0.098	*U*	0.122	*U*	0.108	*U*	0.097	*U*	0.102	*U*	0.104	*U*	0.098	*U*	0.098	*U*
perfluorobutanesulfonic acid (PFBS)	NA	NA	0.113	*U*	0.142	*U*	0.125	*U*	0.112	*U*	0.118	*U*	0.121	*U*	0.114	*U*	0.113	*U*
perfluorodecanoic acid (PFDA)	NA	NA	0.195	*U*	0.244	*U*	0.216	*U*	0.193	*U*	0.203	*U*	0.208	*U*	0.195	*U*	0.195	*U*
perfluorododecanesulfonic acid (PFDoS)	NA	NA	0.172	*U*	0.216	*U*	0.191	*U*	0.171	*U*	0.180	*U*	0.184	*U*	0.173	*U*	0.173	*U*
perfluorododecanoic acid (PFDoA)	NA	NA	0.166	*U*	0.208	*U*	0.184	*U*	0.165	*U*	0.173	*U*	0.177	*U*	0.167	*U*	0.167	*U*
perfluoroheptanoic acid (PFHpA)	NA	NA	0.107	*U*	0.134	*U*	0.119	*U*	0.106	*U*	0.112	*U*	0.114	*U*	0.107	*U*	0.107	*U*
perfluorohexanesulfonic acid (PFHxS)	NA	NA	0.183	*U*	0.228	*U*	0.202	*U*	0.181	*U*	0.190	*U*	0.195	*U*	0.183	*U*	0.183	*U*
perfluorohexanoic acid (PFHxA)	NA	NA	0.054	*U*	0.068	*U*	0.060	*U*	0.054	*U*	0.056	*U*	0.058	*U*	0.054	*U*	0.054	*U*
perfluoro-n-butanoic acid (PFBA)	NA	NA	0.111	*U*	0.139	*U*	0.123	*U*	0.110	*U*	0.116	*U*	0.118	*U*	0.112	*U*	0.111	*U*
perfluorononanoic acid (PFNA)	NA	NA	0.193	*U*	0.241	*U*	0.213	*U*	0.191	*U*	0.201	*U*	0.205	*U*	0.193	*U*	0.193	*U*
perfluorooctanesulfonic acid (PFOS)	0.88	44	0.170	*U*	0.213	*U*	0.189	*U*	0.169	*U*	0.177	*U*	0.182	*U*	0.171	*U*	0.171	*U*
perfluorooctanoic acid (PFOA)	0.66	33	0.175	*U*	0.219	*U*	0.194	*U*	0.174	*U*	0.183	*U*	0.187	*U*	0.176	*U*	0.176	*U*
perfluoropentanoic acid (PFPeA)	NA	NA	0.111	*U*	0.139	*U*	0.123	*U*	0.110	*U*	0.116	*U*	0.118	*U*	0.112	*U*	0.111	*U*
perfluorotetradecanoic acid (PFTA)	NA	NA	0.105	*U*	0.131	*U*	0.116	*U*	0.104	*U*	0.109	*U*	0.112	*U*	0.105	*U*	0.105	*U*
perfluorotridecanoic acid (PFTrDA)	NA	NA	0.127	*U*	0.159	*U*	0.141	*U*	0.126	*U*	0.133	*U*	0.136	*U*	0.128	*U*	0.128	*U*
perfluoroundecanoic acid (PFUnA)	NA	NA	0.202	*U*	0.253	*U*	0.224	*U*	0.200	*U*	0.210	*U*	0.215	*U*	0.203	*U*	0.202	*U*

		Sample	SB-26 11-13		SB-26 22.5-25		SB-27 0-5		SB-27 11-13		SB-27 22.5-25		SB-28 0-5		SB-28 11-13		DUP-20250320	
		Date	2024-03-03		2024-03-03		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-20	
Data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1		1		1	
1,4-Dioxane, 8270 SIM	**UU SCO**	**SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,4-dioxane	0.1	13	0.0196	*U*	0.0196	*U*	0.0198	*U*	0.0196	*U*	0.0183	*U*	0.0196	*U*	0.0183	*U*	0.019	*U*

Analyte Detected
Analyte Above UU Guidance/SCO

Notes: SCOs/guidance values based on NYSDEC Part 375-6.8 and current NYSDEC guidance NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 7: PFAS and 1,4-Dioxane in Soil

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

		Sample	SB-28 22.5-25		SB-29 0-5		SB-29 11-13		SB-29 22.5-25		SB-30 0-5		SB-30 11-13		SB-30 22.5-25	
U= Not Detected ≥ value		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-21		2025-03-21		2025-03-21	
Data in µg/Kg (ppb)		Dilution	1		1		1		1		1		1		1	
PFAS, 1633	**UU**	**RRU**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
11CL-PF3OUdS	NA	NA	0.331	U	0.354	U	0.315	U	0.332	U	0.328	U	0.316	U	0.343	U
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2 FTS)	NA	NA	0.803	U	0.859	U	0.764	U	0.806	U	0.796	U	0.768	U	0.832	U
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2 FTS)	NA	NA	0.633	U	0.677	U	0.602	U	0.635	U	0.627	U	0.605	U	0.656	U
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2 FTS)	NA	NA	0.798	U	0.853	U	0.759	U	0.801	U	0.791	U	0.763	U	0.826	U
3-perfluoroheptyl propanoic acid (FHpPA)	NA	NA	1.600	U	1.710	U	1.520	U	1.600	U	1.580	U	1.530	U	1.650	U
3-perfluoropentyl propanoic acid (FPePA)	NA	NA	2.230	U	2.390	U	2.120	U	2.240	U	2.210	U	2.130	U	2.310	U
3-perfluoropropyl propanoic acid (FPrPA)	NA	NA	0.674	U	0.721	U	0.642	U	0.677	U	0.668	U	0.645	U	0.699	U
9CL-PF3ONS	NA	NA	0.262	U	0.280	U	0.249	U	0.263	U	0.259	U	0.250	U	0.271	U
ADONA	NA	NA	0.185	U	0.198	U	0.176	U	0.186	U	0.183	U	0.177	U	0.192	U
HFPO-DA (Gen-X)	NA	NA	0.647	U	0.692	U	0.616	U	0.649	U	0.641	U	0.618	U	0.670	U
N-EtFOSA	NA	NA	0.211	U	0.225	U	0.200	U	0.211	U	0.209	U	0.201	U	0.218	U
N-EtFOSAA	NA	NA	0.206	U	0.221	U	0.196	U	0.207	U	0.205	U	0.197	U	0.214	U
N-EtFOSE	NA	NA	0.741	U	0.793	U	0.706	U	0.744	U	0.735	U	0.709	U	0.768	U
N-MeFOSA	NA	NA	0.191	U	0.205	U	0.182	U	0.192	U	0.190	U	0.183	U	0.198	U
N-MeFOSAA	NA	NA	0.157	U	0.168	U	0.150	U	0.158	U	0.156	U	0.151	U	0.163	U
N-MeFOSE	NA	NA	0.650	U	0.695	U	0.619	U	0.652	U	0.644	U	0.621	U	0.673	U
perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NA	NA	0.148	U	0.158	U	0.141	U	0.148	U	0.147	U	0.141	U	0.153	U
perfluoro-1-decanesulfonic acid (PFDS)	NA	NA	0.203	U	0.217	U	0.193	U	0.204	U	0.201	U	0.194	U	0.210	U
perfluoro-1-heptanesulfonic acid (PFHpS)	NA	NA	0.165	U	0.176	U	0.157	U	0.166	U	0.163	U	0.158	U	0.171	U
perfluoro-1-nonanesulfonic acid (PFNS)	NA	NA	0.132	U	0.141	U	0.126	U	0.132	U	0.131	U	0.126	U	0.137	U
perfluoro-1-octanesulfonamide (FOSA)	NA	NA	0.155	U	0.166	U	0.148	U	0.156	U	0.154	U	0.149	U	0.161	U
perfluoro-1-pentanesulfonate (PFPeS)	NA	NA	0.167	U	0.179	U	0.159	U	0.168	U	0.166	U	0.160	U	0.173	U
perfluoro-3,6-dioxaheptanoic acid (NFDHA)	NA	NA	0.205	U	0.220	U	0.195	U	0.206	U	0.203	U	0.196	U	0.213	U
perfluoro-4-oxapentanoic acid (PFMPA)	NA	NA	0.066	U	0.071	U	0.063	U	0.066	U	0.065	U	0.063	U	0.068	U
perfluoro-5-oxahexanoic acid (PFMBA)	NA	NA	0.102	U	0.109	U	0.097	U	0.103	U	0.101	U	0.098	U	0.106	U
perfluorobutanesulfonic acid (PFBS)	NA	NA	0.118	U	0.126	U	0.112	U	0.119	U	0.117	U	0.113	U	0.122	U
perfluorodecanoic acid (PFDA)	NA	NA	0.203	U	0.217	U	0.193	U	0.204	U	0.201	U	0.194	U	0.210	U
perfluorododecanesulfonic acid (PFDoS)	NA	NA	0.180	U	0.192	U	0.171	U	0.180	U	0.178	U	0.172	U	0.186	U
perfluorododecanoic acid (PFDoA)	NA	NA	0.173	U	0.185	U	0.165	U	0.174	U	0.172	U	0.166	U	0.180	U
perfluoroheptanoic acid (PFHpA)	NA	NA	0.112	U	0.119	U	0.106	U	0.112	U	0.111	U	0.107	U	0.116	U
perfluorohexanesulfonic acid (PFHxS)	NA	NA	0.190	U	0.204	U	0.181	U	0.191	U	0.189	U	0.182	U	0.197	U
perfluorohexanoic acid (PFHxA)	NA	NA	0.056	U	0.060	U	0.054	U	0.057	U	0.056	U	0.054	U	0.058	U
perfluoro-n-butanoic acid (PFBA)	NA	NA	0.116	U	0.124	U	0.110	U	0.116	U	0.115	U	0.111	U	0.120	U
perfluorononanoic acid (PFNA)	NA	NA	0.201	U	0.215	U	0.191	U	0.202	U	0.199	U	0.192	U	0.208	U
perfluorooctanesulfonic acid (PFOS)	0.88	44	0.178	U	0.190	U	0.169	U	0.178	U	0.176	U	0.511		0.184	U
perfluorooctanoic acid (PFOA)	0.66	33	0.183	U	0.196	U	0.174	U	0.184	U	0.181	U	0.175	U	0.190	U
perfluoropentanoic acid (PFPeA)	NA	NA	0.116	U	0.124	U	0.110	U	0.116	U	0.115	U	0.111	U	0.120	U
perfluorotetradecanoic acid (PFTA)	NA	NA	0.110	U	0.117	U	0.104	U	0.110	U	0.109	U	0.105	U	0.113	U
perfluorotridecanoic acid (PFTrDA)	NA	NA	0.133	U	0.142	U	0.127	U	0.133	U	0.132	U	0.127	U	0.138	U
perfluoroundecanoic acid (PFUnA)	NA	NA	0.211	U	0.225	U	0.200	U	0.211	U	0.209	U	0.201	U	0.218	U

		Sample	SB-28 22.5-25		SB-29 0-5		SB-29 11-13		SB-29 22.5-25		SB-30 0-5		SB-30 11-13		SB-30 22.5-25	
		Date	2025-03-20		2025-03-20		2025-03-20		2025-03-20		2025-03-21		2025-03-21		2025-03-21	
Data in mg/Kg (ppm)		Dilution	1		1		1		1		1		1		1	
1,4-Dioxane, 8270 SIM	**UU SCO**	**SCO**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,4-dioxane	0.1	13	0.0189	U	0.0183	U	0.0185	U	0.0183	U	0.0196	U	0.0196	U	0.0196	U

Analyte Detected
Analyte Above UU Guidance/SCO

Notes: SCOs/guidance values based on NYSDEC Part 375-6.8 and current NYSDEC guidance NA = not available
Result Fags: J = approximate E = estimated B = detected in blank D = diluted

Table 8: VOCs in Groundwater

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

	Sample	MW-04 20250403		MW-05 20250403		DUP- 20250403		MW-06 20250403		MW-07 20250403		MW-08 20250403		MW-09 20250403	
Data in µg/L (parts per billion, ppb)	Date	2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03	
U= Not Detected ≥ value	Dilution	1		1		1		1		1		1		1	
VOCs, 8260	**AWQS**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1,1,2-tetrachloroethane	5	0.216	U	0.216	U	0.216	U	0.216	U	0.216	U	0.216	U	0.216	U
1,1,1-trichloroethane	5	0.266	U	0.266	U	0.266	U	0.266	U	0.266	U	0.266	U	0.266	U
1,1,2,2-tetrachloroethane	5	0.256	U	0.256	U	0.256	U	0.256	U	0.256	U	0.256	U	0.256	U
1,1,2-trichloro-1,2,2-trifluoroethane	5	0.286	U	0.286	U	0.286	U	0.286	U	0.286	U	0.286	U	0.286	U
1,1,2-trichloroethane	1	0.249	U	0.249	U	0.249	U	0.249	U	0.249	U	0.249	U	0.249	U
1,1-dichloroethane	5	0.272	U	0.272	U	0.272	U	0.272	U	0.272	U	0.272	U	0.272	U
1,1-dichloroethylene (1,1-DCE)	5	0.327	U	0.327	U	0.327	U	0.327	U	0.327	U	0.327	U	0.327	U
1,2,3-trichlorobenzene	5	0.222	U	0.222	U	0.222	U	0.222	U	0.222	U	0.222	U	0.222	U
1,2,3-trichloropropane	0.04	0.273	U	0.273	U	0.273	U	0.273	U	0.273	U	0.273	U	0.273	U
1,2,4-trichlorobenzene	5	0.138	U	0.138	U	0.138	U	0.138	U	0.138	U	0.138	U	0.138	U
1,2,4-trimethylbenzene	5	0.31	U	0.31	U	0.31	U	0.31	U	0.31	U	0.31	U	0.31	U
1,2-dibromo-3-chloropropane	0.04	0.432	U	0.432	U	0.432	U	0.432	U	0.432	U	0.432	U	0.432	U
1,2-dibromoethane	5	0.215	U	0.215	U	0.215	U	0.215	U	0.215	U	0.215	U	0.215	U
1,2-dichlorobenzene	3	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
1,2-dichloroethane	0.6	0.377	U	0.377	U	0.377	U	0.377	U	0.377	U	0.377	U	0.377	U
1,2-dichloropropane	1	0.327	U	0.327	U	0.327	U	0.327	U	0.327	U	0.327	U	0.327	U
1,3,5-trimethylbenzene	5	0.347	U	0.347	U	0.347	U	0.347	U	0.347	U	0.347	U	0.347	U
1,3-dichlorobenzene	3	0.283	U	0.283	U	0.283	U	0.283	U	0.283	U	0.283	U	0.283	U
1,4-dichlorobenzene	3	0.311	U	0.311	U	0.311	U	0.311	U	0.311	U	0.311	U	0.311	U
1,4-dioxane	NA	35.3	U	35.3	U	35.3	U	35.3	U	35.3	U	35.3	U	35.3	U
2-butanone (MEK)	50	0.52		0.421	U	0.421	U	0.421	U	0.62		0.59		0.421	U
2-hexanone (MBK)	50	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
4-methyl-2-pentanone	NA	0.365	U	0.365	U	0.365	U	0.365	U	0.365	U	0.365	U	0.365	U
acetone	50	1.34	U	1.76	J	1.69	J	1.34	U	1.34	U	2.57		1.34	U
acrolein	5	0.447	U	0.447	U	0.447	U	0.447	U	0.447	U	0.447	U	0.447	U
acrylonitrile	5	0.422	U	0.422	U	0.422	U	0.422	U	0.422	U	0.422	U	0.422	U
benzene	1	0.279	U	0.279	U	0.279	U	0.279	U	0.279	U	0.279	U	0.279	U
bromochloromethane	5	0.354	U	0.354	U	0.354	U	0.354	U	0.354	U	0.354	U	0.354	U
bromodichloromethane	50	0.245	U	0.245	U	0.245	U	0.245	U	0.245	U	0.245	U	0.245	U
bromoform	50	0.163	U	0.163	U	0.163	U	0.163	U	0.163	U	0.163	U	0.163	U
bromomethane	5	0.119	U	0.119	U	0.119	U	0.119	U	0.119	U	0.119	U	0.119	U
carbon disulfide	NA	0.362	U	0.362	U	0.362	U	0.362	U	0.362	U	0.362	U	0.362	U
carbon tetrachloride	5	0.204	U	0.204	U	0.204	U	0.204	U	0.204	U	0.204	U	0.204	U
chlorobenzene	5	0.284	U	0.284	U	0.284	U	0.284	U	0.284	U	0.284	U	0.284	U
chloroethane	5	0.448	U	0.448	U	0.448	U	0.448	U	0.448	U	0.448	U	0.448	U
chloroform	7	0.93		0.243	U	0.243	U	0.243	U	0.243	U	0.243	U	0.243	U
chloromethane	5	0.372	U	0.372	U	0.372	U	0.372	U	0.372	U	0.372	U	0.372	U
cis-1,2-dichloroethylene (cis-DCE)	5	0.294	U	0.294	U	0.294	U	0.294	U	0.294	U	0.294	U	0.294	U
cis-1,3-dichloropropylene	0.4	0.262	U	0.262	U	0.262	U	0.262	U	0.262	U	0.262	U	0.262	U
cyclohexane	NA	8.44		0.491	U	0.491	U	0.491	U	0.491	U	9.11		0.491	U
dibromochloromethane	5	0.146	U	0.146	U	0.146	U	0.146	U	0.146	U	0.146	U	0.146	U
dibromomethane	5	0.203	U	0.203	U	0.203	U	0.203	U	0.203	U	0.203	U	0.203	U
dichlorodifluoromethane	5	0.451	U	0.451	U	0.451	U	0.451	U	0.451	U	0.451	U	0.451	U
ethyl benzene	5	0.29	U	0.29	U	0.29	U	0.29	U	0.29	U	0.29	U	0.29	U
hexachlorobutadiene	0.5	0.241	U	0.241	U	0.241	U	0.241	U	0.241	U	0.241	U	0.241	U
isopropylbenzene	5	0.405	U	0.405	U	0.405	U	0.405	U	0.405	U	0.405	U	0.405	U
methyl acetate	NA	0.442	U	0.442	U	0.442	U	0.442	U	0.442	U	0.442	U	0.442	U
methyl tert-butyl ether (MTBE)	10	0.244	U	0.244	U	0.244	U	0.244	U	0.244	U	0.244	U	0.244	U
methylcyclohexane	NA	0.477	U	0.477	U	0.477	U	0.477	U	0.477	U	0.477	U	0.477	U
methylene chloride	5	0.397	U	0.397	U	0.397	U	0.397	U	0.397	U	0.397	U	0.397	U
n-butylbenzene	5	0.399	U	0.399	U	0.399	U	0.399	U	0.399	U	0.399	U	0.399	U
n-propylbenzene	5	0.384	U	0.62		0.62		0.384	U	0.384	U	0.384	U	0.384	U
o-xylene	5	0.261	U	0.261	U	0.261	U	0.261	U	0.261	U	0.261	U	0.261	U
p- & m- xylenes	5	0.578	U	0.578	U	0.578	U	0.578	U	0.578	U	0.578	U	0.578	U
p-isopropyltoluene	5	0.377	U	0.377	U	0.377	U	0.377	U	0.377	U	0.377	U	0.377	U
sec-butylbenzene	5	0.76		4.31		4.42		0.444	U	0.444	U	0.71		0.444	U
styrene	5	0.255	U	0.255	U	0.255	U	0.255	U	0.255	U	0.255	U	0.255	U
tert-butyl alcohol (TBA)	NA	1.79		1.53		0.608	U	0.608	U	0.608	U	0.608	U	1.54	
tert-butylbenzene	5	0.367	U	0.367	U	0.367	U	0.367	U	0.367	U	0.367	U	0.367	U
tetrachloroethylene (PCE)	5	0.29	J	0.239	U	0.239	U	0.95		0.239	U	0.239	U	0.5	
toluene	5	0.346	U	0.346	U	0.346	U	0.346	U	0.346	U	0.346	U	0.346	U
trans-1,2-dichloroethylene (trans-DCE)	5	0.279	U	0.279	U	0.279	U	0.279	U	0.279	U	0.279	U	0.279	U
trans-1,3-dichloropropylene	0.4	0.229	U	0.229	U	0.229	U	0.229	U	0.229	U	0.229	U	0.229	U
trichloroethylene (TCE)	5	0.249	U	0.46	J	0.47	J	0.249	U	0.249	U	0.249	U	0.249	U
trichlorofluoromethane	5	0.337	U	0.337	U	0.337	U	0.337	U	0.337	U	0.337	U	0.337	U
vinyl chloride (VC)	2	0.469	U	0.469	U	0.469	U	0.469	U	0.469	U	0.469	U	0.469	U
xylenes, total	5	0.839	U	0.839	U	0.839	U	0.839	U	0.839	U	0.839	U	0.839	U
TOTAL VOCs		**12.7**		**8.7**		**7.2**		**1.0**		**0.6**		**13.0**		**2.0**	

Analyte Detected

Notes: AWQS based on NYSDEC TOGS 1.1.1 (Class GA) NA = not available
Result Flags: J = approximate E = estimated B = detected in blank D = diluted

Table 9: SVOCs in Groundwater

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

	Sample	MW-04 20250403		MW-05 20250403		DUP- 20250403		MW-06 20250403		MW-07 20250403		MW-08 20250403		MW-09 20250403	
Data in µg/L (parts per billion, ppb)	Date	2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03	
U= Not Detected ≥ value	Dilution	1		1		1		1		1		1		1	
SVOCs, 8270 SIM	**AWQS**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
acenaphthene	20	0.05	*U*	0.05	*U*	0.05	*U*	0.05	*U*	0.0571	*U*	0.05	*U*	0.05	*U*
acenaphthylene	NA	0.05	*U*	0.05	*U*	0.05	*U*	0.05	*U*	0.0571	*U*	0.05	*U*	0.05	*U*
anthracene	50	0.05	*U*	0.05	*U*	0.05	*U*	0.05	*U*	0.0571	*U*	0.05	*U*	0.05	*U*
atrazine	NA	0.5	*U*	0.5	*U*	0.5	*U*	0.5	*U*	0.571	*U*	0.5	*U*	0.5	*U*
benzo(a)anthracene	0.002	0.05	*U*	0.05	*U*	0.05	*U*	0.05	*U*	0.0571	*U*	0.05	*U*	0.05	*U*
benzo(a)pyrene	0.002	0.05	*U*	0.05	*U*	0.05	*U*	0.05	*U*	0.0571	*U*	0.05	*U*	0.05	*U*
benzo(b)fluoranthene	0.002	0.05	*U*	0.05	*U*	0.05	*U*	0.05	*U*	0.0571	*U*	0.05	*U*	0.05	*U*
benzo(g,h,i)perylene	~	0.05	*U*	0.05	*U*	0.05	*U*	0.05	*U*	0.0571	*U*	0.05	*U*	0.05	*U*
benzo(k)fluoranthene	0.002	0.05	*U*	0.05	*U*	0.05	*U*	0.05	*U*	0.0571	*U*	0.05	*U*	0.05	*U*
bis(2-ethylhexyl)phthalate	5	0.5	*U*	0.5	*U*	0.5	*U*	0.5	*U*	**70.6**	*D*	0.5	*U*	0.5	*U*
chrysene	0.002	0.05	*U*	0.05	*U*	0.05	*U*	0.05	*U*	0.0571	*U*	0.05	*U*	0.05	*U*
dibenzo(a,h)anthracene	NA	0.05	*U*	0.05	*U*	0.05	*U*	0.05	*U*	0.0571	*U*	0.05	*U*	0.05	*U*
fluoranthene	50	0.05	*U*	0.05	*U*	0.05	*U*	0.05	*U*	0.0571	*U*	0.05	*U*	0.05	*U*
fluorene	50	0.05	*U*	0.05	*U*	0.05	*U*	0.05	*U*	0.0571	*U*	0.05	*U*	0.05	*U*
hexachlorobenzene	0.04	0.02	*U*	0.02	*U*	0.02	*U*	0.02	*U*	0.0229	*U*	0.02	*U*	0.02	*U*
hexachlorobutadiene	0.5	0.5	*U*	0.5	*U*	0.5	*U*	0.5	*U*	0.571	*U*	0.5	*U*	0.5	*U*
hexachloroethane	5	0.5	*U*	0.5	*U*	0.5	*U*	0.5	*U*	0.571	*U*	0.5	*U*	0.5	*U*
indeno(1,2,3-cd)pyrene	0.002	0.05	*U*	0.05	*U*	0.05	*U*	0.05	*U*	0.0571	*U*	0.05	*U*	0.05	*U*
naphthalene	10	0.22		0.15		0.26		0.05	*U*	0.0571	*U*	0.22		0.05	*U*
nitrobenzene	0.4	0.25	*U*	0.25	*U*	0.25	*U*	0.25	*U*	0.286	*U*	0.25	*U*	0.25	*U*
n-nitrosodimethylamine	NA	0.5	*U*	0.5	*U*	0.5	*U*	0.5	*U*	0.571	*U*	0.5	*U*	0.5	*U*
pentachlorophenol	1	0.25	*U*	0.25	*U*	0.25	*U*	0.25	*U*	0.286	*U*	0.25	*U*	0.25	*U*
phenanthrene	50	0.05	*U*	0.05	*U*	0.05	*U*	0.05	*U*	0.0571	*U*	0.05	*U*	0.05	*U*
pyrene	50	0.05	*U*	0.05	*U*	0.05	*U*	0.05	*U*	0.0571	*U*	0.05	*U*	0.05	*U*
SVOCs, 8270	Dilution	1		1		1		1		1		1		1	
1,1-biphenyl	NA	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
1,2,4,5-tetrachlorobenzene	NA	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
1,2,4-trichlorobenzene	5	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
1,2-dichlorobenzene	3	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
2-diphenylhydrazine (as azobenzen	NA	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
1,3-dichlorobenzene	3	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
1,4-dichlorobenzene	3	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
2,3,4,6-tetrachlorophenol	NA	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
2,4,5-trichlorophenol	1	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
2,4,6-trichlorophenol	1	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
2,4-dichlorophenol	5	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
2,4-dimethylphenol	50	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
2,4-dinitrophenol	10	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
2,4-dinitrotoluene	5	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
2,6-dinitrotoluene	5	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
2-chloronaphthalene	10	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
2-chlorophenol	1	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
2-methylnaphthalene	NA	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
2-methylphenol	1	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
2-nitroaniline	5	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
2-nitrophenol	1	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
3- & 4-methylphenols	1	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
3,3-dichlorobenzidine	5	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
3-nitroaniline	5	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
4,6-dinitro-2-methylphenol	NA	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
4-bromophenyl phenyl ether	NA	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
4-chloro-3-methylphenol	1	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
4-chloroaniline	5	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
4-chlorophenyl phenyl ether	NA	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
4-nitroaniline	5	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
4-nitrophenol	1	5	*U*	5	*U*	5	*U*	5	*U*	5.71	*U*	5	*U*	5	*U*
acetophenone	NA	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
aniline	5	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
benzaldehyde	NA	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
benzidine	NA	5	*U*	5	*U*	5	*U*	5	*U*	5.71	*U*	5	*U*	5	*U*
benzoic acid	NA	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
benzyl alcohol	NA	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
benzyl butyl phthalate	50	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
bis(2-chloroethoxy)methane	5	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
bis(2-chloroethyl)ether	1	1	*U*	1	*U*	1	*U*	1	*U*	1.14	*U*	1	*U*	1	*U*
bis(2-chloroisopropyl)ether	5	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
caprolactam	NA	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
carbazole	NA	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
dibenzofuran	NA	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
diethyl phthalate	50	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
dimethyl phthalate	50	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
di-n-butyl phthalate	50	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
di-n-octyl phthalate	50	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
hexachlorocyclopentadiene	5	5	*U*	5	*U*	5	*U*	5	*U*	5.71	*U*	5	*U*	5	*U*
isophorone	50	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
n-nitroso-di-n-propylamine	NA	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
n-nitrosodiphenylamine	50	2.5	*U*	2.5	*U*	2.5	*U*	2.5	*U*	2.86	*U*	2.5	*U*	2.5	*U*
phenol	1	0.75	*U*	0.75	*U*	0.75	*U*	0.75	*U*	0.857	*U*	0.75	*U*	0.75	*U*
TOTAL SVOCS		**0.22**		**0.15**		**0.26**		ND		**70.6**		**0.22**		ND	

Analyte Detected
Analyte above AWQS

Notes: AWQS based on NYSDEC TOGS 1.1.1 (Class GA) NA = not available
Result Flags: J = approximate E = estimated B = detected in blank D = diluted

Table 10: VOC and SVOC TICs in Groundwater

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

Sample	MW-04 20250403		MW-05 20250403		DUP-20250403		MW-08 20250403		MW-09 20250403	
Date	2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03	
Data in µg/L (parts per billion, ppb) Dilution	1		1		1		1		1	
VOC TICs	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
Cyclohexane dimethyl trans isomer	10	J								
Hexane dimethyl isomer	11	J								
Hexane trimethyl isomer	10	J								
Pentane trimethyl isomer					34	J	38	J	11	J
Pentane trimethyl isomer (01)	13	J	33	J						
Pentane trimethyl isomer (02)	130	J	30	J						
Pentane trimethyl isomer (03)	120	J								
TOTAL VOC TICs	**294**		**63**		**34**		**38**		**11**	

Sample	MW-04 20250403		MW-05 20250403		DUP-20250403		MW-06 20250403		MW-07 20250403		MW-08 20250403		MW-09 20250403	
Date	2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03	
Dilution	1		1		1		1		1		1		1	
SVOC TICs	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
2,2-Dimethyl-1 isomer RT5.22											13.5	J		
2-Pentanone isomer RT3.30													13.7	J
2-Pentanone isomer RT3.31											14.4	J		
5-Amino-1-ethylpyrazole iso...											19.3	J		
Pentanone, methyl ISOMER	21	J												
unknown isomer RT3.93			14.5	J	14.5	J	12.5	J	18	J				
TOTAL SVOC TICs	**21**		**14.5**		**14.5**		**12.5**		**18**		**47.2**		**13.7**	

Analyte Detected

Result Flags: J = approximate E = estimated B = detected in blank D = diluted

Table 11: TAL Metals (Total) in Groundwater

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

Data in µg/L (parts per billion, ppb)	**Sample**	**MW-04 20250403**		**MW-05 20250403**		**DUP- 20250403**		**MW-06 20250403**		**MW-07 20250403**		**MW-08 20250403**		**MW-09 20250403**	
U= Not Detected ≥ value	Date	2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03	
USEPA 6010, 7473	Dilution	1		1		1		1		1		1		1	
Metals (ICP)	**AWQS**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
aluminum	NA	148		196		188		55.6	*U*	179		469		133	
barium	1,000	35.7		27.8	*U*	27.8	*U*	27.8	*U*	27.8	*U*	27.8	*U*	27.8	*U*
calcium	NA	37,500		69,600		66,900		30,000		28,400		35,600		61,900	
chromium	50	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*
cobalt	5	**17.3**		4.44	*U*	4.44	*U*	4.44	*U*	4.44	*U*	4.44	*U*	**8.89**	
copper	200	22.2	*U*	22.2	*U*	22.2	*U*	22.2	*U*	22.2	*U*	22.2	*U*	22.2	*U*
iron**	300	**1,470**		**339**		**397**		278	*U*	278	*U*	278	*U*	278	*U*
lead	25	18.2		5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*
magnesium	35,000	2,210		4,290		4,160		2,600		2,000		1,460		4,120	
manganese**	300	210		60.6		62.6		274		153		6.44		264	
nickel	100	11.1	*U*	11.1	*U*	11.1	*U*	11.1	*U*	11.1	*U*	11.1	*U*	11.1	*U*
potassium	NA	3,500		6,280		6,070		3,900		1,830		4,020		5,520	
silver	50	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*
sodium	20,000	17,000		**23,200**		**22,200**		5,990		4,630		5,690		**29,700**	
vanadium	14	11.1	*U*	11.1	*U*	11.1	*U*	11.1	*U*	11.1	*U*	11.1	*U*	11.1	*U*
zinc	2,000	27.8	*U*	38.3		27.8	*U*	27.8	*U*	27.8	*U*	27.8	*U*	29.6	
	Dilution	5		5		5		5		5		5		5	
Metals (ICPMS)	**AWQS**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
antimony	3	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*
arsenic	25	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*
beryllium	3	1.67	*U*	1.67	*U*	1.67	*U*	1.67	*U*	1.67	*U*	1.67	*U*	1.67	*U*
cadmium	5	2.78	*U*	2.78	*U*	2.78	*U*	2.78	*U*	2.78	*U*	2.78	*U*	2.78	*U*
selenium	10	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*
thallium	0.5	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*
	Dilution	1		1		1		1		1		1		1	
Mercury (7470/7471)	**AWQS**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
Mercury	0.7	0.200	*U*	0.200	*U*	0.200	*U*	0.200	*U*	0.200	*U*	0.200	*U*	**1.90**	
	Dilution	1		1		1		1		1		1		1	
Chromium (7196)	**AWQS**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
chromium, hexavalent	50	10	*U*	10	*U*	10	*U*	10	*U*	10	*U*	10	*U*	10	*U*
	Dilution	1		1		1		1		1		1		1	
Cyanide (SM 4500)	**AWQS**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
Cyanide	200	10	*U*	10	*U*	10	*U*	10	*U*	10	*U*	10	*U*	10	*U*

** combined iron and manganese = 500

Analyte Detected
Analyte above AWQS

Notes: AWQS based on NYSDEC TOGS 1.1.1 (Class GA) NA = not available
Result Flags: J = approximate E = estimated B = detected in blank D = diluted

Table 12: TAL Metals (Dissolved) in Groundwater

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

Data in µg/L (parts per billion, ppb)	**Sample**	**MW-04 20250403**		**MW-05 20250403**		**DUP- 20250403**		**MW-06 20250403**		**MW-07 20250403**		**MW-08 20250403**		**MW-09 20250403**	
U= Not Detected ≥ value	Date	2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03	
USEPA 6010, 7473	Dilution	1		1		1		1		1		1		1	
Metals (ICP)	**AWQS**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
aluminum	NA	55.6	*U*	141		139		55.6	*U*	55.6	*U*	274		55.6	*U*
barium	1,000	34.7		27.8	*U*	27.8	*U*	27.8	*U*	27.8	*U*	27.8	*U*	27.8	*U*
calcium	NA	38,900		69,600		69,400		30,900		29,500		29,300		62,800	
chromium	50	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*
cobalt	5	**17.2**		4.44	*U*	4.44	*U*	4.44	*U*	4.44	*U*	4.44	*U*	**8.56**	
copper	200	22.2	*U*	22.2	*U*	22.2	*U*	22.2	*U*	22.2	*U*	22.2	*U*	22.2	*U*
iron**	300	278	*U*	278	*U*	278	*U*	278	*U*	278	*U*	278	*U*	278	*U*
lead	25	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*
magnesium	35,000	2,220		4,330		4,370		2,650		2,030		1,500		4,140	
manganese**	300	216		58.2		53.1		284		141		5.56	*U*	269	
nickel	100	11.1	*U*	11.1	*U*	11.1	*U*	11.1	*U*	11.1	*U*	11.1	*U*	11.1	*U*
potassium	NA	3,460		6,060		6,140		4,000		1,720		3,830		5,370	
silver	50	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*
sodium	20,000	17,500		**22,800**		**22,800**		6,050		4,670		5,790		**29,600**	
vanadium	14	11.1	*U*	11.1	*U*	11.1	*U*	11.1	*U*	11.1	*U*	11.1	*U*	11.1	*U*
zinc	2,000	27.8	*U*	27.8	*U*	27.8	*U*	27.8	*U*	27.8	*U*	27.8	*U*	27.8	*U*
	Dilution	5		5		5		5		5		5		5	
Metals (ICP-MS)	**AWQS**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
antimony	3	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*
arsenic	25	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*
beryllium	3	1.67	*U*	1.67	*U*	1.67	*U*	1.67	*U*	1.67	*U*	1.67	*U*	1.67	*U*
cadmium	5	2.78	*U*	2.78	*U*	2.78	*U*	2.78	*U*	2.78	*U*	2.78	*U*	2.78	*U*
selenium	10	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*
thallium	0.5	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*	5.56	*U*
	Dilution	1		1		1		1		1		1		1	
Mercury by 7470/7471	**AWQS**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
Mercury	0.7	0.200	*U*	0.200	*U*	0.200	*U*	0.200	*U*	0.200	*U*	0.200	*U*	0.200	*U*

** combined iron and manganese = 500

Analyte Detected
Analyte above AWQS

Notes: AWQS based on NYSDEC TOGS 1.1.1 (Class GA) NA = not available
Result Flags: J = approximate E = estimated B = detected in blank D = diluted

Table 13: Pesticides, Herbicides, and PCBs in Groundwater

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

Data in µg/L	Sample	MW-04 20250403		MW-05 20250403		DUP-20250403		MW-06 20250403		MW-07 20250403		MW-08 20250403		MW-09 20250403	
(parts per billion, ppb)	Date	2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03	
U= Not Detected ≥ value	Dilution	1		1		1		1		1		1		1	
Pesticides, 8081	**AWQS**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
4,4'-DDD	0.3	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*
4,4'-DDE	0.2	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*
4,4'-DDT	0.2	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*
aldrin	NE	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*
alpha-BHC	0.01	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*
alpha-chlordane	0.05	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*
beta-BHC	0.04	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*
chlordane, total	0.05	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
delta-BHC	0.04	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*
dieldrin	0.004	0.002	*U*	0.002	*U*	0.002	*U*	0.002	*U*	0.002	*U*	0.002	*U*	0.002	*U*
endosulfan I	NA	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*
endosulfan II	NA	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*
endosulfan sulfate	NA	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*
endrin	NA	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*
endrin aldehyde	5	0.01	*U*	0.01	*U*	0.01	*U*	0.01	*U*	0.01	*U*	0.01	*U*	0.01	*U*
endrin ketone	5	0.01	*U*	0.01	*U*	0.01	*U*	0.01	*U*	0.01	*U*	0.01	*U*	0.01	*U*
gamma-BHC (lindane)	0.05	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*
gamma-chlordane	0.05	0.01	*U*	0.01	*U*	0.01	*U*	0.01	*U*	0.01	*U*	0.01	*U*	0.01	*U*
heptachlor	0.04	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*
heptachlor epoxide	0.03	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*
methoxychlor	35	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*	0.004	*U*
toxaphene	0.06	0.1	*U*	0.1	*U*	0.1	*U*	0.1	*U*	0.1	*U*	0.1	*U*	0.1	*U*
	Dilution	1		1		1		1		1		1		1	
Herbicides, 8151	**AWQS**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
2,4,5-T		5	*U*	5	*U*	5	*U*	5	*U*	5	*U*	5	*U*	5	*U*
2,4,5-TP (Silvex)		5	*U*	5	*U*	5	*U*	5	*U*	5	*U*	5	*U*	5	*U*
2,4-D		5	*U*	5	*U*	5	*U*	5	*U*	5	*U*	5	*U*	5	*U*
	Dilution	1		1		1		1		1		1		1	
PCBs, 8082	**AWQS**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
Aroclor 1016	0.09	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*
Aroclor 1221	0.09	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*
Aroclor 1232	0.09	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*
Aroclor 1242	0.09	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*
Aroclor 1248	0.09	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*
Aroclor 1254	0.09	0.050	*U*	0.058		0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*
Aroclor 1260	0.09	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*	0.050	*U*
Aroclor, Total	0.09	ND		0.0582		ND		ND		ND		ND		ND	

Analyte Detected

Notes: AWQS based on NYSDEC TOGS 1.1.1 (Class GA) NA = not available
Result Flags: J = approximate E = estimated B = detected in blank D = diluted

Table 14: PFAS and 1,4-Dioxane in Groundwater

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

	Sample	MW-04 20250403		MW-05 20250403		DUP- 20250403		MW-06 20250403		MW-07 20250403		MW-08 20250403		MW-09 20250403	
Data in ng/L (parts per trillion, ppt)	Date	2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03	
U= Not Detected ≥ value	Dilution	1		1		1		1		1		1		1	
PFAS	**Guidance**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
11CL-PF3OUdS	NA	1.41	*U*	1.53	*U*	1.46	*U*	1.35	*U*	1.35	*U*	1.29	*U*	1.29	*U*
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2 FTS)	NA	2.1	*U*	2.28	*U*	2.16	*U*	2	*U*	2	*U*	1.92	*U*	1.91	*U*
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2 FTS)	NA	1.83	*U*	1.99	*U*	1.89	*U*	1.75	*U*	1.75	*U*	1.68	*U*	1.67	*U*
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2 FTS)	NA	7.68	*U*	8.33	*U*	7.91	*U*	7.32	*U*	7.33	*U*	7.03	*U*	7	*U*
3-perfluoroheptyl propanoic acid (FHpPA)	NA	9.7	*U*	10.5	*U*	9.99	*U*	9.24	*U*	9.26	*U*	8.88	*U*	8.84	*U*
3-perfluoropentyl propanoic acid (FPePA)	NA	7.51	*U*	8.14	*U*	7.74	*U*	7.15	*U*	7.16	*U*	6.87	*U*	6.84	*U*
3-perfluoropropyl propanoic acid (FPrPA)	NA	2.08	*U*	2.26	*U*	2.14	*U*	1.98	*U*	1.98	*U*	1.9	*U*	1.9	*U*
9CL-PF3ONS	NA	0.717	*U*	0.778	*U*	0.739	*U*	0.683	*U*	0.684	*U*	0.656	*U*	0.653	*U*
ADONA	NA	0.543	*U*	0.589	*U*	0.559	*U*	0.517	*U*	0.518	*U*	0.497	*U*	0.495	*U*
HFPO-DA (Gen-X)	NA	3.31	*U*	3.59	*U*	3.41	*U*	3.15	*U*	3.16	*U*	3.03	*U*	3.02	*U*
N-EtFOSA	NA	1.84	*U*	2	*U*	1.9	*U*	1.76	*U*	1.76	*U*	1.69	*U*	1.68	*U*
N-EtFOSAA	NA	1.05	*U*	1.14	*U*	1.09	*U*	1.01	*U*	1.01	*U*	0.966	*U*	0.962	*U*
N-EtFOSE	NA	4.09	*U*	4.43	*U*	4.21	*U*	3.89	*U*	3.9	*U*	3.74	*U*	3.72	*U*
N-MeFOSA	NA	1.62	*U*	1.76	*U*	1.67	*U*	1.54	*U*	1.54	*U*	1.48	*U*	1.47	*U*
N-MeFOSAA	NA	0.809	*U*	0.878	*U*	0.834	*U*	0.771	*U*	0.772	*U*	0.741	*U*	0.737	*U*
N-MeFOSE	NA	4.09	*U*	4.43	*U*	4.21	*U*	3.89	*U*	3.9	*U*	3.74	*U*	3.72	*U*
perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NA	0.512	*U*	0.556	*U*	0.528	*U*	0.488	*U*	0.489	*U*	0.469	*U*	0.467	*U*
perfluoro-1-decanesulfonic acid (PFDS)	NA	1.35	*U*	1.47	*U*	1.39	*U*	1.29	*U*	1.52	*J*	1.24	*U*	1.23	*U*
perfluoro-1-heptanesulfonic acid (PFHpS)	NA	0.932	*U*	1.01	*U*	0.96	*U*	0.888	*U*	0.889	*U*	1.18	*J*	0.85	*U*
perfluoro-1-nonanesulfonic acid (PFNS)	NA	0.881	*U*	0.956	*U*	0.908	*U*	0.839	*U*	0.841	*U*	0.806	*U*	0.803	*U*
perfluoro-1-octanesulfonamide (FOSA)	NA	0.901	*U*	0.978	*U*	0.929	*U*	0.859	*U*	0.86	*U*	0.825	*U*	0.822	*U*
perfluoro-1-pentanesulfonate (PFPeS)	NA	0.778	*U*	0.844	*U*	0.802	*U*	0.742	*U*	0.743	*U*	0.712	*U*	0.709	*U*
perfluoro-3,6-dioxaheptanoic acid (NFDHA)	NA	2.19	*U*	2.38	*U*	2.26	*U*	2.09	*U*	2.09	*U*	2.01	*U*	2	*U*
perfluoro-4-oxapentanoic acid (PFMPA)	NA	0.256	*U*	0.278	*U*	0.264	*U*	0.244	*U*	0.244	*U*	0.234	*U*	0.233	*U*
perfluoro-5-oxahexanoic acid (PFMBA)	NA	0.379	*U*	0.411	*U*	0.39	*U*	0.361	*U*	0.362	*U*	0.347	*U*	0.345	*U*
perfluorobutanesulfonic acid (PFBS)	NA	12.3		3.23		3.41		3.17		3.43		2.02		19.8	
perfluorodecanoic acid (PFDA)	NA	1.79	*J*	0.833	*U*	0.791	*U*	3.47		1.97		0.876	*J*	0.7	*U*
perfluorododecanesulfonic acid (PFDoS)	NA	0.952	*U*	1.03	*U*	0.981	*U*	0.908	*U*	0.909	*U*	0.872	*U*	0.868	*U*
perfluorododecanoic acid (PFDoA)	NA	0.901	*U*	0.978	*U*	0.929	*U*	0.859	*U*	0.86	*U*	0.825	*U*	0.822	*U*
perfluoroheptanoic acid (PFHpA)	NA	7.91		6.52		6		3.66		2.36		5.13		4.71	
perfluorohexanesulfonic acid (PFHxS)	NA	2.11		2.89		2.29		1.56	*J*	0.896	*J*	2.76		1.26	*J*
perfluorohexanoic acid (PFHxA)	NA	5.08		4.43		4.85		5.43		2.97		5.46		4.85	
perfluoro-n-butanoic acid (PFBA)	NA	0.338	*U*	0.367	*U*	0.348	*U*	4.37	*J*	0.323	*U*	0.309	*U*	5.2	*J*
perfluorononanoic acid (PFNA)	NA	0.82	*J*	0.578	*U*	0.597	*J*	4.07		0.705	*J*	0.928	*J*	2.54	
perfluorooctanesulfonic acid (PFOS)	2.7	**14.8**		**16.3**		**17.4**		**26.8**		**10**		**19.3**		**27.9**	
perfluorooctanoic acid (PFOA)	6.7	**12.7**		**33.8**		**32.3**		**13.1**		**9.16**		**16.9**		**13.6**	
perfluoropentanoic acid (PFPeA)	NA	7.05		3.62	*J*	3.76	*J*	6.79		5.31		7.34		5.06	
perfluorotetradecanoic acid (PFTA)	NA	0.707	*U*	0.767	*U*	0.728	*U*	0.673	*U*	0.674	*U*	0.647	*U*	0.644	*U*
perfluorotridecanoic acid (PFTrDA)	NA	0.758	*U*	0.822	*U*	0.781	*U*	0.722	*U*	0.723	*U*	0.694	*U*	0.691	*U*
perfluoroundecanoic acid (PFUnA)	NA	1.16	*U*	1.26	*U*	1.19	*U*	1.1	*U*	1.1	*U*	1.06	*U*	1.05	*U*
TOTAL PFAS		64.6		70.8		70.6		72.4		38.3		61.9		84.9	

	Sample ID	MW-01 20240303		MW-02 20240303		MW-07 20240303		MW-03 20240303		MW-04 20240303		MW-05 20240303		MW-06 20240303	
Data in µg/L (parts per billion, ppb)	Sample Date	2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03	
U= Not Detected ≥ value	Dilution	1		1		1		1		1		1		1	
1,4-Dioxane 8270 SIM	**AWQS**	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,4-Dioxane	0.1	0.3	*U*	0.3	*U*	0.3	*U*	0.3	*U*	0.3	*U*	0.3	*U*	0.3	*U*

Analyte Detected
Analyte above Guidance

Notes: AWQS based on NYSDEC TOGS 1.1.1 (Class GA) NA = not available
Result Flags: J = approximate E = estimated B = detected in blank D = diluted

Table 15: VOCs in Vapor

10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

Sample	2SV-01		2SV-02		2SV-03		2SV-04		2SV-05		2SV-06		2SV-07	
All data in µg/m³ Date	2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03	
U= Not Detected ≥ value Dilution	1.617		1.597		1.6		1.567		1.68		1.637		1.757	
VOCs, TO-15	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1,1,2-tetrachloroethane	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	U
1,1,1-trichloroethane (TCA)	0.88	U	0.87	U	0.87	U	0.86	U	0.92	U	0.89	U	0.96	U
1,1,2,2-tetrachloroethane	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	U
1,1,2-trichloro-1,2,2-trifluoroethane	1.2	U	1.2	U	1.2	U	1.2	U	1.3	U	1.3	U	1.3	U
1,1,2-trichloroethane	0.88	U	0.87	U	0.87	U	0.86	U	0.92	U	0.89	U	0.96	U
1,1-dichloroethane	0.65	U	0.65	U	0.65	U	0.63	U	0.68	U	0.66	U	0.71	U
1,1-dichloroethene (1,1-DCE)	0.64	U	0.63	U	0.63	U	0.62	U	0.67	U	0.65	U	0.7	U
1,2,4-trichlorobenzene	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.3	U
1,2,4-trimethylbenzene	1	D	1.3	D	1.4	D	1.8	D	1.5	D	1	D	1.8	D
1,2-dibromoethane	1.2	U	1.2	U	1.2	U	1.2	U	1.3	U	1.3	U	1.3	U
1,2-dichlorobenzene	0.97	U	0.96	U	0.96	U	0.94	U	1	U	0.98	U	1.1	U
1,2-dichloroethane	0.65	U	0.65	U	0.65	U	0.63	U	0.68	U	0.66	U	0.71	U
1,2-dichloropropane	0.75	U	0.74	U	0.74	U	0.72	U	0.78	U	0.76	U	0.81	U
1,2-dichlorotetrafluoroethane	1.5	D	2.6	D	1.1	U	1.1	U	1.2	U	1.1	U	2.5	D
1,3,5-trimethylbenzene	0.79	U	0.79	U	0.79	U	0.77	U	0.83	U	0.8	U	0.86	U
1,3-butadiene	1.1	U	1.1	U	1.1	U	1	U	1.1	U	1.1	U	1.2	U
1,3-dichlorobenzene	0.97	U	0.96	U	0.96	U	0.94	U	1	U	0.98	U	1.1	U
1,3-dichloropropane	0.75	U	0.74	U	0.74	U	0.72	U	0.78	U	0.76	U	0.81	U
1,4-dichlorobenzene	0.97	U	0.96	U	0.96	U	0.94	U	1	U	0.98	U	1.1	U
1,4-dioxane	1.2	U	1.2	U	1.2	U	1.1	U	1.2	U	1.2	U	1.3	U
2,2,4-trimethylpentane	0.38	U	26	D	0.37	U	0.37	U	0.39	U	1.5	D	4	D
2-butanone	2.1	D	3.2	D	1.7	D	4.7	D	1.3	D	2.8	D	1.4	D
2-hexanone	1.3	U	1.3	U	1.3	U	1.3	U	1.4	U	1.3	U	1.4	U
3-chloropropene	2.5	U	2.5	U	2.5	U	2.5	U	2.6	U	2.6	U	2.7	U
4-methyl-2-pentanone	0.66	U	0.65	U	0.66	U	2.5	D	0.69	U	0.67	U	0.72	U
acetone	8.7	D	19	D	9.4	D	19	D	8.6	D	17	D	10	D
acrylonitrile	0.35	U	9	D	0.35	U	0.34	U	0.36	U	0.36	U	0.38	U
benzene	0.88	D	1.2	D	0.51	D	0.95	D	0.54	U	1.1	D	0.56	U
benzyl chloride	0.84	U	0.83	U	0.83	U	0.81	U	0.87	U	0.85	U	0.91	U
bromodichloromethane	1.1	U	1.1	U	1.1	U	1	U	1.1	U	1.1	U	1.2	U
bromoform	1.7	U	1.7	U	1.7	U	1.6	U	1.7	U	1.7	U	1.8	U
bromomethane	0.63	U	0.62	U	0.62	U	0.61	U	0.65	U	0.64	U	0.68	U
carbon disulfide	0.65	D	0.5	U	0.5	U	0.49	U	0.52	D	0.51	U	1.6	D
carbon tetrachloride	0.25	U	0.25	U	0.25	U	0.3	D	0.26	U	0.41	D	0.28	U
chlorobenzene	0.74	U	0.74	U	0.74	U	0.72	U	0.77	U	0.75	U	0.81	U
chloroethane	0.43	U	0.42	U	0.42	U	0.41	U	0.44	U	0.43	U	0.46	U
chloroform	0.87	D	0.78	U	9.2	D	0.77	U	0.82	U	0.8	U	0.86	D
chloromethane	0.33	U	1.3	D	0.33	U	0.32	U	0.35	U	1.6	D	0.36	U
cis-1,2-dichloroethene (cis-DCE)	0.64	U	0.63	U	0.63	U	0.62	U	0.67	U	0.65	U	0.7	U
cis-1,3-dichloropropene	0.73	U	0.72	U	0.73	U	0.71	U	0.76	U	0.74	U	0.8	U
cyclohexane	0.56	U	0.55	U	0.55	U	0.54	U	0.58	U	0.56	U	0.6	U
dibromochloromethane	1.4	U	1.4	U	1.4	U	1.3	U	1.4	U	1.4	U	1.5	U
dichlorodifluoromethane	2.5	D	2.5	D	2.5	D	2.6	D	2.6	D	3.2	D	2.6	D
ethyl acetate	1.2	U	1.2	U	1.2	U	1.1	U	1.3	D	8.7	D	1.3	U
ethylbenzene	1.9	D	1.7	D	1.6	D	2.7	D	1.5	D	2.1	D	1.8	D
hexachlorobutadiene	1.7	U	1.7	U	1.7	U	1.7	U	1.8	U	1.7	U	1.9	U
isopropanol	0.79	U	0.79	U	0.79	U	3.2	D	1.6	D	11	D	0.86	U
methyl methacrylate	0.66	U	0.65	U	0.66	U	0.64	U	0.69	U	0.67	U	0.72	U
methyl tert butyl ether	0.58	U	0.58	U	0.58	U	0.56	U	0.61	U	0.59	U	0.63	U
methylene chloride	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	2	D	1.2	U
naphthalene	8.5	U	8.4	U	8.4	U	8.2	U	8.8	U	8.6	U	9.2	U
n-heptane	0.66	U	0.65	U	0.66	U	1.7	D	0.69	U	0.67	D	0.72	U
n-hexane	0.57	U	0.56	U	0.56	U	2.1	D	0.59	U	0.92	D	0.62	U
o-xylene	2.8	D	2.3	D	2.4	D	3.3	D	2.3	D	2.3	D	2.7	D
p/m-xylene	7.8	D	6.9	D	6.4	D	11	D	6.1	D	8.2	D	7.6	D
p-ethyltoluene	1.1	D	1.3	D	1.5	D	2	D	1.3	D	0.97	D	1.6	D
propylene	3.8	D	1.4	D	1	D	1.9	D	0.61	D	1.6	D	0.3	U
styrene	0.69	U	0.68	U	0.68	U	0.67	U	0.72	U	0.7	U	0.75	U
tetrachloroethene (PCE)	2.3	D	18	D	130	D	200	D	88	D	6.2	D	38	D
tetrahydrofuran	0.95	U	0.94	U	0.94	U	0.92	U	0.99	U	0.97	U	1	U
toluene	5.9	D	6.2	D	4.3	D	12	D	4.6	D	17	D	6.1	D
trans-1,2-dichloroethene (trans-DCE)	0.64	U	0.63	U	0.63	U	0.62	U	0.67	U	0.65	U	0.7	U
trans-1,3-dichloropropene	0.73	U	0.72	U	0.73	U	0.71	U	0.76	U	0.74	U	0.8	U
trichloroethene (TCE)	0.22	U	0.21	U	9.5	D	1.8	D	0.27	D	0.22	U	0.28	D
trichlorofluoromethane	3	D	3.9	D	1.9	D	1.3	D	1.4	D	1.6	D	2.9	D
vinyl acetate	0.57	U	0.56	U	0.56	U	0.55	U	0.59	U	0.58	U	0.62	U
vinyl bromide	0.71	U	0.7	U	0.7	U	0.69	U	0.73	U	0.72	U	0.77	U
vinyl chloride (VC)	0.41	U	0.41	U	0.41	U	0.4	U	0.43	U	0.42	U	0.45	U

Detected concentrations

Result Flags: J = approximate E = estimated B = detected in blank D = diluted

Table 15: VOCs in Vapor

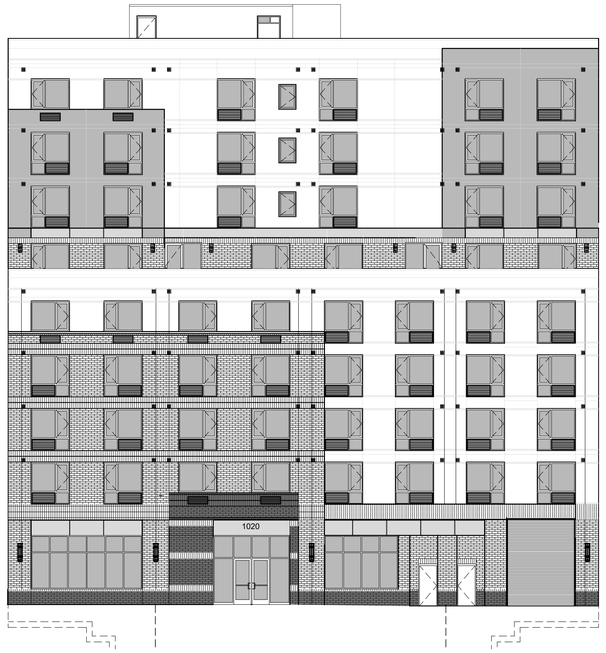
10-16 Beach 19th Street
Far Rockaway, Queens, New York
NYSDEC BCP: C241276

Sample	2SV-08		2SV-09		2SV-10		2SV-11		2SV-12		2SV-13		2SV-14	
All data in µg/m³ Date	2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03		2025-04-03	
U= Not Detected ≥ value Dilution	1.612		1.578		1.633		1.559		1.63		1.569		1.739	
VOCs, TO-15	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*	*Result*	*Flag*
1,1,1,2-tetrachloroethane	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U
1,1,1-trichloroethane (TCA)	0.88	U	0.86	U	0.89	U	0.85	U	0.89	U	0.86	U	0.95	U
1,1,2,2-tetrachloroethane	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U
1,1,2-trichloro-1,2,2-trifluoroethane	1.2	U	1.2	U	1.3	U	1.2	U	1.2	U	1.2	U	1.3	U
1,1,2-trichloroethane	0.88	U	0.86	U	0.89	U	0.85	U	0.89	U	0.86	U	0.95	U
1,1-dichloroethane	0.65	U	0.64	U	0.66	U	0.63	U	0.66	U	0.64	U	0.7	U
1,1-dichloroethene (1,1-DCE)	0.64	U	0.63	U	0.65	U	0.62	U	0.65	U	0.62	U	0.69	U
1,2,4-trichlorobenzene	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.3	U
1,2,4-trimethylbenzene	2.9	D	2.6	D	2.9	D	3.3	D	0.8	U	1.9	D	1.8	D
1,2-dibromoethane	1.2	U	1.2	U	1.3	U	1.2	U	1.3	U	1.2	U	1.3	U
1,2-dichlorobenzene	0.97	U	0.95	U	0.98	U	0.94	U	0.98	U	0.94	U	1	U
1,2-dichloroethane	0.65	U	0.64	U	0.66	U	0.63	U	0.66	U	0.63	U	0.7	U
1,2-dichloropropane	0.74	U	0.73	U	0.75	U	0.72	U	0.75	U	0.73	U	0.8	U
1,2-dichlorotetrafluoroethane	3.2	D	1.2	D	1.1	U	2.1	D	1.1	U	1.1	U	1.2	U
1,3,5-trimethylbenzene	0.87	D	0.85	D	0.88	D	0.84	D	0.8	U	0.77	U	0.85	U
1,3-butadiene	1.1	U	1	U	1.1	U	1	U	1.1	U	1	U	1.2	U
1,3-dichlorobenzene	0.97	U	0.95	U	0.98	U	0.94	U	0.98	U	0.94	U	1	U
1,3-dichloropropane	0.74	U	0.73	U	0.75	U	0.72	U	0.75	U	0.73	U	0.8	U
1,4-dichlorobenzene	0.97	U	0.95	U	0.98	U	0.94	U	0.98	U	0.94	U	1	U
1,4-dioxane	1.2	U	1.1	U	1.2	U	1.1	U	1.2	U	1.1	U	1.3	U
2,2,4-trimethylpentane	0.38	U	20	D	0.38	U	0.36	U	200	D	0.37	U	0.41	U
2-butanone	1.5	D	1.3	D	1.5	D	1.2	D	0.48	U	1.5	D	2.4	D
2-hexanone	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.4	U
3-chloropropene	2.5	U	2.5	U	2.6	U	2.4	U	2.6	U	2.5	U	2.7	U
4-methyl-2-pentanone	0.66	U	0.65	U	0.67	U	0.64	U	0.67	U	0.64	U	0.71	U
acetone	18	D	14	D	15	D	11	D	2.4	D	4.5	D	17	D
acrylonitrile	0.35	U	0.34	U	0.35	U	0.34	U	0.35	U	5.7	D	0.38	U
benzene	0.51	U	0.5	D	0.52	U	0.5	D	0.52	U	0.5	U	0.56	U
benzyl chloride	0.83	U	0.82	U	0.85	U	0.81	U	0.84	U	0.81	U	0.9	U
bromodichloromethane	1.1	U	1.1	U	1.1	U	1	U	1.1	U	1.1	U	1.2	U
bromoform	1.7	U	1.6	U	1.7	U	1.6	U	1.7	U	1.6	U	1.8	U
bromomethane	0.63	U	0.61	U	0.63	U	0.61	U	0.63	U	0.61	U	0.68	U
carbon disulfide	0.75	D	0.54	D	0.51	U	0.49	U	0.51	U	0.49	U	0.97	D
carbon tetrachloride	0.51	D	0.25	U	0.26	U	0.29	D	0.26	U	0.25	U	0.27	U
chlorobenzene	0.74	U	0.73	U	0.75	U	0.72	U	0.75	U	0.72	U	0.8	U
chloroethane	0.43	U	0.42	U	0.43	U	0.41	U	0.43	U	0.41	U	0.46	U
chloroform	2	D	13	D	9.9	D	1.2	D	0.8	U	0.77	U	0.85	U
chloromethane	0.33	U	0.33	U	0.34	U	0.32	U	0.34	U	0.32	U	0.36	U
cis-1,2-dichloroethene (cis-DCE)	0.64	U	0.63	U	0.65	U	0.62	U	0.65	U	0.62	U	0.69	U
cis-1,3-dichloropropene	0.73	U	0.72	U	0.74	U	0.71	U	0.74	U	0.71	U	0.79	U
cyclohexane	0.55	U	0.81	D	0.56	U	0.54	U	0.73	D	0.54	U	0.6	U
dibromochloromethane	1.4	U	1.3	U	1.4	U	1.3	U	1.4	U	1.3	U	1.5	U
dichlorodifluoromethane	2.6	D	2.3	D	2.4	D	2.4	D	0.81	U	2.6	D	2.4	D
ethyl acetate	2.5	D	8.9	D	3.9	D	1.9	D	7.3	D	1.1	U	2.4	D
ethylbenzene	1.9	D	2.3	D	3.2	D	2.1	D	0.71	U	1.6	D	2	D
hexachlorobutadiene	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.9	U
isopropanol	2.2	D	4.2	D	3.5	D	2.3	D	0.8	U	0.77	U	2.3	D
methyl methacrylate	0.66	U	0.65	U	0.67	U	0.64	U	0.67	U	0.64	U	0.71	U
methyl tert butyl ether	0.58	U	0.57	U	0.59	U	0.56	U	0.59	U	0.57	U	0.63	U
methylene chloride	1.1	U	1.1	U	1.1	D	1.1	U	1.1	U	1.1	U	1.2	U
naphthalene	8.5	U	8.3	U	8.6	U	8.2	U	8.5	U	8.2	U	9.1	U
n-heptane	0.66	U	0.65	U	0.67	U	0.64	U	0.67	U	0.64	U	0.71	U
n-hexane	0.57	U	0.56	U	0.58	U	0.6	D	0.57	U	0.55	U	0.61	U
o-xylene	3.1	D	3.6	D	4.7	D	3.5	D	0.71	U	2.7	D	2.9	D
p/m-xylene	8.3	D	10	D	13	D	9.3	D	1.4	U	7.5	D	8.7	D
p-ethyltoluene	2.7	D	2.4	D	2.5	D	2.8	D	0.8	U	1.7	D	1.8	D
propylene	0.28	U	0.27	U	0.28	U	0.27	U	0.28	U	0.27	U	0.3	U
styrene	0.69	U	0.67	U	0.7	U	0.66	U	0.69	U	0.67	U	0.74	U
tetrachloroethene (PCE)	94	D	170	D	72	D	240	D	8.8	D	16	D	13	D
tetrahydrofuran	0.95	U	0.93	U	0.96	U	0.92	U	0.96	U	0.93	U	1	U
toluene	5.8	D	7	D	9.6	D	6.5	D	1.1	D	5.3	D	7.2	D
trans-1,2-dichloroethene (trans-DCE)	0.64	U	0.63	U	0.65	U	0.62	U	0.65	U	0.62	U	0.69	U
trans-1,3-dichloropropene	0.73	U	0.72	U	0.74	U	0.71	U	0.74	U	0.71	U	0.79	U
trichloroethene (TCE)	43	D	0.34	D	0.22	U	0.59	D	0.22	U	0.21	U	0.23	U
trichlorofluoromethane	4.1	D	1.9	D	1.6	D	2.7	D	0.92	U	1.5	D	1.3	D
vinyl acetate	0.57	U	0.56	U	0.57	U	0.55	U	0.57	U	0.55	U	0.61	U
vinyl bromide	0.71	U	0.69	U	0.71	U	0.68	U	0.71	U	0.69	U	0.76	U
vinyl chloride (VC)	0.41	U	0.4	U	0.42	U	0.4	U	0.42	U	0.4	U	0.44	U

Detected concentrations

Result Flags: J = approximate E = estimated B = detected in blank D = diluted

APPENDIX A – Proposed Development Plans



1020 BEACH 19TH STREET

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QUEENS, NEW YORK

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M.E.P.SP. FA. ENGINEER

MOTTOLA RINI ENGINEERS P.C.
10 East 23rd Street, Suite 510
New York, NY 10010

SCOPE OF WORK

NEW BUILDING
USE GROUP - R-2 RESIDENTIAL APARTMENTS
CONSTRUCTION CLASSIFICATION - 1B
STORIES - NINE.
BUILDING HEIGHT - 94'-0"
NUMBER OF APARTMENT UNITS - 178 UNITS

ARCHITECTURAL DRAWINGS

T-001.00	TITLE SHEET AND DRAWING LIST
G-001.00	GENERAL NOTES, LEGENDS & ABBREVIATIONS
G-002.00	ADA SHEET
Z-001.00	ZONING ANALYSIS
Z-002.00	ZONING ANALYSIS AND CALCULATIONS
EN-001.00	BUILDING DEPARTMENT ENERGY ANALYSIS
EN-002.00	BUILDING DEPARTMENT ENERGY DIAGRAMS
EN-003.00	BUILDING DEPARTMENT ENERGY SEALING DETAILS
EN-004.00	BUILDING DEPARTMENT ENERGY SEALING NOTES AND DETAILS
EN-005.00	BUILDING DEPARTMENT ENERGY ANALYSIS PROGRESS INSPECTIONS
A-001.00	SITE PLAN
A-002.00	BUILDING INFORMATION EGRESS I
A-003.00	BUILDING INFORMATION EGRESS II
A-101.00	CELLAR PLAN
A-102.00	1ST FLOOR PLAN
A-103.00	2ND FLOOR THRU 5TH FLOOR PLANS
A-104.00	6TH FLOOR PLAN
A-105.00	7TH FLOOR THRU 9TH FLOOR PLANS
A-106.00	ROOF PLAN
A-107.00	CEILING PLANS(RCP 107)
A-108.00	CEILING PLANS (RCP 108)
A-109.00	CEILING PLANS (RCP 109)
A-201.00	ELEVATIONS
A-202.00	ELEVATIONS
A-203.00	ELEVATIONS
A-204.00	BUILDING SECTIONS
A-301.00	STAIR SECTION
A-302.00	ELEVATOR SECTION
A-401.00	WALL SECTIONS AND DETAILS
A-402.00	WALL SECTIONS AND DETAILS
A-403.00	WALL SECTIONS AND DETAILS
A-501.00	TYPICAL UNIT PLANS
A-502.00	TYPICAL UNIT PLANS, MAILBOX PLAN AND DETAILS
A-503.00	BATHROOM DETAILS
A-504.00	KITCHEN DETAILS
A-505.00	DOOR AND DETAILS
A-506.00	WINDOW SCHEDULE AND DETAILS
A-507.00	WALL TYPES AND FIRE STOPPING DETAILS
A-508.00	FINISH PLAN
A-509.00	SIGNAGE SCHEDULE AND DETAILS

LIGHTING DRAWINGS

EN-200.00	LIGHTING COMCHECK

SPECIAL INSPECTIONS

THE FOLLOWING ITEMS SHALL BE SUBJECT TO DETAILED INSPECTION BY A LICENSED TESTING LABORATORY AND SHALL BE UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER APPROVED BY THE ARCHITECT OF RECORD, AND PAID FOR BY THE CONTRACTOR. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL SPECIAL INSPECTION ITEMS AND CERTIFICATE OF OCCUPANCY.

A. STRUCTURAL COLD FORMED STEEL (1704.3.4)
B. CONCRETE - CAST IN PLACE (BC 1704.4)
C. MASONRY (BC 1704.5)
D. SUBGRADE INSPECTION (BC 1704.7.1)
E. SUBSURFACE INVESTIGATIONS (BORINGS/ TEST PITS) (BC 1704.7.4)
F. DEEP FOUNDATION ELEMENTS
G. WALL PANELS, CURTAIN WALLS AND VENEERS (BC 1704.10)
H. EXTERIOR INSULATION AND FINISH SYSTEMS (EFIS) (BC 1704.13)
I. MECHANICAL SYSTEMS (BC 1704.16)
J. EXCAVATIONS SHEETING, SHORING AND BRACING (1704.20.2)
K. PRIVATE ON SITE STORM WATER DRAINAGE DISPOSAL SYSTEM AND DETENTION SYSTEMS INSTALLATION (1704.21.2)
L. SPRINKLER SYSTEMS (BC 1704.23)
M. STANDPIPE SYSTEMS (BC1704.24)
N. FIRE-RESISTANT PENETRATIONS AND JOINTS (BC 1704.27)
O. CONCRETE DESIGN MIX (BC 1905.3, BC 1913.5)
P. CONCRETE SAMPLING AND TESTING (BC 1905.6, BC 1913.10)

ENERGY CODE PROGRESS INSPECTIONS

A. PROTECTION OF EXPOSED FOUNDATION INSULATION
B. INSULATION PLACEMENT AND R-VALUES
C. FENESTRATION U-FACTOR AND PRODUCT RATINGS
D. FENESTRATION AIR LEAKAGE
E. FENESTRATION AREAS
F. AIR BARRIER - VISUAL
G. AIR BARRIER - TESTING
H. VESTIBULES
I. SHUTOFF DAMPERS
J. HVAC AND SERVICE WATER HEATING EQUIPMENT
K. HVAC AND SERVICE WATER HEATING SYSTEM CONTROLS
K. HVAC INSULATION AND SEALING
L. METERING
M. LIGHTING IN DWELLING UNITS
N. INTERIOR LIGHTING POWER
O. EXTERIOR LIGHTING POWER
P. LIGHTING CONTROLS
Q. ELECTRICAL MOTORS AND ELEVATORS
R. MAINTENANCE INFORMATION

PROGRESS INSPECTIONS

A. FOOTING AND FOUNDATION (BC 110.3.1)
B. ENERGY CODE COMPLIANCE INSPECTIONS (BC 110.3.5)
C. FIRE RESISTANCE RATED CONSTRUCTION (BC 110.3.4)

ADDITIONAL FILINGS

FOUNDATION/EARTHWORK - Q01014357-S2
CURB CUT - Q01014357-S7
MECHANICAL - Q01014357-S3
PLUMBING - Q01014357-S4
SPRINKLER/STANDPIPE - Q01014357-S5
SOE - Q01014357-S6
STRUCTURAL - Q01014357-S1
BPP - TBD
FA - TBD

SITE SAFETY REQUIREMENT

SITE SAFETY PLAN NOT REQUIRED PER BC 3302 AND BC 3310. BUILDING IS UNDER 125 FEET AND THEREFOR NOT A MAJOR BUILDING.

BC 3302 DEFINITIONS
MAJOR BUILDING. AN EXISTING OR PROPOSED BUILDING 10 OR MORE STORIES OR 125 FEET (38 100 MM) OR MORE IN HEIGHT, OR AN EXISTING OR PROPOSED BUILDING WITH A BUILDING FOOTPRINT OF 100,000 SQUARE FEET (30 480 M2) OR MORE REGARDLESS OF HEIGHT, OR AN EXISTING OR PROPOSED BUILDING SO DESIGNATED BY THE COMMISSIONER DUE TO UNIQUE HAZARDS ASSOCIATED WITH THE CONSTRUCTION OR DEMOLITION OF THE STRUCTURE.

BC 3310
REQUIREMENTS FOR THE CONSTRUCTION OR DEMOLITION OF MAJOR BUILDINGS

§28.2-3310.2 MAJOR BUILDINGS. SEE THE DEFINITION OF "MAJOR BUILDING" IN SECTION 28.2-3302.

§28.2-3310.3 SITE SAFETY PLAN. NO PERMIT SHALL BE ISSUED FOR THE TYPE OF WORK LISTED IN SECTION 28.2-3310.1 UNTIL A SITE SAFETY PLAN THAT MEETS THE REQUIREMENTS OF ARTICLE 28-110 OF CC CHAPTER 1 OF TITLE 28 OF THE *ADMINISTRATIVE CODE* HAS BEEN APPROVED BY THE DEPARTMENT.

REV.	DATE	DESCRIPTION
	11-3-25	ISSUED FOR PRICING
	3-20-25	ISSUED TO DOB
	10-30-24	REVISED PER NYCECC COMMENTS
	9-6-24	REVISED PER NYCECC COMMENTS
	8-22-24	ISSUED TO DOB
	5-1-24	ISSUED TO HPD - REVISED PER COMMENTS
	3-6-24	ISSUED TO DOB - ADDRESS AND BIN #
	12-20-23	ISSUED TO HPD
	12-08-23	ISSUED TO DOB
	9-27-23	ISSUED TO HPD

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PROJECT:

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BLOCK - 15560 **LOT - 08**

TITLE:

TITLE SHEET AND DRAWING LIST

Q01014357-I1

STAMP:

REGISTERED ARCHITECT BRIAN ERIC NEWMAN No. 032185 STATE OF NEW YORK

DATE:	8/25/23
JOB #:	23-12
DRAWN BY:	KS
SCALE:	AS NOTED

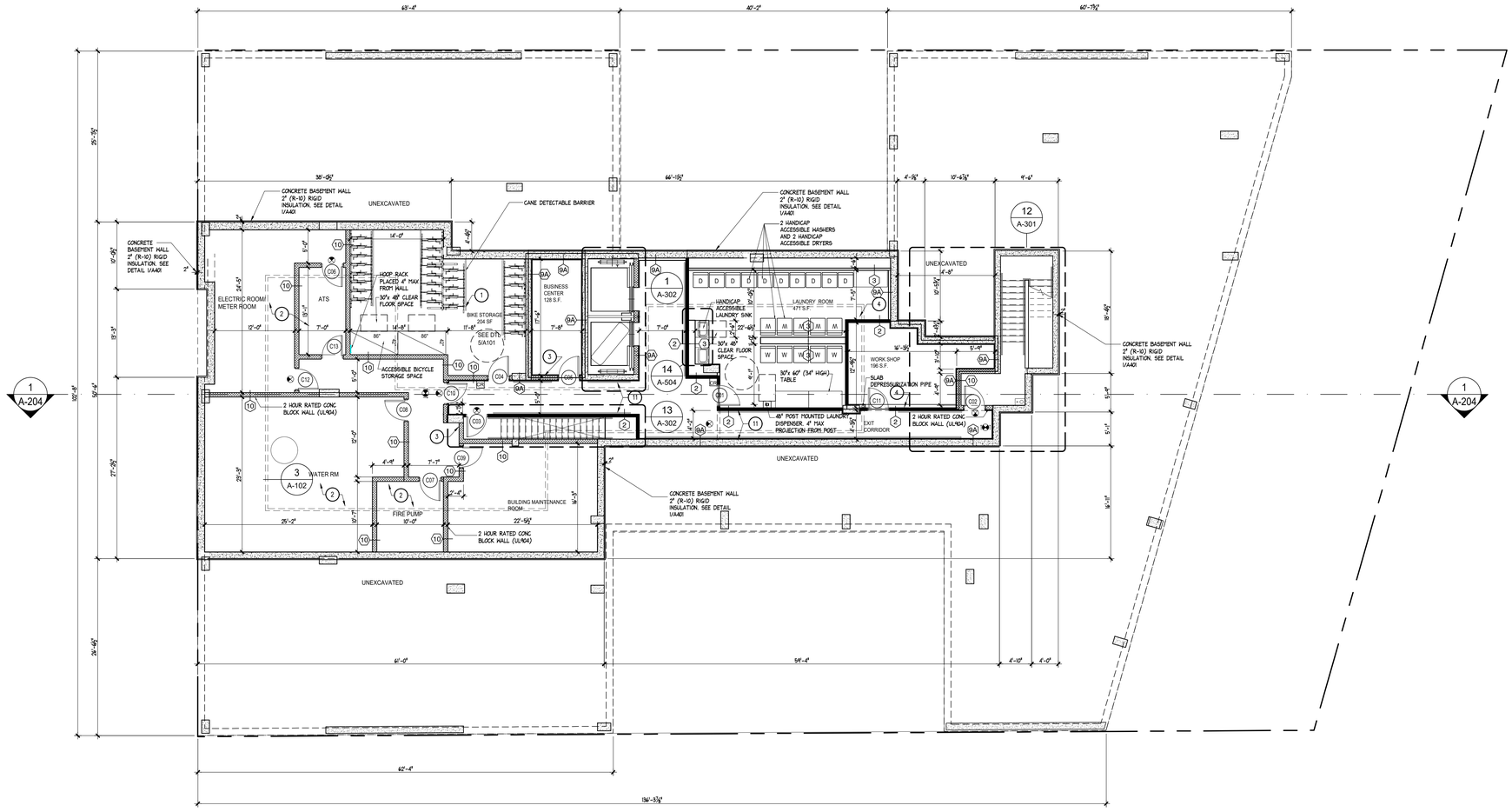
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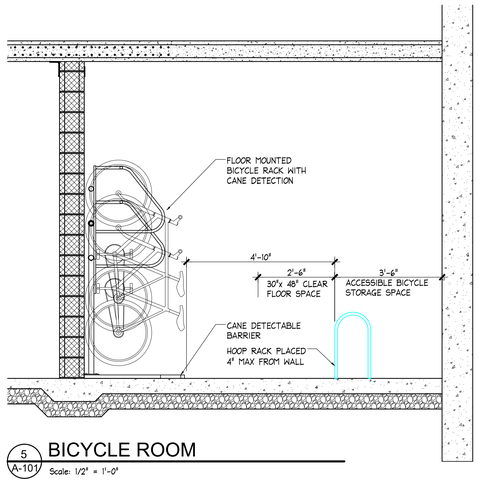
FILE No. :

SHEET: 1 OF 38

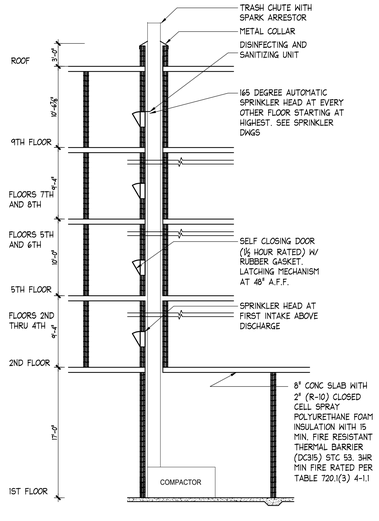
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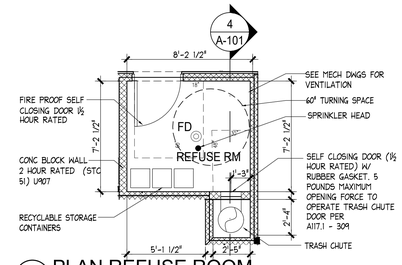
1 A-101 CELLAR PLAN
Scale: 1/8" = 1'-0"



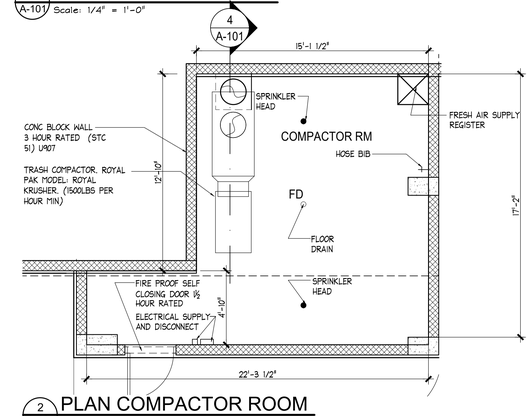
5 A-101 BICYCLE ROOM
Scale: 1/2" = 1'-0"



4 A-101 SECTION AT CHUTE
Scale: 1/8" = 1'-0"



3 A-101 PLAN REFUSE ROOM
Scale: 1/4" = 1'-0"



2 A-101 PLAN COMPACTOR ROOM
Scale: 1/4" = 1'-0"

LEGENDS & SYMBOLS:

- CONCRETE WALL
- CONCRETE BLOCK WALL (2 HOUR RATED) -U904
- FACE BRICK ON CONCRETE BLOCK WALL
- CONCRETE BLOCK WALL (2 HOUR RATED) -U904 W/ AIR-INFILTRATION BARRIER R-GUARD SPRAY WRAP AS MANUFACTURED BY PROSOCO PROVIDE 2" (R8.2) TERMAFIBER INSULATION BOARD AN 5/8" HIGH ABUSE GYPSUM BOARD (PAINTED). HI-ABUSE XP BY GOLD BOND SECURED TO WALL Z FURRING 16" O.C.
- FACE BRICK ON METAL STUD EXTERIOR WALL SYSTEM
- NON-RATED STEEL STUD PARTITION
- (2) TWO HOUR FIRE RATED STEEL STUD PARTITION -U411
- MECHANICAL SHAFT WALL (2 HOUR RATED)- U497
- SMOKE ARCH 12" DOWN FROM KITCHENETTE CEILING
- (S CO) SMOKE CARBON MONOXIDE DETECTOR
- (201) DOOR IDENTIFICATION
- (B) WINDOW IDENTIFICATION
- DENOTES WATER PROOFING. SEE NOTE 11
- 1 BEDROOM 430-1930 APARTMENT UNIT DESIGNATION
- (1) PARTITION TYPE DESIGNATION
- EXIT SIGN
- FE FIRE EXTINGUISHER
- CR CARD READER
- HO HANDICAP DOOR OPERATOR

GENERAL NOTES:

1. ELEVATOR HOISTWAY TO BE PROVIDED WITH 3 S.F. VENTS LOCATED. SEE DRAWING A-106 AND A-302 PER BC 3004.5.1

2. DOOR CLOSERS SHALL NOT BE PROVIDED ON ALL BEDROOM AND BATHROOM DOORS.

3. APARTMENT ENTRANCE DOORS TO BE 1 ½ HOUR FIRE RATED DOORS COMPLYING WITH SECTION BC 715.4.3.1 WITH UL 1784 TEST CONDUCTED WITHOUT THE ARTIFICIAL BOTTOM SEAL. DOORS TO BE SELF CLOSING AND HAVE VIEWING DEVICE, HEAVY DUTY LATCH, DEAD BOLT WITH THUMB TURN ON INSIDE AND CHAIN GUARD.

NOTES:

1. BIKE RACK DERO SPACE SAVER BY DERO 5SULT B-5 WALL MOUNT
2. PROVIDE 4" CONCRETE PADS UNDER ALL EQUIPMENT. COORDINATE WITH MECH DRAWINGS FOR EXACT SIZE
3. 10 LB. EXTINGUISHER MULTIPURPOSE DRY CHEMICAL TYPE: UL-RATED 4-A-80-B-C, IN ENAMELED STEEL CONTAINER MOUNTED WITH METAL BRACKETS.
4. 10 LB. EXTINGUISHER MULTIPURPOSE DRY CHEMICAL TYPE: UL-RATED 4-A-80-B-C, IN ENAMELED STEEL CONTAINER. MOUNTED IN RECESSED METAL CABINET
5. CONCRETE BLOCK WALL (2 HOUR RATED) -U904 W/ AIR-INFILTRATION BARRIER R-GUARD SPRAY WRAP AS MANUFACTURED BY PROSOCO PROVIDE 2" (R8.2) TERMAFIBER INSULATION BOARD AND 5/8" HIGH ABUSE GYPSUM BOARD (PAINTED). HI-ABUSE XP BY GOLD BOND SECURED TO WALL Z FURRING 16" O.C. SEE DETAIL 10/A-101
6. ENTRANCE MAT. RECESSED PEDIMAT MI BY CONSTRUCTION SPECIALTIES WITH LEVEL BASE FRAME ALL SIDES TAPERED ANGLE AT DOOR. EXTERIOR CARPET INSERTS.
7. NON SLIP SURFACE PROVIDE PARKING DECK WATER PROOFING SYSTEM: AUTO-GARD F BY NEOGARD
8. DENOTES AREA OF WATERPROOFING BELOW TILE FLOOR FINISH. WATERPROOFING MEMBRANE TO BE LATICRETE 9235. SEE DRAWING A-503
9. PARKING GARAGE TO BE PROVIDED WITH THE CAPABILITY OF SUPPORTING ELECTRICAL VEHICLE CHARGING STATIONS. ELECTRICAL RACEWAY TO THE ELECTRICAL SUPPLY PANEL SERVING THE GARAGE AND SHALL BE CAPABLE OF PROVIDING A MINIMUM OF 3.1 KW OF ELECTRICAL CAPACITY TO AT LEAST 20 PERCENT (4 SPACES) OF THE PARKING SPACES OF THE GARAGE. SPACE IN THE ELECTRICAL ROOM HAS BEEN PROVIDED FOR SUPPLY PANEL SUFFICIENT TO PROVIDE 3.1KW OF ELECTRICAL CAPACITY TO AT LEAST 20 PERCENT(4 SPACES). RACEWAY AND ALL COMPONENTS AND WORK APPURTENANT THERETO SHALL BE IN ACCORDANCE WITH THE NEW YORK CITY ELECTRICAL CODE
10. 4" (R-20) CLOSED CELL SPRAY POLYURETHANE FOAM INSULATION WITH 15 MIN. FIRE RESISTANT THERMAL BARRIER (DC315) ON BTM OF FLOOR SLAB ABOVE
11. VARI-CRAZ TRAFFRAC STYLE-M-MR60-A06 SERIES. PROVIDE RETURNS AT ALL DOORS. SEE DETAIL 4/A-103

H.C ACCESSIBLE FOR MOBILE IMPAIRED	
APARTMENT	BEDROOMS
202	1 BEDROOM
312	0 BEDROOM
404	0 BEDROOM
511	1 BEDROOM
612	2 BEDROOM
714	2 BEDROOM
908	0 BEDROOM
H.C ACCESSIBLE FOR SENSORY IMPAIRED	
APARTMENT	BEDROOMS
213	0 BEDROOM
702	1 BEDROOM
910	2 BEDROOM

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BLOCK - 15560 — **LOT - 08**

TITLE:

CELLAR PLAN

Q01014357-I1

STAMP: REGISTERED ARCHITECT BRIAN ERIC NEWMAN No. 032185 STATE OF NEW YORK

DATE: **5/22/23**
JOB #: **23-12**
DRAWN BY: **KJS**
SCALE: **AS NOTED**

DRAWING NO: **A-101.00**

FILE No. :

SHEET: **14** OF 38

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LIGHT AND VENTILATION REQUIREMENTS

APARTMENT	ROOM	AREA	VENTILATION = 5%		NATURAL LIGHT = 10%	
			VENTILATION REQUIRED	VENTILATION PROVIDED	NATURAL LIGHT REQUIRED	NATURAL LIGHT PROVIDED
101	LR/DR/BR	204 SF	10.20 S.F.	10.47 S.F.	20.40 S.F.	37.86 S.F.
	BEDRM 1	115 SF	5.75 S.F.	10.47 S.F.	11.50 S.F.	28.97 S.F.
	BEDRM 2	101 SF	5.05 S.F.	10.47 S.F.	10.10 S.F.	37.86 S.F.

LEGENDS & SYMBOLS:

- CONCRETE WALL
- CONCRETE BLOCK WALL (2 HOUR RATED) -U904
- FACE BRICK ON CONCRETE BLOCK WALL
- CONCRETE BLOCK WALL (2 HOUR RATED) -U904 W/ AIR-INFILTRATION BARRIER R-GUARD SPRAY WRAP AS MANUFACTURED BY PROSOCO PROVIDE 2" (RB.2) TERMAFIBER INSULATION BOARD AN 5/8" HIGH ABUSE GYPSUM BOARD (PAINTED). HI-ABUSE XP BY GOLD BOND SECURED TO WALL Z FURRING 16" O.C.
- FACE BRICK ON METAL STUD EXTERIOR WALL SYSTEM
- NON-RATED STEEL STUD PARTITION
- (2) TWO HOUR FIRE RATED STEEL STUD PARTITION -U411
- MECHANICAL SHAFT WALL (2 HOUR RATED)- U497
- SMOKE ARCH 12" DOWN FROM KITCHENETTE CEILING
- SMOKE CARBON MONOXIDE DETECTOR
- 201 DOOR IDENTIFICATION
- B WINDOW IDENTIFICATION
- DENOTES WATER PROOFING. SEE NOTE 11
- 1 BEDROOM 430-1930 APARTMENT UNIT DESIGNATION
- 1 PARTITION TYPE DESIGNATION
- EXIT SIGN
- FE FIRE EXTINGUISHER
- CR CARD READER
- HC HANDICAP DOOR OPERATOR

GENERAL NOTES:

1. ELEVATOR HOISTWAY TO BE PROVIDED WITH 3 S.F. VENTS LOCATED. SEE DRAWING A-106 AND A-302 PER BC 3004.5.1
2. DOOR CLOSERS SHALL NOT BE PROVIDED ON ALL BEDROOM AND BATHROOM DOORS.
3. APARTMENT ENTRANCE DOORS TO BE 1 ½ HOUR FIRE RATED DOORS COMPLYING WITH SECTION BC 715.4.3.1 WITH UL 1784 TEST CONDUCTED WITHOUT THE ARTIFICIAL BOTTOM SEAL. DOORS TO BE SELF CLOSING AND HAVE VISIKING DEVICE, HEAVY DUTY LATCH, DEAD BOLT WITH THUMB TURN ON INSIDE AND CHAIN GUARD.

NOTES:

1. BIKE RACK DERO SPACE SAVER BY DERO SSULT B-5 WALL MOUNT
2. PROVIDE 4" CONCRETE PADS UNDER ALL EQUIPMENT. COORDINATE WITH MECH DRAWINGS FOR EXACT SIZE
3. 10 LB. EXTINGUISHER MULTIPURPOSE DRY CHEMICAL TYPE: UL-RATED 4-A:80:B-C, IN ENAMELED STEEL CONTAINER MOUNTED WITH METAL BRACKETS.
4. 10 LB. EXTINGUISHER MULTIPURPOSE DRY CHEMICAL TYPE: UL-RATED 4-A:80:B-C, IN ENAMELED STEEL CONTAINER. MOUNTED IN RECESSED METAL CABINET
5. CONCRETE BLOCK WALL (2 HOUR RATED) -U904 W/ AIR-INFILTRATION BARRIER R-GUARD SPRAY WRAP AS MANUFACTURED BY PROSOCO PROVIDE 2" (RB.2) TERMAFIBER INSULATION BOARD AND 5/8" HIGH ABUSE GYPSUM BOARD (PAINTED). HI-ABUSE XP BY GOLD BOND SECURED TO WALL Z FURRING 16" O.C. SEE DETAIL 10/A-101
6. ENTRANCE MAT. RECESSED PEDIMAT M1 BY CONSTRUCTION SPECIALTIES WITH LEVEL BASE FRAME ALL SIDES TAPERED ANGLE AT DOOR. EXTERIOR CARPET INSERTS.
7. NON SLIP SURFACE PROVIDE PARKING DECK WATER PROOFING SYSTEM. AUTO-GARD F BY NEOGARD
8. DENOTES AREA OF WATERPROOFING BELOW TILE FLOOR FINISH. WATERPROOFING MEMBRANE TO BE LATICRETE 9235. SEE DRAWING A-503
9. PARKING GARAGE TO BE PROVIDED WITH THE CAPABILITY OF SUPPORTING ELECTRICAL VEHICLE CHARGING STATIONS. ELECTRICAL RACEWAY TO THE ELECTRICAL SUPPLY PANEL SERVING THE GARAGE AND SHALL BE CAPABLE OF PROVIDING A MINIMUM OF 3.1 KW OF ELECTRICAL CAPACITY TO AT LEAST 20 PERCENT (4 SPACES) OF THE PARKING SPACES OF THE GARAGE. SPACE IN THE ELECTRICAL ROOM HAS BEEN PROVIDED FOR SUPPLY PANEL SUFFICIENT TO PROVIDE 3.1KW OF ELECTRICAL CAPACITY TO AT LEAST 20 PERCENT(4 SPACES). RACEWAY AND ALL COMPONENTS AND WORK APPURTENANT THERETO SHALL BE IN ACCORDANCE WITH THE NEW YORK CITY ELECTRICAL CODE
10. 4" (R-20) CLOSED CELL SPRAY POLYURETHANE FOAM INSULATION WITH 15 MIN. FIRE RESISTANT THERMAL BARRIER (DC315) ON BTM OF FLOOR SLAB ABOVE
11. ~~WATL-CLAD TANDRAIL SYSTEM, INTRO 400~~ SERIES. PROVIDE RETURNS AT ALL DOORS. SEE DETAIL 4/A-103

H.C ACCESSIBLE FOR MOBILE IMPAIRED

APARTMENT	BEDROOMS
202	1 BEDROOM
312	0 BEDROOM
404	0 BEDROOM
511	1 BEDROOM
612	2 BEDROOM
714	2 BEDROOM
908	0 BEDROOM

H.C ACCESSIBLE FOR SENSORY IMPAIRED

APARTMENT	BEDROOMS
213	0 BEDROOM
702	1 BEDROOM
910	2 BEDROOM

REV.	DATE	DESCRIPTION
	11-3-25	ISSUED FOR PRICING
	3-20-25	ISSUED TO DOB
	10-30-24	REVISED PER NYCECC COMMENTS
	9-6-24	REVISED PER NYCECC COMMENTS
	8-22-24	ISSUED TO DOB
	5-1-24	ISSUED TO HPD - REVISED PER COMMENTS
	3-6-24	ISSUED TO DOB - ADDRESS AND BIN #
	12-20-23	ISSUED TO HPD
	12-08-23	ISSUED TO DOB
	9-27-23	ISSUED TO HPD

REVISIONS:

NEWMAN DESIGN
ARCHITECTURE • URBAN PLANNING
NEWMAN DESIGN ARCHITECTS PLLC
210 West Rogues Path • Cold Spring Hills, NY 11743
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www.ndarchitects.com

PROJECT:

1020 BEACH 19TH STREET

1020 BEACH 19TH STREET QUEENS N.Y.
BLOCK - 15560 **LOT - 08**

TITLE:

1ST FLOOR PLAN

Q01014357-I1

STAMP: REGISTERED ARCHITECT BRIAN ERIC NEWMAN No. 032165 STATE OF NEW YORK

DATE:	5/22/23
JOB #:	23-12
DRAWN BY:	KJS
SCALE:	AS NOTED

DRAWING NO:

A-102.00

FILE No. :

SHEET: 15 OF 38

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1 FIRST FLOOR PLAN
A-102 Scale: 1/8" = 1'-0"

6 RAMP PLAN
A-102 Scale: 1/4" = 1'-0"

7 RAMP SECTION
A-102 Scale: 1/4" = 1'-0"

13 RAMP SECTION
A-102 Scale: 1/4" = 1'-0"

15 SECTION -GARAGE COLMN
A-102 Scale: 3/4" = 1'-0"

14 SECTION RAMP @ PATIO
A-102 Scale: 3/4" = 1'-0"

2 WALL SECTION
A-102 Scale: 3/4" = 1'-0"

3 SECTION SLAB DEPRESSURIZATION PIPE
A-102 Scale: 3/4" = 1'-0"

4 DETAIL THRU TRENCH DRAIN
A-102 Scale: 3/4" = 1'-0"

12 SECTION PERMEABLE PAVER
A-102 Scale: 3/4" = 1'-0"

6 SECTION PARKING
A-102 Scale: 3/4" = 1'-0"

8 SECTION THRU EXPANSION JOINT
A-102 Scale: 3/4" = 1'-0"

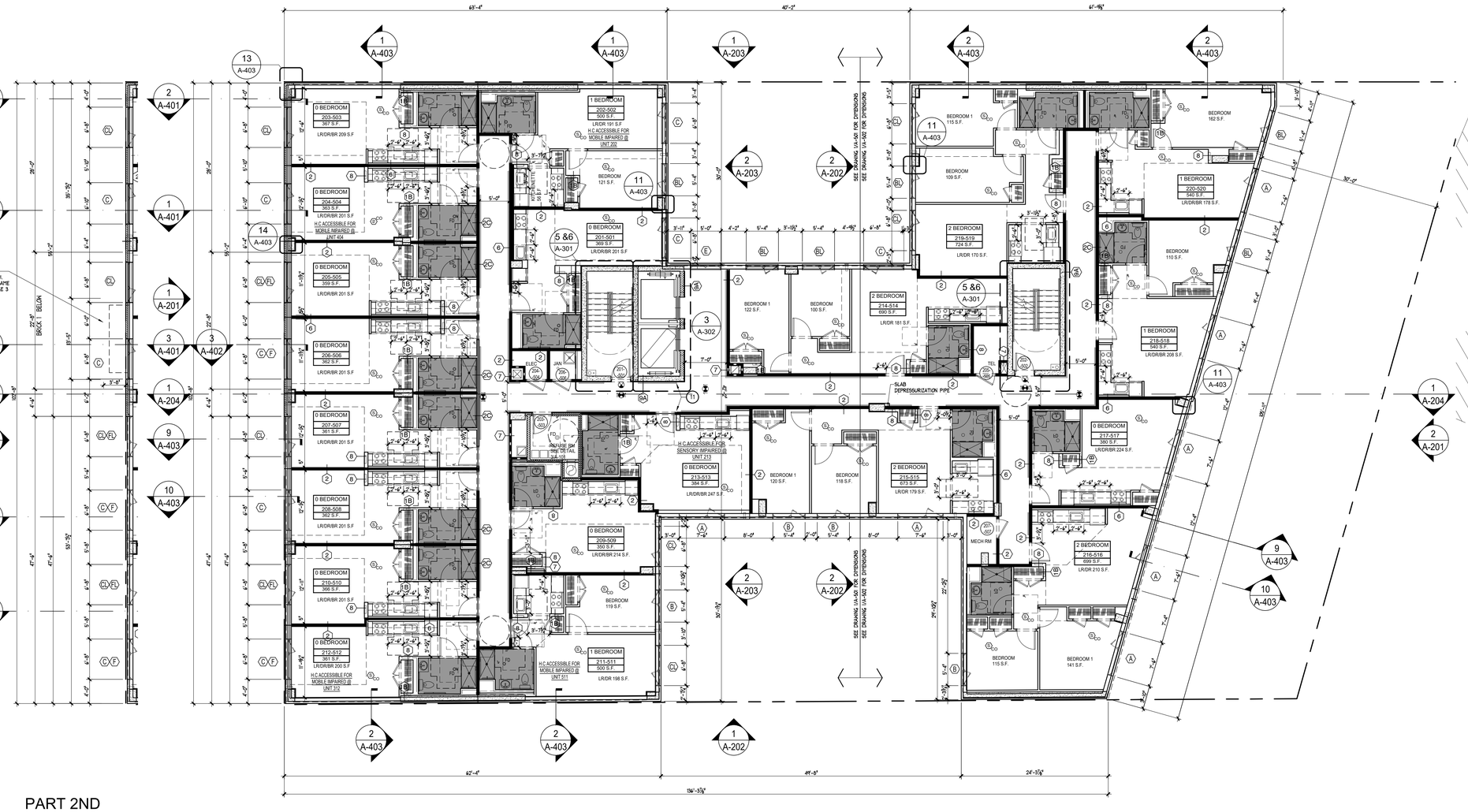
9 SECTION THRU CONTROL JOINT
A-102 Scale: 3/4" = 1'-0"

10 SECTION CONC WALK @ GRADE
A-102 Scale: 3/4" = 1'-0"

5 SECTION THRU BOLLARD
A-102 Scale: 3/4" = 1'-0"

7 SECTION THRU CURB @ PARKING
A-102 Scale: 3/4" = 1'-0"

11 SECTION THRU RETAINING WALL
A-102 Scale: 3/4" = 1'-0"



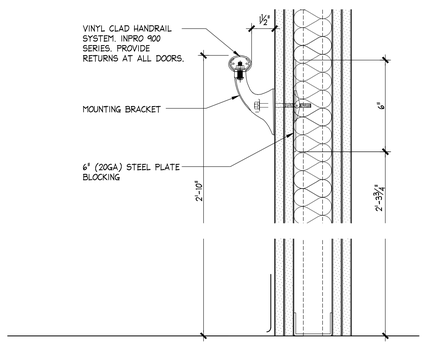
PART 2ND FLOOR PLAN

2 / A-103 Scale: 1/8" = 1'-0"

2ND - 5TH FLOOR PLAN

1 / A-103 Scale: 1/8" = 1'-0"

SEE ENLARGED PLAN DETAILS A-501 AND A-502 AND FOR ADDITIONAL NOTES AND DIMENSIONS

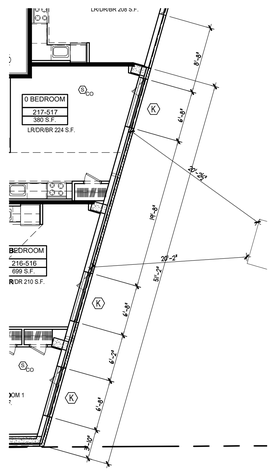


CORRIDOR RAIL DETAIL

4 / A-101 Scale: 3" = 1'-0"

LIGHT AND VENTILATION REQUIREMENTS

APARTMENT	ROOM	AREA	VENTILATION = 5%		NATURAL LIGHT = 10%	
			VENTILATION REQUIRED	VENTILATION PROVIDED	NATURAL LIGHT REQUIRED	NATURAL LIGHT PROVIDED
201-501	LR/DR/BR	201 SF	10.05 S.F.	10.47 S.F.	20.10 S.F.	37.86 S.F.
202-502	LR/DR/KITCHENETTE	191 SF	9.55 S.F.	10.47 S.F.	19.10 S.F.	37.86 S.F.
	BEDRM	121 SF	6.05 S.F.	10.47 S.F.	12.10 S.F.	28.97 S.F.
203-503	LR/DR/BR	209 SF	10.45 S.F.	10.47 S.F.	20.90 S.F.	37.86 S.F.
204-504	LR/DR/BR	201 SF	10.05 S.F.	10.47 S.F.	20.10 S.F.	37.86 S.F.
205-505	LR/DR/BR	201 SF	10.05 S.F.	10.47 S.F.	20.10 S.F.	37.86 S.F.
206-506	LR/DR/BR	201 SF	10.05 S.F.	10.47 S.F.	20.10 S.F.	37.86 S.F.
207-507	LR/DR/BR	201 SF	10.05 S.F.	10.47 S.F.	20.10 S.F.	26.56 S.F.
208-508	LR/DR/BR	201 SF	10.05 S.F.	10.47 S.F.	20.10 S.F.	26.56 S.F.
209-509	LR/DR/BR	214 SF	10.07 S.F.	10.47 S.F.	21.40 S.F.	37.86 S.F.
210-510	LR/DR/BR	201 SF	10.05 S.F.	10.47 S.F.	20.10 S.F.	26.56 S.F.
211-511	LR/DR/KITCHENETTE	198 SF	9.90 S.F.	10.47 S.F.	19.80 S.F.	37.86 S.F.
	BEDRM	119 SF	5.95 S.F.	10.47 S.F.	11.90 S.F.	28.97 S.F.
212-512	LR/DR/BR	200 SF	10.00 S.F.	10.47 S.F.	20.00 S.F.	26.56 S.F.
213-513	LR/DR/BR	216 SF	10.80 S.F.	12.84 S.F.	21.60 S.F.	43.17 S.F.
214-514	LR/DR/KITCHENETTE	181 SF	9.05 S.F.	10.47 S.F.	18.10 S.F.	37.86 S.F.
	BEDRM	122 SF	6.01 S.F.	10.47 S.F.	12.02 S.F.	28.97 S.F.
	BEDRM	100 SF	5.00 S.F.	10.47 S.F.	10.00 S.F.	28.97 S.F.
215-515	LR/DR/KITCHENETTE	179 SF	8.95 S.F.	12.84 S.F.	17.90 S.F.	43.17 S.F.
	BEDRM	118 SF	5.90 S.F.	10.47 S.F.	11.80 S.F.	28.97 S.F.
	BEDRM	120 SF	6.00 S.F.	10.47 S.F.	12.00 S.F.	28.97 S.F.
216-516	LR/DR/KITCHENETTE	210 SF	10.50 S.F.	12.84 S.F.	21.00 S.F.	43.17 S.F.
	BEDRM	141 SF	7.05 S.F.	12.84 S.F.	14.10 S.F.	43.17 S.F.
	BEDRM	115 SF	5.75 S.F.	10.47 S.F.	11.50 S.F.	28.97 S.F.
217-517	LR/DR/BR	224 SF	11.20 S.F.	12.84 S.F.	22.40 S.F.	43.17 S.F.
218-518	LR/DR/KITCHENETTE	208 SF	10.40 S.F.	12.84 S.F.	20.80 S.F.	43.17 S.F.
	BEDRM	110 SF	5.50 S.F.	10.47 S.F.	11.00 S.F.	28.97 S.F.
219-519	LR/DR/KITCHENETTE	170 SF	8.50 S.F.	10.47 S.F.	17.00 S.F.	37.86 S.F.
	BEDRM	109 SF	5.45 S.F.	10.47 S.F.	10.90 S.F.	28.97 S.F.
	BEDRM	115 SF	5.75 S.F.	10.47 S.F.	11.50 S.F.	37.86 S.F.
220-520	LR/DR/BR	178 SF	8.90 S.F.	12.84 S.F.	17.80 S.F.	43.17 S.F.
	BEDRM	162 SF	8.10 S.F.	10.47 S.F.	16.20 S.F.	28.97 S.F.



PART 2ND FLOOR PLAN

3 / A-103 Scale: 1/8" = 1'-0"

LEGENDS & SYMBOLS:

- CONCRETE WALL
- CONCRETE BLOCK WALL (2 HOUR RATED) -U904
- FACE BRICK ON CONCRETE BLOCK WALL
- CONCRETE BLOCK WALL (2 HOUR RATED) -U904 W/ AIR-INFILTRATION BARRIER R-GUARD SPRAY WRAP AS MANUFACTURED BY PROSOCO PROVIDE 2" (R8.2) TERMAFIBER INSULATION BOARD AN 5/8" HIGH ABUSE GYPSUM BOARD (PAINTED). HI-ABUSE XP BY GOLD BOND SECURED TO WALL Z FURRING 16" O.C.
- FACE BRICK ON METAL STUD EXTERIOR WALL SYSTEM
- NON-RATED STEEL STUD PARTITION
- (2) TWO HOUR FIRE RATED STEEL STUD PARTITION -U411
- MECHANICAL SHAFT WALL (2 HOUR RATED)- U497
- SMOKE ARCH 12" DOWN FROM KITCHENETTE CEILING
- SMOKE CARBON MONOXIDE DETECTOR
- 201 DOOR IDENTIFICATION
- (B) WINDOW IDENTIFICATION
- DENOTES WATER PROOFING. SEE NOTE 11
- 1 BEDROOM 430-1030 APARTMENT UNIT DESIGNATION
- (1) PARTITION TYPE DESIGNATION
- EXIT SIGN
- FE FIRE EXTINGUISHER
- CR CARD READER
- HC HANDICAP DOOR OPERATOR

GENERAL NOTES:

1. ELEVATOR HOISTWAY TO BE PROVIDED WITH 3 S.F. VENTS LOCATED. SEE DRAWING A-106 AND A-302 PER BC 3004.5.1
2. DOOR CLOSERS SHALL NOT BE PROVIDED ON ALL BEDROOM AND BATHROOM DOORS.
3. APARTMENT ENTRANCE DOORS TO BE 1 ½ HOUR FIRE RATED DOORS COMPLYING WITH SECTION BC 715.4.3.1 WITH UL 1784 TEST CONDUCTED WITHOUT THE ARTIFICIAL BOTTOM SEAL. DOORS TO BE SELF CLOSING AND HAVE VIEWING DEVICE, HEAVY DUTY LATCH, DEAD BOLT WITH THUMB TURN ON INSIDE AND CHAIN GUARD.

NOTES:

1. BIKE RACK DERO SPACE SAVER BY DERO SSULT B-5 WALL MOUNT
2. PROVIDE 4" CONCRETE PADS UNDER ALL EQUIPMENT. COORDINATE WITH MECH DRAWINGS FOR EXACT SIZE
3. 10 LB. EXTINGUISHER MULTIPURPOSE DRY CHEMICAL TYPE: UL-RATED 4-A:80-B:C, IN ENAMELED STEEL CONTAINER MOUNTED WITH METAL BRACKETS.
4. 10 LB. EXTINGUISHER MULTIPURPOSE DRY CHEMICAL TYPE: UL-RATED 4-A:80-B:C, IN ENAMELED STEEL CONTAINER, MOUNTED IN RECESSED METAL CABINET
5. CONCRETE BLOCK WALL (2 HOUR RATED) -U904 W/ AIR-INFILTRATION BARRIER R-GUARD SPRAY WRAP AS MANUFACTURED BY PROSOCO PROVIDE 2" (R8.2) TERMAFIBER INSULATION BOARD AND 5/8" HIGH ABUSE GYPSUM BOARD (PAINTED). HI-ABUSE XP BY GOLD BOND SECURED TO WALL Z FURRING 16" O.C. SEE DETAIL 10/A-101
6. ENTRANCE MAT. RECESSED PEDIMAT HI BY CONSTRUCTION SPECIALTIES WITH LEVEL BASE FRAME ALL SIDES TAPERED ANGLE AT DOOR. EXTERIOR CARPET INSERTS.
7. NON SLIP SURFACE PROVIDE PARKING DECK WATER PROOFING SYSTEM. AUTO-GARD F BY NEOGARD
8. DENOTES AREA OF WATERPROOFING BELOW TILE FLOOR FINISH. WATERPROOFING MEMBRANE TO BE LATICRETE 9235. SEE DRAWING A-503
9. PARKING GARAGE TO BE PROVIDED WITH THE CAPABILITY OF SUPPORTING ELECTRICAL VEHICLE CHARGING STATIONS. ELECTRICAL RACEWAY TO THE ELECTRICAL SUPPLY PANEL SERVING THE GARAGE AND SHALL BE CAPABLE OF PROVIDING A MINIMUM OF 3.1 KW OF ELECTRICAL CAPACITY TO AT LEAST 20 PERCENT (4 SPACES) OF THE PARKING SPACES OF THE GARAGE. SPACE IN THE ELECTRICAL ROOM HAS BEEN PROVIDED FOR SUPPLY PANEL SUFFICIENT TO PROVIDE 3.1KW OF ELECTRICAL CAPACITY TO AT LEAST 20 PERCENT(4 SPACES). RACEWAY AND ALL COMPONENTS AND WORK APPURTENANT THERETO SHALL BE IN ACCORDANCE WITH THE NEW YORK CITY ELECTRICAL CODE
10. 4" (R-20) CLOSED CELL SPRAY POLYURETHANE FOAM INSULATION WITH 15 MIN. FIRE RESISTANT THERMAL BARRIER (DC315) ON 8ITH OF FLOOR SLAB ABOVE
11. ~~VINYL CLAD HANDRAIL SYSTEM. INPRO 900~~ SERIES. PROVIDE RETURNS AT ALL DOORS. SEE DETAIL 4/A-103

H.C ACCESSIBLE FOR MOBILE IMPAIRED

APARTMENT	BEDROOMS
202	1 BEDROOM
312	0 BEDROOM
404	0 BEDROOM
511	1 BEDROOM
612	2 BEDROOM
714	2 BEDROOM
908	0 BEDROOM

H.C ACCESSIBLE FOR SENSORY IMPAIRED

APARTMENT	BEDROOMS
213	0 BEDROOM
702	1 BEDROOM
910	2 BEDROOM

REV.	DATE	DESCRIPTION
	11-3-25	ISSUED FOR PRICING
	3-20-25	ISSUED TO DOB
	10-30-24	REVISED PER NYCECC COMMENTS
	9-6-24	REVISED PER NYCECC COMMENTS
	8-22-24	ISSUED TO DOB
	5-1-24	ISSUED TO HPD - REVISED PER COMMENTS
	3-6-24	ISSUED TO DOB - ADDRESS AND BIN #
	12-20-23	ISSUED TO HPD
	12-08-23	ISSUED TO DOB
	9-27-23	ISSUED TO HPD

REVISIONS:

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ARCHITECTURE • URBAN PLANNING
NEWMAN DESIGN ARCHITECTS PLLC
210 West Rogues Path • Cold Spring Hills, NY 11743
TEL: 212.673.3110 • TEL: 631.673.3111 • FAX: 631.673.2031
www.ndarchitects.com

PROJECT:

1020 BEACH 19TH STREET

1020 BEACH 19TH STREET QUEENS N.Y.

BLOCK - 15560 **LOT - 08**

TITLE:

2ND - 5TH FLOOR PLAN

Q01014357-I1

STAMP:

REGISTERED ARCHITECT BRIAN ERIC NEWMAN No. 032165 STATE OF NEW YORK

DATE: **5/22/23**
JOB #: **23-12**
DRAWN BY: **KJS**
SCALE: **AS NOTED**

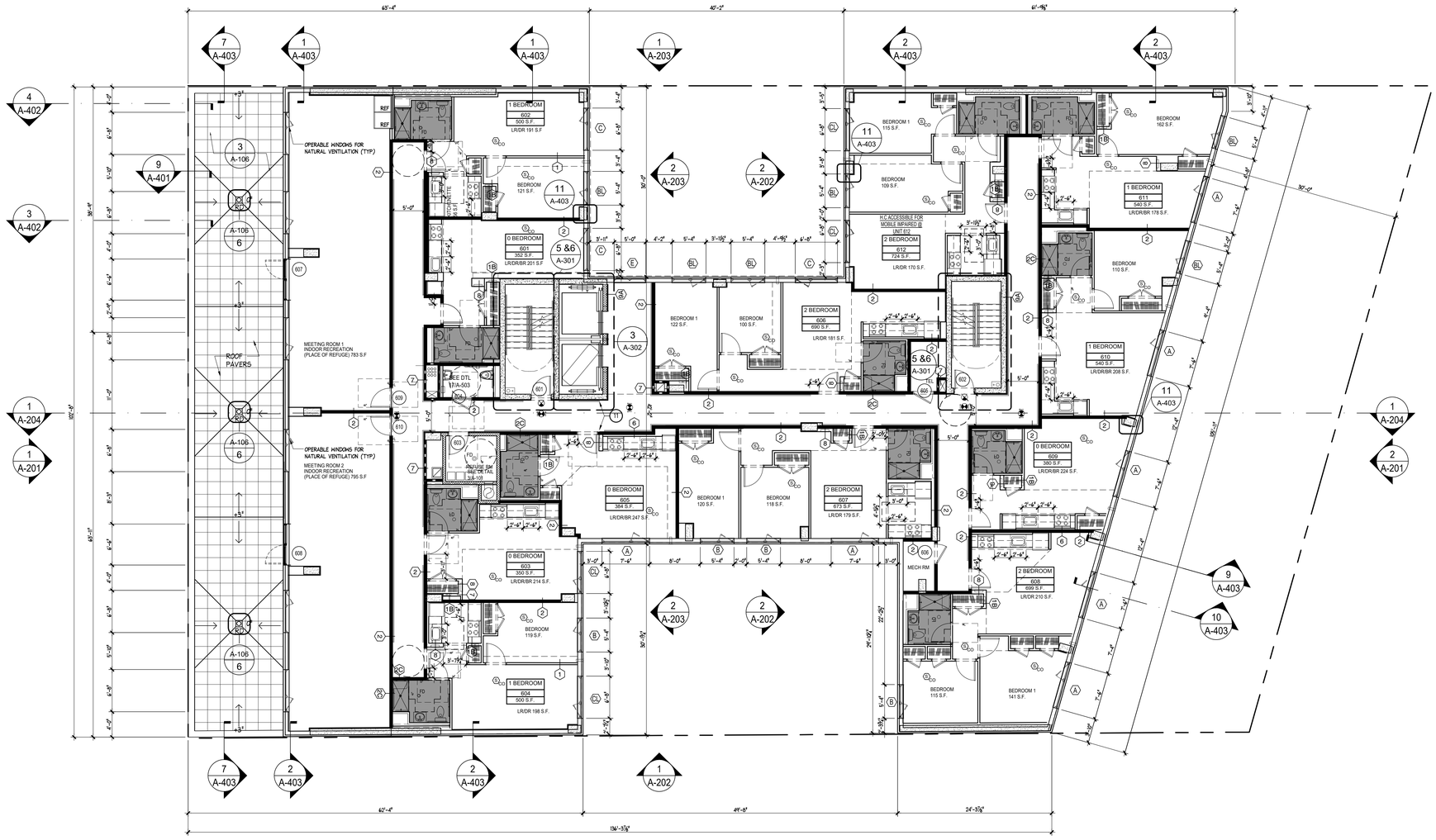
DRAWING NO:

A-103.00

FILE No. :

SHEET: **16** OF 38

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1 6TH FLOOR PLAN
1 / A-104 Scale: 1/8" = 1'-0"

SEE ENLARGED PLAN DETAILS A-501 AND A-502 AND FOR ADDITIONAL NOTES AND DIMENSIONS

LEGENDS & SYMBOLS:

- CONCRETE WALL
- CONCRETE BLOCK WALL (2 HOUR RATED) -U904
- FACE BRICK ON CONCRETE BLOCK WALL
- CONCRETE BLOCK WALL (2 HOUR RATED) -U904 W/ AIR-INFILTRATION BARRIER R-GUARD SPRAY WRAP AS MANUFACTURED BY PROSOCO PROVIDE 2" (R8.2) TERMAFIBER INSULATION BOARD AN 5/8" HIGH ABUSE GYPSUM BOARD (PAINTED). HI-ABUSE XP BY GOLD BOND SECURED TO WALL Z FURRING 16" O.C.
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- DENOTES WATER PROOFING. SEE NOTE 11
- 1 BEDROOM 430-1030 APARTMENT UNIT DESIGNATION
- (1) PARTITION TYPE DESIGNATION
- EXIT SIGN
- FE FIRE EXTINGUISHER
- CR CARD READER
- HC HANDICAP DOOR OPERATOR

GENERAL NOTES:

1. ELEVATOR HOISTWAY TO BE PROVIDED WITH 3 S.F. VENTS LOCATED. SEE DRAWING A-106 AND A-302 PER BC 3004.5.1

2. DOOR CLOSERS SHALL NOT BE PROVIDED ON ALL BEDROOM AND BATHROOM DOORS.

3. APARTMENT ENTRANCE DOORS TO BE 1 ½ HOUR FIRE RATED DOORS COMPLYING WITH SECTION BC 715.4.3.1 WITH UL 1784 TEST CONDUCTED WITHOUT THE ARTIFICIAL BOTTOM SEAL. DOORS TO BE SELF CLOSING AND HAVE VIEWING DEVICE, HEAVY DUTY LATCH, DEAD BOLT WITH THUMB TURN ON INSIDE AND CHAIN GUARD.

NOTES:

1. BIKE RACK DERO SPACE SAVER BY DERO SSULT B-5 WALL MOUNT
2. PROVIDE 4" CONCRETE PADS UNDER ALL EQUIPMENT. COORDINATE WITH MECH DRAWINGS FOR EXACT SIZE
3. 10 LB. EXTINGUISHER MULTIPURPOSE DRY CHEMICAL TYPE: UL-RATED 4-A:80-B:C, IN ENAMELED STEEL CONTAINER MOUNTED WITH METAL BRACKETS.
4. 10 LB. EXTINGUISHER MULTIPURPOSE DRY CHEMICAL TYPE: UL-RATED 4-A:80-B:C, IN ENAMELED STEEL CONTAINER, MOUNTED IN RECESSED METAL CABINET
5. CONCRETE BLOCK WALL (2 HOUR RATED) -U904 W/ AIR-INFILTRATION BARRIER R-GUARD SPRAY WRAP AS MANUFACTURED BY PROSOCO PROVIDE 2" (R8.2) TERMAFIBER INSULATION BOARD AND 5/8" HIGH ABUSE GYPSUM BOARD (PAINTED). HI-ABUSE XP BY GOLD BOND SECURED TO WALL Z FURRING 16" O.C. SEE DETAIL 10/A-101
6. ENTRANCE MAT. RECESSED PEDIMAT M1 BY CONSTRUCTION SPECIALTIES WITH LEVEL BASE FRAME ALL SIDES TAPERED ANGLE AT DOOR. EXTERIOR CARPET INSERTS.
7. NON SLIP SURFACE PROVIDE PARKING DECK WATER PROOFING SYSTEM. AUTO-GARD F BY NEOGARD
8. DENOTES AREA OF WATERPROOFING BELOW TILE FLOOR FINISH. WATERPROOFING MEMBRANE TO BE LATICRETE 9235. SEE DRAWING A-503
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11. ~~VATL COAT HANDRAIL SYSTEM, INTRO-MOD~~ SERIES. PROVIDE RETURNS AT ALL DOORS. SEE DETAIL 4/A-103

LIGHT AND VENTILATION REQUIREMENTS

APARTMENT	ROOM	AREA	VENTILATION = 5%		NATURAL LIGHT = 10%	
			VENTILATION REQUIRED	VENTILATION PROVIDED	NATURAL LIGHT REQUIRED	NATURAL LIGHT PROVIDED
601	LR/DR/BR	201 SF	10.05 S.F.	10.47 S.F.	20.10 S.F.	37.86 S.F.
602	LR/DR/KITCHENETTE	191 SF	9.55 S.F.	10.47 S.F.	19.10 S.F.	37.86 S.F.
	BEDRM	121 SF	6.05 S.F.	10.47 S.F.	12.10 S.F.	28.97 S.F.
603	LR/DR/BR	214 SF	10.07 S.F.	10.47 S.F.	21.40 S.F.	37.86 S.F.
604	LR/DR/KITCHENETTE	198 SF	9.90 S.F.	10.47 S.F.	19.80 S.F.	37.86 S.F.
	BEDRM	119 SF	5.95 S.F.	10.47 S.F.	11.90 S.F.	28.97 S.F.
605	LR/DR/BR	247 SF	12.35 S.F.	12.89 S.F.	24.70 S.F.	43.17 S.F.
606	LR/DR/KITCHENETTE	181 SF	9.05 S.F.	10.47 S.F.	18.10 SF	37.86 S.F.
	BEDRM	122 SF	6.10 S.F.	10.47 S.F.	12.20 SF	28.97 S.F.
	BEDRM	100 SF	5.00 S.F.	10.47 S.F.	10.00 SF	28.97 S.F.
607	LR/DR/KITCHENETTE	179 SF	8.95 S.F.	12.89 S.F.	17.90 SF	43.17 S.F.
	BEDRM	118 SF	5.90 S.F.	10.47 S.F.	11.80 SF	28.97 S.F.
	BEDRM	120 SF	6.00 S.F.	10.47 S.F.	12.00 SF	28.97 S.F.
608	LR/DR/KITCHENETTE	210 SF	10.50 S.F.	12.89 S.F.	21.00 SF	43.17 S.F.
	BEDRM	115 SF	5.75 S.F.	10.47 S.F.	11.50 SF	28.97 S.F.
	BEDRM	141 SF	7.05 S.F.	12.89 S.F.	14.10 SF	43.17 S.F.
609	LR/DR/BR	224 SF	11.20 S.F.	12.89 S.F.	22.40 S.F.	43.17 S.F.
610	LR/DR/KITCHENETTE	208 SF	10.40 S.F.	12.89 S.F.	20.80 SF	43.17 S.F.
	BEDRM	110 SF	5.50 S.F.	10.47 S.F.	11.00 SF	28.97 S.F.
611	LR/DR/KITCHENETTE	178 SF	8.90 S.F.	12.89 S.F.	17.80 SF	43.17 S.F.
	BEDRM	162 SF	8.10 S.F.	10.47 S.F.	16.20 SF	28.97 S.F.
612	LR/DR/KITCHENETTE	170 SF	8.50 S.F.	10.47 S.F.	17.00 SF	37.86 S.F.
	BEDRM	109 SF	5.45 S.F.	10.47 S.F.	10.90 SF	28.97 S.F.
	BEDRM	115 SF	5.75 S.F.	10.47 S.F.	11.50 SF	37.86 S.F.

H.C ACCESSIBLE FOR MOBILE IMPAIRED

APARTMENT	BEDROOMS
202	1 BEDROOM
312	0 BEDROOM
404	0 BEDROOM
511	1 BEDROOM
612	2 BEDROOM
714	2 BEDROOM
908	0 BEDROOM

H.C ACCESSIBLE FOR SENSORY IMPAIRED

APARTMENT	BEDROOMS
213	0 BEDROOM
702	1 BEDROOM
910	2 BEDROOM

REV.	DATE	DESCRIPTION
	11-3-25	ISSUED FOR PRICING
	3-20-25	ISSUED TO DOB
	10-30-24	REVISED PER NYCECC COMMENTS
	9-6-24	REVISED PER NYCECC COMMENTS
	8-22-24	ISSUED TO DOB
	5-1-24	ISSUED TO HPD - REVISED PER COMMENTS
	3-6-24	ISSUED TO DOB - ADDRESS AND BIN #
	12-20-23	ISSUED TO HPD
	12-08-23	ISSUED TO DOB
	9-27-23	ISSUED TO HPD

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PROJECT:

1020 BEACH 19TH STREET

1020 BEACH 19TH STREET QUEENS N.Y.
BLOCK - 15560 **LOT - 08**

TITLE:

6TH FLOOR PLAN

Q01014357-I1

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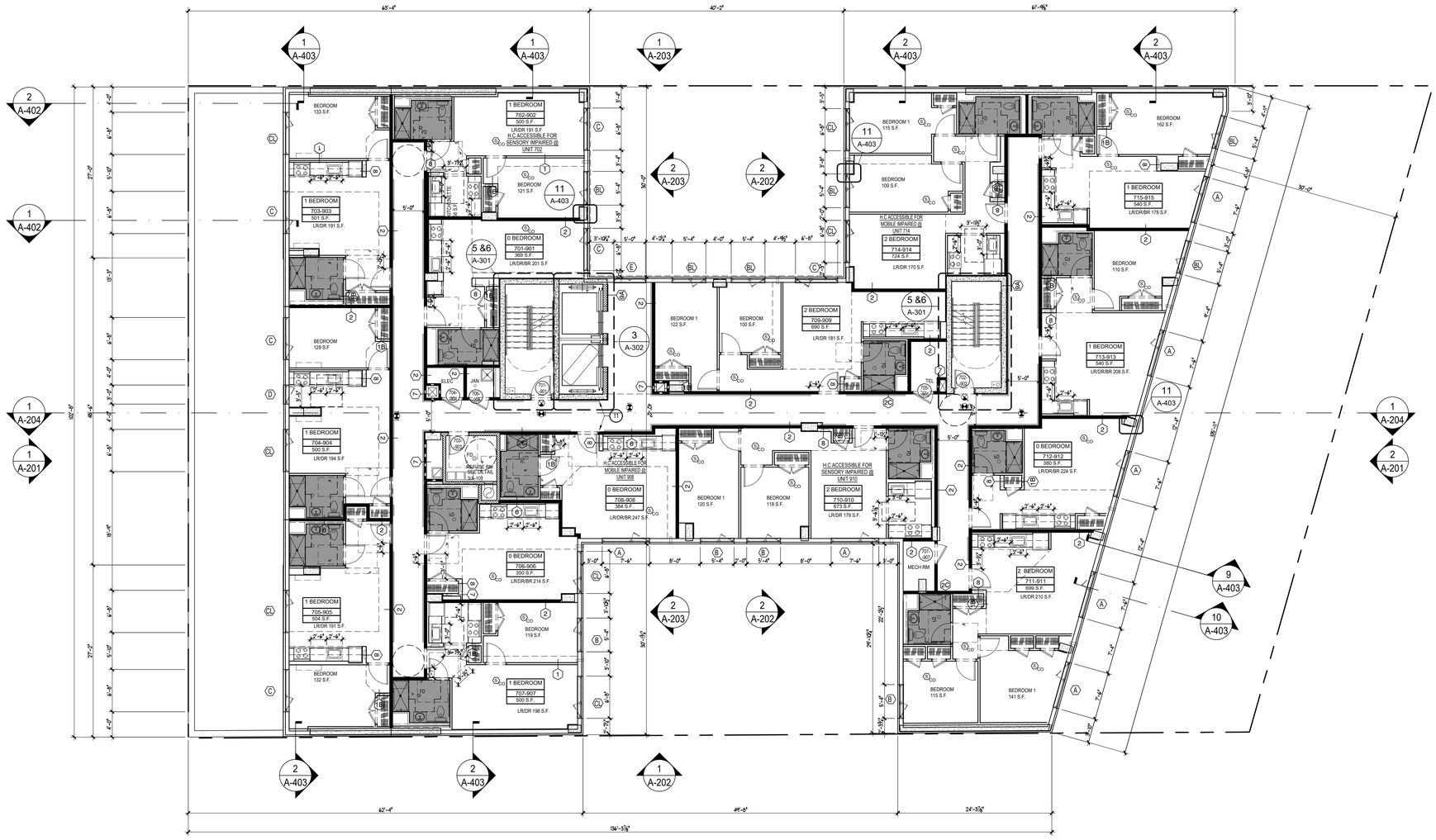
DATE: **5/22/23**
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SCALE: **AS NOTED**

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FILE No. :

SHEET: **17** OF 38

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1 A-105 7TH - 9TH FLOOR PLAN

Scale: 1/8" = 1'-0"

SEE ENLARGED PLAN DETAILS A-501 AND A-502 AND FOR ADDITIONAL NOTES AND DIMENSIONS

LEGENDS & SYMBOLS:

- CONCRETE WALL
- CONCRETE BLOCK WALL (2 HOUR RATED) -U904
- FACE BRICK ON CONCRETE BLOCK WALL
- CONCRETE BLOCK WALL (2 HOUR RATED) -U904 W/ AIR-INFILTRATION BARRIER R-GUARD SPRAY WRAP AS MANUFACTURED BY PROSOCO PROVIDE 2" (R8.2) TERMAFIBER INSULATION BOARD AN 5/8" HIGH ABUSE GYPSUM BOARD (PAINTED). HI-ABUSE XP BY GOLD BOND SECURED TO WALL Z FURRING 16" O.C.
- FACE BRICK ON METAL STUD EXTERIOR WALL SYSTEM
- NON-RATED STEEL STUD PARTITION
- (2) TWO HOUR FIRE RATED STEEL STUD PARTITION -U411
- MECHANICAL SHAFT WALL (2 HOUR RATED)- U417
- SMOKE ARCH 12" DOWN FROM KITCHENETTE CEILING
- SMOKE CARBON MONOXIDE DETECTOR
- 201 DOOR IDENTIFICATION
- (B) WINDOW IDENTIFICATION
- DENOTES WATER PROOFING. SEE NOTE 11
- 1 BEDROOM 430-1030 APARTMENT UNIT DESIGNATION
- (1) PARTITION TYPE DESIGNATION
- EXIT SIGN
- FE FIRE EXTINGUISHER
- CR CARD READER
- HC HANDICAP DOOR OPERATOR

GENERAL NOTES:

1. ELEVATOR HOISTWAY TO BE PROVIDED WITH 3 S.F. VENTS LOCATED. SEE DRAWING A-106 AND A-302 PER BC 3004.5.1
2. DOOR CLOSERS SHALL NOT BE PROVIDED ON ALL BEDROOM AND BATHROOM DOORS.
3. APARTMENT ENTRANCE DOORS TO BE 1 ½ HOUR FIRE RATED DOORS COMPLYING WITH SECTION BC 715.4.3.1 WITH UL 1784 TEST CONDUCTED WITHOUT THE ARTIFICIAL BOTTOM SEAL. DOORS TO BE SELF CLOSING AND HAVE VIEWING DEVICE, HEAVY DUTY LATCH, DEAD BOLT WITH THUMB TURN ON INSIDE AND CHAIN GUARD.

NOTES:

1. BIKE RACK DERO SPACE SAVER BY DERO 5SULT B-5 WALL MOUNT
2. PROVIDE 4" CONCRETE PADS UNDER ALL EQUIPMENT. COORDINATE WITH MECH DRAWINGS FOR EXACT SIZE
3. 10 LB. EXTINGUISHER MULTIPURPOSE DRY CHEMICAL TYPE: UL-RATED 4-A-80-B-C, IN ENAMELED STEEL CONTAINER MOUNTED WITH METAL BRACKETS.
4. 10 LB. EXTINGUISHER MULTIPURPOSE DRY CHEMICAL TYPE. UL-RATED 4-A-80-B-C, IN ENAMELED STEEL CONTAINER. MOUNTED IN RECESSED METAL CABINET
5. CONCRETE BLOCK WALL (2 HOUR RATED) -U904 W/ AIR-INFILTRATION BARRIER R-GUARD SPRAY WRAP AS MANUFACTURED BY PROSOCO PROVIDE 2" (R8.2) TERMAFIBER INSULATION BOARD AND 5/8" HIGH ABUSE GYPSUM BOARD (PAINTED). HI-ABUSE XP BY GOLD BOND SECURED TO WALL Z FURRING 16" O.C. SEE DETAIL 10/A-101
6. ENTRANCE MAT. RECESSED PEDIMAT M1 BY CONSTRUCTION SPECIALTIES WITH LEVEL BASE FRAME ALL SIDES TAPERED ANGLE AT DOOR. EXTERIOR CARPET INSERTS.
7. NON SLIP SURFACE PROVIDE PARKING DECK WATER PROOFING SYSTEM. AUTO-GARD F BY NEOGARD
8. DENOTES AREA OF WATERPROOFING BELOW TILE FLOOR FINISH. WATERPROOFING MEMBRANE TO BE LATICRETE 9235. SEE DRAWING A-503
9. PARKING GARAGE TO BE PROVIDED WITH THE CAPABILITY OF SUPPORTING ELECTRICAL VEHICLE CHARGING STATIONS. ELECTRICAL RACEWAY TO THE ELECTRICAL SUPPLY PANEL SERVING THE GARAGE AND SHALL BE CAPABLE OF PROVIDING A MINIMUM OF 3.1 KW OF ELECTRICAL CAPACITY TO AT LEAST 20 PERCENT (4 SPACES) OF THE PARKING SPACES OF THE GARAGE. SPACE IN THE ELECTRICAL ROOM HAS BEEN PROVIDED FOR SUPPLY PANEL SUFFICIENT TO PROVIDE 3.1KW OF ELECTRICAL CAPACITY TO AT LEAST 20 PERCENT(4 SPACES). RACEWAY AND ALL COMPONENTS AND WORK APPURTENANT THERETO SHALL BE IN ACCORDANCE WITH THE NEW YORK CITY ELECTRICAL CODE
10. 4" (R-20) CLOSED CELL SPRAY POLYURETHANE FOAM INSULATION WITH 15 MIN. FIRE RESISTANT THERMAL BARRIER (DC315) ON 8ITH OF FLOOR SLAB ABOVE
11. ~~VINYL CLAD ALUMINUM SYSTEM, KYNAR 400~~ SERIES. PROVIDE RETURNS AT ALL DOORS. SEE DETAIL 4/A-103

LIGHT AND VENTILATION REQUIREMENTS

APARTMENT	ROOM	AREA	VENTILATION = 5%		NATURAL LIGHT = 10%	
			VENTILATION REQUIRED	VENTILATION PROVIDED	NATURAL LIGHT REQUIRED	NATURAL LIGHT PROVIDED
701-901	LR/DR/BR	201 SF	10.05 S.F.	10.47 S.F.	20.10 S.F.	37.86 S.F.
702-902	LR/DR/KITCHENETTE	191 SF	9.55 S.F.	10.47 S.F.	19.10 S.F.	37.86 S.F.
	BEDRM	121 SF	6.05 S.F.	10.47 S.F.	12.10 S.F.	28.97 S.F.
703-903	LR/DR/KITCHENETTE	191 SF	9.55 SF	10.47 S.F.	19.10 SF	37.86 S.F.
	BEDRM	133 SF	6.65 SF	10.47 S.F.	13.30 SF	37.86 S.F.
704-904	LR/DR/KITCHENETTE	194 SF	9.70 SF	21.14 S.F.	19.40 SF	46.42 S.F.
	BEDRM	129 SF	6.45 SF	10.47 S.F.	12.90 SF	37.86 S.F.
705-905	LR/DR/KITCHENETTE	191 SF	9.55 SF	21.14 S.F.	19.10 SF	46.42 S.F.
	BEDRM	132 SF	6.60 SF	10.47 S.F.	13.20 SF	37.86 S.F.
706-906	LR/DR/BR	214 SF	10.07 S.F.	10.47 S.F.	21.40 S.F.	37.86 S.F.
707-907	LR/DR/KITCHENETTE	198 SF	9.90 S.F.	10.47 S.F.	19.80 S.F.	37.86 S.F.
	BEDRM	119 SF	5.95 S.F.	10.47 S.F.	11.90 S.F.	28.97 S.F.
708-908	LR/DR/BR	247 SF	12.35 S.F.	12.89 S.F.	24.70 S.F.	43.17 S.F.
709-909	LR/DR/KITCHENETTE	181 SF	9.05 S.F.	10.47 S.F.	18.10 SF	37.86 S.F.
	BEDRM	100 SF	5.00 S.F.	10.47 S.F.	10.00 SF	28.97 S.F.
	BEDRM	122 SF	6.10 S.F.	10.47 S.F.	12.20 SF	28.97 S.F.
710-910	LR/DR/BR	179 SF	8.95 S.F.	12.89 S.F.	17.90 SF	43.17 S.F.
	BEDRM	118 SF	5.90 S.F.	10.47 S.F.	11.80 SF	28.97 S.F.
	BEDRM	120 SF	6.00 S.F.	10.47 S.F.	12.00 SF	28.97 S.F.
711-911	LR/DR/KITCHENETTE	210 SF	10.50 S.F.	12.89 S.F.	21.00 S.F.	43.17 S.F.
	BEDRM	141 SF	7.05 S.F.	12.89 S.F.	14.10 S.F.	43.17 S.F.
	BEDRM	115 SF	5.75 S.F.	10.47 S.F.	11.50 S.F.	28.97 S.F.
712-912	LR/DR/BR	224 SF	11.20 S.F.	12.89 S.F.	22.40 S.F.	43.17 S.F.
713-913	LR/DR/KITCHENETTE	208 SF	10.40 S.F.	12.89 S.F.	20.80 S.F.	43.17 S.F.
	BEDRM	110 SF	5.50 SF	10.47 S.F.	11.00 SF	28.97 S.F.
714-914	LR/DR/KITCHENETTE	170 SF	8.50 S.F.	10.47 S.F.	17.00 SF	37.86 S.F.
	BEDRM	109 SF	5.45 S.F.	10.47 S.F.	10.90 SF	28.97 S.F.
	BEDRM	115 SF	5.75 S.F.	10.47 S.F.	11.50 SF	37.86 S.F.
715-915	LR/DR/KITCHENETTE	178 SF	8.90 S.F.	12.89 S.F.	17.80 SF	43.17 S.F.
	BEDRM	162 SF	8.10 S.F.	10.47 S.F.	16.20 SF	28.97 S.F.

H.C ACCESSIBLE FOR MOBILE IMPAIRED

APARTMENT	BEDROOMS
202	1 BEDROOM
312	0 BEDROOM
404	0 BEDROOM
511	1 BEDROOM
612	2 BEDROOM
714	2 BEDROOM
908	0 BEDROOM

H.C ACCESSIBLE FOR SENSORY IMPAIRED

APARTMENT	BEDROOMS
213	0 BEDROOM
702	1 BEDROOM
910	2 BEDROOM

REV.	DATE	DESCRIPTION
	11-3-25	ISSUED FOR PRICING
	3-20-25	ISSUED TO DOB
	10-30-24	REVISED PER NYCECC COMMENTS
	9-6-24	REVISED PER NYCECC COMMENTS
	8-22-24	ISSUED TO DOB
	5-1-24	ISSUED TO HPD - REVISED PER COMMENTS
	3-6-24	ISSUED TO DOB - ADDRESS AND BIN #
	12-20-23	ISSUED TO HPD
	12-08-23	ISSUED TO DOB
	9-27-23	ISSUED TO HPD

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PROJECT:

1020 BEACH 19TH STREET

1020 BEACH 19TH STREET QUEENS N.Y.

BLOCK - 15560 **LOT - 08**

TITLE:

7TH - 9TH FLOOR PLAN

Q01014357-I1

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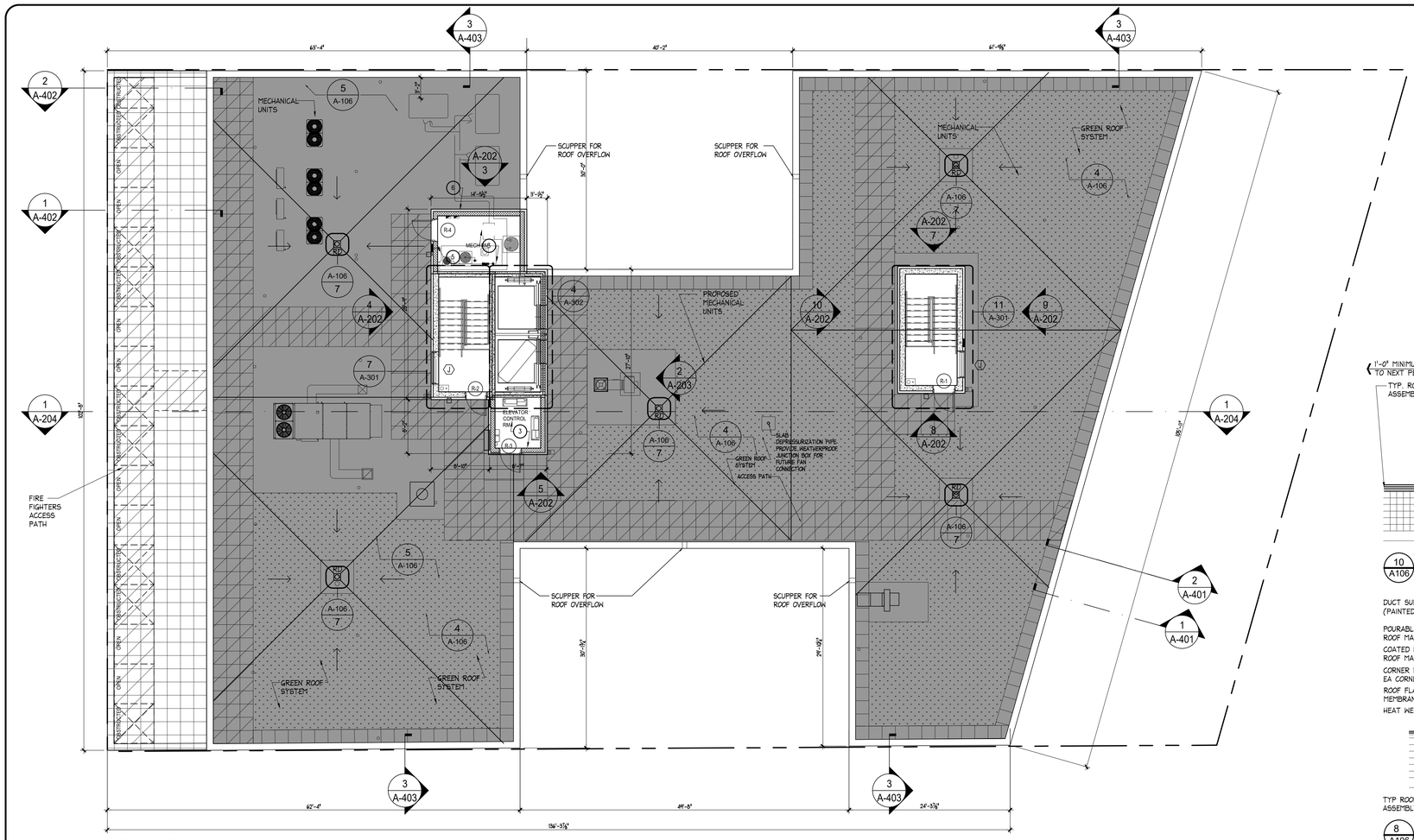
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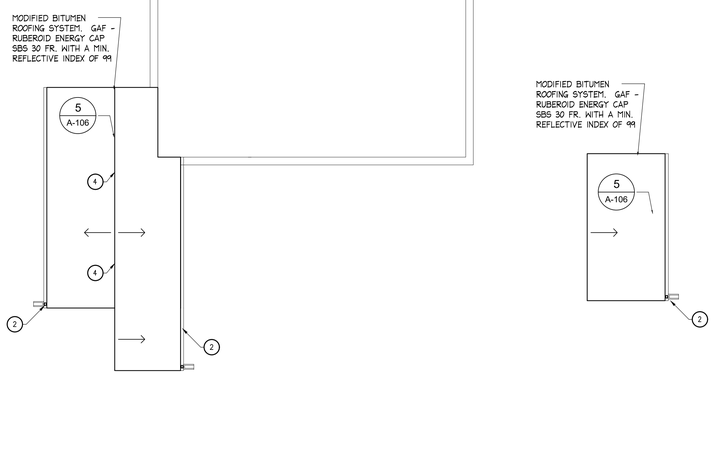
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1 A-106 ROOF PLAN
Scale: 1/8" = 1'-0"



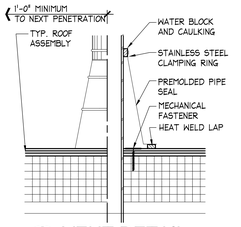
2 A-106 ROOF BULKHEAD PLAN
Scale: 1/8" = 1'-0"

SUSTAINABLE ROOFING ZONE AREAS

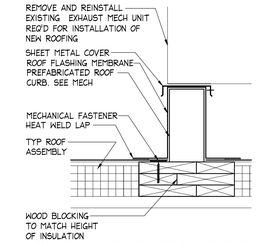
ROOF AREA	ROOF AREAS EXEMPT FROM SUSTAINABLE ROOF AREA	SUSTAINABLE ROOF AREA REQUIRED	SUSTAINABLE ROOF PROVIDED
	ROOF RECREATION SPACE = 1,539 S.F		
	PRIVATE ROOF TERRACE = 0 S.F.		
	MECHANICAL EQUIPMENT = 3,168 S.F.		
	FIRE FIGHTERS ACCESS =2,248 S.F.		
11,234 S.F.	TOTAL EXEMPT AREAS = 6,955 SF	4,279 SF	4,279 SF

ROOF AREA SYMBOLS

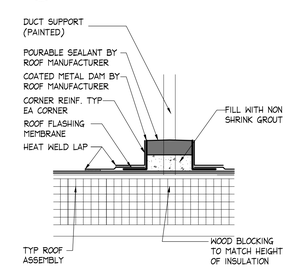
CONC PAVERS
TAPERED ROOF INSULATION
ROOF VEGETATION
FIRE FIGHTERS ACCESS PATH (6'-0" WIDE)



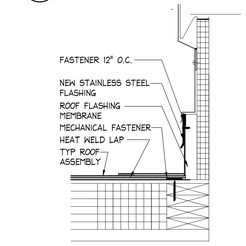
10 A106 VENT DETAIL
Scale: 1 1/2" = 1'-0"



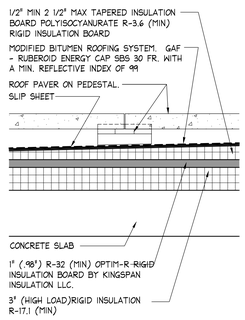
11 A106 EQUIPMENT CURB DTL
Scale: 1 1/2" = 1'-0"



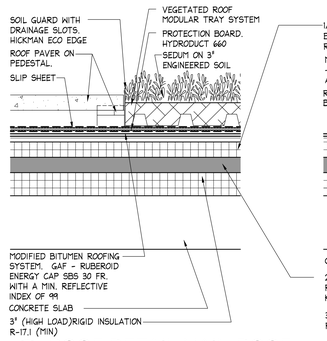
8 A106 SEALANT BOX DETAIL
Scale: 1 1/2" = 1'-0"



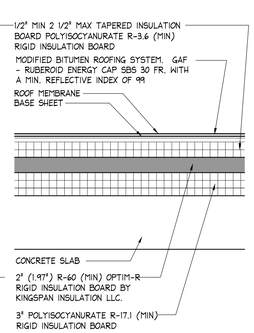
9 A106 MECH UNIT CURB DTL
Scale: 1 1/2" = 1'-0"



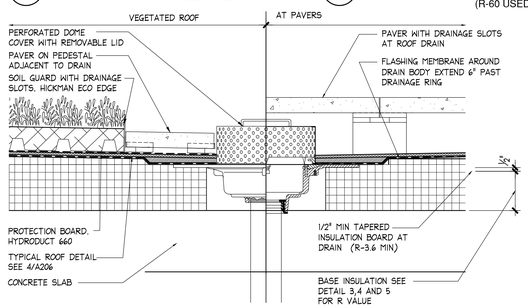
3 A106 TERRACE ROOF 6TH FL
Scale: 1 1/2" = 1'-0" R-52.7 AT LOW POINT



4 A106 ROOF DETAIL MAIN ROOF
Scale: 1 1/2" = 1'-0" R-80.7 AT LOW POIMT (R-60 USED IN COMCHECK)



5 A106 ROOF DETAIL MECH AREAS
Scale: 1 1/2" = 1'-0" R-80.7 AT LOW POIMT (R-60 USED IN COMCHECK)



7 A106 TYP ROOF DRAIN DETAIL
Scale: 1 1/2" = 1'-0"

LEGENDS & SYMBOLS:

- PARAPET. 42 MIN ABOVE FINISHED ROOF
- GUARD RAIL
- SLOPE — DIRECTION OF ROOF SLOPE.
- WALKWAY PADS
- CONC PAVERS
- VEGETATED ROOF MODULAR TRAY SYSTEM SEE DTL 4/A-106
- FIRE FIGHTERS ACCESS PATH (6'-0" WIDE)
- RD — ROOF DRAIN
- DUCT PENETRATION
- PLUMBING VENT
- WALL MOUNTED LIGHT
- GUTTER, DOWN SPOUT AND SPLASH BLOCK

GENERAL NOTES:

1. PROVIDE TAPERED INSULATION OVER 8" BASE LAYER OF INSULATION TO PITCH ROOF 1/8" (MIN) PER FOOT TOWARD ROOF DRAINS
2. PROVIDE CRICKETS WITH TAPERED INSULATION TO PITCH ROOF 1/8" PER FOOT TOWARD ROOF DRAINS AT ALL ROOF CURBS.

NOTES:

1. BULKHEAD ROOF ACCESS LADDER
2. ALUMINUM GUTTER AND DOWN SPOUT
3. FLOOR TO RECEIVE EPOXY FLOOR FINISH. EPOXY FINISH TO BE SHOP FLOOR 'HR' BY DUR-A-FLEX INC WITH ELAST-O-COAT WATER PROOF MEMBRANE. EXTEND FINISH 6" UP WALL.
4. 3 S.F. SCREENED LOUVER AT ROOF LEVEL FOR ELEVATOR HOISTWAY VENTING
5. 10 LB. EXTINGUISHER MULTIPURPOSE DRY CHEMICAL TYPE: UL-RATED 4-A:80:B:C, IN ENAMELED STEEL CONTAINER MOUNTED WITH METAL BRACKETS.
6. LOUVER WITH BIRD SCREEN COLOR TO MATCH ADJACENT WALL FINISH

REV.	DATE	DESCRIPTION
	11-3-25	ISSUED FOR PRICING
	3-20-25	ISSUED TO DOB
	10-30-24	REVISED PER NYCECC COMMENTS
	9-6-24	REVISED PER NYCECC COMMENTS
	8-22-24	ISSUED TO DOB
	5-1-24	ISSUED TO HPD - REVISED PER COMMENTS
	3-6-24	ISSUED TO DOB - ADDRESS AND BIN #
	12-20-23	ISSUED TO HPD
	12-08-23	ISSUED TO DOB
	9-27-23	ISSUED TO HPD

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PROJECT:

1020 BEACH 19TH STREET

1020 BEACH 19TH STREET QUEENS N.Y.
BLOCK - 15560 **LOT - 08**

TITLE:

ROOF PLAN

Q01014357-I1

STAMP: REGISTERED ARCHITECT BRIAN ERIC NEWMAN No. 032165 STATE OF NEW YORK

DATE: **5/22/23**
JOB #: **23-12**
DRAWN BY: **KJS**
SCALE: **AS NOTED**

DRAWING NO:

A-106.00

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SHEET:

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APPENDIX B – Cost Estimates

10-16 Beach 19th Street - C241276 - Remedial Cost Estimates

Track 2 Cleanup with SSDS.

Description	Cost
Waste Characterization	$25,000
Soil Disposal	$315,000
SOE to allow remedial excavation	$32,000
Clean Fill (Assumes back filling to grade except for cellar and stromwater holding tanks)	$95,000
UST Removals	$24,000
Field Oversight Services Reporting/During Site Remediation	$100,000
SSDS	
Allowance	$40,000
SSDS Design	$15,000
Site Management Plan Prep	$20,000
Final Engineering Report Prep	$30,000
DUSR	$20,000
End Point Sample Analysis	$50,000

$766,000

SSDS Operating Costs 1,500 kWh annually for 30 Years	$6,600
Annual PRR	$120,000

Track 1 Cleanup with SSDS.

Description	Cost
Waste Characterization	$25,000
Soil Disposal	$630,000
SOE to allow remedial excavation	$65,000
Clean Fill (Assumes back filling to grade except for cellar and stromwater holding tanks)	$190,000
UST Removals	$24,000
Field Oversight Services During Site Remediation	$175,000
SSDS	
Allowance	$40,000
SSDS Design	$15,000
Site Management Plan Prep	$20,000
Final Engineering Report Prep	$30,000
DUSR	$20,000
End Point Sample Analysis	$50,000

$1,284,000

Annual Operating Costs (30 Years)	$6,600
Annual PRR	$120,000

APPENDIX C – Public Participation Plan

NEW YORK STATE OF OPPORTUNITY. Department of Environmental Conservation

Brownfield Cleanup Program

Public Participation Plan

for

10-16 Beach 19th Street

NYSDEC BCP Site: C241276

October 2024

NYSDEC BCP Site: C241276

10-16 Beach 19th Street, Far Rockaway, NY 11691

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Note: The information presented in this Public Participation Plan was current as of the date of its approval by the New York State Department of Environmental Conservation.Portions of this Public Participation Plan may be revised during the site's investigationand cleanup process.

Applicant: **1016 Beach 19 Partners LLC ("Applicant")**
Site Name: **10-16 Beach 19th Street ("Site")**
Site Address: **10-16 Beach 19th Street, Far Rockaway**
Site County: **Queens**
Site Number: **C241276**

1. What is New York's Brownfield Cleanup Program?

New York's Brownfield Cleanup Program (BCP) works with private developers to encourage the voluntary cleanup of contaminated properties known as "brownfields" so that can be reused and developed. These uses include recreation, housing, and business.

A *brownfield* is any real property that is difficult to reuse or redevelop because of the presence or potential presence of contamination. A brownfield typically is a former industrial or commercial property where operations may have resulted in environmental contamination. A brownfield can pose environmental, legal, and financial burdens on a community. If a brownfield is not addressed, it can reduce property values in the area and affect economic development of nearby properties.

The BCP is administered by the New York State Department of Environmental Conservation (NYSDEC) which oversees Applicants who conduct brownfield site investigation and cleanup activities. An Applicant is a person who has requested to participate in the BCP and has been accepted by NYSDEC. The BCP contains investigation and cleanup requirements, ensuring that cleanups protect public health and the environment. When NYSDEC certifies that these requirements have been met,the property can be reused or redeveloped for the intended use.

For more information about the BCP, go online at:
http://www.dec.ny.gov/chemical/8450.html

2. Public Participation Activities

Why NYSDEC Involves the Public and Why It Is Important

NYSDEC involves the public to improve the process of investigating and cleaning up contaminated sites, and to enable citizens to participate more fully in decisions that affect their health, environment, and social well-being. NYSDEC provides opportunities for citizen involvement and encourages early two-way communication with citizens before decision-makers form or adopt final positions.

Involving citizens affected and interested in site investigation and cleanup programs is important for many reasons. These include:

Promoting the development of timely, effective site investigation and cleanup programs that protect public health and the environment;

Improving public access to, and understanding of, issues and information related toa particular site and that site's investigation and cleanup process;

Providing citizens with early and continuing opportunities to participate in NYSDEC'ssite investigation and cleanup process;

Ensuring that NYSDEC makes site investigation and cleanup decisions that benefitfrom input that reflects the interests and perspectives found within the affected community; and

Encouraging dialogue to promote the exchange of information among the affected/interested public, State agencies, and other interested parties that strengthens trust among the parties, increases understanding of site and communityissues and concerns, and improves decision-making.

This Public Participation (PP) Plan provides information about how NYSDEC will inform and involve the public during the investigation and cleanup of the site identified above. The public information and involvement program will be carried out with assistance, as appropriate, from the Applicant.

Project Contacts

Appendix A identifies NYSDEC project contact(s) to whom the public should address questions or request information about the site's investigation and cleanup program. The public's suggestions about this PP Plan and the PP program for the site are always welcome. Interested people are encouraged to share their ideas and suggestions with the project contacts at any time.

Locations of Reports and Information

The locations of the reports and information related to the site's investigation and cleanup program also are identified in Appendix A. These locations provide convenient access to important project documents for public review and comment. Some documents may be placed on the NYSDEC web-site. If this occurs, NYSDEC will inform the public in fact sheets distributed about the site and by other means, as appropriate.

Site Contact List

Appendix B contains the site contact list. This list has been developed to keep the community informed about, and involved in, the site's investigation and cleanup process. The site contact list will be used periodically to distribute fact sheets that provide updates about the status of the project. These will include notifications of upcoming activities at the site (such as fieldwork), as well as availability of project documents and announcements about public comment periods.

The site contact list includes, at a minimum:

- Chief executive officer and planning board chairperson of each county, city, town and village in which the site is located;
- Residents, owners, and occupants of the site and properties adjacent to the site;
- The public water supplier which services the area in which the site is located;
- Any person who has requested to be placed on the site contact list;
- The administrator of any school or day care facility located on or near the site for purposes of posting and/or dissemination of information at the facility; and,
- Location(s) of reports and information.

The site contact list will be reviewed periodically and updated as appropriate. Individuals and organizations will be added to the site contact list upon request. Such requests should be submitted to the NYSDEC project contact(s) identified in Appendix A. Other additions to the site contact list may be made at the discretion of the NYSDEC project manager, in consultation with other NYSDEC staff as appropriate.

Note: The first site fact sheet (usually related to the draft Remedial Investigation Work Plan) is distributed both by paper mailing through the postal service and through DEC Delivers, its email listserv service. The fact sheet includes instructions for signing up with the appropriate county listserv to receive future notifications about the site.

See http://www.dec.ny.gov/chemical/61092.html.

Subsequent fact sheets about the site will be distributed exclusively through the listserv, except for households without internet access that have indicated the need to continue to receive site information in paper form. Please advise the NYSDEC site project manager identified in Appendix A if that is the case. Paper mailings may continue duringthe investigation and cleanup process for some sites, based on public interest and need.

PP Activities

The table at the end of this section identifies the PP activities, at a minimum, that have been and will be conducted during the site's investigation and cleanup program. The flowchart in Appendix D shows how these PP activities integrate with the site investigation and cleanup process. The public is informed about these PP activities through fact sheets and notices distributed at significant points during the program.

Elements of the investigation and cleanup process that match up with the PP activities are explained briefly in Section 5.

Notices and fact sheets help the interested and affected public to understand contamination issues related to a site, and the nature and progress of efforts toinvestigate and clean up a site.

Public forums, comment periods and contact with project managers provide opportunities for the public to contribute information, opinions, and perspectives that have potential to influence decisions about a site's investigation and cleanup.

The public is encouraged to contact project staff at any time during the site's investigation and cleanup process with questions, comments, or requests for information.

This PP Plan may be revised due to changes in major issues of public concern identified in Section 3 or in the nature and scope of investigation and cleanup activities. Modifications may include additions to the site contact list and changes in planned public participation activities.

Technical Assistance Grant

NYSDEC must determine if the site poses a significant threat to public health or the environment. This determination generally is made using information developed during the investigation of the site, as described in Section 5.

If the site is determined to be a significant threat, a qualifying community group may apply for a Technical Assistance Grant (TAG). The purpose of a TAG is to provide funds to the qualifying group to obtain independent technical assistance. This assistance helps the TAG recipient to interpret and understand existing environmental information about the nature and extent of contamination related to the site and the development and implementation of a remedy.

An eligible community group must certify that its membership represents the interests of the community affected by the site, and that its members' health, economic well-being or enjoyment of the environment may be affected by a release or threatened release of contamination at the site.

As of the date the declaration (page 2) was signed by the NYSDEC project manager, the significant threat determination for the site had not yet been made. To verify the significant threat status of the site, the interested public may contact the NYSDEC project manager identified in Appendix A.

For more information about TAGs, go online at

http://www.dec.ny.gov/regulations/2590.html

Note: The table identifying the public participation activities related to the site's investigation and cleanup program follows on the next page.

Public Participation Activities	Timing of Public Participation Activity(ies)
Application Process:	
• Prepare site contact list • Establish document repository(ies)	At time of preparation of application to participate in theBCP.
• Publish notice in Environmental Notice Bulletin (ENB) announcing receipt of application and 30-day public comment period • Publish above ENB content in local newspaper • Mail above ENB content to site contact list • Conduct 30-day public comment period	When NYSDEC determines that BCP application is complete. The 30-day public comment period begins on date of publication of notice in ENB. End date of public comment period is as stated in ENB notice. Therefore, ENB notice, newspaper notice, and notice to the contact list should be provided to the public at the same time.
After Execution of Brownfield Site Cleanup Agreement (BCA):	
• Prepare Public Participation (PP) Plan	Before start of Remedial Investigation **Note:** Applicant must submit PP Plan to NYSDEC for review and approval within 20 days of the effective dateof the BCA.
Before NYSDEC Approves Remedial Investigation (RI) Work Plan:	
• Distribute fact sheet to site contact list about proposed RI activities and announcing 30-day public comment period about draft RI Work Plan • Conduct 30-day public comment period	Before NYSDEC approves RI Work Plan. If RI Work Plan is submitted with application, public comment periods will be combined and public notice will include fact sheet. 30-day public comment period begins/ends as per dates identified in fact sheet.
After Applicant Completes Remedial Investigation:	
• Distribute fact sheet to site contact list that describesRI results	Before NYSDEC approves RI Report
Before NYSDEC Approves Remedial Work Plan (RWP):	
• Distribute fact sheet to site contact list about draft RWP and announcing 45-day public comment period • Public meeting by NYSDEC about proposed RWP (if requested by affected community or at discretion of NYSDEC project manager) • Conduct 45-day public comment period	Before NYSDEC approves RWP. 45-day public comment period begins/ends as per dates identified in fact sheet. Public meeting would be held within the 45- day public comment period.
Before Applicant Starts Cleanup Action:	
• Distribute fact sheet to site contact list that describes upcoming cleanup action	Before the start of cleanup action.
After Applicant Completes Cleanup Action:	
• Distribute fact sheet to site contact list that announces that cleanup action has been completed and that NYSDEC is reviewing the Final EngineeringReport • Distribute fact sheet to site contact list announcing NYSDEC approval of Final Engineering Report and issuance of Certificate of Completion (COC)	At the time the cleanup action has been completed. **Note:** The two fact sheets are combined when possibleif there is not a delay in issuing the COC.

3. Major Issues of Public Concern

This section of the PP Plan identifies major issues of public concern that relate to the site. Additional major issues of public concern may be identified during the course of the site's investigation and cleanup process.

The primary contaminants of concern at the Site are elevated levels of volatile organic compounds (VOCs) in groundwater (generally compounds associated with gasoline) and soil vapor (notably, the chlorinated solvent tetrachloroethylene [PCE]), and metals and semi-volatile organic compounds (SVOCs) in soil (potentially from poor-quality fill and/or former commercial activities). Given that Site structures are vacant and that there is no property access, and that surfaces in the surrounding urban area are paved or otherwise covered, there appears to be no significant public health concerns from exposures to on-site contaminants at this time. Site contamination is not affecting community activities and there are no known on-site uses of groundwater at or near the Site (the surrounding area utilizes public water). During the cleanup of the Site, there may be issues such as odor, noise, or truck-related traffic.

Environmental justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

Environmental justice efforts focus on improving the environment in communities, specifically minority and low-income communities, and addressing disproportionate adverse environmental impacts that may exist in those communities.

The Site is located in an Environmental Justice Area. In addition, the site is located in an area with a sizable African-American population nearby. Therefore, no need to translate future fact sheets into another language.

4. Site Information

Appendix C contains a map identifying the location of the site.

Site Description

The Site consists of a 0.429-acre parcel located on the eastern side of Beach 19th. The property is improved with an unoccupied single-story commercial building with several interior divisions (approximately 13,000 square feet), formerly used for automotive sales and repair, and paved parking areas. The development plans include construction of a new multi-story affordable-housing senior residence with ground-level parking. New construction will require building demolition and soil excavation. The Site is located in an urban setting comprised primarily of residential and commercial uses. Adjoining properties contain residences, churches, various retail buildings, and a parking lot.

History of Site Use, Investigation, and Cleanup

Development occurred at the property as early as circa 1900, and Site uses included historical automotive repair activities from circa 1933 to July 2021. Gasoline and other underground storage tanks (USTs) were identified at the western portion of the Site.

Previous subsurface investigations did not find evidence of any significant petroleum releases near the USTs; on-Site fill soils in several areas, however, were found to contain elevated levels of a type of SVOCs known as polycyclic aromatic hydrocarbons (PAHs) and metals (lead, mercury, and cadmium). Groundwater from temporary monitoring wells was contaminated with VOCs (chloroform and several gasoline constituents), PAHs, and metals. Vapor sampling in the southern portion of the building documented high levels of PCE, as well as other VOCs at lower levels typically encountered in urban environments.

Site cleanup actions may involve removal and/or treatment of any encountered PCE-contaminated media, and removal of poor-quality fill soil, resulting in a final remediation that is protective of human health and the environment.

5. Investigation and Cleanup Process

Application

The Applicant has applied for and been accepted into New York's Brownfield Cleanup Program **as Volunteer**. This means that the Applicant was not responsible for the disposal or discharge of the contaminants or whose ownership or operation of the site took place after the discharge or disposal of contaminants. The Volunteer must fully characterize the nature and extent of contamination onsite, and must conduct a "qualitative exposure assessment," a process that characterizes the actual or potential exposures of people, fish, and wildlife to contaminants on the site and to contamination that has migrated from the site.

The Applicant in its Application proposes that the site will be used for residential purposes, and will meet (at a minimum) the criteria for a Restricted-Residential Use cleanup (dependent on the final remediation plan, an Unrestricted Use cleanup may be pursued). To achieve this goal, the Applicant will conduct investigation and cleanupactivities at the site with oversight provided by NYSDEC. The Brownfield Cleanup Agreement executed by NYSDEC and the Applicant sets forth the responsibilities ofeach party in conducting these activities at the site.

Investigation

The Applicant will conduct an investigation of the site officially called a "remedial investigation" (RI). This investigation will be performed with NYSDEC oversight. The Applicant must develop a remedial investigation work plan, which is subject to public comment. The site investigation has several goals:

1) Define the nature and extent of contamination in soil, surface water, groundwater and any other parts of the environment that may be affected;
2) Identify the source(s) of the contamination;
3) Assess the impact of the contamination on public health and the environment; and
4) Provide information to support the development of a proposed remedy to address the contamination or the determination that cleanup is not necessary.

The Applicant submits a draft “Remedial Investigation Work Plan” to NYSDEC for review and approval. NYSDEC makes the draft plan available to the public review during a 30-day public comment period.

When the investigation is complete, the Applicant will prepare and submit a report that summarizes the results. This report also will recommend whether cleanup action is needed to address site-related contamination. The investigation report is subject to review and approval by NYSDEC.

NYSDEC will use the information in the investigation report to determine if the site poses a significant threat to public health or the environment. If the site is a “significant threat,” it must be cleaned up using a remedy selected by NYSDEC from an analysis of alternatives prepared by the Applicant and approved by NYSDEC. If the site does not pose a significant threat, the Applicant may select the remedy from the approved analysis of alternatives.

Interim Remedial Measures

An Interim Remedial Measure (IRM) is an action that can be undertaken at a site when a source of contamination or exposure pathway can be effectively addressed before the site investigation and analysis of alternatives are completed. If an IRM is likely to represent all or a significant part of the final remedy, NYSDEC will require a 30-day public comment period.

Remedy Selection

When the investigation of the site has been determined to be complete, the project likely would proceed in one of two directions:

1) The Applicant may recommend in its investigation report that no action is necessaryat the site. In this case, NYSDEC would make the investigation report available for public comment for 45 days. NYSDEC then would complete its review, make any necessary revisions, and, if appropriate, approve the investigation report. NYSDEC would then issue a “Certificate of Completion” (described below) to the Applicant.

or

2) The Applicant may recommend in its investigation report that action needs to be taken to address site contamination. After NYSDEC approves the investigation report, the Applicant may then develop a cleanup plan, officially called a “Remedial Work Plan”. The Remedial Work Plan describes the Applicant’s proposed remedy for addressing contamination related to the site. When the Applicant submits a draft Remedial Work Plan for approval, NYSDEC would announce the availability of the draft plan for public review during a 45-day public comment period.

Cleanup Action

NYSDEC will consider public comments, and revise the draft cleanup plan if necessary, before approving the proposed remedy. The New York State Department of Health (NYSDOH) must concur with the proposed remedy. After approval, the proposed remedy becomes the selected remedy. The selected remedy is formalized in the site Decision Document.

The Applicant may then design and perform the cleanup action to address the site contamination. NYSDEC and NYSDOH oversee the activities. When the Applicant completes cleanup activities, it will prepare a Final Engineering Report (FER) that certifies that cleanup requirements have been achieved or will be achieved within aspecific time frame. NYSDEC will review the report to be certain that the cleanup isprotective of public health and the environment for the intended use of the site.

Certificate of Completion

When NYSDEC is satisfied that cleanup requirements have been achieved or will be achieved for the site, it will approve the FER. NYSDEC then will issue a Certificate of Completion (COC) to the Applicant.

The COC states that cleanup goals have been achieved, and relieves the Applicant from future liability for site-related contamination, subject to certain conditions. The Applicant would be eligible to redevelop the site after it receives a COC.

Site Management

The purpose of site management is to ensure the safe reuse of the property if contamination will remain in place. Site management is the last phase of the site cleanup program. This phase begins when the COC is issued. Site management incorporates any institutional and engineering controls required to ensure that the remedy implemented for the site remains protective of public health and the environment. All significant activities are detailed in a Site Management Plan.

An institutional control is a non-physical restriction on use of the site, such as a deed restriction that would prevent or restrict certain uses of the property. An institutional control may be used when the cleanup action leaves some contamination that makes the site suitable for some, but not all uses.

An engineering control is a physical barrier or method to manage contamination. Examples include caps, covers, barriers, fences, and treatment of water supplies.

Site management also may include the operation and maintenance of a component of the remedy, such as a system that pumps and treats groundwater. Site management continues until NYSDEC determines that it is no longer needed.

Appendix A - Project Contacts and Locations of Reports and Information

Project Contacts

For information about the site's investigation and cleanup program, the public may contact any of the following project staff:

New York State Department of Environmental Conservation (NYSDEC):

Erick Bower
Project Manager, NYSDEC
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
erick.bower@dec.ny.gov
(518) 402-9824

Thomas V. Panzone
Public Participation Specialist
Division of Communications, Education and Engagement
NYSDEC – Region 2
47-40 21st Street
Long Island City, NY 11101
thomas.panzone@dec.ny.gov
(718) 482-4953

New York State Department of Health (NYSDOH):

Michele Dolan
Project Manager, NYSDOH
Bureau of Environmental Exposure Investigation
Empire State Plaza – Corning Tower, Rm 1787
Albany, NY 12237
michele.dolan@health.ny.gov
(518) 402-7860

Locations of Reports and Information

Site-related documents are available for review through the DECInfo Locator on line at https://extapps.dec.ny.gov/data/DecDocs/C241276/.

The facilities identified below are also being used to provide the public with convenient access to important project documents:

Queens Public Library
Far Rockaway Branch
1637 Central Avenue
Far Rockaway, NY 11691
(718) 327-2549
website - hours of operation:
queenslibrary.org/about-us/locations/far-rockaway

Queens Community Board 14
Felicia Johnson, District Manager
Environmental Committee Chairperson:
David Shelborne
Chairperson: Dolores Orr
1931 Mott Avenue, Room 311
Far Rockaway, NY 11691
(718) 471-7300
qn14@cb.nyc.gov

Appendix B - Site Contact List

Public Officials:

Hon. Eric Adams
NYC Mayor
City Hall
New York, NY 10007

Hon. Brad Lander
NYC Comptroller
1 Centre Street Room 517
New York, NY 10007

Hon. Jumaane D. Williams
Public Advocate
1 Centre Street 15th Floor North
New York, NY 10007

David Gold, Esq.
Commissioner, NYC Dept. of City Planning
120 Broadway, 31st Floor
New York, NY 10271

Shaminder Chawla, Acting Director
NYC Office of Environmental Remediation
100 Gold Street - 2nd Floor
New York, NY 10038

Queens Borough President
Hon. Donovan Richards
120-55 Queens Blvd
Kew Gardens NY 11424

Hon Charles Schumer
U.S. Senator
780 Third Avenue, Suite 2301
New York, NY 10017

Hon. Kirsten Gillibrand
U.S. Senator
780 Third Avenue, Suite 2601
New York, NY 10017

New York City Municipal Water Finance Authority
Philip Wasserman - Executive Director
255 Greenwich Street, 6th Floor
New York, NY 10007

New York City Water Board
NYC Department of Environmental Protection
Alfonso L. Carney, Jr., Chairperson
59-17 Junction Boulevard, 8th Floor
Flushing, NY 11373

Hon. Selvena N. Brooks-Powers
NYC Council member
Rockaway Office:
1931 Mott Avenue, Suite 410
Far Rockaway, NY 11691

Hon. Stacey Pheffer Amato
NYS Assembly member
9516 Rockaway Beach Blvd
Rockaway Beach, NY 11693

Hon. James Sanders Jr.
NYS Senator
1931 Mott Avenue, Suite 305
Far Rockaway, NY 11691

Hon. Gregory Meeks
US House of Representatives
Rockaway Peninsula District Office
67-12 Rockaway Beach Boulevard
Arverne, NY 11692

Queens County Clerk's Office
Hon. Audrey I. Pheffer
Queens County Clerk
8811 Sutphin Blvd #106,
Jamaica, NY 11435

Public Water Supplier
Rohit Aggarwala
Commissioner, NYC Dept. of Environmental Protection
59-17 Junction Boulevard
Flushing, NY 11373

Local Media Outlets:

New York Daily News
PO Box 7180
New York, NY 10008

New York Post
1211 Avenue of the Americas
New York, NY 10036

Spectrum NY 1 News
75 Ninth Avenue
New York, NY 10011

Queens Times
11-20 154th Street
Queens, NY 11357

Rockaway Wave
PO Box 930097
Rockaway Beach, NY 11693

The Rockaway Times
114-04 Beach Channel Drive
Rockaway Park, NY 11694

Schneps Media
45-17 Marathon Parkway,
Little Neck, NY 11362

Local Schools & Daycare Centers

Success Academy Charter School - Far Rockaway Elementary
President/Executive Director/Principal
https://www.successacademies.org/school/far-rockaway/
10-45 Nameoke St, Floor 3
Queens, NY 11691
718-704-1421

Bnos Bais Yaakov
President/Executive Director/Principal
https://donate.bbyschool.org/
613 Beach 9th St,
Far Rockaway, NY 11691
https://donate.bbyschool.org/
(718) 337-6000 Ext. 450

M.S. 053 Brian Piccolo
President/Executive Director/Principal
10-45 Nameoke St,
Far Rockaway, NY 11691
https://www.ms53.org/
(718) 471-6900

Lovable Kids Day Care
President/Executive Director/Principal
1070 Dickens St,
Far Rockaway, NY 11691
(718) 327-9234

Kennedi's Playhouse Home of Learning & Adventures
President/Executive Director/Principal
1812 Everdell Ave,
Far Rockaway, NY 11691
(347) 816-7516

Faces of Grace Inc Group Family Daycare
President/Executive Director/Principal
1120 Gipson St,
Far Rockaway, NY 11691
(347) 923-1541

Ralph Hirschkorn Child Care Center
President/Executive Director/Principal
310 Beach 20th St,
Far Rockaway, NY 11691
https://insideschools.org/school/27QAMT
(718) 327-1141

Kid's Time Child Care
President/Executive Director/Principal
10-50 Beach 22nd St,
Far Rockaway, NY 11691
(718) 868-4867

Sunshine Daycare
President/Executive Director/Principal
13-81 McBride St,
Far Rockaway, NY 11691

Brilliant Minds Group Family Daycare LLC
President/Executive Director/Principal
13-49 Gipson St,
Far Rockaway, NY 11691
(718) 350-5658

Little Treasures Daycare
President/Executive Director/Principal
1418 Mott Ave,
Far Rockaway, NY 11691
(718) 337-6107

Clouds of Joy Daycare
President/Executive Director/Principal
11-36 Neilson St,
Far Rockaway, NY 11691
(718) 868-2682

Little Friends Gan Pre-School
President/Executive Director/Principal
1030 Neilson St,
Far Rockaway, NY 11691
(718) 327-3287

Our Precious Angels
President/Executive Director/Principal
2402 Ocean Crest Blvd,
Far Rockaway, NY 11691
(718) 471-7215

Rockaway Adult Social Center
President/Executive Director/Principal
18-58 Cornaga Ave,
Far Rockaway, NY 11691
(347) 926-4134

Just Kids Early Childhood Learning Center
President/Executive Director/Principal
264 Beach 19th St,
Far Rockaway, NY 11691
(718) 868-2961

ALLELUIA DAY CARE
President/Executive Director/Principal
443 Beach 22nd St,
Far Rockaway, NY 11691
(917) 202-2143

Tiny Tykes Day Care
President/Executive Director/Principal
1061 Gipson St,
Far Rockaway, NY 11691
(718) 471-0339

Precious Favor Children Daycare
President/Executive Director/Principal
21-18 Elk Dr,
Far Rockaway, NY 11691

Orah Day Camp
President/Executive Director/Principal
613 Beach 9th St,
Far Rockaway, NY 11691
(718) 324-6724

On Our Way Learning Center
President/Executive Director/Principal
264 Beach 19th St,
Far Rockaway, NY 11691

Community, Civic, Religious and Other Environmental Organizations

Consolidated Edison Corporate Affairs
Richard David
Director of Regional and Community Affairs in Queens
59-17 Junction Boulevard
Flushing, NY 11373

101st NYPD Police Precinct Council
President Arlene Cauley
16-12 Mott Avenue,
Far Rockaway, NY, 11691

FDNY
ENGINE 264/ENGINE 328/LADDER 134
1617 Central Ave,
Far Rockaway, NY 11691

Rockaway Development & Revitalization Corporation
https://www.rdrc.org/
1920 Mott Avenue
Far Rockaway, NY 11691
Kevin W. Alexander, MPA
President & Chief Executive Officer
kalexander@rdrc.org
718.327.5300 extension 314

Rockaway Youth Task Force
https://daphnefoundation.org/rockaway-youth-task-force/
info@daphnefoundation.org
1920 Mott Ave 2nd Fl. Suite,
Far Rockaway, NY 11691
(718) 868-0386

Catholic Charities Neighborhood Services Homebase Homeless Prevention
18-47 Mott Ave,
Far Rockaway, NY 11691
(718) 647-1015
https://www.ccbq.org/service/homebase-homelessness-prevention-program/

Jewish Community Council of the Rockaway Peninsula
https://jccrp.org/
1525 Central Avenue
Far Rockaway, NY 11691
Allison Deal, Executive Director
info@jccrp.org

ACQC - Far Rockaway Site
https://acqc.org/contact/
1600 Central Avenue,
Far Rockaway, New York, 11691
(718) 868-8645
Rosemary Lopez, Executive Director

Heartshare Human Services-NY
603 Beach 19th St
Far Rockaway, NY 11691
(718) 327-9000

Guyda Non-Profit Organization
https://www.guyda.org/contact
402 Beach 22nd Street,
Far Rockaway, NY 11691
info@mysite.com
Mr. Leslie E. C. Stewart, P. E - President

Gods Pentecostal Church
1835 Mott Avenue
Far Rockaway, NY 11691

Upper Room International Ministry
708 Beach 19th St,
Far Rockaway, NY 11691

St Mary's Star of the Sea
1920 New Haven Ave,
Far Rockaway, NY 11691

Prince of Peace Pentecostal
1835 Mott Ave,
Far Rockaway, NY 11691

United Methodist Center In Far Rockaway Mission
1032 Beach 19th St,
Far Rockaway, NY 11691
Refuge Church Of Christ
1837 Mott Ave,
Far Rockaway, NY 11691

Beth-El Temple Church of God in Christ
18-74 Mott Ave,
Far Rockaway, NY 11691
Bethany Apostolic Church
1820 Cornaga Ave,
Far Rockaway, NY 11691

Far Rockaway Mission
1032 Beach 19th St,
Far Rockaway, NY 11691

Evangelical Holiness Church
1143 Beach Channel Dr,
Far Rockaway, NY 11691

Universal Church of Salvation
1121 Bayport Pl,
Far Rockaway, NY 11691

Pentecostal City Mission | Far Rockaway
1618 Central Ave,
Far Rockaway, NY 11691

City of Oasis Church of Deliverance (COGIC)
18-74 Mott Ave,
Far Rockaway, NY 11691

FSBC
710 Beach 20th St,
Far Rockaway, NY 11691

First Church of God
1425 Beach Channel Dr,
Far Rockaway, NY 11691

Far Rockaway Church of Christ
21-25 Nameoke Ave,
Far Rockaway, NY 11691

The Redeemed Christian Church of God
1818 Cornaga Ave,
Far Rockaway, NY 11691

Far Rockaway Spanish SDA Church
18-30 Cornaga Ave,
Far Rockaway, NY 11691

Let's Go Ministry (Ministerio Vamos)
1075 Beach 21st St,
Far Rockaway, NY 11691

Far Rockaway Community Church-The Nazarene
1414 Central Ave,
Far Rockaway, NY 11691

Islamic Society
2118 Cornaga Ave,
Far Rockaway, NY 11691

MASJID SALAHUDEEN
21-28 Cornaga Ave,
Far Rockaway, NY 11691

Young Israel of Far Rockaway
716 Beach 9th St,
Far Rockaway, NY 11691

Cong. Kneseth Israel The White Shul
728 Empire Ave,
Far Rockaway, NY 11691

Agudath Israel of Long Island
1121 Sage St,
Far Rockaway, NY 11691

Cong. Kehilas Jakob Sulitza
612 Beach 9th St,
Far Rockaway, NY 11691

KZMD — K'hal Zichron Moshe Dov
613 Beach 9th St,
Far Rockaway, NY 11691

Bais Medrash Ateres Yisroel, Rabbi Blumenkrantz's Shul
827 Cornaga Ave,
Far Rockaway, NY 11691

Community Kollel Avreichem of Lawrence/Far Rockaway
1204 B 12th St,
Far Rockaway, NY 11691

Kollel Anshei Chemed
814 Caffrey Ave,
Far Rockaway, NY 11691

Yeshiva Ateres Shimon
12-39 Caffrey Ave,
Far Rockaway, NY 11691

Chevras Noam Siach
765 Caffrey Ave,
Far Rockaway, NY 11691

K'hal Nesiv HaTorah
830 Hicksville Rd,
Far Rockaway, NY 11691

Satmar Shul
17-17 Plainview Ave,
Far Rockaway, NY 11691

Chabad Lubavitch of Far Rockaway
1055 Neilson St,
Far Rockaway, NY 11691

Yeshiva Darchei Torah
257 Beach 17th St,
Far Rockaway, NY 11691

Adjacent Properties

Address and Tax ID (section – block – lot)	**Current Use**
10-60 Cornaga Avenue Block 15560, Lot 1	office building
18-58 Cornaga Avenue Block 15560, Lot 54	retail store
18-54 Cornaga Avenue Block 15560, Lot 52	retail store
18-40 Cornaga Avenue Block 15560, Lot 50	beach club
18-36 Cornaga Avenue Block 15560, Lot 45	school
18-37 Mott Avenue Block 15560, Lot 24	church
18-41 Mott Avenue Block 15560, Lot 23	church
10-32 Beach 19th Street Block 15560, Lot 12	multi-dwelling with stores
10-29 Beach 19th Street Block 15561, Lot 43	two family residence
10-27 Beach 19th Street Block 15561, Lot 44	two family residence
10-25 Beach 19th Street Block 15561, Lot 435	two family residence
10-23 Beach 19th Street Block 15561, Lot 46	two family residence
10-21 Beach 19th Street Block 15561, Lot 47	two family residence
10-25 Beach 20th Street Block 15561, Lot 10	vacant

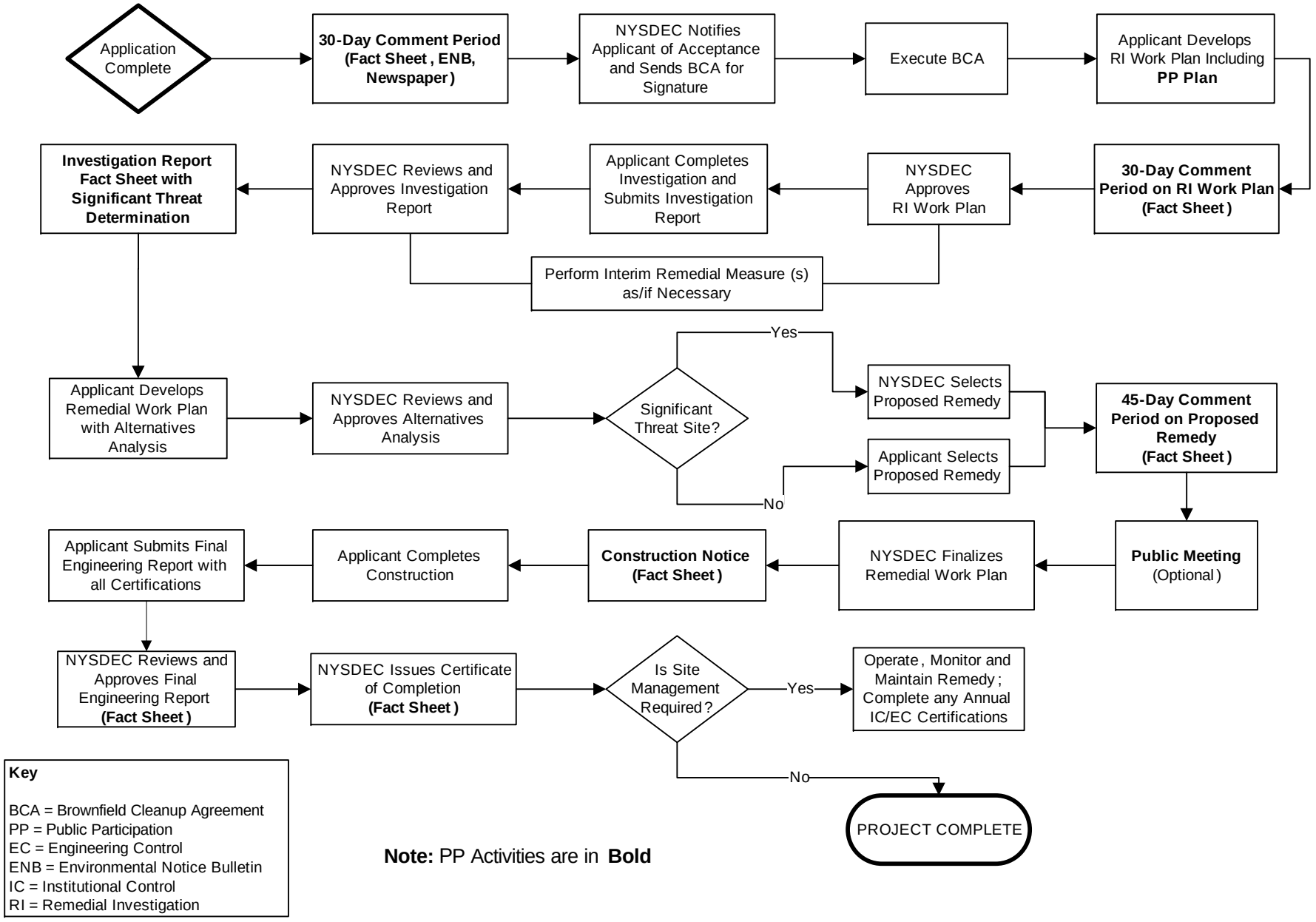
Appendix C - Site Location Map



Appendix C- Site Map



Appendix D– Brownfield Cleanup Program Process



Key

BCA = Brownfield Cleanup Agreement
PP = Public Participation
EC = Engineering Control
ENB = Environmental Notice Bulletin
IC = Institutional Control
RI = Remedial Investigation

Note: PP Activities are in **Bold**

APPENDIX D – Health and Safety Plan

BELLUCCI ENGINEERING, PLLC

HEALTH AND SAFETY PLAN
FOR SITE REMEDIATION

10-16 Beach 19th Street

Queens, New York

NYSDEC BCP Site: C241276

June 2026

Bellucci Engineering, PLLC
West Hartford, Connecticut

BELLUCCI ENGINEERING, PLLC

HEALTH AND SAFETY PLAN
FOR SITE REMEDIATION

June 2026

Prepared By:

Bellucci Engineering, PLLC
West Hartford, Connecticut

Prepared For:

1016 Beach 19 Partners LLC
c/o Foxy Management
500 Trinity Avenue
Bronx, New York

The undersigned has reviewed this Health and Safety Plan for Site Remediation and certifies to 1016 Beach 19 Partners LLC and to the New York State Department of Environmental Conservation that the information provided in this document is accurate as of the date of issuance by this office.



Daniel Bellucci, PE
Bellucci Engineering, PLLC

BELLUCCI ENGINEERING, PLLC

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Attachments

Site Map
NYSDOH Generic CAMP

1.0 INTRODUCTION

1.1 Purpose

This Health and Safety Plan for Site Remediation (HASP) has been developed to provide the requirements and general procedures to be followed by the Remedial Engineer (RE; Bellucci Engineering, PLLC), Qualified Environmental Professional (QEP), and all on-site subcontractors while performing site remediation services at the 10-16 Beach 19th Street BCP Site (ID: C241276) located in Brooklyn, New York.

This HASP incorporates policies, guidelines and procedures intended to protect the public health of the community during fieldwork activities and therefore serves as a Community Health and Safety Plan. The objectives of the HASP are met by establishing guidelines to minimize potential exposures during fieldwork, and by planning for and responding to emergencies affecting the public adjacent to the site.

This HASP describes the responsibilities, training requirements, protective equipment and standard operating procedures to be utilized by all personnel while on the site. All on-site personnel and visitors shall follow the guidelines, rules, and procedures contained in this HASP. The Project Manager or Site Health and Safety Officer (SHSO) may impose any other procedures or prohibitions necessary for safe operations. This HASP incorporates by reference applicable Occupational Safety and Health Administration (OSHA) requirements in 29 CFR 1910 and 1926.

The requirements and guidelines in this HASP are based on a review of available information and evaluation of potential on-site hazards. This HASP will be discussed with site personnel and will be available on-site for review while work is underway. On-site personnel will report to the SHSO in matters of health and safety. The on-site project supervisor(s) are responsible for the enforcement and implementation of this HASP, which is applicable to all on-site field personnel, including contractors and subcontractors.

This HASP is specifically intended for the conduct of activities within the defined scope of work in specified areas of the site. Changes in conditions or future actions that may be conducted at the site may necessitate the modification of the requirements of the HASP. Although this HASP can be made available to interested persons for informational purposes, the RE and QEP cannot be held accountable for the interpretations or activities of any other persons or entities other than the employees of the RE, QEP, and their respective subcontractors.

1.2 Site Location and Description

The site is defined as the property located at 10-16 Beach 19th Street, Far Rockaway, Queens, New York. A Site Map illustrating the site configuration is included as an Attachment to this HASP.

1.3 Work Activities

Fieldwork activities to be conducted at the site are detailed in the NYSDEC-approved Remedial Action Work Plan (RAWP; June 2026), which specifies the remedy for the required environmental remediation of the site.

2.0 HEALTH AND SAFETY HAZARDS

2.1 Hazard Overview for On-Site Personnel

Weathered petroleum is present in soil near the groundwater interface. Elevated concentrations of metals and polycyclic aromatic hydrocarbons (PAHs) have been documented in site soil and groundwater, per- and polyfluoroalkyl substances (PFAS) are additionally present in groundwater, and volatile organic compounds (VOCs) have been documented in soil vapor. The possibility exists for on-site personnel to have contact with contaminated soils, groundwater and/or vapor during remediation activities. Contact with contaminated substances may present a skin contact, inhalation and/or ingestion hazard. These potential hazards are addressed in Sections 3.0 through 11.0, below.

2.2 Potential Hazards to the Public from Fieldwork Activities

The potential exists for the public to be exposed to contaminated media (soils, groundwater and/or vapor), which may present a skin contact, inhalation and/or ingestion hazard. Additional potential hazards associated with fieldwork activities include mechanical and physical hazards, traffic hazards from fieldwork vehicles, and noise impacts from operation of equipment.

Impacts to public health and safety are expected to be limited to hazards that could directly affect on-site visitors and/or trespassers. These effects will be mitigated through site access and control measures (see Section 6.0, below). Specific actions taken to protect the public health (presented in Sections 3.0 through 11, below) are anticipated to minimize any potential off-site impacts from contaminant migration, noise and traffic hazards.

3.0 PERSONAL PROTECTIVE EQUIPMENT

The levels of protection identified for the services specified in the RAWP represent a best estimate of exposure potential and protective equipment needed for that exposure. Determination of levels was based on data provided by previous studies of the site and information reviewed on current and past site usage.

The SHSO may recommend revisions to these levels based on an assessment of actual exposures and may at any time require site workers, supervisors and/or visitors to use specific safety equipment.

The level of protective clothing and equipment selected for this project is Level D. Level D PPE provides minimal skin protection and no respiratory protection and is used when the atmosphere contains no known hazard, oxygen concentrations are not less than 19.5%, and work activities exclude splashes, immersion or the potential for unexpected inhalation or contact with hazardous levels of chemicals. Workers will wear Level D protective clothing including, but not limited to, a hard hat, steel-toed boots, nitrile gloves (when handling soils and/or groundwater), hearing protection (foam ear plugs or earmuffs, as required), and safety goggles (in areas of exposed groundwater and when decontaminating equipment). Personal protective equipment (PPE) will be worn at all times, as designated by this HASP.

Disposable gloves will be changed immediately following the handling of contaminated soils, water, or equipment. Tyvek suits will be worn during activities likely to excessively expose work clothing to contaminated dust or soil (chemically-resistant over garments will be required in situations where exposures could lead to penetration of clothing and direct dermal contact by contaminants).

The requirement for the use of PPE by official on-site visitors shall be determined by the SHSO, based on the most restrictive PPE requirement for a particular Work Zones (see Section 6 for Work Zone definitions). All on-site visitors shall, at a minimum, be required to wear an approved hardhat and be provided with appropriate hearing protection as necessary.

The need for an upgrade in PPE will be determined based upon encountered site conditions, including measurements taken in the breathing zone of the work area using a photo-ionization detector (PID). An upgrade to a higher level of protection (Level C) will begin when specific action levels are reached (see Section 5.0, below), or as otherwise required by the SHSO. Level C PPE includes a full-face or half-mask air-purifying respirator (NIOSH approved for compound[s] of concern), hooded chemical-resistant clothing, outer and inner chemical-resistant gloves, and (as needed) coveralls, outer boots/boot covers, escape mask, and face shield. Level C PPE may be used only when: oxygen concentrations are not less than 19.5%; contaminant contact will not adversely affect exposed skin; types of air contaminants have been identified, concentrations measured, and a cartridge/canister is available that can remove the contaminant; atmospheric contaminant concentrations do not exceed immediately dangerous to life or health (IDLH) levels; and job functions do not require self-contained breathing apparatus (SCBAs). The need for Level B or Level A PPE is not anticipated for the planned remedial activities at this site.

If any equipment fails and/or any employee experiences a failure or other alteration of their protective equipment that may affect its protective ability, that person will immediately leave the work area. The Project Manager and the SHSO will be notified and, after reviewing the situation, determine the effect of the failure on the continuation of on-going operations. If the failure affects the safety of personnel, the work site, or the surrounding environment, personnel will be evacuated until appropriate corrective actions have been taken.

4.0 CONTAMINANT CONTROL

Precautions will be taken during dry weather (e.g., wetting or covering exposed soils) to avoid generating and breathing dust-generated from soils. A PID (or equivalent equipment) will be used to monitor potential contaminant levels. Response to the monitoring will be in accordance with the action levels provided in Section 5.0.

5.0 MONITORING AND ACTION LEVELS

Concentrations of petroleum compounds in the air are expected to be below the OSHA Permissible Exposure Limits (PELs). Air monitoring will be conducted for VOCs and dust according to the NYSDOH Generic Community Air Monitoring Plan (provided as an Attachment), and in accordance with the special requirements presented below. Monitoring will be conducted at all times that fieldwork activities which are likely to generate emissions are occurring. PID and dust readings consistently in excess of CAMP limits will be used as an indication of the need to initiate personnel monitoring, increase worker protective measures, and/or modify or cease on-site operations in order to mitigate off-site community exposure.

PID readings that consistently exceed background in the breathing zone (during any proposed tasks) will necessitate moving away from the source or implementing a higher PPE level.

Special Requirements for Work within 20 Feet of Potentially Exposed Individuals or Structures

When work areas are within 20 feet of potentially exposed populations or occupied structures, the continuous monitoring locations for VOCs and particulates must reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. The use of engineering controls such as vapor/dust barriers, temporary negative pressure enclosures, or special ventilation devices should be considered to prevent exposures related to the work activities and to control dust and odors. Consideration should be given to implementing the planned activities when potentially exposed populations are at a minimum, such as during weekends or evening hours in non-residential settings.

If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed 1 ppm, monitoring should occur within the occupied structure(s). Depending upon the nature of contamination, chemical-specific colorimetric tubes of sufficient sensitivity may be necessary for comparing the exposure point concentrations with appropriate pre-determined response levels (response actions should also be predetermined). Background readings in the occupied spaces must be taken and discussed with NYSDOH prior to commencement of the work.

If total particulate concentrations opposite the walls of occupied structures or next to intake vents exceed 150 mcg/m^3, work activities should be suspended until controls are implemented and are successful in reducing the total particulate concentration to 150 mcg/m^3 or less at the monitoring point.

Depending upon the nature of contamination and remedial activities, other parameters (e.g., explosivity, oxygen, hydrogen sulfide, and carbon monoxide) may also need to be monitored. Response levels and actions should be pre-determined, as necessary, for each site.

Special Requirements for Indoor Work with Co-Located Residences or Facilities:

Unless a self-contained, negative-pressure enclosure with proper emission controls will encompass the work area, all individuals not directly involved with the planned work must be absent from the room in which the work will occur. Monitoring requirements shall be as stated above under "Special Requirements for Work within 20 Feet of Potentially Exposed Individuals or Structures" except that in this instance "nearby/occupied structures" would be adjacent occupied rooms. Additionally, the location of all exhaust vents in the room and their discharge points, as well as potential vapor pathways (openings, conduits, etc.) relative to adjoining rooms, should be understood and the monitoring locations established accordingly. In these situations, it is strongly recommended that exhaust fans or other engineering controls be used to create negative air pressure within the work area during remedial activities. Additionally, it is strongly recommended that the planned work be implemented during hours (e.g., weekends or evenings) when building occupancy is at a minimum.

6.0 SITE CONTROL/WORK ZONES

Site control procedures will be established to reduce the possibility of worker/visitor contact with environmental contaminants, to protect the public in the area surrounding the site and to limit access to the site to only those persons required to be in the work zone. Notices placed near the site will warn the public not to enter fieldwork areas and direct visitors to report to the Project Manager or SHSO. Measures will be taken to limit the entry of unauthorized personnel into the specific areas of field activity and to safely direct and control all vehicular traffic in and near the site (e.g., placement of traffic cones and warning tape).

Work Areas are defined as follows:

Exclusion Zone - The exclusion zone will be that area immediately surrounding the work being performed to accomplish fieldwork activities involving the handling or potential exposures to contaminated media. Only individuals with appropriate PPE and training are allowed into this zone. It is the responsibility of the SHSO to prevent unauthorized personnel from entering the exclusion zone. When necessary (e.g., high traffic areas) the exclusion zone will be delineated with barricade tape, cones and/or barricades.

Dedicated Decontamination Area - A dedicated decontamination area for personnel and equipment (including contamination reduction and support zones) is not anticipated to be required during completion of fieldwork activities, but will be established and utilized, as warranted, based on changes in site conditions. Care will be taken at all times to remove gloves, excess soil from boots, and soiled clothing (if necessary) before entering the Intermediate Zone.

Intermediate Zone - The intermediate zone, also known as the decontamination zone, is where patient decontamination should take place, if necessary. A degree of contamination still is found in this zone and some PPE is required, although it is usually of a lesser degree than that required for the exclusion zone.

Command Zone - The command zone is located outside the decontamination zone. All exposed individuals and equipment from the exclusion zone and the decontamination zone should be decontaminated before entering the command zone. Access to all zones must be controlled. Keeping onlookers, media, and others well away from the site is critical and will be the responsibility of both the SHSO and the Project Manager, and other site personnel as appropriate.

7.0 NOISE CONTROL

All fieldwork activities will be conducted in a manner designed to reduce unnecessary noise generation, and to minimize the potential for both on-site and off-site harmful noise levels. The Project Manager and SHSO will establish noise reduction procedures (as appropriate to the site and the work) to meet these requirements.

8.0 PERSONNEL TRAINING

Work zones that will accomplish the general objective stated above will be established by the Project Manager and the SHSO. Site access will be monitored by the SHSO, who will maintain a log-in sheet for personnel that will include, at the minimum, personnel on the site, their arrival and departure times and their destination on the site. All workers will be properly trained in accordance with OSHA requirements (29 CFR 1910). Personnel exiting the work zone(s) will be decontaminated prior to exiting the site.

Site-specific training will be provided to each employee. Personnel will be briefed by the SHSO as to the potential hazards to be encountered. Topics will include:

- Availability of this HASP;
- General site hazards and specific hazards in the work areas, including those attributable to known of suspect on-site contaminants;
- Selection, use, testing, and care of the body, eye, hand, and foot protection being worn, with the limitations of each;
- Decontamination procedures for personnel, their personal protective equipment, and other equipment used on the site;
- Emergency response procedures and requirements;
- Emergency alarm systems and other forms of notification, and evacuation routes to be followed; and,
- Methods to obtain emergency assistance and medical attention.

9.0 DECONTAMINATION

The SHSO will establish a decontamination system and procedures (appropriate to the site and the work) that will prevent potentially hazardous materials from leaving the site. Vehicles will be brushed to remove materials adhering to surfaces. Sampling equipment will be segregated, decontaminated, and stored separately from PPE. All decontaminated or clean sampling equipment not in use will be protected and stored in a designated, controlled storage area.

10.0 EMERGENCY RESPONSE

10.1 Notification of Site Emergencies

In the event of an emergency, the SHSO will be immediately notified of the nature and extent of the emergency (the names and contact information for key site safety and management personnel, as well as other site safety contact telephone numbers, shall be posted at the site).

Table 1 in this HASP contains Emergency Response Telephone Numbers, and immediately following is a map detailing the directions to the nearest hospital emergency room. This information will be maintained at the work site by the SHSO. The location of the nearest telephone will be determined prior to the initiation of on-site activities. In addition to any permanent phone lines, a cellular phone will be in the possession of the SHSO, or an authorized designee, at all times.

10.2 Responsibilities

Prior to the initiation of on-site work activities, the SHSO will:

- Notify individuals, authorities and/or health care facilities of the potentially hazardous activities and potential wastes that may develop as a result of the remedial activities;
- Confirm that first aid supplies and a fire extinguisher are available on-site;
- Have a working knowledge of safety equipment available; and,
- Confirm that a map detailing the most direct route to the hospital is prominently posted with the emergency telephone numbers.

The SHSO will be responsible for directing notification, response and follow-up actions and for contacting outside response personnel (ambulance, fire department, or others). In the case of an evacuation, the SHSO will account for personnel. A log of individuals entering and leaving the site will be kept so that everyone can be accounted for in an emergency.

Upon notification of an exposure incident, the SHSO will contact the appropriate emergency response personnel for recommended medical diagnosis and, if necessary, treatment. The SHSO will determine whether and at what levels exposure actually occurred, the cause of such exposure, and the means to prevent similar incidents from occurring.

10.3 Accidents and Injuries

In the event of an accident or injury, measures will be taken to assist those who have been injured or exposed and to protect others from hazards. If an individual is transported to a hospital or doctor, a copy of the HASP will accompany the individual.

The SHSO will be notified and respond according to the severity of the incident. The SHSO will investigate the incident and prepare a signed and dated report documenting the investigation. An exposure-incident report will also be completed by the SHSO and the exposed individual. The form will be filed with the employee's medical and safety records to serve as documentation of the incident and the actions taken.

10.4 Communication

No special hand signals will be utilized within the work zone. Field personnel will utilize standard hand signals during the operation of heavy equipment.

10.5 Safe Refuge

Vehicles and on-site structures will serve as the immediate place of refuge in the event of an emergency. If evacuation from the area is necessary, project vehicles will be used to transport on-site personnel to safety.

10.6 Site Security and Control

Site security and control during emergencies, accidents and incidents will be monitored by the SHSO. The SHSO is responsible for limiting access to the site to authorized personnel and for oversight of reaction activities.

10.7 Emergency Evacuation

In case of an emergency, personnel will evacuate to the safe refuge identified by the SHSO, both for their personal safety and to prevent the hampering of response/rescue efforts.

10.8 Resuming Work

A determination that it is safe to return to work will be made by the SHSO and/or any personnel assisting in the emergency, e.g., fire department, police department, utility company, etc. No personnel will be allowed to return to the work areas until a full determination has been made by the above-identified personnel that all field activities can continue unobstructed. Such a determination will depend upon the nature of the emergency (e.g., downed power lines -- removal of all lines from the property; fire -- extinguished fire; injury -- safe transport of the injured party to a medical facility with either assurance of acceptable medical care present or completion of medical care; etc.). Before on-site work is resumed following an emergency, necessary emergency equipment will be recharged, refilled or replaced. Government agencies will be notified as appropriate. An Incident Report Form will be filed.

10.9 Fire Fighting Procedures

A fire extinguisher will be available in the work zone during on-site activities. This extinguisher is intended for small fires. When a fire cannot be controlled with the extinguisher, the area will be evacuated immediately. The SHSO will be responsible for directing notification, response and follow-up actions and for contacting ambulance and fire department personnel.

10.10 Emergency Decontamination Procedure

The extent of emergency decontamination depends on the severity of the injury or illness and the nature of the contamination. Whenever possible, minimum decontamination will consist of washing, rinsing and/or removal of contaminated outer clothing and equipment. If time does not permit decontamination, the person will be given first aid treatment and then wrapped in plastic or a blanket prior to transport.

10.11 Emergency Equipment

The SHSO will maintain a dedicated vehicle containing the following on-site equipment for safety and emergency response: fire extinguisher; first-aid kit; and, extra copy of this HASP.

11.0 SPECIAL PRECAUTIONS AND PROCEDURES

The activities associated with this remediation may involve potential risks of exposure to both chemical and physical hazards. The potential for chemical exposure to hazardous or regulated substances will be significantly reduced through the use of monitoring, personal protective clothing, engineering controls, and implementation of safe work practices.

11.1 Heat/Cold Stress

Training in prevention of heat/cold stress will be provided as part of the site-specific training. The timing of this project is such that heat/cold stress may pose a threat to the health and safety of personnel. Work/rest regimens will be employed, as necessary, so that personnel do not suffer adverse effects from heat/cold stress. Special clothing and appropriate diet and fluid intake regimens will be recommended to personnel to further reduce this temperature-related hazard. Rest periods will be recommended in the event of high/low temperatures and/or humidity to counter the negative effects of heat/cold stress.

11.2 Heavy Equipment

Working in the vicinity of heavy equipment is the primary safety hazard at the site. Physical hazards in working near heavy construction equipment include the following: overhead hazards, slips/trip/falls, hand and foot injuries, moving part hazards, improper lifting/back injuries and noise. All workers will be properly trained in accordance with OSHA requirements (29 CFR 1910).

No workers will be permitted within any excavated areas without proper personal protective equipment (PPE), including, as warranted, any necessary Level C equipment (e.g., respirators and protective suits).

Air monitoring in excavation areas will be conducted for VOCs in accordance with Section 5.0.

11.3 Additional Safety Practices

The following are important safety precautions which will be enforced during the remedial activities.

- Medicine and alcohol can aggravate the effect of exposure to certain compounds. Controlled substances and alcoholic beverages will not be consumed during remedial activities. Consumption of prescribed drugs will only be at the discretion of a physician familiar with the person's work.
- Eating, drinking, chewing gum or tobacco, smoking, or other practices that increase the probability of hand-to-mouth transfer and ingestion of material is prohibited except in areas designated by the SHSO.
- Contact with potentially contaminated surfaces will be avoided whenever possible. Workers will not unnecessarily walk through puddles, mud or other discolored surfaces; kneel on the ground; or lean, sit, or place equipment on drums, containers, vehicles, or the ground.
- Personnel and equipment in the work areas will be minimized, consistent with effective site operations.
- Unsafe, unattended equipment will be identified by a "DANGER, DO NOT OPERATE" tag.
- Work areas for various operational activities will be established.

11.4 Daily Log Contents

The SHSO will establish a system appropriate to the site, the work and the work zones that will record, at a minimum, the following information:

- Personnel on the site (arrival and departure times) and their destination on the site;
- Incidents and unusual activities site such as (but not limited to) accidents, spills, breaches of security, injuries, equipment failures and weather-related problems;
- Changes to the HASP; and,
- Daily information, such as: changes to work and health and safety plans, work accomplished and the current site status, and monitoring results.

12.0 EMERGENCY INFORMATION

12.1 Emergency Contact Information

The following table presents emergency contact information. This table should be copied and freely distributed and/or posted at the site to ensure ready access.

Emergency Contact Information

Emergency Agencies	Phone Numbers
EMERGENCY	**911**
HOSPITAL St. John's Episcopal Hospital 327 Beach 19th Street Far Rockaway	**(718) 869-7000 or 911**
POLICE NYPD – 101st Precinct 16-12 Mott Avenue Far Rockaway	**(718) 868-3400 or 911**
FIRE	**911**
City Hall	**311**
Water and Sewer Services	**311**
Site Health and Safety Officer, Richard Hooker, Gallagher Bassett Technical Services	(845) 452-1658

12.2 Directions to Hospital

Approximately 4 to 8 minutes travel time – 0.6 mile

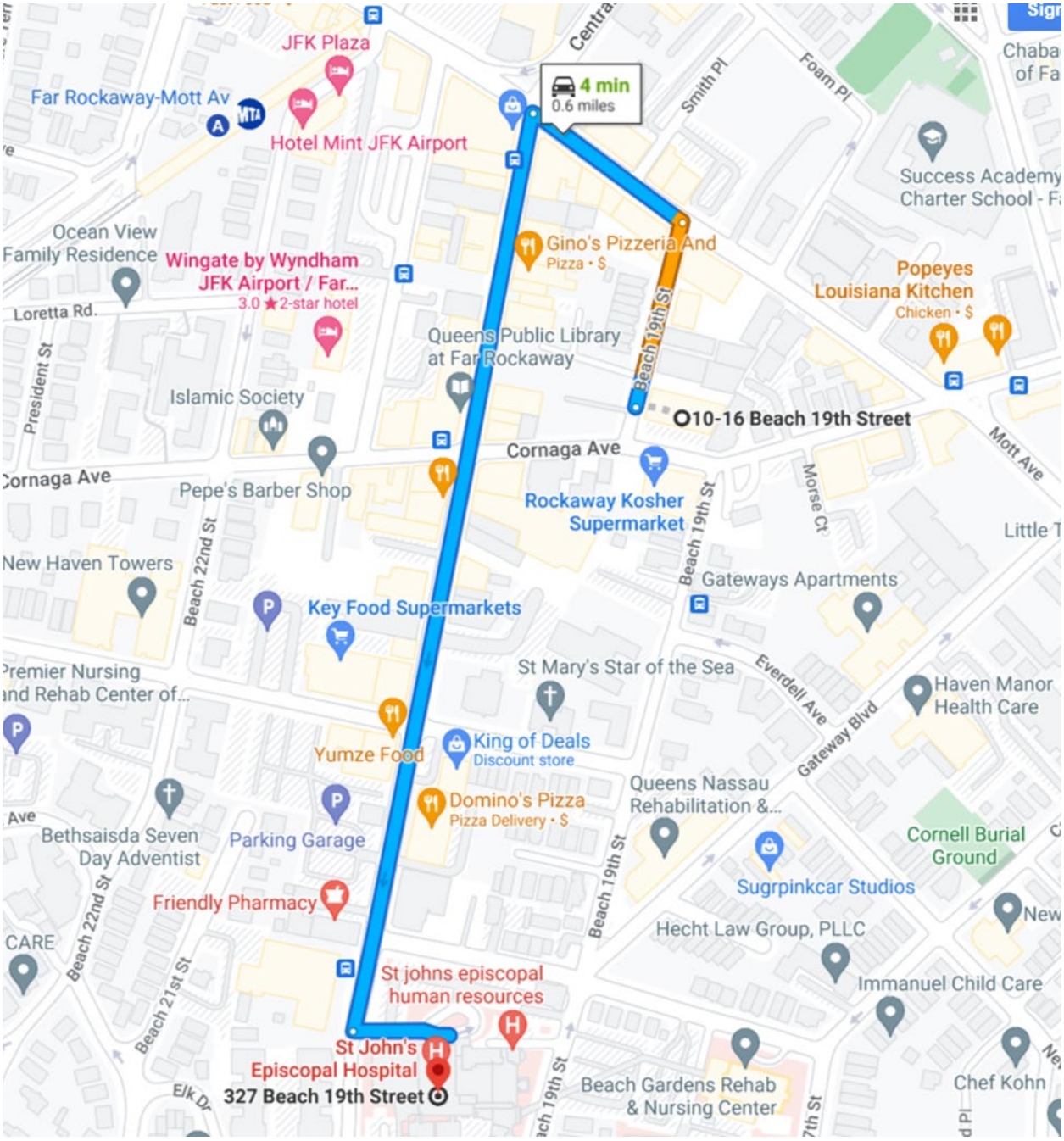
North on Beach 19th Street (400 feet)

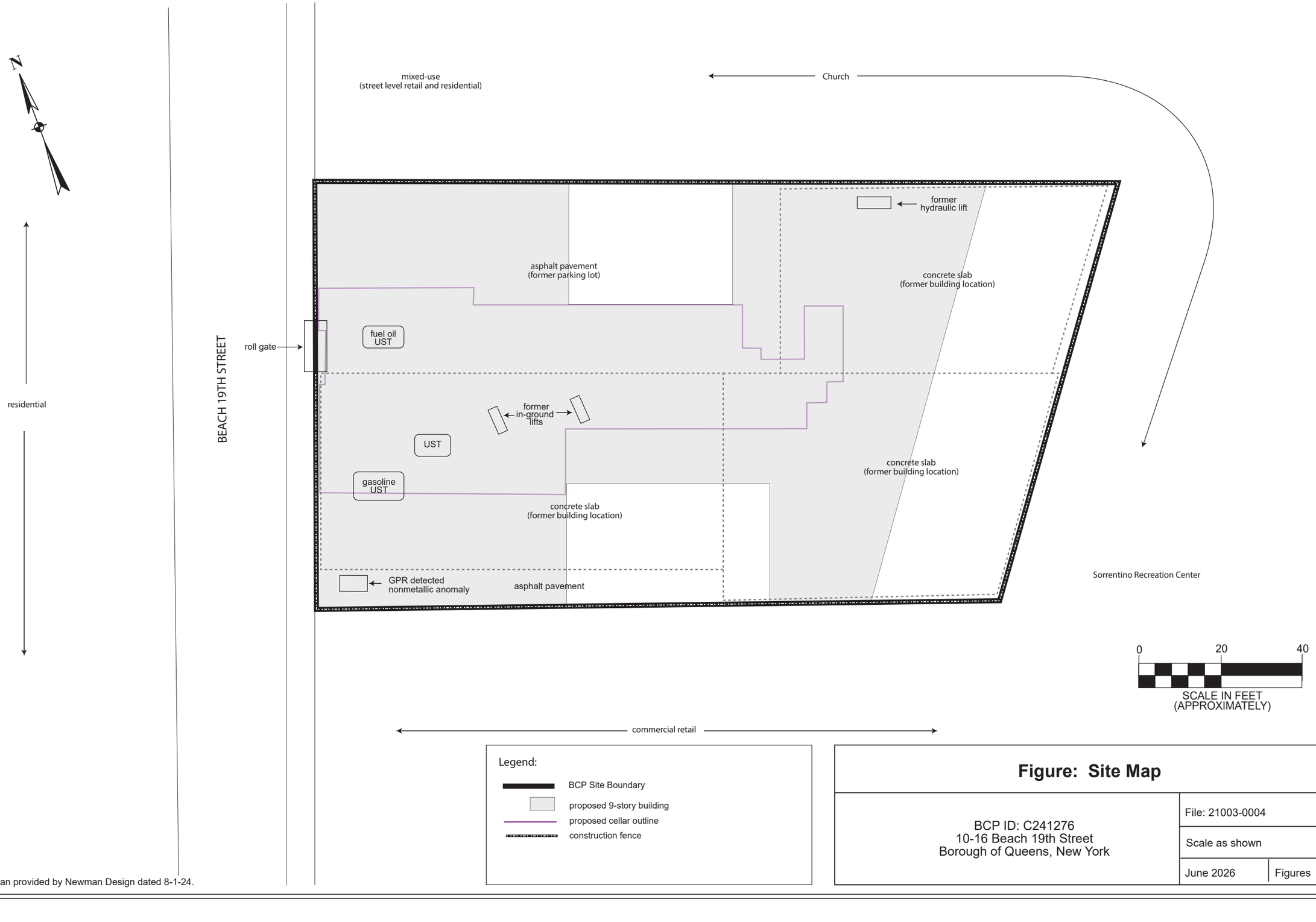
Left on Mott Avenue (384 feet)

Left on Beach 20th Street (0.4 mile)

Hospital on Left, follow signs to Emergency Room

12.3 Map to Hospital





Site Plan provided by Newman Design dated 8-1-24.

Legend:

- BCP Site Boundary
- proposed 9-story building
- proposed cellar outline
- construction fence

Figure: Site Map

BCP ID: C241276
10-16 Beach 19th Street
Borough of Queens, New York

File: 21003-0004

Scale as shown

June 2026 | Figures

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

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

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

APPENDIX E – Community Air Monitoring Plan

BELLUCCI ENGINEERING, PLLC

COMMUNITY AIR MONITORING PLAN

10-16 Beach 19th Street

Queens, New York

NYSDEC BCP Site: C241276

June 2026

Bellucci Engineering, PLLC
West Hartford, Connecticut

BELLUCCI ENGINEERING, PLLC

COMMUNITY AIR MONITORING PLAN

June 2026

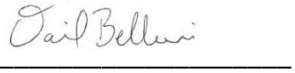
Prepared By:

Bellucci Engineering, PLLC
West Hartford, Connecticut

Prepared For:

1016 Beach 19 Partners LLC
c/o Foxy Management
500 Trinity Avenue
Bronx, New York

The undersigned have reviewed this Community Air Monitoring Plan and certify to 1016 Beach 19 Partners LLC and to the New York State Department of Environmental Conservation that the information provided in this document is accurate as of the date of issuance by this office.



Daniel Bellucci, PE
Bellucci Engineering, PLLC

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Site Map

NYSDOH Generic CAMP

1.0 INTRODUCTION

1.1 Purpose

This Community Air Monitoring Plan (CAMP) has been developed to provide the requirements and general procedures to be followed by the Remedial Engineer (RE; Bellucci Engineering, PLLC), Qualified Environmental Professional (QEP), and on-site subcontractors while performing remediation services at the 10-16 Beach 19th Street (site) located in Queens, New York (Brownfield Cleanup Program ID: C241276).

This CAMP requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area and is intended to provide protection for the downwind receptors, including off-site properties and on-site workers not directly involved in the handling of contaminated materials. Implementation of the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The Project Manager or Site Health and Safety Officer (SHSO) may impose other requirements necessary for safe site operations and protection of potential receptors.

1.2 Site Location and Description

The site is defined as the property located at 10-16 Beach 19th Street, Far Rockaway, Queens, New York. A site map is included as an attachment to this CAMP.

1.3 Work Activities

Environmental management activities are detailed in the NYSDEC-approved Remedial Action Work Plan (RAWP; June 2026). The specific tasks detailed in the RAWP are wholly incorporated by reference into this CAMP. The RAWP describes the tasks required to remediate environmental contamination at the site.

1.4 Health and Safety Hazards

The potential exists for the presence of elevated levels of: semi-volatile organic compounds (SVOCs) and metals in on-site soils; SVOCs, metals, and per- and polyfluoroalkyl substances (PFAS) in groundwater; and VOCs in soil vapor.

The possibility exists for on-site personnel to have contact with contaminated soils and/or vapor during site remediation work; it is not anticipated that groundwater will be encountered during site development activities. Contact with contaminated substances may present a skin contact, inhalation and/or ingestion hazard.

2.0 AIR MONITORING

2.1 General Requirements

The implementation of the CAMP will document the presence or absence of VOCs and dust in the air surrounding the work zone, which may migrate off-site due to fieldwork activities. Monitoring will be conducted at all times that fieldwork activities which are likely to generate emissions are occurring. This plan provides guidance on the need for implementing more stringent dust and emission controls based on air quality data.

2.1.1 Continuous Monitoring

Real-time air monitoring for VOCs and particulate levels at the perimeter of the exclusion zone or work area will be performed according to the NYSDOH Generic Community Air Monitoring Plan (provided as an Attachment), and in accordance with the special requirements presented below, during all ground intrusive activities and any other fieldwork that is reasonably likely to generate significant dust or vapors from known or suspected contaminated soils. 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.

2.1.2 Periodic Monitoring

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.

2.1.3 Health and Safety

Photoionization detector (PID) and dust readings consistently in excess of CAMP limits will be used as an indication of the need to initiate personnel monitoring, increase worker protective measures, and/or modify or cease on-site operations in order to mitigate off-site community exposure. PID readings that consistently exceed background in the breathing zone (during any proposed tasks) will necessitate moving away from the source or implementing a higher level of personal protective equipment (concentrations of VOCs in the air are expected to be below the OSHA Permissible Exposure Limits [PELs]).

2.1.4 VOC Monitoring, Response Levels, and Actions

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. 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 occupied 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 shut down.

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

2.1.5 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 (µg/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 and work will continue provided that downwind PM-10 particulate levels do not exceed 150 µg/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 µg/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 µg/m^3 of the upwind level and in preventing visible dust migration.

All readings will be recorded and will be available for NYSDEC personnel to review.

2.2 Special Requirements

2.2.1 Work within 20 Feet of Potential Receptors

When work areas are within 20 feet of potentially exposed populations or occupied structures, the continuous monitoring locations for VOCs and particulates must reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. The use of engineering controls such as vapor/dust barriers, temporary negative pressure enclosures, or special ventilation devices should be considered to prevent exposures related to the work activities and to control dust and odors. Consideration should be given to implementing the planned activities when potentially exposed populations are at a minimum, such as during weekends or evening hours in non-residential settings.

If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed 1 ppm, monitoring should occur within the occupied structure(s). Depending upon the nature of contamination, chemical-specific colorimetric tubes of sufficient sensitivity may be necessary for comparing the exposure point concentrations with appropriate pre-determined response levels (response actions should also be predetermined). Background readings in the occupied spaces must be taken and discussed with NYSDOH prior to commencement of the work.

If total particulate concentrations opposite the walls of occupied structures or next to intake vents exceed 150 mcg/m^3, work activities should be suspended until controls are implemented and are successful in reducing the total particulate concentration to 150 mcg/m^3 or less at the monitoring point.

Depending upon the nature of contamination and remedial activities, other parameters (e.g., explosivity, oxygen, hydrogen sulfide, and carbon monoxide) may also need to be monitored. Response levels and actions should be pre-determined, as necessary, for each site.

2.2.2 Special Requirements for Indoor Work

Unless a self-contained, negative-pressure enclosure with proper emission controls will encompass the work area, all individuals not directly involved with the planned work must be absent from the room in which the work will occur. Monitoring requirements shall be as stated above under Section 2.2.1, except that in this instance "nearby/occupied structures" would be adjacent occupied rooms. Additionally, the location of all exhaust vents in the room and their discharge points, as well as potential vapor pathways (openings, conduits, etc.) relative to adjoining rooms, should be understood and the monitoring locations established accordingly. In these situations, it is strongly recommended that exhaust fans or other engineering controls be used to create negative air pressure within the work area during remedial activities. Additionally, it is strongly recommended that the planned work be implemented during hours (e.g., weekends or evenings) when building occupancy is at a minimum.

2.3 Contaminant Control

Mitigation measures may be required to control the generation of vapors and/or dust.

2.3.1 Dust Control

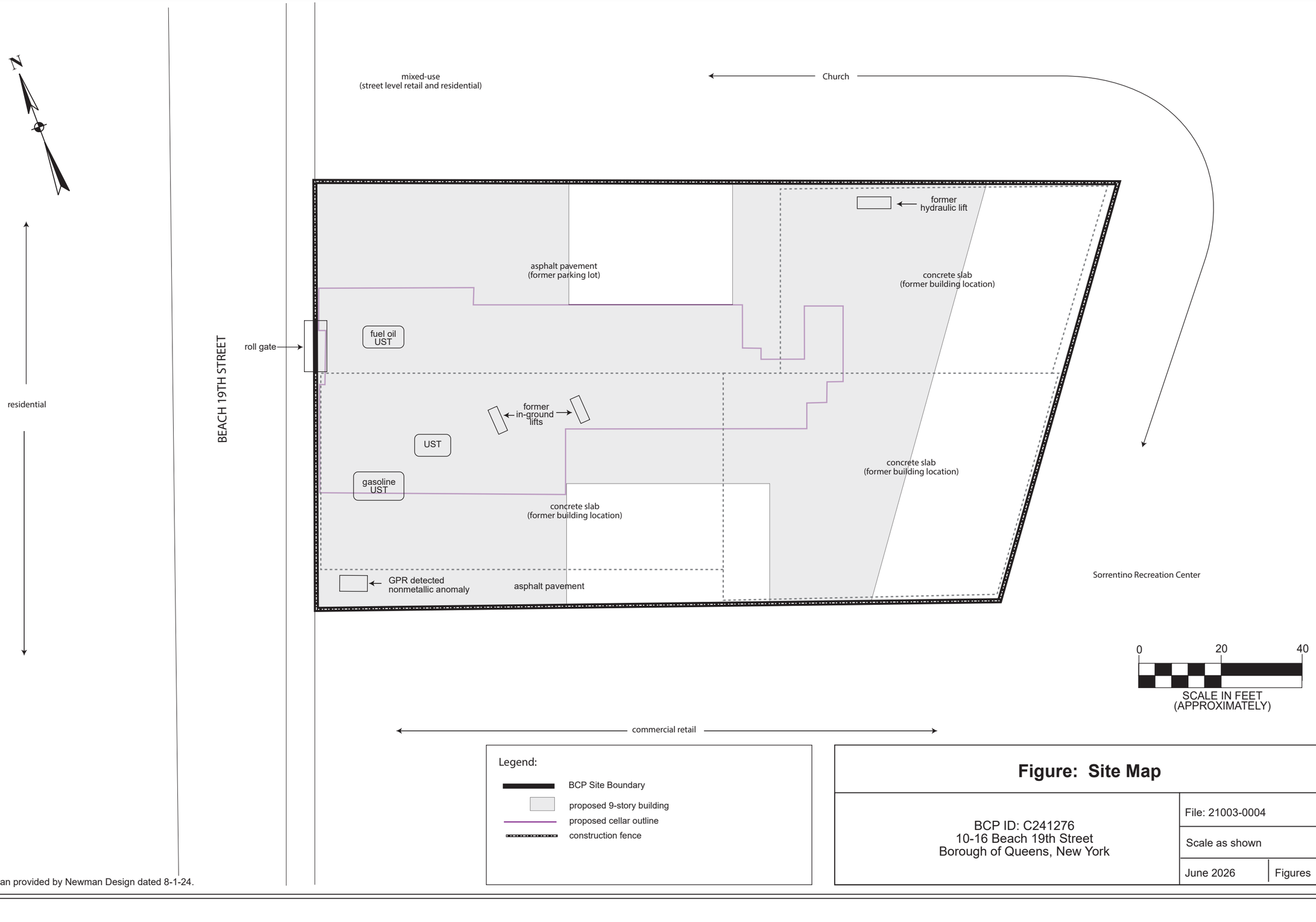
Mitigation measures may include reducing the surface area of contaminated soil being disturbed at one time, wetting heavy equipment and exposed soils to reduce fugitive dust, using covered stockpiles/trucks, or stopping excavation and/or other soil disturbing activities. Dust suppression will be conducted during construction activities that will disturb on-site soils and may include misting, reduction in soil movement, reducing vehicle speeds, or cessation of excavation.

2.3.2 Vapor Control

Mitigation measures include all controls used for dust suppression, as well as specific techniques for reducing releases of vapors, such as spraying commercial odor control products (e.g., BioSolve) or limiting work to cooler or less windy times of day.

3.0 QUALITY ASSURANCE

All instruments will be properly calibrated before the start of fieldwork, with periodic calibration checks as necessary. All equipment will be operated in accordance with the manufacturer's recommendations and the operator's manual. The fieldwork manager will review all data and take appropriate actions based on the requirements in Section 2 of this CAMP. A record of all calibration events, and any unusual occurrence that affect CAMP data, will be recorded in the project field logbook. Instrument calibration shall be documented in the designated field logbook. Exceedances of action levels observed during performance of the CAMP will be reported to the NYSDEC Project Manager and included in the Daily Report.



Site Plan provided by Newman Design dated 8-1-24.

Legend:

- BCP Site Boundary
- proposed 9-story building
- proposed cellar outline
- construction fence

Figure: Site Map

BCP ID: C241276
10-16 Beach 19th Street
Borough of Queens, New York

File: 21003-0004

Scale as shown

June 2026 | Figures

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

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3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

APPENDIX F – Quality Assurance Project Plan

BELLUCCI ENGINEERING, PLLC

SITE REMEDIATION
QUALITY ASSURANCE PROJECT PLAN

10-16 Beach 19th Street

Far Rockaway, Queens, New York

NYSDEC BCP Site: C241276

June 2026

Bellucci Engineering, PLLC
West Hartford, Connecticut

BELLUCCI ENGINEERING, PLLC

SITE REMEDIATION
QUALITY ASSURANCE PROJECT PLAN

June 2026

Prepared By:

Bellucci Engineering, PLLC
West Hartford, Connecticut

Prepared For:

1016 Beach 19 Partners LLC
c/o Foxy Management
500 Trinity Avenue, Bronx, New York

The undersigned has reviewed this Site Remediation Quality Assurance Project Plan and certifies to 1016 Beach 19 Partners LLC and to the New York State Department of Environmental Conservation that the information provided in this document is accurate as of the date of issuance by this office.



_____

Daniel Bellucci, PE
Bellucci Engineering, PLLC

BELLUCCI ENGINEERING, PLLC

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C Soil Cleanup Objectives
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E Laboratory Documents

1.0 PROJECT MANAGEMENT

1.1 Project/Task Organization

Major participants in the project are shown below along with their specific responsibilities and authorities. Resumes for the Remedial Engineer, technical staff, and the Data Validator are provided in Attachment D this Quality Assurance Project Plan (QAPP).

Erick Bower New York State Department of Environmental Conservation (NYSDEC)

Erick Bower is the project manager for the NYSDEC, responsible for review and approval of all project submittals.

Daniel Bellucci, PE Bellucci Engineering, PLLC

Daniel Bellucci, PE is the NYS registered professional engineer serving as the Remedial Engineer for the project, who has contracted directly with 10-16 Beach 19th Street LLC (the Volunteer) to provide all engineering services under the BCP, and has primary direct responsibility for implementation of the remedial program.

Erick Salazar, CHMM Project Manager, Gallagher Bassett Technical Services (GBTS)

Erick Salazar, CHMM is the Qualified Environmental Professional (QEP) for the project, responsible for overview of all project activities, including completion of all on-site fieldwork, collection of all samples, completion of the field log, and chains of custody. Mr. Salazar will act as the On-site Coordinator (OSC) has authority over all GBTS personnel and subcontractors and will be responsible for final review and approval of all project submittals prior to submission to the NYSDEC.

Scott Spitzer Technical Director, Environmental Consulting, GBTS

Scott Spitzer will be the Project Manager, responsible for coordinating all project activities, reviewing all project documents, and ensuring that project plans are followed.

Richard Hooker Quality Assurance Officer (QAO), GBTS

Richard Hooker, PhD will be responsible for reviewing all sampling procedures and certifying that the data was collected and analyzed using the appropriate procedures and will assist in the development of the sampling and analytical portion of a site-specific quality assurance project plan (QAPP).

Laboratory York Analytical Laboratories

York Analytical Laboratories, will be responsible for analysis of samples, and is New York State Department of Health (NYSDOH) Environmental Laboratory Approved Program (ELAP) certified in the appropriate categories, including per- and polyfluoroalkyl substances.

Subcontractors *To be determined*

Subcontractors will be responsible for the operation of special equipment and providing technical assistance as needed.

1.2 Principal Data Users

The principal users of the generated data in this project are listed below.

1. Residents of Far Rockaway, especially those residing in the vicinity of the site
2. 1016 Beach 19 Partners LLC (the Volunteer)
3. NYSDEC

1.3 Problem Definition/Background

The Site is being remediated under the NYSDEC Brownfields Cleanup Program (BCP ID: C241276) to address documented contamination in site media. The Remedial Investigation Report for the site documented the presence of weathered petroleum in soil near the groundwater interface, poor-quality fill soils and on-site groundwater containing elevated levels of metals and polycyclic aromatic hydrocarbons (PAHs), groundwater impacts by per- and polyfluoroalkyl substances (PFAS), and volatile organic compounds (VOCs) in soil vapor.

1.4 Project/Task Description

The project will meet its objective through compliance with applicable requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, and with this QAPP. Proposed remedial actions include collection of confirmatory endpoint soil samples from excavations, and potentially documentation groundwater and/or soil vapor samples.

1.5 Quality Objectives and Criteria

The data collected in this project will be used for the following purposes:

- To document post-remediation site environmental conditions.

In order to meet data quality objectives of precision, accuracy, representation, comparability, and completeness the following actions will be implemented:

- All media sampling will be conducted in accordance with the NYSDEC-approved Remedial Action Work Plan (RAWP) and QAPP Sections 2 and 3.
- Final data generated during the remedial action will be submitted for review by a third, independent party (see Section 3.2.1, below).

Prior to field activities, the QEP, Project Manager, and the OSC will review the RAWP to ensure that the data quality objectives of precision, accuracy, representation, comparability, and completeness will be met during the field activities.

At the completion of field activities, the Project Manager will review field logs and chains of custody to ensure that field activities met the intent of the RIWP. If a problem is identified, the Project Manager and the QAO will meet to determine any necessary corrective measures to meet the data quality objectives.

1.6 Documents and Records

Electronic and paper copies of all fieldwork observations and measurements will be retained by the Remedial Engineer and QEP, which will be provided in the Final Engineering Report (FER).

2.0 SAMPLING AND ANALYSIS PLAN

Sample collection, handling, and laboratory analysis is summarized below. A Fieldwork Map indicating Site features and planned fieldwork locations is provided as Attachment A.

2.1 Sampling Overview

Confirmatory endpoint soil samples will be collected following excavation of contaminated soil. Contingency media samples (soil, groundwater and/or soil vapor) may be collected based on the conditions encountered during remedial construction.

2.2 Fieldwork and Sampling Methodology

All fieldwork activities, including collection and handling of media samples, will be in accordance with the Standard Operating Procedures (SOPs) provided in Attachment B, including specific guidelines for PFAS, which will be strictly followed by all field and laboratory personnel. Basic SOP components are summarized below.

2.2.1 General Fieldwork

The OSC will be responsible for compliance with the SOPs, including:

- Documentation of all fieldwork activities in logbooks for inclusion in final reports;
- Assessment of media characteristics (soil type, presence or absence of foreign materials, field indications of contamination), and instrument readings using properly calibrated and operated precision instruments;
- Identification of materials requiring special handling (media that may contain elevated concentrations of contaminants or is grossly contaminated, hazardous materials, etc.) and ensuring proper secure on-site storage, pending characterization and disposition;
- Ensuring that unforeseen environmental conditions are managed in accordance with applicable federal and state regulations;
- Sample collection, including procedures to minimize potential cross-contamination; and,
- Implementation of decontamination procedures.

Sample collection and laboratory analysis for PFAS will comply with current NYSDEC guidance (*Sampling, Analysis, and Assessment of Per-and Polyfluoroalkyl Substances [PFAS] Under NYSDEC's Part 375 Remedial Programs*, April 2023), provided in Attachment B (SOPs), which includes a target list of PFAS compounds (see also Section 2.4, Analytical Methods).

Guidelines for sampling of soil and/or groundwater for PFAS include the following (detailed protocols, including lists of prohibited behaviors and materials, are provided in the SOP):

- Sampling for PFAS will be conducted prior to sampling for other analytes, as practicable, to minimize cross contamination from sample containers utilized for other methods;
- Sampling personnel will comply with specific prohibitions in regard to field equipment, PPE, rain gear, personal clothing and body-care, food, etc.;
- Sample coolers will be held at low temperature using only water ice (plastic freezer packs are prohibited);
- Decontamination protocols specific to PFAS will be followed, including use of "PFAS free" water and approved cleaning agents (Liquinox is prohibited); and,
- Compliance with laboratory requirements for sampling containers, field blanks, etc. (laboratory fieldwork SOPs for PFAS are included in Attachment B).

2.2.2 Soil Sampling

It is anticipated that approximately 40 confirmatory samples will be collected from excavation floors and walls (the final number will be determined in consultation with NYSDEC). Samples will be collected from remaining soil at excavation areas using hand-held equipment or may be manually collected directly from exposed soil or the sampling instrument using dedicated disposable latex gloves. Soil sampling for VOCs will follow USEPA Method 5035 protocols, using disposable 5-gram plastic syringes to place material into laboratory-supplied glass vials (prepared with stirs bars and appropriate preservatives).

2.2.3 Soil Vapor Sampling

Soil vapor sampling, if required, will be in accordance with applicable NYSDOH guidance, including use of a tracer gas to confirm adequate surface seals. Purge rates will not exceed 0.2 liters per minute. For this project, soil vapor samples will be collected over a two-hour period (rate not exceeding 0.2 liters per minute) into individual laboratory-certified clean Summa canisters equipped with two-hour flow regulators.

2.2.4 Other Materials

Any non-soil solid materials requiring laboratory analysis will be placed into laboratory supplied glassware when possible or alternatively be placed into double locking plastic bags and then boxed in order to prevent a tear or other breach in the bags. Liquid samples from excavations, collection pits, or drums/tanks, etc., will be sampled using a dedicated disposal sampling device.

Any required sampling for other media will be in compliance with fieldwork protocols specified in the RAWP.

2.3 Sample Handling and Custody

2.3.1 Sample Containers

The following laboratory-supplied containers will be used for sample collection (as applicable):

Media	Analyte Class	Collection Container (subject to laboratory requirements)	Preservation
Soil	PFAS	1, 250-ml HDPE plastic (fill halfway)	6° C
Soil	VOCs	Laboratory prepared 5035 VOA kit, (4, 40-ml glass vials)	Method 5035
Soil	SVOCs, metals, pesticides, herbicides, PCBs, cyanide	1, 8-oz. glass jar	4° C
Soil	PFAS MS/MSD	1, 250-ml HDPE plastic (fill halfway), (may use soil from a sample container)	6° C
Soil	All other MS/MSD	additional 8-oz. glass jar	4° C
Water	PFAS	2, 250-ml HDPE plastic (fill to neck)	6° C
Water	VOCs	4, 40-ml prepared glass vials	4° C, HCl
Water	SVOCs, pesticides, herbicides, PCBs	1-liter amber glass (jar quantity per laboratory requirements)	4° C
Water	Metals - total	1, 500-ml HDPE plastic	4° C
Water	Metals - dissolved	1, 500-ml HDPE plastic	4° C, HNO_3
Water	Cyanide	1, 500-ml HDPE plastic	4° C, NaOH
Water	Field blank (PFAS)	1, 250-ml HDPE plastic (fill to neck)	4° C
Water	Trip blank (VOCs)	3, 40-ml prepared glass vials	4° C, HCl
Water	Field blank (other analytes)	As per sample collection requirements	See above
Vapor	VOCs	1, 6-liter Summa canister (or equivalent)	none

2.3.2 Sampling Frequency

Soil samples will be analyzed for NYSDEC Part 375-6.8 parameters, including USEPA Target Compound List (TCL) VOCs and semi-volatile organic compounds (SVOCs) plus 30 tentatively identified compounds (TICs), USEPA Target Analyte List (TAL) metals, Cr^{+6}, polychlorinated biphenyls (PCBs), pesticides, herbicides and cyanide, as well as 1,4-dioxane and PFAS in accordance with the most current NYSDEC guidance. Sample analysis may be modified in consultation with the NYSDEC Project Manager based on previous sampling results.

Additional soil analysis may be performed based repository requirements for waste characterization prior to off-site disposal.

Sampling requirements and USEPA Methods are outlined below.

Media /QC Parameter	Number of Samples [a]	Analytes (USEPA Method) [b, c]
Soil, full parameters as required	*Estimated 40 (final number TBD)*	PFAS: NYSDEC target list (1633) TCL: VOCs +10 and SVOCs +20 (8260C/8270D) TAL: total metals (6010D and 7473); chromium^{+6} (7196A); cyanide (9010C) Other: pesticides (8081); herbicides (8151A); PCBs (8082)
Groundwater; Soil Vapor	*Contingency, only*	Groundwater as per soil; Vapor (VOCs TO-15)
Trip Blank (VOCs)	1 per sample cooler (each day of sampling)	TCL VOCs +10 (8260)
Field Blank (PFAS)	1 per sample day (serves as trip blank)	PFAS NYSDEC target list (1633)
Equipment Blank (PFAS)	1 per sampling day (non-dedicated)	PFAS NYSDEC target list (1633)
Field Blank (other)	1 for every 20 samples (non-dedicated)	As per sample collection requirements
Duplicates, MS/MSD	1 for every 20 samples (minimum 1/week)	As per sample collection requirements; PFAS soil MS/MSD may be from same container as sample

Notes

a Equipment blanks (when required) to be collected at a minimum of one per day for each matrix.

b PFAS will be analyzed using methodologies based on EPA Method 1633; additional laboratory methods may include Synthetic Precipitation Leaching Procedure (SPLP, by 1312, and/or Total Oxidizable Precursor Assay (TOP Assay); 1,4-dioxane by 8270 SIM

2.3.3 Sample Custody

Samples will be handled by the OSC and kept at cold temperatures (per Table 2.3.1) as warranted.

Upon the completion of each day of sample collection activities, all samples will be shipped via either courier or overnight delivery (per laboratory requirements) to a NYSDOH ELAP certified laboratory under proper chain of custody.

Laboratory personnel will record cooler temperature upon receipt and analyze the samples prior to the expiration of the hold times as specified in the NYSDEC Analytical Services Protocols (ASP).

2.4 Analytical Methods

Media samples will be analyzed as indicated in Section 2.3.2. Analytical methods for the samples will be implemented as follows:

Matrix	Sample Analysis (Holding Time)	USEPA Analytical Method
Soil	PFAS (28 days)	1633 (reporting limit 0.5 µg/kg)
Soil	TCL VOCs+10 (14 days)	8260C; 8270 for 1,4-dioxane (1,4-dioxane reporting limit 0.1 mg/kg) [a]
Soil	TCL SVOCs+20 (14 days)	8270B

Matrix	Sample Analysis (Holding Time)	USEPA Analytical Method
Soil	TAL metals (180 days; mercury 28 days)	6010C/7471B
Soil	cyanide (14 days)	9010C
Soil	pesticides/PCBs/herbicides (14 days [b])	8081A/8082/8151A
Water	PFAS (28 days)	1633 (reporting limit 2 ng/L)
Water	TCL VOCs+10 (14 days)	8260C; 8270 SIM for 1,4-dioxane (1,4-dioxane reporting limit 0.35 µg/L) [a]
Water	TCL SVOCs+20 (7 days [b])	8270B
Water	TAL metals (180 days; mercury 28 days)	6010C/7471B
Water	Cyanide (14 days)	9010C
Water	pesticides/PCBs/herbicides (7 days [b])	8081A/8082/8151A
Vapor	VOCs (30 days)	TO-15
a Laboratory will meet required reporting limits running standard USEPA Method 8270 b Days for extraction, 40 days after extraction for laboratory analysis		

NYSDEC PFAS target compounds are shown below. Laboratory reporting limits for PFOA and PFOS should not exceed 0.50 µg/kg for soil and 2.00 ng/l for water (reporting limits for all other PFAS in soil and water should be as close to these limits as possible). The NYSDEC PFAS target list is shown below, and laboratory SOPs for collection analysis of PFAS are provided in Attachment E.

Group	Chemical Name	Abbreviation	CAS Number
perfluoroalkyl sulfonic acids	perfluorobutanesulfonic acid	PFBS	375-73-5
	perfluoropentanesulfonic acid	PFPeS	2706-91-4
	perfluorohexanesulfonic acid	PFHxS	355-46-4
	perfluoroheptanesulfonic acid	PFHpS	375-92-8
	perfluorooctanesulfonic acid	PFOS	1763-23-1
	perfluorononanesulfonic acid	PFNS	68259-12-1
	perfluorodecanesulfonic acid	PFDS	335-77-3
	perfluorododecanesulfonic acid	PFDoS	79780-39-5
perfluoroalkyl carboxylic acids	perfluorobutanoic acid	PFBA	375-22-4
	perfluoropentanoic acid	PFPeA	2706-90-3
	perfluorohexanoic acid	PFHxA	307-24-4
	perfluoroheptanoic acid	PFHpA	375-85-9
perfluoroalkyl carboxylic acids	perfluorooctanoic acid	PFOA	335-67-1
	perfluorononanoic acid	PFNA	375-95-1
	perfluorodecanoic acid	PFDA	335-76-2
	perfluoroundecanoic acid	PFUnA	2058-94-8
	perfluorododecanoic acid	PFDoA	307-55-1
	perfluorotridecanoic acid	PFTrDA	72629-94-8
	perfluorotetradecanoic acid	PFTeDA	376-06-7
per-and polyfluoroether carboxylic acids	hexafluoropropylene oxide dimer acid	HFPO-DA	13252-13-6
	4,8-dioxa-3h-perfluorononanoic acid	ADONA	919005-14-4
	perfluoro-3-methoxypropanoic acid	PFMPA	377-73-1
	perfluoro-4-methoxybutanoic acid	PFMBA	863090-89-5
	nonafluoro-3,6-dioxaheptanoic acid	NFDHA	151772-58-6
fluorotelomer sulfonic acids	4:2 fluorotelomer sulfonic acid	4:2-FTS	757124-72-4
	6:2 fluorotelomer sulfonic acid	6:2-FTS	27619-97-2
	8:2 fluorotelomer sulfonic acid	8:2-FTS	39108-34-4
fluorotelomer carboxylic acids	3:3 fluorotelomer carboxylic acid	3:3 FTCA	356-02-5
	5:3 fluorotelomer carboxylic acid	5:3 FTCA	914637-49-3
	7:3 fluorotelomer carboxylic acid	7:3 FTCA	812-70-4

Group	Chemical Name	Abbreviation	CAS Number
perfluorooctane sulfonamides	perfluorooctane sulfonamide	PFOSA	754-91-6
	n-methylperfluorooctane sulfonamide	NMeFOSA	31506-32-8
	n-ethylperfluorooctane sulfonamide	NEtFOSA	4151-50-2
perfluorooctane sulfonamidoacetic acids	n-methylperfluorooctane sulfonamidoacetic acid	N-MeFOSAA	2355-31-9
	n-ethylperfluorooctane sulfonamidoacetic acid	N-EtFOSAA	2991-50-6
perfluorooctane sulfonamide ethanols	n-methylperfluorooctane sulfonamidoethanol	MeFOSE	24448-09-7
	n-ethylperfluorooctane sulfonamidoethanol	EtFOSE	1691-99-2
ether sulfonic acids	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	9Cl-PF3ONS	756426-58-1
	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS	763051-92-9
	perfluoro(2-ethoxyethane) sulfonic acid	PFEESA	113507-82-7

2.5 Quality Control

Accuracy and precision will be determined by repeated analysis of laboratory standards, and matrix effects and recovery will be determined through use of spiked samples. The laboratory will run standards, blanks, and spiked samples during sample analysis.

Duplicate sampling (for all parameters), and matrix spike (MS)/matrix spike duplicate (MSD) analyses, will be performed in accordance with Section 2.3.2. For each day of sampling, a trip blank will be included with each sample cooler and be analyzed for PFAS or VOCs, as applicable.

Samples will be identified using a unique ID number. This ID will be recorded on the sampling log and/or field record and the sampling container (samples for each day of fieldwork will be assigned to a Sample Delivery Group [SDG] by the laboratory).

In accordance with current best fieldwork practices, permanent marker will not be utilized to label samples planned for analysis for PFAS.

Samples for each day of fieldwork will be shipped via courier to the laboratory under proper chain of custody procedures.

2.6 Quality Assurance

2.6.1 Instrument/Equipment, Testing, Inspection, and Maintenance

Field measurements will be conducted using monitoring equipment specialized for each task, including use of a PID during fieldwork to screen for volatile organic vapors.

All equipment will be properly stored (within buildings or construction trailers when not in use) and calibrated (as warranted) in accordance with the manufacturer's instructions (instrument malfunction is normally apparent during calibration).

In the event of malfunction, equipment will be cleaned and tested. Equipment testing, inspection, and maintenance will be the responsibility of the Project Manager and OSC. Any other equipment selected for field measurements will be similarly managed.

2.6.2 Inspection/Acceptance of Supplies and Consumables

All supplies and consumables will be inspected and tested (if necessary) by either the Project Manager or the OSC upon receipt.

The following supplies and consumables will be used for each sample:

- Laboratory-supplied sampling containers, as specified in Section 2.3.1
- Laboratory-supplied materials for PFAS sampling, including trip blanks and PFAS-free cooler
- Plastic tubing for groundwater and soil vapor sampling
- PFAS-free water for decontamination
- Disposable gloves (nitrile or equivalent)

2.6.3 Data Management

For the purpose of data management, the data can be divided into field and laboratory data.

Field data will be recorded at the time of measurement on written field logs. Laboratory data will be reviewed upon receipt and summarized in data summary tables. The NYSDEC electronic data deliverable format for the analytical data will be requested from the testing laboratory.

NYSDEC ASP Category B Data Deliverables will be requested from the testing laboratory and forwarded to an independent third-party data validator for the development of Data Usability Summary Report (DUSR).

3.0 DATA REVIEW, VALIDATION AND USABILITY

3.1 Field Measurements

If field instruments are determined to function correctly through calibration and measurements of standards, and if there are no inconsistencies between written records and data recorded in the meters, the data will be assumed to be valid and will be accepted as an indication of field conditions.

If instruments malfunction prior to field measurement, they will be restored to proper function prior to re-use. If they malfunction immediately after field measurements are taken, the measurements will be retaken as soon as possible. Inconsistencies between written records and recorded meter data will be resolved by re-testing the material, if possible. If re-testing is not possible, (i.e. the sample has been shipped to the laboratory), the inconsistency will be described in appropriate subsequent reporting, and the laboratory analysis will be utilized to classify the material.

All field data will be reviewed by the Project Manager for consistency and plausibility.

3.2 Laboratory Analysis

A NYSDOH ELAP-certified laboratory will provide a NYSDEC ASP Category B data package and NYSDEC Electronic Data Deliverable format for the determinative sample analyses.

3.3 Standards, Criteria and Guidance

The following Standards, Criteria, and Guidance (SCGs) are applicable for this Site:

SOIL

Soil results are compared to Soil Cleanup Objectives (SCOs) provided in 6 NYCRR Subpart 375 (updated 2025), Table 375-6.8(a) Unrestricted Use SCOs and 6.8(b) Restricted-Residential Use SCOs, and (as needed) Supplemental SCOs and/or Soil Cleanup Levels in NYSDEC CP-51 Soil Cleanup Guidance, Tables 1 to 3. SCOs are provided as Attachment C.

WATER

Water results are compared to NYSDEC Division of Water Ambient Water Quality Standards and Guidance Values (AWQS), provided in Technical and Operational Guidance Series 1.1.1.

VAPOR

The State of New York does not have any SCG for volatile chemicals in subsurface or sub-slab vapors. Laboratory results will be reviewed and evaluated in comparison to Site data as a whole, inclusive of an analysis of potential vapor intrusion concerns, as warranted, in accordance with applicable current NYSDOH guidance.

3.4 Verification and Validation Methods

3.4.1 Verification Method

Laboratory data will go to the Project Manager for review and verification (determination of proper sampling and collection, and completeness of all field and laboratory logs). A DUSR will be prepared by a third, independent party. A current resume of the individual preparing the DUSR (indicating education and relevant experience) is provided in Attachment D.

3.4.2 Authority for Verification

Authority for verification, validation, and resolution of data issues will be distributed among the investigators. Authority to resolve issues regarding verification of field measurements will rest with the Project Manager and the QAO.

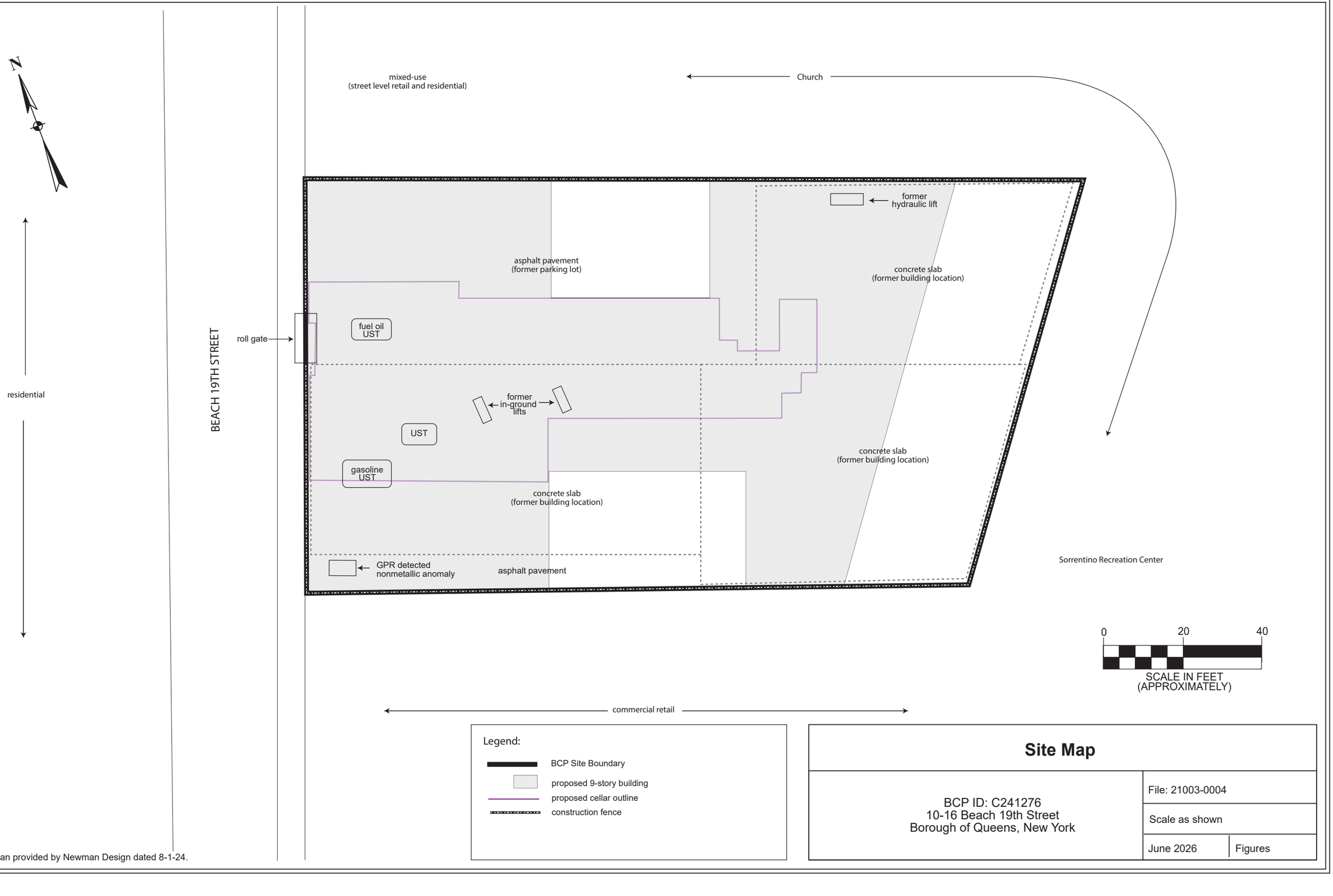
4.0 REPORTING REQUIREMENTS

Following review, validation, and verification, all data will be conveyed to users via a Final Engineering Report in accordance with the requirements of NYSDEC DER-10 Section 3.1.4.

The FER will summarize all data collected during implementation of the RIWP (and any additional work), and will include, at a minimum:

- Descriptions of fieldwork activities and observations;
- Summaries of laboratory analytical results from sampling events, described in the report text and provided in data summary tables, as well as DUSRs for all data;
- Characterization of contamination sources (including environmental fate and transport);
- A qualitative human exposure assessment;
- Accounts of any deviations from RIWP procedural requirements;
- Conclusions drawn from applicable, available data; and,
- A summary of required Green and Sustainable Remediation (GSR) metrics.

Attachment A: Figures



Site Plan provided by Newman Design dated 8-1-24.

Legend:

- BCP Site Boundary
- proposed 9-story building
- proposed cellar outline
- construction fence

Site Map

BCP ID: C241276
10-16 Beach 19th Street
Borough of Queens, New York

File: 21003-0004

Scale as shown

June 2026 | Figures

BELLUCCI ENGINEERING, PLLC

Attachment B: Fieldwork SOPs

BELLUCCI ENGINEERING, PLLC

STANDARD OPERATING PROCEDURES

Fieldwork Sampling
and
Decontamination

Updated June 2026

Bellucci Engineering, PLLC
West Hartford, Connecticut

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I. INTRODUCTION

This document provides Standard Operating Procedures (SOPs) for use by on-site personnel during fieldwork events that require the collection of soil, groundwater, soil vapor and/or air samples. General procedures are presented below; detailed protocols, as available, are provided in the supplemental documentation. Equipment checklists, forms, and calibration documents are maintained at all office locations. All SOPs and supporting documentation are periodically updated.

SOPs are intended to supplement other project-specific documentation, including work plans, sampling and analysis plans, health and safety plans, quality assurance project plans, and additional SOPs found in related documents.

II. RECORD KEEPING AND LOGBOOKS

A. Purpose and Scope

All activities related to fieldwork must be properly documented in accordance with the applicable Work Plan and QAPP. Documentation must be legible, organized, comprehensive, and complete. The primary record keeping methods are use of: field logbook; fieldwork forms (sign-in sheets, calibration logs, sampling records, chain-of-custody, etc); and photographic logs.

Field documentation generally must include project identification, date/times of fieldwork activities, the identification of the person/entity performing the work, and a description of the work being performed.

B. Field Logbook

The field logbook will act as the primary source of documentation for field activities. Only one logbook should be maintained for the fieldwork project (multiple supporting fieldwork data sheets, activity logs, etc., may be used to supplement recorded information, and may be referenced in the logbook).

It is the responsibility of the project manager and the field team leader to ensure that field logbook entries provide sufficient information for the completion of a detailed and accurate description of all field operations. Logbooks should be bound and entries made with indelible ink. All entries must be in English, written in non-cursive lettering, and be legible. The logbook should be stored in a Ziploc bag, as warranted by weather and/or fieldwork conditions, to prevent pages from getting wet or otherwise damaged. The logbook should be checked for completeness/quality control at the end of each day.

Field logbook entries shall be made in the field at the site, as close as possible to the actual observation, not at a later time or different location. Supplemental entries are allowable if properly identified. Logbook pages should be photographed or scanned daily

Record the following on the outside front cover:

- Project name/ID and Fieldwork Activity
- Date of first and last entries in the logbook (e.g. July 17–August 4, 2026)

- Sequential numbering if multiple logbooks are used (e.g., Vol. 1 of 2)
- Name and phone number of person responsible for the logbook
- Reserve and utilize the first page for a table of contents, and several pages at the end of the logbook for important notes not directly related to daily activities, such as contact information.

Daily entries should include:

- Appropriate header information on the first page of notes, including sequential page numbering, date information (yyyy-mm-dd), and fieldwork location/activity
- Weather summary (temperature, wind direction and speed, cloud cover, precipitation conditions)
- Site fieldwork personnel (including all contractors) and visitors, with and arrival/departure times
- Summary of relevant project communications with the client, regulators, or other site visitors
- Documentation of safety meeting, with general topics and attendees
- References to data collection forms
- Description of the fieldwork activities (generally chronological), including sampling methodology and start/stop times, with military time notation (e.g., 2:30 p.m. as 1430 hr)
- Map sketches with approximate scale and orientation (e.g., north arrow, building outline), with relevant notes regarding encountered field conditions
- Description of equipment used and any relevant calibration and/or maintenance information
- Changes/deviations from scope of work and/or fieldwork protocols and reason for the changes
- Problems, downtime, delays, unusual events and the proximate causes
- Applicable HASP and CAMP information, including upgrade or downgrade of PPE

A single line should be drawn through incorrect entries and the corrected entry written next to the original strikeout. Strikeouts are to be initialed and dated by the originator. A diagonal line should be drawn through unused space at the end of a page.

C. Fieldwork Forms

Pre-printed fieldwork forms should be utilized when practical, including any model forms provided in Work Plans, Site Management Plans, Quality Assurance Project Plans, and similar project documents.

D. Photographic Logs

Fieldwork should be documented through representative digital (JPEG or equivalent) photographs, in a quality and resolution that makes all relevant details readily apparent. The photographic log should fully document the site as a whole and all fieldwork elements including each contaminant source area.

III. FIELDWORK SAMPLING

Fieldwork sampling procedures are described below (model field logs are provided in Supplement A). Selection of field equipment will be based on anticipated site conditions (updated check-lists of equipment and supplies required for sampling activities are maintained at the local field office). All equipment operations will be in accordance with applicable operating manuals and specifications, and will be conducted (as needed) by an experienced subcontractor holding applicable permits/licenses. Decontamination procedures will be implemented as warranted during all fieldwork activities. Special requirements for PFAS sampling are noted in Section III.

A. Procedures to be Conducted Prior to Fieldwork

Prior to the initiation of any ground-intrusive fieldwork, a request for a complete utility markout of the fieldwork site will be submitted to an appropriate service, as required by state regulations. Confirmation of underground utility locations will be secured and a field check of the utility markout will be conducted prior to the extension of soil borings[1].

A Fieldwork Map and Work Plan, indicating sampling locations and objectives, will be prepared prior to fieldwork activities, and sampling locations will be confirmed and located prior to starting work.

B. General Fieldwork Methodology

At the start of the work day, all on-site personnel, including environmental subcontractors and observers, will be briefed on planned activities and the contents of the site-specific Health and Safety Plan (HASP). Independent field logs will be utilized to document relevant information, including arrival and departure times of on-site personnel, safety meetings, basic weather conditions, and detailed notes and drawings documenting all fieldwork activities and/or any other relevant events and conditions.

On-site personnel will be properly dressed for the intended activities[2] and the anticipated weather conditions, including use of personnel protective equipment in accordance with the HASP.

Sampling locations will be determined in the field, measured to the nearest 0.5-foot relative to a fixed on-site marker, and will be recorded in logbooks for inclusion in all final maps.

Media will be collected in accordance with the Quality Assurance Project Plan (QAPP) and in a manner consistent with NYSDEC and/or NYSDOH requirements, including protocols for handling and custody. New, dedicated disposable nitrile gloves will be worn at each sampling location, and will be changed frequently based on field conditions. Fieldwork personnel will assess media characteristics (e.g., soil type, presence of debris, indications of contamination, etc.) and record all observations in logbooks.

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[1] Markout requirements apply to any ground intrusive methodologies, including the extension of test pits.

[2] Special care is required when for sampling of PFAS; see Section V

On-site senior personnel will be responsible for: a) identifying any materials that require special handling, such as media that may contain high levels of contaminants or is grossly contaminated or likely to be hazardous; b) ensuring that identified materials are properly securely stored on-site (stockpiled on plastic and covered, or placed in approved containers), pending characterization and proper disposition; and, c) ensuring that unforeseen environmental conditions are managed in accordance with applicable federal and state regulations.

Sample collection from recovered media will be performed without unnecessary delay. Samples will be placed into labeled containers provided by the laboratory, stored in dedicated coolers kept at 4 (+/-2) °C and handled under proper chain of custody. All samples will be shipped to a NYSDOH ELAP certified laboratory via laboratory courier (either upon completion of each day of sample collection activities, or the following day after overnight storage in a dedicated sample refrigerator).

C. Extension of Soil Borings

Soil borings will be extended using either hand-held or mechanized equipment, based on site conditions and Work Plan requirements. Mechanized equipment includes using either direct push technology (DPT) or rotary methods, including hollow stem auger (HSA) and sonic drilling. The small size of DPT rigs allows for sampling in tight spaces and areas that are sensitive to the use of heavy equipment. DPT can be used in overburden soils where the soil texture allows for direct push of sampling equipment. A HSA or sonic rig will be utilized if significant subsurface obstructions (e.g., large cobbles, boulders, concrete, etc) are (or are expected to be) encountered.

Hand borings will be extended (as warranted) using manual DPT equipment (e.g., Geoprobe), which includes a collection barrel lined with disposable acetate sleeves, extension rods and a slide hammer. The barrel will collect samples from discreet intervals of 2 feet. Hand boring methods are generally restricted to shallow soil sampling (0 to 6’ below grade) and may be employed/attempted if access by mechanized equipment is not practical.

DPT will typically be utilized during the extension of borings in overburden soils. The DPT rig will be equipped with a macro-core sampling barrel (minimum diameter 4”) lined with disposable acetate sleeves. The barrel will collect samples from discreet intervals of either 4 or 5 feet. HSA rigs will use a continuous hollow stem auger with a split-spoon (collection interval of 2 feet) or other collection device. This system drives drill cuttings to the surface as drilling progresses, which will require management. Sonic drill rigs will utilize coring barrels of various lengths lined with plastic tubing.

Bore hole openings will be periodically screened with a photoionization detector (PID).

D. Installation and Development of Monitoring wells

Groundwater monitoring wells will be installed by the drilling subcontractor. Unless otherwise specified, monitoring wells will be constructed of two-inch PVC casing with a ten-foot length of 0.01-inch slotted PVC well screening across the water table. No glue will be used to thread the casing lengths. A minimum of 2 feet of screening will extend above the water table, with approximately 8 feet below the water level (depth to water will be inferred based on saturated soils encountered during installation, or from data from existing groundwater monitoring wells).

The annular space between the well screen and the borehole will be backfilled with clean silica sand to approximately two feet above the screen. A seal consisting of at least 12 inches of hydrated bentonite clay will be placed above the sand pack and the remaining annular space will be grouted with cement.

A locked cap with vent will be installed at the top of the PVC riser (well protection will be in accordance with the Work Plan, including use of secure "drive-over" metal cover or stick-up metal outer casing). A surveyor's transit level will be used to determine the elevation of the top of the PVC well riser, relative to a permanent on-site marker, for use in determining relative groundwater elevations. Well locations and relative elevations will be recorded in field logs and indicated on all fieldwork maps.

The wells will be developed one week following installation. The wells will be developed with a properly decontaminated mechanical pump and dedicated polyethylene tubing in order to clear fine-grained material that may have settled around the well screen and to enhance the natural hydraulic connection between the well screen and the surrounding soils. Well development will begin at the top of the screened interval to prevent clogging of the pump within the well casing. Well development will be discontinued when the discharge water is free of obvious sediment, turbidity is below 50 NTUs, and indicator parameters (e.g., dissolved oxygen, temperature, etc.) have stabilized. Upon completion, the pump assembly will be removed from the well while the pump is still running to avoid discharge of purged water back into the well. Development water will be securely stored on-site pending laboratory analysis.

E. Soil Sampling

General Methodology

Recovered sampling equipment will be placed on a clean surface (folding table, plastic sheeting, etc.) and opened (liners will be sliced with a clean razor knife). Recovered soils will be observed for potential contamination through observation and use of properly calibrated field instruments, e.g., PID. Samples will be collected directly from the sampling device. The volume of material collected will be sufficient for the required analyses and for reasonably anticipated potential additional analyses. Soil to be analyzed for volatile organic compounds (VOCs) will be collected following USEPA Method 5035 protocols, using laboratory sampling kits. Samples to be analyzed for parameters other than VOCs will be collected as either grab or composite samples, using disposable plastic trowels or properly decontaminated stainless steel instruments, or directly by the fieldwork technician using dedicated, fresh disposable nitrile gloves.

Sampling in Conformance with NYSDEC DER-10

Soil sampling will be conducted in accordance with the requirements of DER-10 (excerpted in Supplement B), including Sections 3.5 (Soil) and 3.9 (Area Specific Requirements). The number and location of typical required soil samples, consistent with DER-10 requirements, are provided in the table below (see DER-10 for situations not addressed in the table, e.g., tank piping, ecological resources, establishing background concentrations):

Soil Sample Type	Depth Interval	Notes
Surface	0 to 2 inches	Below vegetative cover; if only VOCs being analyzed or if vegetable/fruit garden, use 0 to 6 inches
Subsurface	In accordance with Work Plan	Samples should be collected continuously in discrete increments as grab samples prior to any consolidation of the sample; collect deeper samples when evidence of contamination
Aboveground storage tanks (ASTs)	Minimum of two surface soil samples	Collect from areas of suspect contamination; larger tanks at least one sample per 100 linear feet of tank perimeter, depth of at least 6 inches if VOCs were stored)
Underground storage tanks (USTs) and distribution systems	0 to 2 feet below tank bottom (see DER-10 for saturated soils)	Sampling frequency per Table 3.9 (at least four soil samples from around each tank/group), within two feet of the tank with one at each end, and additional locations along the length of the entire tank, sample from base of excavation is recommended

F. Groundwater Sampling

Groundwater sampling will be conducted using USEPA "Low-Stress" protocols (detailed in Supplement C). Sampling will be conducted using the following general procedures:

1. Groundwater sampling will begin at the potentially least contaminated well (as determined from well location and/or previous data) and proceed to the potentially most contaminated well. The field technician will check and record the condition of all monitoring wells for damage or evidence of tampering before initiating sampling. Plastic will be placed around wells to minimize potential contamination of sampling equipment from the ground surface, and all monitoring, purging, and sampling equipment will be placed on the sheeting.
2. The protective casing on the well will be unlocked, the air in the well head will be screened with a PID, and static water level (from the top of the casing) will be measured with a decontaminated water-level meter. A peristaltic pump with plastic tubing, or a submersible pump attached to tubing (if required by Site conditions, e.g., well depth) will be used for sampling. The tubing (or pump attached to tubing) will be slowly lowered until reaching two to three feet off of the well bottom to prevent disturbance and re-suspension of any remaining sediment.
3. Depth to water will be measured to nearest 0.01 feet, relative to a reference measuring point on the well casing (if no pre-existing reference point is found, a reference point will be marked on the inner casing and noted in the field logbook). The water level will be measured before the pump is started and at intervals of every three to five minutes. Pumping rates will be reduced (as needed)

to the minimum capabilities of the pump to ensure stabilization of the water level (drawdown of 0.3 feet or less).

4. During pumping, field indicator parameters (turbidity, temperature, specific conductance, pH, redox potential, and dissolved oxygen) will be monitored and recorded approximately every five minutes. The well will be considered stabilized when the indicator parameters have stabilized for three consecutive readings (the minimum purge interval will be at least 15 minutes).
5. All groundwater samples will be collected in a manner consistent with the QAPP.
6. The protective cap on the well will be replaced and locked following sampling, and the field sampling crew will move to the next most contaminated well and the process will be repeated.

G. Soil Vapor Sampling

Soil vapor sampling will be conducted consistent with applicable NYSDOH guidance and fieldwork protocols (detailed in Supplement D). Sampling will be conducted using the following general procedures:

Soil vapor samples may be collected from beneath building foundations or paved areas, or from exterior areas not otherwise covered by material that trap soil vapor at the surface. Concrete slabs and exterior pavement will generally be breached with rotary equipment, which produce a small-diameter hole. The hole will be extended into underlying soil/sub-base to a depth required by the sampling technology (typically 6 to 12 inches below the base of the overlying materials for temporary installations). Sampling at exterior areas will require extension of a borehole to at least 3 to 4 feet below the surface (greater depths may be specified by the Work Plan).

Construction details for soil vapor implants are provided in the Supplement D. All soil vapor probes will be installed with a properly sealed surface opening to prevent ambient air from entering the system.

A tracer gas (e.g., helium) will be used at soil vapor sampling locations to verify that adequate sampling techniques are being implemented (i.e. to verify the absence of significant infiltration of outside air), in accordance with applicable NYSDOH guidance. The space around the sampling point will be enclosed and sealed (with a metal hemisphere and clay) in order to introduce a tracer gas (helium) into the area surrounding the probe point. Real-time sampling equipment (Radiodetection Multi-vapor Leak Locator, model MDG 2002, or equivalent) will be utilized to determine when the interior atmosphere in the enclosure reaches a concentration of 80%, and the tubing for the vapor implant will then be sampled for the tracer gas. If helium is detected in vapor at a concentration greater than 10%, the annular seal will be repaired and gas tracing performed again until less than 10% helium is detected.

Vapor in the sampling tubing will be screened with a PID for VOCs prior to purging. For all sampling locations, the exact purge volume will be dependent on the boring depth and subsequent length of tubing. Three borehole and tubing volumes will be purged prior to collection. The purge rate will not exceed 0.2 liters per minute. Following purging of ambient air from the collection device, soil vapor samples will be

(at a rate not exceeding 0.2 liters per minute) into individual laboratory-certified clean Summa canisters equipped with flow regulators (sampling period as specified in the Work Plan).

IV. GENERAL DECONTAMINATION PROTOCOL

Consistent decontamination methods will be used to reduce or eliminate contamination and cross-contamination of samples by field equipment, other samples, or personnel, and to minimize potential exposures caused by the spread of contaminants. Decontamination will occur any time a sampling tool or instrument used in field investigations contacts sampled media or personnel using the equipment. These procedures will be used in conjunction with all non-dedicated (i.e. reusable) equipment used during the handling, sampling or measuring of environmental media, and will be implemented primarily on-site at the point of use or at a designated equipment decontamination station at the project site.

Types of equipment usually requiring decontamination include pumps, gauges, augers, and sampling barrels. Drilling equipment, water level meters, submersible pumping equipment, and any other non-dedicated monitoring and sampling equipment will be decontaminated prior to the start of fieldwork, after the collection of each media sample, and between boring intervals and/or sampling locations. Water quality parameter sensors and flow-through cell will be cleaned between sampling locations in accordance with the manufacturer's recommendations.

Materials and methods for decontamination are provided in Supplement E.

V. PFAS SAMPLING - SPECIAL REQUIREMENTS

Special requirements apply to all fieldwork procedures during sampling for per- and polyfluoroalkyl substances (PFAS). Because of the potential presence of PFAS in common consumer products and in equipment typically used to collect media and the need for very low reporting limits, special handling and care must be taken when collecting samples for PFAS analysis to avoid sample contamination. There is only limited research regarding how the use of various procedures and materials affect sample results, and this SOP therefore represent a conservative approach. Field personnel should take precautions to avoid items that are likely to contain PFAS at the sampling site as well as avoid specific items during the sampling event, and must frequently check for updates to this SOP. The most recent NYSDEC guidance document, as well as a *PFAS Sampling Quick Reference Field Guide* (provided by Michigan Department of Environment, Great Lakes, and Energy), are provided in Supplement F.

A. EQUIPMENT AND SUPPLIES

Avoid personal protective equipment (PPE, including clothing chemically treated for UV protection) and field supplies that may include PFAS and which could cross-contaminate field samples. Personal body products such as shampoos, moisturizers, and cosmetics may contain PFAS and should be used with care the day of sampling.

Sunblock and insect repellent ingredients need to be verified to ensure that they do not contain PFAS before use in the field.

Food and food packaging should not enter the sampling zone.

Water resistant, waterproof, stain-treated, clothing recently washed with fabric softeners, and new clothing should be avoided. If sampling in inclement weather a canopy tent may be a good option (note, however, that water resistant/waterproof material likely contains PFAS and disposable gloves should be worn when putting up and/or moving the tent.

Waterproof field books may contain PFAS and should not be used. Documentation of field activities should be on loose paper on an aluminum clipboard or in a waterproof field book that does not use PFAS. Field notes should be taken with a ball point pen (avoid large felt tip markers; fine and ultra-fine point Sharpie® markers are acceptable). Sticky notes, etc., may contain PFAS and should be avoided (pre-printed labels should be verified PFAS-free.

Disposable, powderless, nitrile gloves must be worn during PFAS sampling and handling activities and should be changed frequently during and between sampling activities.

Sealed laboratory-supplied sampling containers may be placed into LDPE re-sealable storage bags (e.g., Ziploc®) that will not contact the sample media.

Chemical ice packs should not be used unless it is verified that they are PFAS-free. Samples for PFAS analysis should be placed on water ice immediately and should ideally be received by the laboratory at a temperature less than 6º Celsius.

B. GENERAL SAMPLING PROCEDURES

Sampling must be conducted in accordance with the project-specific QAPP, including use of laboratory-supplied sample containers.

If non-dedicated non-disposable equipment is used for sampling, proper decontamination is necessary. Decontamination reagents should be checked to ensure that they do not contain PFAS before use. Similarly, water used for decontamination should be checked (i.e. field equipment blanks) to verify that it does not contain PFAS. It may be necessary to collect samples of decontamination water prior to use to ensure that water being used for decontamination does not contain PFAS.

Soil samples should be collected using stainless steel, acetate, or polypropylene constructed equipment. Liners for soil sampling should not contain PFAS.

If a monitoring well has dedicated tubing that may contain PFAS, the dedicated tubing should be removed, and silicone or HDPE tubing should be used to sample for PFAS following at least one well volume purge prior to sampling for PFAS. The recommended length of time that dedicated tubing should be removed, and the recommended amount of purging conducted prior to sampling where dedicated tubing has been present is variable. If it is anticipated that dedicated tubing may be a source of PFAS cross contamination extra precaution, such as removal of the tubing 14 days prior to sampling or purging of three well volumes, should be considered.

Care should be taken to not cross contaminate PFAS samples if samples for non-PFAS analyses are being collected. For example, if VOCs and PFAS water samples are being collected, the VOCs would be collected using a peristaltic pump with HDPE and silicone tubing, and then a second set of samples would be collected for PFAS after changing gloves and switching sample container sets.

If transfer bottles are necessary for surface water sample collection, they should be PFAS-free and made of the same material as the laboratory provided sample containers.

If a water supply is to be sampled, both a pre- and post-treatment sample may be necessary. Carbon filtration, reverse osmosis, and other filter media may bias laboratory results for PFAS. Water should be allowed to run freely until water quality parameter stabilization has occurred, typically between 3 and 5 minutes. Water flow rate should be reduced for minimal aeration.

Do not filter samples for PFAS analysis.

C. DECONTAMINATION OF PFAS SAMPLING EQUIPMENT

Special requirements apply to decontaminating non-dedicated equipment used for PFAS sampling. Laboratory supplied PFAS-free deionized water is preferred for decontamination (commercially available deionized water in an HDPE container, and municipal drinking water, may be used for decontamination if verified to be PFAS-free. Sampling equipment can be scrubbed using a polyethylene or polyvinyl chloride (PVC) brush to remove particulates. Decontamination procedures should include triple rinsing with PFAS-free water. Note that a QAPP prepared for NYSDEC program sites prohibits use of Liquinox®.

VI. INVESTIGATION DERIVED WASTES

Disposal of any waste materials will be in accordance with provisions of the applicable site-specific Work Plan. If not otherwise specified: 1) discarded personal protective equipment and other fieldwork supplies not significantly impacted by free petroleum or other gross contaminants will be disposed as municipal solid waste; and, 2) well development purge water, spent absorbents or other significantly contaminated materials, and/or any recovered free-petroleum, will be properly stored on-site, in properly labeled and secured containers, pending final off-site disposal at a permitted facility.

Supplement A – Model Fieldwork Logs

Soil Boring Log

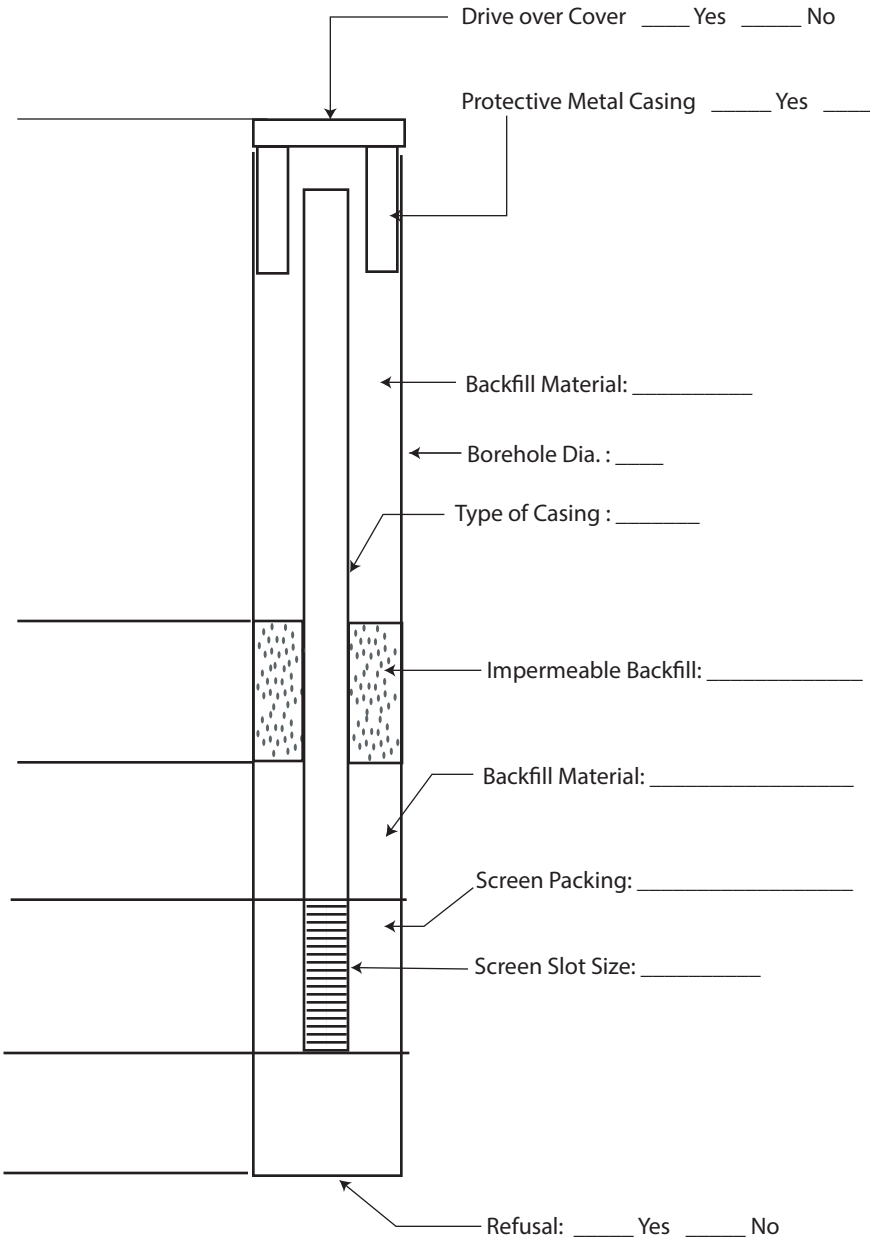
BELLUCCI ENGINEERING, PLLC

Boring ID	**Site ID:**	**GBTS Project**
Page____of____	Date: Driller (Rig) GBTS Staff: Weather:	

Boring Interval (recovery)	Surface Material: **Soil / Material Description**	Moisture	PID (ppm)	Odors	Staining	NAPL	Samples Collected
___–___ (___%)							
___–___ (___%)							
___–___ (___%)							
___–___ (___%)							
___–___ (___%)							
___–___ (___%)							

Notes Fill, water conditions, field evidence of contamination, well installation details, etc

ND (non-detect) **PID** (photoionization detector) **ppm** (parts per million) **NAPL** (non-aqueous phase liquid)
F (fine) **M** (medium) **C** (coarse) **P** (plastic) **LP** (low plastic) **NP** (non-plastic)



Materials Used:

- Screen (PVC)
- Riser (PVC)
- Plug (PVC)
- Silica Sand
- Bentonite clay

Monitor Well Construction Log - Well ID:

Site:

Project:	
Date:	
Appendix:	

GROUNDWATER MONITORING WELL PURGE DATA SHEET

BELLUCCI ENGINEERING, PLLC

Project Name: _____ **Well ID:** _____
GBTS PROJECT #: _____ **PID Reading:** _____
Date: _____ **Depth of well:** _____
Field Personnel: _____ **Depth to water:** _____
Weather: _____ **Pump type:** _____

Time	Temp (°C)	pH	ORP (mv)	Specific Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Depth to Water (ft)	Purge Rate (mL/m)	Comments (e.g. color/clarity)

***** STABILIZATION CRITERIA*****

Temp +/- 3% **pH** +/- 0.1 **ORP** +/- 10 **Spec Cond** +/- 3% **Turb** +/- 10% **DO** +/- 10%

NOTES:

*****PURGED WATER DETAILS*****

Start/End time: _____
Total purge time: _____
Total volume: _____
Purge rate: _____

CHARACTERISTICS:

Odor: none | slight | moderate | strong

Sheen: none | slight | moderate | strong

L/DNAPL: Yes | No **L/DNAPL thickness (in.)**:_____

Supplement B – DER-10 Soil Sampling Requirements

3.5 Soil

3.5.1 Site Characterization

(a) SC soil investigations should satisfy the applicable elements of this subsection.

1. Initial site survey. The presence of potential source areas to be considered by the initial site survey are those AOCs identified in subdivision 1.8(c). Where the potential for buried drums, tanks, deposits of waste or other discrete and identifiable AOCs may exist the use test pits, ground penetrating radar, magnetometry, electromagnetic, or other techniques capable of detecting metal containers and other waste to an average depth of 20 feet or deeper should be considered.

2. Based on the findings of this survey and/or other AOCs identified by the records search to be undertaken in accordance with Appendix 3A and reported as set forth in section 3.12, soil sampling to characterize contaminant levels in surface or subsurface soil should be planned where:

i. there have been any indications of buried drums, tanks or waste;

ii. groundwater contamination is detected and no source has been identified;

iii. aerial photographic history of the site indicates the presence of drums, tanks or waste in or adjacent to regraded and/or filled areas;

iv. historic fire insurance maps, or other documentation, has identified the past presence of structures or operations (e.g., former manufactured gas plants) which are likely sources of contamination;

v. there are areas of soil staining;

vi. distressed vegetation exists; or

vii. bare soil is present.

(b) Surface soil sampling. Samples, except those being analyzed for VOCs as noted below, should be collected based upon the type of exposure or disposal to be assessed by the sample.

1. Assessing human exposures to soil. When assessing the human exposure resulting from soil contamination related to:

i. incidental soil ingestion, inhalation of soil or dermal contact with soil; soil samples should be collected from a depth of 0 to 2 inches below the vegetative cover, unless VOCs are the only contaminants of concern in which case the sampling should be from 0 to 6 inches; and/or

ii. vegetable/fruit gardens, soil samples should be collected from a depth of 0 to 6 inches below the vegetative cover.

2. Assessing ecological resource exposure to soil. When assessing the impact of soil

contamination on ecological resources samples should be collected from:

i. surface soil at a depth of 0 to 6 inches below the vegetative cover; and

ii. a deeper soil horizon, typically from 12 to 24 inches below ground surface.

3. Where both human and ecological resource exposures are being evaluated, samples at each depth may be required.

(c) Subsurface soil sampling. Samples should be collected via soil borings and/or test pitting for chemical analysis and to provide a profile of subsurface conditions in identified or suspected AOCs and in other areas as needed to characterize the site.

1. Boring logs should be prepared by a qualified individual, reporting to the site QEP, for all soil samples to document subsurface conditions including, without limitation:

i. soil types and description of non-soil materials;

ii. field instrument measurements;

iii. depth to groundwater, if groundwater is encountered; and

iv. to document physical evidence, if present, including but not limited to:

(1) soil mottling;
(2) presence of odor or vapors;
(3) soil discoloration or staining; and
(4) NAPL, free and/or residual product;

2. Soil should be described using the:

i. New York State Department of Transportation *Soil Description Procedure* (NYSDOT Soil Mechanics Bureau STP-2 dated May 1, 1975, as amended); or

ii. unified soil classification system (USCS) which is set forth in ASTM 2488.

3. Known hazardous waste, concentrated solid or semi-solid substances, soils with free product or NAPL and/or grossly contaminated media will not be returned to the subsurface and must be disposed of in accordance with applicable guidance and regulations. If contaminated materials are returned to the ground, in accordance with subdivision 3.3(e), the remedial party must address the presence of this contamination as part of any remedial action.

4. Soil sample locations should be documented by the use of GPS. They may also be photo-documented.

5. Samples should be collected continuously in discrete increments as grab samples prior to any consolidation of the sample. If less than full recovery is obtained by the sampling technique, an explanation should be provided in the soil log.

6. Additional sampling of soil from boring-depth increments below those specified in a work plan to investigate AOCs or based on observations as set forth in paragraph 3.5.1(a) 2 should be completed in cases where:

i. the surface has been regraded;

ii. evidence is identified in a boring of:

(A) the conditions identified in subparagraph 1.iv above;
(B) LNAPL, from the water table; or
(C) DNAPL, form the top of a confining unit; or

iii. other evidence is found which indicates the possible presence of contamination.

7. If the designated subsurface soil sampling point is within the saturated zone, when sample recovery is possible, a sample of the saturated soil should be collected and analyzed.

(d) The use of expedited site investigation approaches, such as the USEPA Triad, are encouraged.

1. Expedited site investigation involves systematic project planning, use of dynamic work strategies and field screening techniques.

2. Sampling methodologies using field-screening techniques:

i. have similar analytical limitations to laboratory methods, which are addressed in subdivision 2.1(c); and

ii. should be detailed in a work plan and approved by DER before use.

3. Field testing sampling plans should be prepared in accordance with Appendix 2A.

3.5.2 Remedial Investigation

(a) The RI should include provisions to identify all soil which may contain contaminants above the unrestricted use soil SCGs.

1. Soil sampling during the RI is intended to determine the areal and vertical extent of those areas found to be contaminated. Sampling locations should be biased toward locations expected to be contaminated or source areas, but must also provide sufficient coverage of the entire site to allow decisions relative to land use restrictions.

2. In addition, soil data is used in the exposure assessment to identify any actual, or potential for, exposure.

3. The use of the field-screening techniques/investigations (e.g., Triad) as described in subdivision 3.5.1(d) and Appendix 2B are encouraged to focus the location of surface or subsurface soil sampling to the most likely source areas, to minimize multiple mobilizations and obtain more complete data set and to indicate a potential for vapor intrusion into buildings.

4. Geophysical surveys. Geophysical surveys may be used as described in paragraph 3.5.1(a)1 and should also be considered during the RI to:

i. identify subsurface utilities as sources of discharge or preferential pathways;

ii. obtain geologic characterization of bedrock, clay layers, etc.; or

iii. focus test pit and/or soil boring locations to areas of subsurface anomalies.

5. Soil gas surveys may be used to identify areas of soil contamination which are a source of soil vapor, in accordance with section 3.6.

(b) Surface soil investigations.

1. Follow the sampling procedures identified in subdivision 3.5.1(b).

2. For suspected surface discharges. Soil samples to be analyzed/screened for VOCs should be collected to minimize contaminant loss during sampling. Each sample should be field screened with a properly calibrated photoionization detector or flame ionization detector (PID/FID) or other suitable instrument. When field screening is used the following should apply:

i. at a minimum, the initial 24 inches of soil rather than the surface soil sampling depths identified in subdivision 3.5.1(b) should be field screened for the presence of VOCs; and

ii. if field measurement readings are detected above background, the sampling should be extended until background readings are achieved, or groundwater or bedrock is encountered; or

iii. a sample from the interval registering the highest field-measurement reading should be collected and analyzed for VOCs.

(c) Subsurface soil investigations.

1. Subsurface soil sampling from soil borings, geoprobes and/or test pits/trenches, in addition to the areas described in paragraphs 3.5.1(a)2 and (c)6, is required in any area:

i. where it is likely that contaminants have migrated downward from the surface or were released below ground surface; for example, from dry wells, leach fields, injection wells or underground storage tanks;

ii. where the investigation of a geophysical or soil vapor anomaly suggests a possible contaminant source;

iii. where waste was or was reported to have been disposed. Such sampling should delineate the boundaries of the area impacted by the disposal; and

iv. when surficial contamination is known or suspected. Such sampling should determine the vertical extent of that contamination.

2. If VOCs are confirmed in the subsurface, the investigation should evaluate any

subsurface utilities, structures (with both basement and slab on grade) and/or other preferential pathways to identify additional sampling that may be warranted to determine whether actions are needed to address exposures associated with soil vapor intrusion, as a result of the soil contamination.

3. When any soil boring, geoprobe or test pit/trench is installed, written logs of the findings are to be prepared and maintained which include, but are not limited to:

i. the data identified in paragraphs 3.5.1(c)1 and 2;

ii. documentation and/or observations regarding the interface between waste and native soils (if appropriate);

iii. identification of the groundwater table and related observations, such as floating product or LNAPL;

iv. identification of the mobility of any contaminants, NAPL or free product identified; and

v. a photographic record of such excavation areas is also recommended to document subsurface features and observations.

(d) The investigation should gather sufficient data on contamination present in soil to evaluate the need for remediation or mitigation at the site.

3.5.3 Soil Background Evaluation

(a) This guidance is intended for soil background evaluations conducted as a component of a SC, RI or, where appropriate, at another element of the remedial program. Site background evaluations are not considered for use on-site at BCP sites.

1. If a suspected contaminant is identified in soil in excess of the unrestricted soil SCGs, the guidance in this subsection may be followed to demonstrate to DER that the concentration of the element, chemical or contaminant in the soils may be due to background conditions.

2. Area-wide soil background studies, intended to be applied to more than one site, may require an expanded level of effort to be determined after consultation with DEC.

3. Background evaluations typically focus on surface soils, although the same approach is applicable to deeper soil horizons.

(b) The remedial party may evaluate soil background conditions at a site using the approaches discussed in this subdivision. The evaluation of background conditions consists of a two-step process. The first step is gaining an understanding of soil conditions on-site and the second step is understanding the soil conditions off-site.

1. On-site soil conditions. Understanding conditions on-site includes an evaluation of whether:

i. the contaminant(s) of concern was(were) never used, stored, or disposed on or near

the site);

ii. (an) element(s) or chemical concentration detected in the soil at the site are within the ranges reported in appropriate references for naturally or regionally occurring background levels for New York. In doing so, the remedial party needs to consider the applicability of the rural background study (see subparagraph 2.ii, below) to the study area;

iii. the distribution of the element, chemical or contaminant in the soil does not follow a concentration gradient indicative of disposal or a discharge; and

iv. the presence of historic fill material.

2. Off-site soil conditions. The remedial party may employ one of the following three approaches to gain an understanding of off-site soil conditions:

i. use an existing DEC-approved background evaluation which was conducted generally in accordance with subdivision (c) below, for soils near the site to establish the background soil conditions;

ii. use the rural background study conducted by DEC, in collaboration with the New York State Department of Health, as part of the development of the soil cleanup objectives set forth at 6 NYCRR Part 375 as background soil conditions and available in the technical support document [see 6 NYCRR 375-6.2(b)]; or

iii. undertake a site-specific background evaluation, to demonstrate background conditions of the soil in the vicinity of the site, in accordance with subdivision (c) below.

(c) Site-specific background evaluation. A site-specific background evaluation will consider soil samples collected and analyzed from no less than five background sample locations in the vicinity of the site as detailed in this subdivision to assist in the characterization of site-related contamination. An evaluation intended to develop site-specific cleanup objectives is addressed in subdivision (d) below.

1. The background grab samples should be collected from:

i. a depth which conforms to the same depths of the surface soils sampled during the surface soil investigation;

ii. the 0 to 2 foot soil horizon if no surface soil samples were collected at an AOC or from the site.; or

iii. deeper horizons if appropriate based where the contamination is present

2. Background samples should be collected at locations which are:

i. unaffected by current and historic site operations, as documented by the records search;

ii. wherever possible, from locations which are topographically upgradient and upwind of contaminant sources; and

iii. off the site being investigated, unless the site being investigated encompasses a large area which includes separable areas having no identified AOCs.

3. Background samples should not be collected from potentially contaminated areas, including any of the following:

i. areas where materials or wastes were loaded, handled or stored;

ii. identified waste-disposal areas;

iii. areas which receive runoff from areas identified in subparagraphs i or ii above or adjacent contaminated sites;

iv. storm drain outfall discharges or ditches receiving runoff from the site or adjacent contaminated sites; or

v. any other area of concern, as defined by section 1.8;

4. Background samples generally should not be collected from the following areas unless it can be demonstrated that the contamination in the area is due to generally occurring pollution related to the urban or industrial nature (anthropogenic) of the surrounding area and the results will be compared to samples taken from similar areas on the site:

i. parking lots, roads or roadside areas;

ii. areas near railroad tracks;

iii. areas of historic fill material;

iv. storm drains or ditches receiving runoff not impacted by the site or adjacent contaminated sites; or

v. depositional areas outside the influence of known sources.

5. Background studies should use the same sampling and analytical methods as were used for other site samples.

6. Samples collected from a site or an area of concern cannot be averaged for background comparisons, rather the individual samples should be evaluated, in consultation with DEC and the NYSDOH to determine a background level for the site. Except for on-site at a BCP site, if contaminant concentrations are found at any sampling location on the site exceeding the background level developed from the background samples, the RI may delineate the extent of the contamination based on the background level, rather than the applicable unrestricted soil SCG.

7. The background evaluation should be presented in a work plan developed in accordance with section 3.3, if not included in the RI work plan.

(d) Site-specific remediation levels based on background concentrations. If a site-specific

background soil level identified by subdivision (c) above is to be proposed as a remediation level at the site, a more extensive sampling program to allow a statistical analysis of background levels may be required.

1. The remedial party should, after consulting with DER, submit a work plan outlining the proposed methods for the additional sampling and any proposed statistical evaluation of samples.

2. Where a grid or predetermined sample spacing is to be used in a site-specific evaluation , the limitations on the location of samples identified by paragraph (c)3 above are not applicable, because the investigation is intended to assess the impacts from other potential sources of contaminants in the vicinity of the site to the site-specific background.

3. Any statistical analysis should be in designed consistent with the rural background study data analysis methods provided in Appendix D, Section B of the *New York State Brownfield Cleanup Program Development of Soil Cleanup Objectives Technical Support Document (TSD) September 2006* or any subsequently approved applicable document, which is available on DEC's website identified in the table of contents.



3.9 Area Specific Requirements for Tanks, Storage Facilities, Water Treatment, Drainage Structures and Other Systems

(a) Storage tanks and appurtenances. The investigation of bulk storage tanks and appurtenances; should include, without limitation, all in use and out-of-service storage and associated piping, dispensers and fill ports.

1. Aboveground tanks over unpaved soil or broken pavement in contact with the soil. Sampling around tanks with shell or bottom in direct contact with soil now or in the past should meet all the following criteria:

i. a minimum of two surface soil samples should be collected to detect surface contamination around the base of each tank, in accordance with subdivision 3.5.1(b), as follows:

(1) from areas of contamination, based on soil discoloration/odors, history of repairs/replacement, soil beneath valves or low areas where spills or leaks from valves may accumulate;

(2) additional samples should be taken around larger tanks to ensure that there is at least one sample per 100 linear feet (from a depth of at least 6 inches if VOCs were stored) of tank perimeter; and

(3) unless the tank was installed and maintained in compliance with 6 NYCRR Parts 614 or 599:

(A) at least one boring should be located adjacent to or within two feet of the most down gradient tank with continuous two-foot split spoon sampling, or another DER approved comparable sampling technique, performed to four feet below the current water table, or deeper where appropriate; and

(B) the sample in each boring evidencing the highest apparent contamination based on soil discoloration, odor, field-screening result or other field indicator should be analyzed at a laboratory;

ii. if there is no evidence of soil contamination, a groundwater sample should be collected from the zero to one-foot interval below the current water table elevation. The sample should be collected within five feet of the tank on the expected downgradient side. It should then be analyzed following an appropriate laboratory method; and

iii. if there is evidence of groundwater contamination, the groundwater sample must be collected at this location.

2. Aboveground tanks elevated over unpaved soil or broken pavement. Elevated tanks where the shell or bottom is not in contact with ground:

i. require soil sampling when:

(1) there is any physical or documentary evidence of discharges;
(2) soil discoloration is observed; or
(3) field monitoring or other evidence indicates that a discharge has occurred; and

ii. at least one soil sample should be taken below tanks which store, or may have stored, contaminants that do not cause obvious soil discoloration such as VOCs:

(1) the samples should be collected in the area most likely to be contaminated, including without limitation, valve or former leak or rupture areas; or
(2) if samples cannot be obtained from below the tank because soils are not accessible to sampling equipment, the sample may be located within two feet of the tank.

3. Aboveground tanks over unbroken paved surfaces. Soil around aboveground tanks:

i. on paved surfaces or pads should be sampled pursuant to paragraph (b)1 below, if there:

(1) are stained soils adjacent to the paving or pad; or
(2) if the potential contaminant would not cause discoloration such as VOCs, if there is a history of spillage or other evidence that a discharge has occurred;

ii. within a paved containment area should be sampled at the drainage discharge point, if one exists, pursuant to subdivision (d) below (Drainage Areas);

iii. soil sampling below the pavement should be conducted when the pavement has deteriorated so as to allow potential contaminant contact with the soil, or if there is reason to believe that pavement was not present over the life of the tank or former tanks; and

iv. instead of sampling soil beneath pavement, samples around the pad may be taken pursuant to (b)1 below, subject to DER's review of documentation pursuant to subdivision 1.6(c) specifying why boring through pavement was not considered practical (for example, concrete slabs with berms, synthetic liners).

4. Underground storage tanks (USTs). USTs and distribution systems containing potential contaminants should be evaluated to identify any past or present discharges. All USTs must be in

compliance with applicable regulations, upgraded as necessary or closed in accordance with the requirements of section 5.5. All USTs not being closed should be evaluated as follows:

i. at least four soil samples should be collected from around each tank or group of tanks as noted in clause (a)3.i.(2) above. The soil samples should be collected within two feet of the tank with one sampling location located at each end, and additional sampling locations along the length of the entire tank:

(1) if sampling within two feet of the tank is not possible due to the presence of bedding gravel or there are safety considerations (e.g., danger of tank puncture) which have been identified through field investigations or review of as built plans:

(A) soil samples should be taken as close as possible to the tank, with no samples collected further than five feet from the tank or group of tanks; and

(B) a groundwater sample should be collected within five feet and down gradient of the tank or group of tanks; or

(2) when, due to safety considerations, the distance between adjacent tanks precludes locating soil samples between the tanks, a groundwater sample may be collected within five feet and down gradient of the tanks, at the appropriate depth in lieu of the required soil samples between the tanks. Where available, tank field wells may be sampled in lieu of a new well;

ii. the total number of sampling locations required per tank, or group of adjacent tanks, located within the length identified in Table 3.9 for the total tank capacity;

iii. soil samples collected for analysis should be taken at zero to two feet below the tank bottom unless the tank is within the saturated zone (see subparagraph iv below); and

iv. for underground storage tanks (USTs) within the saturated zone based on site-specific water levels:

(1) if the contents of the UST being evaluated have ever had a density less than water, a soil sample should be collected from one foot above to one foot below the current water table surface. A groundwater sample should also be collected at the appropriate depth pursuant to section 3.7. To verify tank contents for out-of-service tanks, one sample should be taken of any product or residue remaining in the tank and analyzed using an appropriate fingerprinting or other analytical method; or

(2) if the contents of the UST being evaluated have ever had a density greater than water, a soil sample should be collected from zero to two feet below the bottom of the tank. A groundwater sample should also be collected at the appropriate depth pursuant to section 3.7. To verify tank contents for out-of-service tanks, one sample should be taken of any product or residue remaining in the tank and analyzed using an appropriate fingerprinting or other analytical method; and

v. if a tank is located on bedrock, a bedrock monitoring well may be necessary.

Table 3.9 Sampling Frequency Based on Tank Capacity and/or Length [from Subparagraph 3.9(a)4.ii]		
Total Tank Capacity (Gallons)	**Approximate Tank Length (Feet)**	**Minimum Number of Samples**
56-2000	Up to 10	4
2001-10,000	Up to 30	6
10001 - 25,000	Up to 40	8
25,000+	Greater than 40	10

5. Above-grade piping. Sampling of soil beneath above-grade piping is necessary if there is evidence of a discharge (for example, discolored soil, etc.) or reports of past discharges. Any sampling conducted should be pursuant to subdivision (e) below (Discharge/Disposal Areas).

6. Below-grade piping. Below-grade piping should be evaluated to identify any past or present discharges using soil samples located zero to six inches below the piping and within two feet of the piping. Additional samples should be collected as follows, for:

i. a total piping length of 1to 15 feet, a minimum of one soil sample should be collected:

(1) an additional soil sample should be collected for each additional 20 linear feet of piping or portion thereof from 16 to 50 feet of piping length; and
(2) sample locations should be biased to include joints, dispensers and other potential discharge areas;

ii. pipe runs within two feet of another pipe run may be considered a single pipe run. Soil samples for multiple pipe lines should be collected midway between/among the lines or biased toward any pipe for which evidence of a discharge exists. For pipes that are separated by a distance greater than two feet vertically, soil samples should be collected below each pipe; or

iii. total piping lengths in excess of 50 feet, sampling frequency may be reduced subject to DER's approval of documentation pursuant to section 1.6 specifying why the reduced number was considered adequate.

7. Loading and unloading areas. For loading or unloading areas located:

i. over exposed soils which are associated with tanks, should be sampled at a minimum rate of one sample per fill connection or valved discharge point; or

ii. over impervious cover, sampling should be conducted pursuant to paragraph (b)1 below.

(b) Storage and staging areas. The investigation for all storage and staging areas, dumpsters and transformers, whether temporary or permanent, including exposed soil areas adjacent to aboveground vessels on pads; tank loading/unloading areas on pads; dumpster staging areas; electrical transformers,

heat exchanger and other outdoor equipment and drum storage pads, should also satisfy the requirements of this subdivision.

1. Pads. The investigation of a pad should:

i. have a minimum of one sampling location per side adjacent to exposed soil for sides:

(1) up to 30 feet long; or
(2) for sides greater than 30 feet long, one additional sample location is required for each additional 30 feet of length;

ii. locate each sampling point immediately adjacent to the pad and biased toward the suspected location of greatest contamination (e.g. joints);

iii. include soil samples beneath the pad, collected pursuant to subparagraph (b)2.ii below, if:

(1) the pad shows evidence of deterioration that may allow contaminant contact with the soil;
(2) the pad or its surface has been modified or repaved; or
(3) aerial photographs or site history indicate potential for previous discharges to the soil beneath the pad; and

iv. sample bermed pads and pads surrounded by impermeable cover at any drainage discharge point pursuant to subdivision (d) below (Drainage Systems).

2. Storage and staging areas over a permeable cover. Storage and staging areas with evidence of discharges which are or were used for storage of contaminants:

i. should be sampled pursuant to subdivision (e) below (Discharge and waste disposal systems);

ii. should be sampled at locations biased toward the suspected location of greatest contamination based on low points, drainage patterns, discoloration, stressed vegetation, field instrument measurements or other field indicators; and

iii. the sample frequency for these areas should be:

(1) at least one surface sample, in accordance with subdivision 3.5.1(b), per 900 square feet of surface area to characterize soils below a storage or staging area up to 300 feet in perimeter; and
(2) sample frequency may be reduced for larger areas subject to DER approval of documentation pursuant to subdivision 1.6(c) specifying why the proposed sample frequency is adequate.

(c) Surface impoundments. The investigation for all surface impoundments, including without limitation, lagoons, fire ponds, waste ponds or waste pits, storm water detention basins, excavations, natural depressions or diked areas, which are designed to hold an accumulation of liquid substances or

substances containing free liquids, should satisfy the requirements of this subdivision.

1. Sediments within any surface impoundments should be sampled if the impoundment receives runoff from areas of potential contaminant sources.

2. Sediment sample locations should be biased towards inflow/outflow areas, and areas where sediments may be expected to accumulate.

3. Core samples should be taken for contaminant analysis and to fully characterize sediment type, thickness of sediment layers and vertical extent of sediment.

4. Distinct layers of sediments thicker than six inches, as evidenced by color, particle size, or other physical characteristics, should be sampled individually.

5. Sediment quantity within the surface impoundment should be estimated.

6. Active surface impoundments with impermeable liners, which may be damaged as a result of sample collection, should have liner integrity verified by physical inspection and/or evaluation of monitoring well water quality data associated with the surface impoundment, if available.

(d) Drainage systems. The SC or RI for all drainage systems should satisfy the sampling requirements of this subdivision.

1. Floor drains and collection systems. If there is reason to believe contaminants were or may have been discharged into the floor drain or collection system:

i the point of discharge for any floor drain or collection system should be sampled if the system discharges were, or may have been, discharged to soil, groundwater or surface water;

ii. if the point of discharge is unknown, tracer tests (for example, dye or smoke) should be conducted to determine the discharge point(s);

iii. collection system integrity should be documented by representative soil sampling at potential leak areas, video inspection, hydrostatic test or pressure test. Other methods may be acceptable, subject to DER approval of documentation pursuant to subdivision 1.6 (c) specifying why the methods are effective; and

iv. sampling soil below floor drains or collection system laterals should be conducted when corrosives (if plastic piping is or was used, organic solvents are considered corrosive) are or were discharged to floor drains or the collection system or there has been a history of collection system discharges, rupture or repairs. In such cases, representative soil sampling at known or suspected leak areas is required for potential contaminants.

2. Roof leader discharge. Soil at each roof leader discharge point should be sampled if storage units or process operations using contaminants of concern vent, or may have vented, to the roof.

3. Swales and culverts. Sampling should be conducted when the swale or culvert receives or received runoff from other contaminated areas of concern:

i. sediment and soil sampling should be conducted at the points where contamination from runoff/spills enter or have entered the drainage system; and

ii. if flow could have scoured sediments from the receiving structure, sampling should be conducted at on-site down gradient structures laden with sediments.

4. Storm sewer and spill containment collection systems. Sampling should be conducted when the collection system is or was the runoff/spill discharge point from other contaminated areas of concern:

i. sediment sampling should be conducted at the manhole, catch basin, sump, or other structure where contaminated runoff or discharges enter the drainage system;

ii. sampling should be conducted in the soils around catch basins, manholes, sumps or other structures which contain or may have contained contaminants, and are not hydraulically sound (that is, water percolates through the floor and walls), through the use of adjacent soil borings:

(1) a single boring located within two feet of the downstream side of the structure should be sampled at a depth corresponding to the bottom of the structure; and

(2) if highly permeable soils are encountered and VOC sampling is required, sample at the next lower permeability soil horizon or zero to six inches above the saturated zone, or at 9.5 to 10 feet, whichever is encountered first; and

iii. groundwater discharging from storm sewer systems which contain dry weather flow (that is, five days following the most recent rainfall) should be sampled at the discharge point and analyzed for potential contaminants discharged or potentially discharged into the system.

5. Boiler and compressor discharges. For all boiler and compressor discharges if there is reason to believe that a potential contaminant discharge has occurred, sampling should be conducted pursuant to subdivision (e) below.

(e) Discharge and waste disposal systems. The SC or RI for all discharge and waste disposal systems and areas should satisfy the sampling requirements of this subdivision.

1. Discharge areas and areas of discolored soil or stressed vegetation. Where specific requirements are not otherwise provided in this section each distinct area should be evaluated independently as an area of concern:

i. initial surface soil samples, in accordance with subdivision 3.5.1(b), should be biased based on field indicators such as soil discoloration, stressed vegetation or field instrument measurements toward those areas of greatest suspected contamination;

ii. sample frequency should be at least 1 sample for every 900 square feet for areas up to 300 feet in perimeter; and

iii. sample frequency may be reduced for larger areas, subject to DER's review of documentation pursuant to subdivision 1.6 (c) specifying why the reduced sample frequency was considered adequate.

2. Aboveground treatment systems. Above ground treatment systems should be sampled pursuant to the requirements for the functional portions of the system pursuant to subdivision (a) above. For example, any aboveground waste treatment tanks over unpaved soil should be sampled pursuant to paragraph (a)1 above.

3. Below-grade wastewater treatment systems:

i. tanks, septic tanks, separators and neutralization pits:

(1) two samples, one aqueous and one sludge sample, should be collected from within the tank etc, for analysis unless documentation acceptable to DER pursuant to subdivision 1.6(c) is provided in the SCR (section 3.13) specifying why such sampling was not considered necessary to confirm that only sanitary waste was discharged to the system during the entire life of the system; and

(2) documentation, based upon diligent inquiry, should be provided to support that only sanitary waste was ever discharged to the system and that no present or former floor drains, sinks or other units in process areas were ever connected to the system;

ii. septic disposal fields:

(1) soil borings and/or test pitting should be completed as specified below for on-site disposal fields unless documentation acceptable to DER is provided as to why soil borings were not considered necessary to confirm that only sanitary waste was discharged to the system pursuant to subparagraph (e)3.i above;

(2) at least one boring or test pit per 500 square feet of field area should be completed, with a minimum of four borings per field;

(3) borings should be located within two feet of the edge of the bed area in active fields but should be angled so that samples are taken below the infiltrative surface and directly below laterals within abandoned fields;

(4) borings should be located to include the first five feet of the infiltrative surface and should be spaced so that samples are representative of the entire disposal field; and

(5) soil samples should be taken at a depth corresponding to zero to six inches below the bottom of the infiltrative surface.

iii. cesspools, seepage pits and dry wells:

(1) sampling should be conducted in accordance with clauses (2) through (5) below, unless documentation acceptable to DER, pursuant to subdivision 1.6(c), is provided in the SCR specifying why sampling was not considered necessary (e.g., to confirm that only sanitary waste or storm water was discharged to the system pursuant to subparagraph (e)3.i above);

(2) one representative sample of sludge/sediment in each pit should be obtained for laboratory analysis;

(3) a soil boring should be placed within the well, pit or pool:

(A) the soil should be cored and inspected for evidence of discharge and samples collected in accordance with paragraphs 3.2.1(c)1 and 2; or

(B) if not possible to core within the suspected structure, the boring should be placed within two feet of the downgradient side of the pit and should extend to a minimum of two feet below the pit bottom;

(4) for structures with perforated sidewalls, perforated rings, brick, block or stone construction, a boring should be placed immediately adjacent to the outside of the structure. If no other

field indicators (e.g., staining) identify a vertical zone to sample, a sample should be collected at the level of any sediment observed inside the structure;

(5) samples obtained for VOC analysis should be collected as follows:

(A) each core should be field screened with a properly calibrated photoionization detector or flame ionization detector (PID/FID) or other suitable instrument;

(B) if field measurement readings are detected above background, coring should be extended until background readings are achieved or groundwater or bedrock is encountered; and

(C) an undisturbed sample from the two-foot interval registering the highest field measurement reading should be collected and analyzed for VOCs;

(6) if the pit bottom is within two feet of the saturated zone or bedrock, a groundwater sample will be obtained within the pit or, if not possible, within two feet of the suspected downgradient side of the pit; and

(7) at a minimum, the laboratory analysis should target the contaminants suspected to have been discharged to the seepage pit.

iv. collection lines, should be sampled pursuant to paragraph (d)1 above.

Supplement C – USEPA Groundwater Sampling

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION I

LOW STRESS (low flow) PURGING AND SAMPLING PROCEDURE FOR THE COLLECTION OF GROUNDWATER SAMPLES FROM MONITORING WELLS

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Revision Page

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1.0 USE OF TERMS

Equipment blank: The equipment blank shall include the pump and the pump's tubing. If tubing is dedicated to the well, the equipment blank needs only to include the pump in subsequent sampling rounds. If the pump and tubing are dedicated to the well, the equipment blank is collected prior to its placement in the well. If the pump and tubing will be used to sample multiple wells, the equipment blank is normally collected after sampling from contaminated wells and not after background wells.

Field duplicates: Field duplicates are collected to determine precision of the sampling procedure. For this procedure, collect duplicate for each analyte group in consecutive order (VOC original, VOC duplicate, SVOC original, SVOC duplicate, etc.).

Indicator field parameters: This SOP uses field measurements of turbidity, dissolved oxygen, specific conductance, temperature, pH, and oxidation/reduction potential (ORP) as indicators of when purging operations are sufficient and sample collection may begin.

Matrix Spike/Matrix Spike Duplicates: Used by the laboratory in its quality assurance program. Consult the laboratory for the sample volume to be collected.

Potentiometric Surface: The level to which water rises in a tightly cased well constructed in a confined aquifer. In an unconfined aquifer, the potentiometric surface is the water table.

QAPP: Quality Assurance Project Plan

SAP: Sampling and Analysis Plan

SOP: Standard operating procedure

Stabilization: A condition that is achieved when all indicator field parameter measurements are sufficiently stable (as described in the "Monitoring Indicator Field Parameters" section) to allow sample collection to begin.

Temperature blank: A temperature blank is added to each sample cooler. The blank is measured upon receipt at the laboratory to assess whether the samples were properly cooled during transit.

Trip blank (VOCs): Trip blank is a sample of analyte-free water taken to the sampling site and returned to the laboratory. The trip blanks (one pair) are added to each sample cooler that contains VOC samples.

2.0 SCOPE & APPLICATION

The goal of this groundwater sampling procedure is to collect water samples that reflect the total mobile organic and inorganic loads (dissolved and colloidal sized fractions) transported through the subsurface under ambient flow conditions, with minimal physical and chemical alterations from sampling operations. This standard operating procedure (SOP) for collecting groundwater samples will help ensure that the project's data quality objectives (DQOs) are met under certain low-flow conditions.

The SOP emphasizes the need to minimize hydraulic stress at the well-aquifer interface by maintaining low water-level drawdowns, and by using low pumping rates during purging and sampling operations. Indicator field parameters (e.g., dissolved oxygen, pH, etc.) are monitored during purging in order to determine when sample collection may begin. Samples properly collected using this SOP are suitable for analysis of groundwater contaminants (volatile and semi-volatile organic analytes, dissolved gases, pesticides, PCBs, metals and other inorganics), or naturally occurring analytes. This SOP is based on Puls, and Barcelona (1996).

This procedure is designed for monitoring wells with an inside diameter (1.5-inches or greater) that can accommodate a positive lift pump with a screen length or open interval ten feet or less and with a water level above the top of the screen or open interval (Hereafter, the "screen or open interval" will be referred to only as "screen interval"). This SOP is not applicable to other well-sampling conditions.

While the use of dedicated sampling equipment is not mandatory, dedicated pumps and tubing can reduce sampling costs significantly by streamlining sampling activities and thereby reducing the overall field costs.

The goal of this procedure is to emphasize the need for consistency in deploying and operating equipment while purging and sampling monitoring wells during each sampling event. This will help to minimize sampling variability.

This procedure describes a general framework for groundwater sampling. Other site specific information (hydrogeological context, conceptual site model (CSM), DQOs, etc.) coupled with systematic planning must be added to the procedure in order to develop an appropriate site specific SAP/QAPP. In addition, the site specific SAP/QAPP must identify the specific equipment that will be used to collect the groundwater samples.

This procedure does not address the collection of water or free product samples from wells containing free phase LNAPLs and/or DNAPLs (light or dense non-aqueous phase

liquids). For this type of situation, the reader may wish to check: Cohen, and Mercer (1993) or other pertinent documents.

This SOP is to be used when collecting groundwater samples from monitoring wells at all Superfund, Federal Facility and RCRA sites in Region 1 under the conditions described herein. Request for modification of this SOP, in order to better address specific situations at individual wells, must include adequate technical justification for proposed changes. All changes and modifications must be approved and included in a revised SAP/QAPP before implementation in field.

3.0 BACKGROUND FOR IMPLEMENTATION

It is expected that the monitoring well screen has been properly located (both laterally and vertically) to intercept existing contaminant plume(s) or along flow paths of potential contaminant migration. Problems with inappropriate monitoring well placement or faulty/improper well installation cannot be overcome by even the best water sampling procedures. This SOP presumes that the analytes of interest are moving (or will potentially move) primarily through the more permeable zones intercepted by the screen interval.

Proper well construction, development, and operation and maintenance cannot be overemphasized. The use of installation techniques that are appropriate to the hydrogeologic setting of the site often prevent "problem well" situations from occurring. During well development, or redevelopment, tests should be conducted to determine the hydraulic characteristics of the monitoring well. The data can then be used to set the purging/sampling rate, and provide a baseline for evaluating changes in well performance and the potential need for well rehabilitation. Note: if this installation data or well history (construction and sampling) is not available or discoverable, for all wells to be sampled, efforts to build a sampling history should commence with the next sampling event.

The pump intake should be located within the screen interval and at a depth that will remain under water at all times. It is recommended that the intake depth and pumping rate remain the same for all sampling events. The mid-point or the lowest historical midpoint of the saturated screen length is often used as the location of the pump intake. For new wells, or for wells without pump intake depth information, the site's SAP/QAPP must provide clear reasons and instructions on how the pump intake depth(s) will be selected, and reason(s) for the depth(s) selected. If the depths to top and bottom of the well screen are not known, the SAP/QAPP will need to describe how the sampling depth will be determined and how the data can be used.

Stabilization of indicator field parameters is used to indicate that conditions are suitable for sampling to begin. Achievement of turbidity levels of less than 5 NTU, and stable drawdowns of less than 0.3 feet, while desirable, are not mandatory. Sample collection

may still take place provided the indicator field parameter criteria in this procedure are met. If after 2 hours of purging indicator field parameters have not stabilized, one of three optional courses of action may be taken: a) continue purging until stabilization is achieved, b) discontinue purging, do not collect any samples, and record in log book that stabilization could not be achieved (documentation must describe attempts to achieve stabilization), c) discontinue purging, collect samples and provide full explanation of attempts to achieve stabilization (note: there is a risk that the analytical data obtained, especially metals and strongly hydrophobic organic analytes, may reflect a sampling bias and therefore, the data may not meet the data quality objectives of the sampling event).

It is recommended that low-flow sampling be conducted when the air temperature is above 32°F (0°C). If the procedure is used below 32°F, special precautions will need to be taken to prevent the groundwater from freezing in the equipment. Because sampling during freezing temperatures may adversely impact the data quality objectives, the need for water sample collection during months when these conditions are likely to occur should be evaluated during site planning and special sampling measures may need to be developed. Ice formation in the flow-through-cell will cause the monitoring probes to act erratically. A transparent flow-through-cell needs to be used to observe if ice is forming in the cell. If ice starts to form on the other pieces of the sampling equipment, additional problems may occur.

4.0 HEALTH & SAFETY

When working on-site, comply with all applicable OSHA requirements and the site's health/safety procedures. All proper personal protection clothing and equipment are to be worn. Some samples may contain biological and chemical hazards. These samples should be handled with suitable protection to skin, eyes, etc.

5.0 CAUTIONS

The following cautions need to be considered when planning to collect groundwater samples when the below conditions occur.

If the groundwater degasses during purging of the monitoring well, dissolved gases and VOCs will be lost. When this happens, the groundwater data for dissolved gases (e.g., methane, ethene, ethane, dissolved oxygen, etc.) and VOCs will need to be qualified. Some conditions that can promote degassing are the use of a vacuum pump (e.g., peristaltic pumps), changes in aperture along the sampling tubing, and squeezing/pinching the pump's tubing which results in a pressure change.

When collecting the samples for dissolved gases and VOCs analyses, avoid aerating the groundwater in the pump's tubing. This can cause loss of the dissolved gases and VOCs in

the groundwater. Having the pump's tubing completely filled prior to sampling will avoid this problem when using a centrifugal pump or peristaltic pump.

Direct sun light and hot ambient air temperatures may cause the groundwater in the tubing and flow-through-cell to heat up. This may cause the groundwater to degas which will result in loss of VOCs and dissolved gases. When sampling under these conditions, the sampler will need to shade the equipment from the sunlight (e.g., umbrella, tent, etc.). If possible, sampling on hot days, or during the hottest time of the day, should be avoided. The tubing exiting the monitoring well should be kept as short as possible to avoid the sun light or ambient air from heating up the groundwater.

Thermal currents in the monitoring well may cause vertical mixing of water in the well bore. When the air temperature is colder than the groundwater temperature, it can cool the top of the water column. Colder water which is denser than warm water sinks to the bottom of the well and the warmer water at the bottom of the well rises, setting up a convection cell. "During low-flow sampling, the pumped water may be a mixture of convecting water from within the well casing and aquifer water moving inward through the screen. This mixing of water during low-flow sampling can substantially increase equilibration times, can cause false stabilization of indicator parameters, can give false indication of redox state, and can provide biological data that are not representative of the aquifer conditions" (Vroblesky 2007).

Failure to calibrate or perform proper maintenance on the sampling equipment and measurement instruments (e.g., dissolved oxygen meter, etc.) can result in faulty data being collected.

Interferences may result from using contaminated equipment, cleaning materials, sample containers, or uncontrolled ambient/surrounding air conditions (e.g., truck/vehicle exhaust nearby).

Cross contamination problems can be eliminated or minimized through the use of dedicated sampling equipment and/or proper planning to avoid ambient air interferences. Note that the use of dedicated sampling equipment can also significantly reduce the time needed to complete each sampling event, will promote consistency in the sampling, and may reduce sampling bias by having the pump's intake at a constant depth.

Clean and decontaminate all sampling equipment prior to use. All sampling equipment needs to be routinely checked to be free from contaminants and equipment blanks collected to ensure that the equipment is free of contaminants. Check the previous equipment blank data for the site (if they exist) to determine if the previous cleaning procedure removed the contaminants. If contaminants were detected and they are a concern, then a more vigorous cleaning procedure will be needed.

6.0 PERSONNEL QUALIFICATIONS

All field samplers working at sites containing hazardous waste must meet the requirements of the OSHA regulations. OSHA regulations may require the sampler to take the 40 hour OSHA health and safety training course and a refresher course prior to engaging in any field activities, depending upon the site and field conditions.

The field samplers must be trained prior to the use of the sampling equipment, field instruments, and procedures. Training is to be conducted by an experienced sampler before initiating any sampling procedure.

The entire sampling team needs to read, and be familiar with, the site Health and Safety Plan, all relevant SOPs, and SAP/QAPP (and the most recent amendments) before going onsite for the sampling event. It is recommended that the field sampling leader attest to the understanding of these site documents and that it is recorded.

7.0 EQUIPMENT AND SUPPLIES

A. Informational materials for sampling event

A copy of the current Health and Safety Plan, SAP/QAPP, monitoring well construction data, location map(s), field data from last sampling event, manuals for sampling, and the monitoring instruments' operation, maintenance, and calibration manuals should be brought to the site.

B. Well keys.

C. Extraction device

Adjustable rate, submersible pumps (e.g., centrifugal, bladder, etc.) which are constructed of stainless steel or polytetrafluoroethylene (PTFE, i.e. Teflon®) are preferred. PTFE, however, should not be used when sampling for per- and polyfluoroalkyl substances (PFAS) as it is likely to contain these substances.

Note: If extraction devices constructed of other materials are to be used, adequate information must be provided to show that the substituted materials do not leach contaminants nor cause interferences to the analytical procedures to be used. Acceptance of these materials must be obtained before the sampling event.

If bladder pumps are selected for the collection of VOCs and dissolved gases, the pump setting should be set so that one pulse will deliver a water volume that is sufficient to fill a 40 mL VOC vial. This is not mandatory, but is considered a "best practice". For the proper operation, the bladder pump will need a minimum amount of water above the pump; consult the manufacturer for the recommended submergence. The pump's recommended submergence value should be determined during the planning stage, since it may influence well construction and placement of dedicated pumps where water-level fluctuations are significant.

Adjustable rate, peristaltic pumps (suction) are to be used with caution when collecting samples for VOCs and dissolved gases (e.g., methane, carbon dioxide, etc.) analyses. Additional information on the use of peristaltic pumps can be found in Appendix A. If peristaltic pumps are used, the inside diameter of the rotor head tubing needs to match the inside diameter of the tubing installed in the monitoring well.

Inertial pumping devices (motor driven or manual) are not recommended. These devices frequently cause greater disturbance during purging and sampling, and are less easily controlled than submersible pumps (potentially increasing turbidity and sampling variability, etc.). This can lead to sampling results that are adversely affected by purging and sampling operations, and a higher degree of data variability.

D. Tubing

PTFE (Teflon®) or PTFE-lined polyethylene tubing are preferred when sampling is to include VOCs, SVOCs, pesticides, PCBs and inorganics. As discussed in the previous section, PTFE tubing should not be used when sampling for PFAS. In this case, a suitable alternative such as high-density polyethylene tubing should be used.

PVC, polypropylene or polyethylene tubing may be used when collecting samples for metal and other inorganics analyses.

Note: If tubing constructed of other materials is to be used, adequate information must be provided to show that the substituted materials do not leach contaminants nor cause interferences to the analytical procedures to be used. Acceptance of these materials must be obtained before the sampling event.

The use of 1/4 inch or 3/8 inch (inside diameter) tubing is recommended. This will help ensure that the tubing remains liquid filled when operating at very low pumping rates when using centrifugal and peristaltic pumps.

Silastic tubing should be used for the section around the rotor head of a peristaltic pump. It should be less than a foot in length. The inside diameter of the tubing used at the pump rotor head must be the same as the inside diameter of tubing placed in the well. A tubing connector is used to connect the pump rotor head tubing to the well tubing. Alternatively, the two pieces of tubing can be connected to each other by placing the one end of the tubing inside the end of the other tubing. The tubing must not be reused.

E. The water level measuring device

Electronic ”tape”, pressure transducer, water level sounder/level indicator, etc. should be capable of measuring to 0.01 foot accuracy. Recording pressure transducers, mounted above the pump, are especially helpful in tracking water levels during pumping operations, but their use must include check measurements with a water level “tape” at the start and end of each sampling event.

F. Flow measurement supplies

Graduated cylinder (size according to flow rate) and stopwatch usually will suffice.

Large graduated bucket used to record total water purged from the well.

G. Interface probe

To be used to check on the presence of free phase liquids (LNAPL, or DNAPL) before purging begins (as needed).

H. Power source (generator, nitrogen tank, battery, etc.)

When a gasoline generator is used, locate it downwind and at least 30 feet from the well so that the exhaust fumes do not contaminate samples.

I. Indicator field parameter monitoring instruments

Use of a multi-parameter instrument capable of measuring pH, oxidation/reduction potential (ORP), dissolved oxygen (DO), specific conductance, temperature, and coupled with a flow-through-cell is required when measuring all indicator field parameters, except turbidity. Turbidity is collected using a separate instrument. Record equipment/instrument identification (manufacturer, and model number).

Transparent, small volume flow-through-cells (e.g., 250 mLs or less) are preferred. This allows observation of air bubbles and sediment buildup in the cell, which can interfere with the operation of the monitoring instrument probes, to be easily detected. A small volume

cell facilitates rapid turnover of water in the cell between measurements of the indicator field parameters.

It is recommended to use a flow-through-cell and monitoring probes from the same manufacturer and model to avoid incompatibility between the probes and flow-through-cell.

Turbidity samples are collected before the flow-through-cell. A "T" connector coupled with a valve is connected between the pump's tubing and flow-through-cell. When a turbidity measurement is required, the valve is opened to allow the groundwater to flow into a container. The valve is closed and the container sample is then placed in the turbidimeter.

Standards are necessary to perform field calibration of instruments. A minimum of two standards are needed to bracket the instrument measurement range for all parameters except ORP which use a Zobell solution as a standard. For dissolved oxygen, a wet sponge used for the 100% saturation and a zero dissolved oxygen solution are used for the calibration.

Barometer (used in the calibration of the Dissolved Oxygen probe) and the conversion formula to convert the barometric pressure into the units of measure used by the Dissolved Oxygen meter are needed.

J. Decontamination supplies

Includes (for example) non-phosphate detergent, distilled/deionized water, isopropyl alcohol, etc.

K. Record keeping supplies

Logbook(s), well purging forms, chain-of-custody forms, field instrument calibration forms, etc.

L. Sample bottles

M. Sample preservation supplies (as required by the analytical methods)

N. Sample tags or labels

O. PID or FID instrument

If appropriate, to detect VOCs for health and safety purposes, and provide qualitative field evaluations.

P. Miscellaneous Equipment

Equipment to keep the sampling apparatus shaded in the summer (e.g., umbrella) and from freezing in the winter. If the pump's tubing is allowed to heat up in the warm weather, the cold groundwater may degas as it is warmed in the tubing.

8.0 EQUIPMENT/INSTRUMENT CALIBRATION

Prior to the sampling event, perform maintenance checks on the equipment and instruments according to the manufacturer's manual and/or applicable SOP. This will ensure that the equipment/instruments are working properly before they are used in the field.

Prior to sampling, the monitoring instruments must be calibrated and the calibration documented. The instruments are calibrated using U.S Environmental Protection Agency Region 1 *Calibration of Field Instruments (temperature, pH, dissolved oxygen, conductivity/specific conductance, oxidation/reduction [ORP], and turbidity),* March 23, 2017, or latest version or from one of the methods listed in 40CFR136, 40CFR141 and SW-846.

The instruments shall be calibrated at the beginning of each day. If the field measurement falls outside the calibration range, the instrument must be re-calibrated so that all measurements fall within the calibration range. At the end of each day, a calibration check is performed to verify that instruments remained in calibration throughout the day. This check is performed while the instrument is in measurement mode, not calibration mode. If the field instruments are being used to monitor the natural attenuation parameters, then a calibration check at mid-day is highly recommended to ensure that the instruments did not drift out of calibration. Note: during the day if the instrument reads zero or a negative number for dissolved oxygen, pH, specific conductance, or turbidity (negative value only), this indicates that the instrument drifted out of calibration or the instrument is malfunctioning. If this situation occurs the data from this instrument will need to be qualified or rejected.

9.0 PRELIMINARY SITE ACTIVITIES (as applicable)

Check the well for security (damage, evidence of tampering, missing lock, etc.) and record pertinent observations (include photograph as warranted).

If needed, lay out a sheet of clean polyethylene for monitoring and sampling equipment, unless equipment is elevated above the ground (e.g., on a table, etc.).

Remove well cap and if appropriate measure VOCs at the rim of the well with a PID or FID instrument and record reading in field logbook or on the well purge form.

If the well casing does not have an established reference point (usually a V-cut or indelible mark in the well casing), make one. Describe its location and record the date of the mark in the logbook (consider a photographic record as well). All water level measurements must be recorded relative to this reference point (and the altitude of this point should be determined using techniques that are appropriate to site's DQOs.

If water-table or potentiometric surface map(s) are to be constructed for the sampling event, perform synoptic water level measurement round (in the shortest possible time) before any purging and sampling activities begin. If possible, measure water level depth (to 0.01 ft.) and total well depth (to 0.1 ft.) the day before sampling begins, in order to allow for re-settlement of any particulates in the water column. This is especially important for those wells that have not been recently sampled because sediment buildup in the well may require the well to be redeveloped. If measurement of total well depth is not made the day before, it should be measured after sampling of the well is complete. All measurements must be taken from the established referenced point. Care should be taken to minimize water column disturbance.

Check newly constructed wells for the presence of LNAPLs or DNAPLs before the initial sampling round. If none are encountered, subsequent check measurements with an interface probe may not be necessary unless analytical data or field analysis signal a worsening situation. This SOP cannot be used in the presence of LNAPLs or DNAPLs. If NAPLs are present, the project team must decide upon an alternate sampling method. All project modifications must be approved and documented prior to implementation.

If available check intake depth and drawdown information from previous sampling event(s) for each well. Duplicate, to the extent practicable, the intake depth and extraction rate (use final pump dial setting information) from previous event(s). If changes are made in the intake depth or extraction rate(s) used during previous sampling event(s), for either portable or dedicated extraction devices, record new values, and explain reasons for the changes in the field logbook.

10.0 PURGING AND SAMPLING PROCEDURE

Purging and sampling wells in order of increasing chemical concentrations (known or anticipated) are preferred.

The use of dedicated pumps is recommended to minimize artificial mobilization and entrainment of particulates each time the well is sampled. Note that the use of dedicated sampling equipment can also significantly reduce the time needed to complete each sampling event, will promote consistency in the sampling, and may reduce sampling bias by having the pump's intake at a constant depth.

A. Initial Water Level

Measure the water level in the well before installing the pump if a non-dedicated pump is being used. The initial water level is recorded on the purge form or in the field logbook.

B. Install Pump

Lower pump, safety cable, tubing and electrical lines slowly (to minimize disturbance) into the well to the appropriate depth (may not be the mid-point of the screen/open interval). The Sampling and Analysis Plan/Quality Assurance Project Plan should specify the sampling depth (used previously), or provide criteria for selection of intake depth for each new well. If possible keep the pump intake at least two feet above the bottom of the well, to minimize mobilization of particulates present in the bottom of the well.

Pump tubing lengths, above the top of well casing should be kept as short as possible to minimize heating the groundwater in the tubing by exposure to sun light and ambient air temperatures. Heating may cause the groundwater to degas, which is unacceptable for the collection of samples for VOC and dissolved gases analyses.

C. Measure Water Level

Before starting pump, measure water level. Install recording pressure transducer, if used to track drawdowns, to initialize starting condition.

D. Purge Well

From the time the pump starts purging and until the time the samples are collected, the purged water is discharged into a graduated bucket to determine the total volume of groundwater purged. This information is recorded on the purge form or in the field logbook.

Start the pump at low speed and slowly increase the speed until discharge occurs. Check water level. Check equipment for water leaks and if present fix or replace the affected equipment. Try to match pumping rate used during previous sampling event(s). Otherwise, adjust pump speed until there is little or no water level drawdown. If the

minimal drawdown that can be achieved exceeds 0.3 feet, but remains stable, continue purging.

Monitor and record the water level and pumping rate every five minutes (or as appropriate) during purging. Record any pumping rate adjustments (both time and flow rate). Pumping rates should, as needed, be reduced to the minimum capabilities of the pump to ensure stabilization of the water level. Adjustments are best made in the first fifteen minutes of pumping in order to help minimize purging time. During pump start-up, drawdown may exceed the 0.3 feet target and then "recover" somewhat as pump flow adjustments are made. Purge volume calculations should utilize stabilized drawdown value, not the initial drawdown. If the initial water level is above the top of the screen do not allow the water level to fall into the well screen. The final purge volume must be greater than the stabilized drawdown volume plus the pump's tubing volume. If the drawdown has exceeded 0.3 feet and stabilizes, calculate the volume of water between the initial water level and the stabilized water level. Add the volume of the water which occupies the pump's tubing to this calculation. This combined volume of water needs to be purged from the well after the water level has stabilized before samples are collected.

Avoid the use of constriction devices on the tubing to decrease the flow rate because the constrictor will cause a pressure difference in the water column. This will cause the groundwater to degas and result in a loss of VOCs and dissolved gasses in the groundwater samples.

Note: the flow rate used to achieve a stable pumping level should remain constant while monitoring the indicator parameters for stabilization and while collecting the samples.

Wells with low recharge rates may require the use of special pumps capable of attaining very low pumping rates (e.g., bladder, peristaltic), and/or the use of dedicated equipment. For new monitoring wells, or wells where the following situation has not occurred before, if the recovery rate to the well is less than 50 mL/min., or the well is being essentially dewatered during purging, the well should be sampled as soon as the water level has recovered sufficiently to collect the volume needed for all anticipated samples. The project manager or field team leader will need to make the decision when samples should be collected, how the sample is to be collected, and the reasons recorded on the purge form or in the field logbook. A water level measurement needs to be performed and recorded before samples are collected. If the project manager decides to collect the samples using the pump, it is best during this recovery period that the pump intake tubing not be removed, since this will aggravate any turbidity problems. Samples in this specific situation may be collected without stabilization of indicator field parameters. Note that field conditions and efforts to overcome problematic situations must be recorded in order to support field decisions to deviate from normal procedures described in this SOP. If this type of problematic situation persists in a well, then water sample collection should be

changed to a passive or no-purge method, if consistent with the site's DQOs, or have a new well installed.

E. Monitor Indicator Field Parameters

After the water level has stabilized, connect the "T" connector with a valve and the flow-through-cell to monitor the indicator field parameters. If excessive turbidity is anticipated or encountered with the pump startup, the well may be purged for a while without connecting up the flow-through-cell, in order to minimize particulate buildup in the cell (This is a judgment call made by the sampler). Water level drawdown measurements should be made as usual. If possible, the pump may be installed the day before purging to allow particulates that were disturbed during pump insertion to settle.

During well purging, monitor indicator field parameters (turbidity, temperature, specific conductance, pH, ORP, DO) at a frequency of five minute intervals or greater. The pump's flow rate must be able to "turn over" at least one flow-through-cell volume between measurements (for a 250 mL flow-through-cell with a flow rate of 50 mLs/min., the monitoring frequency would be every five minutes; for a 500 mL flow-through-cell it would be every ten minutes). If the cell volume cannot be replaced in the five minute interval, then the time between measurements must be increased accordingly. Note: during the early phase of purging, emphasis should be put on minimizing and stabilizing pumping stress, and recording those adjustments followed by stabilization of indicator parameters. Purging is considered complete and sampling may begin when all the above indicator field parameters have stabilized. Stabilization is considered to be achieved when three consecutive readings are within the following limits:

Turbidity (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized),
Dissolved Oxygen (10% for values greater than 0.5 mg/L, if three Dissolved Oxygen values are less than 0.5 mg/L, consider the values as stabilized),
Specific Conductance (3%),
Temperature (3%),
pH (± 0.1 unit),
Oxidation/Reduction Potential (±10 millivolts).

All measurements, except turbidity, must be obtained using a flow-through-cell. Samples for turbidity measurements are obtained before water enters the flow-through-cell. Transparent flow-through-cells are preferred, because they allow field personnel to watch for particulate build-up within the cell. This build-up may affect indicator field parameter values measured within the cell. If the cell needs to be cleaned during purging operations, continue pumping and disconnect cell for cleaning, then reconnect after cleaning and

continue monitoring activities. Record start and stop times and give a brief description of cleaning activities.

The flow-through-cell must be designed in a way that prevents gas bubble entrapment in the cell. Placing the flow-through-cell at a 45 degree angle with the port facing upward can help remove bubbles from the flow-through-cell (see Appendix B Low-Flow Setup Diagram). Throughout the measurement process, the flow-through-cell must remain free of any gas bubbles. Otherwise, the monitoring probes may act erratically. When the pump is turned off or cycling on/off (when using a bladder pump), water in the cell must not drain out. Monitoring probes must remain submerged in water at all times.

F. Collect Water Samples

When samples are collected for laboratory analyses, the pump's tubing is disconnected from the "T" connector with a valve and the flow-through-cell. The samples are collected directly from the pump's tubing. Samples must not be collected from the flow-through-cell or from the "T" connector with a valve.

VOC samples are normally collected first and directly into pre-preserved sample containers. However, this may not be the case for all sampling locations; the SAP/QAPP should list the order in which the samples are to be collected based on the project's objective(s). Fill all sample containers by allowing the pump discharge to flow gently down the inside of the container with minimal turbulence.

If the pump's flow rate is too high to collect the VOC/dissolved gases samples, collect the other samples first. Lower the pump's flow rate to a reasonable rate and collect the VOC/dissolved gases samples and record the new flow rate.

During purging and sampling, the centrifugal/peristaltic pump tubing must remain filled with water to avoid aeration of the groundwater. It is recommended that 1/4 inch or 3/8 inch (inside diameter) tubing be used to help ensure that the sample tubing remains water filled. If the pump tubing is not completely filled to the sampling point, use the following procedure to collect samples: collect non-VOC/dissolved gases samples first, then increase flow rate slightly until the water completely fills the tubing, collect the VOC/dissolved gases samples, and record new drawdown depth and flow rate.

For bladder pumps that will be used to collect VOC or dissolved gas samples, it is recommended that the pump be set to deliver long pulses of water so that one pulse will fill a 40 mL VOC vial.

Use pre-preserved sample containers or add preservative, as required by analytical methods, to the samples immediately after they are collected. Check the analytical methods

(e.g. EPA SW-846, 40 CFR 136, water supply, etc.) for additional information on preservation.

If determination of filtered metal concentrations is a sampling objective, collect filtered water samples using the same low flow procedures. The use of an in-line filter (transparent housing preferred) is required, and the filter size (0.45 µm is commonly used) should be based on the sampling objective. Pre-rinse the filter with groundwater prior to sample collection. Make sure the filter is free of air bubbles before samples are collected. Preserve the filtered water sample immediately. Note: filtered water samples are not an acceptable substitute for unfiltered samples when the monitoring objective is to obtain chemical concentrations of total mobile contaminants in groundwater for human health or ecological risk calculations.

Label each sample as collected. Samples requiring cooling will be placed into a cooler with ice or refrigerant for delivery to the laboratory. Metal samples after acidification to a pH less than 2 do not need to be cooled.

G. Post Sampling Activities

If a recording pressure transducer is used to track drawdown, re-measure water level with tape.

After collection of samples, the pump tubing may be dedicated to the well for re-sampling (by hanging the tubing inside the well), decontaminated, or properly discarded.

Before securing the well, measure and record the well depth (to 0.1 ft.), if not measured the day before purging began. Note: measurement of total well depth annually is usually sufficient after the initial low stress sampling event. However, a greater frequency may be needed if the well has a “silting” problem or if confirmation of well identity is needed.

Secure the well.

11.0 DECONTAMINATION

Decontaminate sampling equipment prior to use in the first well, and then following sampling of each subsequent well. Pumps should not be removed between purging and sampling operations. The pump, tubing, support cable and electrical wires which were in contact with the well should be decontaminated by one of the procedures listed below.

The use of dedicated pumps and tubing will reduce the amount of time spent on decontamination of the equipment. If dedicated pumps and tubing are used, only the initial sampling event will require decontamination of the pump and tubing.

Note if the previous equipment blank data showed that contaminant(s) were present after using the below procedure or the one described in the SAP/QAPP, a more vigorous procedure may be needed.

Procedure 1

Decontaminating solutions can be pumped from either buckets or short PVC casing sections through the pump and tubing. The pump may be disassembled and flushed with the decontaminating solutions. It is recommended that detergent and alcohol be used sparingly in the decontamination process and water flushing steps be extended to ensure that any sediment trapped in the pump is removed. The pump exterior and electrical wires must be rinsed with the decontaminating solutions, as well. The procedure is as follows:

Flush the equipment/pump with potable water.

Flush with non-phosphate detergent solution. If the solution is recycled, the solution must be changed periodically.

Flush with potable or distilled/deionized water to remove all of the detergent solution. If the water is recycled, the water must be changed periodically.

Optional - flush with isopropyl alcohol (pesticide grade; must be free of ketones {e.g., acetone}) or with methanol. This step may be required if the well is highly contaminated or if the equipment blank data from the previous sampling event show that the level of contaminants is significant.

Flush with distilled/deionized water. This step must remove all traces of alcohol (if used) from the equipment. The final water rinse must not be recycled.

Procedure 2

Steam clean the outside of the submersible pump.

Pump hot potable water from the steam cleaner through the inside of the pump. This can be accomplished by placing the pump inside a three or four inch diameter PVC pipe with end cap. Hot water from the steam cleaner jet will be directed inside the PVC pipe and the pump exterior will be cleaned. The hot water from the steam cleaner will then be pumped from the PVC pipe through the pump and collected into another container. Note: additives or solutions should not be added to the steam cleaner.

Pump non-phosphate detergent solution through the inside of the pump. If the solution is recycled, the solution must be changed periodically.

Pump potable water through the inside of the pump to remove all of the detergent solution. If the solution is recycled, the solution must be changed periodically.

Pump distilled/deionized water through the pump. The final water rinse must not be recycled.

12.0 FIELD QUALITY CONTROL

Quality control samples are required to verify that the sample collection and handling process has not compromised the quality of the groundwater samples. All field quality control samples must be prepared the same as regular investigation samples with regard to sample volume, containers, and preservation. Quality control samples include field duplicates, equipment blanks, matrix spike/matrix spike duplicates, trip blanks (VOCs), and temperature blanks.

13.0 FIELD LOGBOOK

A field log shall be kept to document all groundwater field monitoring activities (see Appendix C, example table), and record the following for each well:

Site name, municipality, state.

Well identifier, latitude-longitude or state grid coordinates.

Measuring point description (e.g., north side of PVC pipe).

Well depth, and measurement technique.

Well screen length.

Pump depth.

Static water level depth, date, time and measurement technique.

Presence and thickness of immiscible liquid (NAPL) layers and detection method.

Pumping rate, drawdown, indicator parameters values, calculated or measured total volume pumped, and clock time of each set of measurements.

Type of tubing used and its length.

Type of pump used.

Clock time of start and end of purging and sampling activity.

Types of sample bottles used and sample identification numbers.

Preservatives used.

Parameters requested for analyses.

Field observations during sampling event.

Name of sample collector(s).

Weather conditions, including approximate ambient air temperature.

QA/QC data for field instruments.

Any problems encountered should be highlighted.

Description of all sampling/monitoring equipment used, including trade names, model number, instrument identification number, diameters, material composition, etc.

14.0 DATA REPORT

Data reports are to include laboratory analytical results, QA/QC information, field indicator parameters measured during purging, field instrument calibration information, and whatever other field logbook information is needed to allow for a full evaluation of data usability.

Note: the use of trade, product, or firm names in this sampling procedure is for descriptive purposes only and does not constitute endorsement by the U.S. EPA.

15.0 REFERENCES

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APPENDIX A

PERISTALTIC PUMPS

Before selecting a peristaltic pump to collect groundwater samples for VOCs and/or dissolved gases, (e.g., methane, carbon dioxide, etc.) consideration should be given to the following:

- The decision of whether or not to use a peristaltic pump is dependent on the intended use of the data.
- If the additional sampling error that may be introduced by this device is NOT of concern for the VOC/dissolved gases data's intended use, then this device may be acceptable.
- If minor differences in the groundwater concentrations could affect the decision, such as to continue or terminate groundwater cleanup or whether the cleanup goals have been reached, then this device should NOT be used for VOC/dissolved gases sampling. In these cases, centrifugal or bladder pumps are a better choice for more accurate results.

EPA and USGS have documented their concerns with the use of the peristaltic pumps to collect water sample in the below documents.

- "Suction Pumps are not recommended because they may cause degassing, pH modification, and loss of volatile compounds" *A Compendium of Superfund Field Operations Methods*, EPA/540/P-87/001, December 1987.
- "The agency does not recommend the use of peristaltic pumps to sample ground water particularly for volatile organic analytes" *RCRA Ground-Water Monitoring Draft Technical Guidance*, EPA Office of Solid Waste, November 1992.
- "The peristaltic pump is limited to shallow applications and can cause degassing resulting in alteration of pH, alkalinity, and volatiles loss", *Low-flow (Minimal drawdown) Ground-Water Sampling Procedures*, by Robert Puls & Michael Barcelona, April 1996, EPA/540/S-95/504.
- "Suction-lift pumps, such as peristaltic pumps, can operate at a very low pumping rate; however, using negative pressure to lift the sample can result in the loss of volatile analytes", USGS Book 9 Techniques of Water-Resources Investigation, Chapter A4. (Version 2.0, 9/2006).

APPENDIX B

SUMMARY OF SAMPLING INSTRUCTIONS

These instructions are for using an adjustable rate, submersible pump or a peristaltic pump with the pump's intake placed at the midpoint of a 10 foot or less well screen or an open interval. The water level in the monitoring well is above the top of the well screen or open interval, the ambient temperature is above 32°F, and the equipment is not dedicated. Field instruments are already calibrated. The equipment is setup according to the diagram at the end of these instructions.

1. Review well installation information. Record well depth, length of screen or open interval, and depth to top of the well screen. Determine the pump's intake depth (e.g., mid-point of screen/open interval).

2. On the day of sampling, check security of the well casing, perform any safety checks needed for the site, lay out a sheet of polyethylene around the well (if necessary), and setup the equipment. If necessary a canopy or an equivalent item can be setup to shade the pump's tubing and flow-through-cell from the sun light to prevent the sun light from heating the groundwater.

3. Check well casing for a reference mark. If missing, make a reference mark. Measure the water level (initial) to 0.01 ft. and record this information.

4. Install the pump's intake to the appropriate depth (e.g., midpoint) of the well screen or open interval. Do not turn-on the pump at this time.

5. Measure water level and record this information.

6. Turn-on the pump and discharge the groundwater into a graduated waste bucket. Slowly increase the flow rate until the water level starts to drop. Reduce the flow rate slightly so the water level stabilizes. Record the pump's settings. Calculate the flow rate using a graduated container and a stop watch. Record the flow rate. Do not let the water level drop below the top of the well screen.

If the groundwater is highly turbid or discolored, continue to discharge the water into the bucket until the water clears (visual observation); this usually takes a few minutes. The turbid or discolored water is usually from the well-being disturbed during the pump installation. If the water does not clear, then you need to make a choice whether to continue purging the well (hoping that it will clear after a reasonable time) or continue to

the next step. Note, it is sometimes helpful to install the pump the day before the sampling event so that the disturbed materials in the well can settle out.

If the water level drops to the top of the well screen during the purging of the well, stop purging the well, and do the following:

> Wait for the well to recharge to a sufficient volume so samples can be collected. This may take a while (pump may be removed from well, if turbidity is not a problem). The project manager will need to make the decision when samples should be collected and the reasons recorded in the site's log book. A water level measurement needs to be performed and recorded before samples are collected. When samples are being collected, the water level must not drop below the top of the screen or open interval. Collect the samples from the pump's tubing. Always collect the VOCs and dissolved gases samples first. Normally, the samples requiring a small volume are collected before the large volume samples are collected just in case there is not sufficient water in the well to fill all the sample containers. All samples must be collected, preserved, and stored according to the analytical method. Remove the pump from the well and decontaminate the sampling equipment.

If the water level has dropped 0.3 feet or less from the initial water level (water level measure before the pump was installed); proceed to Step 7. If the water level has dropped more than 0.3 feet, calculate the volume of water between the initial water level and the stabilized water level. Add the volume of the water which occupies the pump's tubing to this calculation. This combined volume of water needs to be purged from the well after the water level has stabilized before samples are be collected.

7. Attach the pump's tubing to the "T" connector with a valve (or a three-way stop cock). The pump's tubing from the well casing to the "T" connector must be as short as possible to prevent the groundwater in the tubing from heating up from the sun light or from the ambient air. Attach a short piece of tubing to the other end of the end of the "T" connector to serve as a sampling port for the turbidity samples. Attach the remaining end of the "T" connector to a short piece of tubing and connect the tubing to the flow-through-cell bottom port. To the top port, attach a small piece of tubing to direct the water into a calibrated waste bucket. Fill the cell with the groundwater and remove all gas bubbles from the cell. Position the flow-through-cell in such a way that if gas bubbles enter the cell they can easily exit the cell. If the ports are on the same side of the cell and the cell is cylindrical shape, the cell can be placed at a 45-degree angle with the ports facing upwards; this position should keep any gas bubbles entering the cell away from the monitoring probes and allow the gas bubbles to exit the cell easily (see Low-Flow Setup Diagram). Note:

make sure there are no gas bubbles caught in the probes' protective guard; you may need to shake the cell to remove these bubbles.

8. Turn-on the monitoring probes and turbidity meter.

9. Record the temperature, pH, dissolved oxygen, specific conductance, and oxidation/reduction potential measurements. Open the valve on the "T" connector to collect a sample for the turbidity measurement, close the valve, do the measurement, and record this measurement. Calculate the pump's flow rate from the water exiting the flow-through-cell using a graduated container and a stop watch, and record the measurement. Measure and record the water level. Check flow-through-cell for gas bubbles and sediment; if present, remove them.

10. Repeat Step 9 every 5 minutes or as appropriate until monitoring parameters stabilized. Note: at least one flow-through-cell volume must be exchanged between readings. If not, the time interval between readings will need to be increased. Stabilization is achieved when three consecutive measurements are within the following limits:

Turbidity (10% for values greater than 5 NTUs; if three Turbidity values are less than 5 NTUs, consider the values as stabilized),
Dissolved Oxygen (10% for values greater than 0.5 mg/L, if three Dissolved Oxygen values are less than 0.5 mg/L, consider the values as stabilized),
Specific Conductance (3%),
Temperature (3%),
pH (± 0.1 unit),
Oxidation/Reduction Potential (±10 millivolts).

If these stabilization requirements do not stabilize in a reasonable time, the probes may have been coated from the materials in the groundwater, from a buildup of sediment in the flow-through-cell, or a gas bubble is lodged in the probe. The cell and the probes will need to be cleaned. Turn-off the probes (not the pump), disconnect the cell from the "T" connector and continue to purge the well. Disassemble the cell, remove the sediment, and clean the probes according to the manufacturer's instructions. Reassemble the cell and connect the cell to the "T" connector. Remove all gas bubbles from the cell, turn-on the probes, and continue the measurements. Record the time the cell was cleaned.

11. When it is time to collect the groundwater samples, turn-off the monitoring probes, and disconnect the pump's tubing from the "T" connector. If you are using a centrifugal or peristaltic pump check the pump's tubing to determine if the tubing is completely filled with water (no air space).

All samples must be collected and preserved according to the analytical method. VOCs and dissolved gases samples are normally collected first and directly into pre-preserved sample containers. However, this may not be the case for all sampling locations; the SAP/QAPP should list the order in which the samples are to be collected based on the project's objective(s). Fill all sample containers by allowing the pump discharge to flow gently down the inside of the container with minimal turbulence.

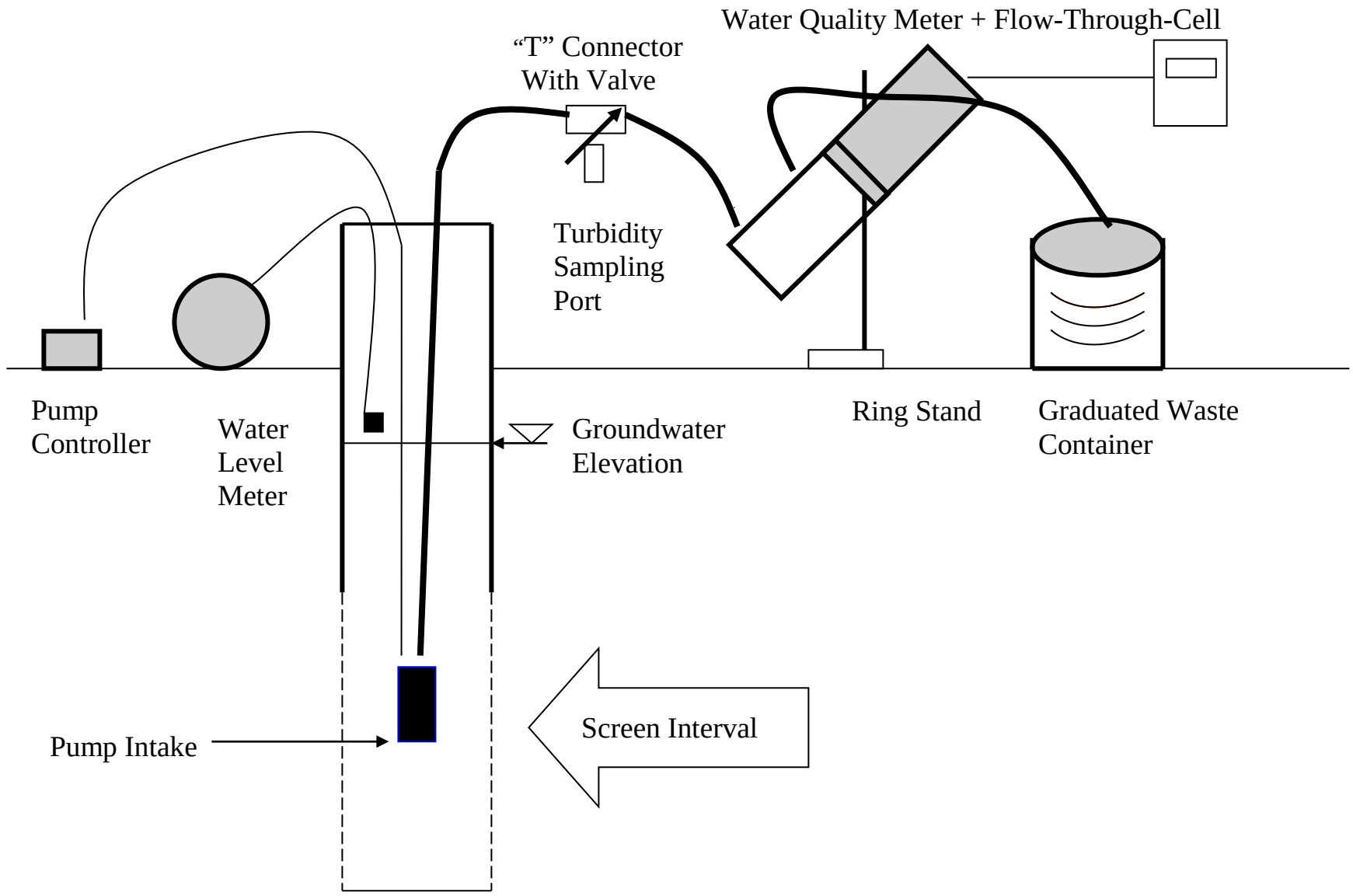
If the pump's tubing is not completely filled with water and the samples are being collected for VOCs and/or dissolved gases analyses using a centrifugal or peristaltic pump, do the following:

> All samples must be collected and preserved according to the analytical method. The VOCs and the dissolved gases (e.g., methane, ethane, ethene, and carbon dioxide) samples are collected last. When it becomes time to collect these samples increase the pump's flow rate until the tubing is completely filled. Collect the samples and record the new flow rate.

12. Store the samples according to the analytical method.

13. Record the total purged volume (graduated waste bucket). Remove the pump from the well and decontaminate the sampling equipment.

Low-Flow Setup Diagram



APPENDIX C

EXAMPLE (Minimum Requirements)

WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Location (Site/Facility Name)_____ Depth to _____/_____ of screen
Well Number_____ Date_____ (below MP) top bottom
Field Personnel_____ Pump Intake at (ft. below MP)_____
Sampling Organization_____ Purging Device; (pump type)_____
Identify MP_____ Total Volume Purged _____

Clock Time 24 HR	Water Depth below MP ft	Pump Dial[1]	Purge Rate ml/min	Cum. Volume Purged liters	Temp. "C	Spec. Cond.[2] µS/cm	pH	ORP[3] mv	DO mg/L	Tur-bidity NTU	Comments
Stabilization Criteria					3%	3%	±0.1	±10 mv	10%	10%	

1. Pump dial setting (for example: hertz, cycles/min, etc).
2. µSiemens per cm(same as µmhos/cm)at 25°C.
3. Oxidation reduction potential (ORP)

Supplement D – NYSDOH Vapor and Air Sampling

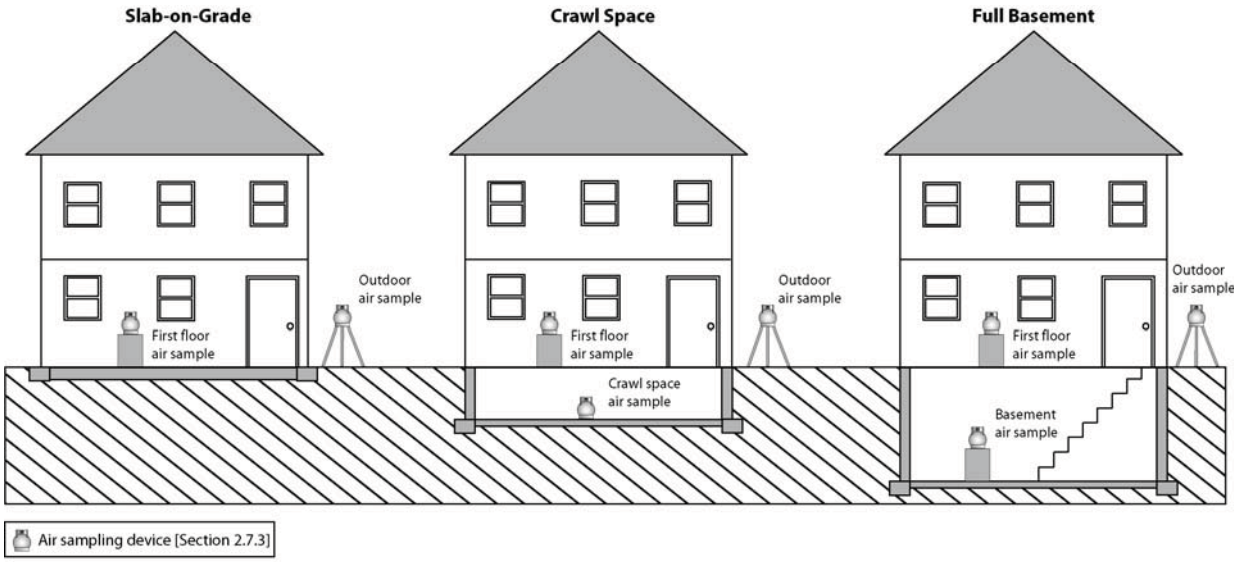


Figure 2.1
Schematic of indoor and outdoor air sampling locations

2.6.4 Outdoor air

Typically, an outdoor air sample is collected outside of each building where an indoor air sample is collected. However, if several buildings are being sampled within a localized area, representative outdoor air samples may be appropriate. For example, one outdoor air sample may be sufficient for three houses being sampled in a cul-de-sac. Outdoor air samples should be collected from a representative upwind location, away from wind obstructions (e.g., trees or bushes), and at a height above the ground to represent breathing zones (3 to 5 feet) [Figure 2.1]. A representative sample is one that is not biased toward obvious sources of volatile chemicals (e.g., automobiles, lawn mowers, oil storage tanks, gasoline stations, industrial facilities, etc.). For buildings with HVAC systems that draw outdoor air into the building, an outdoor air sample collected near the outdoor air intake may be appropriate.

2.7 Sampling protocols

The procedures recommended here may be modified depending on site-specific conditions, the sampling objectives, or emerging technologies and methodologies. Alternative sampling procedures should be described thoroughly and proposed in a work plan submitted for review by the State. The State will review and comment on the proposed procedure and consider the efficacy of the alternative sampling procedure based on the objectives of investigation. In all cases, work plans should thoroughly describe the proposed sampling procedure. Similarly, the procedures that were implemented in the field should be documented and included in the final report of the sampling results.

2.7.1 Soil vapor

Soil vapor probe installations [Figure 2.2] may be permanent, semi-permanent or temporary. In general, permanent or semi-permanent installations are preferred for data consistency reasons and to ensure outdoor air infiltration does not occur. Temporary probes should only be used if measures are taken to ensure that an adequate surface seal is created to prevent outdoor air infiltration and if tracer gas is used at every sampling location. [See Section 2.7.5 for additional information about the use of tracer gas when collecting soil vapor samples.] Soil vapor implants or probes should be constructed in the same manner at all sampling locations to minimize possible discrepancies. The following procedures should be included in any permanent construction protocol:

a. implants should be installed using an appropriate method based on site conditions (e.g., direct push, manually driven, auger — if necessary to attain the desired depth or if sidewall smearing is a concern, etc.);

b. porous, inert backfill material (e.g., glass beads, washed #1 crushed stone, etc.) should be used to create a sampling zone 1 to 2 feet in length;

c. implants should be fitted with inert tubing (e.g., polyethylene, stainless steel, nylon, Teflon®, etc.) of the appropriate size (typically 1/8 inch to 1/4 inch diameter) and of laboratory or food grade quality to the surface;

d. soil vapor probes should be sealed above the sampling zone with a bentonite slurry for a minimum distance of 3 feet to prevent outdoor air infiltration and the remainder of the borehole backfilled with clean material;

e. for multiple probe depths, the borehole should be grouted with bentonite between probes to create discrete sampling zones or separate nested probes should be installed [Figure 2.2]; and

f. steps should be taken to minimize infiltration of water or outdoor air and to prevent accidental damage (e.g., setting a protective casing around the top of the probe tubing and grouting in place to the top of bentonite, sloping the ground surface to direct water away from the borehole like a groundwater monitoring well, etc.).

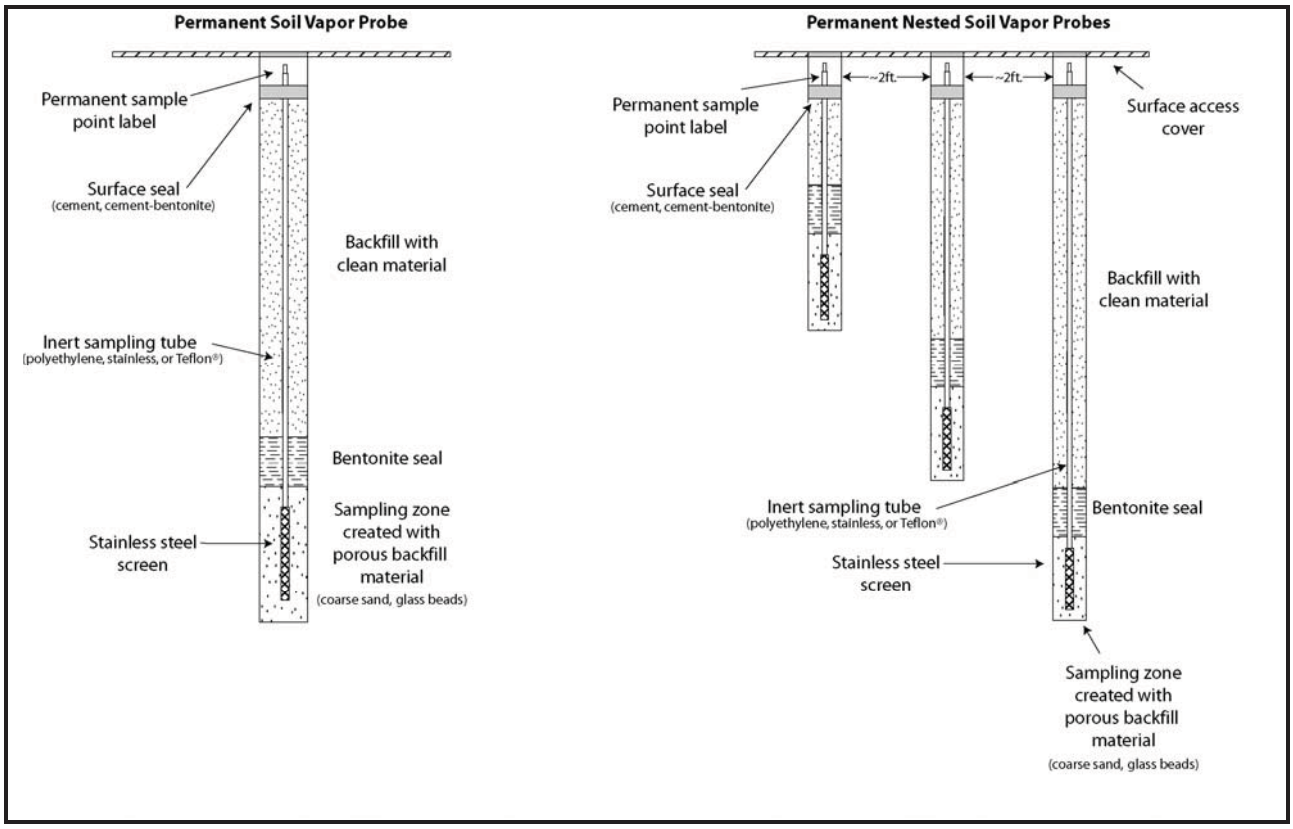


Figure 2.2

Schematics of a generic permanent soil vapor probe
and permanent nested soil vapor probes

[Note: Many variations exist and may be proposed in a work plan. Proposed installations should meet the sampling objectives and requirements of the analytical methods.]

To obtain representative samples and to minimize possible discrepancies, soil vapor samples should be collected in the following manner at all locations:

a. at least 24 hours after the installation of permanent probes and shortly after the installation of temporary probes, one to three implant volumes (i.e., the volume of the sample probe and tube) should be purged prior to collecting the samples;

b. flow rates for both purging and collecting should not exceed 0.2 liters per minute to minimize outdoor air infiltration during sampling;

c. samples should be collected, using conventional sampling methods, in an appropriate container — one which

    i. meets the objectives of the sampling (e.g., investigation of areas where low or high concentrations of volatile chemicals are expected; to minimize losses of volatile chemicals that are susceptible to photodegradation),

    ii. is consistent with the sampling and analytical methods (e.g., low flow rate; Summa® canisters if analyzing by using EPA Method TO-15), and

    iii. is certified clean by the laboratory;

d. sample size depends upon the volume of that will achieve minimum reporting limits [Section 2.9]; and

e. a tracer gas (e.g., helium, butane, sulfur hexafluoride, etc.) should be used when collecting soil vapor samples to verify that adequate sampling techniques are being implemented (i.e., to verify infiltration of outdoor air is not occurring) [Section 2.7.5].

In some cases, weather conditions may present certain limitations on soil vapor sampling. For example, condensation in the sample tubing may be encountered during winter sampling due to low outdoor air temperatures. Devices, such as tube warmers, may be used to address these conditions. Anticipated limitations to the sampling should be discussed prior to the sampling event so appropriate measures can be taken to address these difficulties and produce representative and reliable data.

When soil vapor samples are collected, the following actions should be taken to document local conditions during sampling that may influence interpretation of the results:

a. if sampling near a commercial or industrial building, uses of volatile chemicals during normal operations of the facility should be identified;

b. outdoor plot sketches should be drawn that include the site, area streets, neighboring commercial or industrial facilities (with estimated distance to the site), outdoor air sampling locations (if applicable), and compass orientation (north);

c. weather conditions (e.g., precipitation and outdoor temperature) should be noted for the past 24 to 48 hours; and

d. any pertinent observations should be recorded, such as odors and readings from field instrumentation.

Additional information that could be gathered to assist in the interpretation of the results includes barometric pressure, wind speed and wind direction.

The field sampling team should maintain a sample log sheet summarizing the following:

a. sample identification,

b. date and time of sample collection,

c. sampling depth,

d. identity of samplers,

e. sampling methods and devices,

f. purge volumes,

g. volume of soil vapor extracted,

h. if canisters used, the vacuum before and after samples were collected,

i. apparent moisture content (dry, moist, saturated, etc.) of the sampling zone, and

j. chain of custody protocols and records used to track samples from sampling point to analysis.

2.7.2 Sub-slab vapor

During colder months, heating systems should be operating to maintain normal indoor air temperatures (i.e., 65 – 75 °F) for at least 24 hours prior to and during the scheduled sampling time. Prior to installation of the sub-slab vapor probe, the building floor should be inspected and any penetrations (cracks, floor drains, utility perforations, sumps, etc.) should be noted and recorded. Probes should be installed at locations where the potential for ambient air infiltration via floor penetrations is minimal.

Sub-slab vapor probe installations [Figure 2.3] may be permanent, semi-permanent or temporary. A vacuum should not be used to remove drilling debris from the sampling port. Sub-slab implants or probes should be constructed in the same manner at all sampling locations to minimize possible discrepancies. The following procedures should be included in any construction protocol:

a. permanent recessed probes should be constructed with brass or stainless steel tubing and fittings;

b. temporary probes should be constructed with inert tubing (e.g., polyethylene, stainless steel, nylon, Teflon®, etc.) of the appropriate size (typically 1/8 inch to 1/4 inch diameter), and of laboratory or food grade quality;

c. tubing should not extend further than 2 inches into the sub-slab material;

d. porous, inert backfill material (e.g., glass beads, washed #1 crushed stone, etc.) should be added to cover about 1 inch of the probe tip for permanent installations; and

e. the implant should be sealed to the surface with non-VOC-containing and non-shrinking products for temporary installations (e.g., permagum grout, melted beeswax, putty, etc.) or cement for permanent installations.

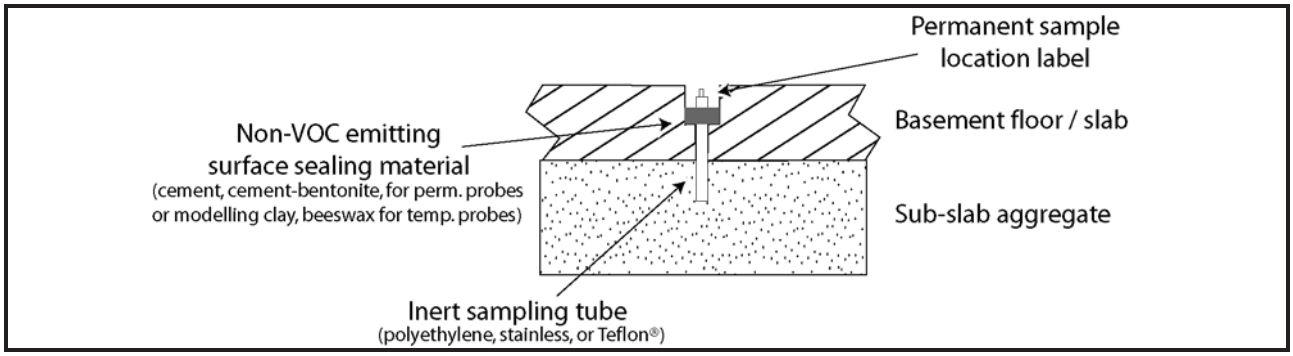


Figure 2.3

Schematic of a generic sub-slab vapor probe

[Note: Many variations exist and may be proposed in a work plan. Proposed installations should meet the sampling objectives and requirements of the analytical methods.]

To obtain representative samples that meet the data quality objectives, sub-slab vapor samples should be collected in the following manner:

a. after installation of the probes, one to three volumes (i.e., the volume of the sample probe and tube) must be purged prior to collecting the samples to ensure samples collected are representative;

b. flow rates for both purging and collecting must not exceed 0.2 liters per minute to minimize ambient air infiltration during sampling; and

c. samples should be collected, using conventional sampling methods, in an appropriate container — one which

    i. meets the objectives of the sampling (e.g., investigation of areas where low or high concentrations of volatile chemicals are expected; to minimize losses of volatile chemicals that are susceptible to photodegradation),

    ii. is consistent with the sampling and analytical methods (e.g., low flow rate; Summa® canisters if analyzing by using EPA Method TO-15), and

    iii. is certified clean by the laboratory;

d. sample size depends upon the volume of that will achieve minimum reporting limits [Section 2.9], the flow rate, and the sampling duration; and

e. ideally, samples should be collected over the same period of time as concurrent indoor and outdoor air samples.

When sub-slab vapor samples are collected, the following actions should be taken to document conditions during sampling and ultimately to aid in the interpretation of the sampling results [Section 3]:

a. historic and current storage and uses of volatile chemicals should be identified, especially if sampling within a commercial or industrial building (e.g., use of volatile chemicals in commercial or industrial processes and/or during building maintenance);

b. the use of heating or air conditioning systems during sampling should be noted;

c. floor plan sketches should be drawn that include the floor layout with sampling locations, chemical storage areas, garages, doorways, stairways, location of basement sumps or subsurface drains and utility perforations through building foundations, HVAC system air supply and return registers, compass orientation (north), footings that create separate foundation sections, and any other pertinent information should be completed;

d. outdoor plot sketches should be drawn that include the building site, area streets, outdoor air sampling locations (if applicable), compass orientation (north), and paved areas;

e. weather conditions (e.g., precipitation and indoor and outdoor temperature) and ventilation conditions (e.g., heating system active and windows closed) should be reported; and

f. any pertinent observations, such as spills, floor stains, smoke tube results, odors and readings from field instrumentation (e.g., vapors via PID, ppbRAE, Jerome Mercury Vapor Analyzer, etc.), should be recorded.

Additional documentation that could be gathered to assist in the interpretation of the results includes information about air flow patterns and pressure relationships obtained by using smoke tubes or other devices (especially between floor levels and between suspected

contaminant sources and other areas), the barometric pressure and photographs to accompany floor plan sketches.

The field sampling team should maintain a sample log sheet summarizing the following:

a. sample identification,
b. date and time of sample collection,
c. sampling depth,
d. identity of samplers,
e. sampling methods and devices,
f. soil vapor purge volumes,
g. volume of soil vapor extracted,
h. if canisters used, vacuum of canisters before and after samples collected,
i. apparent moisture content (dry, moist, saturated, etc.) of the sampling zone, and
j. chain of custody protocols and records used to track samples from sampling point to analysis.

2.7.3 Indoor air

[Reference: NYSDOH's *Indoor Air Sampling & Analysis Guidance (February 1, 2005)*]

During colder months, heating systems should be operating to maintain normal indoor air temperatures (i.e., 65 – 75 °F) for at least 24 hours prior to and during the scheduled sampling time. If possible, prior to collecting indoor samples, a pre-sampling inspection [Section 2.11.1] should be performed to evaluate the physical layout and conditions of the building being investigated, to identify conditions that may affect or interfere with the proposed sampling, and to prepare the building for sampling. This process is described in Section 2.11.1.

In general, indoor air samples should be collected in the following manner:

a. sampling duration should reflect the exposure scenario being evaluated without compromising the detection limit or sample collection flow rate (e.g., an 8 hour sample from a workplace with a single shift versus a 24 hour sample from a workplace with multiple shifts). To ensure that air is representative of the locations sampled and to avoid undue influence from sampling personnel, samples should be collected for at least 1 hour. If the goal of the sampling is to represent average concentrations over longer periods, then longer duration sampling periods may be appropriate. Typically, 24 hour samples are collected from residential settings;
b. personnel should avoid lingering in the immediate area of the sampling device while samples are being collected;
c. sample flow rates must conform to the specifications in the sample collection method and, if possible, should be consistent with the flow rates for concurrent outdoor air and sub-slab samples; and
d. samples must be collected, using conventional sampling methods, in an appropriate container — one which

i. meets the objectives of the sampling (e.g., investigation of areas where low or high concentrations of volatile chemicals are expected; to minimize losses of volatile chemicals that are susceptible to photodegradation),

ii. is consistent with the sampling and analytical methods (e.g., low flow rate; Summa® canisters if analyzing by using EPA Method TO-15), and

iii. is certified clean by the laboratory.

At sites with tetrachloroethene contamination, passive air monitors that are specifically analyzed for tetrachloroethene (i.e., "perc badges") are commonly used to collect indoor and outdoor air samples. If site characterization activities indicate that degradation products of tetrachloroethene also represent a vapor intrusion concern, perc badges may be used to indicate the likelihood of vapor intrusion (i.e., by using tetrachloroethene as a surrogate) followed, as appropriate, by more comprehensive sampling and laboratory analyses to quantify both tetrachloroethene and its degradation products. Perc badge samples ideally should be collected over a twenty-four hour period, but for no less than eight hours.

The following actions should be taken to document conditions during indoor air sampling and ultimately to aid in the interpretation of the sampling results [Section 3]:

a. historic and current uses and storage of volatile chemicals should be identified, especially if sampling within a commercial or industrial building (e.g., use of volatile chemicals in commercial or industrial processes and/or during building maintenance);

b. a product inventory survey documenting sources of volatile chemicals present in the building during the indoor air sampling that could potentially influence the sample results should be completed [Section 2.11.2];

c. the use of heating or air conditioning systems during sampling should be noted;

d. floor plan sketches should be drawn that include the floor layout with sampling locations, chemical storage areas, garages, doorways, stairways, location of basement sumps or subsurface drains and utility perforations through building foundations, HVAC system supply and return registers, compass orientation (north), footings that create separate foundation sections, and any other pertinent information should be completed;

e. outdoor plot sketches should be drawn that include the building site, area streets, outdoor air sampling locations (if applicable), compass orientation (north), and paved areas;

f. weather conditions (e.g., precipitation and indoor and outdoor temperature) and ventilation conditions (e.g., heating system active and windows closed) should be reported; and

g. any pertinent observations, such as spills, floor stains, smoke tube results, odors and readings from field instrumentation (e.g., vapors via PID, ppbRAE, Jerome Mercury Vapor Analyzer, etc.), should be recorded.

Additional documentation that could be gathered to assist in the interpretation of the results includes information about air flow patterns and pressure relationships obtained by using smoke tubes or other devices (especially between floor levels and between suspected contaminant sources and other areas), the barometric pressure and photographs to accompany floor plan sketches.

The field sampling team should maintain a sample log sheet summarizing the following:

a. sample identification,
b. date and time of sample collection,
c. sampling height,
d. identity of samplers,
e. sampling methods and devices,
f. depending upon the method, volume of air sampled,
g. if canisters are used, vacuum of canisters before and after samples collected, and
h. chain of custody protocols and records used to track samples from sampling point to analysis.

2.7.4 Outdoor air

Outdoor air samples should be collected simultaneously with indoor air samples to evaluate the potential influence, if any, of outdoor air on indoor air quality. They may also be collected simultaneously with soil vapor samples to identify potential outdoor air interferences associated with infiltration of outdoor air into the sampling apparatus while the soil vapor was collected. To obtain representative samples that meet the data quality objectives, outdoor air samples should be collected in a manner consistent with that for indoor air samples (described in Section 2.7.3).

The following actions should be taken to document conditions during outdoor air sampling and ultimately to aid in the interpretation of the sampling results [Section 3]:

a. outdoor plot sketches should be drawn that include the building site, area streets, outdoor air sampling locations, the location of potential interferences (e.g., gasoline stations, factories, lawn movers, etc.), compass orientation (north), and paved areas;
b. weather conditions (e.g., precipitation and outdoor temperature) should be reported; and
c. any pertinent observations, such as odors, readings from field instrumentation, and significant activities in the vicinity (e.g., operation of heavy equipment or dry cleaners) should be recorded.

2.7.5 Tracer gas

When collecting soil vapor samples as part of a vapor intrusion evaluation, a tracer gas serves as a quality assurance/quality control measure to verify the integrity of the soil vapor probe seal. Without the use of a tracer, there is no way to verify that a soil vapor sample has not been diluted by outdoor air.

Depending on the nature of the contaminants of concern, a number of different compounds can be used as a tracer. Typically, sulfur hexafluoride (SF_6) or helium are used as tracers because they are readily available, have low toxicity, and can be monitored with portable measurement devices. Butane and propane (or other gases) could also be used as a tracer in some situations. Compounds other than those mentioned here may be appropriate, provided they meet project-specific data quality objectives. Where applicable, steps should

be taken to ensure that the gas used by the laboratory to clean the air sampling container is different from the gas used as a tracer during sampling (e.g., helium).

The protocol for using a tracer gas is straightforward: simply enrich the atmosphere in the immediate vicinity of the area where the probe intersects the ground surface with the tracer gas, and measure a vapor sample from the probe for the presence of high concentrations (> 10%) of the tracer. A cardboard box, a plastic pail, or even a garbage bag can serve to keep the tracer gas in contact with the probe during the testing. If there are concerns about infiltration of ambient air through other parts of the sampling train (such as around the fittings, not just at the probe/ground interface), then consideration should be given to ensuring that the tracer gas is in contact with the entire sampling apparatus. In these cases, field personnel may prefer to use a liquid tracer — soaking paper towels with a liquid tracer and placing the towels around the probe/ground interface, around fittings, and/or in the corner of a shroud.

There are two basic approaches to testing for the tracer gas:

1. include the tracer gas in the list of target analytes reported by the laboratory; or
2. use a portable monitoring device to analyze a sample of soil vapor for the tracer prior to and after sampling for the compounds of concern. (Note that the tracer gas samples can be collected via syringe, Tedlar® bag etc. They need not be collected in Summa® canisters or minicans.)

The advantage of the second approach is that the real time tracer sampling results can be used to confirm the integrity of the probe seals prior to formal sample collection.

Figure 2.4 depicts common methods for using tracer gas. In examples a, b and c, the tracer gas is released in the enclosure prior to initially purging the sample point. Care should be taken to avoid excessive purging prior to sample collection. Care should also be taken to prevent pressure build-up in the enclosure during introduction of the tracer gas. Inspection of the installed sample probe, specifically noting the integrity of the surface seal and the porosity of the soil in which the probe is installed, will help to determine the tracer gas setup. Figure 2.4a may be most effective at preventing tracer gas infiltration, however, it may not be appropriate in some situations depending on site-specific conditions. Figures 2.4b and 2.4c may be sufficient for probes installed in tight soils with well-constructed surface seals. Figure 2d provides an example of using a liquid tracer. In all cases, the same tracer gas application should be used for all probes at any given site.

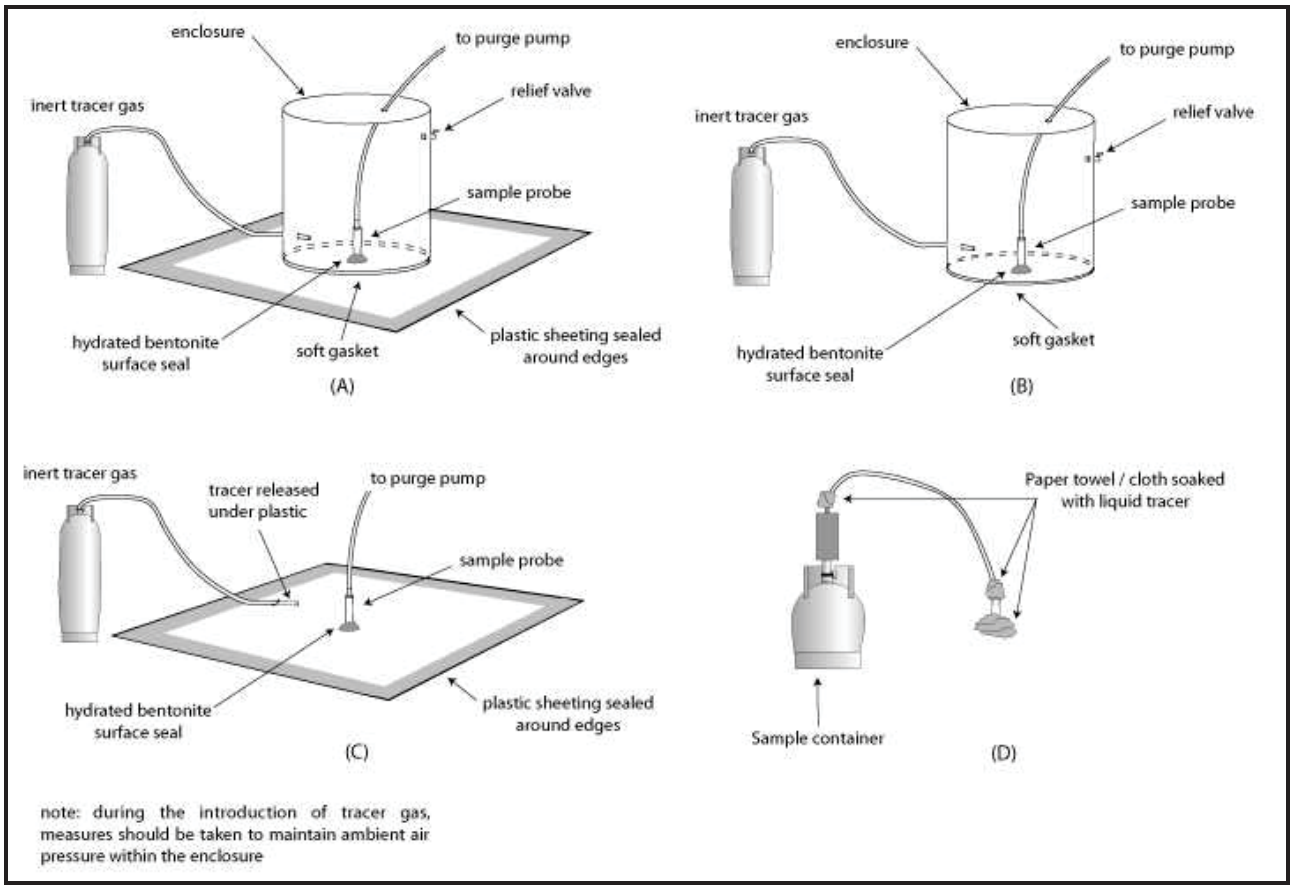


Figure 2.4
Schematics of generic tracer gas applications when collecting soil vapor samples

Because minor leakage around the probe seal should not materially affect the usability of the soil vapor sampling results, the mere presence of the tracer gas in the sample should not be a cause for alarm. Consequently, portable field monitoring devices with detection limits in the low ppm range are more than adequate for screening samples for the tracer. If high concentrations (> 10%) of tracer gas are observed in a sample, the probe seal should be enhanced to reduce the infiltration of outdoor air.

Where permanent or semi-permanent sampling probes are used, tracer gas samples should be collected at each of the sampling probes during the initial stages of a soil vapor sampling program. If the results of the initial samples indicate that the probe seals are adequate, reducing the number of locations at which tracer gas samples are employed may be considered. At a minimum, tracer gas samples should be collected with at least 10% of the soil vapor samples collected in subsequent sampling rounds. When using permanent soil vapor probes as part of a long-term monitoring program, annual testing of the probe integrity is recommended. Where temporary probes are used, tracer gas should be used at every sampling location, every time.

Supplement E – Decontamination

1.0 Purpose and Scope

This SOP supplement provides guidance to project personnel for the decontamination of field equipment, but does not specifically address all of the required procedures, and is intended to be used in conjunction with available operating manuals supplied by equipment manufacturers. Decontamination must be performed in accordance with other relevant project-specific documentation, including work plans, sampling and analysis plans, health and safety plans, quality assurance project plans, and additional SOPs, as appropriate.

2.0 General

Decontamination of sampling and heavy equipment, as well as personal protective equipment (PPE), is performed as a quality assurance measure and a safety precaution. Decontamination prevents cross-contamination between samples, minimizes contaminant transport (it is critical that equipment used in one area not serve as a source of contamination of another), and helps to maintain a clean working environment for the safety of field personnel. General decontamination requirements will be specified in project plans. Note: All decontamination procedures must comply with specific requirements when sampling for per- and polyfluoroalkyl substances (PFAS).

Field personnel will review and be familiar with required decontamination procedures, including those for cleaning field equipment, proper storage of cleaned field equipment, and for properly disposing of waste generated from decontamination procedures. Decontamination conducted on site will be performed in a designated, controlled location that will not impact collected samples. Decontamination activities will be appropriately documented in the field notes. Wastes generated in the field will be collected, stored, and properly disposed in accordance with applicable project requirements.

Decontamination consists of physically removing contaminants from the surface of equipment and/or materials potentially exposed to contaminants. A decontamination plan assumes that protective clothing and equipment that leave the exclusion zone are contaminated, and a system is established to wash and rinse non-disposable equipment and dispose of disposable equipment.

Decontamination procedures will vary depending on project-specific requirements as listed in the project-specific work plan, type of equipment, and the required analytical parameters. The effectiveness of the decontamination procedure is verified by collecting and analyzing equipment blank samples (as required).

To minimize or eliminate the need for decontamination, it is recommended that dedicated disposable equipment be used whenever possible.

Document all decontamination activities, and flag equipment with decontamination issues, in fieldwork log books and related fieldwork forms.

3.0 Responsibilities

3.1 Fieldwork Manager

The Fieldwork Manager (FM), in conjunction with the Project Manager (PM), is responsible for overall compliance with SOPs. The FM, or designee, is responsible for ensuring and verifying that all equipment and materials are decontaminated, as required.

3.2 Site Personnel

Site personnel are required to read SOP documentation before engaging in fieldwork activities. The FM will inform personnel who will be responsible for decontamination of specific equipment.

4.0 Procedures

These are standard (typically applicable) operating procedures, which may be varied or changed as required, dependent on site conditions, equipment limitations or limitations imposed by the procedure. In all instances, the ultimate procedures employed should be documented. All decontamination procedures are to be modified, as appropriate, when sampling for PFAS (see applicable sampling SOPs).

Decontaminate non-disposable sampling equipment used at the site both before activities begin and after each sample is collected. Decontaminate drilling and excavation equipment both before activities begin and between each investigation location. Take care that materials and solutions used for decontamination procedures are themselves not hazardous or could potentially contaminate samples (e.g., solvents, acids).

4.1 Decontamination Area

A localized decontamination area should be establish where decontamination fluids and soil wastes can be managed and controlled with minimal risk to the surrounding environment. Decontamination should be performed in a non-contaminated area (as possible), that is large enough to allow temporary storage of cleaned equipment and materials before use, as well as to stage drums of decontamination investigation-derived waste (IDW).

In the case of large decontamination areas (e.g., hollow-stem-auger decontamination), line each area with a heavy-gauge plastic sheeting and include a collection system designed to capture potential decontamination IDW. Decontamination areas will, in all cases, be laid out in such a way as to prevent overspray while performing equipment and personnel decontamination.

Smaller decontamination tasks, such as the cleaning of soil or water sampling equipment, and Geoprobe drive rods and barrels, may take place at the sampling location. In this case, all required decontamination supplies and equipment must be brought to the sampling location. This decontamination will use various containment systems to capture the decontamination IDW, which can then be transferred to larger containers as needed.

4.2 Health and Safety Precautions

Decontamination procedures may involve exposure to contaminants in site media and/or dangerous materials used during decontamination (e.g., solvents or acids), and physical hazards associated with the operation of the decontamination equipment. All work should be performed in accordance with the HASP, including decontamination of PPE. Safety Data Sheets for any solvents/chemical stored or used during fieldwork should be available at the site. At a minimum, eye protection, safety shoes, and gloves are to be worn. There are several types of gloves that may be worn, depending on equipment being cleaned, type and extent of equipment contamination, and cleaning solutions or solvents being used. Nitrile gloves (or similar) may be worn when the equipment to be decontaminated is not heavily coated with constituents such as tars/oils. In cases where heavy accumulations of tars/oils are present on the equipment, neoprene or similar chemically compatible gloves are recommended. If a potential for skin contact exists, protective clothing should be worn.

4.3 General Equipment Decontamination Procedures

All sampling equipment must be decontaminated before use to ensure that contaminants have not been introduced to the sample during the sampling process through contact with the sampling device. Monitoring well riser pipes, screens and drilling augers must also be decontaminated, as appropriate, to prevent the introduction of contaminants.

Unless the decontaminated sampling devices that will come in contact with samples are to be used immediately, they should be wrapped in aluminum foil, shiny side out, and stored in a designated “clean” area. Field equipment can also be stored in plastic bags to eliminate the potential for contamination. Larger size equipment, such drill rods, backhoe buckets, etc. need not be wrapped or covered, but must not be stored directly on the ground surface. Field equipment should be inspected and decontaminated prior to use if the equipment has been stored for long periods of time.

4.4 Decontamination Equipment

The following is a list equipment and materials typically needed to perform decontamination:

- Health and safety equipment, including appropriate PPE
- Plastic sheeting (to serve as secondary containment for liquids and protect equipment)
- Brushes and flat-bladed scrapers
- Garden-type water sprayers (without oil-lubricated, moving parts)
- High-pressure washer or portable steam cleaner
- Sump or collection system for contaminated liquid
- Wash basins and buckets
- Spray and rinse bottles
- Potable water, distilled/deionized water (DIW), and laboratory-grade detergent

- Isopropyl alcohol (free of ketones) or methanol (can be wipes or diluted with DIW)
- Airtight, sealable plastic baggies
- Plastic waste bags
- Leak-tight liquid waste containers (55-gallon drums or similar)
- Bulk solid waste containers (55-gallon drums, or similar)

4.5 Specific Decontamination Procedures

For all procedures, decontamination fluids and other wastes may be transferred from smaller to larger containers (e.g., 55-gallon drums or 5-gallon buckets, with tight fitting lids, and transported to the IDW storage facility.

4.5.1 Sampling Equipment

Conduct consistent decontamination of sampling equipment to ensure the quality of the samples collected. Decontaminate all sampling equipment that comes into contact with potentially contaminated samples. Disposable equipment intended for one-time use that is factory-wrapped generally does not need to be decontaminated before use, unless evidence of contamination is present.

Disposable equipment (e.g., water bailers, plastic scoops, VOC sampling syringes) is preferred over reusable equipment; use wherever appropriate. Decontaminate sampling equipment, including split-spoon samplers, Geoprobe Macro-Core cutting shoes, hand augers, reusable bailers, spoons, trowels, and shovels used to collect samples for chemical analyses before sampling at a new sampling location. All decontamination fluids will be captured in a containment system as appropriate.

Take the following steps to decontaminate non-dedicated, non-disposable sampling equipment:

1. Remove as much gross contamination (such as pieces of soil) as possible off equipment at the sampling site.
2. Wash water-resistant equipment thoroughly and vigorously with potable water containing non-phosphate laboratory-grade detergent such as Liquinox®, Alconox®, or equivalent, and using a bristle brush or similar utensil to remove any remaining residual contamination.
3. Rinse equipment thoroughly with potable water.
4. Repeat the first three steps as necessary until all residue is removed.
5. Rinse equipment thoroughly with DIW.
6. If metals are a constituent of interest, rinse with 10% nitric acid and then with DIW.
7. If organics are constituents of interest, rinse with methanol and allow to air dry on a clean surface.

8. Air dry at a location where dust or other fugitive contaminants may not contact the sample equipment. Alternatively, wet equipment maybe dried with a clean, disposable paper towel to assist the drying process. All equipment should be dry before reuse.
9. If the equipment is not used soon after decontamination, it should be covered or wrapped in new, oil-free aluminum foil or new, unused plastic bags to protect the decontaminated equipment from fugitive contaminants before reuse.
10. Store decontaminated equipment at a secure, unexposed location out of the weather and any potential contaminant exposure.

4.5.2 Groundwater Sampling Pumps

[Note: This procedure does not apply to dedicated submersible pumps which have been permanently installed in wells.] Proper decontamination between wells is essential to avoid introducing contaminants from the sampling equipment to another well. If peristaltic pumps are being used, it is necessary only to replace the pump head tubing after sampling each well. If sampling with submersible pumps that come into direct contact with groundwater, the equipment must be decontaminated. The following procedure will be used to decontaminate submersible pumps and non-dedicated tubing before and between sample collection points, as well as the end of each day of use.

Preparation

Pre-clean appropriately sized buckets and prepare cleaning solutions (detergent solution, tap water rinse, distilled/deionized water rinse) and field blank water.

Detergent wash and tap water rinse

a) Put on disposable, powderless gloves. Rest pump in a washbasin or pail partially filled with detergent solution and clean exterior of pump and tubing with a soft brush. Rinse thoroughly with tap water. (DIW can be used instead of tap water, but is less efficient in detergent removal and requires a greater volume of water than tap water).
b) Place pump into bucket, add detergent solution to level above pump intake, and route the intake and discharge ends of pump tubing into the bucket. Begin pumping. Circulate detergent solution for several minutes. If possible, pump detergent solution through tubing at alternating high and low speeds.
c) Change gloves. Manually rinse detergent from pump, tubing and bucket with tap water.
d) Place pump into bucket, add tap water to level above pump intake, and route the intake and discharge ends of pump tubing into the bucket. Begin pumping. Circulate tap water for several minutes. If possible, pump tap water through tubing at alternating high and low speeds. Replace water in bucket and repeat cycle until no sudsing is observed. Change gloves as needed.

DIW Rinse

If a pump will be used to collect inorganic samples, manually rinse pump and tubing with DIW, then place in clean bucket, add DIW to level above pump intake, and route the discharge end of pump tubing outside the bucket. Begin pumping to rinse DIW through the equipment without recirculating. Collect water for use as a field blank, as required, from the pump discharge.

Equipment Storage

1. Place pump into a clean, non-contaminating storage bag and tie the bag shut.
2. Cover the pump reel and tubing with plastic bags or sheeting for transport to the next site.
3. On reaching the next monitoring well, place the pump in the well casing and wipe dry the power and discharge lines with a chemical-free paper towel as the pump is lowered.
4. For long-term storage (longer than 3 days), the pump and exterior and interior of the tubing must be dry before being placed into plastic bags.

4.5.3 Measurement Devices & Monitoring Equipment

For water quality instruments, oil-water interface indicators, water level indicators, continuous water level data loggers, and other field instruments that have the potential to come into contact with site media, at a minimum, wash with dilute laboratory-grade detergent (e.g., Alconox) and double rinse with tap water and DIW before and after each use or by using a similar procedure as discussed in Section 4.4.1. All decontamination fluids will be captured in a containment system as appropriate.

4.5.4 Subsurface Drilling Equipment

Drilling equipment and associated materials (drill bits, augers, and drilling stems) will be decontaminated by the drilling contractor prior to any drilling operations and between borings. These decontamination activities should be performed in the defined decontamination area as described in Section 4.1.

All down-hole Geoprobe tools (drive rods, Macro-Core barrels, etc.) that come in direct contact with potentially contaminated soil or groundwater shall be decontaminated between each sampling location, and may take place at the sampling location using a mobile decontamination platform with a containment system or other means to capture the decontamination IDW.

Decontamination will be performed using the following basic sequence:

1. Remove as much gross contamination as possible off equipment at the sampling site.
2. Wash equipment thoroughly and vigorously with potable water using a high-pressure washer and/or steam cleaner. A bristle brush is also suggested to remove any persistent gross contamination.
3. Air dry at a location where dust or other contaminants may not contact the sample equipment. All equipment should be dry before reuse.
4. Store decontaminated equipment at a location away from any potential exposure from fugitive contamination.

4.5.5 Heavy Equipment

Wash earthwork equipment (such as excavators and back-hoes) with high-pressure potable water, if possible, before leaving a contaminated area using similar steps as outlined in Section 4.4.4, otherwise the equipment may be moved to the decontamination area discussed in Section 4.1. Hand washing with a brush and detergent, followed by a potable water rinse, can also be used. In some instances, tires and tracks of equipment maybe only need to be thoroughly brushed with a dry brush. Take particular care with the components in direct contact with contaminants, such as tires and backhoe buckets.

Any part of earthwork equipment that may come in direct contact with analytical samples (that is, sampling from the excavator bucket) must be thoroughly decontaminated before excavation activities and between sample locations.

4.6 Quality Assurance/Quality Control

To ensure that sampling equipment is cleaned properly and sample cross-contamination does not occur, field rinsate blanks may be collected if required by project plans. A rinsate blank will consist of pouring deionized organic-free water over the specific sampling device or pouring it through the device after it has been cleaned. The rinsate sample is collected in the field under the same conditions as occurred for the sampling activity, and is handled exactly like any other samples collected that day.

Generally, one rinsate blank is collected each day of sampling or at a rate of 1 per 20 for each parameter, whichever is less, for each matrix being sampled or for each type of sampling instrument decontaminated and reused per day. The rinsate samples are analyzed for the specific parameters of concern (for each matrix). Rinsate blanks should be labeled like a routine environmental sample, and laboratory analysis instructions should be included on the chain-of-custody form. Rinsate blanks are not required if dedicated sampling equipment is used. Additional quality assurance samples may be collected if deemed necessary by project specific requirements.

Supplement F – PFAS Sampling Guidance

NEW YORK STATE OF OPPORTUNITY.

Department of Environmental Conservation

SAMPLING, ANALYSIS, AND ASSESSMENT OF PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

Under NYSDEC's Part 375 Remedial Programs

April 2023



www.dec.ny.gov

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ERRATA SHEET for

SAMPLING, ANALYSIS, AND ASSESSMENT OF PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) Under NYSDEC's Part 375 Remedial Programs Issued January 17, 2020

Citation and Page Number	Current Text	Corrected Text	Date
Title of Appendix I, page 32	Appendix H	Appendix I	2/25/2020
Document Cover, page 1	Guidelines for Sampling and Analysis of PFAS	Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs	9/15/2020
Data Assessment and Application to Site Cleanup Page 3	Until such time as Ambient Water Quality Standards (AWQS) and Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published	Until such time as Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published	3/28/2023
Water Sample Results Page 3	PFOA and PFOS should be further assessed and considered as potential contaminants of concern in groundwater or surface water if PFOA or PFOS is detected in any water sample at or above 10 ng/L (ppt) and is determined to be attributable to the site, either by a comparison of upgradient and downgradient levels, or the presence of soil source areas, as defined below.	NYSDEC has adopted ambient water quality guidance values for PFOA and PFOS. Groundwater samples should be compared to the human health criteria of 6.7 ng/l (ppt) for PFOA and 2.7 ng/l (ppt) for PFOS. These guidance values also include criteria for surface water for PFOS applicable for aquatic life, which may be applicable at some sites. Drinking water sample results should be compared to the NYS maximum contaminant level (MCL) of 10 ng/l (ppt).Analysis to determine if PFOA and PFOS concentrations are attributable to the site should include a comparison between upgradient and downgradient levels, and the presence of soil source areas, as defined below.	3/28/2023
Soil Sample Results Page 3	Soil cleanup objectives for PFOA and PFOS have been proposed in an upcoming revision to 6 NYCRR Part 375-6. Until SCOs are in effect, the following are to be used as guidance values:	NYSDEC will delay adding soil cleanup objectives for PFOA and PFOS to 6 NYCRR Part 375-6 until the PFAS rural soil background study has been completed. Until SCOs are in effect, the following are to be used as guidance values:	3/28/2023
Protection of Groundwater Page 3	PFOA (ppb) 1.1 PFOS (ppb) 3.7	PFOA (ppb) 0.8 PFOS (ppb) 1.0	3/28/2023

Citation and Page Number	Current Text	Corrected Text	Date
Footnote 2 Page 3	The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the guidance value for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).	The Protection of Groundwater values are based on the above referenced ambient groundwater guidance values. Details on that calculation are available in the following document, prepared for the February 2022 proposed changes to Part 375 (https://www.dec.ny.gov/docs/remediation_hudson_pdf/part375techsupport.pdf). The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the guidance value for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).	3/28/2023
Testing for Imported Soil Page 4	If the concentrations of PFOA and PFOS in leachate are at or above 10 ppt (the Maximum Contaminant Levels established for drinking water by the New York State Department of Health), then the soil is not acceptable.	If the concentrations of PFOA and PFOS in leachate are at or above the ambient water quality guidance values for groundwater, then the soil is not acceptable.	3/28/2023
Routine Analysis, page 9	"However, laboratories analyzing environmental samples…PFOA and PFOS in drinking water by EPA Method 537, 537.1 or ISO 25101."	"However, laboratories analyzing environmental samples…PFOA and PFOS in drinking water by EPA Method 537, 537.1, ISO 25101, or Method 533."	9/15/2020
Additional Analysis, page 9, new paragraph regarding soil parameters	None	"In cases where site-specific cleanup objectives for PFOA and PFOS are to be assessed, soil parameters, such as Total Organic Carbon (EPA Method 9060), soil pH (EPA Method 9045), clay content (percent), and cation exchange capacity (EPA Method 9081), should be included in the analysis to help evaluate factors affecting the leachability of PFAS in site soils."	9/15/2020

Citation and Page Number	Current Text	Corrected Text	Date
Data Assessment and Application to Site Cleanup Page 10	Until such time as Ambient Water Quality Standards (AWQS) and Soil Cleanup Objectives (SCOs) for PFAS are published, the extent of contaminated media potentially subject to remediation should be determined on a case-by-case basis using the procedures discussed below and the criteria in DER-10. Target levels for cleanup of PFAS in other media, including biota and sediment, have not yet been established by the DEC.	Until such time as Ambient Water Quality Standards (AWQS) and Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published, the extent of contaminated media potentially subject to remediation should be determined on a case-by-case basis using the procedures discussed below and the criteria in DER-10. Preliminary target levels for cleanup of PFOA and PFOS in other media, including biota and sediment, have not yet been established by the DEC.	9/15/2020
Water Sample Results Page 10	PFAS should be further assessed and considered as a potential contaminant of concern in groundwater or surface water (…) If PFAS are identified as a contaminant of concern for a site, they should be assessed as part of the remedy selection process in accordance with Part 375 and DER-10.	PFOA and PFOS should be further assessed and considered as potential contaminants of concern in groundwater or surface water (…) If PFOA and/or PFOS are identified as contaminants of concern for a site, they should be assessed as part of the remedy selection process in accordance with Part 375 and DER-10.	9/15/2020

Citation and Page Number	Current Text	Corrected Text	Date
Soil Sample Results, page 10	"The extent of soil contamination for purposes of delineation and remedy selection should be determined by having certain soil samples tested by Synthetic Precipitation Leaching Procedure (SPLP) and the leachate analyzed for PFAS. Soil exhibiting SPLP results above 70 ppt for either PFOA or PFOS (individually or combined) are to be evaluated during the cleanup phase."	"Soil cleanup objectives for PFOA and PFOS will be proposed in an upcoming revision to 6 NYCRR Part 375-6. Until SCOs are in effect, the following are to be used as guidance values. " [Interim SCO Table] "PFOA and PFOS results for soil are to be compared against the guidance values listed above. These guidance values are to be used in determining whether PFOA and PFOS are contaminants of concern for the site and for determining remedial action objectives and cleanup requirements. Site-specific remedial objectives for protection of groundwater can also be presented for evaluation by DEC. Development of site-specific remedial objectives for protection of groundwater will require analysis of additional soil parameters relating to leachability. These additional analyses can include any or all the parameters listed above (soil pH, cation exchange capacity, etc.) and/or use of SPLP. As the understanding of PFAS transport improves, DEC welcomes proposals for site-specific remedial objectives for protection of groundwater. DEC will expect that those may be dependent on additional factors including soil pH, aqueous pH, % organic carbon, % Sand/Silt/Clay, soil cations: K, Ca, Mg, Na, Fe, Al, cation exchange capacity, and anion exchange capacity. Site-specific remedial objectives should also consider the dilution attenuation factor (DAF). The NJDEP publication on DAF can be used as a reference: https://www.nj.gov/dep/srp/guidance/rs/daf.pdf. "	9/15/2020

Citation and Page Number	Current Text	Corrected Text	Date
Testing for Imported Soil Page 11	Soil imported to a site for use in a soil cap, soil cover, or as backfill is to be tested for PFAS in general conformance with DER-10, Section 5.4(e) for the PFAS Analyte List (Appendix F) using the analytical procedures discussed below and the criteria in DER-10 associated with SVOCs. If PFOA or PFOS is detected in any sample at or above 1 µg/kg, then soil should be tested by SPLP and the leachate analyzed for PFAS. If the SPLP results exceed 10 ppt for either PFOA or PFOS (individually) then the source of backfill should be rejected, unless a site-specific exemption is provided by DER. SPLP leachate criteria is based on the Maximum Contaminant Levels proposed for drinking water by New York State's Department of Health, this value may be updated based on future Federal or State promulgated regulatory standards. Remedial parties have the option of analyzing samples concurrently for both PFAS in soil and in the SPLP leachate to minimize project delays. Category B deliverables should be submitted for backfill samples, though a DUSR is not required.	Testing for PFAS should be included any time a full TAL/TCL analyte list is required. Results for PFOA and PFOS should be compared to the applicable guidance values. If PFOA or PFOS is detected in any sample at or above the guidance values then the source of backfill should be rejected, unless a site-specific exemption is provided by DER based on SPLP testing, for example. If the concentrations of PFOA and PFOS in leachate are at or above 10 ppt (the Maximum Contaminant Levels established for drinking water by the New York State Department of Health), then the soil is not acceptable. PFOA, PFOS and 1,4-dioxane are all considered semi-volatile compounds, so composite samples are appropriate for these compounds when sampling in accordance with DER-10, Table 5.4(e)10. Category B deliverables should be submitted for backfill samples, though a DUSR is not required.	9/15/2020

Citation and Page Number	Current Text	Corrected Text	Date
Footnotes	None	[1] TOP Assay analysis of highly contaminated samples, such as those from an AFFF (aqueous film-forming foam) site, can result in incomplete oxidation of the samples and an underestimation of the total perfluoroalkyl substances. [2] The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the soil cleanup objective for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).	9/15/2020
Additional Analysis, page 9	In cases… soil parameters, such as Total Organic Carbon (EPA Method 9060), soil…	In cases… soil parameters, such as Total Organic Carbon (Lloyd Kahn), soil…	1/8/2021
Appendix A, General Guidelines, fourth bullet	List the ELAP-approved lab(s) to be used for analysis of samples	List the ELAP- certified lab(s) to be used for analysis of samples	1/8/2021
Appendix E, Laboratory Analysis and Containers	Drinking water samples collected using this protocol are intended to be analyzed for PFAS by ISO Method 25101.	Drinking water samples collected using this protocol are intended to be analyzed for PFAS by EPA Method 537, 537.1, 533, or ISO Method 25101	1/8/2021
Water Sample Results Page 9	"In addition, further assessment of water may be warranted if either of the following screening levels are met: a. any other individual PFAS (not PFOA or PFOS) is detected in water at or above 100 ng/L; or b. total concentration of PFAS (including PFOA and PFOS) is detected in water at or above 500 ng/L"	Deleted	6/15/2021

Citation and Page Number	Current Text	Corrected Text	Date
Routine Analysis, Page XX	Currently, New York State Department of Health's Environmental Laboratory Approval Program (ELAP)… criteria set forth in the DER's laboratory guidelines for PFAS in non-potable water and solids (Appendix H - Laboratory Guidelines for Analysis of PFAS in Non-Potable Water and Solids).	Deleted	5/31/2022
Analysis and Reporting, Page XX	As of October 2020, the United States Environmental Protection Agency (EPA) does not have a validated method for analysis of PFAS for media commonly analyzed under DER remedial programs (non-potable waters, solids). DER has developed the following guidelines to ensure consistency in analysis and reporting of PFAS.	Deleted	5/31/2022
Routine Analysis, Page XX	LC-MS/MS analysis for PFAS using methodologies based on EPA Method 537.1 is the procedure to use for environmental samples. Isotope dilution techniques should be utilized for the analysis of PFAS in all media.	EPA Method 1633 is the procedure to use for environmental samples.	
Soil Sample Results, Page XX	Soil cleanup objectives for PFOA and PFOS will be proposed in an upcoming revision to 6 NYCRR Part 375-6	Soil cleanup objectives for PFOA and PFOS have been proposed in an upcoming revision to 6 NYCRR Part 375-6	
Appendix A	"Include in the text… LC-MS/MS for PFAS using methodologies based on EPA Method 537.1"	"Include in the text ….EPA Method 1633"	
Appendix A	"Laboratory should have ELAP certification for PFOA and PFOS in drinking water by EPA Method 537, 537.1, EPA Method 533, or ISO 25101"	Deleted	
Appendix B	"Samples collected using this protocol are intended to be analyzed for PFAS using methodologies based on EPA Method 537.1"	"Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633"	

Citation and Page Number	Current Text	Corrected Text	Date
Appendix C	"Samples collected using this protocol are intended to be analyzed for PFAS using methodologies based on EPA Method 537.1"	"Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633"	
Appendix D	"Samples collected using this protocol are intended to be analyzed for PFAS using methodologies based on EPA Method 537.1"	"Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633"	
Appendix G		Updated to include all forty PFAS analytes in EPA Method 533	
Appendix H		Deleted	
Appendix I	Appendix I	Appendix H	
Appendix H	"These guidelines are intended to be used for the validation of PFAS analytical results for projects within the Division of Environmental Remediation (DER) as well as aid in the preparation of a data usability summary report."	"These guidelines are intended to be used for the validation of PFAS using EPA Method 1633 for projects within the Division of Environmental Remediation (DER)."	
Appendix H	"The holding time is 14 days…"	"The holding time is 28 days…"	
Appendix H, Initial Calibration	"The initial calibration should contain a minimum of five standards for linear fit…"	"The initial calibration should contain a minimum of six standards for linear fit…"	
Appendix H, Initial Calibration	Linear fit calibration curves should have an R^2 value greater than 0.990.	Deleted	
Appendix H, Initial Calibration Verification	Initial Calibration Verification Section	Deleted	
Appendix H	secondary Ion Monitoring Section	Deleted	
Appendix H	Branched and Linear Isomers Section	Deleted	

Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs

Objective

New York State Department of Environmental Conservation's Division of Environmental Remediation (DER) performs or oversees sampling of environmental media and subsequent analysis of PFAS as part of remedial programs implemented under 6 NYCRR Part 375. To ensure consistency in sampling, analysis, reporting, and assessment of PFAS, DER has developed this document which summarizes currently accepted procedures and updates previous DER technical guidance pertaining to PFAS.

Applicability

All work plans submitted to DEC pursuant to one of the remedial programs under Part 375 shall include PFAS sampling and analysis procedures that conform to the guidelines provided herein.

As part of a site investigation or remedial action compliance program, whenever samples of potentially affected media are collected and analyzed for the standard Target Analyte List/Target Compound List (TAL/TCL), PFAS analysis should also be performed. Potentially affected media can include soil, groundwater, surface water, and sediment. Based upon the potential for biota to be affected, biota sampling and analysis for PFAS may also be warranted as determined pursuant to a Fish and Wildlife Impact Analysis. Soil vapor sampling for PFAS is not required.

Field Sampling Procedures

DER-10 specifies technical guidance applicable to DER's remedial programs. Given the prevalence and use of PFAS, DER has developed "best management practices" specific to sampling for PFAS. As specified in DER-10 Chapter 2, quality assurance procedures are to be submitted with investigation work plans. Typically, these procedures are incorporated into a work plan, or submitted as a stand-alone document (e.g., a Quality Assurance Project Plan). Quality assurance guidelines for PFAS are listed in Appendix A - Quality Assurance Project Plan (QAPP) Guidelines for PFAS.

Field sampling for PFAS performed under DER remedial programs should follow the appropriate procedures outlined for soils, sediments, or other solids (Appendix B), non-potable groundwater (Appendix C), surface water (Appendix D), public or private water supply wells (Appendix E), and fish tissue (Appendix F).

QA/QC samples (e.g. duplicates, MS/MSD) should be collected as specified in DER-10, Section 2.3(c). For sampling equipment coming in contact with aqueous samples only, rinsate or equipment blanks should be collected. Equipment blanks should be collected at a minimum frequency of one per day per site or one per twenty samples, whichever is more frequent.

Analysis and Reporting

The investigation work plan should describe analysis and reporting procedures, including laboratory analytical procedures for the methods discussed below. As specified in DER-10 Section 2.2, laboratories should provide a full Category B deliverable. In addition, a Data Usability Summary Report (DUSR) should be prepared by an independent, third-party data validator. Electronic data submissions should meet the requirements provided at: https://www.dec.ny.gov/chemical/62440.html.

DER has developed a *PFAS Analyte List* (Appendix G) for remedial programs to understand the nature of contamination at sites. It is expected that reported results for PFAS will include, at a minimum, all the compounds listed. If lab and/or matrix specific issues are encountered for any analytes, the DER project manager, in consultation with the DER chemist, will make case-by-case decisions as to whether certain analytes may be temporarily or permanently discontinued from analysis at each site. As with other contaminants that are analyzed for at a site, the *PFAS Analyte List* may be refined for future sampling events based on investigative findings.

Routine Analysis

EPA Method 1633 is the procedure to use for environmental samples. Reporting limits for PFOA and PFOS in aqueous samples should not exceed 2 ng/L. Reporting limits for PFOA and PFOS in solid samples should not exceed 0.5 µg/kg. Reporting limits for all other PFAS in aqueous and solid media should be as close to these limits as possible. If laboratories indicate that they are not able to achieve these reporting limits for the entire *PFAS Analyte List*, site-specific decisions regarding acceptance of elevated reporting limits for specific PFAS can be made by the DER project manager in consultation with the DER chemist. Data review guidelines were developed by DER to ensure data comparability and usability (Appendix H - Data Review Guidelines for Analysis of PFAS in Non-Potable Water and Solids).

Additional Analysis

Additional laboratory methods for analysis of PFAS may be warranted at a site, such as the Synthetic Precipitation Leaching Procedure (SPLP) and Total Oxidizable Precursor Assay (TOP Assay).

In cases where site-specific cleanup objectives for PFOA and PFOS are to be assessed, soil parameters, such as Total Organic Carbon (Lloyd Kahn), soil pH (EPA Method 9045), clay content (percent), and cation exchange capacity (EPA Method 9081), should be included in the analysis to help evaluate factors affecting the leachability of PFAS in site soils.

SPLP is a technique used to determine the mobility of chemicals in liquids, soils and wastes, and may be useful in determining the need for addressing PFAS-containing material as part of the remedy. SPLP by EPA Method 1312 should be used unless otherwise specified by the DER project manager in consultation with the DER chemist.

Impacted materials can be made up of PFAS that are not analyzable by routine analytical methodology. A TOP Assay can be utilized to conceptualize the amount and type of oxidizable PFAS which could be liberated in the environment, which approximates the maximum concentration of perfluoroalkyl substances that could be generated if all polyfluoroalkyl substances were oxidized. For example, some polyfluoroalkyl substances may degrade or transform to form perfluoroalkyl substances (such as PFOA or PFOS), resulting in an increase in perfluoroalkyl substance concentrations as contaminated groundwater moves away from a source. The TOP Assay converts, through oxidation, polyfluoroalkyl substances (precursors) into perfluoroalkyl substances that can be detected by routine analytical methodology.[1]

[1] TOP Assay analysis of highly contaminated samples, such as those from an AFFF (aqueous film-forming foam) site, can result in incomplete oxidation of the samples and an underestimation of the total perfluoroalkyl substances.

Commercial laboratories have adopted methods which allow for the quantification of targeted PFAS in air and biota. The EPA's Office of Research and Development (ORD) is currently developing methods which allow for air emissions characterization of PFAS, including both targeted and non-targeted analysis of PFAS. Consult with the DER project manager and the DER chemist for assistance on analyzing biota/tissue and air samples.

Data Assessment and Application to Site Cleanup

Until such time as Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published, the extent of contaminated media potentially subject to remediation should be determined on a case-by-case basis using the procedures discussed below and the criteria in DER-10. Preliminary target levels for cleanup of PFOA and PFOS in other media, including biota and sediment, have not yet been established by the DEC.

Water Sample Results

NYSDEC has adopted ambient water quality guidance values for PFOA and PFOS. Groundwater samples should be compared to the human health criteria of 6.7 ng/l (ppt) for PFOA and 2.7 ng/l (ppt) for PFOS. These human health criteria should also be applied to surface water that is used as a water supply. This guidance also includes criteria for surface water for PFOS applicable for aquatic life, which may be applicable at some sites. Drinking water sample results should be compared to the NYS maximum contaminant level (MCL) of 10 ng/l (ppt). Analysis to determine if PFOA and PFOS concentrations are attributable to the site should include a comparison between upgradient and downgradient levels, and the presence of soil source areas, as defined below.

If PFOA and/or PFOS are identified as contaminants of concern for a site, they should be assessed as part of the remedy selection process in accordance with Part 375 and DER-10.

Soil Sample Results

NYSDEC will delay adding soil cleanup objectives for PFOA and PFOS to 6 NYCRR Part 375-6 until the PFAS rural soil background study has been completed. Until SCOs are in effect, the following are to be used as guidance values:

Guidance Values for Anticipated Site Use	PFOA (ppb)	PFOS (ppb)
Unrestricted	0.66	0.88
Residential	6.6	8.8
Restricted Residential	33	44
Commercial	500	440
Industrial	600	440
Protection of Groundwater[2]	0.8	1.0

PFOA and PFOS results for soil are to be compared against the guidance values listed above. These guidance values are to be used in determining whether PFOA and PFOS are contaminants of concern for the site and for determining remedial action objectives and cleanup requirements. Site-specific remedial objectives for protection of groundwater can also be presented for evaluation by DEC. Development of site-specific remedial objectives for protection of groundwater will require analysis of additional soil parameters relating to leachability. These

[2] The Protection of Groundwater values are based on the above referenced ambient groundwater guidance values. Details on that calculation are available in the following document, prepared for the February 2022 proposed changes to Part 375 (https://www.dec.ny.gov/docs/remediation_hudson_pdf/part375techsupport.pdf). The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the guidance value for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).

additional analyses can include any or all the parameters listed above (soil pH, cation exchange capacity, etc.) and/or use of SPLP.

As the understanding of PFAS transport improves, DEC welcomes proposals for site-specific remedial objectives for protection of groundwater. DEC will expect that those may be dependent on additional factors including soil pH, aqueous pH, % organic carbon, % Sand/Silt/Clay, soil cations: K, Ca, Mg, Na, Fe, Al, cation exchange capacity, and anion exchange capacity. Site-specific remedial objectives should also consider the dilution attenuation factor (DAF). The NJDEP publication on DAF can be used as a reference: https://www.nj.gov/dep/srp/guidance/rs/daf.pdf.

Testing for Imported Soil

Testing for PFAS should be included any time a full TAL/TCL analyte list is required. Results for PFOA and PFOS should be compared to the applicable guidance values. If PFOA or PFOS is detected in any sample at or above the guidance values then the source of backfill should be rejected, unless a site-specific exemption is provided by DER based on SPLP testing, for example. If the concentrations of PFOA and PFOS in leachate are at or above the ambient water quality guidance values for groundwater, then the soil is not acceptable.

PFOA, PFOS and 1,4-dioxane are all considered semi-volatile compounds, so composite samples are appropriate for these compounds when sampling in accordance with DER-10, Table 5.4(e)10. Category B deliverables should be submitted for backfill samples, though a DUSR is not required.

Appendix A - Quality Assurance Project Plan (QAPP) Guidelines for PFAS

The following guidelines (general and PFAS-specific) can be used to assist with the development of a QAPP for projects within DER involving sampling and analysis of PFAS.

General Guidelines in Accordance with DER-10

- Document/work plan section title – Quality Assurance Project Plan
- Summarize project scope, goals, and objectives
- Provide project organization including names and resumes of the project manager, Quality Assurance Officer (QAO), field staff, and Data Validator
    - The QAO should not have another position on the project, such as project or task manager, that involves project productivity or profitability as a job performance criterion
- List the ELAP certified lab(s) to be used for analysis of samples
- Include a site map showing sample locations
- Provide detailed sampling procedures for each matrix
- Include Data Quality Usability Objectives
- List equipment decontamination procedures
- Include an "Analytical Methods/Quality Assurance Summary Table" specifying:
    - Matrix type
    - Number or frequency of samples to be collected per matrix
    - Number of field and trip blanks per matrix
    - Analytical parameters to be measured per matrix
    - Analytical methods to be used per matrix with minimum reporting limits
    - Number and type of matrix spike and matrix spike duplicate samples to be collected
    - Number and type of duplicate samples to be collected
    - Sample preservation to be used per analytical method and sample matrix
    - Sample container volume and type to be used per analytical method and sample matrix
    - Sample holding time to be used per analytical method and sample matrix
- Specify Category B laboratory data deliverables and preparation of a DUSR

Specific Guidelines for PFAS

- Include in the text that sampling for PFAS will take place
- Include in the text that PFAS will be analyzed by EPA Method 1633
- Include the list of PFAS compounds to be analyzed (*PFAS Analyte List*)
- Include the laboratory SOP for PFAS analysis
- List the minimum method-achievable Reporting Limits for PFAS
    - Reporting Limits should be less than or equal to:
        - Aqueous – 2 ng/L (ppt)
        - Solids – 0.5 µg/kg (ppb)
- Include the laboratory Method Detection Limits for the PFAS compounds to be analyzed
-
- Include detailed sampling procedures
    - Precautions to be taken
    - Pump and equipment types
    - Decontamination procedures
    - Approved materials only to be used
- Specify that regular ice only will be used for sample shipment
- Specify that equipment blanks should be collected at a minimum frequency of 1 per day per site for each matrix

Appendix B - Sampling Protocols for PFAS in Soils, Sediments and Solids

General

The objective of this protocol is to give general guidelines for the collection of soil, sediment and other solid samples for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Containers

Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633.

The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in to contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions.

- stainless steel spoon
- stainless steel bowl
- steel hand auger or shovel without any coatings

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Sampling is often conducted in areas where a vegetative turf has been established. In these cases, a pre-cleaned trowel or shovel should be used to carefully remove the turf so that it may be replaced at the conclusion of sampling. Surface soil samples (e.g. 0 to 6 inches below surface) should then be collected using a pre-cleaned, stainless steel spoon. Shallow subsurface soil samples (e.g. 6 to ~36 inches below surface) may be collected by digging a hole using a pre-cleaned hand auger or shovel. When the desired subsurface depth is reached, a pre-cleaned hand auger or spoon shall be used to obtain the sample.

When the sample is obtained, it should be deposited into a stainless steel bowl for mixing prior to filling the sample containers. The soil should be placed directly into the bowl and mixed thoroughly by rolling the material into the middle until the material is homogenized. At this point the material within the bowl can be placed into the laboratory provided container.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A soil log or sample log shall document the location of the sample/borehole, depth of the sample, sampling equipment, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate. Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appropriate rain gear (PVC, polyurethane, or rubber rain gear are acceptable), bug spray, and sunscreen should be used that does not contain PFAS. Well washed cotton coveralls may be used as an alternative to bug spray and/or sunscreen.

PPE that contains PFAS is acceptable when site conditions warrant additional protection for the samplers and no other materials can be used to be protective. Documentation of such use should be provided in the field notes.

Appendix C - Sampling Protocols for PFAS in Monitoring Wells

General

The objective of this protocol is to give general guidelines for the collection of groundwater samples for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Container

Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633.

The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include: stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials including plumbers tape and sample bottle cap liners with a PTFE layer.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions.

- stainless steel inertia pump with HDPE tubing
- peristaltic pump equipped with HDPE tubing and silicone tubing
- stainless steel bailer with stainless steel ball
- bladder pump (identified as PFAS-free) with HDPE tubing

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Monitoring wells should be purged in accordance with the sampling procedure (standard/volume purge or low flow purge) identified in the site work plan, which will determine the appropriate time to collect the sample. If sampling using standard purge techniques, additional purging may be needed to reduce turbidity levels, so samples contain a limited amount of sediment within the sample containers. Sample containers that contain sediment may cause issues at the laboratory, which may result in elevated reporting limits and other issues during the sample preparation that can compromise data usability. Sampling personnel should don new nitrile gloves prior to sample collection due to the potential to contact PFAS containing items (not related to the sampling equipment) during the purging activities.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- Collect one equipment blank per day per site and minimum 1 equipment blank per 20 samples. The equipment blank shall test the new and decontaminated sampling equipment utilized to obtain a sample for residual PFAS contamination. This sample is obtained by using laboratory provided PFAS-free water and passing the water over or through the sampling device and into laboratory provided sample containers
- Additional equipment blank samples may be collected to assess other equipment that is utilized at the monitoring well
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A purge log shall document the location of the sample, sampling equipment, groundwater parameters, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate. Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appropriate rain gear (PVC, polyurethane, or rubber rain gear are acceptable), bug spray, and sunscreen should be used that does not contain PFAS. Well washed cotton coveralls may be used as an alternative to bug spray and/or sunscreen.

PPE that contains PFAS is acceptable when site conditions warrant additional protection for the samplers and no other materials can be used to be protective. Documentation of such use should be provided in the field notes.

Appendix D - Sampling Protocols for PFAS in Surface Water

General

The objective of this protocol is to give general guidelines for the collection of surface water samples for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Container

Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633.

The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include: stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions.

- stainless steel cup

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Where conditions permit, (e.g. creek or pond) sampling devices (e.g. stainless steel cup) should be rinsed with site medium to be sampled prior to collection of the sample. At this point the sample can be collected and poured into the sample container.

If site conditions permit, samples can be collected directly into the laboratory container.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- Collect one equipment blank per day per site and minimum 1 equipment blank per 20 samples. The equipment blank shall test the new and decontaminated sampling equipment utilized to obtain a sample for residual PFAS contamination. This sample is obtained by using laboratory provided PFAS-free water and passing the water over or through the sampling device and into laboratory provided sample containers
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A sample log shall document the location of the sample, sampling equipment, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate. Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appropriate rain gear (PVC, polyurethane, or rubber rain gear are acceptable), bug spray, and sunscreen should be used that does not contain PFAS. Well washed cotton coveralls may be used as an alternative to bug spray and/or sunscreen.

PPE that contains PFAS is acceptable when site conditions warrant additional protection for the samplers and no other materials can be used to be protective. Documentation of such use should be provided in the field notes.

Appendix E - Sampling Protocols for PFAS in Private Water Supply Wells

General

The objective of this protocol is to give general guidelines for the collection of water samples from private water supply wells (with a functioning pump) for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Container

Drinking water samples collected using this protocol are intended to be analyzed for PFAS by EPA Method 537, 537.1, 533, or ISO Method 25101. The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials (e.g. plumbers tape), including sample bottle cap liners with a PTFE layer.

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Locate and assess the pressure tank and determine if any filter units are present within the building. Establish the sample location as close to the well pump as possible, which is typically the spigot at the pressure tank. Ensure sampling equipment is kept clean during sampling as access to the pressure tank spigot, which is likely located close to the ground, may be obstructed and may hinder sample collection.

Prior to sampling, a faucet downstream of the pressure tank (e.g., washroom sink) should be run until the well pump comes on and a decrease in water temperature is noted which indicates that the water is coming from the well. If the homeowner is amenable, staff should run the water longer to purge the well (15+ minutes) to provide a sample representative of the water in the formation rather than standing water in the well and piping system including the pressure tank. At this point a new pair of nitrile gloves should be donned and the sample can be collected from the sample point at the pressure tank.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- If equipment was used, collect one equipment blank per day per site and a minimum 1 equipment blank per 20 samples. The equipment blank shall test the new and decontaminated sampling equipment utilized to obtain a sample for residual PFAS contamination. This sample is obtained by using laboratory provided PFAS-free water and passing the water over or through the sampling device and into laboratory provided sample containers.
- A field reagent blank (FRB) should be collected at a rate of one per 20 samples. The lab will provide a FRB bottle containing PFAS free water and one empty FRB bottle. In the field, pour the water from the one bottle into the empty FRB bottle and label appropriately.
- Request appropriate data deliverable (Category B) and an electronic data deliverable
- For sampling events where multiple private wells (homes or sites) are to be sampled per day, it is acceptable to collect QC samples at a rate of one per 20 across multiple sites or days.

Documentation

A sample log shall document the location of the private well, sample point location, owner contact information, sampling equipment, purge duration, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate and available (e.g. well construction, pump type and location, yield, installation date). Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appendix F - Sampling Protocols for PFAS in Fish

This appendix contains a copy of the current SOP developed by the Division of Fish and Wildlife (DFW) entitled "General Fish Handling Procedures for Contaminant Analysis" (Ver. 8). This SOP should be followed when collecting fish for contaminant analysis. Note, however, that the Bureau of Ecosystem Health will not be supplying bags or tags. All supplies are the responsibility of the collector

Procedure Name: General Fish Handling Procedures for Contaminant Analysis

Number: FW-005

Purpose: This procedure describes data collection, fish processing and delivery of fish collected for contaminant monitoring. It contains the chain of custody and collection record forms that should be used for the collections.

Organization: Environmental Monitoring Section
Bureau of Ecosystem Health
Division of Fish and Wildlife (DFW)
New York State Department of Environmental Conservation (NYSDEC)
625 Broadway
Albany, New York 12233-4756

Version: 8

Previous Version Date: 21 March 2018

Summary of Changes to this Version: Updated bureau name to Bureau of Ecosystem Health. Added direction to list the names of all field crew on the collection record. Minor formatting changes on chain of custody and collection records.

Originator or Revised by: Wayne Richter, Jesse Becker

Date: 26 April 2019

Quality Assurance Officer and Approval Date: Jesse Becker, 26 April 2019

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

GENERAL FISH HANDLING PROCEDURES FOR CONTAMINANT ANALYSES

A. Original copies of all continuity of evidence (i.e., Chain of Custody) and collection record forms must accompany delivery of fish to the lab. A copy shall be directed to the Project Leader or as appropriate, Wayne Richter. All necessary forms will be supplied by the Bureau of Ecosystem Health. Because some samples may be used in legal cases, it is critical that each section is filled out completely. Each Chain of Custody form has three main sections:

   1. The top box is to be filled out **and signed** by the person responsible for the fish collection (e.g., crew leader, field biologist, researcher). This person is responsible for delivery of the samples to DEC facilities or personnel (e.g., regional office or biologist).

   2. The second section is to be filled out **and signed** by the person responsible for the collections while being stored at DEC, before delivery to the analytical lab. This may be the same person as in (1), but it is still required that they complete the section. Also important is the **range of identification numbers** (i.e., tag numbers) included in the sample batch.

   3. Finally, the bottom box is to record any transfers between DEC personnel and facilities. Each subsequent transfer should be **identified, signed, and dated**, until laboratory personnel take possession of the fish.

B. The following data are required on each **Fish Collection Record** form:

   1. Project and Site Name.

   2. DEC Region.

   3. All personnel (and affiliation) involved in the collection.

   4. Method of collection (gill net, hook and line, etc.)

   5. Preservation Method.

C. The following data are to be taken on each fish collected and recorded on the **Fish Collection Record** form:

   1. Tag number - Each specimen is to be individually jaw tagged at time of collection with a unique number. Make sure the tag is turned out so that the number can be read without opening the bag. Use tags in sequential order. For small fish or composite samples place the tag inside the bag with the samples. The Bureau of Ecosystem Health can supply the tags.

   2. Species identification (please be explicit enough to enable assigning genus and species). Group fish by species when processing.

   3. Date collected.

   4. Sample location (waterway and nearest prominent identifiable landmark).

   5. Total length (nearest mm or smallest sub-unit on measuring instrument) and weight (nearest g or

smallest sub-unit of weight on weighing instrument). Take all measures as soon as possible with calibrated, protected instruments (e.g. from wind and upsets) and prior to freezing.

6. Sex - fish may be cut enough to allow sexing or other internal investigation, but do not eviscerate. Make any incision on the right side of the belly flap or exactly down the midline so that a left-side fillet can be removed.

D. General data collection recommendations:

1. It is helpful to use an ID or tag number that will be unique. It is best to use metal striped bass or other uniquely numbered metal tags. If uniquely numbered tags are unavailable, values based on the region, water body and year are likely to be unique: for example, R7CAY11001 for Region 7, Cayuga Lake, 2011, fish 1. If the fish are just numbered 1 through 20, we have to give them new numbers for our database, making it more difficult to trace your fish to their analytical results and creating an additional possibility for errors.

2. Process and record fish of the same species sequentially. Recording mistakes are less likely when all fish from a species are processed together. Starting with the bigger fish species helps avoid missing an individual.

3. If using Bureau of Ecosystem Health supplied tags or other numbered tags, use tags in sequence so that fish are recorded with sequential Tag Numbers. This makes data entry and login at the lab and use of the data in the future easier and reduces keypunch errors.

4. Record length and weight as soon as possible after collection and before freezing. Other data are recorded in the field upon collection. An age determination of each fish is optional, but if done, it is recorded in the appropriate “Age” column.

5. For composite samples of small fish, record the number of fish in the composite in the Remarks column. Record the length and weight of each individual in a composite. All fish in a composite sample should be of the same species and members of a composite should be visually matched for size.

6. Please submit photocopies of topographic maps or good quality navigation charts indicating sampling locations. GPS coordinates can be entered in the Location column of the collection record form in addition to or instead for providing a map. These records are of immense help to us (and hopefully you) in providing documented location records which are not dependent on memory and/or the same collection crew. In addition, they may be helpful for contaminant source trackdown and remediation/control efforts of the Department.

7. When recording data on fish measurements, it will help to ensure correct data recording for the data recorder to call back the numbers to the person making the measurements.

E. Each fish is to be placed in its own individual plastic bag. For small fish to be analyzed as a composite, put all of the fish for one composite in the same bag but use a separate bag for each composite. It is important to individually bag the fish to avoid difficulties or cross contamination when processing the fish for chemical analysis. Be sure to include the fish’s tag number inside the bag, preferably attached to the fish with the tag number turned out so it can be read. Tie or otherwise secure the bag closed. **The Bureau of Ecosystem Health will supply the bags.** If necessary, food grade bags may be procured from a suitable vendor (e.g., grocery store). It is preferable to redundantly label each bag with a manila tag tied between the knot and the body of the bag. This tag should be labeled with the project name, collection location, tag number, collection date, and fish species. If scales are collected, the scale envelope should be labeled with

the same information.

F. Groups of fish, by species, are to be placed in one large plastic bag per sampling location. **The Bureau of Ecosystem Health will supply the larger bags.** Tie or otherwise secure the bag closed. Label the site bag with a manila tag tied between the knot and the body of the bag. The tag should contain: project, collection location, collection date, species and **tag number ranges**. Having this information on the manila tag enables lab staff to know what is in the bag without opening it.

G. Do not eviscerate, fillet or otherwise dissect the fish unless specifically asked to. If evisceration or dissection is specified, the fish must be cut along the exact midline or on the right side so that the left side fillet can be removed intact at the laboratory. If filleting is specified, the procedure for taking a standard fillet (SOP PREPLAB 4) must be followed, including removing scales.

H. Special procedures for PFAS: Unlike legacy contaminants such as PCBs, which are rarely found in day to day life, PFAS are widely used and frequently encountered. Practices that avoid sample contamination are therefore necessary. While no standard practices have been established for fish, procedures for water quality sampling can provide guidance. The following practices should be used for collections when fish are to be analyzed for PFAS:

No materials containing Teflon.
No Post-it notes.
No ice packs; only water ice or dry ice.
Any gloves worn must be powder free nitrile.
No Gore-Tex or similar materials (Gore-Tex is a PFC with PFOA used in its manufacture).
No stain repellent or waterproof treated clothing; these are likely to contain PFCs.
Avoid plastic materials, other than HDPE, including clipboards and waterproof notebooks.
Wash hands after handling any food containers or packages as these may contain PFCs.
Keep pre-wrapped food containers and wrappers isolated from fish handling.
Wear clothing washed at least six times since purchase.
Wear clothing washed without fabric softener.
Staff should avoid cosmetics, moisturizers, hand creams and similar products on the day of sampling as many of these products contain PFCs (Fujii et al. 2013). Sunscreen or insect repellent should not contain ingredients with “fluor” in their name. Apply any sunscreen or insect repellent well downwind from all materials. Hands must be washed after touching any of these products.

I. All fish must be kept at a temperature <45° F (<8° C) immediately following data processing. As soon as possible, freeze at -20° C ± 5° C. Due to occasional freezer failures, daily freezer temperature logs are required. The freezer should be locked or otherwise secured to maintain chain of custody.

J. In most cases, samples should be delivered to the Analytical Services Unit at the Hale Creek field station. Coordinate delivery with field station staff and send copies of the collection records, continuity of evidence forms and freezer temperature logs to the field station. For samples to be analyzed elsewhere, non-routine collections or other questions, contact Wayne Richter, Bureau of Ecosystem Health, NYSDEC, 625 Broadway, Albany, New York 12233-4756, 518-402-8974, or the project leader about sample transfer. Samples will then be directed to the analytical facility and personnel noted on specific project descriptions.

K. A recommended equipment list is at the end of this document.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF FISH AND WILDLIFE
FISH COLLECTION RECORD

Project and Site Name _____ DEC Region _____

Collections made by (include all crew) _____

Sampling Method: □Electrofishing □Gill netting □Trap netting □Trawling □Seining □Angling □Other _____

Preservation Method: □Freezing □Other _____ Notes (SWFDB survey number): _____

FOR LAB USE ONLY- LAB ENTRY NO.	COLLECTION OR TAG NO.	SPECIES	DATE TAKEN	LOCATION	AGE	SEX &/OR REPROD. CONDIT	LENGTH ( )	WEIGHT ( )	REMARKS

richter: revised 2011, 5/7/15, 10/4/16, 3/20/17; becker: 3/23/17, 4/26/19

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CHAIN OF CUSTODY

I, _____, of _____ collected the
(Print Name) (Print Business Address)

following on _____, 20____ from _____
(Date) (Water Body)

in the vicinity of _____
(Landmark, Village, Road, etc.)

Town of _____, in _____ County.

Item(s) _____

_____

Said sample(s) were in my possession and handled according to standard procedures provided to me prior to collection. The sample(s) were placed in the custody of a representative of the New York State Department of Environmental Conservation on _____, 20_____.

_____ _____
Signature Date

I, _____, received the above mentioned sample(s) on the date specified and assigned identification number(s) _____ to the sample(s). I have recorded pertinent data for the sample(s) on the attached collection records. The sample(s) remained in my custody until subsequently transferred, prepared or shipped at times and on dates as attested to below.

_____ _____
Signature Date

SECOND RECIPIENT (Print Name)	TIME & DATE	PURPOSE OF TRANSFER
SIGNATURE	UNIT	
THIRD RECIPIENT (Print Name)	TIME & DATE	PURPOSE OF TRANSFER
SIGNATURE	UNIT	
FOURTH RECIPIENT (Print Name)	TIME & DATE	PURPOSE OF TRANSFER
SIGNATURE	UNIT	
RECEIVED IN LABORATORY BY (Print Name)	TIME & DATE	REMARKS
SIGNATURE	UNIT	
LOGGED IN BY (Print Name)	TIME & DATE	ACCESSION NUMBERS
SIGNATURE	UNIT	

richter: revised 21 April 2014; becker: 23 March 2017, 26 April, 2019

NOTICE OF WARRANTY

By signature to the chain of custody (reverse), the signatory warrants that the information provided is truthful and accurate to the best of his/her ability. The signatory affirms that he/she is willing to testify to those facts provided and the circumstances surrounding the same. Nothing in this warranty or chain of custody negates responsibility nor liability of the signatories for the truthfulness and accuracy of the statements provided.

HANDLING INSTRUCTIONS

On day of collection, collector(s) name(s), address(es), date, geographic location of capture (attach a copy of topographic map or navigation chart), species, number kept of each species, and description of capture vicinity (proper noun, if possible) along with name of Town and County must be indicated on reverse.

Retain organisms in manila tagged plastic bags to avoid mixing capture locations. Note appropriate information on each bag tag.

Keep samples as cool as possible. Put on ice if fish cannot be frozen within 12 hours. If fish are held more than 24 hours without freezing, they will not be retained or analyzed.

Initial recipient (either DEC or designated agent) of samples from collector(s) is responsible for obtaining and recording information on the collection record forms which will accompany the chain of custody. This person will seal the container using packing tape and writing his signature, the time and the date across the tape onto the container with indelible marker. Any time a seal is broken, for whatever purpose, the incident must be recorded on the Chain of Custody (reason, time, and date) in the purpose of transfer block. Container then is resealed using new tape and rewriting signature, with time and date.

EQUIPMENT LIST

Scale or balance of appropriate capacity for the fish to be collected.

Fish measuring board.

Plastic bags of an appropriate size for the fish to be collected and for site bags.

Individually numbered metal tags for fish.

Manila tags to label bags.

Small envelops, approximately 2” x 3.5”, if fish scales are to be collected.

Knife for removing scales.

Chain of custody and fish collection forms.

Clipboard.

Pens or markers.

Paper towels.

Dish soap and brush.

Bucket.

Cooler.

Ice.

Duct tape.

Appendix G – PFAS Analyte List

Group	Chemical Name	Abbreviation	CAS Number
Perfluoroalkyl sulfonic acids	Perfluorobutanesulfonic acid	PFBS	375-73-5
	Perfluoropentanesulfonic acid	PFPeS	2706-91-4
	Perfluorohexanesulfonic acid	PFHxS	355-46-4
	Perfluoroheptanesulfonic acid	PFHpS	375-92-8
	Perfluorooctanesulfonic acid	PFOS	1763-23-1
	Perfluorononanesulfonic acid	PFNS	68259-12-1
	Perfluorodecanesulfonic acid	PFDS	335-77-3
	Perfluorododecanesulfonic acid	PFDoS	79780-39-5
Perfluoroalkyl carboxylic acids	Perfluorobutanoic acid	PFBA	375-22-4
	Perfluoropentanoic acid	PFPeA	2706-90-3
	Perfluorohexanoic acid	PFHxA	307-24-4
	Perfluoroheptanoic acid	PFHpA	375-85-9
	Perfluorooctanoic acid	PFOA	335-67-1
	Perfluorononanoic acid	PFNA	375-95-1
	Perfluorodecanoic acid	PFDA	335-76-2
	Perfluoroundecanoic acid	PFUnA	2058-94-8
	Perfluorododecanoic acid	PFDoA	307-55-1
	Perfluorotridecanoic acid	PFTrDA	72629-94-8
	Perfluorotetradecanoic acid	PFTeDA	376-06-7
Per- and Polyfluoroether carboxylic acids	Hexafluoropropylene oxide dimer acid	HFPO-DA	13252-13-6
	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	919005-14-4
	Perfluoro-3-methoxypropanoic acid	PFMPA	377-73-1
	Perfluoro-4-methoxybutanoic acid	PFMBA	863090-89-5
	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	151772-58-6
Fluorotelomer sulfonic acids	4:2 Fluorotelomer sulfonic acid	4:2-FTS	757124-72-4
	6:2 Fluorotelomer sulfonic acid	6:2-FTS	27619-97-2
	8:2 Fluorotelomer sulfonic acid	8:2-FTS	39108-34-4
Fluorotelomer carboxylic acids	3:3 Fluorotelomer carboxylic acid	3:3 FTCA	356-02-5
	5:3 Fluorotelomer carboxylic acid	5:3 FTCA	914637-49-3
	7:3 Fluorotelomer carboxylic acid	7:3 FTCA	812-70-4
Perfluorooctane sulfonamides	Perfluorooctane sulfonamide	PFOSA	754-91-6
	N-methylperfluorooctane sulfonamide	NMeFOSA	31506-32-8
	N-ethylperfluorooctane sulfonamide	NEtFOSA	4151-50-2
Perfluorooctane sulfonamidoacetic acids	N-methylperfluorooctane sulfonamidoacetic acid	N-MeFOSAA	2355-31-9
	N-ethylperfluorooctane sulfonamidoacetic acid	N-EtFOSAA	2991-50-6
Perfluorooctane sulfonamide ethanols	N-methylperfluorooctane sulfonamidoethanol	MeFOSE	24448-09-7
	N-ethylperfluorooctane sulfonamidoethanol	EtFOSE	1691-99-2

Group	Chemical Name	Abbreviation	CAS Number
Ether sulfonic acids	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (F-53B Major)	9Cl-PF3ONS	756426-58-1
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (F-53B Minor)	11Cl-PF3OUdS	763051-92-9
	Perfluoro(2-ethoxyethane) sulfonic acid	PFEESA	113507-82-7

Appendix H - Data Review Guidelines for Analysis of PFAS in Non-Potable Water and Solids

General

These guidelines are intended to be used for the validation of PFAS using EPA Method 1633 for projects within the Division of Environmental Remediation (DER). Data reviewers should understand the methodology and techniques utilized in the analysis. Consultation with the end user of the data may be necessary to assist in determining data usability based on the data quality objectives in the Quality Assurance Project Plan. A familiarity with the laboratory's Standard Operating Procedure may also be needed to fully evaluate the data. If you have any questions, please contact DER's Quality Assurance Officer, Dana Barbarossa, at dana.barbarossa@dec.ny.gov.

Preservation and Holding Time

Samples should be preserved with ice to a temperature of less than 6°C upon arrival at the lab. The holding time is 28 days to extraction for aqueous and solid samples. The time from extraction to analysis for aqueous samples is 28 days and 40 days for solids.

Temperature greatly exceeds 6ºC upon arrival at the lab*	Use professional judgement to qualify detects and non-detects as estimated or rejected
Holding time exceeding 28 days to extraction	Use professional judgement to qualify detects and non-detects as estimated or rejected if holding time is grossly exceeded

*Samples that are delivered to the lab immediately after sampling may not meet the thermal preservation guidelines. Samples are considered acceptable if they arrive on ice or an attempt to chill the samples is observed.

Initial Calibration

The initial calibration should contain a minimum of six standards for linear fit and six standards for a quadratic fit. The relative standard deviation (RSD) for a quadratic fit calibration should be less than 20%.

The low-level calibration standard should be within 50% - 150% of the true value, and the mid-level calibration standard within 70% - 130% of the true value.

%RSD >20%	J flag detects and UJ non detects

Continuing Calibration Verification

Continuing calibration verification (CCV) checks should be analyzed at a frequency of one per ten field samples. If CCV recovery is very low, where detection of the analyte could be in question, ensure a low level CCV was analyzed and use to determine data quality.

CCV recovery <70 or >130%	J flag results

Blanks

There should be no detections in the method blanks above the reporting limits. Equipment blanks, field blanks, rinse blanks etc. should be evaluated in the same manner as method blanks. Use the most contaminated blank to evaluate the sample results.

Blank Result	Sample Result	Qualification
Any detection	<Reporting limit	Qualify as ND at reporting limit
Any detection	>Reporting Limit and >10x the blank result	No qualification
>Reporting limit	>Reporting limit and <10x blank result	J+ biased high

Field Duplicates

A blind field duplicate should be collected at rate of one per twenty samples. The relative percent difference (RPD) should be less than 30% for analyte concentrations greater than two times the reporting limit. Use the higher result for final reporting.

RPD >30%	Apply J qualifier to parent sample

Lab Control Spike

Lab control spikes should be analyzed with each extraction batch or one for every twenty samples. In the absence of lab derived criteria, use 70% - 130% recovery criteria to evaluate the data.

Recovery <70% or >130% (lab derived criteria can also be used)	Apply J qualifier to detects and UJ qualifier to non detects

Matrix Spike/Matrix Spike Duplicate

One matrix spike and matrix spike duplicate should be collected at a rate of one per twenty samples. Use professional judgement to reject results based on out of control MS/MSD recoveries.

Recovery <70% or >130% (lab derived criteria can also be used)	Apply J qualifier to detects and UJ qualifier to non detects of parent sample only
RPD >30%	Apply J qualifier to detects and UJ qualifier to non detects of parent sample only

Extracted Internal Standards (Isotope Dilution Analytes)

Problematic analytes (e.g. PFBA, PFPeA, fluorotelomer sulfonates) can have wider recoveries without qualification. Qualify corresponding native compounds with a J flag if outside of the range.

Recovery <50% or >150%	Apply J qualifier
Recovery <25% or >150% for poor responding analytes	Apply J qualifier
Isotope Dilution Analyte (IDA) Recovery <10%	Reject results

Signal to Noise Ratio

The signal to noise ratio for the quantifier ion should be at least 3:1. If the ratio is less than 3:1, the peak is discernable from the baseline noise and symmetrical, the result can be reported. If the peak appears to be baseline noise and/or the shape is irregular, qualify the result as tentatively identified.

Reporting Limits

If project-specific reporting limits were not met, please indicate that in the report along with the reason (e.g. over dilution, dilution for non-target analytes, high sediment in aqueous samples).

Peak Integrations

Target analyte peaks should be integrated properly and consistently when compared to standards. Ensure branched isomer peaks are included for PFAS where standards are available. Inconsistencies should be brought to the attention of the laboratory or identified in the data review summary report.

EGLE Michigan Department of Environment, Great Lakes, and Energy

EGLE PFAS Sampling Quick Reference Field Guide[1]

All Items Used During Sampling Event

● Prohibited

• Items or materials that contain fluoropolymers such as
  ○ Polytetrafluoroethylene (PTFE), that includes the trademarks Teflon® and Hostaflon®
  ○ Polyvinylidene fluoride (PVDF), that includes the trademark Kynar®
  ○ Polycholotrifluoroethylene (PCTFE), that includes the trademark Neoflon ®
  ○ Ethylene-tetrafluoro-ethylene (ETFE), that includes the trademark Tefzel®
  ○ Fluorinated ethylene propylene (FEP), that includes the trademarks Teflon® FEP and Hostaflon® FEP
• Items or materials that contain any other fluoropolymer

Pumps, Tubing, and Sampling Equipment

● Prohibited	■ Allowable	▲Needs Screening[2]

• Items or materials containing any fluoropolymer (potential items include tubing, valves, or pipe thread seal tape)	• High-density polyethylene (HDPE)
	• Low-density polyethylene (LDPE) tubing
	• Polypropylene
	• Silicone
	• Stainless-steel
	• Any items used to secure sampling bottles made from:
	  ○ Natural rubber
	  ○ Nylon (cable ties)
	  ○ Uncoated metal springs
	  ○ Polyethylene
		• Any items or materials that will come into direct contact with the sample that have **not** been verified to be PFAS-free
		  ○ Do not assume that any sampling items or materials are PFAS-free based on composition alone

Sample Storage and Preservation

● Prohibited	■ Allowable	▲Needs Screening[2]
• Polytetrafluoroethylene (PTFE): Teflon® lined bottles or caps	• Glass jars[4] • Laboratory-provided PFAS-Free bottles: ○ HDPE or polypropylene • Regular wet ice • Thin HDPE sheeting • LDPE resealable storage bags (i.e. Ziploc®) that will not contact the sample media[6]	• Aluminium foil[4] • Chemical or blue ice[5] • Plastic storage bags other than those listed as ■ Allowable • Low-density polyethylene (LDPE) bottles

Field Documentation

● Prohibited	■ Allowable	▲Needs Screening[2]
• Clipboards coated with PFAS • Notebooks made with PFAS treated paper • PFAS treated loose paper • PFAS treated adhesive paper products	• Loose paper (non-waterproof, non-recycled) • Rite in the Rain® notebooks • Aluminium, polypropylene, or Masonite field clipboards • Ballpoint pens, pencils, and Fine or Ultra-Fine Point Sharpie® markers	• Plastic clipboards, binders, or spiral hard cover notebooks • All markers not listed as ■ Allowable • Post-It® Notes or other adhesive paper products • Waterproof field books

Decontamination

● Prohibited	■ Allowable	▲Needs Screening[2]
• Decon 90® • PFAS treated paper towel	• Alconox®, Liquinox®, or Citranox® • Triple rinse with PFAS-free deionized water • Cotton cloth or untreated paper towel	• Municipal water • Recycled paper towels or chemically treated paper towels

Clothing, Boots, Rain Gear, and PPE

● Prohibited	■ Allowable	▲Needs Screening[2]
• New or unwashed clothing • Anything made of or with: ○ Gore-Tex™ or other water-resistant synthetics • Anything applied with or recently washed with: ○ Fabric softeners ○ Fabric protectors, including UV protection ○ Insect resistant chemicals ○ Water, dirt, and/or stain resistant chemicals	• Powderless nitrile gloves • Well-laundered synthetic or 100% cotton clothing, with most recent launderings not using fabric softeners • Made of or with: ○ Polyurethane ○ Polyvinyl chloride (PVC) ○ Wax coated fabrics ○ Rubber / Neoprene ○ Uncoated Tyvek®	• Latex gloves • Water and/or dirt resistant leather gloves • Any special gloves required by a HASP • Tyvek® suits, clothing that contains Tyvek®, or coated Tyvek®

Food and Beverages

● Prohibited	■ Allowable
• No food should be consumed in the staging or sampling areas, including pre-packaged food or snacks. ■ If consuming food on-site becomes necessary, move to the staging area and remove PPE. After eating, wash hands thoroughly and put on new PPE.	• Brought and consumed only outside the vicinity of the sampling area: ○ Bottled water ○ Hydration drinks (i.e. Gatorade®, Powerade®)

Personal Care Products (PCPs) - for day of sample collection[6]

● Prohibited	■ Allowable	▲Needs Screening[2]
• Any PCPs[6], sunscreen, and insect repellent applied in the sampling area.	PCPs[6], sunscreens, and insect repellents applied in the staging area, away from sampling bottles and equipment followed by thoroughly washing hands: **PCPs[6]:** • Cosmetics, deodorants/antiperspirants, moisturizers, hand creams, and other PCPs[6] **Sunscreens:** • Banana Boat® for Men Triple Defense Continuous Spray Sunscreen SPF 30 • Banana Boat® Sport Performance Coolzone Broad Spectrum SPF 30 • Banana Boat® Sport Performance Sunscreen Lotion Broad Spectrum SPF 30 • Banana Boat® Sport Performance Sunscreen Stick SPF 50 • Coppertone® Sunscreen Lotion Ultra Guard Broad Spectrum SPF 50 • Coppertone® Sport High Performance AccuSpray Sunscreen SPF 30 • Coppertone® Sunscreen Stick Kids SPF 55 • L'Oréal® Silky Sheer Face Lotion 50 • Meijer® Clear Zinc Sunscreen Lotion Broad Spectrum SPF 50 • Meijer® Sunscreen Continuous Spray Broad Spectrum SPF 30 • Meijer® Clear Zinc Sunscreen Lotion Broad Spectrum SPF 15, 30 and 50 • Meijer® Wet Skin Kids Sunscreen Continuous Spray Broad Spectrum SPF 70 • Neutrogena® Beach Defense Water+Sun Barrier Lotion SPF 70 • Neutrogena® Beach Defense Water+Sun Barrier Spray Broad Spectrum SPF 30 • Neutrogena® Pure & Free Baby Sunscreen Broad Spectrum SPF 60+ • Neutrogena® UltraSheer Dry-Touch Sunscreen Broad Spectrum SPF 30 **Insect Repellents:** • OFF® Deep Woods • Sawyer® Permethrin	• Products other than those listed as ■Allowable

[1] This table is not considered to be a complete listing of prohibited or allowable materials. All materials should be evaluated prior to use during sampling. The manufacturers of various products should be contacted in order to determine if PFAS was used in the production of any particular product.

[2] Equipment blank samples should be taken to verify these products are PFAS-free prior to use during sampling.

[3] **For surface water foam samples:** LDPE storage bags may be used in the sampling of foam on surface waters. In this instance, it is allowable for the LDPE bag to come into direct contact with the sample media.

[4] **For fish and other wildlife samples:** Depending on the project objectives, glass jars and aluminum foil might be used for PFAS sampling. PFAS has been found to bind to glass and if the sample is stored in a glass jar, a rinse of the jar is required during the sample analysis. PFAS are sometimes used as a protective layer for some aluminum foils. An equipment blank sample should be collected prior to any aluminum foil use.

[5] Regular ice is recommended as there are concerns that chemical and blue ice may not cool and maintain the sample at or below 42.8°F (6°C) (as determined by EPA 40 CFR 136 – NPDES) during collection and through transit to the laboratory.

[6] Based on evidence, avoidance of PCPs is considered to be precautionary because none have been documented as having cross-contaminated samples due to their use. However, if used, application of PCPs must be done at the staging area and away from sampling bottles and equipment, and hands must be thoroughly washed after the use of any PCPs prior to sampling.

●- Prohibited ■- Allowable ▲- Needs Screening

Attachment C: Soil Cleanup Objectives

Department of Environmental Conservation

Division of Environmental Remediation

6 NYCRR PART 375

Environmental Remediation Programs

Effective December 31, 2025

New York State Department of Environmental Conservation

Subpart 375-6 Remedial Program Soil Cleanup Objectives

375-6.1 Purpose; applicability.
375-6.2 Definitions.
375-6.3 Unrestricted use soil cleanup objectives.
375-6.4 Restricted use soil cleanup objectives for the protection of public health.
375-6.5 Soil cleanup objectives for the protection of groundwater.
375-6.6 Soil cleanup objectives for the protection of ecological resources.
375-6.7 Other considerations and media.
375-6.8 Soil cleanup objective tables.
375-6.9 Development or modification of soil cleanup objectives.

375-6.1 Purpose; applicability.

(a) This Subpart applies to the development and implementation of the remedial programs for soil and other media set forth in Subparts 375-2 through 375-4 of this Part.

(b) This Subpart includes the soil cleanup objective tables developed pursuant to ECL 27-1415(6).

375-6.2 Definitions.

(a) *Contract required quantitation limit* or *CRQL* means the minimum level of quantitation acceptable for department analytical services contracts. The value represents minimum quantitation limits, not absolute detection limits. The minimum quantitation limit is the lowest level at which the analytical instrument can determine the concentration of a chemical that exists in the sample. The detection limit is the minimum level at which the analytical instrument can confirm the presence of the chemical in the sample. At the detection limit, the analytical instrument can confirm that there is some amount of the chemical in the sample but cannot determine the concentration that exists with certainty.

(b) *Technical support document* means the *New York State Brownfield Cleanup Program Development of Soil Cleanup Objectives Technical Support Document* dated September 2006, as amended by the *2019 Soil Cleanup Objective Technical Support Document Update* which is the document that presents the assumptions, rationale, algorithms and calculations utilized by the department and the New York State Department of Health to develop the soil cleanup objectives in ECL 27-1415(6).

375-6.3 Unrestricted use soil cleanup objectives.

(a) Applicability. The unrestricted use soil cleanup objectives represent the concentration of a contaminant in soil which, when achieved at a site, will require no use restrictions on the site for the protection of public health, groundwater and ecological resources due to the presence of contaminants in the soil.

(b) Soil cleanup objectives.

(1) The calculated values for the protection of groundwater, ecological resources and public health were considered in developing the unrestricted use soil cleanup

objectives. The unrestricted soil cleanup objectives in Table 375-6.8(a) of this Subpart represent the lowest of the three values for protection of groundwater, ecological resources and public health developed as set forth in ECL 27-1415(6).

(2) Unrestricted use, as set forth in section 375-1.8(g)(1)(i) of this Part, is achieved when a remedial program for soil meets the unrestricted use soil cleanup objectives in Table 375-6.8(a) of this Subpart.

375-6.4 Restricted use soil cleanup objectives for the protection of public health.

(a) Applicability. A protection of public health soil cleanup objective is applicable for the protection of public health at every restricted use site where contamination has been identified in soil above the residential use soil cleanup objectives for a compound included in Table 375-6.8(b) of this Subpart, and the department has determined that remediation is required to protect public health.

(b) Soil cleanup objectives. Protection of public health soil cleanup objectives have been developed for:

(1) Residential use, as set forth in section 375-1.8(g)(2)(i) of this Part. The residential use soil cleanup objectives are presented in the protection of public health-residential use column of Table 375-6.8(b) of this Subpart.

(2) Restricted-residential use, as set forth in section 375-1.8(g)(2)(ii) of this Part. The restricted-residential use soil cleanup objectives are presented in the protection of public health, restricted-residential use column of Table 375-6.8(b) of this Subpart.

(3) Commercial use, as set forth in section 375-1.8(g)(2)(iii) of this Part. The commercial use soil cleanup objectives are presented in the protection of public health-commercial use column of Table 375-6.8(b) of this Subpart.

(4) Industrial use, as set forth in section 375-1.8(g)(2)(iv) of this Part. The industrial use soil cleanup objectives are presented in the protection of public health-industrial use column of Table 375-6.8(b) of this Subpart.

(c) Selection of the restricted use soil cleanup objectives. In addition to the protection of public health soil cleanup objective for the identified use of the site, protection of groundwater and ecological resources soil cleanup objectives shall be considered where applicable. The contaminant-specific soil cleanup objectives for the soil cleanup component of the remedial program shall be the lowest of the applicable contaminant-specific soil cleanup objectives which are identified for the site as set forth in paragraphs (1) through (3) of this subdivision.

(1) The protection of groundwater soil cleanup objectives in Table 375-6.8(b) of this Subpart will be applicable to the site and evaluated in determining the soil cleanup objectives for a site as set forth in section 375-6.5 of this Title.

(2) The protection of ecological resources soil cleanup objectives in Table 375-6.8(b) of this Subpart will be applicable to the site and evaluated in determining the soil cleanup objectives in section 375-6.6 of this Subpart.

(3) The protection of public health soil cleanup objective for the current, intended and reasonably anticipated future use of the site in Table 375-6.8(b) of this Subpart will

be applicable and evaluated in determining the soil cleanup objectives for every site, unless a site-specific soil cleanup objective is proposed.

375-6.5 Soil cleanup objectives for the protection of groundwater.

(a) Applicability. Except as provided in paragraphs (1) and (2) of this subdivision, the protection of groundwater soil cleanup objectives are applicable at restricted use sites where contamination has been identified in on-site soil by the remedial investigation and groundwater standards are, or are threatened to be, contravened by the presence of soil contamination at concentrations above the protection of groundwater soil cleanup objectives.

(1) The protection of groundwater soil cleanup objectives may not be applicable where:

(i) the groundwater standard contravention is the result of an on-site source which is addressed by the remedial program;

(ii) an environmental easement will be put in place which provides for a groundwater use restriction on the site as set forth in section 375-1.8(h)(2) of this Part;

(iii) the department determines that contaminated groundwater at the site:

(*a*) is not migrating, or likely to migrate, off-site; or

(*b*) is migrating, or is likely to migrate, off-site, however, the remedy includes controls or treatment to address off-site migration; and

(iv) the department determines the groundwater quality will improve over time.

(2) The protection of groundwater soil cleanup objectives are not applicable if the contravention of groundwater standards at the site is determined to be solely the result of an off-site source, as set forth in section 375-1.8(d)(2) of this Part.

(b) Soil cleanup objectives. The protection of groundwater soil cleanup objectives are in Table 375-6.8(b) of this Subpart in the protection of groundwater column.

375-6.6 Soil cleanup objectives for the protection of ecological resources.

(a) Applicability. The soil cleanup objectives for protection of ecological resources must be considered and applied as set forth in this section for the upland soils at sites where terrestrial flora and fauna and the habitats that support them are identified.

(1) Protection of ecological resources soil cleanup objectives apply to sites or portions of sites where the department determines:

(i) ecological resources are present at or adjacent to the site, or will be present under the reasonably anticipated future use of the site, as set forth in subdivision (b) of this section which constitute an important component of the environment

(ii) an impact or threat to the ecological resource has been identified as set forth in subdivision 375-6.6(c) of this section; and

(iii) soil contaminant concentrations exceed the protection of ecological resources soil cleanup objectives, as set forth in subdivision 375-6.6(d) of this section.

(2) Protection of ecological resources soil cleanup objectives do not and/or will not apply to:

(i) sites or portions of sites where the condition of the land (e.g., paved, covered by impervious surfaces, buildings and other structures) precludes the existence of an ecological resource which constitutes an important component of the environment;

(ii) protection of the aquatic environment; or

(iii) such non-wild biota as:

(*a*) pets or livestock;

(*b*) agricultural or horticultural crops; and

(*c*) landscaping in developed areas.

(b) Identification of ecological resources. The presence of ecological resources shall be determined during the investigation of a site.

(1) The remedial party for a remedial program undertaken pursuant to either Subpart 375-2 or 375-4 of this Part shall conduct an ecological resource characterization as part of a fish and wildlife impact analysis according to department guidance to document the presence of fish, wildlife, plants and habitats both on and adjacent to the site.

(2) The remedial party for a remedial program undertaken pursuant to Subpart 375-3 of this Part shall conduct a resource characterization as part of the qualitative exposure assessment required by ECL 27-1415(2)(b) and in accordance with department guidance to document the presence of fish, wildlife, plants and habitats both on and adjacent to the site.

(3) The department shall determine whether the characterization conducted as set forth in paragraphs (1) and (2) of this subdivision:

(i) has identified ecological resources to be present at or adjacent to a site, or a portion thereof; and

(ii) if such ecological resources constitute an important component of the environment at, or in the vicinity of, the site.

(c) Consideration of impact or threat of impact. If ecological resources that constitute an important component of the environment at, or adjacent to, the site are determined to be present the protection of ecological resources soil cleanup objectives must be considered in the remedial program for the site. An impact or threat of impact exists when:

(1) a threat to the environment exists, as set forth in sections 375-2.7(a)(1)(i) to (iv) of this Part, as a result of contaminants in the soil of the site, unless the department determines that a more stringent cleanup is necessary to meet the requirements of sections 375-2.8(a) and 375-2.8(b)(1) of this Part; or

(2) an ecological resource is, or is potentially, impacted by contaminants in the soil of the site.

(d) Soil cleanup objectives. The protection of ecological resources soil cleanup objectives are the same for both unrestricted and restricted use and are incorporated in the soil cleanup objective tables.

(1) For an unrestricted use site, Table 375-6.8(a) of this Subpart presents the lower of the protection of groundwater, ecological resources and unrestricted public health soil cleanup objectives, as calculated and presented in the technical support document.

(2) For a restricted use site, Table 375-6.8(b) of this Subpart includes a protection of ecological resources column, which is applicable to a site regardless of the identified use, as set forth in subdivision (a) of this section.

(3) Protection of ecological resources soil cleanup objectives were not developed for contaminants identified in Table 375-6.8(b) of this Subpart as *NS*. For such contaminants, the applicant may be required to calculate a protection of ecological resources soil cleanup objective for any site, as set forth in section 375-6.9 of this Subpart.

375-6.7 Other considerations and media.

(a) Soil vapor and vapor intrusion.

(1) The soil cleanup objectives presented in this Subpart do not account for the impact of concentrations of contaminants in soil relative to soil vapor or vapor intrusion attributable to a remedial site.

(2) The nature and extent of any contamination of the soil vapor media, if present at the site, will be evaluated by the remedial investigation.

(3) The remedy will be protective for soil vapor and vapor intrusion and shall address through appropriate removal or engineering controls the migration of contaminants in soil and groundwater at levels which could impact the indoor air of buildings.

(b) Surface water and sediments.

(1) The soil cleanup objectives presented in this Subpart do not account for the impact of contaminants in soil relative to surface water and surface water sediments attributable to a remedial site.

(2) The nature and extent of any contamination of the surface water and sediment, if present at the site, will be evaluated by the remedial investigation.

(3) The remedy for a site will eliminate or mitigate the threat to public health and the environment from contaminated surface water and surface water sediments and shall, to the extent feasible:

(i) remove, contain or treat the source of a discharge of contaminants from the site to the surface water and sediments;

(ii) address through appropriate removal or engineering controls the migration of contaminants in soil and groundwater at levels which could impact the water quality or adversely impact the sediments of a surface water body on or adjacent to the site; and

(iii) remove, contain or treat the impacted surface water and surface water sediments based upon the cleanup objectives developed for the remedial program.

(c) Adjacent residential properties.

(1) The soil cleanup objectives presented for commercial or industrial use in this Subpart do not directly account for the impact of concentrations of contaminants in soil relative to adjacent residential properties attributable to a remedial site.

(2) The remedy for a site using the commercial or industrial soil cleanup objectives will be protective of adjacent residential properties and shall address, through appropriate removal or engineering controls, the migration of contaminants in soil which could impact residential properties adjacent to the site.

(d) Soil covers and backfill.

(1) Soil brought to the site for use as a soil cover or backfill must not exceed the applicable soil cleanup objectives for the use of the site, as set forth in Table 375-6.8(a) or (b) of this Subpart, as follows:

(i) for unrestricted use sites, as set forth in Table 375-6.8(a) of this Subpart;

(ii) for residential, restricted-residential, and commercial use sites use the lower of the protection of groundwater or the protection of public health soil cleanup objectives, for the identified use of the site as set forth in Table 375-6.8(b) of this Subpart;

(iii) for industrial use sites, use the lower of the protection of groundwater or the protection of public health soil cleanup objectives for commercial use as set forth in Table 375-6.8(b) of this Subpart;

(iv) for restricted use sites where an ecological resource that constitutes an important component of the environment is determined to be present, the protection of ecological resources soil cleanup objective must also be considered, so as not to preclude the growth and development of plants and soil dwelling organisms nor inhibit the activity of burrowing organisms; or

(v) a site-specific modification to a soil cleanup objective, as set forth in section 375-6.9(e) of this Subpart, may also be utilized in compliance with clauses (ii)(*a*) through (*d*) of this subparagraph.

(2) Analytical data is required to demonstrate that the material complies with the requirements of paragraph (1) of this subdivision. The number of samples required to confirm compliance will be approved in the work plan. The department may issue a site-specific exemption for the analytical testing requirements, based upon documentation of the origin and composition of the material.

(3) The department may issue a site-specific exemption for one or more of the requirements set forth in paragraph (1) of this subdivision, based upon site-specific conditions, including but not limited to, the following:

(i) the use and redevelopment of the site;

(ii) the depth of placement of the backfill material;

(iii) the depth of placement of the backfill material relative to groundwater;
(iv) the volume of backfill material;
(v) the potential for odor from the backfill material;
(vi) a department issued beneficial use determination, pursuant to Part 360 of this Title; or
(vii) background levels of contamination in areas surrounding the site.

375-6.8 Soil cleanup objective tables.

Table 375-6.8(a). Unrestricted use soil cleanup objectives

Table 375-6.8(a). Unrestricted use soil cleanup objectives.

Contaminant	CAS Number	Unrestricted Use
Metals		
Arsenic	7440-38-2	13 [c]
Barium	7440-39-3	410 [c]
Beryllium	7440-41-7	4.4
Cadmium	7440-43-9	2.5 [c]
Chromium, hexavalent [e]	18540-29-9	1 [b]
Chromium, trivalent [e]	16065-83-1	30 [c]
Copper	7440-50-8	50
Total Cyanide [e, f]		2.3 [c]
Lead	7439-92-1	63 [c]
Manganese	7439-96-5	1600 [c]
Mercury (Total)		0.18 [c]
Nickel	7440-02-0	30
Selenium	7782-49-2	3.9 [c]
Silver	7440-22-4	2
Zinc	7440-66-6	109 [c]
PCBs/Pesticides		
4,4’-DDE	72-55-9	0.0033 [b]
4,4’-DDT	50-29-3	0.0033 [b]
4,4’-DDD	72-54-8	0.0033 [b]

Table 375-6.8(a). Unrestricted use soil cleanup objectives.

Contaminant	**CAS Number**	**Unrestricted Use**
Aldrin	309-00-2	0.0048 [c]
alpha-BHC	319-84-6	0.02
beta-BHC	319-85-7	0.021
Chlordane (alpha)	5103-71-9	0.014
delta-BHC [g]	319-86-8	0.04
Dieldrin	60-57-1	0.005 [c]
Endosulfan I [d, f]	959-98-8	4.3
Endosulfan II [d, f]	33213-65-9	4.3
Endosulfan sulfate [d, f]	1031-07-8	4.3
Endrin	72-20-8	0.014
Heptachlor	76-44-8	0.013
Lindane	58-89-9	0.025
Polychlorinated biphenyls	1336-36-3	0.1
Semivolatile organic compounds		
1,4 Dioxane	123-91-1	0.1 [b]
Acenaphthene	83-32-9	20
Acenaphthylene [f]	208-96-8	100 [a]
Anthracene [f]	120-12-7	100 [a]
Benz(a)anthracene [f]	56-55-3	1 [c]
Benzo(a)pyrene	50-32-8	1 [c]
Benzo(b)fluoranthene [f]	205-99-2	1 [c]

Table 375-6.8(a). Unrestricted use soil cleanup objectives.

Contaminant	**CAS Number**	**Unrestricted Use**
Benzo(g,h,i)perylene [f]	191-24-2	0.64
Benzo(k)fluoranthene [f]	207-08-9	0.8 [c]
Chrysene [f]	218-01-9	1 [c]
Dibenz(a,h)anthracene [f]	53-70-3	0.33 [b]
Dibenzofuran [f]	132-64-9	2.1
Fluoranthene [f]	206-44-0	85
Fluorene	86-73-7	30
Indeno(1,2,3-cd)pyrene [f]	193-39-5	0.5 [c]
m-Cresol [f]	108-39-4	0.33 [b]
Naphthalene [f]	91-20-3	12
o-Cresol [f]	95-48-7	0.33 [b]
p-Cresol [f]	106-44-5	0.33 [b]
Pentachlorophenol	87-86-5	0.8 [b]
Phenanthrene [f]	85-01-8	1.1 [c]
Phenol	108-95-2	0.33 [b]
Pyrene [f]	129-00-0	64
Volatile organic compounds		
1,1,1-Trichloroethane [f]	71-55-6	0.68
1,1-Dichloroethane [f]	75-34-3	0.27
1,1-Dichloroethene [f]	75-35-4	0.24
1,2-Dichlorobenzene [f]	95-50-1	1.1

Table 375-6.8(a). Unrestricted use soil cleanup objectives.

Contaminant	CAS Number	Unrestricted Use
1,2-Dichloroethane	107-06-2	0.02 [c]
cis -1,2-Dichloroethene [f]	156-59-2	0.19
trans-1,2-Dichloroethene [f]	156-60-5	0.19
1,3-Dichlorobenzene [f]	541-73-1	2.6
1,4-Dichlorobenzene	106-46-7	1.8
Acetone	67-64-1	0.03
Aniline	62-53-3	0.04
Benzene	71-43-2	0.06
n-Butylbenzene [f]	104-51-8	18
Carbon tetrachloride [f]	56-23-5	0.76
Chlorobenzene	108-90-7	4.5
Chloroform	67-66-3	0.37
Ethylbenzene [f]	100-41-4	1
Hexachlorobenzene [f]	118-74-1	0.33 [b]
Methyl ethyl ketone	78-93-3	0.10
Methyl tert-butyl ether [f]	1634-04-4	0.1
Methylene chloride	75-09-2	0.05
Nitrobenzene	98-95-3	0.08[c]
n – Propylbenzene [f]	103-65-1	5
sec-Butylbenzene [f]	135-98-8	25
tert-Butylbenzene [f]	98-06-6	11

Table 375-6.8(a). Unrestricted use soil cleanup objectives.

Contaminant	CAS Number	Unrestricted Use
Tetrachloroethene	127-18-4	1.3
Toluene	108-88-3	0.7
Trichloroethene	79-01-6	0.47
1,2,4-Trimethylbenzene [f]	95-63-6	5.9
1,3,5-Trimethylbenzene [f]	108-67-8	3.1
Vinyl chloride [f]	75-01-4	0.03
Xylene (mixed)	1330-20-7	0.26
All soil cleanup objectives are in parts per million (ppm).		

[a.] The soil cleanup objectives for unrestricted use were capped at a maximum value of 100 ppm. See the New York State Department of Environmental Conservation Technical Support Document (2006), section 9.3.
[b.] For constituents where the calculated soil cleanup objective was lower than the contract required quantitation limit, the contract required quantitation limit is used as the Track 1 soil cleanup objective value.
[c.] For constituents where the calculated soil cleanup objective was lower than the rural soil background concentration, the rural soil background concentration is used as the Track 1 soil cleanup objective value for this use of the site. See the New York State Department of Environmental Conservation Technical Support Document (2006), Section 9 and Appendix D.
[d.] The soil cleanup objective is the sum of endosulfan I, endosulfan II, and endosulfan sulfate.
[e.] The soil cleanup objective for this specific compound (or family of compounds) is met if the analysis for the total species of this contaminant is below the specific soil cleanup objective.
[f.] Protection of ecological resources soil cleanup objectives were not developed for contaminants identified in Table 375-6.8(b) with “NS”. Where such contaminants appear in Table 375-6.8(a), the applicant may be required by the department to calculate a protection of ecological resources soil cleanup objective according to the New York State Department of Environmental Conservation Technical Support Document (2006).
[g] This soil cleanup objective is derived from data on mixed isomers of BHC.

Table 375-6.8(b). Restricted use soil cleanup objectives.

Table 375-6.8(b) Restricted use soil cleanup objectives.

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Residential	Restricted Residential	Commercial	Industrial		
Metals							
Arsenic	7440-38-2	16 [f]	16 [f]	16 [f]	16 [f]	13 [f]	16 [f]
Barium	7440-39-3	410	410	410	10,000 [d]	433	820
Beryllium	7440-41-7	8.8	43	670	750	10	47
Cadmium	7440-43-9	2.5 [f]	2.5 [f]	3.7	4.4	4	7.5
Chromium, hexavalent [h]	18540-29-9	1 [e]	1 [e]	11	11	20	19
Chromium, trivalent [h]	16065-83-1	30 [f]	110	1,700	2,000	160	NS
Copper	7440-50-8	280	280	280	10,000 [d]	50	1720
Total Cyanide [h]		2.6	13	28	240	NS	40
Lead	7439-92-1	400	400	1,000	3,900	63 [f]	450
Manganese	7439-96-5	2,000 [f]	2,000 [f]	10,000 [d]	10,000 [d]	1600 [f]	2,000 [f]
Mercury (Total)		0.30 [j]	0.30 [j]	1.1 [j]	1.1 [j]	0.18 [f]	0.73
Nickel	7440-02-0	87	320	320	5,900	30	130
Selenium	7782-49-2	22	110	1,700	2,000	3.9 [f]	4 [f]
Silver	7440-22-4	22	110	1,700	2,000	2	8.3
Zinc	7440-66-6	1,300	6,600	10,000 [d]	10,000 [d]	109 [f]	2,480
PCBs/Pesticides							
4,4’-DDE	72-55-9	0.78	3.4	22	22	0.0033 [e]	9.3

Table 375-6.8(b) Restricted use soil cleanup objectives.

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Residential	Restricted Residential	Commercial	Industrial		
4,4'-DDT	50-29-3	0.78	3.8	27	27	0.0033 [e]	135
4,4'- DDD	72-54-8	1.2	5	33	33	0.0033 [e]	14
Aldrin	309-00-2	0.0088	0.044	0.33	0.33	0.14	0.19
alpha-BHC	319-84-6	0.042	0.18	1.2	1.2	0.04 [g]	0.02
beta-BHC	319-85-7	0.042	0.18	1.8	2.9	0.6	0.09
Chlordane (alpha)	5103-71-9	0.14	0.65	8.2	11	1.3	4.5
delta-BHC	319-86-8	100	100 [a]	500 [b]	1,000 [c]	0.04 [g]	0.1
Dieldrin	60-57-1	0.017	0.075	0.48	0.48	0.006	0.1
Endosulfan I	959-98-8	8.4 [i]	35 [i]	360 [i]	580 [i]	NS	65
Endosulfan II	33213-65-9	8.4 [i]	35 [i]	360 [i]	580 [i]	NS	44
Endosulfan sulfate	1031-07-8	8.4 [i]	35 [i]	360 [i]	580 [i]	NS	47 [c]
Endrin	72-20-8	1.2	5.3	55	87	0.014	0.06
Heptachlor	76-44-8	0.12	0.53	5.1	5.1	0.14	0.38
Lindane	58-89-9	0.05	0.21	0.21	3.4	6	0.05
Polychlorinated biphenyls	1336-36-3	1	1	1	25	1	3.2
Semivolatiles							
1,4-Dioxane	123-91-1	1.4	5.7	36	36	0.1 [e]	0.1 [e]
Acenaphthene	83-32-9	100 [a]	100 [a]	500 [b]	1,000 [c]	20	98

Table 375-6.8(b) Restricted use soil cleanup objectives.

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Residential	Restricted Residential	Commercial	Industrial		
Acenaphthylene	208-96-8	100 [a]	100 [a]	500 [b]	1,000 [c]	NS	365
Anthracene	120-12-7	100 [a]	100 [a]	500 [b]	1,000 [c]	NS	1,000 [c]
Benz(a)anthracene	56-55-3	1 [f]	1.4	37	37	NS	1 [f]
Benzo(a)pyrene	50-32-8	1 [f]	1 [f]	3.7	3.7	2.6	22
Benzo(b)fluoranthene	205-99-2	1 [f]	1.4	37	37	NS	2.1
Benzo(g,h,i)perylene	191-24-2	1.2	4.9	47	78	NS	1,000 [c]
Benzo(k)fluoranthene	207-08-9	1.2	4.9	47	78	NS	2
Chrysene	218-01-9	1.2	4.9	47	78	NS	1 [f]
Dibenz(a,h) anthracene	53-70-3	0.33 [e]	0.33 [e]	3.7	3.7	NS	1,000 [c]
Dibenzofuran	132-64-9	4.2	18	180	290	NS	110
Fluoranthene	206-44-0	100 [a]	100 [a]	500 [b]	1,000 [c]	NS	1,000 [c]
Fluorene	86-73-7	100 [a]	100 [a]	500 [b]	1,000 [c]	30	386
Indeno(1,2,3-cd) pyrene	193-39-5	0.5 [f]	1.4	37	37	NS	6.6
m-Cresol	108-39-4	100 [a]	100 [a]	500 [b]	1,000 [c]	NS	0.33 [e]
Naphthalene	91-20-3	84 [a]	100 [a]	500 [b]	1,000 [c]	NS	12
o-Cresol	95-48-7	100 [a]	100 [a]	500 [b]	1,000 [c]	NS	0.33 [e]
p-Cresol	106-44-5	100 [a]	100 [a]	500 [b]	1,000 [c]	NS	0.33 [e]
Pentachlorophenol	87-86-5	0.8 [e]	1.3	6.9	7	0.8 [e]	0.8 [e]

Table 375-6.8(b) Restricted use soil cleanup objectives.

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Residential	Restricted Residential	Commercial	Industrial		
Phenanthrene	85-01-8	1.2	4.9	47	78	NS	1,000 [c]
Phenol	108-95-2	100 [a]	100 [a]	500 [b]	1,000 [c]	30	0.33 [e]
Pyrene	129-00-0	100 [a]	100 [a]	500 [b]	1,000 [c]	NS	1,000 [c]
Volatiles							
1,1,1-Trichloroethane	71-55-6	100 [a]	100 [a]	500 [b]	1,000 [c]	NS	0.68
1,1-Dichloroethane	75-34-3	19	47	240	240	NS	0.27
1,1-Dichloroethene	75-35-4	0.41	0.98	5.1	5.1	NS	0.33
1,2-Dichlorobenzene	95-50-1	100 [a]	100 [a]	500 [b]	1,000 [c]	NS	1.1
1,2-Dichloroethane	107-06-2	2.4	5.8	30	30	10	0.02
cis-1,2-Dichloroethene	156-59-2	8.7	41	500 [b]	590	NS	0.19
trans-1,2-Dichloroethene	156-60-5	75	100 [a]	500 [b]	1,000 [c]	NS	0.19
1,3-Dichlorobenzene	541-73-1	11	38	280	280	NS	2.6
1,4-Dichlorobenzene	106-46-7	10	24	130	130	20	1.8
Acetone	67-64-1	100 [a]	100 [b]	500 [b]	1,000 [c]	2.2	0.03
Aniline	62-53-3	6.7	8.1	36	36	32	0.04
Benzene	71-43-2	1.2	3.7	20	20	70	0.06
n-Butylbenzene	104-51-8	100 [a]	100 [a]	500 [b]	1,000 [c]	NS	18
Carbon tetrachloride	56-23-5	1.9	7.1	41	41	NS	0.76

Table 375-6.8(b) Restricted use soil cleanup objectives.

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Residential	Restricted Residential	Commercial	Industrial		
Chlorobenzene	108-90-7	73	100 [a]	500 [b]	1,000 [c]	40	4.5
Chloroform	67-66-3	4.8	24	180	180	12	0.37
Ethylbenzene	100-41-4	32	76	390	390	NS	1
Hexachlorobenzene	118-74-1	0.33 [e]	0.33 [e]	1.8	2.9	NS	3.2
Methyl ethyl ketone	78-93-3	100 [a]	100 [a]	500 [b]	1,000 [c]	100 [a]	0.10
Methyl tert-butyl ether	1634-04-4	40	100 [a]	500 [b]	890	NS	0.1
Methylene chloride	75-09-2	17	81	500 [b]	1,000 [c]	12	0.05
Nitrobenzene	98-95-3	0.77	1.8	8.9	8.9	2	0.08[f]
n-Propylbenzene	103-65-1	100 [a]	100 [a]	500 [b]	1,000 [c]	NS	5
sec-Butylbenzene	135-98-8	100 [a]	100 [a]	500 [b]	1,000 [c]	NS	25
tert-Butylbenzene	98-06-6	100 [a]	100 [a]	500 [b]	1,000 [c]	NS	11
Tetrachloroethene	127-18-4	15	18	81	81	2	1.3
Toluene	108-88-3	100 [a]	100 [a]	500 [b]	1,000 [c]	36	0.7
Trichloroethene	79-01-6	1.7	6.4	54	54	2	0.47
1,2,4-Trimethylbenzene	95-63-6	41	100 [a]	500 [b]	1,000 [c]	NS	5.9
1,3,5-Trimethylbenzene	108-67-8	41	100 [a]	500 [b]	1,000 [c]	NS	3.1
Vinyl chloride	75-01-4	0.099	0.48	7.1	7.1	NS	0.03
Xylene (mixed)	1330-20-7	100 [a]	100 [a]	500 [b]	1,000 [c]	0.26	1.2

Table 375-6.8(b) Restricted use soil cleanup objectives.

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Residential	Restricted Residential	Commercial	Industrial		
All soil cleanup objectives are in parts per million (ppm).							
NS = Not specified. See New York State Department of Environmental Conservation Technical Support Document (2006).							

[a.] The soil cleanup objectives for residential, restricted-residential, and ecological resources use were capped at a maximum value of 100 ppm. See New York State Department of Environmental Conservation Technical Support Document (2006) section 9.3.
[b.] The soil cleanup objectives for commercial use were capped at a maximum value of 500 ppm. See New York State Department of Environmental Conservation Technical Support Document (2006) section 9.3.
[c.] The soil cleanup objectives for industrial use and the protection of groundwater were capped at a maximum value of 1000 ppm. See New York State Department of Environmental Conservation Technical Support Document (2006) section 9.3.
[d.] The soil cleanup objectives for metals were capped at a maximum value of 10,000 ppm. See New York State Department of Environmental Conservation Technical Support Document (2006) section 9.3.
[e.] For constituents where the calculated soil cleanup objective was lower than the contract required quantitation limit, the contract required quantitation limit is used as the soil cleanup objective value.
[f.] For constituents where the calculated soil cleanup objective was lower than the rural soil background concentration, the rural soil background concentration is used as the Track 2 soil cleanup objective value for this use of the site. See the New York State Department of Environmental Conservation Technical Support Document (2006), Section 9 and Appendix D.
[g.] This soil cleanup objective is derived from data on mixed isomers of BHC.
[h.] The soil cleanup objective for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific soil cleanup objective.
[i.] This soil cleanup objective is for the sum of endosulfan I, endosulfan II, and endosulfan sulfate.
[j.] Protection of public health soil cleanup objectives for total mercury are based on either the rural soil background concentration for total mercury (0.3 ppm or 0.18 ppm for habitat) or the most toxic mercury form that may be present in soil samples. If total mercury is found in soil

above the published soil cleanup objective, then subsequent analysis of the separate species of mercury can be taken into consideration during the remedy selection process.

375-6.9 Development or modification of soil cleanup objectives.

(a) Applicability. This section identifies when and the procedures under which a contaminant-specific soil cleanup objective may be developed or modified.

(1) Soil cleanup objectives for contaminants not included in Tables 375-6.8(a) and (b) of this Subpart may be developed by the remedial party or required by the department.

(2) Soil cleanup objectives for contaminants included in Tables 375-6.8(a) and (b) of this Subpart, may be modified based on site-specific data if desired by the remedial party; as set forth in:

(i) Subpart 375-3 for Tracks 3 or 4, as set forth in section 375-3.8(e)(3) or (4), respectively of this Part; or

(ii) Subparts 375-2 and 375-4 of this Part, as set forth in sections 375-2.8(b)(1)(iii) and 375-4.8(c)(1)(iii) of this Part.

(3) Protection of ecological resources soil cleanup objectives were not developed for certain contaminants, which are identified in Table 375-6.8(b) of this Subpart as *NS*. Where such contaminants:

(i) appear in Table 375-6.8(a) of this Subpart, the applicant may be required by the department to calculate a protection of ecological resources soil cleanup objective for the contaminant for use in Track 1 and apply such soil cleanup objective where it is lower than the soil cleanup objective set forth in Table 375-6.8(a) of this Subpart; or

(ii) are identified as impacting or threatening an ecological resource for a restricted use remedial program the department may require a protection of ecological resources soil cleanup objective be developed.

(b) New soil cleanup objectives must:

(1) Be developed utilizing the same methodologies that were used by the department to develop the respective soil cleanup objective, as provided in the technical support document.

(2) Apply the following caps, as set forth in section 9.3 of the technical support document, on any soil cleanup objective included in Tables 375-6.8(a) and (b) of this Subpart, with the exception of metals, as set forth in paragraph (3) of this subdivision, developed for:

(i) unrestricted use, residential use, restricted-residential use and the protection of ecological resources, a maximum value of 100 ppm;

(ii) commercial use, a maximum value of 500 ppm; and

(iii) industrial use and the protection of groundwater a maximum value of 1,000 ppm, and

(3) Apply a cap for metals at a maximum value of 10,000 ppm. This cap does not apply to metals which may naturally occur in some areas above that level including aluminum, calcium, iron, magnesium and potassium.

(c) Development of unrestricted use soil cleanup objectives. The unrestricted use soil cleanup objective for a compound will be the lowest of the soil cleanup values, calculated as set forth in appendix E of the technical support document, for the protection of groundwater, protection of ecological resources and protection of public health.

(d) Development of restricted use soil cleanup objectives. The protection of:

(1) Groundwater soil cleanup objective will be the values calculated for the protection of groundwater as set forth in appendix E of the technical support document;

(2) Ecological resources soil cleanup objectives will be the values calculated for the protection of ecological resources as set forth in appendix E of the technical support document; and

(3) Public health cleanup objective will be the values calculated for the protection of public health for the identified use of the site, as set forth in appendix E of the technical support document.

(e) Modification of soil cleanup objectives. The contaminant specific soil cleanup objectives set forth at Tables 375-6.8(a) and (b) of this Subpart may be modified by site-specific data as set forth in this subdivision.

(1) Contaminant specific soil cleanup objectives modified in accordance with this subdivision may be utilized by the remedial party for a site remedial program undertaken pursuant to:

(i) Subpart 375-3 in Tracks 3 or 4, as set forth in section 375-3.8(e)(3) or (4), respectively of this Part; or

(ii) Subparts 375-2 and 375-4 of this Part, as set forth in sections 375-2.8(b)(1)(ii) and 375-4.8(c)(1)(ii) of this Part.

(2) For the calculation of a protection of groundwater or ecological resources contaminant specific soil cleanup objective, the site-specific percentage of total organic carbon in the soil at the site may be substituted in the algorithms provided in appendix E of the technical support document.

(3) For the calculation of a protection of public health contaminant specific soil cleanup objective, site-specific data may be used to modify two of the five exposure pathways, as follows:

(i) for the particulate inhalation pathway six parameters rely on site-specific data; and

(ii) for the volatile inhalation pathway, four parameters rely on site-specific data.

(4) The algorithms to be used for each protection of public health pathway and details on the parameters which can be substituted are included in appendix E of the technical support document.

(f) Use of soil cleanup objectives developed or modified. Once approved by the department, contaminant specific soil cleanup objectives developed or modified as set forth in

this section may be utilized by the department at other sites consistent with paragraphs (1) and (2) of this subdivision.

(1) Contaminant specific soil cleanup objectives developed for contaminants not included in Tables 375-6.8(a) and (b) of this Subpart, as set forth in subdivision 375-6.9(b) of this section, will be used as guidance and shall be considered by the department for inclusion in the Tables in this Subpart during any subsequent reevaluation of the soil cleanup objectives, as set forth by ECL 27-1415.

(2) Contaminant specific soil cleanup objectives modified for site-specific parameters, as set forth in subdivision 375-6.9(e) of this section, may be utilized at sites manifesting similar parameters, if approved by the department.

CP-51 / Soil Cleanup Guidance

New York State Department of Environmental Conservation

DEC Policy

Issuing Authority: Alexander B. Grannis, Commissioner

Date Issued: October 21, 2010	**Latest Date Revised:**

I. Summary

This policy provides the framework and procedures for the selection of soil cleanup levels appropriate for each of the remedial programs in the New York State Department of Environmental Conservation (DEC) Division of Environmental Remediation (DER). This policy applies to the Inactive Hazardous Waste Disposal Site Remedial Program, known as the State Superfund Program (SSF); Brownfield Cleanup Program (BCP); Voluntary Cleanup Program (VCP); Environmental Restoration Program (ERP); Spill Response Program - Navigation Law (NL) section 176 (SRP); and the Resource Conservation and Recovery Act (RCRA) Corrective Action Program. It replaces *Technical and Administrative Guidance Memorandum (TAGM) 4046: Determination of Soil Cleanup Objectives and Cleanup Levels* (January 24, 1994); the *Petroleum Site Inactivation and Closure Memorandum* (February 23, 1998); and Sections III and IV of *Spill Technology and Remediation Series (STARS) #1* (August 1992).

This document is used in conjunction with the applicable statutes, regulations and guidance. Site-specific soil cleanup levels, determined in accordance with this guidance, are only applied after:

- the site, or area of concern, is fully investigated to determine the nature and extent of contamination;
- all sources of contamination are addressed consistent with the hierarchy provided in 6 NYCRR 375-1.8(c) or consistent with the RCRA Corrective Action Program (as appropriate);
- groundwater, if contaminated, has been evaluated for appropriate remedial actions consistent with 6 NYCRR 375-1.8(d) or consistent with the RCRA Corrective Action Program (as appropriate); and
- impacts on adjacent residential properties, surface water, aquatic ecological resources are evaluated, as well as indoor air, soil vapor, vapor intrusion and other appropriate media.

II. Policy

It is DEC's policy, consistent with applicable statutes and regulations, that all remedies will be protective of public health and the environment. DEC's preference is that remedial programs, including the selection of soil cleanup levels, be designed such that the performance standard results in the implementation of a permanent remedy resulting in no future land use restrictions. However, some of

DEC's remedial programs are predicated on future site use. Further, it is not always feasible to return to a condition where no restrictions are required.

The procedures set forth herein are intended for the use and guidance of both DEC and remedial parties to provide a uniform and consistent process for the determination of soil cleanup levels. This guidance is not intended to create any substantive or procedural rights, enforceable by any party in administrative or judicial litigation with DEC. DEC reserves the right to act at variance with these procedures to address site-specific circumstances and to change the procedures in this guidance at any time.

Please note that this guidance focuses only on soil cleanup levels. All remedies must be fully protective of public health and the environment and must prevent further off-site migration to the extent feasible, with special emphasis on preventing or minimizing migration onto adjacent residential properties. A remedial party is required to evaluate and investigate, if necessary, all environmental media including soil, groundwater, surface water, sediments, soil vapor, ambient air, and biota. [See 6 NYCRR 375-1.8(a)(6) or RCRA Corrective Action Program (as appropriate)]. This investigation will determine if any of the referenced media are, or may be, impacted by site contamination. Applicable guidance should be consulted for media other than soil.

Nothing contained in this guidance, in itself, forms the basis for changes to previously selected remedies. However, a change in the site remedy may be considered consistent with *DER-2: Making Changes to Selected Remedies* (April 1, 2008). [See Section VI, Related References.] To the extent that a change to a selected remedy at a site in one of DER's remedial programs is necessary as provided in DER-2, as applicable, the Soil Cleanup Objectives (SCOs) may be considered in the evaluation of appropriate changes to the selected remedy. For sites in other programs, applicable regulations and guidance must be used.

III. Purpose and Background

DEC has a number of different remedial programs that were developed over time based on separate and distinct authorities. These programs use different procedures to determine the extent of soil cleanup necessary to satisfy the remedial program goals. The purpose of this document is to set forth how soil cleanup levels are selected for the different programs.

Legislation establishing New York State's Brownfield Cleanup Program (Article 27, Title 14 of the Environmental Conservation Law [ECL]) required DEC, in consultation with the New York State Department of Health (NYSDOH), to develop an approach for the remediation of contamination at brownfield sites. The resulting regulation includes seven sets of SCOs. Four sets provide for the protection of public health for different land uses (residential, restricted residential, commercial, and industrial); two sets provide for the protection of other resources (groundwater and ecological resources); and one set includes SCOs for protection of public health and the environment for all uses (unrestricted use).

With the promulgation of the SCOs, it is necessary to discuss how the SCOs, and soil cleanup levels generally, are arrived at for a specific site. Some key definitions in understanding how cleanup levels for soil are arrived at follow.

Feasible, which means suitable to site conditions, capable of being successfully carried out with available technology, implementable and cost effective [see 6 NYCRR 375-1.2(s)].

Presumptive remedy, which means a technology or technique where experience has shown the remedy to be a proven solution for specific types of sites and/or contaminant classes [See *DER-15: Presumptive/Proven Remedial Technologies* February 27, 2007. Refer to Section VI, Related References.]

Soil cleanup level, which means the concentration of a given contaminant for a specific site that must be achieved under a remedial program for soil. Depending on the regulatory program, a soil cleanup level may be based on the regulation [6 NYCRR 375-6.8(a) or (b)], modified from the regulatory value based on site-specific differences, or based on other information, including background levels or feasibility. Soil cleanup levels may include:

- SCOs promulgated at 6 NYCRR 375-6;
- Supplemental Soil Cleanup Objectives (SSCOs);
- a "totals" approach for a family of contaminants known as Polycyclic Aromatic Hydrocarbons (PAHs);
- Presumptive remedy for Polychlorinated Biphenyls (PCBs); and
- Nuisance Condition.

Soil Cleanup Objective (SCO), which means the chemical concentrations for soil cleanup of individual chemicals contained in 6 NYCRR 375-6.8(a) or (b). The SCOs were developed using the process outlined in the Technical Support Document (TSD). The SCOs and the SSCOs defined below are applicable statewide and do not account for many site-specific considerations which could potentially result in higher levels. Soil concentrations that are higher than the SCOs and SSCOs are not necessarily a health or environmental concern. When an SCO (or SSCO) is exceeded, the degree of public health or environmental concern depends on several factors, including the magnitude of the exceedance, the accuracy of the exposure estimates, other sources of exposure to the contaminant, and the strength and quality of the available toxicological information on the contaminant.

Supplemental Soil Cleanup Objective (SSCO), which means a) an existing soil cleanup level for a contaminant which had been included in former TAGM 4046 and was not included in 6 NYCRR 375-6; b) has been developed using the same process used for development of the SCOs; and c) new cleanup levels for soil developed by the remedial party following the approach detailed in Appendix E of the TSD. The TSD provides information relative to the development of cleanup objectives for soil that are not set forth in 6 NYCRR 375-6. Cleanup objectives that have been established at the direction of DEC or the election of remedial parties are included in Table 1.

Technical Support Document (TSD), which refers to the document dated December 2006 detailing the development of the SCOs that were promulgated in 6 NYCRR 375-6. It provides the technical background and provides a detailed discussion of the considerations for development of the SCOs for the different land uses and exposure pathways. The TSD is available on DEC's website [see Section VI, Related References].

The purpose of this guidance is NOT to focus on media other than soil. Accordingly, the remedial program may require remedial activities to address media other than soil (e.g., groundwater, surface

water, sediment, and vapor). Applicable guidance should be consulted for media other than soil. This guidance is to be used in conjunction with the applicable statutes, regulations and guidance. Site-specific soil cleanup levels, determined in accordance with this guidance, are only applied after:

- the site, or area of concern, is fully investigated to determine the nature and extent of contamination;
- all sources of contamination are addressed consistent with the hierarchy provided in 6 NYCRR 375-1.8(c) or consistent with the RCRA Corrective Action Program (as appropriate);
- groundwater, if contaminated, has been evaluated for appropriate remedial actions consistent with 6 NYCRR 375-1.8(d) or consistent with the RCRA Corrective Action Program (as appropriate); and
- an evaluation of impacts on adjacent residential properties, surface water, aquatic ecological resources, as well as indoor air, soil vapor, vapor intrusion and other appropriate media.

IV. Responsibility

The responsibility for maintaining and updating this policy lies with DER. DEC staff are responsible for implementing this policy, with input (as applicable) from NYSDOH.

V. Procedures

A. General Approaches to the Selection of Soil Cleanup Levels

The determination of soil cleanup levels for a site is dependent on:

1. The regulatory program pursuant to which the site is being addressed;
2. Whether the groundwater beneath or down gradient of the site is, or may become contaminated with site-related contaminants;
3. Whether ecological resources constitute an important component of the environment at or adjacent to a site, and which are, or may be, impacted by site-related contaminants; and
4. Other impacted environmental media such as surface water, sediment, and soil vapor.

After fully evaluating the nature and extent of soil contamination associated with a site, the soil cleanup levels will be based on one, or a combination of, the following four approaches.

Approach 1: **Utilize the Unrestricted Use Soil Cleanup Objectives** [see 6 NYCRR Table 375-6.8(a)]. Under this approach, the soil cleanup levels will be established consistent with the SCOs set forth in 6 NYCRR Table 375-6.8(a). For contaminants of concern which are not included in the rule, DEC may direct development of a soil cleanup level which is protective of public health and the environment without restrictions following the procedure outlined in Appendix E of the TSD. Under this approach, the unrestricted SCOs are applied throughout the soil matrix to the top of bedrock (including the saturated zone).

Approach 2: **Utilize the Restricted Use Soil Cleanup Objectives** [see 6 NYCRR Table 375-6.8(b)]. Under this approach, soil cleanup levels will be established consistent with the SCOs set forth in 6 NYCRR Table 375-6.8(b) selecting the lowest SCO in the categories described in A

through C below. Generally, after source removal, the soil cleanup levels do not need to be achieved to more than 15 feet below ground surface or to the top of bedrock, whichever is shallower.

A. Select the applicable land use category for the protection of public health (residential, restricted residential, commercial or industrial);

B. Determine if the SCOs for the protection of groundwater are applicable (see Section V.D); and

C. Determine if the SCOs for the protection of ecological resources are applicable (see Section V.C).

Approach 3: **Limited Site-Specific Modifications to Soil Cleanup Objectives.** This approach allows for consideration of site-specific information to modify the SCOs promulgated in 6 NYCRR Tables 375-6.8 (a) and (b) following the approach detailed in Appendix E of the TSD. The equations and basic methodology specified for calculating the 6 NYCRR 375-6.8 (a) and (b) values may not be modified under this approach. However, in instances where site-specific parameters were used in the calculation of the SCOs, site data different from the assumptions used to calculate the SCOs may be used to modify the soil cleanup levels for a specific site. These instances are very limited and occur only in certain pathways that are listed below.

- Protection of groundwater pathway
- Particulate inhalation pathway
- Volatile inhalation pathway
- Protection of ecological resources pathway

It should be noted that even if site-specific data modifies these pathways, it may not result in modifying the SCOs because the lowest value from all applicable pathways is used to determine each SCO. The inhalation pathway is very seldom the controlling pathway in the determination of the protection of public health. The specific parameters that can be modified are identified in Appendix E of the TSD (e.g., inhalation dispersion terms, fraction of organic carbon in soil, etc.).

The remedial party should consider the cost of collecting the data necessary to support a request to modify the SCOs with the potential for deriving a higher SCO that provides an appropriate level of protection. The remedial party may be required to submit additional data to support the use of modified SCOs. Once DEC approves one or more modified SCOs, they are applied in the manner described under Approach 2.

Approach 4: **Site-Specific Soil Cleanup Objectives.** Under this approach, the remedial party may propose site-specific cleanup levels or approaches for soil which are protective of public health and the environment based on other information. This approach sets forth a flexible framework to develop soil cleanup levels by allowing the remedial party to conduct a more detailed evaluation of site information in an effort to calculate protective soil cleanup levels or approaches unique to a site. Under this approach, the remedial party may propose a remedy that does not include specific soil cleanup levels (e.g., excavate the top 6 feet in an area extending 75 feet in all directions from boring B12); modify the input parameters used in the SCO calculations; use site data to improve or confirm predictions of exposures to receptors to contaminants of concern; analyze site-specific risks using

risk assessments; use toxicological information available from alternate sources; or consider site background and historic fill. Data supporting these site-specific adjustments or use of alternate methodologies must also be provided to DEC for review and approval to ensure that the resulting soil cleanup levels are protective.

The Approach 4 framework leaves DEC with discretion to determine whether a different approach is appropriate for the site and, if a different approach is to be used, the proper method of implementation. The remedial party should consider the cost of collecting the data necessary to develop site-specific soil cleanup levels (or approaches) with the potential for deriving a soil cleanup level which is higher than a particular SCO and which provides an appropriate level of protection. The remedial party may also be required to submit additional data to support the use of methodologies in the calculation of site-specific soil cleanup levels or to support the proposed approach.

B. Application of Soil Cleanup Levels for the Specific Remedial Programs: Soil cleanup levels are determined on a site-specific basis depending on the program under which the site is being remediated. In some cases (e.g., BCP Track 1 or Track 2), the soil cleanup levels are the SCOs taken directly from 6 NYCRR 375-6. In other cases, soil cleanup levels may be derived from the Part 375 SCOs but modified based on other information. In yet other cases, the soil cleanup levels may have no relationship or connection to the SCOs, but rather be developed in accordance with DEC-approved methodologies or approaches.

1. <u>Inactive Hazardous Waste Disposal Site Remedial Program (State Superfund Program)</u>: The goal of the remedial program for a specific site is to restore that site to pre-disposal conditions, to the extent feasible. The unrestricted use SCOs are considered to be representative of pre-disposal conditions unless an impact to ecological resources has been identified (see 6 NYCRR 375-2.8(b)(2)). However, it must be recognized that achievement of this goal may not be feasible in every case. At a minimum, all remedies must be protective of public health and the environment. The following procedure is used to determine the most feasible remedy.

(a) The remedial party shall evaluate, and if feasible, implement a cleanup utilizing Approach 1 (application of unrestricted SCOs).

(b) Where DEC determines that achieving unrestricted SCOs is not feasible as documented in a feasibility study, the remedial party may evaluate alternatives to remediate the site to the greatest extent feasible (see *DER-10: Technical Guidance for Site Investigation and Remediation*, Chapter 4.3). [See Section VI, Related References.] In this event, the remedial party may propose soil cleanup levels in accordance with any of the general approaches. However, when considering restricted use soil cleanup levels, the remedial party should apply the least restrictive use category feasible. For purposes of this discussion, residential use is the least restrictive use and industrial use is the most restrictive category. This process starts with consideration of residential use, followed by restricted residential use, commercial use, and then industrial use. The evaluation proceeds through the different land uses until a feasible remedy is found. This evaluation is not bound to the SCOs in regulation or SSCOs set forth in this guidance but may result in a site-specific soil cleanup level that is between the SCOs or soil cleanup level for two different land uses (e.g., above the restricted residential SCO and below the commercial SCO).

2. <u>Brownfield Cleanup Program</u> The remedy shall be fully protective of public health and the environment, including, but not limited to, groundwater according to its classification pursuant to ECL 17-0301, drinking water, surface water, air (including indoor air), sensitive populations (including children), and ecological resources (including fish and wildlife). Soil cleanup levels corresponding to the cleanup track under which the site is being remediated are required to be met. The four cleanup tracks are:

<u>Track 1</u>: Cleanups pursuant to this track must achieve unrestricted use of the site. This track requires that the remedial party implement a cleanup utilizing Approach 1. Institutional and engineering controls are allowed only for periods of less than five years (defined as short-term controls) except in the limited instance where a volunteer has conducted remedial activities resulting in a bulk reduction in groundwater contamination to asymptotic levels.

<u>Track 2</u> : Cleanups pursuant to this track may consider the current, intended, or reasonably anticipated future use in determining the appropriate cleanup levels for soil. This track requires that the remedial party implement a cleanup that achieves the SCOs in the tables in 6 NYCRR 375-6.7(b) for the top 15 feet of soil (or bedrock if less than 15 feet). This track follows approach 2. Institutional and engineering controls are allowed for soil (for the top 15 feet of soil or bedrock if less than 15 feet) for less than five years (defined as short-term controls). Institutional and engineering controls which limit site use and the use of onsite groundwater can be used without regard to duration. Track 2 cleanups at restricted residential, commercial or industrial use sites require site management plans to ensure that material removed from the site (post remedial action) is managed appropriately and to ensure that any buffer zone protecting adjacent residential use sites or ecological resources is maintained.

<u>Track 3</u>: Cleanups pursuant to this track may consider the current, intended, or reasonably anticipated use in determining the appropriate cleanup levels for soil. This track requires that the remedial party implement a cleanup utilizing Approach 3 for those SCOs which the remedial party seeks to modify an established SCO. Institutional and engineering controls are allowed for soil (for the top 15 feet of soil or bedrock if less than 15 feet) for less than 5 years (defined as short-term controls). Institutional and engineering controls which limit site use and the use of on-site groundwater can be used without regard to duration. Track 3 cleanups at restricted residential, commercial or industrial use sites require site management plans to ensure that material removed from the site (post remedial action)is managed appropriately and to ensure that any buffer zone protecting adjacent residential use sites or ecological resources is maintained.

<u>Track 4</u>: Cleanups pursuant to this track may consider the current, intended, or reasonably anticipated use in determining the appropriate cleanup levels for soil. This track allows for the development of site-specific soil cleanup levels below the cover system in accordance with Approach 4. Track 4 remedies must address all sources as a component of the remedy. Short- and long-term institutional and engineering controls are allowed to achieve protection of public health and the environment. The remedy under Track 4 must provide a cover system over exposed residual soil contamination. Soils which are not otherwise covered by structures such as buildings, sidewalks or pavement (i.e., exposed surface soils) must be covered with soil that complies with the use-based SCOs in 6 NYCRR Table 375-6.8(b) levels for the top one foot (non-residential uses) or top two feet (restricted residential use).

3. Environmental Restoration Program: The goal of the program for a specific site is to select a remedy that is protective of public health and the environment, including, but not limited to, groundwater according to its classification pursuant to ECL 17-0301, drinking water, surface water and air (including indoor air), sensitive populations (including children) and ecological resources (including fish and wildlife). At a minimum, the remedy selected shall eliminate or mitigate all significant threats to public health and to the environment presented by contaminants disposed at the site through the proper application of scientific and engineering principles. Soil cleanup levels may be developed in accordance with Approaches 1 – 4 without restriction.

4. Voluntary Cleanup Program: The goal of the program for a specific site is to select a remedy that is protective of public health and the environment for the contemplated use. The soil cleanup levels may be developed in accordance with Approaches 1 – 4 without restriction.

5. Petroleum Spill Response Program: The goal of the Petroleum Spill Response Program is to achieve pre-spill conditions [6 NYCRR 611.6(a)(4)]. Remedial activities under this program shall be undertaken relative to the petroleum contamination that was released along with any co-mingled contamination from other sources. The remedial party shall achieve, to the extent feasible, the unrestricted SCOs for petroleum-related contaminants listed in 6 NYCRR Table 375-6.8(a). For petroleum contaminants not included in 6 NYCRR Table 375-6.8(a) (discussed in Section E below), the remedial party shall apply, to the extent feasible, the soil cleanup levels provided in Table 1. For ease of implementation, two lists of petroleum contaminants (Gasoline and Fuel Oil, Tables 2 and 3) are attached. The tables combine the applicable petroleum-related SCOs from 6 NYCRR 375-6.8(a) and the applicable petroleum related SSCOs from Table 1. Where DEC determines that it is not feasible to achieve the soil cleanup levels as set forth in this paragraph, the remedial party may propose soil cleanup levels in accordance with any of the general approaches. However, when considering restricted use soil cleanup levels, the remedial party should apply the least restrictive use category feasible.

For purposes of this discussion, residential use is the least restrictive use, and industrial use is the most restrictive category. This process starts with consideration of residential use, followed by restricted residential use, commercial use, and then industrial use. The evaluation proceeds through the different land uses until a feasible remedy is found. If the protection of groundwater or ecological SCOs apply, the lower of the applicable protection of the public health SCO or the applicable protection of groundwater or ecological SCO should be achieved to the extent feasible. This evaluation is not bound to the SCOs in regulation or the SSCOs set forth in this guidance but may result in a site-specific soil cleanup level that is between the SCOs or soil cleanup level for two different land uses (e.g., above the restricted residential SCO and below the commercial SCO).

6. RCRA Corrective Action Program: The RCRA program was promulgated to regulate facilities that actively manage hazardous waste. DER administers the RCRA Corrective Action Program, with a goal of achieving soil cleanup levels at Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) that eliminate risks to public health and the environment (i.e., clean the site to unrestricted use) or control said risks (i.e., clean the site or unit(s) to the lowest possible soil cleanup objective, regardless of site use), to the extent feasible. This goal takes into account that certain units at the facility may be permitted to manage hazardous waste under New York State's Hazardous Waste Management (HWM) regulations (6 NYCRR Part 373). The requirements of active HWM facilities, as well as the site's history, will be considered when soil cleanup levels are determined. Selected remedies must be protective of public health and the environment. Soil cleanup levels will be selected using the following procedure.

(a) The remedial party shall evaluate, and if feasible, implement a cleanup utilizing Approach 1. Under this approach, the unrestricted SCOs apply to the entire soil matrix to the top of bedrock. For contaminants not listed in 6 NYCRR 375-6, a new or existing SSCO may be used.

(b) If DEC determines that achieving unrestricted SCOs is not feasible, the remedial party may evaluate other alternatives to remediate the site. In this event, the remedial party may propose soil cleanup levels in accordance with any of the general approaches. However, when considering restricted use soil cleanup levels, the remedial party shall apply the use category which is both feasible and least restricted. For purposes of this discussion, residential use is the least restricted category and industrial use is the most restricted category. A soil cleanup level between two different land uses (e.g., residential and restricted residential) may be determined to be feasible, and if selected, must be achieved.

Any soil cleanup levels specified in regulation (i.e., 6 NYCRR 373-2.6(b)-(k) for "regulated units" as defined in 6 NYCRR 373-2.6 (a)(1)(ii)) or in a DEC enforceable document (Part 373 permits, Consent Orders, etc.) shall take precedence over the soil cleanup levels which could be established through use of this document.

C. Determination of Whether Ecological Resources SCOs Apply to a Site: SCOs developed to protect ecological resources (ESCOs) are incorporated in the Unrestricted Use SCO in 6 NYCRR Table 375-6.8(a) and are included as a separate category in 6 NYCRR Table 375-6.8(b). For contaminants of concern which do not have a calculated ESCO in regulation, DEC may direct the remedial party to develop a soil cleanup level which is protective of ecological resources where appropriate, based on the process outlined in Appendix E of the TSD.

The presence of ecological resources and any impact to those resources will be assessed during the remedial investigation. For sites where there is the potential for an ecological resource impact to be present, or where it is likely to be present, an assessment of fish and wildlife resource impacts will be performed. For sites in DER's SSF, BCP, VCP and ERP, the assessment will be performed in accordance with DEC's guidance, *Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites*, October, 1994, as described in DER-10, Section 3.10. For sites in the RCRA Corrective Action Program, the assessment will be performed using the above referenced fish and wildlife impact analysis document as guidance, and by consulting with appropriate personnel in DEC's Division of Fish, Wildlife and Marine Resources.

Soil cleanup levels which are protective of ecological resources must be considered and applied, as appropriate, for the upland soils (not sediment) at sites where DEC determines, based on the foregoing analysis, that:

- ecological resources are present, or will be present, under the reasonably anticipated future use of the site, and such resources constitute an important component of the environment at, or adjacent to, the site;

- an impact or threat of impact to the ecological resource has been identified; and

- contaminant concentrations in soil exceed the ESCOs as set forth in 6 NYCRR 375-6.8(b) or the Protection of Ecological Resources SSCOs contained in this document.

Sites or portions thereof that will be covered by buildings, structures or pavement are not subject to the ESCOs. Further, ecological resources do not include pets, livestock, agricultural or horticultural crops, or landscaping in developed areas. (See 6 NYCRR 375-6.6 for more detail.)

D. Determination of Whether Protection of Groundwater SCOs Apply: SCOs developed to protect groundwater are incorporated in the Unrestricted Use SCOs in 6 NYCRR Table 375-6.8(a) and are included as a separate category in 6 NYCRR Table 375-6.8(b). For contaminants of concern which do not have a protection of groundwater SCO, DEC may direct the remedial party to develop a soil cleanup level which is protective of groundwater using the process in Appendix E of the TSD.

1. Except as provided for in (2) below, the protection of groundwater SCOs will be applicable where:

   (i) contamination has been identified in on-site soil by the remedial investigation; and
   (ii) groundwater standards are, or are threatened to be, contravened by the presence of soil contamination at concentrations above the protection of groundwater SCOs.

2. DEC may provide an exception to the applicability of the protection of groundwater SCOs, as set forth in 6 NYCRR 375-6.5(a)(1), when (i), (ii), and (iii) exist and either (iv) or (v) also apply, as described below.

   (i) The groundwater standard contravention is the result of an on-site source which is addressed by the remedial program.
   (ii) An environmental easement or other institutional control will be put in place which provides for a groundwater use restriction.
   (iii) DEC determines that contaminated groundwater at the site:
      (a) is not migrating, nor is likely to migrate, off-site; or
      (b) is migrating, or is likely to migrate, off-site; however, the remedy includes active groundwater management to address off-site migration.
   (iv) DEC determines the groundwater quality will improve over time.
   (v) The groundwater contamination migrating from the site is the result of an off-site source of contamination, and site contaminants are not contributing consequential amounts to the groundwater contamination.

3. In determining whether to provide the exemption set forth in subparagraph 2 above, DEC will consider:

   (i) all of the remedy selection criteria at 6 NYCRR 375-1.8(h) or in the RCRA Corrective Action program;
   (ii) the amount of time that the groundwater will need to be actively managed for the protection of public health and the environment; and
   (iii) the potential impact that groundwater contamination may have on media not specifically addressed by the SCOs (e.g., vapor intrusion, protection of surface water, and protection of aquatic ecological resources).

E. Supplemental Soil Cleanup Objectives: SSCOs are either existing cleanup levels in Table 1 or are new soil cleanup levels developed by the remedial party as part of its remedial program. These SSCOs are in addition to the SCOs that are included in Part 375.

Existing SSCOs: The Table 1 list of SSCOs includes contaminants from former TAGM 4046 that were not included in 6 NYCRR 375-6.8 and soil cleanup levels developed using the process detailed in Appendix E of the TSD but not promulgated. For those contaminants which were part of the former TAGM 4046, soil cleanup levels exist for the protection of public health (based on ingestion) and for the protection of groundwater. In some cases, to be determined on a site-by-site basis, evaluation of other factors is likely needed for the protection of public health, especially when the use of a site includes residential use.

These other factors include other exposure pathways (e.g., homegrown vegetable ingestion, inhalation and dermal contact), potential non-site exposures to the contaminant and current toxicological data on the contaminant. In these instances, DEC (in consultation with NYSDOH) will determine if the additional factors have been adequately addressed. The SSCOs identified in Table 1 (subject to the limitation described above) may be used as if they were included in Part 375. A remedial party is not required to use the SSCOs set forth in Table 1. In lieu of applying an SSCO, the remedial party may elect to develop a soil cleanup level (using the process described in Appendix E of the TSD and discussed below.) Table 1 also includes SSCOs that were developed for some pathways using the same process detailed in the TSD. A remedial party may elect to use those SSCOs directly or confirm that the calculated value for that pathway is correct.

New SSCOs: The remedial party may elect to, or DEC may direct a remedial party to, develop a contaminant-specific SCO for any contaminant not included in 6 NYCRR Tables 375-6.8(a) or (b). Generally, DEC will request that an SCO be developed only where the contaminant is a predominant contaminant of concern (COC) at the site and is not otherwise being addressed to DEC's satisfaction as part of the proposed remedy. This could happen, for example, when a remedial party is seeking a Track 1 cleanup and non-SCO/SSCO contaminants are present and may not be satisfactorily addressed by the remedial activities addressing the SCOs or SSCOs. Guidance on the process for developing new SCOs is provided in Appendix E of the TSD. DEC will include all newly developed soil cleanup levels, developed and approved pursuant to this paragraph in a revised Table 1. The developed SSCO must:

1. be developed utilizing the same methodologies that were used by DEC to develop SCOs that are set forth in Part 375; and

2. apply the maximum acceptable soil concentrations (caps), as set forth in section 9.3 of the TSD.

F. Use of SCOs and SSCOs as a Screening Tool: The SCOs and SSCOs may be used to identify areas of soil contamination and to determine the extent of soil contamination. As noted in Section V.K, consideration of other media is required to determine if remedial action is needed.

1. At sites or areas of concern where contaminant concentrations are equal to or below the unrestricted SCOs in 6 NYCRR Table 375-6.8(a), no action or study is warranted because of soil contamination.

2. The exceedance of one or more applicable SCOs or SSCOs, (which is the lower of protection of public health, protection of groundwater, or protection of ecological resources soil cleanup objectives as described in Section III below), alone does not trigger the need for remedial action, define "unacceptable" levels of contaminants in soil, or indicates that a site qualifies for any DEC remedial program (e.g., BCP, SSF). As noted in the definition of SCO above, SCOs and SSCOs are applicable statewide and do not account for many site-specific considerations which could potentially result in higher levels. Therefore, soil concentrations that are higher than the applicable SCOs or SSCOs are not necessarily health or environmental concerns.

3. When an applicable SCO or SSCO is exceeded, the degree of public health or environmental concern depends on several factors, including:

    - magnitude of the exceedance;
    - accuracy of the exposure estimates;
    - other sources of exposure to the contaminant; and
    - strength and quality of the available toxicological information on the contaminant.

G. Soil Cleanup Levels for Nuisance Conditions: Experience has shown that contaminants in soil that meets the DEC-approved soil cleanup levels can exhibit a distinct odor or other type of nuisance (e.g., staining). This is true even though the contaminants will not leach from the soil (e.g., certain soils with more insoluble substances at higher concentrations). When DEC determines that soil remaining after the remedial action will result in the continuation of a nuisance (e.g., odors, staining, etc), DEC will require that additional remedial measures be evaluated, and may require additional remedial actions be taken to address the nuisance condition.

H. Subsurface Soil Cleanup for Total Polycyclic Aromatic Hydrocarbons: For non-residential use sites (i.e., commercial or industrial use sites) where the ESCOs are not applicable, DEC may approve a remedial program which achieves a soil cleanup level of 500 parts per million (ppm) for total PAHs for all subsurface soil. The 500 ppm soil cleanup level is in lieu of achieving all of the PAH-specific SCOs in 6 NYCRR 375-6. For purposes of this provision, subsurface soil shall mean the soil beneath permanent structures, pavement, or similar cover systems; or at least one foot of soil cover (which must meet the applicable SCOs). Institutional controls (e.g., an environmental easement) along with a site management plan will be required when this soil cleanup level is employed at a site. This cleanup level is determined to be feasible and protective based on DEC's experience in its various remedial programs. This approach has existed in TAGM 4046 since it was first issued in 1992.

I. Soil Cleanup for PCBs: DEC may approve a remedial program which achieves a soil cleanup level for PCBs as set forth herein:

1. **For Non-BCP sites:** An acceptable presumptive remedy for soil where neither the unrestricted SCOs nor the ESCOs are applied in the remedial program may include a soil cleanup level for PCBs of 1 ppm in the surface soils and 10 ppm in subsurface soils.

2. **For BCP sites:** An acceptable presumptive remedy for soil may include a soil cleanup level for PCBs of 1 ppm (the applicable SCO) in the surface soils and 10 ppm in subsurface in limited circumstances as follows:

- cleanup track is Track 4;
- site use will be restricted residential, commercial or industrial; and
- ESCOs do not apply.

3. **At industrial use sites,** a level of 25 ppm for PCBs provided that access is limited and individual occupancy is restricted to less than an average of 6.7 hours per week.

For purposes of this provision, subsurface soil shall mean:

- soil beneath permanent structures, pavement, or similar cover systems;
- soil beneath 1 foot of soil cover for commercial and industrial uses; or
- soil beneath 2 feet of soil cover for residential and restricted residential uses.

Institutional controls (i.e., an environmental easement), along with a site management plan, will be required when this soil cleanup level is employed at a site. As with all presumptive remedies, just because a remedy is presumptive does not mean that it will work at every site. For example, this presumptive remedy for PCBs in soil is not applicable at most landfills. This cleanup level is determined to be feasible and protective based on DEC's experience in its various remedial programs. Further, this approach has existed in TAGM 4046 since it was first issued in 1992.

J. Sampling and Compliance with Soil Cleanup Levels: The number of samples to determine if the SCOs have been achieved should be sufficient to be representative of the area being sampled. See attached Table 4 for suggested sampling frequency and subdivision 5.4(e) of DER-10 for details. This frequency can be used for confirmatory samples or for backfill. It is DEC's goal that all confirmatory samples demonstrate that the remedy has achieved the DEC-approved soil cleanup levels. However, recognizing the heterogeneity of contaminated sites and the uncertainty of sampling and analysis, DEC project manager has limited discretion to determine that remediation is complete where some discrete samples do not meet the soil cleanup levels established for a site. See DER-10 for more information regarding the determination that remediation is complete.

K. Other Considerations: All remedies must be fully protective of public health and the environment and prevent off-site migration to the extent feasible with special emphasis for the prevention or minimization of migration onto adjacent residential properties or into ecological resources. A remedial party is required to investigate all environmental media including soil, groundwater, surface water, sediments, soil vapor, indoor air, and biota. (See 6 NYCRR 375-1.8(a)(6) or RCRA Corrective Action Program). This investigation will determine if any of the referenced media are, or may be, impacted by site contamination. However, the SCOs do not directly address these other media. DEC may require remedial actions to address such media and impacts, including but not limited to the application of lower soil cleanup levels or buffer zones where it determines, based on the investigation, that any of these media are, or may be, impacted by site contamination.

VI. Related References:

- Environmental Conservation Law, Article 27 Titles 3, 5, 9, 13 and 14.

- Article 12 of the Navigation Law, Section 178.

- 6 NYCRR Part 375, Environmental Remediation Programs. December 14, 2006.
- 6 NYCRR Subparts 373-1, 373-2 and 373-3, Requirements for Hazardous Waste Management Facilities. September 6, 2006.
- 6 NYCRR Part 611, Environmental Priorities and Procedures in Petroleum Cleanup and Removal. November 5, 1984 (amended).
- Development of Soil Cleanup Objectives: Technical Support Document. New York State Department of Environmental Conservation. December 14, 2006.
- Supplemental Guidance to RAGS: Calculating the Concentration Term. United States Environmental Protection Agency. Publication 9285.7-081. May 1992.
- New York State Guidelines for Urban Erosion and Sediment Control. 1997.
- Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites. New York State Department of Environmental Conservation. October 1994.
- Program Policy DER-2, *Making Changes to Selected Remedies*. New York State Department of Environmental Conservation. April 1, 2008.
- Program Policy DER-10, *Technical Guidance for Site Investigation and Remediation*. New York State Department of Environmental Conservation. May 3, 2010.
- Program Policy DER-15, *Presumptive/Proven Remedial Technologies*. New York State Department of Environmental Conservation. February 27, 2007.

TABLES

1 - Supplemental Soil Cleanup Objectives
2 - Soil Cleanup Levels for Gasoline Contaminated Soils
3 - Soil Cleanup Levels for Fuel Oil Contaminated Soils
4 - Recommended Number of Soil Samples for Soil Imported to or Exported From a Site

Table 1

Supplemental Soil Cleanup Objectives
(ppm)

Contaminant	CAS Number	Residential	Restricted Residential	Commercial	Industrial	Protection of Ecological Resources	Protection of Ground-water
METALS							
Aluminum	7429-90-5					10,000 [a,b]	
Antimony	7440–36-0					12[c]	
Boron	7440-42-8					0.5	
Calcium	7440-70-2					10,000 [a,b]	
Cobalt	7440-48-4	30				20	
Iron	7439-89-6	2,000					
Lithium	7439-93-2					2	
Molybdenum	7439-98-7					2	
Technetium	7440-26-8					0.2	
Thallium	7440-28-0					5 [c]	
Tin	7440-31-5					50	
Uranium	7440-61-1					5	
Vanadium	7440-62-2	100 [a]				39[b]	
PESTICIDES							
Biphenyl	92-52-4					60	
Chlordecone (Kepone)	143-50-0					0.06	
Dibenzofuran	132-64-9						6.2
2,4-D (2,4-Dichloro-phenoxyacetic acid)	94-75-7	100 [a]					0.5
Furan	110-00-9					600	
Gamma Chlordane	5103-74-2	0.54					14
Heptachlor Epoxide	1024-57-3	0.077					0.02
Methoxychlor	72-43-5	100 [a]				1.2	900

Contaminant	CAS Number	Residential	Restricted Residential	Commercial	Industrial	Protection of Ecological Resources	Protection of Ground-water
Parathion	56-38-2	100 [a]					1.2
2,4,5-T	93-76-5	100 [a]					1.9
2,3,7,8-TCDD	1746-01-6					0.000001	
2,3,7,8-TCDF	51207-31-9					0.000001	
SEMIVOLATILE ORGANIC COMPOUNDS							
Aniline	62-53-3	48	100[a]	500[a]	1000[a]		0.33[b]
Bis(2-ethylhexyl) phthalate	117-81-7	50				239	435
Benzoic Acid	65-85-0	100[a]					2.7
Butylbenzyl-phthalate	85-68-7	100 [a]					122
4-Chloroaniline	106-47-8	100 [a]					0.22
Chloroethane	75-00-3						1.9
2-Chlorophenol	95-57-8	100 [a]				0.8	
3-Chloroaniline	108-42-9					20	
3-Chlorophenol	108-43-0					7	
Di-n-butyl-phthalate	84-74-2	100 [a]				0.014	8.1
2,4-Dichlorophenol	120-83-2	100 [a]				20	0.40
3,4-Dichlorophenol	95-77-2					20	
Diethylphthalate	84-66-2	100 [a]				100	7.1
Di-*n*-hexyl-phthalate	84-75-3					0.91	
2,4-Dinitrophenol	51-28-5	100 [a]				20	0.2
Dimethylphthlate	131-11-3	100 [a]				200	27
Di-n-octylphthlate	117-84-0	100 [a]					120
1,2,3,6,7,8-HCDF	57117-44-9					0.00021	
Hexachloro-benzene	118-74-1	0.41					1.4
2,6-Dinitrotoluene	606-20-2	1.03					1.0
Isophorone	78-59-1	100 [a]					4.4

Contaminant	CAS Number	Residential	Restricted Residential	Commercial	Industrial	Protection of Ecological Resources	Protection of Ground-water
4-methyl-2-pentanone	108-10-1						1.0
2-methyl-naphthalene	91-57-6	0.41					36.4
2-Nitroaniline	88-74-4						0.4
3-Nitroaniline	99-09-2						0.5
Nitrobenzene	98-95-3	3.7	15	69	140	40	0.17[b]
2-Nitrophenol	88-75-5					7	0.3
4-Nitrophenol	100-02-7					7	0.1
Pentachloroaniline	527-20-8					100	
2,3,5,6-Tetrachloroaniline	3481-20-7					20	
2,3,4,5-Tetrachlorophenol	4901-51-3					20	
2,4,5-Trichloroaniline	636-30-6					20	
2,4,5-Trichlorophenol	95-95-4	100 [a]				4	0.1
2,4,6-Trichlorophenol	88-06-2					10	
VOLATILE ORGANIC COMPOUNDS							
2-Butanone	78-93-3	100 [a]					0.3
Carbon Disulfide	75-15-0	100 [a]					2.7
Chloroacetamide	79-07-2					2	
Dibromochloro-methane	124-48-1					10	
2,4-Dichloro aniline	554-00-7					100	
3,4-Dichloroaniline	95-76-1					20	
1,2-Dichloropropane	78-87-5					700	
1,3-Dichloropropane	142-28-9						0.3
2,6-Dinitrotoluene	606-20-2	1.03					0.17[b]
Ethylacetate	141-78-6					48	

Contaminant	CAS Number	Residential	Restricted Residential	Commercial	Industrial	Protection of Ecological Resources	Protection of Ground-water
4-methyl-2-pentanone	108-10-1						1.0
113 Freon (1,1,2- TFE)	76-13-1	100 [a]					6
isopropylbenzene	98-82-8	100 [a]					2.3
p-isopropyltoluene	99-87-6						10
Hexachlorocyclo-pentadiene	77-47-4					10	
Methanol	67-56-1					6.5	
N-nitrosodiphenyl-amine	86-30-6					20	
Pentachloro-benzene	608-93-5					20	
Pentachloronitro-benzene	82-68-8					10	
Styrene	100-42-5					300	
1,2,3,4-Tetrachlorobenzene	634-66-2					10	
1,1,2,2-Tetrachloroethane	79-34-5	35					0.6
1,1,2,2-Tetrachloroethylene	127-18-4					2	
1,2,3-Trichlorobenzene	87-61-6					20	
1,2,4-Trichlorobenzene	120-82-1					20	3.4
1,2,3-Trichloropropane	96-18-4	80					0.34

[a] SCOs for organic contaminants (volatile organic compounds, semivolatile organic compounds, and pesticides) are capped at 100 ppm for residential use, 500 ppm for commercial use, 1000 ppm for industrial use. SCOs for metals are capped at 10,000 ppm.

[b] Based on rural background study

[c] SCO limited by contract required quantitation limit.

Table 2

Soil Cleanup Levels for Gasoline Contaminated Soils

Contaminant	CAS Registry Number	Soil Cleanup Level (ppm)
Benzene	71-43-2	0.06
n-Butylbenzene	104-51-8	12.0
sec-Butylbenzene	135-98-8	11.0
Ethylbenzene	100-41-4	1.0
Isopropylbenzene	98-82-8	2.3
p-Isopropyltoluene	99-87-6	10.0
Methyl-Tert-Butyl-Ether	1634-04-4	0.93
Naphthalene	91-20-3	12.0
n-Propylbenzene	103-65-1	3.9
Tert-Butylbenzene	98-06-6	5.9
Toluene	108-88-3	0.7
1,2,4-Trimethylbenzene	95-63-6	3.6
1,3,5-Trimethylbenzene	108-67-8	8.4
Xylene (Mixed)	1330-20-7	0.26

Table 3

Soil Cleanup Levels for Fuel Oil Contaminated Soil

Contaminant	CAS Registry Number	Soil Cleanup Level (ppm)
Acenaphthene	83-32-9	20
Acenaphthylene	208-96-8	100
Anthracene	120-12-7	100
Benz(a)Anthracene	56-55-3	1.0
Dibenzo(a,h)Anthracene	53-70-3	0.33
Benzene	71-43-2	0.06
n-Butylbenzene	104-51-8	12.0
sec-Butylbenzene	135-98-8	11.0
Tert-Butylbenzene	98-06-6	5.9
Chrysene	218-01-9	1.0
Ethylbenzene	100-41-4	1.0
Fluoranthene	206-44-0	100
Benzo(b)Fluoranthene	205-99-2	1.0
Benzo(k)Fluoranthene	207-08-9	0.8
Fluorene	86-73-7	30
Isopropylbenzene	98-82-8	2.3
p-Isopropyltoluene	99-87-6	10.0
Naphthalene	91-20-3	12.0
n-Propylbenzene	103-65-1	3.9
Benzo(g,h,i)Perylene	191-24-2	100
Phenanthrene	85-01-8	100
Pyrene	129-00-0	100
Benzo(a)Pyrene	50-32-8	1.0
Indeno(1,2,3-cd)Pyrene	193-39-5	0.5
1,2,4-Trimethylbenzene	95-63-6	3.6
1,3,5-Trimethylbenzene	108-67-8	8.4
Toluene	108-88-3	0.7
Xylene (Mixed)	1330-20-7	0.26

Table 4

Recommended Number of Soil Samples for Soil Imported To or Exported From a Site

Contaminant	VOCs[a]	SVOCs, Inorganics & PCBs/Pesticides	
Soil Quantity (cubic yards)	**Discrete Samples**	**Composite**	**Discrete Samples/Composite**
0-50	1	1	Each composite sample for analysis is created from 3-5 discrete samples from representative locations in the fill.
50-100	2	1	
100-200	3	1	
200-300	4	1	
300-400	4	2	
400-500	5	2	
500-800	6	2	
800-1000	7	2	
➢ 1000	Add an additional 2 VOC and 1 composite for each additional 1000 Cubic yards or consult with DER.[b]		

[a] VOC samples cannot be composited. Discrete samples must be taken to maximize the representativeness of the results.

[b] For example, a 3,000 cubic yard soil pile to be sampled and analyzed for VOCs would require 11 discrete representative samples. The same pile to be sampled for SVOCs would require 4 composite samples with each composite sample consisting of 3-5 discrete samples.

BELLUCCI ENGINEERING, PLLC

Attachment D: Resumes

Daniel A. Bellucci, P.E.
27 Belcrest Road • West Hartford, CT 06107 • (845) 803-4347 • bellucciengineeringpllc@gmail.com

Education & Certifications

B.S. Environmental Engineering University of New Hampshire 2011
Professional Engineer (Environmental) MA, NY, NH
40 Hour HAZWOPER Training Certification- 29 CFR 1910.120
Understanding the MCP Course – UMass Lowell (Spring 2019)
ASTM E 1527 Phase I Environmental Site Assessment (ESA) Training, 2012
National Groundwater Association - Certified Well Driller (CWD)
Dig Safe Certified Excavator in Safe Digging Practices, 2019-2024

Employment History

President Core Down Drilling LLC, Brewster, NY July 2019 to Present

- Manage all aspects of company operation including proposal preparation, scheduling/ logistics, client management, sub-contractor bid solicitation, permitting/ regulatory compliance, employee management, payroll.

Environmental Engineer, P.E Bellucci Engineering, PLLC 2019 to Present

- Principal Engineer specializing in Brownfield Remediation and mitigation and remediation system designs.

Environmental Engineer, P.E. EBI Consulting, Site Investigation and Remediation (SIR) Group, Burlington, MA (October 2012 to July 2019)

- Project Management including site investigation proposal preparation, management of junior field staff and client correspondence, project invoicing (fixed fee)
- Extensive field experience conducting hundreds of Phase II Subsurface Investigations throughout Eastern US
- Sub-slab depressurization system pilot testing, design, installation, system startup and ongoing operation, maintenance and sampling
- Field and project management experience associated with the following: soil, groundwater, soil vapor, and surface water sampling / monitoring, UST closure, monitoring well elevation surveys, monitoring well installation and abandonments, operation and maintenance of groundwater pump and treat systems; construction site air monitoring, soil management plans, site plan creation using AutoCAD
- Annual US Airforce base stormwater and wastewater sampling
- Broad spectrum of Real Estate Due Diligence projects including Phase I Environmental Site Assessments (ESAs), State File Reviews, Telecommunications ESAs, Environmental Protection Plans, Soil Management Plans, Release Abatement Measure Plans and Spill Prevention Control and Countermeasure Plans

Environmental Engineer HydroEnvironmental Solutions Inc., Somers, NY (November 2011 to October 2012)

- Oversight and project management of remediation projects including petroleum release sites, industrial redevelopment soil characterization and disposal, and construction dewatering discharge permitting
- Detailed field reporting, soil and water sampling and analysis of laboratory data
- Operator: Geoprobe® Direct Push macro core sampling drill rig
- Invoice review, cost estimates, spill closure report compilation, review and output
- O&M of pumps, carbon filtration units, and oil/water separators
- Spill Prevention, Control and Countermeasure Plan compilation and review

Field Technician Tri-State Environmental Services Inc., Hawthorne, NY (September 2011 to November 2011)

- Hazardous materials handling, transportation, and disposal procedures

Related Educational Experience

- Senior Research Presentation on Microbial Degradation of PCB's in the Hudson River
- Advanced Water Treatment Facility Full Scale Team Design
- Membrane filtration design to optimize pathogen removal prior to disinfection, decreasing disinfection byproducts

Engineering & Business Software Experience

AutoCAD, Win Log/ Strata Explorer, Sales Force/ Financial Force, Parcel, Microsoft

References furnished upon request

RICHARD HOOKER, PH.D.

GALLAGHER BASSETT

CURRENT POSITION: MANAGER, ENVIRONMENTAL CONSULTING

PROFESSIONAL SUMMARY

Richard Hooker serves as Manager of Environmental Consulting for investigative and remedial projects including NYSDEC and OER Brownfields sites, Phase II investigations, and environmental management of construction projects. He also prepares and evaluates interdisciplinary, comprehensive environmental impact assessment reviews (NEPA, SEQR and CEQR) and has a particular expertise in noise issues. Mr. Hooker develops investigative and remedial work plans, health and safety plans, performs fieldwork, and prepares technical reports. He works with regulatory authorities and subcontractors including construction personnel, waste repositories and haulage contractors, laboratories and drillers. His responsibilities include: designing noise studies, investigating site histories, and document reviews, cost benefit analysis of remedial alternatives, overseeing excavations and in situ remediation, sampling, sample data evaluation, report preparation, and obtaining regulatory closure. He has extensive experience of sampling and sample collection protocols for soil, vapor, indoor air, sediment, and groundwater and has worked to remediate a wide range of environmental contaminants including petroleum, heavy metals, PCBs, and solvents.

Mr. Hooker holds a Ph.D. from the University of St. Andrews, St. Andrews, Scotland and a BA from Staffordshire University, Stoke-on-Trent, England. Prior to relocating to the Hudson Valley, he served as an Assistant Professor at the University of Glasgow, Scotland.

PROFESSIONAL EXPERIENCE

3475 Third Avenue, Bronx, NY—Investigated and remediated this former manufacturing facility to NYSDEC Brownfields to Track 1 cleanup standards. This site was the first project in the OER Jumpstart program established to assist cleanup on government supported affordable and supportive housing projects in NYC. Under this program OER sponsored enrollment in the NYS Brownfield Cleanup Program. Work on this trailblazing project required liaising with OER and NYSDEC Region 2 to ensure documentation met the requirements of both agencies. Certificate of Completion secured in 2016.

Former A.C. Dutton Lumber Yard, Dutchess County, NY—Documented hazardous concentrations of arsenic and chromium in soils and concrete surfaces at this NYSDEC Brownfields site contaminated by the historical pressure treatment of lumber. Developed a Workplan for site remediation and directed environmental restoration activities, including: characterization, excavation and removal of hazardous soils, scarification concrete warehouse floors, removal aboveground and underground chemical and petroleum storage tanks.

Crannell Square, Dutchess County, NY —oversaw the investigation and remediation of this Track 1 BCP site.

EDUCATION:

- Ph.D., University of St. Andrews, Scotland
- BA, Staffordshire University, England

SCOTT SPITZER

GALLAGHER BASSETT | TECHNICAL SERVICES

CURRENT POSITION: DIRECTOR OF ENVIRONMENTAL INVESTIGATIONS

PROFESSIONAL SUMMARY

Scott Spitzer serves as Director of Environmental Investigations, overseeing the technical elements of Phase I and Phase II technical environmental investigations and remedial projects, including Brownfield sites. Mr. Spitzer supervises all GBTS field staff and reviews all documents prepared by GBTS to ensure consistency and technical accuracy.

His responsibilities associated with the preparation of site assessments include: investigating site histories, conducting facility inspections, reviewing regulatory agency records, documenting facility compliance with relevant State and Federal regulations, and preparing reports. As project manager for complex technical environmental investigations (including sites currently on the NYSDEC Registry of Inactive Hazardous Waste Sites), Mr. Spitzer is involved with: coordinating subcontractors; overseeing fieldwork; designing and implementing material, soil, and water sampling plans, preparing technical reports and interfacing with regulatory agency personnel.

Mr. Spitzer has 15 years' experience in the preparation of Phase I, Phase II and Brownfields investigations and in the management of complex remediation projects. He is knowledgeable in both New York State and Federal environmental regulations and has an understanding of a broad range of remedial technologies. Mr. Spitzer studied environmental science at SUNY Purchase and holds a BS in Biology from SUNY at Stony Brook, Stony Brook, New York.

PROFESSIONAL EXPERIENCE

Former NuHart Plastics Manufacturing Site, Brooklyn, NY: GBTS conducted a complex remedial investigation of a NYSDEC Class 2 Inactive Hazardous Waste Disposal ("Superfund") site, where a plume of liquid phthalates and chlorinated solvents had impacted groundwater. Extensive sampling was conducted of both on- and off-site soil, soil vapor and groundwater, and phthalates were removed from recovery wells as an interim remedial measure. A Remedial Investigation Report was completed, allowing the site owner to move create a Remedial Design Document.

Sakmann Restaurant Corporation Site, Fort Montgomery, NY: Conducted Phase I Environmental Site Assessment and Phase II Subsurface Investigations for former filling station and automotive repair garage contaminated by solvent and waste-oil discharges to an on-site drywell. Designed and implemented a sampling plan for soils impacted by chlorinated hydrocarbons, petroleum, and metals. Created Work Plan (in coordination with the NYSDEC Voluntary Cleanup Program) for remediation of on-site contamination and long-term sampling of on-site groundwater monitoring wells.

EDUCATION:

- BS, Biology, SUNY at Stony Brook, NY

ERICK SALAZAR

GALLAGHER BASSETT

CURRENT POSITION: SENIOR PROJECT MANAGER

PROFESSIONAL SUMMARY

Erick Salazar serves as Senior Project Manager for environmental site assessments and Phase II technical environmental investigations. His responsibilities include: investigating site histories, conducting facility inspections, reviewing regulatory agency records, documenting facility compliance with relevant State and Federal regulations, and preparing reports. He assists with Phase II technical environmental investigations and fieldwork including implementation of community air monitoring plans (CAMP), collecting soil and water samples and tank removal oversight.

Mr. Salazar has experience in the implementation of CAMP monitoring, personal sampling for lead and dust of workers, coordinating pre-demolition C&D waste inventory as part of Sandy relief work on Staten Island, and providing oversight of site remedial activities on rural properties.

PROFESSIONAL EXPERIENCE

Mr. Salazar has experience in the implementation of CAMP monitoring, personal sampling for lead and dust of workers, coordinating pre-demolition C&D waste inventory as part of Sandy relief work on Staten Island, and providing oversight of site remedial activities on rural properties.
Mr. Salazar's experience with Health and Safety services include:

- Complete OSHA training and three years' experience of Sites handling regulated materials as well as hazardous and non-hazardous wastes.
- Preparation of Environmental Health & Safety Plan for (EHASP) for debris removal and soil sampling project in Ulster County, New York.
- Assistance in the preparation of EHASPs for NYSDEC sites in Dutchess and Westchester Counties.
- Implementation of CAMP at sites in Dutchess, Ulster, Bronx and Queens Counties, including preparation of status reports, preparation of incident reports, and communication with involved regulatory agencies.
- Collection/analysis of media samples (air, water and soil) per requirements of the EHASP and/or remedial work plans.

EDUCATION:

- BS, Biology, State University at New Paltz, NY

REGISTRATIONS / CERTIFICATIONS:

- OSHA, 40-hr Hazardous Waste Operations & Emergency Response Health & Safety Certification
- OSHA, 10-hr General Construction Industry Training & Certification

BELLUCCI ENGINEERING, PLLC

Attachment E: Laboratory Documents

PFAS Field Sampling Guidelines for Groundwater and Soil

For Waters: 2 x 125 mL Bottles per sample filled to the neck of the bottle

PLEASE READ THESE INSTRUCTIONS PRIOR TO CONDUCTING SAMPLING

Sampling for PFAS for determination using EPA 537m can be challenging due to the prevalence of these compounds in consumer products. The following guidelines reflect current knowledge and are recommended when conducting sampling.

Consider Sampling for PFAS First...

Sample containers for other methods may have PFAS present on their sampling containers which could cross-contaminate your sample(s). We are analyzing down to the low parts-per-trillion (ppt) range so cross-contamination prevention is an important consideration.

SAMPLING

All Sampling done with Nitrile Gloves, provided by YORK

SAMPLE CONTAINERS

All sample containers - PP ONLY (Target list of 21 PFAS) Caps are unlined and made of PP (no Teflon® lined caps) Bottles are Batch Certified to be Target PFAS-free (< Reporting Limit)

FIELD EQUIPMENT

-Must not contain Teflon® (aka PTFE) or LDPE materials

-All sampling materials must be made from stainless steel, HDPE, acetate, silicone, or polypropylene

-No waterproof field notebooks can be used

-No plastic clipboards, binders, or the like

-No adhesives (e.g.Post-It® Notes, Duct tape) can be used

-Sharpies and permanent markers not allowed; regular ball point pens are acceptable

-Aluminum foil must not be used

-Keep PFAS samples in separate cooler, away from sampling containers that may contain PFAS

-Coolers filled with regular ice only - Do not use chemical (blue) ice packs

EQUIPMENT DECON

-"PFAS-free" water (e.g. Poland Spring*)-on-site for decontamination

-Only Alconox and Liquinox can be used for decontamination

* *Poland Spring has been demonstrated to be PFAS -free when freshly opened*

FIELD SAMPLING CLOTHING CONSIDERATIONS

Do not use fabric softener on clothing to be worn in field

Do not used cosmetics, moisturizers, hand cream, or other related products the morning of sampling

Do not use sunscreen or insect repellants

No materials containing Tyvek®

All safety boots made from polyurethane and PVC

No clothing or boots containing Gore-Tex®

Wet weather gear made of polyurethane and PVC only

FOOD CONSIDERATIONS

No food or drink when PFAS Sampling with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area.

SAMPLE CONTAINER HANDLING

-For **AQUEOUS** Samples: Each sample set contains 2 x 125 mL containers. Fill each container to the neck

-For **SOILS**-1 x 250 mL container, FILL HALF WAY ONLY

-No preservative is necessary for this appliction at this time.

-Place closed, labeled Sample bottles into ZipLock bag.

-Dispose of Nitrile gloves in provided waste bag.

-Place in separate cooler from other samples, WET ICE only

-Follow instructions on next page for more detail.

-If you have a Quality Assurance Project Plan follow that guidance

York Analytical Laboratories, Inc. ***Emerging Contaminants Laboratory***
132-02 89th Avenue SUITE 217 Richmond Hill, NY 11418

Rev 2.0 12/20

PFAS -Recommended Field Sampling Guidelines

PLEASE READ INSTRUCTIONS ENTIRELY PRIOR TO SAMPLING EVENT

Sampler should wash hands before wearing nitrile gloves in order to limit contamination during sampling. Each sample set* requires a set of containers to comply with the method as indicated below. **Sample set is composed of samples collected from the same sample site and at the same time.* **A pair of Nitrile gloves is included with each sample Zip-lock bag/bottle set. One Field Blank set per day is provided.**

Note: PP is Polypropylene

Sample Containers	Bottle Type	Preservation
2 Sampling Containers - Empty- per sample-Waters **SOILS- 1 Container-fill only half way**	125 mL PP container-Waters 250 mL PP for Soils	None, Cool <6C
1 PP Bottle with PFAS-free Water for Field Blank	125 mL PP container	None, Cool <6C
1 Field Blank (FRB) - Empty-per sampling day	125 mL PP container	None, Cool <6C
2 - Empty PP bottles for MS/DUP when needed (Soils MS/DUP come from same Bottle)	125 mL PP container	None, Cool <6C

NOTE: Sampling containers for WATERS must be filled to the neck. **SOILS, fill bottle only 1/2 full**

FIELD BLANK and MS/DUP Bottles are labeled with NEON GREEN LABELS

Field blanks are required per sampling event day and the containers have been provided. Follow the instructions below.

Field Blank Instructions:

1. Locate the PFAS Field Blank bottle (empty, labeled) supplied The PFAS Field Blank Water container is pre-filled at YORK with PFAS-free water to transfer to the empty PFAS Field Blank bottle.
2. Locate the empty container labeled "Field Blank" with Neon green labels
3. Open both containers and proceed to transfer contents of the "PFAS FIELD BLANK WATER" container into the "PFAS FIELD BLANK" Bottle
4. Field Blanks to be analyzed must be listed on the Chain-of-Custody.
5. Both the empty Field Blank water container and the filled Field Blank container must be returned to YORK along with the samples taken.

Matrix Spike/ Matrix Dup Instructions: Note: Soil MS/MSD can be from the same container as the sample

1. Locate the PFAS MS and DUP bottles (empty, labeled-NEON GREEN) supplied -normally 1 set per 20 field samples
2. Transfer chosen Field MS /Dup as a normal sample and indicate sample ID on container and on Chain-of-Custody

Sampling Instructions: ALL SAMPLE BOTTLES HAVE NEON YELLOW LABELS

1. Do not overfill or rinse the container. Any sample(s) for Matrix Spike and Matrix Duplicates are treated similarly.
2. Close containers securely. Label legibly and place containers in ZipLoc® bags, and in a separate cooler (no other container types).
3. Ensure Chain-of-Custody and all sample labels contain required information. Place all samples in separate coolers (separate from other samples for different parameters). Place wet ice (bagged) on samples for return to YORK. Samples should be kept at 4°C ±2. Samples must not exceed 10°C during first 48 hours after collection. **Hold time is 14 days.**

York Analytical Laboratories, Inc. ***Emerging Contaminants Laboratory***
132-02 89th Avenue SUITE 217 Richmond Hill, NY 11418

PFAS Target compounds and Reporting Limits

Analytical Method Information

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PFAS, EPA 1633 Target List in Soil (EPA 1633 Draft 2)

Preservation: Cool 4°C

Container: 10_250mL Plastic Cool to 4° C **Amount Required:** 250 mL **Hold Time:** 28 days

Analyte	MDL	Reporting Limit	Surrogate %Rec	Duplicate RPD	----Matrix Spike---- %Rec	RPD	--Blank Spike / LCS-- %Rec	RPD
Perfluorobutanesulfonic acid (PFBS)	0.111	0.177 ug/kg		30	25-150	35	50-150	30
Perfluorohexanoic acid (PFHxA)	0.0530	0.200 ug/kg		30	25-150	35	50-150	30
Perfluoroheptanoic acid (PFHpA)	0.105	0.200 ug/kg		30	25-150	35	50-150	30
Perfluorohexanesulfonic acid (PFHxS)	0.179	0.183 ug/kg		30	25-150	35	50-150	30
Perfluorooctanoic acid (PFOA)	0.172	0.200 ug/kg		30	25-150	35	50-150	30
Perfluorooctanesulfonic acid (PFOS)	0.167	0.186 ug/kg		30	25-150	35	50-150	30
Perfluorononanoic acid (PFNA)	0.189	0.200 ug/kg		30	25-150	35	50-150	30
Perfluorodecanoic acid (PFDA)	0.191	0.200 ug/kg		30	25-150	35	50-150	30
Perfluoroundecanoic acid (PFUnA)	0.198	0.200 ug/kg		30	25-150	35	50-150	30
Perfluorododecanoic acid (PFDoA)	0.163	0.200 ug/kg		30	25-150	35	50-150	30
Perfluorotridecanoic acid (PFTrDA)	0.125	0.200 ug/kg		30	25-150	35	50-150	30
Perfluorotetradecanoic acid (PFTA)	0.103	0.200 ug/kg		30	25-150	35	50-150	30
N-MeFOSAA	0.148	0.200 ug/kg		30	25-150	35	50-150	30
N-EtFOSAA	0.194	0.200 ug/kg		30	25-150	35	50-150	30
Perfluoropentanoic acid (PFPeA)	0.109	0.400 ug/kg		30	25-150	35	50-150	30
Perfluoro-1-octanesulfonamide (FOSA)	0.146	0.200 ug/kg		30	25-150	35	50-150	30
Perfluoro-1-heptanesulfonic acid (PFHpS)	0.155	0.200 ug/kg		30	25-150	35	50-150	30
Perfluoro-1-decanesulfonic acid (PFDS)	0.191	0.193 ug/kg		30	25-150	35	50-150	30
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	0.595	0.760 ug/kg		30	25-150	35	50-150	30
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	0.755	0.768 ug/kg		30	25-150	35	50-150	30
Perfluoro-n-butanoic acid (PFBA)	0.109	0.800 ug/kg		30	25-150	35	50-150	30
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.139	0.356 ug/kg		30	25-150	30	50-150	30
Perfluoro-3,6-dioxaheptanoic acid (NFDHA)	0.193	0.400 ug/kg		30	25-150	30	50-150	30
Perfluoro-4-oxapentanoic acid (PFMPA)	0.0620	0.400 ug/kg		30	25-150	30	50-150	30
Perfluoro-5-oxahexanoic acid (PFMBA)	0.0960	0.400 ug/kg		30	25-150	30	50-150	30
Perfluoro-1-pentanesulfonate (PFPeS)	0.157	0.188 ug/kg		30	25-150	30	50-150	30
1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS)	0.595	0.750 ug/kg		30	25-150	30	50-150	30
HFPO-DA (Gen-X)	0.608	0.800 ug/kg		30	25-150	30	50-150	30
11CL-PF3OUdS	0.311	0.756 ug/kg		30	25-150	30	50-150	30
9CL-PF3ONS	0.246	0.748 ug/kg		30	25-150	30	50-150	30
ADONA	0.174	0.756 ug/kg		30	25-150	30	50-150	30
Perfluorododecanesulfonic acid (PFDoS)	0.169	0.194 ug/kg		30	25-150	30	50-150	30
Perfluoro-1-nonanesulfonic acid (PFNS)	0.124	0.192 ug/kg		30	25-150	30	50-150	30
3-Perfluoropropyl propanoic acid (FPrPA)	0.634	1.00 ug/kg		30	25-150	30	50-150	30
3-Perfluoropentyl propanoic acid (FPePA)	2.10	5.00 ug/kg		30	25-150	30	50-150	30
3-Perfluoroheptyl propanoic acid (FHpPA)	1.50	5.00 ug/kg		30	25-150	30	50-150	30
N-MeFOSE	0.611	2.00 ug/kg		30	25-150	30	50-150	30
N-MeFOSA	0.180	0.200 ug/kg		30	25-150	30	50-150	30
N-EtFOSE	0.697	2.00 ug/kg		30	25-150	30	50-150	30
N-EtFOSA	0.198	0.200 ug/kg		30	25-150	30	50-150	30
Surr: M3PFBS			25-150					

Analytical Method Information

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(Continued)

PFAS, EPA 1633 Target List in Soil (EPA 1633 Draft 2) (Continued)

Analyte	MDL	Reporting Limit	Surrogate %Rec	Duplicate RPD	----Matrix Spike---- %Rec	RPD	--Blank Spike / LCS-- %Rec	RPD
Surr: M5PFHxA			25-150					
Surr: M4PFHpA			25-150					
Surr: M3PFHxS			25-150					
Surr: Perfluoro-n-[13C8]octanoic acid (M8PFOA)			25-150					
Surr: M6PFDA			25-150					
Surr: M7PFUdA			25-150					
Surr: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)			25-150					
Surr: M2PFTeDA			10-150					
Surr: Perfluoro-n-[13C4]butanoic acid (MPFBA)			25-150					
Surr: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)			25-150					
Surr: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)			25-150					
Surr: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)			10-150					
Surr: d3-N-MeFOSAA			25-150					
Surr: d5-N-EtFOSAA			25-150					
Surr: M2-6:2 FTS			25-200					
Surr: M2-8:2 FTS			25-200					
Surr: M9PFNA			25-150					
Surr: M2-4:2 FTS			25-150					
Surr: d-N-MeFOSA			25-150					
Surr: d-N-EtFOSA			25-150					
Surr: M3HFPO-DA			25-150					
Surr: d9-N-EtFOSE			25-150					
Surr: d7-N-MeFOSE			25-150					
M3PFBA								
MPFDA								
MPFHxA								
MPFHxS								
MPFNA								
MPFOA								
MPFOS								
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)-EIS								
Perfluoro-n-[13C8]octanoic acid (M8PFOA)-EIS								
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)-EIS								
Perfluoro-n-[13C4]butanoic acid (MPFBA)-EIS								
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)-EIS								
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)-EIS								
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)-EIS								
M7PFUdA-EIS								
M6PFDA-EIS								
M5PFHxA-EIS								
M4PFHpA-EIS								
M3PFHxS-EIS								
M3PFBS-EIS								
M3-HFPO-DA-EIS								
M2PFTeDA-EIS								

Analytical Method Information

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PFAS, EPA 1633 Target List in Soil (EPA 1633 Draft 2) (Continued)

Analyte	MDL	Reporting Limit	Surrogate %Rec	Duplicate RPD	----Matrix Spike---- %Rec	RPD	--Blank Spike / LCS-- %Rec	RPD
M2-8-2FTS-EIS								
M2-6-2FTS-EIS								
M2-4-2FTS-EIS								
d9-NEtFOSE-EIS								
d7-NMeFOSE-EIS								
d5-NEtFOSA-EIS								
d5-N-EtFOSAA-EIS								
d3-NMeFOSA-EIS								
d3-N-MeFOSAA-EIS								

Analytical Method Information

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PFAS, EPA 1633 Target List in Water (EPA 1633 Draft 2)

Preservation: Cool 4°C

Container: 10_250mL Plastic Cool to 4° C **Amount Required:** 250 mL **Hold Time:** 28 days

Analyte	MDL	Reporting Limit	Surrogate %Rec	Duplicate RPD	----Matrix Spike---- %Rec	RPD	--Blank Spike / LCS-- %Rec	RPD
Perfluorobutanesulfonic acid (PFBS)	0.470	1.77 ng/L		30	25-150	35	50-150	30
Perfluorohexanoic acid (PFHxA)	0.350	2.00 ng/L		30	25-150	35	50-150	30
Perfluoroheptanoic acid (PFHpA)	0.710	2.00 ng/L		30	25-150	35	50-150	30
Perfluorohexanesulfonic acid (PFHxS)	0.680	1.83 ng/L		30	25-150	35	50-150	30
Perfluorooctanoic acid (PFOA)	0.420	2.00 ng/L		30	25-150	35	50-150	30
Perfluorooctanesulfonic acid (PFOS)	0.820	1.86 ng/L		30	25-150	35	50-150	30
Perfluorononanoic acid (PFNA)	0.520	2.00 ng/L		30	25-150	35	50-150	30
Perfluorodecanoic acid (PFDA)	0.750	2.00 ng/L		30	25-150	35	50-150	30
Perfluoroundecanoic acid (PFUnA)	1.13	2.00 ng/L		30	25-150	35	50-150	30
Perfluorododecanoic acid (PFDoA)	0.880	2.00 ng/L		30	25-150	35	50-150	30
Perfluorotridecanoic acid (PFTrDA)	0.740	2.00 ng/L		30	25-150	35	50-150	30
Perfluorotetradecanoic acid (PFTA)	0.690	2.00 ng/L		30	25-150	35	50-150	30
N-MeFOSAA	0.790	2.00 ng/L		30	25-150	35	50-150	30
N-EtFOSAA	1.03	2.00 ng/L		30	25-150	35	50-150	30
Perfluoropentanoic acid (PFPeA)	0.230	4.00 ng/L		30	25-150	35	50-150	30
Perfluoro-1-octanesulfonamide (FOSA)	0.880	2.00 ng/L		30	25-150	35	50-150	30
Perfluoro-1-heptanesulfonic acid (PFHpS)	0.910	1.91 ng/L		30	25-150	35	50-150	30
Perfluoro-1-decanesulfonic acid (PFDS)	1.32	1.93 ng/L		30	25-150	35	50-150	30
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	1.06	7.60 ng/L		30	25-150	35	50-150	30
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	2.05	7.68 ng/L		30	25-150	35	50-150	30
Perfluoro-n-butanoic acid (PFBA)	0.330	8.00 ng/L		30	25-150	35	50-150	30
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.500	3.56 ng/L		30	25-150	30	50-150	30
Perfluoro-3,6-dioxaheptanoic acid (NFDHA)	2.14	4.00 ng/L		30	25-150	30	50-150	30
Perfluoro-4-oxapentanoic acid (PFMPA)	0.250	4.00 ng/L		30	25-150	30	50-150	30
Perfluoro-5-oxahexanoic acid (PFMBA)	0.370	4.00 ng/L		30	25-150	30	50-150	30
Perfluoro-1-pentanesulfonate (PFPeS)	0.760	1.88 ng/L		30	25-150	30	50-150	30
1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS)	1.79	7.50 ng/L		30	25-150	30	50-150	30
HFPO-DA (Gen-X)	3.23	8.00 ng/L		30	25-150	30	50-150	30
11CL-PF3OUdS	1.38	7.56 ng/L		30	25-150	30	50-150	30
9CL-PF3ONS	0.700	7.48 ng/L		30	25-150	30	50-150	30
ADONA	0.530	7.56 ng/L		30	25-150	30	50-150	30
Perfluorododecanesulfonic acid (PFDoS)	0.930	1.94 ng/L		30	25-150	30	50-150	30
Perfluoro-1-nonanesulfonic acid (PFNS)	0.860	1.92 ng/L		30	25-150	30	50-150	30
3-Perfluoropropyl propanoic acid (FPrPA)	2.03	5.00 ng/L		30	25-150	30	50-150	30
3-Perfluoropentyl propanoic acid (FPePA)	7.33	25.0 ng/L		30	25-150	30	50-150	30
3-Perfluoroheptyl propanoic acid (FHpPA)	9.47	25.0 ng/L		30	25-150	30	50-150	30
N-MeFOSE	3.99	20.0 ng/L		30	25-150	30	50-150	30
N-MeFOSA	1.58	2.00 ng/L		30	25-150	30	50-150	30
N-EtFOSE	3.99	20.0 ng/L		30	25-150	30	50-150	30
N-EtFOSA	1.80	2.00 ng/L		30	25-150	30	50-150	30
Surr: M3PFBS			25-150					

Analytical Method Information

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PFAS, EPA 1633 Target List in Water (EPA 1633 Draft 2) (Continued)

Analyte	MDL	Reporting Limit	Surrogate %Rec	Duplicate RPD	----Matrix Spike---- %Rec	----Matrix Spike---- RPD	--Blank Spike / LCS-- %Rec	--Blank Spike / LCS-- RPD
Surr: M5PFHxA			25-150					
Surr: M4PFHpA			25-150					
Surr: M3PFHxS			25-150					
Surr: Perfluoro-n-[13C8]octanoic acid (M8PFOA)			25-150					
Surr: M6PFDA			25-150					
Surr: M7PFUdA			25-150					
Surr: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)			25-150					
Surr: M2PFTeDA			10-150					
Surr: Perfluoro-n-[13C4]butanoic acid (MPFBA)			25-150					
Surr: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)			25-150					
Surr: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)			25-150					
Surr: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)			10-150					
Surr: d3-N-MeFOSAA			25-150					
Surr: d5-N-EtFOSAA			25-150					
Surr: M2-6:2 FTS			25-200					
Surr: M2-8:2 FTS			25-200					
Surr: M9PFNA			25-150					
Surr: M2-4:2 FTS			25-150					
Surr: d-N-MeFOSA			25-150					
Surr: d-N-EtFOSA			25-150					
Surr: M3HFPO-DA			25-150					
Surr: d9-N-EtFOSE			25-150					
Surr: d7-N-MeFOSE			25-150					
M3PFBA								
MPFDA								
MPFHxA								
MPFHxS								
MPFNA								
MPFOA								
MPFOS								
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)-EIS								
Perfluoro-n-[13C8]octanoic acid (M8PFOA)-EIS								
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)-EIS								
Perfluoro-n-[13C4]butanoic acid (MPFBA)-EIS								
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)-EIS								
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)-EIS								
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)-EIS								
M7PFUdA-EIS								
M6PFDA-EIS								
M5PFHxA-EIS								
M4PFHpA-EIS								
M3PFHxS-EIS								
M3PFBS-EIS								
M3-HFPO-DA-EIS								
M2PFTeDA-EIS								

Analytical Method Information

(Continued)

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PFAS, EPA 1633 Target List in Water (EPA 1633 Draft 2) (Continued)

Analyte	MDL	Reporting Limit	Surrogate %Rec	Duplicate RPD	----Matrix Spike---- %Rec	RPD	--Blank Spike / LCS-- %Rec	RPD
M2-8-2FTS-EIS								
M2-6-2FTS-EIS								
M2-4-2FTS-EIS								
d9-NEtFOSE-EIS								
d7-NMeFOSE-EIS								
d5-NEtFOSA-EIS								
d5-N-EtFOSAA-EIS								
d3-NMeFOSA-EIS								
d3-N-MeFOSAA-EIS								

Laboratory Standard Operating Procedure

Determination of PFAS in Aqueous and Solid matrices by

Isotope Dilution Analysis by HPLC/MS-MS (EPA 1633 Draft 2)

Standard Operating Procedure

Determination of Target Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous and Solid matrices by Isotope Dilution Analysis by HPLC/MS-MS According to EPA Method 1633 Draft 2

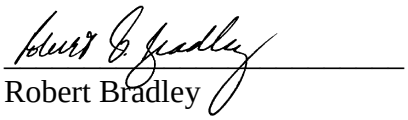
Approvals

Laboratory Director/QA Officer



Krys Trafalski

Vice President/Chief Scientific Officer



Robert Bradley

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1. SCOPE AND APPLICATION

This method is used to identify and quantitate specific PFAS compounds in extracts of non-potable water and solid (soil/sediment) samples using HPLC/MS-MS (high pressure liquid chromatography/tandem mass spectrometry. Currently the compounds (40) that are measured by this methodology are listed in the Table 1.0 below.

Table 1.0-Target PFAS

Perfluoroalkyl carboxylic acids		
Perfluorobutanoic acid	PFBA	375-22-4
Perfluoropentanoic acid	PFPeA	2706-90-3
Perfluorohexanoic acid	PFHxA	307-24-4
Perfluoroheptanoic acid	PFHpA	375-85-9
Perfluorooctanoic acid	PFOA	335-67-1
Perfluorononanoic acid	PFNA	375-95-1
Perfluorodecanoic acid	PFDA	335-76-2
Perfluoroundecanoic acid	PFUnA	2058-94-8
Perfluorododecanoic acid	PFDoA	307-55-1
Perfluorotridecanoic acid	PFTrDA	72629-94-8
Perfluorotetradecanoic acid	PFTeDA	376-06-7
Perfluoroalkyl sulfonic acids Acid Form		
Perfluorobutanesulfonic acid	PFBS	375-73-5
Perfluoropentansulfonic acid	PFPeS	2706-91-4
Perfluorohexanesulfonic acid	PFHxS	355-46-4
Perfluoroheptanesulfonic acid	PFHpS	375-92-8
Perfluorooctanesulfonic acid	PFOS	1763-23-1
Perfluorononanesulfonic acid	PFNS	68259-12-1
Perfluorodecanesulfonic acid	PFDS	335-77-3
Perfluorododecanesulfonic acid	PFDoS	79780-39-5
Fluorotelomer sulfonic acids		
1*H*,1*H*, 2*H*, 2*H*-Perfluorohexane sulfonic acid	4:2FTS	757124-72-4
1*H*,1*H*, 2*H*, 2*H*-Perfluorooctane sulfonic acid	6:2FTS	27619-97-2
1*H*,1*H*, 2*H*, 2*H*-Perfluorodecane sulfonic acid	8:2FTS	39108-34-4
Perfluorooctane sulfonamides		
Perfluorooctanesulfonamide	PFOSA	754-91-6
N-methyl perfluorooctanesulfonamide	NMeFOSA	31506-32-8
N-ethyl perfluorooctanesulfonamide	NEtFOSA	4151-50-2
Perfluorooctane sulfonamidoacetic acids		
N-methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA	2355-31-9
N-ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA	2991-50-6
Perfluorooctane sulfonamide ethanols		
N-methyl perfluorooctanesulfonamidoethanol	NMeFOSE	24448-09-7
N-ethyl perfluorooctanesulfonamidoethanol	NEtFOSE	1691-99-2
Per- and Polyfluoroether carboxylic acids		
Hexafluoropropylene oxide dimer acid	HFPO-DA	13252-13-6
4,8-Dioxa-3*H*-perfluorononanoic acid	ADONA	919005-14-4
Perfluoro-3-methoxypropanoic acid	PFMPA	377-73-1
Perfluoro-4-methoxybutanoic acid	PFMBA	863090-89-5
Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	151772-58-6
Ether sulfonic acids		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	9Cl-PF3ONS	756426-58-1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS	763051-92-9
Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	113507-82-7
Fluorotelomer carboxylic acids		
3-Perfluoropropyl propanoic acid	3:3FTCA	356-02-5
2*H*,2*H*,3*H*,3*H*-Perfluorooctanoic acid	5:3FTCA	914637-49-3
3-Perfluoroheptyl propanoic acid	7:3FTCA	812-70-4

The estimated reporting limits (MRL) based upon the preparation/analysis parameters herein at the time of this revision are approximately 2.0-20.0 ng/L (ppt) for aqueous samples and 0.5-5.0 ug/kG for solids . The linear range for these PFAS can be extended by dilution. These MRLs are based upon a volume of 0.250L-0.500L extracted for aqueous samples and 2-5 g. for solids.

This method is "performance-based," which means that modifications may be made without additional EPA review to improve performance (e.g., overcome interferences, or improve the sensitivity, accuracy, or precision of the results) *provided that* all performance criteria in this method are met. Requirements for establishing equivalency are in Section 9.1.2 and include 9.1.2.2c. For CWA uses, additional flexibility is described at 40 CFR 136.6. Changes in performance, sensitivity, selectivity, precision, recovery, etc., that result from modifications within the scope of 40 CFR Part 136.6, and Section 9.0 of this method must be documented, as well as how these modifications compare to the specifications in this method. Changes outside the scope of 40 CFR Part 136.6 and Section 9.0 of this method may require prior review or approval.

2. SUMMARY

Environmental samples are prepared and extracted using method-specific procedures. Sample extracts are subjected to cleanup procedures designed to remove interferences. Analyses of the sample extracts are conducted by LC-MS/MS in the multiple reaction monitoring (MRM) mode. Sample concentrations are determined by isotope dilution or extracted internal standard quantification (see Section 10.3) using isotopically labeled compounds added to the samples before extraction

2.1 Extraction

2.1.1 Aqueous samples are spiked with isotopically labeled standards, extracted using solid-phase extraction (SPE) cartridges and undergo cleanup using carbon before analysis.

2.1.2 Solid samples are spiked with isotopically labeled standards, extracted into basic methanol, and cleaned up by carbon and SPE cartridges before analysis.

2.2 Analysis

2.2.1 Extracts are then analyzed by HPLC-MS/MS in the MRM mode. Extracts contain Non-extracted Internal Standards (NIS) to monitor instrument performance and used for quantitative analysis.

2.2.2 Individual PFAS analytes are identified through peak analysis of the quantification and confirmation ions (Precursor and product ions) where applicable.

2.2.3 The concentration of each analyte is calculated using the isotope dilution technique. This approach corrects the target analytes for surrogate analog recoveries and these surrogates are essentially extracted internal standards (EIS). For QC purposes, the percent recoveries of the isotope dilution analogues are calculated using the integrated peak areas of isotope performance standards, which are added to the final extract and function as traditional internal standards (non-extracted internal standards), exclusively applied to the isotope dilution analogues.

3. DEFINITIONS

3.1 ANALYSIS BATCH – A set of samples that is analyzed on the same instrument during a 24-hour period, including no more than 20 Field Samples, that begins and ends with the analysis of the appropriate Continuing Calibration Check (CCC) standards. Additional CCCs may be required depending on the length of the analysis batch and/or the number of Field Samples.

3.2 CALIBRATION STANDARD (CAL) – A solution of the method analytes, isotope dilution analogues, and isotope performance standards (Internal standards) prepared from the Primary Dilution Standards and stock standards. The calibration standards are used to calibrate the instrument response with respect to analyte concentration.

3.3 CONTINUING CALIBRATION VERIFICATION (CCV) – A calibration standard containing the method analytes, internal standard(s) and surrogate(s). The CCV is analyzed periodically to verify the accuracy of the existing calibration for those analytes.

3.4 EXTRACTION BATCH – A set of up to 20 Field Samples (not including QC Samples) extracted together by the same person(s) during a work day using the same lot of SPE devices, solvents, surrogate, internal standard and fortifying solutions. Required QC samples include Method blank, and Matrix spike/duplicate pair.

3.5 FIELD DUPLICATES – Separate samples collected at the same time and sampling location, shipped and stored under identical conditions. Method precision, including the contribution from sample collection procedures, is estimated from the analysis of Field Duplicates. Field Duplicates are used to prepare matrix spike/matrix spike duplicate QC samples.

3.6 FIELD BLANK (FBLK) – An aliquot of reagent water that is placed in a sample container in the laboratory and treated as a sample in all respects, including shipment to the sampling site, exposure to sampling site conditions, storage, preservation, and all analytical procedures. The purpose of the FBLK is to determine if method analytes or other interferences are introduced into the sample from shipping, storage, and the field environment.

3.7 ISOTOPE DILUTION ANALOGUES - Isotopically labeled analogues of the method analytes that are added to the sample prior to extraction in a known amount. Note: Not all target PFAS currently have an isotopically labeled analogue. In these cases, an alternate isotopically labeled analogue is used as detailed in our SOP and in the reference method.

3.8 ISOTOPE DILUTION TECHNIQUE - An analytical technique for measuring analyte concentration using the ratio of the peak area of the native analyte to that of an isotopically labeled analogue, added to the original sample in a known amount and carried through the entire analytical procedure.

3.9 ISOTOPE PERFORMANCE STANDARDS (Internal Standards) - Quality control compounds that are added to all standard solutions and extracts in a known amount and used to measure the relative response of the isotopically labelled analogues that are components of the same solution. For this method, the isotope performance standards are three isotopically labeled analogues of the method analytes. The isotope performance standards are indicators of instrument performance and are used to calculate the recovery of the isotope dilution analogues through the extraction procedure. In this method, the isotope performance standards are not used in the calculation of the recovery of the native analytes.

3.10 METHOD BLANK – An aliquot of reagent water to which known quantities of the method analytes and isotope dilution analogues are added. The results of the MBLK verify method performance in the absence of sample matrix.

3.11 MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) – Aliquots of field samples that have been fortified with a known concentration of target compounds, prior to sample preparation and extraction, and analyzed to measure the effect of matrix interferences. The use of MS/MSD samples is generally not required in isotope dilution methods because the labeled compounds added to every sample provide more performance data than spiking a single sample in each preparation batch.

3.12 LIMIT OF QUANTITATION (LOQ) – The smallest concentration that produces a quantitative result with known and recorded precision and bias. The LOQ shall be set at or above the concentration of the lowest initial calibration standard (the lowest calibration standard must fall within the linear range). Determined by matrix through the entire preparation and analysis process.

3.13 METHOD DETECTION LIMIT (MDL) – The minimum measured concentration of a substance that can be reported with 99% confidence that the measured analyte concentration is distinguishable from method blank results (40 CFR 136, Appendix B).

3.14 MINIMUM LEVEL OF QUANTITATION (ML) – The lowest level at which the entire analytical system must give a recognizable signal and acceptable calibration point for the analyte. The ML represents the lowest concentration at which an analyte can be measured with a known level of confidence. It may be equivalent to the concentration of

the lowest calibration standard, assuming that all method-specified sample weights, volumes, and cleanup procedures have been employed. Alternatively, the ML may be established by multiplying the MDL (pooled or unpooled, as appropriate) by 3.18 and rounding the result to the number nearest to 1, 2, or 5 x 10n, where n is zero or an integer (see 68 FR 11770).

3.15 PRECURSOR ION – For the purpose of this method, the precursor ion is the deprotonated molecule ($[M-H]^-$) of the method analyte (with the exception of HFPO-DA, in which the precursor ion is formed by decarboxylation). In MS/MS, the precursor ion is mass selected and fragmented by collisionally activated dissociation to produce distinctive product ions of smaller *m/z*.

3.16 PRIMARY DILUTION STANDARD (PDS) SOLUTION – A solution containing the analytes prepared in the laboratory from stock standard solutions and diluted as needed to prepare calibration solutions and other needed analyte solutions.

3.17 PRODUCT ION – For the purpose of this method, a product ion is one of the fragment ions produced in MS/MS by collisionally activated dissociation of the precursor ion.

3.18 INITIAL CALIBRATION VERIFICATION (ICV) – A calibration standard prepared independently from the primary calibration solutions. For this method, the ICV is a repeat of the entire dilution scheme starting with the same stock materials (neat compounds or purchased stock solutions) used to prepare the primary calibration solutions. Independent sources and separate lots of the starting materials are not required, provided the laboratory has obtained the purest form of the starting materials commercially available. The purpose of the ICV is to verify the integrity of the primary calibration standards.

3.19 QUANTITATIVE STANDARD - A quantitative standard of assayed concentration and purity traceable to a Certificate of Analysis.

3.20 STOCK STANDARD SOLUTION - A concentrated solution containing one or more method analytes prepared in the laboratory using assayed reference materials or purchased from a reputable commercial source with a Certificate of Analysis.

3.21 TECHNICAL GRADE STANDARD – As defined for this method, a technical-grade standard includes a mixture of the branched and linear isomers of a method analyte. For the purposes of this method, technical-grade standards are used to identify retention times of branched and linear isomers of method analytes.

3.22 ANALYTE – A PFAS compound included in this method. The analytes are listed in Table 1.

3.23 CALIBRATION STANDARD (CS) – A solution prepared from a secondary standard and/or stock solutions and used to calibrate the response of the LC-MS/MS instrument.

3.24 CONTINUING CALIBRATION VERIFICATION (CCV) STANDARD – The mid-point calibration standard that is used to verify calibration.

3.25 CFR – Code of Federal Regulations

3.26 EXTRACTED INTERNAL STANDARD (EIS) QUANTIFICATION – The response of the target compound is compared to the response of the labeled analog of another compound in the same LOC.

3.27 INSTRUMENT SENSITIVITY CHECK – solution used to check the sensitivity of the instrument. The solution contains the native compounds at the concentration of the LOQ.

3.28 IPR – INITIAL PRECISION AND RECOVERY; four aliquots of a reference matrix spiked with the analytes of interest and labeled compounds and analyzed to establish the ability of the laboratory to generate acceptable precision and recovery. An IPR is performed prior to the first time this method is used and any time the method or instrumentation is modified

3.29 OPR - ONGOING PRECISION AND RECOVERY- – Ongoing precision and recovery standard (OPR); a method blank spiked with known quantities of analytes. The OPR is analyzed exactly like a sample. Its purpose is to assure that the results produced by the laboratory remain within the limits specified in this method for precision and recovery. Applies to OPR and LLOPR (low level OPR at **2x** the LOQ level).

3.30 SPE – SOLID PHASE EXTRACTION; a technique in which an analyte is extracted from an aqueous solution or a solid extract by passage over or through a material capable of reversibly adsorbing the analyte. Also termed liquid-solid extraction.

4. INTERFERENCES

LC-MS/MS data from blanks, samples, and spikes must be evaluated for interferences. If any interferences are present, take corrective action if necessary. Do not use aluminum foil because PFAAs can be potentially transferred from the aluminum foil to the glassware. Only aluminum foil rinsed with LC/MS grade methanol can be used where necessary.

4.1 PFAS have been used in a wide variety of manufacturing processes, and laboratory supplies should be considered potentially contaminated until they have been tested and shown to be otherwise. The materials and supplies used during the method validation process have been tested and shown to be clean. These items are listed in the Reagents section.

4.2 Method interferences may be caused by contaminants in solvents, reagents (including DI water), sample bottles and caps, and other sample processing hardware that lead to discrete artifacts and/or elevated baselines in the chromatograms. All items such as these must be routinely demonstrated to be free from interferences (less than 1/2 the Reporting Limit), under the conditions of the analysis by analyzing Method Blanks. Subtracting blank values from sample results is not permitted.

4.3 PTFE products can be a source of PFAS (PFOA) contamination. The use of PTFE in the procedure should be avoided. Polypropylene (PP) or polyethylene (PE, HDPE) products may be used in place of PTFE products to minimize PFOA contamination.

4.3.1 Standards and samples are injected from polypropylene autosampler vials with polypropylene or polyolefin snap caps, once. Multiple injections may be performed on Primers when conditioning the instrument for analysis.

4.3.2 Random evaporation losses have been observed with the polypropylene caps causing high Internal Std. recovery after the vial was punctured and sample re-injected. For this reason, it is best to inject standards and samples once in the analytical sequence, then recap with polyolefin caps for storage.

4.3.2 Teflon-lined screw caps have detected PFAS at low concentrations. Repeated injection from the same teflon-lined screw cap have detected PFNA at increasing concentration as each repeated injection was performed, therefore, it is best to use polypropylene snap caps.

4.3.3 Aqueous samples should not come in contact with any glass containers or pipettes as PFAS analytes can potentially adsorb to glass surfaces. Standards dissolved in organic solvent may be purchased in glass ampoules. These standards in organic solvent are acceptable and subsequent transfers may be performed using glass syringes and pipets. Following extraction, the eluate must be collected in a polypropylene tube prior to concentration to dryness. Concentration to dryness in glass tubes may cause poor recovery.

4.4 LC/MS grade methanol must be used for all steps where methanol is used in this method. HPLC grade methanol has been demonstrated to be acceptable if tested prior to use.

4.5 Matrix interferences may be caused by contaminants that are co-extracted from the sample. The extent of matrix interferences will vary considerably from source to source, depending upon the nature of the sample.

4.5.1 Co-extracted Organic Material - Under normal LC conditions matrix effects due to co-extracted organic material enhanced the ionization of 4:2 FTS appreciably. Total organic carbon (TOC) is a good indicator of humic content of the sample.

4.5.2 Solid phase extraction cartridges may be a source of interferences. The analysis of field and laboratory reagent blanks can provide important information regarding the presence or absence of such interferences. SPE cartridges should be sealed while in storage to prevent ambient contamination of the SPE sorbent.

4.6 Contamination by carryover can occur whenever a high-concentration and low concentration samples are sequentially analyzed. To reduce carryover, the sample syringe in automatically rinsed with solvent between injections. These operations are programmed into the LC multi-sampler system.

4.7 Volumetric glassware and syringes are difficult to clean after being used for solutions containing high levels of PFOA. These items should be labeled for use only with similarly concentrated solutions or verified clean prior to re-use. To the extent possible, disposable labware is used.

4.8 Both branched and linear PFAS isomers can potentially be found in the environment. Linear and branched isomers are known to exist for PFOS, PFOA, PFHxS, and PFBS, based upon the scientific literature. We have also seen branched isomers for PFHpA, NMeFOSAA, NEtFOSAA and PFNA. If multiple isomers are present for one of these PFAS they likely are adjacent peaks that completely resolve or not, but usually with a deflection point resolved during peak integration. The later of these peaks matches the retention time of its labeled linear analog. In general, earlier peaks are the branched isomers and are not the result of peak splitting.

Currently, all these species are available as linear isomers. Some available branched and linear reference standards of the technical mixtures for these specific PFAS are used to ensure that all appropriate peaks are included during peak integration. These species currently include PFOA, PFHxS, NMeFOSAA, and NEtFOSAA. These branched isomers elute before the linear isomer and are integrated and reported as total for those species. Others are also included at this time such as those listed in section 7.3.4.

4.9 In an attempt to reduce PFOS bias, it is required that *m/z* 499>80 transition be used as the quantitation transition.

5. SAMPLE HANDLING

5.1 **Aqueous Samples** - samples are collected by our clients in 250 or 500ml HDPE bottles with unlined HDPE or polypropylene caps and filled to the neck. Each sample submitted should be submitted in triplicate-with one used for determination of Suspended solids and possible pre-screening. Sub-sampling should be avoided whenever possible. When historical data are available indicating high levels of PFAS, sub-sampling may be an advisable option.

5.2 **Soil Samples** – samples are collected in wide mouth 125 or 250 mL HDPE bottles with PP unlined caps.

5.3 SAMPLE SHIPMENT AND STORAGE/HOLDING TIMES – Maintain all aqueous samples protected from light at 0 - 6 ºC from the time of collection until shipped to the laboratory. Samples must be shipped as soon as practical with sufficient ice to maintain the sample temperature below 6 ºC during transport. Sample are to be received by the laboratory within 48 hours of collection. The laboratory must confirm that the sample temperature is 0 - 6 ºC upon receipt. Once received by the laboratory, the samples may be stored at ≤ -20 ºC, or at 0 - 6 ºC, until sample preparation. However, the allowable holding time for samples depends on the storage temperature, as described below:

5.3.1 Aqueous samples may be held in the laboratory for up to 90 days from collection, when stored at ≤ -20 ºC and protected from the light. When stored at 0 - 6 ºC and protected from the light, aqueous samples may be held for up to **28 days**, with the caveat that issues were observed with certain perfluorooctane sulfonamide ethanols and perfluorooctane sulfonamidoacetic acids after **7 days**. These issues are more likely to elevate the observed concentrations of other PFAS compounds via the transformation of these precursors if they are present in the sample.

5.3.2 Solid samples (soils and sediments) may be held for up to 90 days, if stored in the dark at either 0 - 6 ºC or ≤ -20 ºC, with the caveat that samples may need to be extracted as soon as possible if NFDHA is an important analyte.

5.4 **SAMPLE EXTRACT HOLDING TIMES** – Store sample extracts in the dark at less than 0 - 4 ºC until analyzed. If stored in the dark at less than 0 - 4 ºC, sample extracts may be stored for up to 90 days, with the caveat that issues were observed for some ether sulfonates after 28 days. These issues may elevate the observed concentrations of the ether sulfonates in the extract over time. Samples may need to be extracted as soon as possible if NFDHA is an important analyte.

6. APPARATUS AND MATERIALS (as listed or demonstrated equivalents)

6.1 250-500 mL polypropylene bottles with polypropylene caps. VWR Scientific or equivalent: Part no. 414004-125, 12 pk. Alternate: White PP unlined lid L238WH and 16oz. clarified PP single wall jar 70-400 neck, item J066-Containers and Packaging.com or equivalent.

6.2 Transport Tube: Virgin Polypropylene, White, Plastic, 10 mL Capacity, 16 mm OD, 93 mm Overall Lg, Self-Standing, 250 PK， Item 710Z420, Gamut.com (Grainger), with PP cap or equivalent.

6.3 Graduated cylinders, 50, 100, 250, 500 and 1000mL, Polypropylene, VWR Scientific or equivalent

6.4 Analytical Balance, 0.0001g., checked for accuracy each day of use with Class S weights, certified annually by an outside service

6.5 Extract concentrators: Organomation Model N-EVAP 112, 24 position concentrator with water batch control and nitrogen supply controls or equivalent

6.6 3.1 Micron in-line filters, Promochrom only

6.7 1.0-2.0 mL polypropylene snap cap vials, Agilent part no. 5182-0567 or equivalent

6.8 Snap caps, polypropylene or olefin, 11 mm, 11/9k, Agilent Part no. 5182-0542

6.9 Solid Phase Extraction Tubes: for EPA 1633: WAX (weak anion exchange mixed mode polymeric sorbent – Phenomenex No. 8B-S038-HCH 200 mg or Waters Oasis 150 mg Cat. # 186002493. Must have a pKa > 8 to remain positively charged during the extraction. Alternate is Agilent Bond Elute WAX 200 mg-cat. No. 5610-2151

6.10 Syringes, Hamilton or equivalent 5.0 uL, 10 uL 25 uL, 100 uL, 250 uL, 500 uL, teflon free

6.11 Solid Phase Extraction System-automated-Promochrom 8 position autosampler system for 6 mL capacity SPE tubes. System retrofit to remove all PTFE components and replaced with PEEK tubing or PFAS free tubing. Automated bottle rinsing feature required with 3.1 um in line PP filters

6.12 Nitrogen Evaporation System- TurboVap nitrogen evaporation system operated at less than 55C.

6.13 LC/MS-MS system- Agilent 1260 or 1290 HPLC system interfaced to an Agilent 6470A or 6460C Triple Quadrupole system. The instrument control and qualitative/quantitative software is Mass Hunter versions B.8.0 and B.9.0 or later.

6.13.1 HPLC System-Agilent 1260 or 1290 Infinity II

6.13.1.1 The Agilent 1260 or 1290 Infinity II HPLC system is configured with temperature controlled column oven compartment. 4 column configuration, temperature controlled (refrigerated) auto sampler compartments, injection valve, proportioning valves, variable flow controls and variable injection capabilities.

6.13.1.2 The delay column (PFAS and other interference removal) is an Agilent Eclipse Plus C18, 4.6mm x 50 mm, 3.5 um-Part no. 959943-902 or equivalent.

6.13.1.3 The analytical column is a Restek Raptor C18 part no. 9304252 50mm x 2.1 mm ID, 1.8 u particle size or equivalent

6.13.2 Agilent LC/MS-MS- Agilent 6470AAR/6460C

6.14.2.1 Agilent model 6470AAR/6460C triple Quadrupole system with Agilent Jet Stream ESI source. UHP nitrogen is used as cell gas and High purity nitrogen is delivered for the sheath gas from a Peak Scientific nitrogen generator system.

6.14 Vortex Mixer- Benchmark Industries or equivalent

6.15 Variable Speed shaker table, 18” x 12”- Orbital Shaker- Jiangau Tenlin Instr. Co., Ltd., Model no. TLSK-III 20-230 RPM, 0-999 min, or equivalent

6.16 Centrifuge, 50 mL, Premiere Model XC-2450 Series Centrifuge 6 x 50 mL, 3500 RPM max., or equivalent

6.17 Mechanical Pipettors- 10-100 uL; 100-1000 uL; 1000-5000 uL-4 E’S Scientific or equivalent, calibrated quarterly.

6.18 Vortex Mixer- Benchmark Industries or equivalent

6.19 pH paper, short range 6-8 and full range with 0.5 pH readability- VWR Scientific or equivalent

6.20 15 mL PP or HDPE Centrifuge tubes, Corning Part no. 430791

6.21 3 mL Disposable Transfer pipets, PE, VWR part no. 16001-176

6.22 1.0 mL polypropylene snap cap vials, Agilent part no. 5182-0567

6.23 Snap caps, polypropylene, 11 mm, 11/9k, Agilent Part no. 5182-0542

6.24 2mL self standing PP microcentrifuge snap cap tubes, SKS Scientific part no. 0747-17

6.25 Collection tubes, 15 mL graduated PP or HDPE Centrifuge tubes, Corning Part no. 430791
6.26 Disposable 10 mg scoops, PP
6.27 Ultrasonic mixer
6.28 10 mL disposable syringes, PP or HDPE, luer fitting
6.29 13mm or 25 mm 0.2 um Nylon membrane filters, PALL Acrodisc or equivalent

7. REAGENTS AND STANDARDS-as listed or equivalents

7.1 ALL REAGENTS and STANDARDS MUST BE LOGGED INTO THE ELEMENT LIMS SYSTEM. This includes lot numbers, expiration, open and prepared dates, receipt date, Certification/traceability documents from supplier(s) if provided and preparer.

7.2 SOLVENTS and REAGENTS-all as listed or equivalents

7.2.1 Methanol, hypergrade for LC/MS. (Merck) from Sigma Aldrich Part no. 1060354000 or equivalent (HPLC Plus grade is an acceptable alternate)

7.2.2 Water, hypergrade for LC/MS. (Merck) from Sigma Aldrich Part no. 1153334000 or equivalent (HPLC plus grade is an acceptable alternate). Alternatively, York PFAS free water demonstrated ion and PFAS free can be used.

7.2.3 Acetic Acid, glacial. ACS grade or equivalent.

7.2.4 Ammonium Hydroxide, conc. Cert. ACS grade, 28-30% in water, Sigma Aldrich part no.1054231000, or equivalent

7.2.5 Methanolic Potassium Hydroxide (0.05 M) – add 3.3 g of KOH to 1L MeOH

7.2.6 Sodium Hydroxide, pellets, ACS grade- Sigma Aldrich part no. 221465-500G, or equivalent

7.2.7 Potassium Hydroxide, pellets, ACS grade

7.2.8 Ammonium Acetate – ACS grade or better, Ammonium Acetate, HPLC or cert. ACS grade. Sigma Aldrich Part no. 73594-100-G-F or equivalent.

7.2.9 Ammonium Acetate 5 mM for HPLC in aqueous solution: HPLC gradient A-- Weigh 0.3854 g (+ 0.0005) Ammonium Acetate and add to 1 liter hypergrade Water. Mix until dissolved then sonicate for 5 mins. To remove air bubbles. Stability - 2 weeks.

7.2.10 **Methanolic Ammonium Hydroxide 0.3 %** - take 2.5 mL of conc. ammonium hydroxide into 247 mL MeOH (measure the 247 mL in a PP graduated cylinder-they are under QQ1 somewhere). Use a mechanical pipet to add the 2.5 mL (not strictly quantitative FYI)-**Make 4 bottles of this**. *Used for soil extractions*.- 1 month life

7.2.11 **Methanolic Ammonium Hydroxide 1.0 %** - take 8.25 mL of conc. ammonium hydroxide into 242 mL MeOH (measure the 242 mL in a PP graduated cylinder-they are under QQ1 somewhere). Use a mechanical pipet to add the 8.25 mL (not strictly quantitative FYI)- **Make 4 bottles of this** -*used in Promochrom*-1 month life.

7.2.12 **Aqueous Ammonium Hydroxide 3%-** take 24.8 mL of ammonium hydroxide and add to 242 mL PFAS free water. 3 month life- *used for pH adjustment*

7.2.13 **Methanol with 4% water, 1% ammonium hydroxide and 0.625% acetic acid** – add ammonium hydroxide (3.3 mL, 30%), reagent water (1.7 mL) and acetic acid (0.625 mL) to methanol (92 mL), store at room temperature, replace after 1 month. **This solution is used to prepare the instrument blank, calibration stds and is used to dilute the extracts of samples that exceed the calibration range.**

7.2.14 **Formic Acid 0.1M-aqueous** – add 873 uL formic acid into 250 mL PFAS free water- **Make 2 bottles of this-***used to prepare 7 below.* 2 year life

7.2.15 **Formic Acid, 0.3M**-aqueous- add 2.62 mL (2619 uL) into 250 mL PFAS free water- **Make 4 bottles of this** -*used in Promochrom*-2 year life

7.2.16 **Formic Acid methanolic 1:1, 0.1M formic acid**- mix equal volumes of Methanol and 0.1 M formic acid- **Make 4 bottles of this** -*used in Promochrom*-2 year life

7.2.17 **Formic Acid 5% aqueous**- add 12.5 mL Formic acid into 250 mL PFAS free water. *Used for pH adjustment.* 2 year life

7.3 Stock Standards

Stock Standards are purchased in mid to high concentration levels from Wellington Laboratories, Inc. Guelph, ONT, CA. Currently, Wellington is the preferred supplier of these materials. As a second source verification, prepare a mid-level from the stock independently from the preparation used for initial calibration. Document this preparation in Element. See Attachments 1,2, and 3 for detailed information.

7.3.1 Internal Standards (7-Non-Extracted –NIS)) used for the method are MPFOA, MPFOS, M3PFBA, MPFDA, MPFHxA, MPFHxS and MPFNA.

These are purchased at 250 - 1000 ng/mL depending upon the ISTD in a mixture. This mixture is purchased from Wellington Labs in 1.2 mL volumes with the following **part no.: MPFAC-HIF-IS**. Stored at 4C or less unopened this solution has a 5 year life. Once opened, the life is one year from open date.

7.3.2 Isotopic Surrogate Analogs (24 isotopes) are purchased for the method described from Wellington Labs at 250-5000 ng/mL levels, depending upon the isotope. The part no. is **MPFAC-HIF-ES**.

7.3.3 Stock Standard mixtures of both linear and branched isomers of the EPA 1633 - 40 list are purchased from Wellington Labs at varying concentrations in 5 different mixtures under part nos. PFAC-MXJ, PFAS-MXI, PFAC-MXH, PFAC-MXG, PFAC-MXF.

7.3.4 Qualitative branched isomers mix- individual available branched and linear mixes for the following PFAS are used daily to allow for qualitative knowledge of the PFAS branched isomers so they are integrated/included in quantitative analysis: T-PFOA, lp-PFNA, br-FOSA, br-NEtFOSA, br-NMeFOSA, br-NEtFOSE and br-NMeFOSE. These are purchased at 50,000 ng/mL levels from Wellington Labs-the names above are the Catalogue nos. These have a five year life at stock concentrations.

Make a 100 ng/mL Intermediate mix by adding 2.0 uL of the individual stocks up to 1.0 mL with MeOH.

Make a working solution by taking 200 uL of the 100 ng/mL intermediate into 750 uL of cal matrix solution (7.2.13) and add 50 uL of 1:10 EIS mix.

Transfer 300 uL to an autosampler vials, add 3 uL of ISTD working mix, cap, vortex and store until needed. Life is 1 year.

The summary below details the procurement requirements for this method - All from Wellington Laboratories, Inc.:

Description	Part nos.	Comes in
40 Compound Target 1633 list targets	PFAC-MXJ	4 Days – 1.2 mL
	PFAS-MXI	
	PFAC-MXH	
	PFAC-MXG	
	PFAC-MXF	
Isotopic Surrogates-24	MPFAC-HIF-ES	4 Days – 1.2 mL
EPA 1633 - 7 Internal Stds	MPFAC-HIF-IS	4 Days – 1.2 mL

7.4 Preparation of Standards

7.4.1 Preparation of Working Standards and Intermediates from STOCK Materials

All stock standards are prepared by the vendor in methanol containing a bit of sodium hydroxide to prevent losses of target PFAS compounds due to potential esterification in methanolic solution. The stocks come prepared with 4 molar equivalents (a 3x excess) of sodium hydroxide for stocks at the 50 ug/mL levels. This insures their stability with respect to potential loss due to esterification. The basic solution insures that any acidic sites on the glass ampules or acidic impurities in the methanol are neutralized to prevent ester formation and forms the sodium salt of the PFAS to stabilize it.

When preparing any intermediate level standards, the dilution must be prepared in alkaline methanol to prevent the above from occurring.

In order to do this, prepare a 5.0 mM NaOH in Hypergrade Methanol (or LC/MSMS grade) by dissolving 0.02 g. of sodium hydroxide into 100 mL of MeOH. This has a 2 week life.

For intermediate standards that are made to 10 mL final volume, add 100 uL of 5.0 mM NaOH/MeOH as part of the preparation. This results in a final concentration of NaOH at 0.05 mM.

For intermediate standards prepared to a final volume of 1.0 mL. add 10 uL of the 5.0 mM NaOH/MeOH.

For working calibration standards/CCV/SCV made to 500 uL final volume, using the mixture detailed in section 7.1.13 (MeOH/Water/acetic acid/ammonium hydroxide). This approximates the matrix of the final extracts for analysis.

7.4.2 Storage and Handling of Standards

All working standards should be stored at either room temperature or 4C provided the containers are sealed properly.

Stock Standards may be stored at 4-10 deg. C but before using must sit to allow equilibration to room temperature followed by either vigorous vortex mixing or sonication for 3-5 mins.

7.4.3 Detailed Standards Preparation Procedure-EPA 1633

7.4.4 Internal Standards-*See Attachment 1*

Internal Standards are purchased as a **stock mixture** at 250-1000 ng/mL

These as transferred to a snap cap vial that has been pre-rinsed with 5 mM NaOH/MeOH then allowed to dry.

7.4.4.1 Working level of Non-Extracted Internal Standard (NIS) –make a 1:1 dilution of the stock by taking 500 uL of the Stock and adding 500 uL MeOH.

Use as is by adding 3 uL to 300 uL volumes for QC, samples or calibration.

7.4.5 Isotopic Surrogates (Extracted Internal Standards)- *See Attachment 2*

7.4.5.1 Stock Surrogates are purchased as a mixture at 250-5000 ng/mL. These are transferred to a snap cap vial that has been pre-rinsed with 5 mM NaOH/MeOH then allowed to dry.

Option 1- Use Stock as received and add 25 uL to all samples/QC to be extracted

Option 2- Prepare **2** mL of Working EIS by preparing a 1:2 dilution to yield 125-2500 ng/mL for use as follows:
Take 1000 uL of the Surrogate Stock, plus 25 uL of 5 mM NaOH/MeOH and 975 uL MeOH to give 2.0 mL final volume**. 50 uL are added to ALL preparation blanks, samples and QC**. This is sufficient for approx. 40 x 50 uL additions to all blanks, QC and samples.

This corresponds to adding 5 to 100 ng of EIS compounds to the initial samples and QC. The final volume of extractions will typically be 5.0 ml so this yields 1-20 ng/mL of the isotope EISs in the final extract for analysis.

For calibration, the Stock mix at 250-5000 ng/mL is used by adding 100 uL up to 1.0 mL final volume to yield 25/500 ng/mL in each calibration level as directed in the calibration section 7.4.7.1.

7.4.6 Target Analytes- EPA 1633- *See Attachment 3*

The target analytes for this method are purchased commercially from Wellington Labs under the 5 part nos. described in Section 7.3.3 which contains the method target analytes only at varying concentrations. These mixtures are transferred from their glass ampules to snap cap vials that have been pre-rinsed with 5 mM NaOH/MeOH then allowed to dry. Again these are the nominal concentrations and the actual anion concentrations for those present as salts are listed in the documentation and are reflected in both Mass Hunter and Element.

Preparation of a 1.0 mL volume of a 10 x intermediate of each of the 5 mixes for Calibration. Some of the higher levels on the curve use aliquots of the stock as shown in Figure 2.

Scale the volume accordingly if less is desired. Note that the EPA 1633 mixes come 1.2 mL per vial so this recipe may consume one vial quickly.

7.4.6.1 OPR and LLOPR - these are a mid-level blank spike and low level blank spike (at 2x the LOQ). These are prepared as follows from the EPA 1633 Target mixtures (5 components) by taking 200 uL of each STOCK into a snap cap vial giving 1.0 mL final volume.

1. Element ID Y22B199- PFAC-MXF mix 200 uL
2. Element ID Y22B200- PFAC-MXG mix 200 uL
3. Element ID Y22B201- PFAC-MXH mix 200 uL
4. Element ID Y22B204- PFAC-MXI mix 200 uL
5. Element ID Y22B205- PFAC-MXJ mix 200 uL

For OPR (BS) at mid-level add 100 uL to each matrix for the batch OPR and for the **LLOPR add 20 uL** of the spike mix and process through all steps of the specific matrix preparation.

7.4.7 Calibration

Calibration of the LC-MSMS systems is done by an eight level calibration covering the range 0.2 to 1650 ng/mL, nominal. Various PFAS species are present as salts and at differing concentrations and these are reflected in Mass Hunter and Element as their actual concentrations. Six to eight levels are prepared depending upon the analyte. These levels are prepared as directed below using the internal standards, surrogates and target analytes from above.
This is made to a final volume of 1000 uL in the matrix described in section 7.1.13 (MeOH/Water/acetic acid/ammonium hydroxide)

This preparation excludes the ISTD in the initial preparation. After preparation as directed, withdraw 300 uL of each level into a 500 uL PP vial and add 3 uL of ISTD before analysis, cap and vortex to mix.
These are stored at <10C and are stable for 6 months when prepared as directed.

7.4.7.1 Calibration Curve Preparation - Based upon a final volume of 1.0 mL in CAL Matrix Solution*
See Attachment 4 for details.

EPA 1633 Calibration Standard Preparation
Rev 1.,0 10/03/22

For Final volume of 1.0 mL
Recipe uses both a 1:10 intermediate for some levels AND the Stock for other points as indicated
All standards in Stds refrig. Adjacent to QQQ1 N2 generator in box labeled EPA 1633 standards- all are opened, labeled and good to use.

Level	*Stock: Y22B201* **1633 MXH Targets Intermediate @10x *** uL of MXH 10x Interm.	*Stock: Y22B200* **1633 MXG Targets Intermediate at 10x*** ul of MXG interm.	*Stock: Y22B199* **1633 MXF Targets Intermediate at 10x*** ul of MXF interm.	*Stock: Y22B204* **1633 MXI Targets Intermediate at 10x*** ul of MXI interm.	*Stock: Y22B205* **1633 MXJ Targets Intermediate at 10x*** ul of MXJ interm.	*Stock: Y22B198* **1633 EIS isotope Mix Intermediate at 10x** uL of EIS Interm.
1	2	2	4	2	2.5	50
2	5	5	10	5	6.25	50
3	12.5	12.5	25	12.5	15.6	50
4	25	25	50	25	31.3	50
5	50	50	100	50	62.5	50
6	125	125	250	125	15.6 of Stock	50
7	25 of Stock	25 of Stock	50 of Stock	25 of Stock	31.2 of Stock	50
8	62.5 of STOCK	62.5 of STOCK	125 of STOCK	62.5 of STOCK	78.0 of Stock	50

* 100 uL up to 1 mL in MeOH

*CAL MATRIX: Methanol with 4% water, 1% ammonium hydroxide and 0.625% acetic acid – Prepared by adding ammonium hydroxide (3.3 mL, 30%), reagent water (1.7 mL) and acetic acid (0.625 mL) to methanol (92 mL), store at room temperature, replace after 1 month. This solution is used to prepare the instrument blank and is used to dilute the extracts of samples that exceed the calibration range.

Amount of CAL Matrix to make up to 1.0 mL Final volumes:

CAL LEVEL	uL of CAL Matrix
1	937.5
2	918.8
3	871.9
4 *	793.7
5	637.5
6	309.0
7	843.8
8	609.5

INTERNAL STANDARD MIX (non-extracted IS-NIS). Mix 500 uL of STOCK ISTD at 250-1000 ng/mL with 500 uL of Methanol. This results in 125-500 ng/mL Intermediate ISTD. See 7.4.4.1.

Add 3.0 uL to 300 uL of each level 1-8 in a 500 uL PP autosampler vials and cap with polyolefin cap, vortex to mix and run. Add 3 uL to 300 uL of all sample/QC extracts before analysis.

*Level 4 is also used as the CCV for each analysis sequence run initially, then after every 10 samples and at the end of the sequence. Multiple vials should be prepared for this level.

7.4.8 Checking the Efficacy of the Surrogate/Spike Mixes

On a monthly basis the surrogate (EIS) and spike mixes from the vials used for spiking are assayed to ensure stability. These are prepared for the analysis by taking 3.0 uL of the surrogate (EIS) mix and 3 uL of the Spike mix into 294 uL MeOH/Water/Acetic Acid/Ammonium hydroxide from 7.1.13, then add 3 uL of NIS (ISTD). This yields a 1:100 dilution of the EIS and Spike mixes. Use 100 as the dilution factor in the Mass Hunter worklist.

7.4.9 Second Source - Initial Calibration Verification (ICV)

Currently, the EPA method 1633 does not require a second source ICV. Rather, the initial calibration is verified by preparing a Level 5 -5.0 ng/mL (nominal) calibration standard independently from calibration standard preparation. This serves as the ICV.

8. PROCEDURE

8.1 Preventative and Routine Maintenance

HPLC/MS/MS Preventative Maintenance	
As Needed:	**Daily (When in use)**
Change pump seals. Change in-line filters in autosampler (HPLC). Check/replace in-line frit if excessive pressure or poor performance. Replace column if no change following in-line frit change. Clean needle. Replace or clean Capillary Replace fused silica tube in ESI interface. Clean lenses. Clean skimmer. Ballast rough pump 30 minutes. Check Nozzle flow pattern	Check solvent reservoirs for sufficient level of solvent. Verify that pump is primed, operating pulse free. (ripple < 1%) Check needle wash reservoir for sufficient solvent. Verify capillary heater temperature functioning. Verify vaporizer heater temperature. Verify rough pump oil levels. Verify turbo-pump functioning. Verify nitrogen pressure for auxiliary and sheath gasses. Possible Checktune
Semi-Annually	**Annually**
Replace oil mist and odor elements. Replace activated alumina filter if applicable	Vacuum system components including fans and fan covers. Clean/replace fan filters, if applicable.

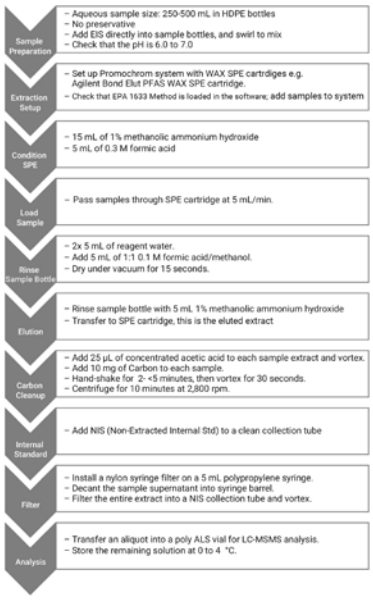
8.2 Sample Preparation (Extraction, Clean-up and Concentration)- Aqueous Matrices

A summary of the steps for the steps related to aqueous samples are shown in Figure 1.0 and in the summary below.

1. Determine % Suspended Solids – 10.0 mLs $\pm$ 0.02 mL through a tared 0.2 um PP filter. Dry filter $\geq$ 12 hours @ 105C, cool in dessicator. Calc % TSS
2. Check pH with short range pH paper to insure pH = 6.5 $\pm$ 0.5. Adjust if necessary with either 5% aqueous formic acid to lower pH or with 3% aqueous ammonium hydroxide to raise pH.
3. Weigh sample bottle as is to $\pm$ 0.1 g.-remove cap first since that will not be weighed later since autosampler caps are used
4. Homogenize sample by inversion 3-4 x-place full volume on Promochrom System using WAX SPE cartridges.

5. Set up MBLK, OPR at 2x LOQ (low LCS) and mid-level OPR (mid-level LCS)-spike with 10 uL of Spike mix for LLOPR and 100 uL of spike mix for mid-OPR.
6. Spike all with 25 uL EIS solution (isotopic surrogates)
7. Follow Promochrom method for EPA 1633
8. Initiate SPE program EPA1633AQ on the Promochrom system
9. Once the program is finished there will be 5 ml in the collection tube. If less, make up to exactly 5.0 mL with MeOH.
10. Remove the sample bottle from the Promochrom system and weigh the empty bottle. That will determine the weight (volume for water) assume 1g. = 1.0 mL. Enter this value into the element bench sheet and the initial volume.
11. Add 25 uL of concentrated acetic acid to each collection tube and vortex to mix.
12. Add 10 mg of activated carbon to all samples and QC. Hand mix and vortex mix for no more than 2 minutes
13. Centrifuge at 2800 rpm for approx. 10 minutes.
14. Filter the final volume through 0.2 um nylon filter using a syringe.
15. If the client provides only 250 mL of sample, in order to meet reporting limits, it may be required to concentrate the unfiltered extract by a factor of at least 2 on a TurboVap at 1.2 Liters/min with nitrogen at <55ºC.. For example if final volume is 5.0 mL, concentrate to 2.0 mL final volume (2.5 x concentration). If 500 ml provided, skip this step.
16. Enter the final volume achieved into the bench sheet in Element.
17. Transfer a portion of the final extract to a 2 mL snap cap, labeled.
18. Take a 300 uL portion of the extract into a 500 uL PP autosampler vial, add 3 uL of NIS (non-extracted internal std.). Cap, vortex, store at <6ºC.
19. Sample is ready for analysis.

Figure 1.0 Aqueous Sample Preparation Steps



8.2.1 To measure sample initial volume for aqueous samples, remove the cap and weight the bottle and record the weight in the sample weight. For MBLK, LLOPR and OPR use 250-500 mL volumes). After SPE processing, be sure the empty bottle is dry and weight to determine the amount of sample in grams (essentially equal to volume in mL). Use that number for the initial volume in Element LIMS.

8.2.2 For every 20 field samples (Field blanks are considered field samples in as they are treated as such), a blank (MBLK), blank spikes, (2 levels-LLOPR and OPR as BS1 and BS2 respectively. A matrix spike is not necessary since isotope dilution is used. If an MS/MSD is required by a specific project, spike 100 uL of the mid-level BS mix (OPR).

8.2.3 All polypropylene equipment including graduated cylinders and sample transfer lines/reservoirs should be washed prior to using with extraction solvent (Methanol).

8.2.4 Add 25 uL of EIS (isotopic surrogates) (250/5000 ng/mL) to each sample and QC sample, recap and invert to mix well.

8.2.5 Add, 5ul (low level spike), 50 uL (mid-level spike)

8.2.6 Using the Promochrom automated system, run a cleaning run. Be sure the reservoirs of LC/MS grade methanol and HPLC plus grade water or equivalent are full. Prime all lines and align all components.

8.2.7. Load in the EPA1633 method and adjust the sample volume to 10 ml more than the highest volume container measured by visual comparison to a calibrated bottle of the same size.

8.2.8 The SPE method solvents for extractions are as follows:

- Solvent 1 = MeOH
- Solvent 2 = H_2O
- Solvent 3 = 0.3 M Formic acid,
- Solvent 4 = 1:1 0.1M Formic Acid/MeOH,
- Solvent 5 = MeOH with 1% ammonium hydroxide ("Basic MeOH")
  W1 = Aqueous waste, W2 = Organic waste

8.2.9 Place labeled 15 mL graduated collection vessels in the sample collection tray and use Element labels to identify the vials at this point. Print 2 sets of labels for each since they will be used after the concentration step as well. These are graduated.

8.2.10 Connect the bottles to the automated system.

8.2.12 Initiate the EPA1633Aq SPE Extraction Program. Each run is approximately 1 hour 45 minutes.

8.2.13 **Evaporation Options**-Aqueous Samples

N-EVAP systems

8.2.13.1 The resulting 5 mL extracts are not further concentrated unless Work Plan reporting limits need to be lower than standard RLs. When this is required by the Work Plan, the extracts and QC are transferred to the N-EVAP concentrator systems operated at 50-55 degrees C (never more than 55C) in their original collection vials. The nitrogen flow is initiated at 1.2 ml/min and adjusted on each individual sample to provide a gentle stream causing a slight disturbance at the surface of the methanol extracts.

8.2.13.2 As this evaporation proceeds the walls of each vessel are rinsed with methanol when the volume is approximately 2.5 mls and then again when the volume is reduced to just below 2.0 mL. Then Bring up the final volume to 2.5 mL. This is a 2x concentration when needed.

8.2.14 Swirl final extract, make up to 2.0 mL with methanol. Using a disposable polypropylene pipet, carefully transfer to a 2 mL PP snap cap vial.

8.2.15 Withdraw an aliquot of 300 uL into a 500 uL autosampler vial (PP) and add 3.0 uL of ISTD (NIS) mix. .

8.2.16 Cap with polyolefin flexible caps and vortex to mix.

8.2.17 Store Extracts at <6^{o}C until analysis.

8.3 Sample Preparation (Extraction, Clean-up and Concentration)- Soil Matrices

1. Determine % solids: use 5 grams; dry at 110C $\geq$ 12 hours.
2. Mix sample with a stainless steel spatula to homogenize-exclude Sticks, vegetation, rocks and the like.
3. Remove 5.0 g. from the homogenized sample container. Add to a tared 50 mL centrifuge tube. Determine the weight $\pm$ 0.01 g.
4. Prepare QC using clean matrix (Ottawa Sand) wetted with 1 mL PFAS free water in 50 mL centrifuge tubes
5. For all samples, QC blanks and LCSs (LLOPR and ML OPR) and a 25 uL aliquot of EIS onto the soil. The current Element standard ID is Y22J305. For the OPRs add appropriate amount of spike solution (10 uL for LLOPR and 100 uL for OPR. The current Element Std ID is Y22J304.
6. Swirl the samples to mix then let sit for 30 minutes.
7. Add 10 mL of 0.3% methanolic ammonium hydroxide to each centrifuge tube.
8. Vortex to mix then shake on the shaker table for 30 minutes.
9. Next, centrifuge at 3500 rpm for 5 minutes or 2800 rpm for 10 minutes.
10. Transfer the supernatant liquid to a clean 50 mL centrifuge tube
11. Add 15 mL of 0.3% methanolic ammonium hydroxide to each of the original centrifuge tubes.
12. Vortex to mix then shake on the shaker table for 30 minutes
13. Next, centrifuge at 3500 rpm for 5 minutes or 2800 rpm for 10 minutes.
14. Transfer the supernatant liquid to the centrifuge tubes from 10.0 above
15. Add another 5 mL of 0.3% methanolic ammonium hydroxide to each of the original centrifuge tubes.
16. Vortex to mix then shake on shaker table for 30 minutes
17. Next, centrifuge at 3500 rpm for 5 minutes or 2800 rpm for 10 minutes.
18. Transfer the supernatant liquid to the centrifuge tubes from 10.0 above
19. Add 10 mg of activated carbon to the combined extract using a 10 mg scoop and hand swirl for 2 minutes (never more than 5 minutes of losses of Target PFAS will occur)
20. Centrifuge at 3500 rpm for 5 minutes or 2800 rpm for 10 minutes
21. Immediately Decant into a 50 mL centrifuge tube.
22. Place in Turbovap or on the N-EVAP system and concentrate at 55 deg. C to a final volume of approx..7 mL at a nitrogen flow of 1.2 ml/min.
23. Add 35-40 mL of PFAS free water to the tube and vortex to mix.
24. Check the pH= 6.5 $\pm$ 0.5 if not adjust accordingly using 5% formic acid to lower pH or 3% aqueous ammonium hydroxide to raise pH rto within this range.

25. Set up the soil EPA 1633 method on the Promochrom be sure volume is set to 50 ml for sample size.
26. Place samples and QC centrifuge tubes on the autosampler
27. Once the program is finished, note the final volume and use that in the Element benchsheet as final volume. Should be 5.0 mL. If less make up to 5.0 mL with MeOH.
28. Add 25 uL of concentrated acetic acid to each collection tube and vortex to mix.
29. Add 10 mg of carbon to all samples and QC and mix for 2 minutes (no more than 5 minutes).
30. Immediately centrifuge at 2800 rpm for 10 minutes.
31. Filter the extract through a 0.2 um nylon membrane using a syringe and filter into a 2 mL snap cap vial.
32. When ready for analysis, remove 300 uL of extract and transfer to a 500 uL autosampler vial. Add 3 uL of NIS (internal standard), vortex to mix. Cap with polyolefin flexible caps and vortex to mix.
33. Store Extracts at <6^{o}C until analysis
34. Samples/QC are now ready for analysis.

8.4 Sample Analysis--Running Samples/QC - Acquisition Method

The acquisition method is detailed in Attachment 4 (HPLC) and Attachment 5 (MS/MS) of this SOP. The method is a HPLC with dynamic MRM method with precursor and product ions with specific acquisition parameters to maximize sensitivity and specificity. This list may be modified to add other PFAS target analytes as necessary.

8.3.1 The triple Quadrupole (QQQ) system must be optimized for each target analyte (including surrogates and internal standards) using the Mass Hunter Optimizer program. This program determines the most abundant precursor and product ions for each compound and their abundances. These data are then used to build an MRM (multiple reaction monitor) method for acquisition. This is done initially or after any major maintenance procedures are performed to the triple quadrupole system. A high level standard is used for this in the $[M-H]^-$ mode or M-COOH for HFPO-DA.

8.3.2 The QQQ is checked for tuning on a weekly basis (if necessary) before analysis using the Tune context by selecting the CHECKTUNE radio button. This is done only in negative ion mode since that what we are operating under. If the Checktune fails, run the Autotune program-note: this takes approx. 45 mins. in negative mode. After autotune or any tuning adjustment, a re-calibration of the instrument is required.

8.3.3 Before any QC or samples can be run, the HPLC must be allowed to purge for at least thirty minutes. This purge must be done using the initial mobile phase conditions used in the method must be allowed to run for 15 minutes or until pressure has stabilized (ripple must be < 1%)

8.3.4 An instrument sequence (Worklist) is then made. It should begin with a blank, a primer (5 ng/mL) followed by a blank with ISTD to establish system cleanliness.

8.3.5 After a successful initial calibration has been completed, the analytical sequence for a batch of samples analyzed during the same time period is as follows. Standards and sample extracts must be brought to room temperature and vortexed prior to aliquoting into an instrument vial in order to ensure homogeneity of the extract.

8.3.6 **Analysis Sequence**

1. Instrument Blank *
2. Instrument Sensitivity Check –**LOQ Standard Level (SEQ-CAL 1) S/N > 3:1**
3. Calibration Verification Standard (CCV)
4. Qualitative Identification Standards –Branched PFAS
   PFOA, PFNA, PFOSA, NMeFOSA, NEtFOSA, NEtFOSE, and NMeFOSE.
5. Instrument Blank (SEQ-CCB)*
6. Method Blank (Batchxxxx-BLK1)
7. Low-level OPR (LLOPR) (Batchxxxx-BS1)
8. OPR (Batchxxxx-BS2)
9. Field Samples (10 or fewer)
10. Calibration Verification Standard (SEQ-CCVn)
11. Instrument Blank (SEQ-CCBn)*
12. Field Samples (10 or fewer)
13. Calibration Verification Standard (SEQ-CCVn)
14. Instrument Blank (SEQ-CCBn)*

* Contains solvent system for calibration, NIS and EIS

8.3.7 The run can end with a script to put the instrument into standby mode.

8.4 Daily Sample Preparation/Analysis Sequence

- Prepare extracts for analysis by placing a 300 ul aliquot of sample extract containing 3 uL of internal standards into a PP auto-sampler vial. Apply Polyolefin cap.
- Confirm that the samples loaded on the auto-sampler were entered correctly in the injection log. Make any necessary corrections.
- Run instrument CCV checks at the RL (0.25-0.5 ng/mL), then at a mid level and high level rotating every ten samples (5, 25 ng/mL) and ending with a mid level CCV.
- Enter the Worklist (injection sequence) into the instrument software and load samples onto the auto-sampler in the order shown above in Section 8.3.6

8.5 Data Review

The Agilent Mass Hunter Quantitation program is used to review all data. All identifications are based upon acceptable ion ratios for the abundance of both precursor and product ions along with retention time information. All positive detections of target PFAS must be less that the high point conc. of the Cal. Curve.

8.5.1 Since certain PFAS species are manufactured by different processes the presence of branched as well as linear isomers may be found. In order to properly quantitate these species, the analyst must sum the related branched and linear isomers. This affects the following species: PFOS, PFHxS, PFOA, PFNA, PFOSA, NMeFOSA, NEtFOSA, NEtFOSE, and NMeFOSE.

8.5.2 Any detection greater than the upper limit of the calibration curve requires dilution into the upper half of the curve, where possible.

9. CALIBRATION

9.1 Initial Calibration

The initial calibration covers the range 0.20 ng/mL to 1560 ng/mL nominal conc. or higher depending upon the linearity of the PFAS species. After acquisition, the data are quantitated in Mass Hunter and the default calibration model for target compounds is generated using Quadratic regression, FORCED through the origin where applicable. All same level species (EIS) used average response factor model. Depending upon the response and accuracy at each level as shown in the Mass Hunter program, use Linear, Forced, weighted (1/x) or quadratic, Forced, with or without weighting to achieve the best fit which is based upon the best accuracy on a compound by compound basis. In any case, the correlation coefficient must be greater than 0.990. Average response factor RSD should be $\leq$ 20% where used.

9.1.1 The calibration levels as shown in Section 7.6.3 use 8 levels. All points are included in the calibration with exception of some species that saturate at levels 7 and 8.

9.2 ICV/SCV

An independently prepared Initial Calibration Verification must be run immediately following initial calibration. The concentration of this standard should be in the middle of the calibration range (e.g. 5.0 ng/mL) and prepared from a separate preparation as that of the calibration. Unless project-specific data quality objectives are required, the values from the second-source check should be $\pm$ 30% of the expected concentration.

Corrective Action: Quantitative sample analyses should not proceed for a failing ICV. Recalibrate and re-run the ICV if necessary.

9.3 Continuing Calibration Verification

The first CCV is at a mid-level and run every 10 client samples including a closing CCV.

The mid-Level CCV must be ± 30% of the true value.

Corrective Action: If any of the required calibration check criteria fail, the system must be evaluated and any appropriate instrument repair or maintenance must be performed. Sample data are unacceptable and must be rerun. Reinjection the standard may be done. If the calibration check standard still fails, the system must be recalibrated.

10. Quality Control

10.1 Initial Demonstration of Capability (IDOC)

10.1.1 The initial demonstration requirement of EPA 1633 must be acceptable before analysis of samples may begin. To establish the ability to generate acceptable precision and recovery, the laboratory must perform the following operations for each sample matrix type to which the method will be applied by that laboratory.

The IDOC includes the following key elements:

- Initial Demonstration of Precision and Recovery (IPR)
- MDL determination

10.1.2 Initial Demonstration of Precision and Recovery-IPR

- Extract, concentrate, and analyze four aliquots of aqueous and soil matrices spiked with 100 uL of the native spike solution OPR Mix Y22J304, 50 µL of the EIS solution no. Y22J305. At least one method blank, matching the matrix being analyzed, must be prepared with the IPR batches by matrix. All sample processing steps that are used for processing samples, including preparation and extractions, cleanup and concentration, must be included in this test.

- Using results of the set of four analyses, compute the average percent recovery (R) of the extracts and the relative standard deviation (RSD) of the concentration for each target and EIS compound.
- For each native and isotopically labeled compound, compare RSD and % recovery with the corresponding limits for initial precision and recovery in Table 5. If RSD and R for all compounds meet the acceptance criteria, system performance is acceptable, and analysis of blanks and samples may begin. *Note these acceptance criteria are not finalized and are based upon a single lab validation. Data for this table are derived from the single-laboratory validation study, and are only provided as examples for this draft method. The data will be updated to reflect the inter-laboratory study results in a subsequent revision. Therefore, these criteria will change after inter-laboratory validation. Several sections of this method state that Table 5 criteria are required, this is standard language that will be applicable when the method is finalized.*

10.1.3 MDL Determination

MDL Determination –In order to perform the MDL study, 7 total extractions are performed on 3 different days (Extraction day 1= 3 LRBs and 3 LFBs); Extraction day 2 is 2 of each, and Extraction day 3 is also 2 of each).

The levels extracted represent approx. 3-5 x the expected LOQ.

Once extracted, the analyses are conducted on 3 separate days (we use only QQQ2 for EPA 1633 so all runs are on that system). The MDL is determined according to the EPA MDL protocol defined in Definition and Procedure of the Determination of the Method Detection Limit, Revision 2 Dec. 2016 as detailed below:

Make all computations as specified in the analytical method and express the final results in the method-specified reporting units.

Calculate the sample standard deviation (SD) of the replicate spiked sample measurements and the sample standard deviation of the replicate method blank measurements from all instruments to which the MDL will be applied.

Compute the MDLs (the MDL based on spiked samples) as follows:

MDL_s = 3.143 x SD (for seven replicates; SD = Standard Deviation)

Compute the MDLb (MDL based on method blanks-LRBs) as follows:

- If none of the blanks give numerical results then the MDLb does not apply
- If only some of the blanks (but not all) give a result, set the MDLb to the highest result found

- If ALL method blanks show a detections then use the following calculation to determine MDLb:

MDLb = Average of Blank Detections + (3.143 x Std. Dev.)

Calculate the final MDL by selecting the greater of MDLs or MDLb.

10.2 On-going QC Requirements

Preparation Batches are defined at the sample preparation step. Batches should be kept together through the whole analytical process as far as possible, but it is not mandatory to analyze prepared extracts on the same instrument or in the same sequence.

The quality control batch is a set of up to 20 samples of the same matrix processed using the same procedure and reagents within the same time period. The quality control batch may contain a matrix spike/matrix spike duplicate (MS/MSD), two laboratory control sample (LCS-LLOPR and OPR) and a method blank. Laboratory generated QC samples (Blank, LLOPR, OPR, MS/MSD) do not count toward the maximum 20 samples in a batch. Field QC samples are included in the batch count. In some cases, at client request, the MS/MSD may be replaced with a matrix spike and sample duplicate.

10.2.1 METHOD BLANK - One method blank must be extracted with every prep batch of similar matrix, not to exceed twenty (20) samples. For aqueous samples the matrix is Lab reagent water. For Soils the method blank matrix is Ottawa sand. Criteria:

- The method blank must not contain any analyte at or above 1/2 the LOQ (Reporting Limit).
- Re-extraction and reanalysis of samples associated with an unacceptable method blank is required when reportable concentrations are determined in the samples.

10.2.2 LABORATORY CONTROL SAMPLES (LCS- also called OPR and LLOPR) must be extracted with every process batch of similar matrix, not to exceed twenty (20) samples. The LCS is an aliquot of laboratory matrix (e.g. water for aqueous spiked with analytes of known identity and concentration and isotopic surrogate analogs. The OPRs must be processed in the same manner and at the same time as the associated samples. Recovery for Aqueous low level OPR target analytes is 40-150% until more data are derived. For all other Aqueous OPR levels recovery targets are 50-150%. These data are based upon EPA 1633 draft ranges that will change and are not used for acceptance/rejection but are reported until such time that fully validated acceptance ranges are provided in the final version of the method.

10.2.3 Matrix spike/Matrix spike duplicate (MS/MSD or MS/MSD). These are not typically required since each sample contains isotopic PFAS analogues that correct for any matrix effects. If the client requests them, then they are processed accordingly but are not a requirement of this method. If done they are by matrix, not to exceed twenty (20) samples. An MS/MSD pair is aliquots of a selected field sample spiked with analytes of known identity and concentration. The MS/MSD pair must be processed in the same manner and at the same time as the associated samples. Spiked analytes with recoveries or precision outside of the Laboratory control limits are flagged accordingly. Until enough statistical data per matrix is available, no criteria are offered. If a specific QA Project Plan has required limits, this is preempted. Any outliers must be qualified accordingly.

10.2.4 Initial calibration verification (ICV) –A second source standard is not required for this method. A second independently prepared mid-level standard is prepared and used for this purpose and analyzed after the ICAL. The concentration should be at the mid range of the curve and must recover within 70-130 % of expected value.

Corrective actions for the ICV include:

- Rerun the ICV
- Remake or acquire a new ICV.
- Evaluate the instrument conditions.
- Evaluate the initial calibration standards.
- Rerun the initial calibration.

10.2.5 Internal Standard- The Non-extracted Internal Standard (NIS) is added to each field and QC sample prior to analysis. The IS response (peak area) must not deviate by more than 50-200% from the mean response (peak area) of the initial calibration. If the areas are low for all the field samples and QC samples in the batch, it suggests a loss of instrument sensitivity, while low areas in only some field or QC samples suggests a possible bad injection.

Corrective action includes:

- Reinject the questionable samples
- Verifying the CCV NIS areas are compliant with the range, if so, this suggests either matrix effects and may require a small dilution to mitigate interference if only some of the NIS compounds are affected
- Qualify affected data

10.3 Initial Demonstration of Capability (IDC)

Initial Demonstration of Capability involves the following processes listed ion Table 1.0 as follows.

Table 1.0 - Initial Demonstration of Capability (IDC)

Requirement	Specification and Frequency	Acceptance Criteria
Initial Demonstration of Precision and Recovery (IPR)	Extract, concentrate, and analyze four aliquots of the matrix (aqueous and soil) spiked with target native standard solution, EIS solution and finally the NIS (ISTD). Extract a method blank of each matrix with each matrix IPR batch. All steps that are used for processing samples, including preparation and extraction must be included.	Using results of the set of four analyses, compute the average percent recovery (R) of the extracts and the relative standard deviation (RSD) of the concentration for each target and EIS compound.
		For each native and isotopically labeled compound, compare RSD and % recovery with the corresponding limits for initial precision and recovery in Table 5. If RSD and R for all compounds meet the acceptance criteria, system performance is acceptable, and analysis of blanks and samples may begin.
Method Detection Limit (MDL)	Method detection limit (MDL) - Each laboratory must also establish MDLs for all the analytes using the MDL procedure at 40 CFR Part 136, Appendix B. An MDL determination must be performed for all target compounds.	The minimum level of quantification (ML) can be calculated by multiplying the MDL by 3.18 and rounding to the nearest integer
Calibration Verification (ICV or SCV) *Section 9.1.5*	Analyze a mid-level ICV, each time a new calibration is performed or at a minimum, quarterly. The ICV must be an independent dilution beginning with the common starting materials used for ICAL. No 2nd source is required due to availability.	Results must be 70-130% of true value.

10.4 QC Requirements

Ongoing QC requirements are detailed in Table 3.0 as follows.

Table 3.0 QC Requirements

Summary of Quality Control		
Method Reference	**Requirement**	**Specification and Frequency**
Section 10.1	Mass Calibration	Annually and on as-needed basis
Section 10.1.7	Mass Calibration Verification	After mass calibration
Section 10.3	Initial Calibration (ICAL)	Minimum 6 calibration standards for linear model and 7 calibration standards for non-linear models.
Sections 10.2.2, 14.4	Retention Time (RT) window	After ICAL and at the beginning of analytical sequence
Sections 7.3.1, 9.4	Extracted Internal Standard (EIS) Analytes	All CAL standards, batch QC and field samples

Sections 7.3.2	Non-extracted Internal Standards (NIS)	All CAL standards, batch QC and field samples
Sections 7.3.4, 10.3.1, 13.3	Instrument Sensitivity Check (ISC)	Daily, prior to analysis
Section 14.2	Calibration Verification (CV) (CCV)	At the beginning and every 10 samples and at the end
Section 14.6	Instrument Blank	Daily prior to analysis and after high standards
Sections 9.1.3, 9.5, 14.7	Method Blank (MB)	One per preparation batch
Section 14.5	Ongoing Precision Recovery (OPR)	One per preparation batch
Section 11.0	Limit of Quantitation Verification (LLOPR)	Prior to analyzing samples
Section 11.0	Matrix Spike (MS/MSD)	One per preparation batch (if required) Normally not needed, since Isotope dilution is employed

11.0 DATA REVIEW, CALCULATIONS AND REPORTING

Samples concentrations are determined using either or linear regression or quadratic regression FORCED through the origin. Weighted ($1/x$ or $1/x^2$) may assist with low level accuracy and is recommended where necessary. All calibration curves have greater than 6 points. Any target analyte exceeding the calibration range will require dilution.

11.1 Data interpretation

All sample data calculations are performed by the Agilent Mass Hunter software in ng/mL and then final data are calculated taking into account final extract volumes and the initial sample volumes extracted which are entered into the Element bench sheet.

11.2 Linear and Branched Isomers are addressed in Section 8.5 and are reported for the noted species as Total which is a sum of the linear and branched isomers for affected species.

11.3 All Data are uploaded into Element LIMS and all final concentration calculations and associated recoveries are detailed. All pdfs of Mass Hunter Quant reports are uploaded to the Element Raw_Data drive for association with ICALs and all batch and analysis sequence runs. Data are set to Analyzed status once uploaded and initially reviewed, then locked.

11.4 The Data are then evaluated using the York Qualinator ^{TM} data review tool which evaluates all data CCVs, QC, ISTDS, Recoveries, etc. and automatically assigns outlier qualifiers for review and acceptance by the reviewer. The accepted data are then uploaded to Element and final reviewed in Laboratory Data Entry/Review module. Once reviewed, the status is set to Reviewed indicating the data are ready to be Reported by the Reporting Group.

12. HEALTH AND SAFETY

12.1 General safety considerations and requirements are detailed in the York Laboratory Safety and Health Standard Operating Procedure No. Safety011600.

Specific safety rules applying to the conduct of this analysis requiring the following:

- When handling standards and samples, latex gloves are required.
- Also, when handling neat materials, a fume hood and safety glasses are required.
- When handling samples, gloves and glasses are required.
- Highly odorous samples must be handled in a fume hood.
- Refer to SDSs for specific safety/health information.

12.2 The analysts must exercise normal care and be supervised and trained to work in an analytical chemistry laboratory. The analysts will be handling fragile glassware, needles, syringes, volatile and flammable chemicals, toxic chemicals and corrosive chemicals.

- No smoking or open flames are allowed.
- No food or food products may be brought into the laboratory.

Solvents should not be left uncovered on the laboratory benches.
All solvent transfers should be done in the hoods.

Hood doors must be kept in the position which yields approx. 100 fpm face velocity.
Solvent evaporation must be done in the hood with exhaust elevated and in the rear.

Waste containers that had solvents must be vented to a hood until all solvents have evaporated.

Safety glasses are provided and must be worn at all times in the laboratory.
Gloves are provided and must be worn when working with chemicals.
Laboratory coats are provided and should be worn to protect the analysts' clothes.
Syringes and needles must be kept in their original cases when not in use.
Care must be exercised in using and handling syringes to avoid injury.
Report any sticking with a needle immediately to your supervisor.

12.3 Specific Safety Concerns

12.3.1 Preliminary toxicity studies indicate that PFAS could have significant toxic effects. In the interest of keeping exposure levels as low as reasonably achievable, PFAS must be handled in the laboratory as hazardous and toxic chemicals.

12.3.2 Exercise caution when using syringes with attached filter

disc assemblies. Application of excessive force has, upon occasion, caused a filter disc to burst during the process.

12.3.3 Laboratory procedures such as repetitive use of pipets, repetitive transferring of extracts and manipulation of filled separatory funnels and other glassware represent a significant potential for repetitive motion or other ergonomic injuries. Laboratory associates performing these procedures are in the best position to realize when they are at risk for these types of injuries.

12.3.4 Eye protection, laboratory coat, and nitrile gloves must be worn while handling samples, standards, solvents, and reagents. Disposable gloves that have been contaminated will be removed and discarded; other gloves will be cleaned immediately.

12.3.5 Perfluorocarboxylic acids are acids and are not compatible with strong bases.

12.3.6 Primary Materials Used- The following is a list of the materials used in this method, which have a serious or significant hazard rating. NOTE: This list does not include all materials used in the method. The table contains a summary of the primary hazards listed in the SDS for each of the materials listed in the table. A complete list of materials used in the method can be found in the reagents and materials section. Employees must review the information in the SDS for each material before using it for the first time or when there are major changes to the SDS.

Methanol	-Flammable Poison -Irritant	200 ppm (TWA)	A slight irritant to the mucous membranes. Toxic effects exerted upon nervous system, particularly the optic nerve. Symptoms of overexposure may include headache, drowsiness and dizziness. Methyl alcohol is a defatting agent and may cause skin to become dry and cracked. Skin absorption can occur; symptoms may parallel inhalation exposure. Irritant to the eyes.

Acetic Acid, Glacial	-Flammable liquid and vapor. -Irritation	10 ppm TWA; 25 mg/m3 TWA	**Eye:** Causes severe eye irritation. Contact with liquid or vapor causes severe burns and possible irreversible eye damage. **Skin:** Causes skin burns. May be harmful if absorbed through the skin. Contact with the skin may cause blackening and hyperkeratosis of the skin of the hands. **Ingestion:** May cause severe and permanent damage to the digestive tract. Causes severe pain, nausea, vomiting, diarrhea, and shock. May cause polyuria, oliguria (excretion of a diminished amount of urine in relation to the fluid intake) and anuria (complete suppression of urination). Rapidly absorbed from the gastrointestinal tract. **Inhalation:** Effects may be delayed. Causes chemical burns to the respiratory tract. Exposure may lead to bronchitis, pharyngitis, and dental erosion. May be absorbed through the lungs. **Chronic:** Chronic exposure to acetic acid may cause erosion of dental enamel, bronchitis, eye irritation, darkening of the skin, and chronic inflammation of the respiratory tract. Acetic acid can cause occupational asthma. One case of a delayed asthmatic response to glacial acetic acid has been reported in a person with bronchial asthma. Skin sensitization to acetic acid is rare, but has occurred.
Ammonium Hydroxide, conc. 28-30%	- Inhalation hazard - Skin Corrosion -Eye Damage and Irritation	OSHA PEL: 35 mg/m3 ; 50 ppm OSHA TWA: 18 mg/m3; 25 ppm	Ammonia is an irritant and corrosive to the skin, eyes, respiratory tract and mucous membranes. May cause severe chemical burns to the eyes, lungs and skin. Skin and respiratory related diseases could be aggravated by exposure. The extent of injury produced by exposure to ammonia depends on the duration of the exposure, the concentration of the liquid or vapor and the depth of inhalation**.** Exposure Routes: Inhalation (vapors), skin and/or eye contact (vapors, liquid), ingestion (liquid).
Formic Acid, conc.	-Flammable liquid and vapor -Harmful if swallowed -Causes severe skin burns and eye damage -Toxic if inhaled -May cause respiratory irritation	OSHA TWA: 5 ppm or 9 mg/m3 OSHA PEL: 10 ppm	Formic acid is an irritant and corrosive to the skin, eyes, respiratory tract and mucous membranes. May cause severe chemical burns to the eyes, lungs and skin. Skin and respiratory related diseases could be aggravated by exposure. The extent of injury produced by exposure to ammonia depends on the duration of the exposure, the concentration of the liquid or vapor and the depth of inhalation**.** Exposure Routes: Inhalation (vapors), skin and/or eye contact (vapors, liquid), ingestion (liquid).

13. WASTE MANAGEMENT/POLLUTION PREVENTION

Neat Materials

Waste management procedures require the prudent use of neat materials. The ordering of neat standards and materials must be done to minimize unused material which would result in storage or handling of excess material. Quantities ordered should be sufficient to provide for necessary standards with consideration to shelf life. When ordering a unique material for a standard, be sure to order the smallest practical quantity.

Solvents

The solvents used at York for this procedure include isopropanol and Methanol. These solvents are used for sample extraction or LC cleanup, all amounts are either consumed during concentration or placed in one liter amber jars in the hood areas for evaporation. Any remaining solvent/water is transferred to a drum designated for solvent waste.

Acids and Bases

The acids and bases used for this procedure include: Acetic Acid and Formic Acid. The bases used are Ammonium hydroxide, sodium hydroxide and potassium hydroxide. Store concentrated base and acids separately whether waste or neat material.

Samples

Unused or remaining water samples are returned to the sample control room for continued storage for proper disposal by the sample control group.

14. REFERENCES

1. EPA METHOD 1633 Draft 2 June, 2022- Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS; EPA 821-D-22-001

15. REVISION HISTORY

Revision 1.0	10/24/2022	First issue.
Revision 1.1	02/10/2023	Modified LLOPR in Section 7.4.6.1 to reflect 2x the MRL

Attachment 1 – Non-Extracted Internal Standards (NIS)

YORK
ANALYTICAL LABORATORIES, INC.

Analytical Standard Record

Standard ID: **Y22B197**

Description:	MPFAC-HIF-IS-EPA 1633 ISTD STOCK	Prepared:	02/16/2022
Standard Type:	Other	Expires:	09/07/2026
Solvent:	Methanol/Water (<1%)	Prepared By:	Robert Q. Bradley
Final Volume (mls):	1	Department:	PFAS
Vials:	1	Lot No.:	MPFACHIFIS0921
Vendor:	Wellington Laboratories		

Comments: Stock ISTD for EPA method 1633

Analyte	CAS Number	Concentration	Units
M3PFBA		1	ug/mL
MPFDA		0.25	ug/mL
MPFHxA		0.5	ug/mL
MPFHxS		0.474	ug/mL
MPFNA		0.25	ug/mL
MPFOA		0.5	ug/mL
MPFOS		0.479	ug/mL

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

MPFAC-HIF-IS

Mass-Labelled Perfluoroalkyl Substance Injection Standard Solution/Mixture

PRODUCT CODE:	MPFAC-HIF-IS
LOT NUMBER:	MPFACHIFIS0921
SOLVENT(S):	Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	09/07/2021
LAST TESTED: (mm/dd/yyyy)	09/07/2021
EXPIRY DATE: (mm/dd/yyyy)	09/07/2026
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

MPFAC-HIF-IS is a solution/mixture of five mass-labelled (^{13}C) perfluoroalkylcarboxylic acids (C_4, C_8, C_9-C_{10}) and two mass-labelled (^{18}O and ^{13}C) perfluoroalkanesulfonates (C_6 and C_8). The components and their concentrations are given in Table A.

The individual mass-labelled perfluoroalkylcarboxylic acids and mass-labelled perfluoroalkanesulfonates all have chemical purities of >98% and isotopic purities of ≥99% per ^{13}C or >94% per ^{18}O.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A1226), and ISO 17034 by ANSI National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ANSI National Accreditation Board ACCREDITED AR-1523 ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: **MPFAC-HIF-IS; Components and Concentrations (ng/mL, ± 5% in methanol/water (<1%))**

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
Perfluoro-n-(2,3,4-$^{13}C_3$)butanoic acid	M3PFBA	1000		1
Perfluoro-n-(1,2-$^{13}C_2$)hexanoic acid	MPFHxA	500		2
Perfluoro-n-(1,2,3,4-$^{13}C_4$)octanoic acid	MPFOA	500		4
Perfluoro-n-(1,2,3,4,5-$^{13}C_5$)nonanoic acid	MPFNA	250		5
Perfluoro-n-(1,2-$^{13}C_2$)decanoic acid	MPFDA	250		7
Compound	**Acronym**	**Concentration* (ng/mL)**		**Peak Assignment in Figure 1**
		as the salt	**as the acid**	
Sodium perfluoro-1-hexane($^{18}O_2$)sulfonate	MPFHxS	500	474	3
Sodium perfluoro-1-(1,2,3,4-$^{13}C_4$)octanesulfonate	MPFOS	500	479	6

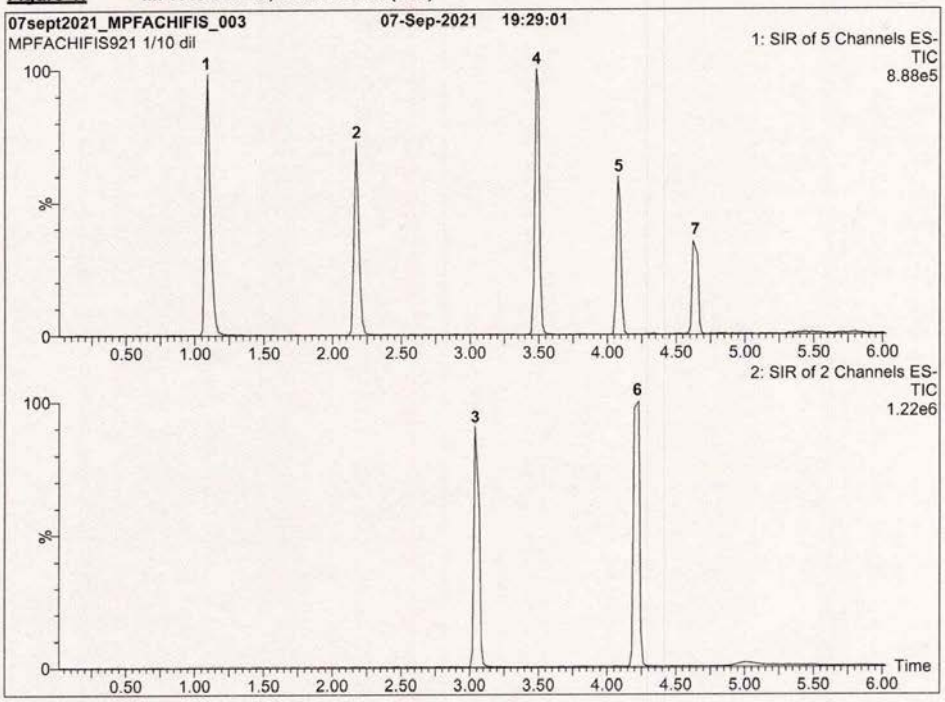
* Concentrations have been rounded to three significant figures.

Certified By: _____ **Date:** 10/13/2021 (mm/dd/yyyy)
B.G. Chittim, General Manager

Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

MPFACHIFIS0921 (3 of 5)
rev1

Figure 1: **MPFAC-HIF-IS; LC/MS Data (SIR)**



Conditions for Figure 1:

Waters Acquity Ultra Performance LC
Waters Xevo TQ-S micro MS

Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% H_2O / 50% (80:20 MeOH:ACN)
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 9 min and hold for
2 min before returning to initial conditions in 1 min.
Time: 15 min

Flow: 300 µL/min

MS Parameters:

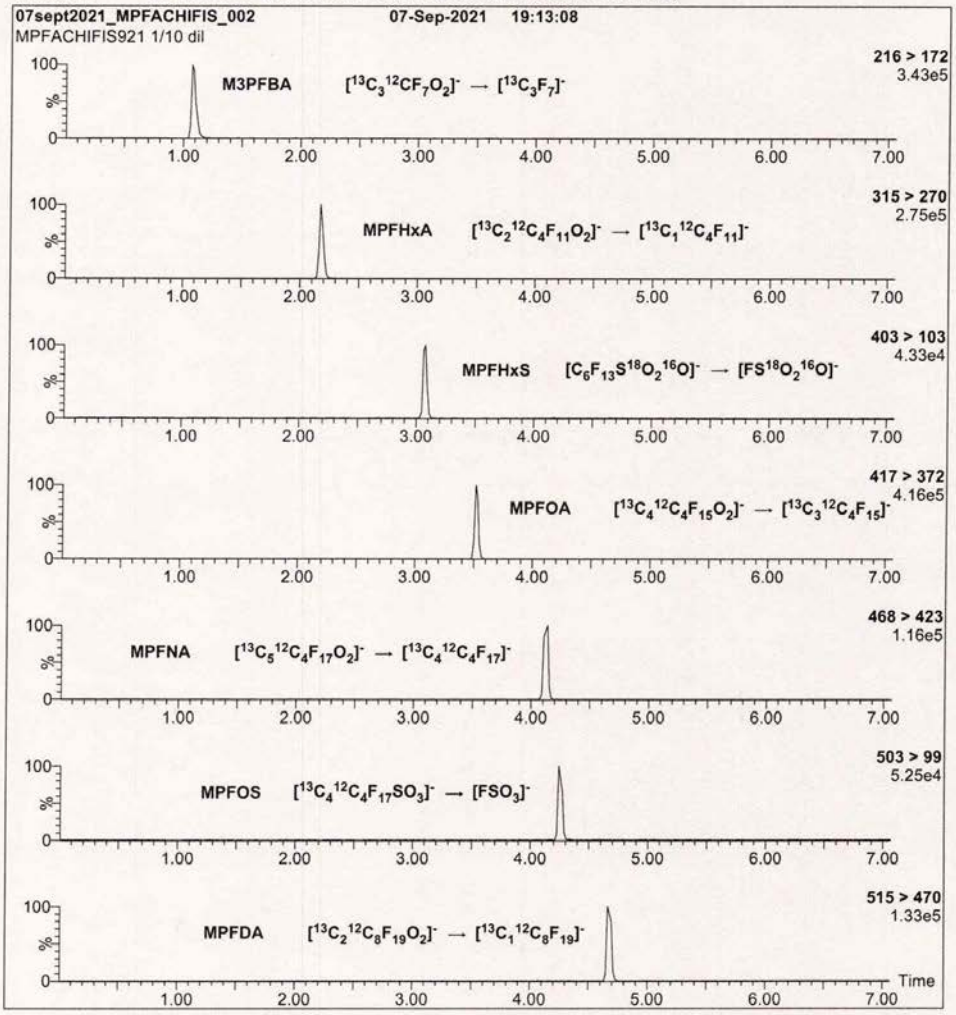
Experiment: SIR

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = variable (2-6)
Desolvation Temperature (°C) = 350
Desolvation Gas Flow (L/hr) = 1000

Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

MPFACHIFIS0921 (4 of 5)
rev1

Figure 2: **MPFAC-HIF-IS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (MPFAC-HIF-IS)

Mobile phase: Same as Figure 1

Flow: 300 µL/min

MS Parameters:

Collision Gas (mbar) = 3.18e-3
Collision Energy (eV) = 4-64 (variable)

Formlt:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

MPFACHIFIS0921 (5 of 5)
rev1

Attachment 2 – Extracted Internal Standards (EIS)

YORK
ANALYTICAL LABORATORIES, INC.

Analytical Standard Record

Standard ID: **Y22B198**

Description:	MPFAC-HIF-ES-EPA 1633 STOCK EIS mix	Prepared:	02/17/2022
Standard Type:	Other	Expires:	08/06/2024
Solvent:	MeOH/IPA/1% H2O	Prepared By:	Robert Q. Bradley
Final Volume (mls):	1	Department:	PFAS
Vials:	1	Lot No.:	MPFACHIFES0821
Vendor:	Wellington Laboratories		

Comments:

Analyte	CAS Number	Concentration	Units
d3-N-MeFOSAA		1	ug/mL
d5-N-EtFOSAA		1	ug/mL
d7-N-MeFOSE		5	ug/mL
d9-N-EtFOSE		5	ug/mL
d-N-EtFOSA		0.5	ug/mL
d-N-MeFOSA		0.5	ug/mL
M2-4:2FTS		0.938	ug/mL
M2-6:2FTS		0.951	ug/mL
M2-8:2FTS		0.96	ug/mL
M2PFTeDA		0.25	ug/mL
M3HFPO-DA		2	ug/mL
M3PFBS		0.466	ug/mL
M3PFHxS		0.474	ug/mL
M4PFHpA		0.5	ug/mL
M5PFHxA		0.5	ug/mL
M5PFPeA		1	ug/mL
M6PFDA		0.25	ug/mL
M7PFUdA		0.25	ug/mL
M8FOSA		0.5	ug/mL
M8PFOA		0.5	ug/mL
M8PFOS		0.479	ug/mL
M9PFNA		0.25	ug/mL
MPFBA		2	ug/mL
MPFDoA		0.25	ug/mL

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

MPFAC-HIF-ES

Mass-Labelled Per- and Poly-fluoroalkyl Substance Extraction Standard Solution/Mixture

PRODUCT CODE:	MPFAC-HIF-ES
LOT NUMBER:	MPFACHIFES0821
SOLVENT(S):	Methanol/Isopropanol (1%)/Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	08/05/2021
LAST TESTED: (mm/dd/yyyy)	08/16/2021
EXPIRY DATE: (mm/dd/yyyy)	08/16/2024
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

MPFAC-HIF-ES is a solution/mixture of ten mass-labelled (^{13}C) perfluoroalkylcarboxylic acids (C_4-C_{12}, C_{14}), three mass-labelled (^{13}C) perfluoroalkanesulfonates (C_4, C_8, and C_8), three mass-labelled (one ^{13}C and two ^{2}H) perfluoro-1-octanesulfonamides, three mass-labelled (^{13}C) fluorotelomer sulfonates (4:2, 6:2, and 8:2), two mass-labelled (^{2}H) perfluorooctanesulfonamidoacetic acids, two mass-labelled (^{2}H) perfluorooctanesulfonamidoethanols, and mass-labelled (^{13}C) hexafluoropropylene oxide dimer acid. The components and their concentrations are given in Table A.

The individual mass-labelled perfluoroalkylcarboxylic acids, mass-labelled perfluoroalkanesulfonates, mass-labelled fluorotelomer sulfonates, perfluoro-1-($^{13}C_8$)octanesulfonamide, and mass-labelled hexafluoropropylene oxide dimer acid all have chemical purities of >98% and isotopic purities of ≥99%. The individual mass-labelled perfluorooctanesulfonamidoacetic acids, mass-labelled perfluorooctanesulfonamidoethanols, and two mass-labelled (^{2}H) perfluoro-1-octanesulfonamides all have chemical purities of >98% and isotopic purities of ≥98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A1226), and ISO 17034 by ANSI National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

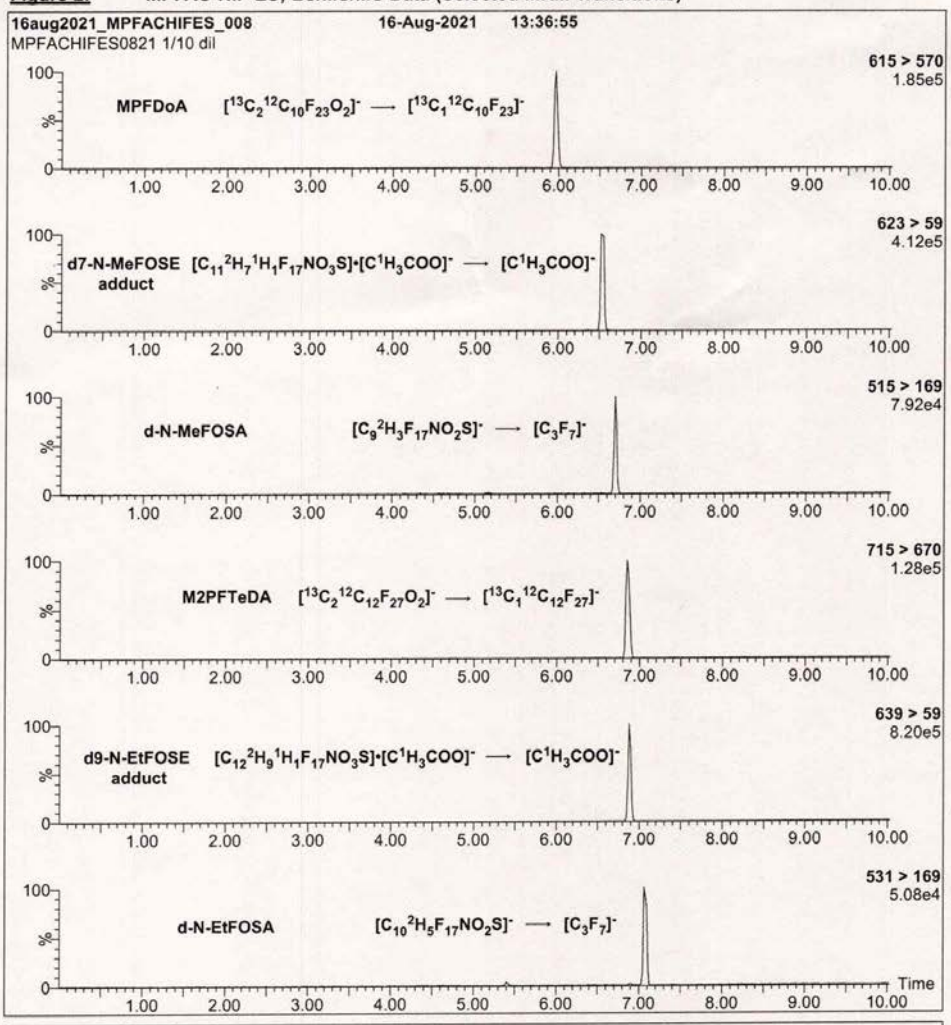
ANAB ANSI National Accreditation Board ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

MPFACHIFES0821 (2 of 7)
rev1

Figure 2: **MPFAC-HIF-ES; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (MPFAC-HIF-ES)

Mobile phase: Same as Figure 1

Flow: 300 µL/min

MS Parameters:

Collision Gas (mbar) = 3.41e-3
Collision Energy (eV) = 4-64 (variable)

Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

MPFACHIFES0821 (7 of 7)
rev1

Table A: **MPFAC-HIF-ES; Components and Concentrations (ng/mL, ± 5% in Methanol/Isopropanol (1%)/Water (<1%))**

Compound	Acronym	Concentration (ng/mL)	Peak Assignment in Figure 1
Perfluoro-n-($^{13}C_4$)butanoic acid	MPFBA	2000	1
Perfluoro-n-($^{13}C_5$)pentanoic acid	M5PFPeA	1000	2
Perfluoro-n-(1,2,3,4,6-$^{13}C_5$)hexanoic acid	M5PFHxA	500	5
Perfluoro-n-(1,2,3,4-$^{13}C_4$)heptanoic acid	M4PFHpA	500	7
Perfluoro-n-($^{13}C_8$)octanoic acid	M8PFOA	500	10
Perfluoro-n-($^{13}C_9$)nonanoic acid	M9PFNA	250	11
Perfluoro-n-(1,2,3,4,5,6-$^{13}C_6$)decanoic acid	M6PFDA	250	14
Perfluoro-n-(1,2,3,4,5,6,7-$^{13}C_7$)undecanoic acid	M7PFUdA	250	17
Perfluoro-n-(1,2-$^{13}C_2$)dodecanoic acid	MPFDoA	250	19
Perfluoro-n-(1,2-$^{13}C_2$)tetradecanoic acid	M2PFTeDA	250	22
Perfluoro-1-($^{13}C_8$)octanesulfonamide	M8FOSA	500	18
N-methyl-d_3-perfluoro-1-octanesulfonamide	d-N-MeFOSA	500	21
N-ethyl-d_5-perfluoro-1-octanesulfonamide	d-N-EtFOSA	500	24
N-methyl-d_3-perfluoro-1-octanesulfonamidoacetic acid	d3-N-MeFOSAA	1000	15
N-ethyl-d_5-perfluoro-1-octanesulfonamidoacetic acid	d5-N-EtFOSAA	1000	16
2-(N-methyl-d_3-perfluoro-1-octanesulfonamido)ethan-d_4-ol	d7-N-MeFOSE	5000	20
2-(N-ethyl-d_5-perfluoro-1-octanesulfonamido)ethan-d_4-ol	d9-N-EtFOSE	5000	23
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)($^{13}C_3$)propanoic acid	M3HFPO-DA	2000	6

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Sodium perfluoro-1-(2,3,4-$^{13}C_3$)butanesulfonate	M3PFBS	500	466	3
Sodium perfluoro-1-(1,2,3-$^{13}C_3$)hexanesulfonate	M3PFHxS	500	474	8
Sodium perfluoro-1-($^{13}C_8$)octanesulfonate	M8PFOS	500	479	12
Sodium 1H,1H,2H,2H-perfluoro-(1,2-$^{13}C_2$)hexanesulfonate	M2-4:2FTS	1000	938	4
Sodium 1H,1H,2H,2H-perfluoro-(1,2-$^{13}C_2$)octanesulfonate	M2-6:2FTS	1000	951	9
Sodium 1H,1H,2H,2H-perfluoro-(1,2-$^{13}C_2$)decanesulfonate	M2-8:2FTS	1000	960	13

* Concentrations have been rounded to three significant figures.

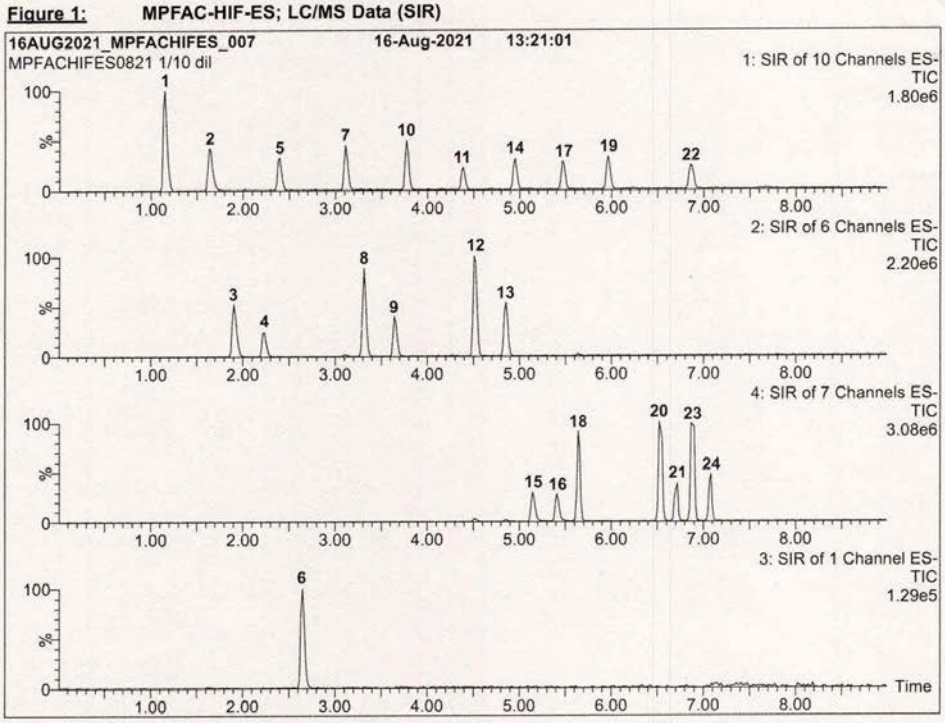
Certified By: _____ **Date:** 10/13/2021 (mm/dd/yyyy)

B.G. Chittim, General Manager

Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

MPFACHIFES0821 (3 of 7)
rev1

Figure 1: **MPFAC-HIF-ES; LC/MS Data (SIR)**



Conditions for Figure 1:

Waters Acquity Ultra Performance LC
Waters Xevo TQ-S micro MS

Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% H_2O / 50% (80:20 MeOH:ACN)
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 9 min and hold for
2 min before returning to initial conditions in 1 min.
Time: 15 min

Flow: 300 µL/min

MS Parameters:

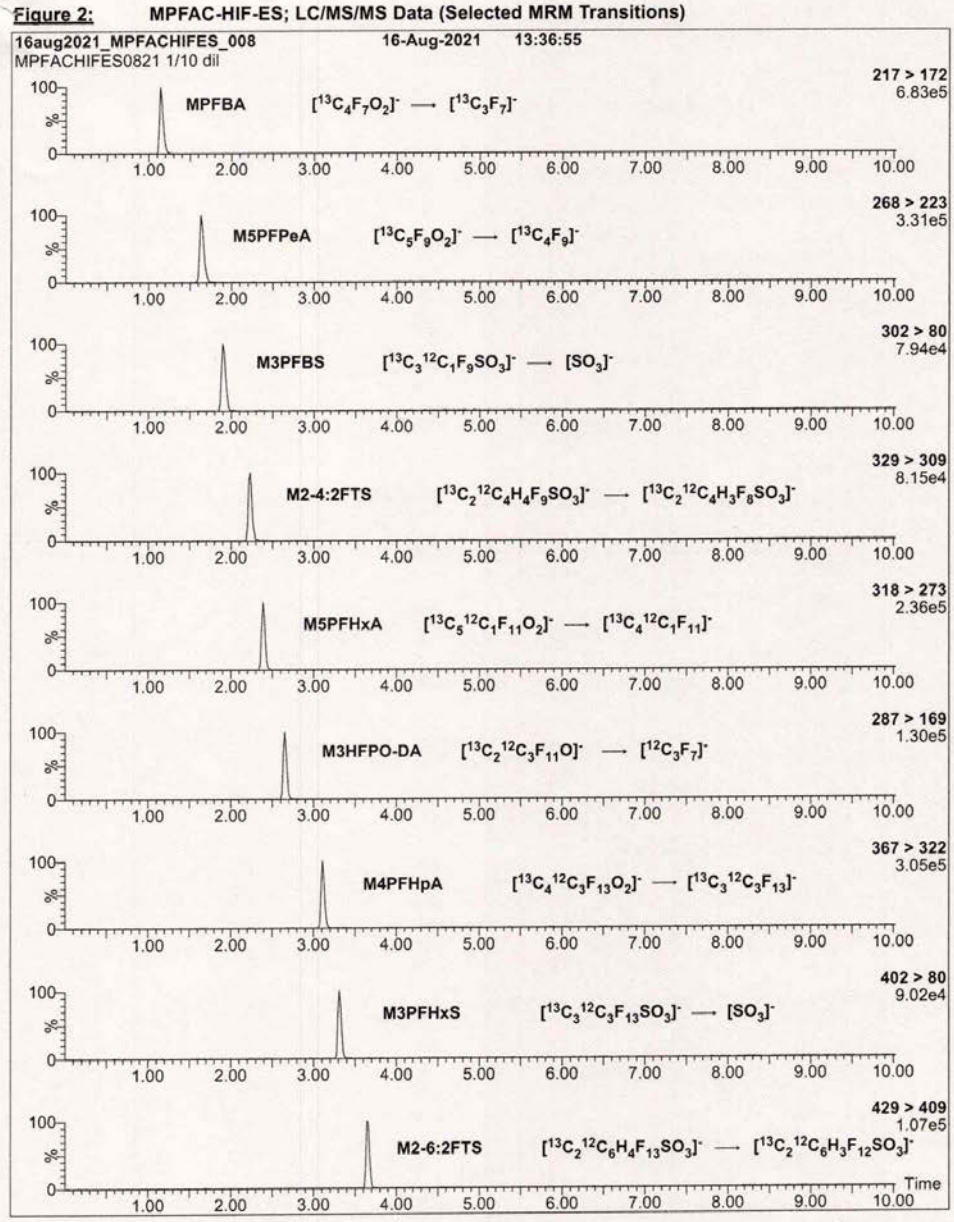
Experiment: SIR

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = variable (2-44)
Desolvation Temperature (°C) = 350
Desolvation Gas Flow (L/hr) = 1000

Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

MPFACHIFES0821 (4 of 7)
rev1

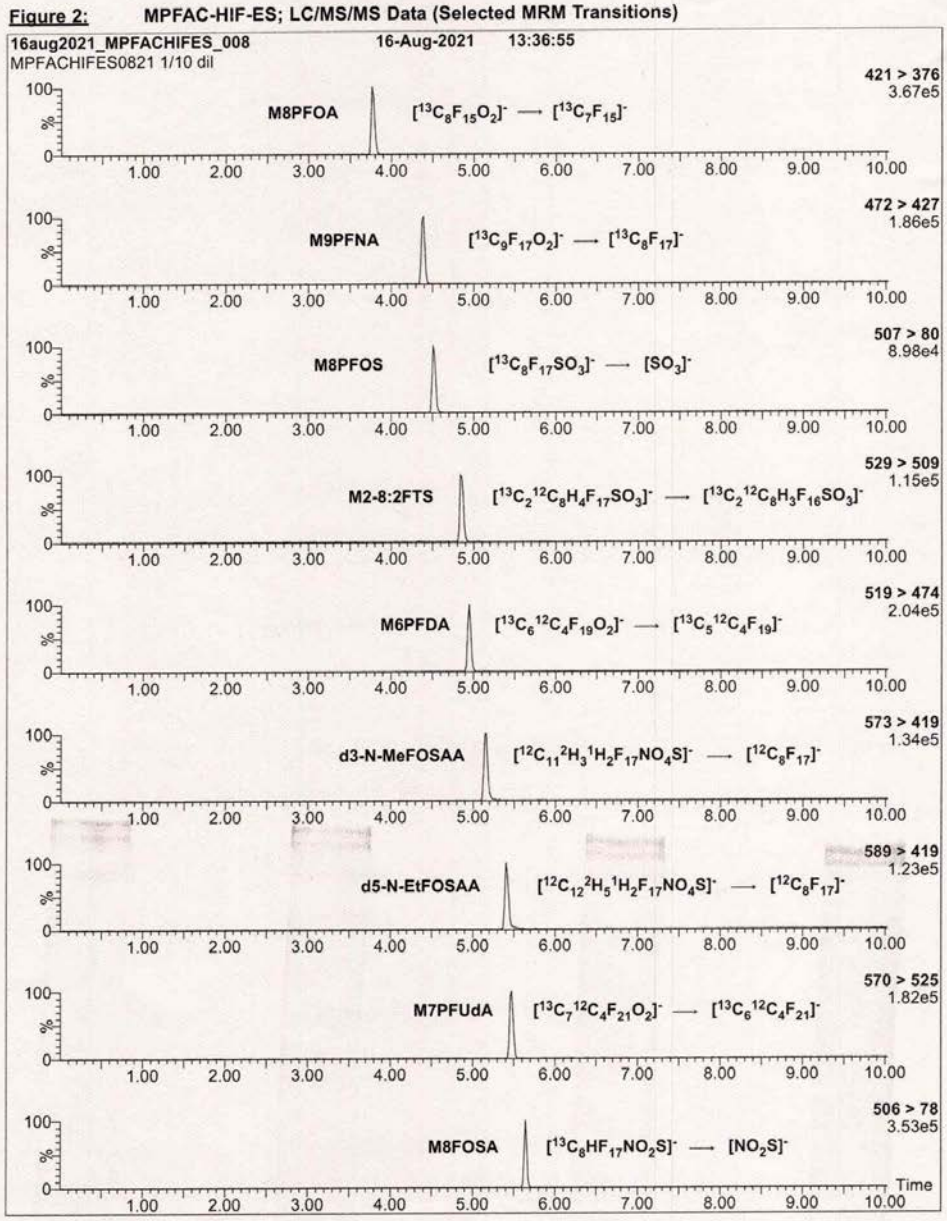
Figure 2: **MPFAC-HIF-ES; LC/MS/MS Data (Selected MRM Transitions)**



Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

MPFACHIFES0821 (5 of 7)
rev1

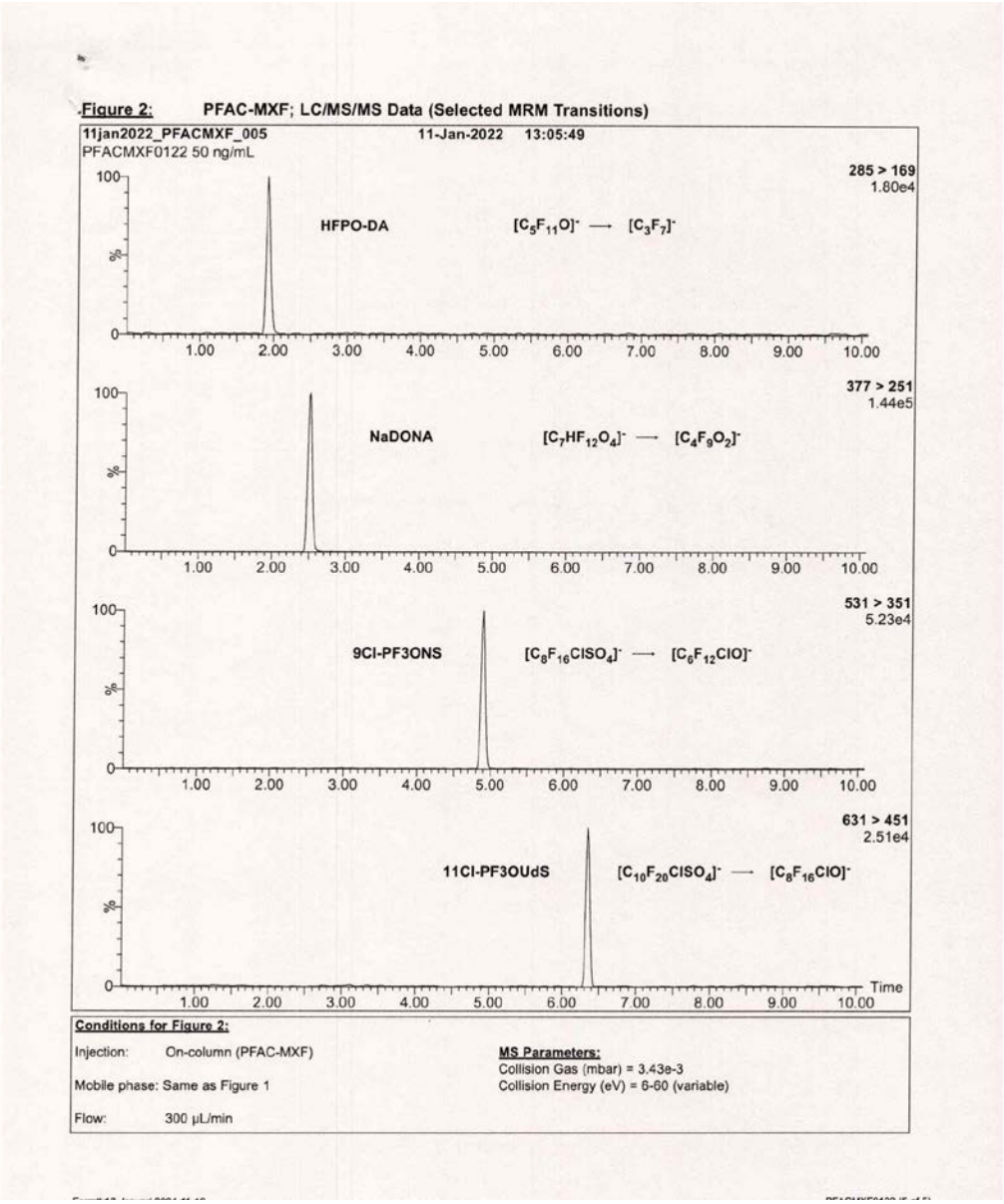
Figure 2: **MPFAC-HIF-ES; LC/MS/MS Data (Selected MRM Transitions)**



Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

MPFACHIFES0821 (6 of 7)
rev1

Attachment 3 – Target Analyte Mixtures



INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A1226), and ISO 17034 by ANSI National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ANSI National Accreditation Board ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXF0122 (2 of 5)
rev0

Table A: **PFAC-MXF; Components and Concentrations (ng/mL; ± 5% in Methanol/Water (<1%))**

Compound	Acronym	Concentration* (ng/ml)		Peak Assignment in Figure 1
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid	HFPO-DA	2000		A
Compound	**Acronym**	**Concentration* (ng/mL)**		**Peak Assignment in Figure 1**
		as the salt	**as the acid**	
Sodium dodecafluoro-3H-4,8-dioxanonanoate	NaDONA	2000	1890	B
Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate	9Cl-PF3ONS	2000	1870	C
Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate	11Cl-PF3OUdS	2000	1890	D

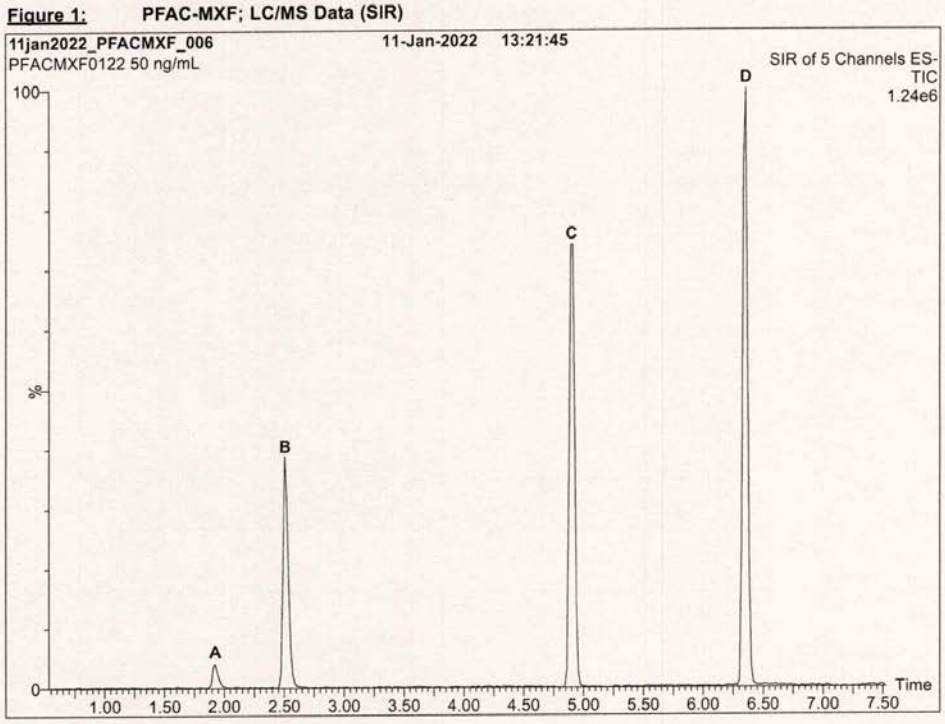
* Concentrations have been rounded to three significant figures.

Certified By: _____ **Date:** 01/12/2022 (mm/dd/yyyy)
B.G. Chittim, General Manager

Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXF0122 (3 of 5)
rev0

Figure 1: **PFAC-MXF; LC/MS Data (SIR)**



Conditions for Figure 1:

Waters Acquity Ultra Performance LC
Waters Xevo TQ-S micro MS

Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% H_2O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for 2 min
before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µL/min

MS Parameters:

Experiment: SIR

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = variable (15-74)
Desolvation Temperature (°C) = 325
Desolvation Gas Flow (L/hr) = 1000

Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXF0122 (4 of 5)
rev0

YORK
ANALYTICAL LABORATORIES, INC.

Analytical Standard Record

Standard ID: **Y22B199**

Description:	PFAC-MXF-Native Repl.STOCK EPA 1633 PFAS	Prepared:	02/17/2022
Standard Type:	Other	**Expires:**	**01/11/2025**
Solvent:	MeOH/H20	Prepared By:	Robert Q. Bradley
Final Volume (mls):	1	Department:	PFAS
Vials:	1	Lot No.:	PFACMXF0122
Vendor:	Wellington Laboratories		

Comments:

Analyte	CAS Number	Concentration	Units
11CL-PF3OUdS	763051-92-9	1.89	ug/mL
9CL-PF3ONS	756426-58-1	1.87	ug/mL
ADONA	919005-14-4	1.89	ug/mL
HFPO-DA (Gen-X)	13252-13-6	2	ug/mL

Reviewed By Date

Page 1 of 1

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PFAC-MXF

Native Replacement PFAS Solution/Mixture

PRODUCT CODE:	PFAC-MXF
LOT NUMBER:	PFACMXF0122
SOLVENT(S):	Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	01/10/2022
LAST TESTED: (mm/dd/yyyy)	01/11/2022
EXPIRY DATE: (mm/dd/yyyy)	01/11/2025
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

PFAC-MXF is a solution/mixture of sodium dodecafluoro-3H-4,8-dioxanonanoate (NaDONA), the major and minor components of F-53B (9Cl-PF3ONS and 11Cl-PF3OUdS), and GenX (HFPO-DA). The components and their concentrations are given in Table A.

The individual native components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

Table A: **PFAC-MXI; Components and Concentrations (µg/mL; ± 5% in methanol)**

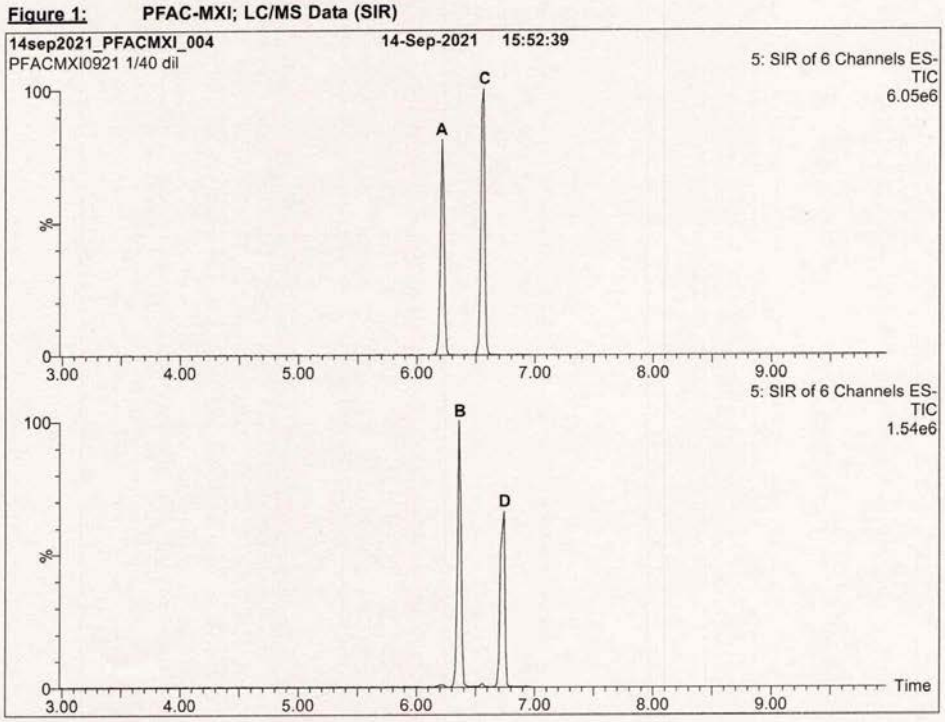
Compound	Acronym	Concentration (µg/mL)	Peak Assignment in Figure 1
N-methylperfluoro-1-octanesulfonamide	N-MeFOSA	1.00	B
N-ethylperfluoro-1-octanesulfonamide	N-EtFOSA	1.00	D
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	N-MeFOSE	10.0	A
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	N-EtFOSE	10.0	C

Certified By: _____ **Date:** 09/23/2021
(mm/dd/yyyy)
B.G. Chittim, General Manager

Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXI0921 (3 of 5)
rev0

Figure 1: **PFAC-MXI; LC/MS Data (SIR)**



Conditions for Figure 1:

Waters Acquity Ultra Performance LC
Waters Xevo TQ-S micro MS

Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% H_2O / 50% (80:20 MeOH:ACN)
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 9 min and hold for
2 min before returning to initial conditions in 1 min.
Time: 15 min

Flow: 300 µL/min

MS Parameters:

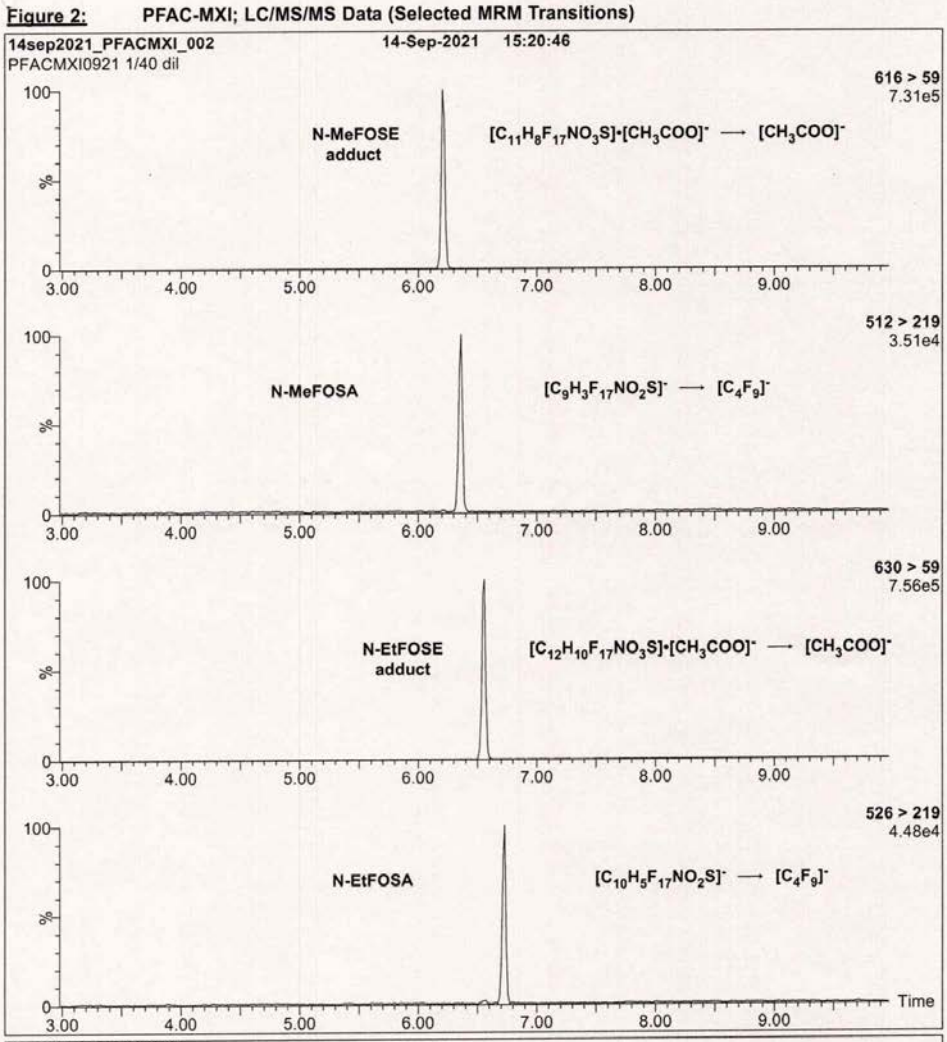
Experiment: SIR

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = variable (2-74)
Desolvation Temperature (°C) = 350
Desolvation Gas Flow (L/hr) = 1000

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rev0

Figure 2: **PFAC-MXI; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (PFAC-MXI)

Mobile phase: Same as Figure 1

Flow: 300 µL/min

MS Parameters:
Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 6-60 (variable)

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Revision#:9, Revised 2020-12-23

PFACMXI0921 (5 of 5)
rev0

YORK
ANALYTICAL LABORATORIES, INC.

Analytical Standard Record

Standard ID: **Y22B204**

Description:	PFAC-MXI-EPA 1633 Stock	Prepared:	02/17/2022
Standard Type:	Other	**Expires:**	**02/17/2023**
Solvent:	Methanol	Prepared By:	Robert Q. Bradley
Final Volume (mls):	1	Department:	PFAS
Vials:	1	Lot No.:	PFACMXI0921
Vendor:	Wellington Laboratories		

Comments:

Analyte	CAS Number	Concentration	Units
N-EtFOSA	4151-50-2	1	ug/mL
N-EtFOSE	1691-99-2	10	ug/mL
N-MeFOSA	31506-32-8	1	ug/mL
N-MeFOSE	24448-09-7	10	ug/mL

Reviewed By Date

Page 1 of 1

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PFAC-MXI

Native Perfluorooctanesulfonamide and Perfluorooctanesulfonamidoethanol Solution/Mixture

PRODUCT CODE:	PFAC-MXI
LOT NUMBER:	PFACMXI0921
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	09/08/2021
LAST TESTED: (mm/dd/yyyy)	09/14/2021
EXPIRY DATE: (mm/dd/yyyy)	09/14/2026
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

PFAC-MXI is a solution/mixture of two native perfluorooctanesulfonamides (FOSAs) and two native perfluorooctanesulfonamidoethanols (FOSEs). The components and their concentrations are given in Table A.

The individual components have a chemical purity of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A1226), and ISO 17034 by ANSI National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

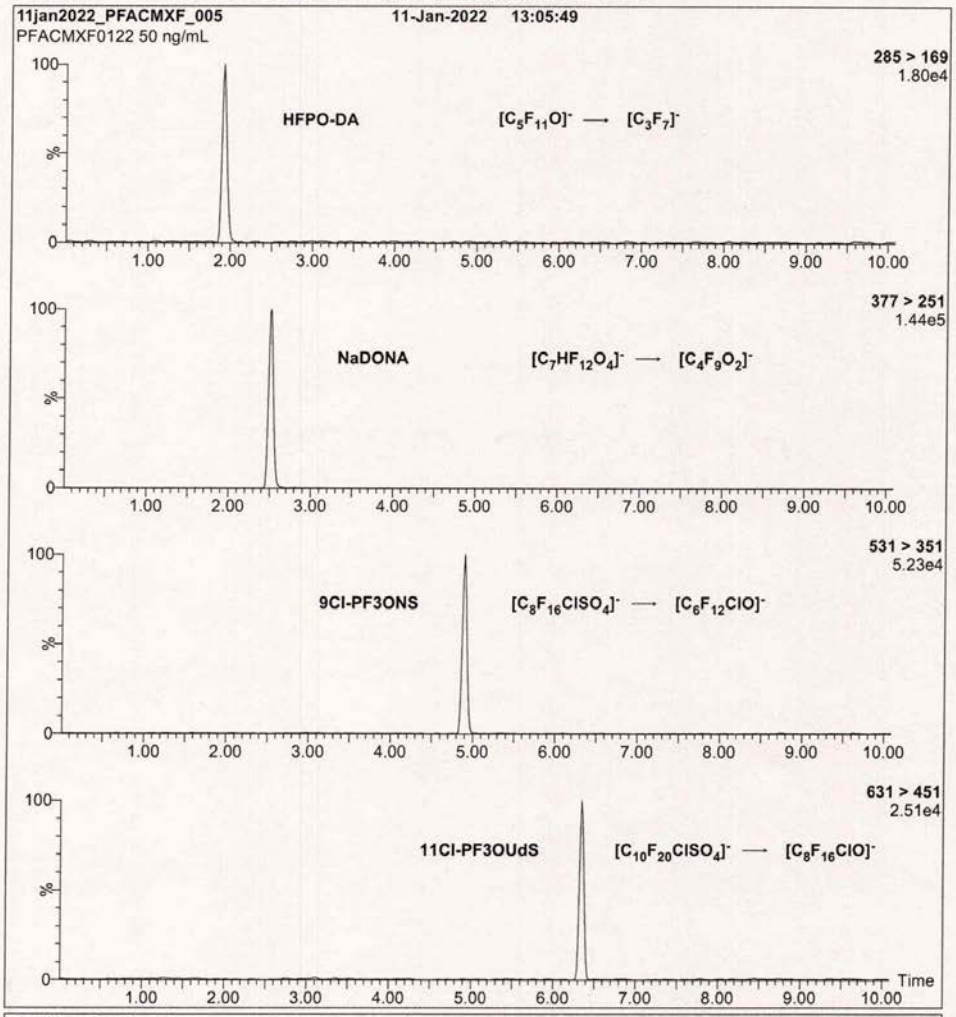
ANAB ANSI National Accreditation Board ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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PFACMXI0921 (2 of 5)
rev0

Figure 2: **PFAC-MXF; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (PFAC-MXF)

Mobile phase: Same as Figure 1

Flow: 300 µL/min

MS Parameters:
Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 6-60 (variable)

Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXF0122 (5 of 5)
rev0

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A1226), and ISO 17034 by ANSI National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ANSI National Accreditation Board ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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Form#:13, Issued 2004-11-10
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PFACMXF0122 (2 of 5)
rev0

Table A: **PFAC-MXF; Components and Concentrations (ng/mL; ± 5% in Methanol/Water (<1%))**

Compound	Acronym	Concentration* (ng/ml)		Peak Assignment in Figure 1
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid	HFPO-DA	2000		A
Compound	**Acronym**	**Concentration* (ng/mL)**		**Peak Assignment in Figure 1**
		as the salt	**as the acid**	
Sodium dodecafluoro-3H-4,8-dioxanonanoate	NaDONA	2000	1890	B
Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate	9Cl-PF3ONS	2000	1870	C
Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate	11Cl-PF3OUdS	2000	1890	D

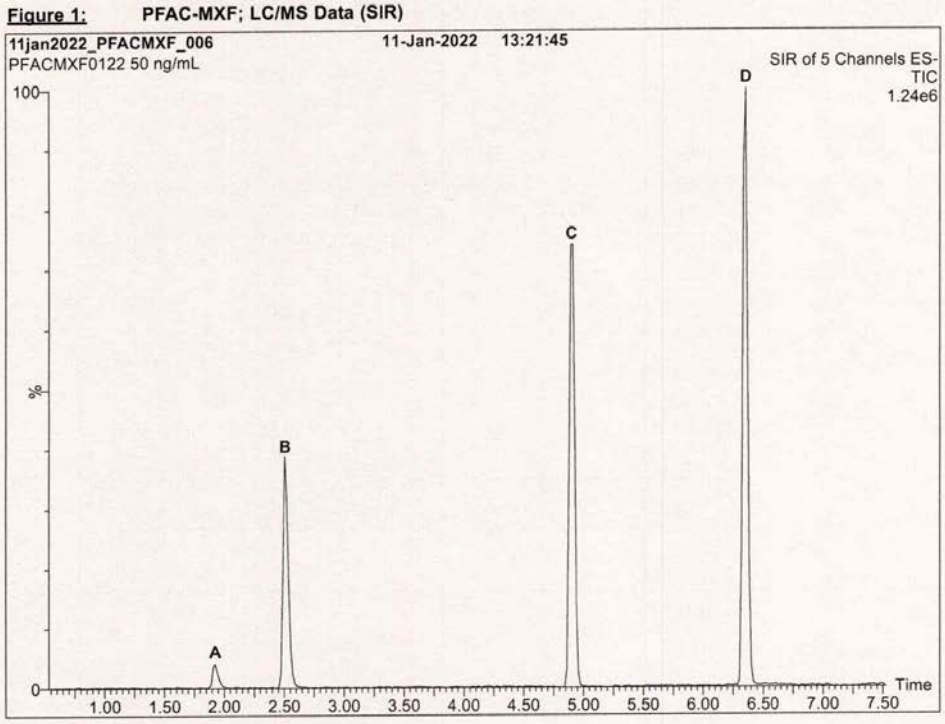
* Concentrations have been rounded to three significant figures.

Certified By: _____ **Date:** 01/12/2022 (mm/dd/yyyy)
B.G. Chittim, General Manager

Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXF0122 (3 of 5)
rev0

Figure 1: **PFAC-MXF; LC/MS Data (SIR)**



Conditions for Figure 1:

Waters Acquity Ultra Performance LC
Waters Xevo TQ-S micro MS

Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% H_2O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for 2 min
before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µL/min

MS Parameters:

Experiment: SIR

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = variable (15-74)
Desolvation Temperature (°C) = 325
Desolvation Gas Flow (L/hr) = 1000

Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXF0122 (4 of 5)
rev0

YORK
ANALYTICAL LABORATORIES, INC.

Analytical Standard Record

Standard ID: **Y22B199**

Description:	PFAC-MXF-Native Repl.STOCK EPA 1633 PFAS	Prepared:	02/17/2022
Standard Type:	Other	**Expires:**	**01/11/2025**
Solvent:	MeOH/H20	Prepared By:	Robert Q. Bradley
Final Volume (mls):	1	Department:	PFAS
Vials:	1	Lot No.:	PFACMXF0122
Vendor:	Wellington Laboratories		

Comments:

Analyte	CAS Number	Concentration	Units
11CL-PF3OUdS	763051-92-9	1.89	ug/mL
9CL-PF3ONS	756426-58-1	1.87	ug/mL
ADONA	919005-14-4	1.89	ug/mL
HFPO-DA (Gen-X)	13252-13-6	2	ug/mL

Reviewed By Date

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WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PFAC-MXF

Native Replacement PFAS Solution/Mixture

PRODUCT CODE:	PFAC-MXF
LOT NUMBER:	PFACMXF0122
SOLVENT(S):	Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	01/10/2022
LAST TESTED: (mm/dd/yyyy)	01/11/2022
EXPIRY DATE: (mm/dd/yyyy)	01/11/2025
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

PFAC-MXF is a solution/mixture of sodium dodecafluoro-3H-4,8-dioxanonanoate (NaDONA), the major and minor components of F-53B (9Cl-PF3ONS and 11Cl-PF3OUdS), and GenX (HFPO-DA). The components and their concentrations are given in Table A.

The individual native components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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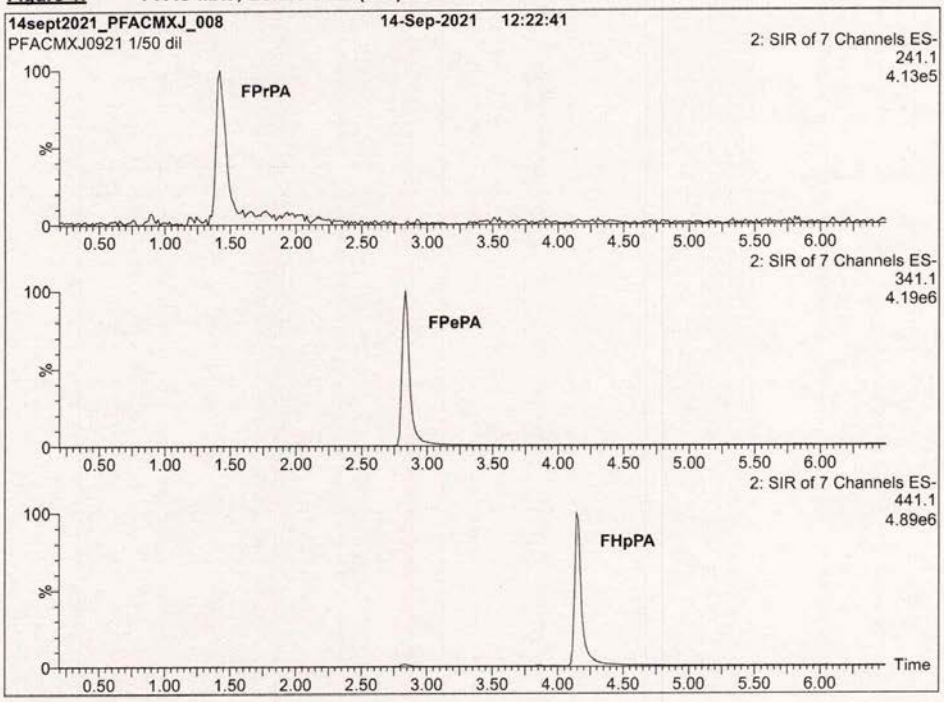
Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

Table A: **PFAC-MXJ; Components and Concentrations (µg/mL; ± 5% in methanol)**

Compound	Acronym	Concentration (µg/mL)
3-Perfluoropropyl propanoic acid	FPrPA	4.00
3-Perfluoropentyl propanoic acid	FPePA	20.0
3-Perfluoroheptyl propanoic acid	FHpPA	20.0

Certified By: _____ **Date:** 10/02/2021 (mm/dd/yyyy)
B.G. Chittim, General Manager

Figure 1: **PFAC-MXJ; LC/MS Data (SIR)**



Conditions for Figure 1:

Waters Acquity Ultra Performance LC
Waters Xevo TQ-S micro MS

Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% H_2O / 50% (80:20 MeOH:ACN)
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 9 min and hold for
2 min before returning to initial conditions in 1 min.
Time: 15 min

Flow: 300 µL/min

MS Parameters:

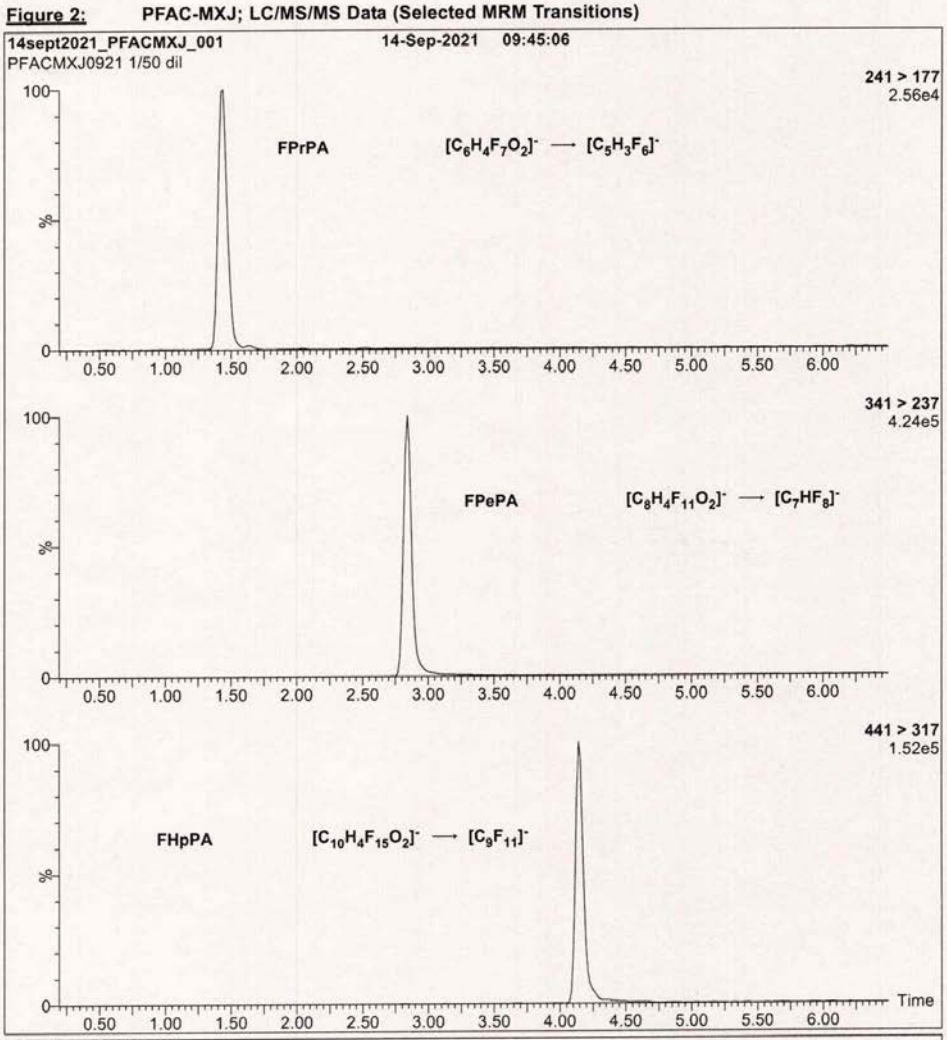
Experiment: SIR

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = variable (2-74)
Desolvation Temperature (°C) = 350
Desolvation Gas Flow (L/hr) = 1000

Form#:13, Issued 2004-11-10
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PFACMXJ0921 (4 of 5)
rev1

Figure 2: **PFAC-MXJ; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (PFAC-MXJ)

Mobile phase: Same as Figure 1

Flow: 300 µL/min

MS Parameters:
Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 6-60 (variable)

Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXJ0921 (5 of 5)
rev1

YORK
ANALYTICAL LABORATORIES, INC.

Analytical Standard Record

Standard ID: **Y22B205**

Description:	PFAC-MXJ-EPA 1633 Stock mix	Prepared:	02/17/2022
Standard Type:	Other	Expires:	09/14/2026
Solvent:	Methanol	Prepared By:	Robert Q. Bradley
Final Volume (mls):	1	Department:	PFAS
Vials:	1	Lot No.:	PFACMXJ0921
Vendor:	Wellington Laboratories		

Comments:

Analyte	CAS Number	Concentration	Units
3-Perfluoroheptyl propanoic acid (FHpPA	812-70-4	20	ug/mL
3-Perfluoropentyl propanoic acid (FPePA)	914637-49-3	20	ug/mL
3-Perfluoropropyl propanoic acid (FPrPA)	356-02-2	4	ug/mL

Reviewed By Date

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WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic Acid Solution/Mixture

PRODUCT CODE:	PFAC-MXJ
LOT NUMBER:	PFACMXJ0921
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	09/08/2021
LAST TESTED: (mm/dd/yyyy)	09/14/2021
EXPIRY DATE: (mm/dd/yyyy)	09/14/2026
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

PFAC-MXJ is a solution/mixture of three native X:3 fluorotelomer carboxylic acids. The components and their concentrations are given in Table A.

The individual components have a chemical purity of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A1226), and ISO 17034 by ANSI National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

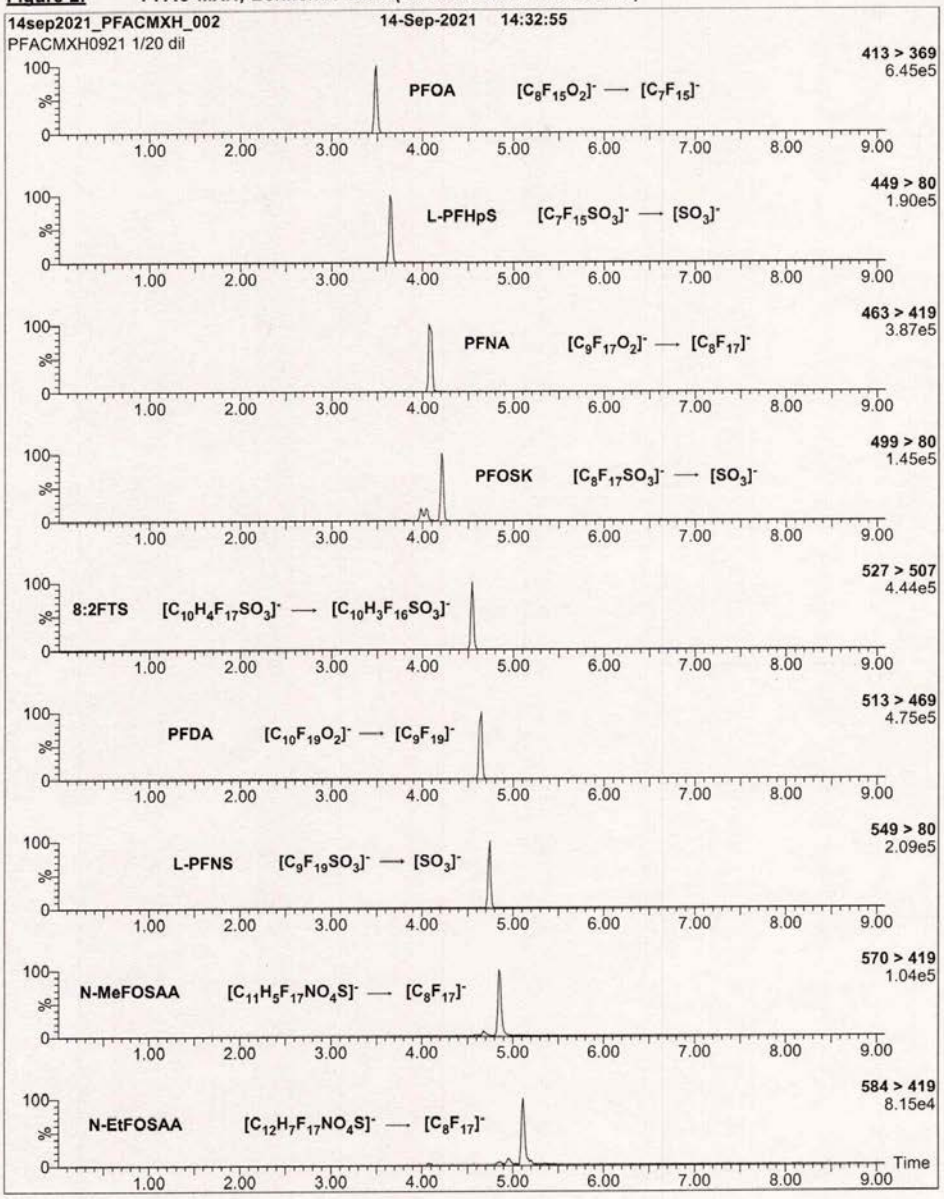
ANAB ANSI National Accreditation Board ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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rev1

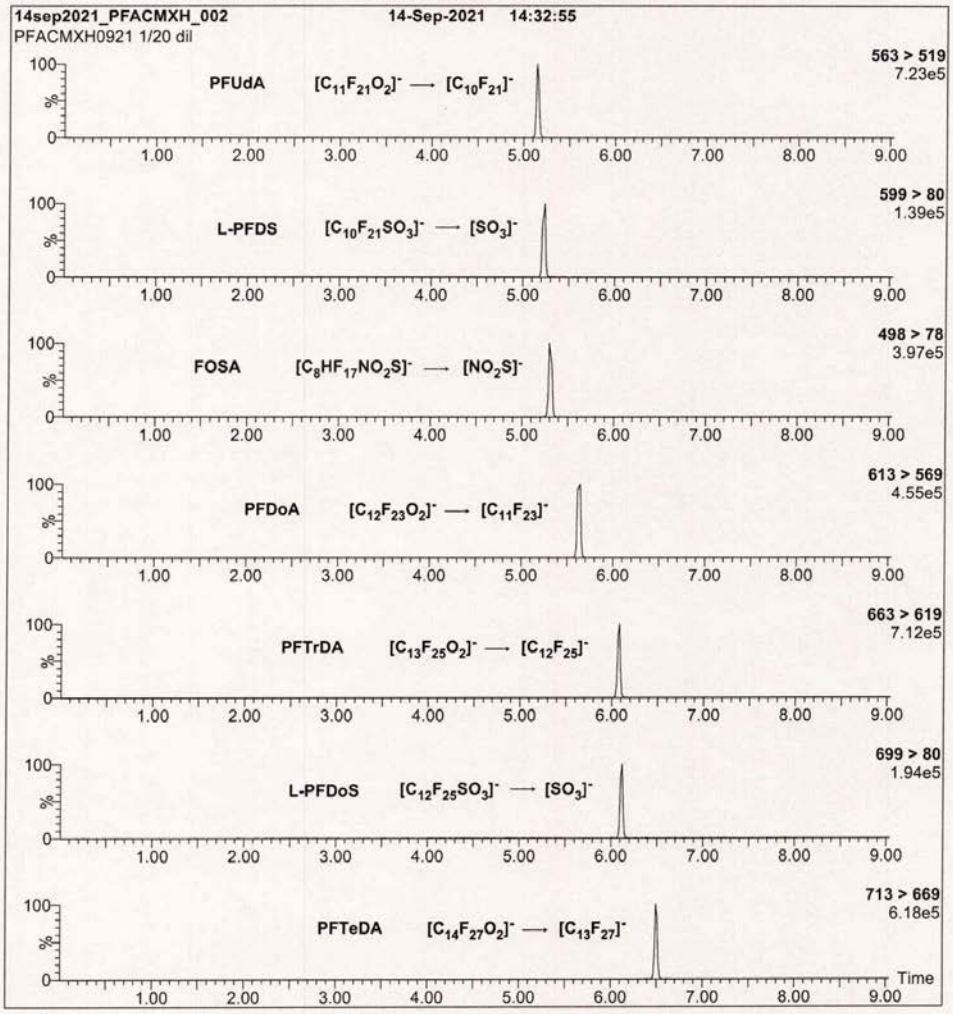
Figure 2: **PFAC-MXH; LC/MS/MS Data (Selected MRM Transitions)**



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PFACMXH0921 (10 of 11)
rev0

Figure 2: **PFAC-MXH; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (PFAC-MXH)

Mobile phase: Same as Figure 1

Flow: 300 µL/min

MS Parameters:
Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 6-60 (variable)

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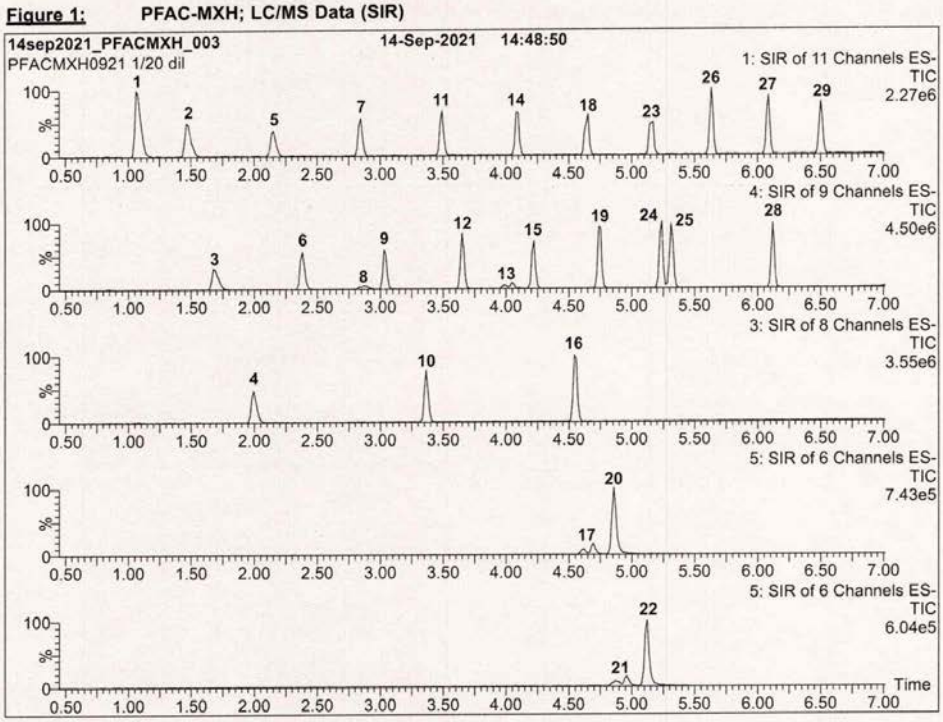
PFACMXH0921 (11 of 11)
rev0

Table E: **PFOSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

Isomer	Compound	Structure	Percent Composition by ^{19}F-NMR	
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	78.8	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	1.2	21.1
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	0.6	
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	1.9	
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	2.2	
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	4.5	
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	10.0	
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3C(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	0.2	
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF_2C(CF_3)CF_2CF_2CF_2SO_3^-K^+$	0.03	
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	0.4	
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	0.07	

* Percent of total perfluorooctanesulfonate isomers only.
** Systematic Name: Potassium perfluorooctane-2-sulfonate.

Figure 1: **PFAC-MXH; LC/MS Data (SIR)**



Conditions for Figure 1:

Waters Acquity Ultra Performance LC
Waters Xevo TQ-S micro MS

Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% H_2O / 50% (80:20 MeOH:ACN)
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 9 min and hold for 2 min
before returning to initial conditions in 1 min.
Time: 15 min

Flow: 300 µL/min

MS Parameters:

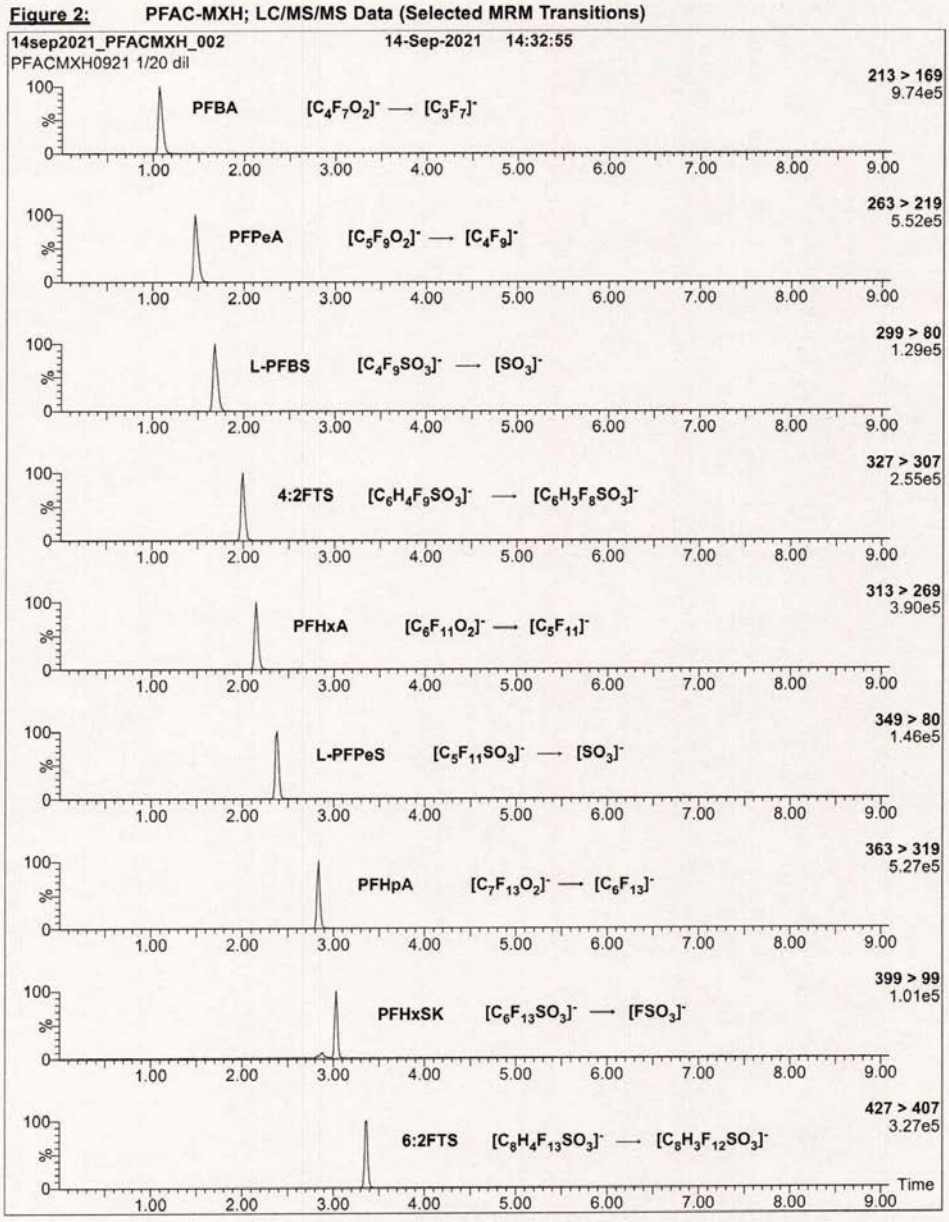
Experiment: SIR

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = variable (2-74)
Desolvation Temperature (°C) = 350
Desolvation Gas Flow (L/hr) = 1000

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Figure 2: **PFAC-MXH; LC/MS/MS Data (Selected MRM Transitions)**



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Table B: **br-NMeFOSAA; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

Isomer	Compound	Structure	Percent Composition by ^{19}F-NMR	
1	N-methylperfluoro-1-octanesulfonamidoacetic acid	$CF_3(CF_2)_7SO_2N(CH_3)CH_2CO_2H$	76.0	76.0
2	N-methylperfluoro-3-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_3CF(CF_3)(CF_2)_2SO_2N(CH_3)CH_2CO_2H$	0.7	24.0
3	N-methylperfluoro-4-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_2CF(CF_3)(CF_2)_3SO_2N(CH_3)CH_2CO_2H$	2.0	
4	N-methylperfluoro-5-methylheptanesulfonamidoacetic acid	$CF_3CF_2CF(CF_3)(CF_2)_4SO_2N(CH_3)CH_2CO_2H$	6.0	
5	N-methylperfluoro-6-methylheptanesulfonamidoacetic acid	$CF_3CF(CF_3)(CF_2)_5SO_2N(CH_3)CH_2CO_2H$	14.0	
6	N-methylperfluoro-5,5-dimethylhexanesulfonamidoacetic acid	$CF_3C(CF_3)_2(CF_2)_4SO_2N(CH_3)CH_2CO_2H$	0.2	
7	Other Unidentified Isomers		1.1	

* Percent of total N-methylperfluorooctanesulfonamidoacetic acid isomers only.

Table C: **br-NEtFOSAA; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

Isomer	Compound	Structure	Percent Composition by ^{19}F-NMR	
1	N-ethylperfluoro-1-octanesulfonamidoacetic acid	$CF_3(CF_2)_7SO_2NCH_2CO_2H$ C_2H_5	77.5	77.5
2	N-ethylperfluoro-3-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_3CF(CF_2)_2SO_2NCH_2CO_2H$ CF_3 C_2H_5	2.3	22.5
3	N-ethylperfluoro-4-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_2CF(CF_2)_3SO_2NCH_2CO_2H$ CF_3 C_2H_5	2.2	
4	N-ethylperfluoro-5-methylheptanesulfonamidoacetic acid	$CF_3CF_2CF(CF_2)_4SO_2NCH_2CO_2H$ CF_3 C_2H_5	5.4	
5	N-ethylperfluoro-6-methylheptanesulfonamidoacetic acid	$CF_3CF(CF_2)_5SO_2NCH_2CO_2H$ CF_3 C_2H_5	10.4	
6	N-ethylperfluoro-5,5-dimethylhexanesulfonamidoacetic acid	$CF_3C(CF_2)_4SO_2NCH_2CO_2H$ CF_3 C_2H_5	0.3	
7	N-ethylperfluoro-4,5-dimethylhexanesulfonamidoacetic acid	$CF_3CFCF(CF_2)_3SO_2NCH_2CO_2H$ CF_3 C_2H_5	0.3	
8	N-ethylperfluoro-3,5-dimethylhexanesulfonamidoacetic acid	$CF_3CFCF_2CF(CF_2)_2SO_2NCH_2CO_2H$ CF_3 C_2H_5	0.3	
9	Other Unidentified Isomers		1.3	

* Percent of total N-ethylperfluorooctanesulfonamidoacetic acid isomers only.

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rev0

Table D: **PFHxSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

Isomer	Compound	Structure	Percent Composition by ^{19}F-NMR	
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	2.9	18.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	1.4	
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	5.0	
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	8.9	
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	$CF_3C(CF_3)CF_2CF_2SO_3^-K^+$	0.2	
7	Other Unidentified Isomers		0.5	

* Percent of total perfluorohexanesulfonate isomers only.
** Systematic Name: Potassium perfluorohexane-2-sulfonate.

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PFAC-MXH

Native Per- and Poly-fluoroalkyl Substance Solution/Mixture

PRODUCT CODE:	PFAC-MXH
LOT NUMBER:	PFACMXH0921
SOLVENT(S):	Methanol / Isopropanol (2%) / Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	09/09/2021
LAST TESTED: (mm/dd/yyyy)	09/14/2021
EXPIRY DATE: (mm/dd/yyyy)	09/14/2026
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

PFAC-MXH is a solution/mixture of eleven native linear perfluoroalkylcarboxylic acids (C_4-C_{14}), eight native perfluoroalkanesulfonates (C_4, C_5, C_7, C_8, C_{10} and C_{12} linear; C_6 and C_8 linear and branched), three native fluorotelomer sulfonates (4:2, 6:2, and 8:2), two native linear and branched perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide (FOSA). The components and their concentrations are given in Table A.

The individual components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Table B: Isomeric Components and Percent Composition of br-NMeFOSAA
Table C: Isomeric Components and Percent Composition of br-NEtFOSAA
Table D: Isomeric Components and Percent Composition of PFHxSK
Table E: Isomeric Components and Percent Composition of PFOSK
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2,...x_n$ on which it depends is:

$$u_c(y(x_1, x_2,...x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A1226), and ISO 17034 by ANSI National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ANSI National Accreditation Board ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXH0921 (2 of 11)
rev0

Table A: **PFAC-MXH; Components and Concentrations (µg/mL, ± 5% in methanol / isopropanol (2%) / water (<1%))**

Compound	Acronym	Concentration* (µg/mL)	Peak Assignment in Figure 1
Perfluoro-n-butanoic acid	PFBA	4.00	1
Perfluoro-n-pentanoic acid	PFPeA	2.00	2
Perfluoro-n-hexanoic acid	PFHxA	1.00	5
Perfluoro-n-heptanoic acid	PFHpA	1.00	7
Perfluoro-n-octanoic acid	PFOA	1.00	11
Perfluoro-n-nonanoic acid	PFNA	1.00	14
Perfluoro-n-decanoic acid	PFDA	1.00	18
Perfluoro-n-undecanoic acid	PFUdA	1.00	23
Perfluoro-n-dodecanoic acid	PFDoA	1.00	26
Perfluoro-n-tridecanoic acid	PFTrDA	1.00	27
Perfluoro-n-tetradecanoic acid	PFTeDA	1.00	29
Perfluoro-1-octanesulfonamide	FOSA	1.00	25
N-methylperfluorooctanesulfonamidoacetic acid [a]	N-MeFOSAA: linear isomer	0.760	20
	N-MeFOSAA: ∑ branched isomers	0.240	17
N-ethylperfluorooctanesulfonamidoacetic acid [b]	N-EtFOSAA: linear isomer	0.775	22
	N-EtFOSAA: ∑ branched isomers	0.225	21

Compound	Acronym	Concentration* (µg/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro-1-butanesulfonate	L-PFBS	1.00	0.887	3
Sodium perfluoro-1-pentanesulfonate	L-PFPeS	1.00	0.941	6
Potassium perfluorohexanesulfonate [c]	PFHxSK: linear isomer	0.811	0.741	9
	PFHxSK: ∑ branched isomers	0.189	0.173	8
Sodium perfluoro-1-heptanesulfonate	L-PFHpS	1.00	0.953	12
Potassium perfluorooctanesulfonate [d]	PFOSK: linear isomer	0.788	0.732	15
	PFOSK: ∑ branched isomers	0.211	0.196	13
Sodium perfluoro-1-nonanesulfonate	L-PFNS	1.00	0.962	19
Sodium perfluoro-1-decanesulfonate	L-PFDS	1.00	0.965	24
Sodium perfluoro-1-dodecanesulfonate	L-PFDoS	1.00	0.970	28
Sodium 1H,1H,2H,2H-perfluorohexanesulfonate	4:2FTS	4.00	3.75	4
Sodium 1H,1H,2H,2H-perfluorooctanesulfonate	6:2FTS	4.00	3.80	10
Sodium 1H,1H,2H,2H-perfluorodecanesulfonate	8:2FTS	4.00	3.84	16

[a] See Table B for percent composition of linear and branched N-MeFOSAA isomers.
[b] See Table C for percent composition of linear and branched N-EtFOSAA isomers.
[c] See Table D for percent composition of linear and branched PFHxSK isomers.
[d] See Table E for percent composition of linear and branched PFOSK isomers.

* Concentrations have been rounded to three significant figures.

Certified By: _____ **Date:** 09/23/2021 (mm/dd/yyyy)
B.G. Chittim, General Manager

Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXH0921 (3 of 11)
rev0

YORK
ANALYTICAL LABORATORIES, INC.

Analytical Standard Record

Standard ID: **Y22B201**

Description:	PFAC-MXH STOCK PFAS EPA 1633	Prepared:	02/17/2022
Standard Type:	Other	**Expires:**	**09/14/2026**
Solvent:	MeOH/IPA/H2O	Prepared By:	Robert Q. Bradley
Final Volume (mls):	1	Department:	PFAS
Vials:	1	Lot No.:	PFACMXH0921
Vendor:	Wellington Laboratories		

Comments:

Analyte	CAS Number	Concentration	Units
1H,1H,2H,2H-Perfluorodecanesulfonic acid	39108-34-4	3.84	ug/mL
1H,1H,2H,2H-Perfluorohexanesulfonic acid	757124-72-4	3.75	ug/mL
1H,1H,2H,2H-Perfluorooctanesulfonic acid	27619-97-2	3.8	ug/mL
N-EtFOSAA	2991-50-6	1	ug/mL
N-MeFOSAA	2355-31-9	1	ug/mL
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	0.965	ug/mL
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	0.953	ug/mL
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	0.962	ug/mL
Perfluoro-1-octanesulfonamide (FOSA)	754-91-6	1	ug/mL
Perfluoro-1-pentanesulfonate (PFPeS)	2706-91-4	0.941	ug/mL
Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.887	ug/mL
Perfluorodecanesulfonic acid(PFDS)	335-77-3	0.965	ug/mL
Perfluorodecanoic acid (PFDA)	335-76-2	1	ug/mL
Perfluorododecanoic acid (PFDoA)	307-55-1	1	ug/mL
Perfluoroheptanoic acid (PFHpA)	375-85-9	1	ug/mL
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.914	ug/mL
Perfluorohexanoic acid (PFHxA)	307-24-4	1	ug/mL
Perfluoro-n-butanoic acid (PFBA)	375-22-4	4	ug/mL
Perfluorononanoic acid (PFNA)	375-95-1	1	ug/mL
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.928	ug/mL
Perfluorooctanoic acid (PFOA)	335-67-1	1	ug/mL
Perfluoropentanoic acid (PFPeA)	2706-90-3	1	ug/mL
Perfluorotetradecanoic acid (PFTA)	376-06-7	1	ug/mL
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	1	ug/mL
Perfluoroundecanoic acid (PFUnA)	2058-94-8	1	ug/mL

Reviewed By Date

Page 1 of 1

Attachment 4 – Calibration Concentrations, nominal

Calibration Solutions (ng/mL) Compound CS1 (LOQ) CS2 Perfluoroalkyl carboxylic acids			CS3	CS4 (CV[1])	CS5	CS6	CS7[2]
acids							
PFBA	0.8	2	5	10	20	50	250
PFPeA	0.4	1	2.5	5	10	25	125
PFHxA	0.2	0.5	1.25	2.5	5	12.5	62.5
PFHpA	0.2	0.5	1.25	2.5	5	12.5	62.5
PFOA	0.2	0.5	1.25	2.5	5	12.5	62.5
PFNA	0.2	0.5	1.25	2.5	5	12.5	62.5
PFDA	0.2	0.5	1.25	2.5	5	12.5	62.5
PFUnA	0.2	0.5	1.25	2.5	5	12.5	62.5
PFDoA	0.2	0.5	1.25	2.5	5	12.5	62.5
PFTrDA	0.2	0.5	1.25	2.5	5	12.5	62.5
PFTeDA	0.2	0.5	1.25	2.5	5	12.5	62.5
Perfluoroalkyl sulfonic acids							
PFBS	0.2	0.5	1.25	2.5	5	12.5	62.5
PFPeS	0.2	0.5	1.25	2.5	5	12.5	62.5
PFHxS	0.2	0.5	1.25	2.5	5	12.5	62.5
PFHpS	0.2	0.5	1.25	2.5	5	12.5	62.5
PFOS	0.2	0.5	1.25	2.5	5	12.5	62.5
PFNS	0.2	0.5	1.25	2.5	5	12.5	62.5
PFDS	0.2	0.5	1.25	2.5	5	12.5	62.5
PFDoS	0.2	0.5	1.25	2.5	5	12.5	62.5
Fluorotelomer sulfonic acids							
4:2FTS	0.8	2	5	10	20	50	NA
6:2FTS	0.8	2	5	10	20	50	NA
8:2FTS	0.8	2	5	10	20	50	NA
Perfluorooctane sulfonamides							
PFOSA	0.2	0.5	1.25	2.5	5	12.5	62.5
NMeFOSA	0.2	0.5	1.25	2.5	5	12.5	62.5
NEtFOSA	0.2	0.5	1.25	2.5	5	12.5	62.5
Perfluorooctane sulfonamidoacetic acids							
NMeFOSAA	0.2	0.5	1.25	2.5	5	12.5	62.5
NEtFOSAA	0.2	0.5	1.25	2.5	5	12.5	62.5
Perfluorooctane sulfonamide ethanols							
NMeFOSE	2	5	12.5	25	50	125	625
NEtFOSE	2	5	12.5	25	50	125	625
Per- and polyfluoroether carboxylic acids							
HFPO-DA	0.8	2	5	10	20	50	250
ADONA	0.8	2	5	10	20	50	250
PFMPA	0.4	1	2.5	5	10	25	125
PFMBA	0.4	1	2.5	5	10	25	125
NFDHA	0.4	1	2.5	5	10	25	125
Ether sulfonic acids							
9Cl-PF3ONS	0.8	2	5	10	20	50	250
11Cl-PF3OUdS	0.8	2	5	10	20	50	250
PFEESA	0.4	1	2.5	5	10	25	125

Calibration Solutions (ng/mL) Compound CS1 (LOQ) CS2 Fluorotelomer carboxylic			CS3	CS4 (CV[1])	CS5	CS6	CS7[2]
acids							
3:3FTCA	1.0	2.5	6.26	12.5	25	62.4	312
5:3FTCA	5.0	12.5	31.3	62.5	125	312	1560
7:3FTCA	5.0	12.5	31.3	62.5	125	312	1560
Extracted Internal Standard (EIS) Analytes							
$^{13}C_4$-PFBA	10	10	10	10	10	10	10
$^{13}C_5$-PFPeA	5	5	5	5	5	5	5
$^{13}C_5$-PFHxA	2.5	2.5	2.5	2.5	2.5	2.5	2.5
$^{13}C_4$-PFHpA	2.5	2.5	2.5	2.5	2.5	2.5	2.5
$^{13}C_8$-PFOA	2.5	2.5	2.5	2.5	2.5	2.5	2.5
$^{13}C_9$-PFNA	1.25	1.25	1.25	1.25	1.25	1.25	1.25
$^{13}C_6$-PFDA	1.25	1.25	1.25	1.25	1.25	1.25	1.25
$^{13}C_7$-PFUnA	1.25	1.25	1.25	1.25	1.25	1.25	1.25
$^{13}C_2$-PFDoA	1.25	1.25	1.25	1.25	1.25	1.25	1.25
$^{13}C_2$-PFTeDA	1.25	1.25	1.25	1.25	1.25	1.25	1.25
$^{13}C_3$-PFBS	2.5	2.5	2.5	2.5	2.5	2.5	2.5
$^{13}C_3$-PFHxS	2.5	2.5	2.5	2.5	2.5	2.5	2.5
$^{13}C_8$-PFOS	2.5	2.5	2.5	2.5	2.5	2.5	2.5
$^{13}C_2$-4:2FTS	5	5	5	5	5	5	5
$^{13}C_2$-6:2FTS	5	5	5	5	5	5	5
$^{13}C_2$-8:2FTS	5	5	5	5	5	5	5
$^{13}C_8$-PFOSA	2.5	2.5	2.5	2.5	2.5	2.5	2.5
D_3-NMeFOSA	2.5	2.5	2.5	2.5	2.5	2.5	2.5
D_5-NEtFOSA	2.5	2.5	2.5	2.5	2.5	2.5	2.5
D_3-NMeFOSAA	5	5	5	5	5	5	5
D_5-NEtFOSAA	5	5	5	5	5	5	5
D_7-NMeFOSE	25	25	25	25	25	25	25
D_9-NEtFOSE	25	25	25	25	25	25	25
$^{13}C_3$-HFPO-DA	10	10	10	10	10	10	10
Non-extracted Internal Standard (NIS) Analytes							
$^{13}C_3$-PFBA	5	5	5	5	5	5	5
$^{13}C_2$-PFHxA	2.5	2.5	2.5	2.5	2.5	2.5	2.5
$^{13}C_4$-PFOA	2.5	2.5	2.5	2.5	2.5	2.5	2.5
$^{13}C_5$-PFNA	1.25	1.25	1.25	1.25	1.25	1.25	1.25
$^{13}C_2$-PFDA	1.25	1.25	1.25	1.25	1.25	1.25	1.25
$^{18}O_2$-PFHxS	2.5	2.5	2.5	2.5	2.5	2.5	2.5
$^{13}C_4$-PFOS	2.5	2.5	2.5	2.5	2.5	2.5	2.5

[1] This calibration point is used as the calibration verification (CV)

[2] A minimum of six contiguous calibrations standards are required for linear models and a minimum of seven calibration standards are required for second-order models.

Attachment 5 -HPLC Method Parameters

HPLC Acquisition Method Report

Stroke A
Automatic Stroke Calculation A Yes

Compress A
Compressibility Mode A Compressibility Value Set
Compressibility A 70 10e-6/bar

Compress B
Compressibility Mode B Compressibility Value Set
Compressibility B 90 10e-6/bar

Stop Time
Stoptime Mode Time set
Stoptime 10.00 min

Post Time
Posttime Mode Time set
Posttime 1.50 min

Injection
Injection with needle wash
3.00 µL

Solvent Composition

	Channel	Name 1	Name 2	Selected	Used	Percent
1	A	Water 5mM ammonium acetate		Ch. 1	Yes	90.00 %
2	B	Methanol		Ch. 1	Yes	10.00 %

Timetable

	Time	A	B	Flow
1	3.50 min	50.00 %	50.00 %	0.400 mL/min
2	8.00 min	10.00 %	90.00 %	0.400 mL/min
3	8.50 min	90.00 %	10.00 %	0.400 mL/min

Name: **Column Comp.** Module: **G1316C**

Left Temperature Control
Temperature Control Mode Temperature Set
Temperature 50.0 °C
Enable Analysis Left Temperature
Enable Analysis Left Temperature On Yes
Enable Analysis Left Temperature Value 0.8 °C

Right Temperature Control
Right temperature Control Mode Temperature Set
Right temperature 50.0 °C
Enable Analysis Right Temperature
Enable Analysis Right Temperature On Yes
Enable Analysis Right Temperature Value 0.8 °C

Stop Time
Stoptime Mode As pump/injector

Post Time
Posttime Mode Off

Timetable
Valve Position Position 1 (Port 1 -> 2)
Ready when front door open Yes

Attachment 6 - Triple Quadrupole Acquisition Method

Acquisition Method Report

Agilent Technologies

Acquisition Method Info

Method Name PFAS1633_ACQ_092922.m

Method Path D:\MassHunter\methods\PFAS1633_ACQ_092922.m

Method Description EPA 1633_Target PFAS Isotope Dilution_Acquisition

Device List

HiP Sampler
Binary Pump
Column Comp.
QQQ

MS QQQ Mass Spectrometer

Ion Source	AJS ESI	**Tune File**	D:\MassHunter\Tune\QQQ\G6460C\atunes.TUNE.XML
Stop Mode	No Limit/As Pump	**Stop Time (min)**	1
Time Filter	On	**Time Filter Width (min)**	0.07
LC->Waste Pre Row	N/A	**LC->Waste Post Row**	N/A

Time Segments

Index	Start Time (min)	Scan Type	Ion Mode	Div Valve	Delta EMV	Store	Cycle Time (ms)	Triggered?	MRM Repeats
1	0	DynamicMRM	ESI+Agilent Jet Stream	To MS	350	Yes	550	Yes	3

Time Segment 1

Scan Segments

Cpd Name	ISTD?	Prec Ion	MS1 Res	Prod Ion	MS2 Res	Primary	Trigger	Frag (V)	CE (V)	Cell Acc (V)	Ret Time (min)	Ret Window	Polarity
11-Cl-PF3OUdS	No	631	Unit/Enh (6490)	451	Unit/Enh (6490)	Yes	No	170	33	4	7.62	3	Negative
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	No	527	Unit/Enh (6490)	507	Unit/Enh (6490)	Yes	No	170	28	4	7.14	3	Negative
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	No	527	Unit/Enh (6490)	80.9	Unit/Enh (6490)	Yes	No	170	40	4	7.14	3	Negative
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	No	327	Unit/Enh (6490)	307	Unit/Enh (6490)	Yes	No	162	20	4	4.788	3	Negative
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	No	327	Unit/Enh (6490)	80.9	Unit/Enh (6490)	Yes	No	162	36	4	4.788	3	Negative
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	No	427	Unit/Enh (6490)	407	Unit/Enh (6490)	Yes	No	162	24	4	6.168	3	Negative
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	No	427	Unit/Enh (6490)	79.7	Unit/Enh (6490)	Yes	No	162	48	4	6.168	3	Negative
3:3FTCA	No	241	Unit/Enh (6490)	177	Unit/Enh (6490)	Yes	No	74	4	4	3.4	3	Negative
3-3FTCA	No	241	Unit/Enh (6490)	117	Unit/Enh (6490)	Yes	No	74	44	4	3.4	3	Negative

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Acquisition Method Report

Agilent Technologies

Cpd Name	ISTD?	Prec Ion	MS1 Res	Prod Ion	MS2 Res	Primary	Trigger	Frag (V)	CE (V)	Cell Acc (V)	Ret Time (min)	Ret Window	Polarity
5-3FTCA	No	341	Unit/Enh (6490)	237	Unit/Enh (6490)	Yes	No	84	12	4	5.73	3	Negative
5-3FTCA	No	341	Unit/Enh (6490)	217	Unit/Enh (6490)	Yes	No	84	24	4	5.73	3	Negative
7-3FTCA	No	441	Unit/Enh (6490)	337	Unit/Enh (6490)	Yes	No	76	12	4	6.7	3	Negative
7-3FTCA	No	441	Unit/Enh (6490)	317	Unit/Enh (6490)	Yes	No	76	24	4	6.7	3	Negative
9-Cl-PF3ONS	No	531	Unit/Enh (6490)	351	Unit/Enh (6490)	Yes	No	175	29	4	6.89	3	Negative
ADONA	No	377	Unit/Enh (6490)	251	Unit/Enh (6490)	Yes	No	103	9	4	5.62	3	Negative
ADONA	No	377	Unit/Enh (6490)	85	Unit/Enh (6490)	Yes	No	103	37	4	5.62	3	Negative
d3-NMeFOSA	No	515	Unit/Enh (6490)	219	Unit/Enh (6490)	Yes	No	134	20	4	7.17	3	Negative
d3-N-MeFOSAA	No	572.99	Unit/Enh (6490)	418.8	Unit/Enh (6490)	Yes	No	130	20	4	7.17	3	Negative
d5-NEtFOSA	No	531	Unit/Enh (6490)	219	Unit/Enh (6490)	Yes	No	150	20	4	8.52	3	Negative
d5-NEtFOSA	No	531	Unit/Enh (6490)	169	Unit/Enh (6490)	Yes	No	150	20	4	8.52	3	Negative
d5-N-EtFOSAA	No	589.02	Unit/Enh (6490)	530.9	Unit/Enh (6490)	Yes	No	130	20	4	7.36	3	Negative
d5-N-EtFOSAA	No	589.02	Unit/Enh (6490)	418.8	Unit/Enh (6490)	Yes	No	130	20	4	7.36	3	Negative
d7-NMeFOSE	No	623	Unit/Enh (6490)	310	Unit/Enh (6490)	Yes	No	150	15	4	8.28	3	Negative
d7-NMeFOSE	No	623	Unit/Enh (6490)	59	Unit/Enh (6490)	Yes	No	88	15	4	8.28	3	Negative
d9-NEtFOSE	No	639	Unit/Enh (6490)	59	Unit/Enh (6490)	Yes	No	150	15	4	8.6	3	Negative
HFPO-DA	No	285	Unit/Enh (6490)	169.1	Unit/Enh (6490)	Yes	No	100	20	4	4.95	3	Negative
M2-4-2FTS	No	329	Unit/Enh (6490)	309	Unit/Enh (6490)	Yes	No	156	20	4	4.787	3	Negative
M2-4-2FTS	No	329	Unit/Enh (6490)	81	Unit/Enh (6490)	Yes	No	156	28	4	4.787	3	Negative
M2-6-2FTS	No	429	Unit/Enh (6490)	409	Unit/Enh (6490)	Yes	No	162	24	4	6.01	3	Negative
M2-6-2FTS	No	429	Unit/Enh (6490)	81	Unit/Enh (6490)	Yes	No	162	40	4	6.01	3	Negative
M2-8-2FTS	No	529	Unit/Enh (6490)	509	Unit/Enh (6490)	Yes	No	165	28	4	6.98	3	Negative
M2-8-2FTS	No	529	Unit/Enh (6490)	81	Unit/Enh (6490)	Yes	No	165	40	4	6.98	3	Negative
M2PFTeDA	No	715	Unit/Enh (6490)	670	Unit/Enh (6490)	Yes	No	62	12	4	8.25	3	Negative
M3-HFPO-DA	No	287	Unit/Enh (6490)	169	Unit/Enh (6490)	Yes	No	90	5	4	4.99	3	Negative
M3PFBA	Yes	216	Unit/Enh (6490)	172	Unit/Enh (6490)	Yes	No	90	5	4	1.2	2	Negative
M3PFBS	No	302	Unit/Enh (6490)	98.9	Unit/Enh (6490)	Yes	No	114	32	4	3.94	3	Negative
M3PFBS	No	302	Unit/Enh (6490)	79.9	Unit/Enh (6490)	Yes	No	114	40	4	3.94	3	Negative
M3PFHxS	No	402	Unit/Enh (6490)	98.9	Unit/Enh (6490)	Yes	No	165	40	4	5.55	3	Negative
M3PFHxS	No	402	Unit/Enh (6490)	80	Unit/Enh (6490)	Yes	No	165	48	4	5.55	3	Negative
M4PFHpA	No	367	Unit/Enh (6490)	322	Unit/Enh (6490)	Yes	No	124	8	4	5.601	3	Negative
M5PFHxA	No	318	Unit/Enh (6490)	273	Unit/Enh (6490)	Yes	No	70	4	4	5.47	3	Negative
M5PFHxA	No	318	Unit/Enh (6490)	120	Unit/Enh (6490)	Yes	No	70	4	4	5.47	3	Negative
M6PFDA	No	519	Unit/Enh (6490)	473.9	Unit/Enh (6490)	Yes	No	59	8	4	6.99	3	Negative
M7PFUdA	No	570	Unit/Enh (6490)	525	Unit/Enh (6490)	Yes	No	64	8	4	7.38	3	Negative
MPFDA	Yes	514.98	Unit/Enh (6490)	469.8	Unit/Enh (6490)	Yes	No	94	5	4	6.972	2	Negative
MPFHxA	Yes	314.99	Unit/Enh (6490)	269.8	Unit/Enh (6490)	Yes	No	86	4	4	4.705	2	Negative
MPFHxA	Yes	314.99	Unit/Enh (6490)	120	Unit/Enh (6490)	Yes	No	86	4	4	4.705	2	Negative
MPFHxS	Yes	403	Unit/Enh (6490)	103	Unit/Enh (6490)	Yes	No	110	37	4	5.63	2	Negative
MPFHxS	Yes	403	Unit/Enh (6490)	84	Unit/Enh (6490)	Yes	No	110	40	4	5.63	2	Negative
MPFNA	Yes	468	Unit/Enh (6490)	423	Unit/Enh (6490)	Yes	No	66	4	4	6.541	2	Negative
MPFOA	Yes	417	Unit/Enh (6490)	372	Unit/Enh (6490)	Yes	No	84	4	4	6.03	2	Negative
MPFOS	Yes	502.96	Unit/Enh (6490)	99	Unit/Enh (6490)	Yes	No	148	48	4	6.57	3	Negative

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Acquisition Method Report

Agilent Technologies

Cpd Name	ISTD?	Prec Ion	MS1 Res	Prod Ion	MS2 Res	Primary	Trigger	Frag (V)	CE (V)	Cell Acc (V)	Ret Time (min)	Ret Window	Polarity
MPFOS	Yes	502.96	Unit/Enh (6490)	80	Unit/Enh (6490)	Yes	No	148	54	4	6.57	3	Negative
NEtFOSA	No	526	Unit/Enh (6490)	219	Unit/Enh (6490)	Yes	No	120	20	4	8.528	3	Negative
NEtFOSA	No	526	Unit/Enh (6490)	169	Unit/Enh (6490)	Yes	No	120	20	4	8.528	3	Negative
N-EtFOSAA	No	584	Unit/Enh (6490)	525.9	Unit/Enh (6490)	Yes	No	130	20	4	7.521	3	Negative
N-EtFOSAA	No	584	Unit/Enh (6490)	418.8	Unit/Enh (6490)	Yes	No	130	20	4	7.521	3	Negative
NEtFOSE	No	630	Unit/Enh (6490)	59	Unit/Enh (6490)	Yes	No	120	20	4	8.301	3	Negative
NFDHA	No	295	Unit/Enh (6490)	201.1	Unit/Enh (6490)	Yes	No	92	2	4	4.641	3	Negative
NFDHA	No	295	Unit/Enh (6490)	84.9	Unit/Enh (6490)	Yes	No	92	34	4	4.641	3	Negative
NMeFOSA	No	512	Unit/Enh (6490)	219	Unit/Enh (6490)	Yes	No	120	20	4	8.298	3	Negative
NMeFOSA	No	512	Unit/Enh (6490)	169	Unit/Enh (6490)	Yes	No	120	20	4	8.298	3	Negative
N-MeFOSAA	No	570	Unit/Enh (6490)	511.9	Unit/Enh (6490)	Yes	No	150	20	4	7.335	3	Negative
N-MeFOSAA	No	570	Unit/Enh (6490)	418.9	Unit/Enh (6490)	Yes	No	150	20	4	7.335	3	Negative
NMeFOSE	No	616	Unit/Enh (6490)	59	Unit/Enh (6490)	Yes	No	120	20	4	8.301	3	Negative
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	No	506	Unit/Enh (6490)	78	Unit/Enh (6490)	Yes	No	162	48	4	7.59	3	Negative
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	No	507	Unit/Enh (6490)	98.9	Unit/Enh (6490)	Yes	No	174	48	4	6.59	3	Negative
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	No	507	Unit/Enh (6490)	80	Unit/Enh (6490)	Yes	No	174	54	4	6.59	3	Negative
Perfluoro-1-decanesulfonate (L-PFDS)	No	598.9	Unit/Enh (6490)	98.9	Unit/Enh (6490)	Yes	No	156	50	4	7.546	3	Negative
Perfluoro-1-decanesulfonate (L-PFDS)	No	598.9	Unit/Enh (6490)	98.9	Unit/Enh (6490)	Yes	No	100	60	4	7.546	3	Negative
Perfluoro-1-heptanesulfonate (L-PFHpS)	No	448.9	Unit/Enh (6490)	98.9	Unit/Enh (6490)	Yes	No	162	48	4	6.252	3	Negative
Perfluoro-1-heptanesulfonate (L-PFHpS)	No	448.9	Unit/Enh (6490)	80	Unit/Enh (6490)	Yes	No	162	48	4	6.252	3	Negative
Perfluoro-1-octanesulfonamide (FOSA)	No	497.9	Unit/Enh (6490)	478	Unit/Enh (6490)	Yes	No	156	100	4	7.651	3	Negative
Perfluoro-1-octanesulfonamide (FOSA)	No	497.9	Unit/Enh (6490)	78	Unit/Enh (6490)	Yes	No	156	40	4	7.651	3	Negative
Perfluoro-1-pentanesulfonate (L-PFPeS)	No	348.9	Unit/Enh (6490)	98.9	Unit/Enh (6490)	Yes	No	150	36	4	5.042	3	Negative
Perfluoro-1-pentanesulfonate (L-PFPeS)	No	348.9	Unit/Enh (6490)	79.9	Unit/Enh (6490)	Yes	No	150	40	4	5.042	3	Negative

Acquisition Method Report

Agilent Technologies

Cpd Name	ISTD?	Prec Ion	MS1 Res	Prod Ion	MS2 Res	Primary	Trigger	Frag (V)	CE (V)	Cell Acc (V)	Ret Time (min)	Ret Window	Polarity
Perfluorobutanesulfonic acid (PFBS)	No	298.9	Unit/Enh (6490)	98.9	Unit/Enh (6490)	Yes	No	150	32	4	4.042	3	Negative
Perfluorobutanesulfonic acid (PFBS)	No	298.9	Unit/Enh (6490)	79.9	Unit/Enh (6490)	Yes	No	150	36	4	4.042	3	Negative
Perfluorodecanoic acid (PFDA)	No	513	Unit/Enh (6490)	468.8	Unit/Enh (6490)	Yes	No	90	8	4	7.158	3	Negative
Perfluorodecanoic acid (PFDA)	No	513	Unit/Enh (6490)	268.8	Unit/Enh (6490)	Yes	No	90	16	4	7.158	3	Negative
Perfluorododecanesulfonic acid (PFDoS)	No	699	Unit/Enh (6490)	99	Unit/Enh (6490)	Yes	No	100	60	4	7.984	3	Negative
Perfluorododecanesulfonic acid (PFDoS)	No	699	Unit/Enh (6490)	80	Unit/Enh (6490)	Yes	No	156	50	4	7.984	3	Negative
Perfluorododecanoic acid (PFDoA)	No	613	Unit/Enh (6490)	568.8	Unit/Enh (6490)	Yes	No	90	12	4	7.876	3	Negative
Perfluorododecanoic acid (PFDoA)	No	613	Unit/Enh (6490)	168.7	Unit/Enh (6490)	Yes	No	90	28	4	7.876	3	Negative
Perfluoroheptanoic acid (PFHpA)	No	363	Unit/Enh (6490)	318.8	Unit/Enh (6490)	Yes	No	90	8	4	5.601	3	Negative
Perfluoroheptanoic acid (PFHpA)	No	363	Unit/Enh (6490)	168.9	Unit/Enh (6490)	Yes	No	90	16	4	5.601	3	Negative
Perfluorohexanesulfonic acid (PFHxS)	No	398.9	Unit/Enh (6490)	98.9	Unit/Enh (6490)	Yes	No	150	40	4	5.685	3	Negative
Perfluorohexanesulfonic acid (PFHxS)	No	398.9	Unit/Enh (6490)	79.9	Unit/Enh (6490)	Yes	No	150	44	4	5.685	3	Negative
Perfluorohexanoic acid (PFHxA)	No	313	Unit/Enh (6490)	268.9	Unit/Enh (6490)	Yes	No	70	4	4	4.856	3	Negative
Perfluorohexanoic acid (PFHxA)	No	313	Unit/Enh (6490)	119	Unit/Enh (6490)	Yes	No	70	20	4	4.856	3	Negative
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	No	615	Unit/Enh (6490)	570	Unit/Enh (6490)	Yes	No	53	8	4	7.71	3	Negative
Perfluoro-n-[13C4]butanoic acid (MPFBA)	No	217	Unit/Enh (6490)	172	Unit/Enh (6490)	Yes	No	59	4	4	1.22	3	Negative
Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	No	268	Unit/Enh (6490)	223	Unit/Enh (6490)	Yes	No	62	4	4	3.44	3	Negative
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	No	421	Unit/Enh (6490)	376	Unit/Enh (6490)	Yes	No	59	4	4	6.05	3	Negative
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	No	421	Unit/Enh (6490)	172	Unit/Enh (6490)	Yes	No	59	16	4	6.05	3	Negative

Acquisition Method Report

Agilent Technologies

Cpd Name	ISTD?	Prec Ion	MS1 Res	Prod Ion	MS2 Res	Primary	Trigger	Frag (V)	CE (V)	Cell Acc (V)	Ret Time (min)	Ret Window	Polarity
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	No	472	Unit/Enh (6490)	427	Unit/Enh (6490)	Yes	No	59	8	4	6.56	3	Negative
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	No	472	Unit/Enh (6490)	223	Unit/Enh (6490)	Yes	No	59	16	4	6.56	3	Negative
Perfluoro-n-butanoic acid (PFBA)	No	213	Unit/Enh (6490)	169.9	Unit/Enh (6490)	Yes	No	70	4	4	1.246	3	Negative
Perfluorononanesulfonate (L-PFNS)	No	548.9	Unit/Enh (6490)	98.9	Unit/Enh (6490)	Yes	No	159	48	4	7.174	3	Negative
Perfluorononanesulfonate (L-PFNS)	No	548.9	Unit/Enh (6490)	79.9	Unit/Enh (6490)	Yes	No	159	48	4	7.174	3	Negative
Perfluorononanoic acid (PFNA)	No	463	Unit/Enh (6490)	418.8	Unit/Enh (6490)	Yes	No	90	8	4	6.718	3	Negative
Perfluorononanoic acid (PFNA)	No	463	Unit/Enh (6490)	218.8	Unit/Enh (6490)	Yes	No	90	16	4	6.718	3	Negative
Perfluoro-n-pentanoic acid (PFPeA)	No	263	Unit/Enh (6490)	219	Unit/Enh (6490)	Yes	No	62	4	4	3.526	3	Negative
Perfluorooctanesulfonic acid (PFOS)	No	498.9	Unit/Enh (6490)	98.9	Unit/Enh (6490)	Yes	No	150	44	4	6.743	3	Negative
Perfluorooctanesulfonic acid (PFOS)	No	498.9	Unit/Enh (6490)	79.9	Unit/Enh (6490)	Yes	No	150	84	4	6.743	3	Negative
Perfluorooctanoic acid (PFOA)	No	413	Unit/Enh (6490)	368.8	Unit/Enh (6490)	Yes	No	90	8	4	6.202	3	Negative
Perfluorooctanoic acid (PFOA)	No	413	Unit/Enh (6490)	168.9	Unit/Enh (6490)	Yes	No	90	16	4	6.202	3	Negative
Perfluorotetradecanoic acid (PFTA)	No	713	Unit/Enh (6490)	669	Unit/Enh (6490)	Yes	No	110	12	4	8.414	3	Negative
Perfluorotetradecanoic acid (PFTA)	No	713	Unit/Enh (6490)	168.8	Unit/Enh (6490)	Yes	No	110	28	4	8.414	3	Negative
Perfluorotridecanoic acid (PFTrDA)	No	663	Unit/Enh (6490)	618.8	Unit/Enh (6490)	Yes	No	90	12	4	8.164	3	Negative
Perfluoroundecanoic acid (PFUnA)	No	563	Unit/Enh (6490)	519	Unit/Enh (6490)	Yes	No	90	8	4	7.538	3	Negative
Perfluoroundecanoic acid (PFUnA)	No	563	Unit/Enh (6490)	169	Unit/Enh (6490)	Yes	No	90	24	4	7.538	3	Negative
PFEESA	No	315	Unit/Enh (6490)	135	Unit/Enh (6490)	Yes	No	112	26	4	4.464	3	Negative
PFEESA	No	315	Unit/Enh (6490)	83	Unit/Enh (6490)	Yes	No	112	14	4	4.464	3	Negative
PFMBA	No	279	Unit/Enh (6490)	85	Unit/Enh (6490)	Yes	No	75	18	4	4.011	3	Negative
PFMPA	No	229	Unit/Enh (6490)	85	Unit/Enh (6490)	Yes	No	59	6	4	2.15	3	Negative

Scan Parameters

Data Stg	Threshold
Centroid	0

Acquisition Method Report

Agilent Technologies

Source Parameters

Parameter	Value (+)	Value (-)
Gas Temp (°C)	230	230
Gas Flow (l/min)	5	5
Nebulizer (psi)	15	15
SheathGasHeater	350	350
SheathGasFlow	12	12
Capillary (V)	3500	2500
VCharging	500	0

Chromatograms

Chrom Type	Label	Offset	Y-Range
TIC	TIC	0	10000000

Instrument Curves

Actual

Name: HiP Sampler **Module: G4226A**

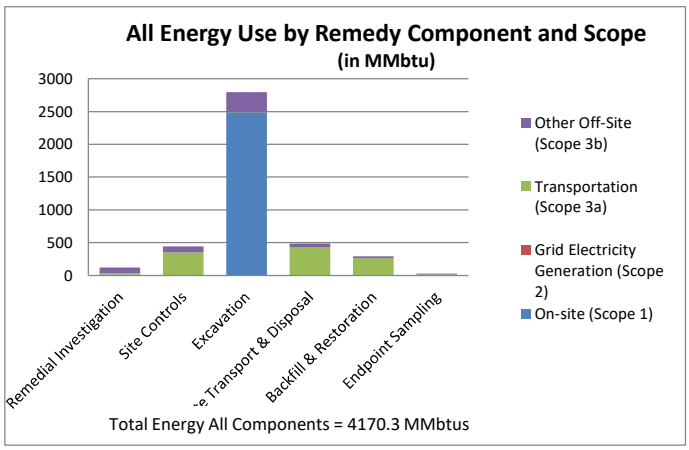
Auxiliary	
Draw Speed	100.0 µL/min
Eject Speed	400.0 µL/min
Draw Position Offset	1.5 mm
Wait Time After Drawing	1.2 s
Sample Flush Out Factor	5.0
Vial/Well bottom sensing	Yes
Injection	
Injection Mode	Injection with needle wash
Injection Volume	3.00 µL
Needle Wash	
Needle Wash Location	Flush Port
Wash Time	10.0 s
High throughput	
Automatic Delay Volume Reduction	No
Overlapped Injection	
Enable Overlapped Injection	No
Valve Switching	
Valve Movements	0
Valve Switch Time 1	
Switch Time 1 Enabled	No
Valve Switch Time 2	
Switch Time 2 Enabled	No
Valve Switch Time 3	
Switch Time 3 Enabled	No
Valve Switch Time 4	
Switch Time 4 Enabled	No
Stop Time	
Stoptime Mode	As pump/No limit
Post Time	
Posttime Mode	Off

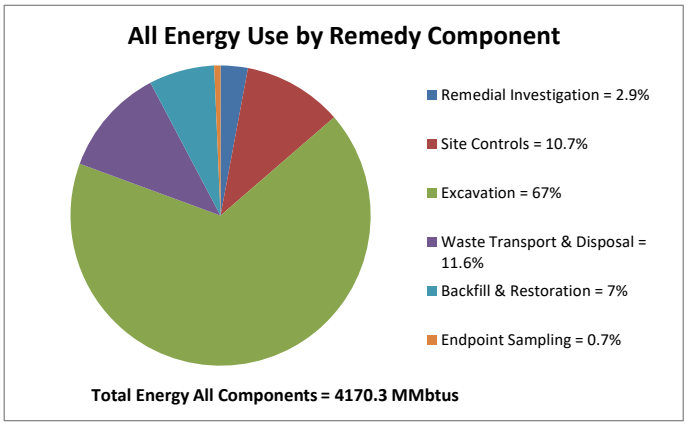
Name: Binary Pump **Module: G4220A**

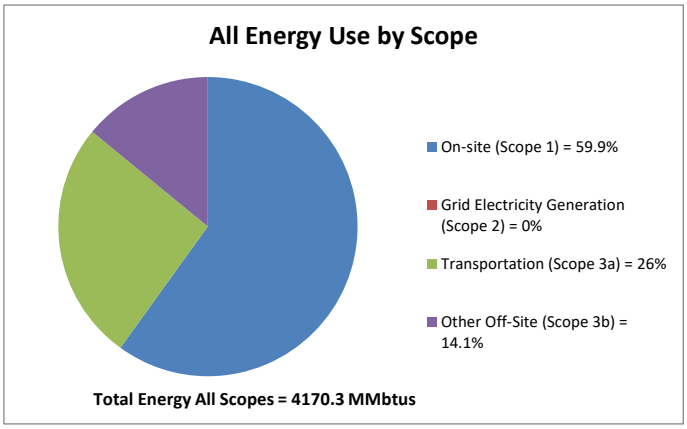
Flow	0.400 mL/min
Use Solvent Types	No
Stroke Mode	Synchronized
Low Pressure Limit	0.00 bar
High Pressure Limit	600.00 bar
Max. Flow Ramp Up	100.000 mL/min²
Max. Flow Ramp Down	100.000 mL/min²
Expected Mixer	No check

Report generation date: 18-Oct-2022 09:01:44 AM Page 6 of 8

APPENDIX G – Green and Sustainable Remediation







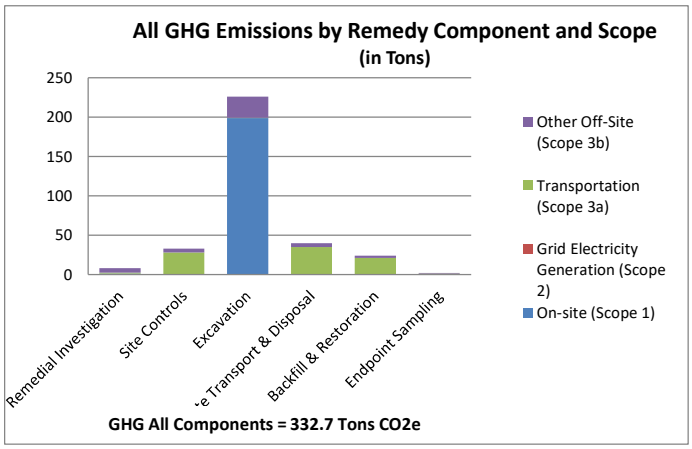
Total Energy
MMbtus

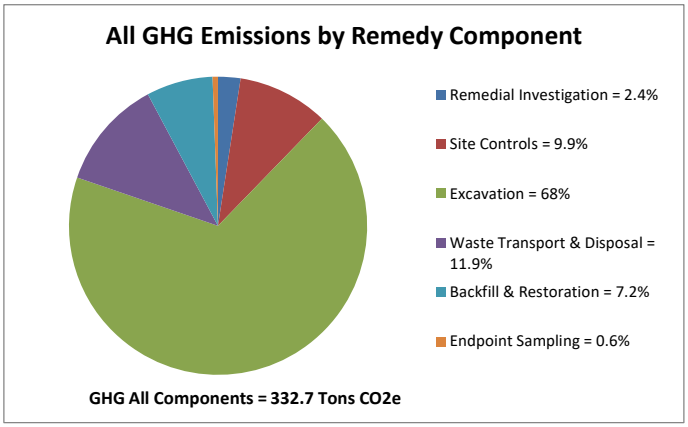
	Remedial I	Site Contrc	Excavation	Waste Trar	Backfill & F	Endpoint S	Total	
On-site (Scope 1)	12.7	0.0	2,487.3	0.0	0.0	0.0	2,500.0	
Generation (Scope 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Electricity
nsportation (Scope 3a)	19.6	351.9	1.9	432.5	261.3	16.8	1,083.9	Tran
her Off-Site (Scope 3b)	90.4	94.2	304.4	52.9	32.0	12.5	586.4	Oth
Total	122.7	446.0	2,793.6	485.4	293.3	29.2	4,170.3	

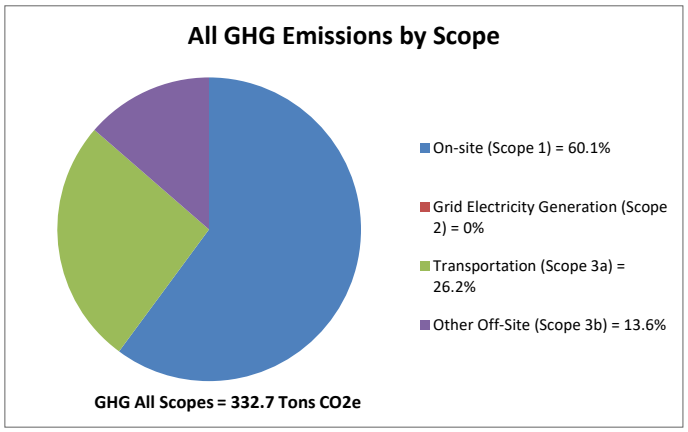
Remedial Investigation = 2.9%
Site Controls = 10.7%
Excavation = 67%
Waste Transport & Disposal = 11.6%
Backfill & Restoration = 7%
Endpoint Sampling = 0.7%

On-site (Scope 1) = 59.9%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 26%
Other Off-Site (Scope 3b) = 14.1%

Total Energy All Components = 4170.3 MMbtus
Total Energy All Scopes = 4170.3 MMbtus







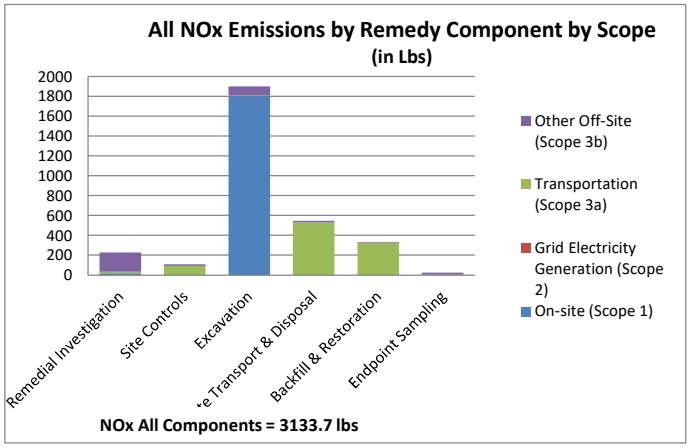
GHG
Tons CO2e

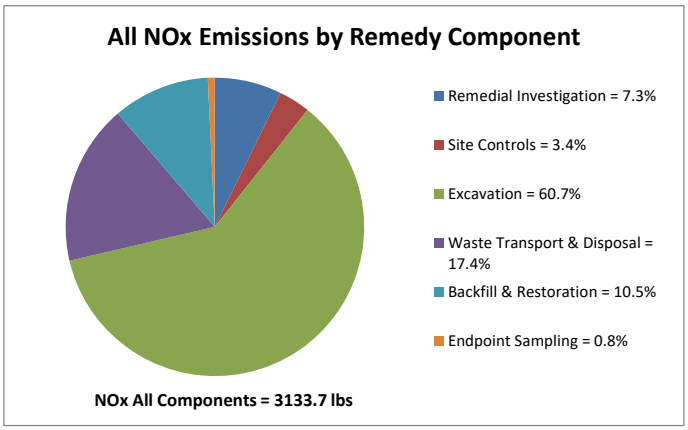
	Remedial I	Site Contrc	Excavation	Waste Trar	Backfill & F	Endpoint S	Total	
On-site (Scope 1)	1.0	0.0	199.0	0.0	0.0	0.0	200.0	
Generation (Scope 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	l Electricity
ısportation (Scope 3a)	1.6	28.1	0.2	35.0	21.2	1.3	87.3	Tran
ıer Off-Site (Scope 3b)	5.4	4.7	27.0	4.7	2.8	0.7	45.4	Oth
Total	8.0	32.8	226.2	39.7	24.0	2.0	332.7	

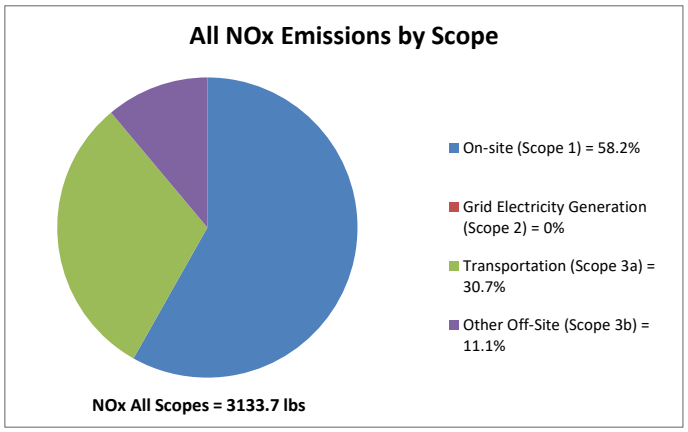
Remedial Investigation = 2.4%
Site Controls = 9.9%
Excavation = 68%
Waste Transport & Disposal = 11.9%
Backfill & Restoration = 7.2%
Endpoint Sampling = 0.6%

On-site (Scope 1) = 60.1%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 26.2%
Other Off-Site (Scope 3b) = 13.6%

GHG All Components = 332.7 Tons CO2e
GHG All Scopes = 332.7 Tons CO2e







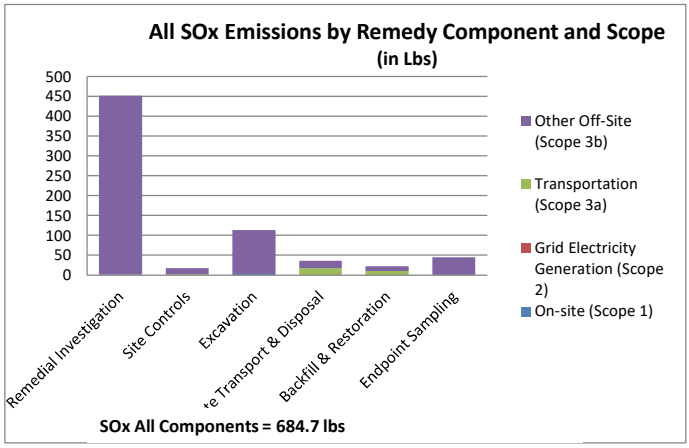
NOx lbs

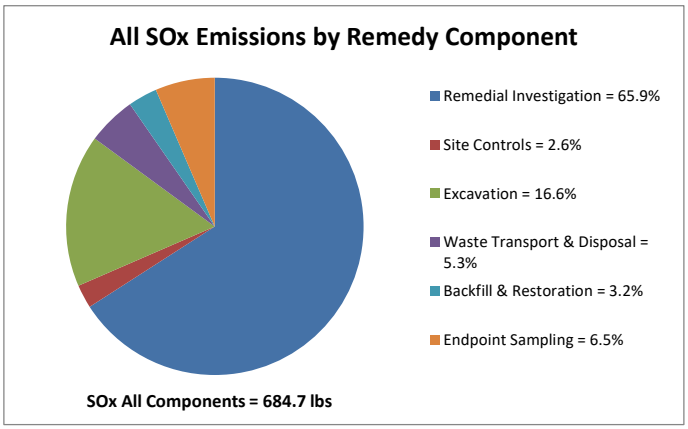
	Remedial I	Site Contrc	Excavation	Waste Trar	Backfill & F	Endpoint S	Total	
On-site (Scope 1)	15.5	0.0	1,807.3	0.0	0.0	0.0	1,822.8	
Generation (Scope 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Electricity
sportation (Scope 3a)	17.1	90.8	2.3	529.0	319.6	4.6	963.4	Tran
er Off-Site (Scope 3b)	195.3	15.9	91.3	15.9	9.6	19.5	347.6	Oth
Total	228.0	106.7	1,900.9	544.8	329.2	24.1	3,133.7	

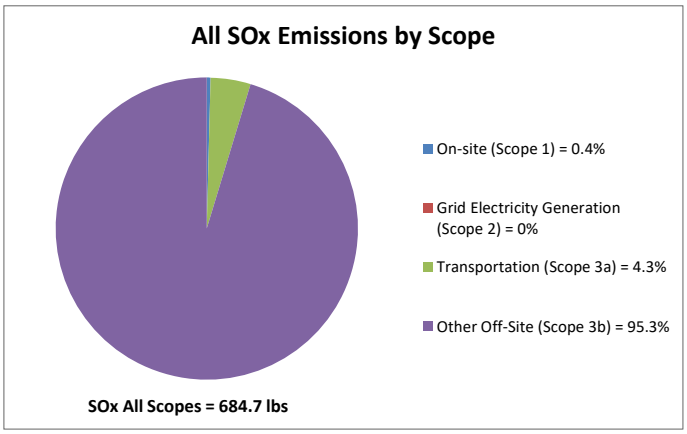
Remedial Investigation = 7.3%
Site Controls = 3.4%
Excavation = 60.7%
Waste Transport & Disposal = 17.4%
Backfill & Restoration = 10.5%
Endpoint Sampling = 0.8%

On-site (Scope 1) = 58.2%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 30.7%
Other Off-Site (Scope 3b) = 11.1%

NOx All Components = 3133.7 lbs
NOx All Scopes = 3133.7 lbs







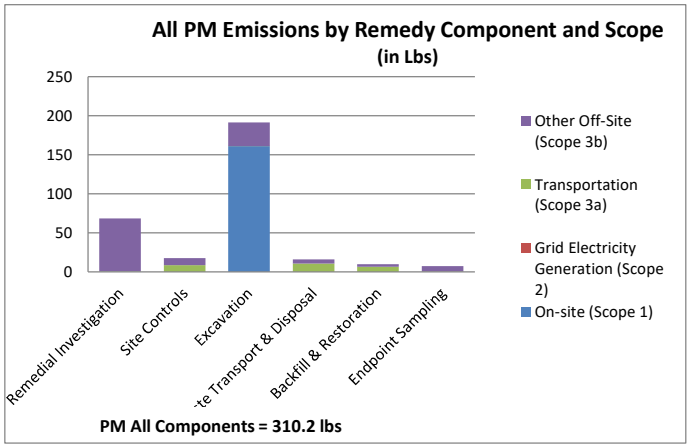
SOx lbs

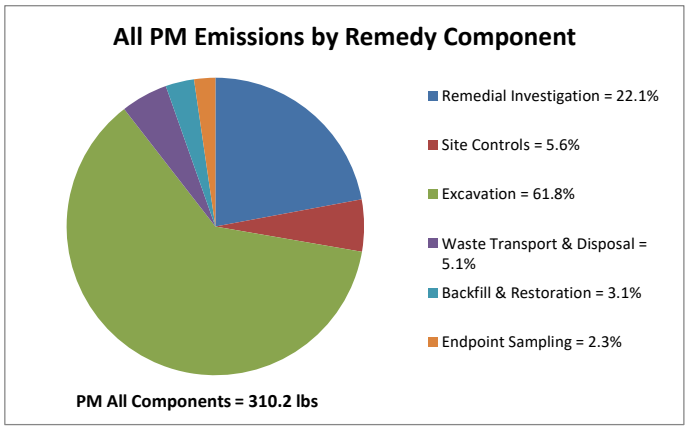
	Remedial I	Site Contrc	Excavation	Waste Trar	Backfill & F	Endpoint S	Total	
On-site (Scope 1)	0.5	0.0	2.3	0.0	0.0	0.0	2.8	
Generation (Scope 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Electricity
sportation (Scope 3a)	0.5	1.5	0.1	16.8	10.2	0.1	29.2	Tran
er Off-Site (Scope 3b)	450.3	16.0	111.0	19.3	11.7	44.4	652.7	Oth
Total	451.3	17.5	113.4	36.1	21.8	44.5	684.7	

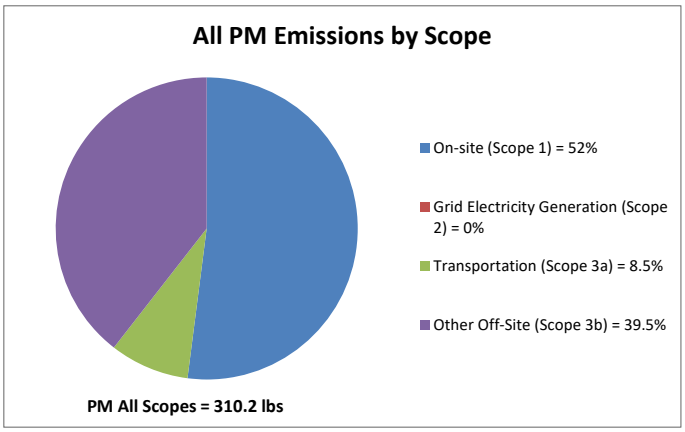
Remedial Investigation = 65.9%
Site Controls = 2.6%
Excavation = 16.6%
Waste Transport & Disposal = 5.3%
Backfill & Restoration = 3.2%
Endpoint Sampling = 6.5%

On-site (Scope 1) = 0.4%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 4.3%
Other Off-Site (Scope 3b) = 95.3%

SOx All Components = 684.7 lbs
SOx All Scopes = 684.7 lbs







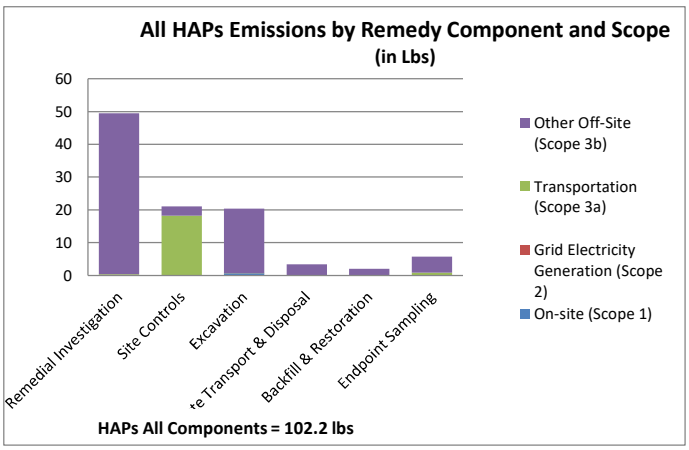
PM lbs

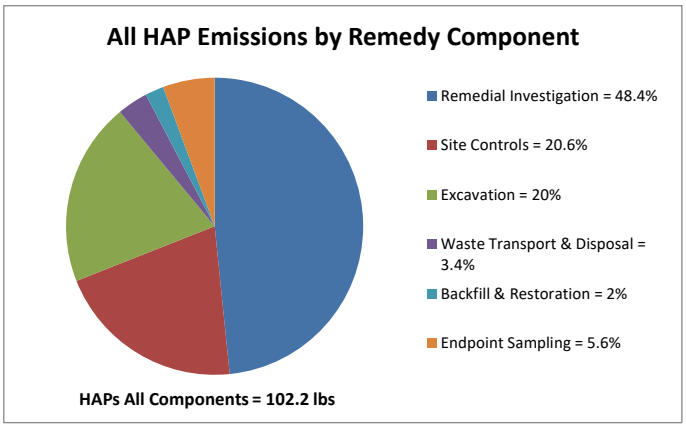
	Remedial I	Site Contrc	Excavation	Waste Trar	Backfill & F	Endpoint S	Total	
On-site (Scope 1)	0.3	0.0	161.0	0.0	0.0	0.0	161.4	
Generation (Scope 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Electricity
sportation (Scope 3a)	0.5	8.5	0.0	10.6	6.4	0.4	26.4	Tran
er Off-Site (Scope 3b)	67.7	9.0	30.4	5.3	3.2	6.8	122.4	Oth
Total	68.5	17.5	191.5	15.9	9.6	7.2	310.2	

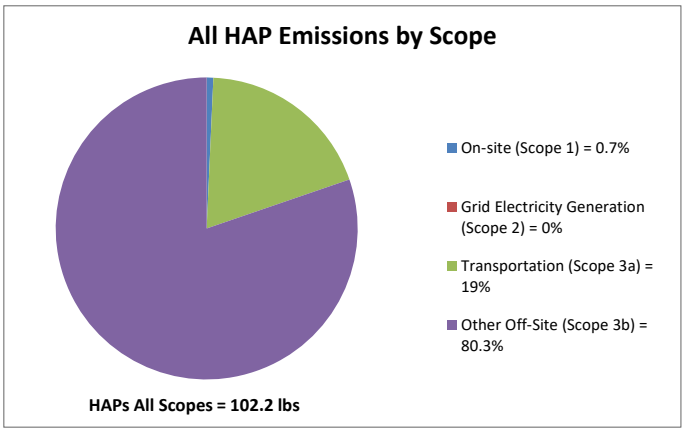
Remedial Investigation = 22.1%
Site Controls = 5.6%
Excavation = 61.8%
Waste Transport & Disposal = 5.1%
Backfill & Restoration = 3.1%
Endpoint Sampling = 2.3%

On-site (Scope 1) = 52%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 8.5%
Other Off-Site (Scope 3b) = 39.5%

PM All Components = 310.2 lbs
PM All Scopes = 310.2 lbs







HAPs
lbs

	Remedial I	Site Contrc	Excavation	Waste Trar	Backfill & F	Endpoint S	Total
On-site (Scope 1)	0.0	0.0	0.7	0.0	0.0	0.0	0.7
Generation (Scope 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ısportation (Scope 3a)	0.4	18.2	0.0	0.0	0.0	0.9	19.5
ıer Off-Site (Scope 3b)	49.1	2.8	19.7	3.4	2.1	4.9	82.0
Total	49.5	21.1	20.4	3.4	2.1	5.7	102.2

Remedial Investigation = 48.4%
Site Controls = 20.6%
Excavation = 20%
Waste Transport & Disposal = 3.4%
Backfill & Restoration = 2%
Endpoint Sampling = 5.6%

On-site (Scope 1) = 0.7%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 19%
Other Off-Site (Scope 3b) = 80.3%

HAPs All Components = 102.2 lbs
HAPs All Scopes = 102.2 lbs

Total Fuel Footprints		Remedial I	Site Contrc	Excavation	Waste Trai	Backfill & F	Endpoint S	Total
Diesel (gal)	Transportation	89	107.9	13.4	3111.6	1880	6.666	5208.566
	On-site equipment	0	0	17894.42	0	0	0	17894.42
ıasoline (ga	Transportation	58.5	2716.6	0	0	0	127.7	2902.8
	On-site equipment	0	0	0	0	0	0	0

Environmental Footprint Summary

Core Element	Metric		Unit of Measure	Footprint						
				Remedial Investigation	Site Controls	Excavation	Waste Transport & Disposal	Backfill & Restoration	Endpoint Sampling	Total
Materials & Waste	M&W-1	Refined materials used on-site	Tons	0.1	16.3	0.0	0.0	0.0	1.8	18.1
	M&W-2	% of refined materials from recycled or reused material	%	0.0%	0.0%				0.0%	0.0%
	M&W-3	Unrefined materials used on-site	Tons	0.824	120.000	0.000	0.000	4,623.000	0.000	4,743.8
	M&W-4	% of unrefined materials from recycled or reused material	%	0.0%	100.0%			100.0%		100.0%
	M&W-5	On-site hazardous waste disposed of off-site	Tons	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	M&W-6	On-site non-hazardous waste disposed of off-site	Tons	0.0	0.0	0.0	4,623.0	0.0	0.0	4,623.0
	M&W-7	Recycled or reused waste	Tons	0.0	0.0	0.0	28.0	0.0	0.0	28.0
	M&W-8	% of total potential waste recycled or reused	%				0.6%			0.6%
Water (used on-site)	W-1	Public water use	MG	0.0	0.3	0.0	0.0	0.0	0.0	0.3
	W-2	Groundwater use	MG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	W-3	Surface water use	MG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	W-4	Reclaimed water use	MG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	W-5	Storm water use	MG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	W-6	User-defined water resource #1	MG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	W-7	User-defined water resource #2	MG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	W-8	Wastewater generated	MG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Energy	E-1	Total energy used (on-site and off-site)	MMBtu	122.7	446.0	2,793.6	485.4	293.3	29.2	4,170.3
	E-2	Energy voluntarily derived from renewable resources								
	E-2A	On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	E-2B	Voluntary purchase of renewable electricity	MWh	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	E-3	Voluntary purchase of RECs	MWh	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	E-4	On-site grid electricity use	MWh	0.000	0.000	0.000	0.000	0.000	0.000	0.0
Air	A-1	On-site NOx, SOx, and PM emissions	Pounds	16.3	0.0	1,970.7	0.0	0.0	0.0	1,987.0
	A-2	On-site HAP emissions	Pounds	0.0	0.0	0.7	0.0	0.0	0.0	0.7
	A-3	Total NOx, SOx, and PM emissions	Pounds	747.8	141.7	2,205.9	596.8	360.6	75.8	4,128.6
	A-3A	Total NOx emissions	Pounds	228.0	106.7	1,900.9	544.8	329.2	24.1	3,133.7
	A-3B	Total SOx emissions	Pounds	451.3	17.5	113.4	36.1	21.8	44.5	684.7
	A-3C	Total PM emissions	Pounds	68.5	17.5	191.5	15.9	9.6	7.2	310.2
	A-4	Total HAP emissions	Pounds	49.5	21.1	20.4	3.4	2.1	5.7	102.2
	A-5	Total greenhouse gas emissions	Tons CO2e*	8.0	32.8	226.2	39.7	24.0	2.0	332.7
Land & Ecosystems	Qualitative Description									

** Total greenhouse gases emissions (in CO2e) include consideration of CO2, CH4, and N2O (Nitrous oxide) emissions.*
"MMBtu" = millions of Btus
"MG" = millions of gallons
"CO2e" = carbon dioxide equivalents of global warming potential
"MWh" = megawatt hours (i.e., thousands of kilowatt-hours or millions of Watt-hours)
"Tons" = short tons (2,000 pounds)

The above metrics are consistent with EPA's Methodology for Understanding and Reducing a Project's Environmental Footprint (EPA 542-R-12-002), February 2012

Notes:

All - Energy & Air Compiled Results

Category	Total Energy	GHG	NOx	SOx	PM	NOx + SOx + PM	HAPs
	MMbtus	lbs CO2e	lbs	lbs	lbs	lbs	lbs
On-site (Scope 1)	**2,500**	**400,022**	**1,823**	**3**	**161**	**1,987**	**1**
Grid Electricity Generation (Scope 2)	**0.000**	**0**	**0**	**0**	**0**	**0**	**0**
Transportation (Scope 3a)	**1,084**	**174,581**	**963**	**29**	**26**	**1,019**	**19**
Other Off-Site (Scope 3b)	**586**	**90,745**	**348**	**653**	**122**	**1,123**	**82**
Remedy Totals	**4,170**	**665,348**	**3,134**	**685**	**310**	**4,129**	**102**

Values that are forwarded to the "Summary" tab are indicated in orange.

Voluntary Renewable Energy Use	Unit	Quantity	
On-site renewable energy generation or use	MMBtu	**0**	
On-site biodiesel use	MMBtu	**0**	
Biodiesel and other renewable resource use for transportation	MMBtu	**0**	
On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu	**0**	*(This value is the sum of the three rows above)*
Voluntary purchase of renewable electricity	MWh	**0**	
Voluntary purchase of RECs	MWh	**0**	

This worksheet is not intended for user input. Values on this worksheet are obtained from the following file:
Beach 19th - Track 1 SEFA_calculations.xlsx

Remedial Investigation - Energy & Air Compiled Results

Category	Total Energy	GHG	NOx	SOx	PM	NOx + SOx + PM	HAPs
	MMbtus	lbs CO2e	lbs	lbs	lbs	lbs	lbs
On-site (Scope 1)	**13**	**2,050**	**15**	**0**	**0**	**16**	**0**
Grid Electricity Generation (Scope 2)	**0.000**	**0**	**0**	**0**	**0**	**0**	**0**
Transportation (Scope 3a)	**20**	**3,158**	**17**	**1**	**0**	**18**	**0**
Other Off-Site (Scope 3b)	**90**	**10,829**	**195**	**450**	**68**	**713**	**49**
Remedy Totals	**123**	**16,037**	**228**	**451**	**68**	**748**	**49**

Values that are forwarded to the "Summary" tab are indicated in orange.

Voluntary Renewable Energy Use	Unit	Quantity	
On-site renewable energy generation or use	MMBtu	**0**	
On-site biodiesel use	MMBtu	**0**	
Biodiesel and other renewable resource use for transportation	MMBtu	**0**	
On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu	**0**	*(This value is the sum of the three rows above)*
Voluntary purchase of renewable electricity	MWh	**0**	
Voluntary purchase of RECs	MWh	**0**	

This worksheet is not intended for user input. Values on this worksheet are obtained from the following file:
Beach 19th - Track 1 SEFA_calculations.xlsx

Site Controls - Energy & Air Compiled Results

Category	Total Energy	GHG	NOx	SOx	PM	NOx + SOx + PM	HAPs
	MMbtus	lbs CO2e	lbs	lbs	lbs	lbs	lbs
On-site (Scope 1)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Grid Electricity Generation (Scope 2)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Transportation (Scope 3a)	**352**	**56,135**	**91**	**2**	**9**	**101**	**18**
Other Off-Site (Scope 3b)	**94**	**9,402**	**16**	**16**	**9**	**41**	**3**
Remedy Totals	**446**	**65,538**	**107**	**18**	**18**	**142**	**21**

Values that are forwarded to the "Summary" tab are indicated in orange.

Voluntary Renewable Energy Use	Unit	Quantity	
On-site renewable energy generation or use	MMBtu	**0**	
On-site biodiesel use	MMBtu	**0**	
Biodiesel and other renewable resource use for transportation	MMBtu	**0**	
On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu	**0**	*(This value is the sum of the three rows above)*
Voluntary purchase of renewable electricity	MWh	**0**	
Voluntary purchase of RECs	MWh	**0**	

This worksheet is not intended for user input. Values on this worksheet are obtained from the following file:
Beach 19th - Track 1 SEFA_calculations.xlsx

Excavation - Energy & Air Compiled Results

Category	Total Energy	GHG	NOx	SOx	PM	NOx + SOx + PM	HAPs
	MMbtus	lbs CO2e	lbs	lbs	lbs	lbs	lbs
On-site (Scope 1)	**2,487**	**397,972**	**1,807**	**2**	**161**	**1,971**	**1**
Grid Electricity Generation (Scope 2)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Transportation (Scope 3a)	**2**	**302**	**2**	**0**	**0**	**2**	**0**
Other Off-Site (Scope 3b)	**304**	**54,082**	**91**	**111**	**30**	**233**	**20**
Remedy Totals	**2,794**	**452,355**	**1,901**	**113**	**192**	**2,206**	**20**

Values that are forwarded to the "Summary" tab are indicated in orange.

Voluntary Renewable Energy Use	Unit	Quantity	
On-site renewable energy generation or use	MMBtu	**0**	
On-site biodiesel use	MMBtu	**0**	
Biodiesel and other renewable resource use for transportation	MMBtu	**0**	
On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu	**0**	*(This value is the sum of the three rows above)*
Voluntary purchase of renewable electricity	MWh	**0**	
Voluntary purchase of RECs	MWh	**0**	

This worksheet is not intended for user input. Values on this worksheet are obtained from the following file:
Beach 19th - Track 1 SEFA_calculations.xlsx

Waste Transport & Disposal - Energy & Air Compiled Results

Category	Total Energy	GHG	NOx	SOx	PM	NOx + SOx + PM	HAPs
	MMbtus	lbs CO2e	lbs	lbs	lbs	lbs	lbs
On-site (Scope 1)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Grid Electricity Generation (Scope 2)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Transportation (Scope 3a)	**433**	**70,011**	**529**	**17**	**11**	**556**	**0**
Other Off-Site (Scope 3b)	**53**	**9,397**	**16**	**19**	**5**	**40**	**3**
Remedy Totals	**485**	**79,408**	**545**	**36**	**16**	**597**	**3**

Values that are forwarded to the "Summary" tab are indicated in orange.

Voluntary Renewable Energy Use	Unit	Quantity	
On-site renewable energy generation or use	MMBtu	**0**	
On-site biodiesel use	MMBtu	**0**	
Biodiesel and other renewable resource use for transportation	MMBtu	**0**	
On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu	**0**	*(This value is the sum of the three rows above)*
Voluntary purchase of renewable electricity	MWh	**0**	
Voluntary purchase of RECs	MWh	**0**	

This worksheet is not intended for user input. Values on this worksheet are obtained from the following file:
Beach 19th - Track 1 SEFA_calculations.xlsx

Backfill & Restoration - Energy & Air Compiled Results

Category	Total Energy	GHG	NOx	SOx	PM	NOx + SOx + PM	HAPs
	MMbtus	lbs CO2e	lbs	lbs	lbs	lbs	lbs
On-site (Scope 1)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Grid Electricity Generation (Scope 2)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Transportation (Scope 3a)	**261**	**42,300**	**320**	**10**	**6**	**336**	**0**
Other Off-Site (Scope 3b)	**32**	**5,678**	**10**	**12**	**3**	**24**	**2**
Remedy Totals	**293**	**47,978**	**329**	**22**	**10**	**361**	**2**

Values that are forwarded to the "Summary" tab are indicated in orange.

Voluntary Renewable Energy Use	Unit	Quantity	
On-site renewable energy generation or use	MMBtu	**0**	
On-site biodiesel use	MMBtu	**0**	
Biodiesel and other renewable resource use for transportation	MMBtu	**0**	
On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu	**0**	*(This value is the sum of the three rows above)*
Voluntary purchase of renewable electricity	MWh	**0**	
Voluntary purchase of RECs	MWh	**0**	

This worksheet is not intended for user input. Values on this worksheet are obtained from the following file:
Beach 19th - Track 1 SEFA_calculations.xlsx

Endpoint Sampling - Energy & Air Compiled Results

Category	Total Energy	GHG	NOx	SOx	PM	NOx + SOx + PM	HAPs
	MMbtus	lbs CO2e	lbs	lbs	lbs	lbs	lbs
On-site (Scope 1)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Grid Electricity Generation (Scope 2)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Transportation (Scope 3a)	**17**	**2,675**	**5**	**0**	**0**	**5**	**1**
Other Off-Site (Scope 3b)	**12**	**1,357**	**20**	**44**	**7**	**71**	**5**
Remedy Totals	**29**	**4,032**	**24**	**45**	**7**	**76**	**6**

Values that are forwarded to the "Summary" tab are indicated in orange.

Voluntary Renewable Energy Use	Unit	Quantity	
On-site renewable energy generation or use	MMBtu	**0**	
On-site biodiesel use	MMBtu	**0**	
Biodiesel and other renewable resource use for transportation	MMBtu	**0**	
On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu	**0**	*(This value is the sum of the three rows above)*
Voluntary purchase of renewable electricity	MWh	**0**	
Voluntary purchase of RECs	MWh	**0**	

This worksheet is not intended for user input. Values on this worksheet are obtained from the following file:
Beach 19th - Track 1 SEFA_calculations.xlsx

Input Worksheet for RI

Please specify which Remedy Component this Input worksheet is part of: (Select "Off" to exclude this Input worksheet from calculations and results)	**Component 1**	**Remedial Investigation**

General Scope

Remedial Investigation
Mobilization of 6610DT Geoprobe 5' macro-core rig and crewm and GBTS personnel to execute the extension of 30 borings from 25 to 30 feet bsg (3/19-3/25), installation of 14 soil vapor points (12 feet bsg; 3/25), and installation of 6 groundwater monitoring wells (32 feet bsg; 3/26).
Sampling of groundwater (Part 375, PFAS), soil (Full Part 375, PFAS), and soil vapor (TO-15 VOCs) was performed on 4/3/2025.
Misc. Tasks: GPR Utility/UST Markout

Example Items Eliminated through Screening Process

Drill tailings reused for well install from 0-10ft (not included in calculation)
Waste Disposal (N/A) - remaining drill tailings are stored in staged 55-gallon drums on-site

Other Notes and References

Soil tailings were reused in from 0 - 10 ft bsg in well install
All material transport during the Riis summarized in Personnel Transport
Telemetry used during drilling, battery packs charged nightly

Personnel Transportation

Participant	Number of Roundtrips to Site	Roundtrip Distance to Site (miles)	Mode of Transportation*	Transport Fuel Type*	Total Distance Transported (miles)	Default Fuel Usage Rate**	Fuel Usage Rate Override**	Fuel Used for Personnel Transport**	Activity or Notes
Gallagher Bassett Technical Services	5	185	Car	Gasoline	925	25	30	30.8	transport to the site on 3/19 and back on 3/21, full roundtrips on 3/25
Lakewood	5	96	Heavy-Duty Truck	Diesel	480	7.55		63.6	Transport to the site 3/19-3/21, 3/25. 3/26, 3/27, 3/28 (subtract 2
York Analytical Lab Courier (to/from Site)	2	137	Car	Gasoline	274	25		11	Sample pickup on 3/21, 4/3
York Analytical Lab Courier (to/from GBTS Office)	2	146	Car	Gasoline	292	25		11.7	Sample pickup on 3/25, 3/37
X-Ray Locating (GPR Crew) Personnel	1	47	Heavy-Duty Truck	Gasoline	47	9.45		5	GPR Survey on 3/19

**** See the "Detailed Notes and Explanations" tab for explanation of transport and fuel options.***

***** for biodiesel, B20, diesel, and gasoline, units are gallons for Fuel Used and miles/gallon for Fuel Usage Rate; for natural gas, units are hundreds of cubic feet (ccf) for Fuel Used and ccf/miles for Fuel Usage Rate; for electricity, units are miles/kWh for Fuel Usage Rate and the kWh (Fuel Used) are added to total grid electricity used (cell G69).***

On-Site Equipment Use and Transportation

Equipment Type*	HP*	Load Factor (%)*	Equipment Fuel Type**	Equipment Fuel Usage Rate	Equipment Hours Operated	Fuel Used for On-site Equipment	Equipment weight (tons)	Number of Equipment Roundtrips to Site	Roundtrip Distance to Site (miles)	Total Distance Transported (miles)	Mode of Transportation	Transport Fuel Type***	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Equipment Transport (gallons)	Activity or Notes
Drilling - direct push (60 HP)	54	75%	Diesel	2.025	45	91.125	2.85	2	96	192	Truck (mpg)	Diesel	6	7.55	25.4	6610DT Geoprobe, 5' macro-core, transported on trailer attached
																GPR Equipment

**** HP and Load Factor must be entered by user in Columns C and D. Please see the "Detailed Notes and Explanations" tab for further explanation.***

***** For biodiesel, B20, diesel, gasoline, and liquified petroleum gas, units are gallons for Fuel Used for On-site Equipment and gallons/hr for Equipment Fuel Usage Rate; for compressed natural gas units are ccf (hundreds of cubic feet) for Fuel Used for On-site Equipment and ccf/hr for Equipment Fuel Usage Rate.***

****** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation and other aspects of data entry in Columns M, N, and P. Units are gallons for Fuel Used for Equipment Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Input Worksheet for RI

Remedy Component that this Input worksheet is part of:	Component 1	Remedial Investigation

On-Site Electricity Use

Equipment Type	HP	Load Factor (%)	Efficiency (%)	Electrical Rating (kW)	Hours Used	Energy Used (kWh)	Notes
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with known kW rating>							DustTrak II (ASM - 1)
<Equip. with known kW rating>							DustTrak II (ASM - 2)
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
Estimated Total Electricity Usage Based on Above						0	
Renewable Electricity Generated On-Site*							
Total Electricity Usage Based on Personnel Transportation						0	
Total Grid Electricity Used						0	

**** Electricity generated on-site from renewable resources, for which the facility retains the rights to the renewable energy (i.e., does not sell renewable energy certificates associated with the renewable energy generation).***

On-Site Natural Gas Use

Equipment Type	Power Rating (Btu/hr)	Efficiency (%)	Hours Used	Energy Required (Btu)	Natural Gas Used (ccf)	Notes
					0	
				0		
Totals			0	0	0	

Landfill Gas Combusted On-Site for Energy Use

Equipment Type	Landfill Gas (ccf)	% Methane by volume	Used for electricity?	Landfill Gas Methane Used (ccf)	Notes
				0	
				0	
				0	
Total				0	

Please see the "Detailed Notes and Explanations" tab for instructions on using the two tables above ("On-site Natural Gas Use" and "Landfill Gas Combusted On-Site for Energy Use"). In the two tables above, ccf = hundreds of cubic feet.

Materials Use and Transportation

Material Type*	Unit	Quantity	Tons	Is the Material Refined or Unrefined?**	Material Source: Virgin, Recycled, or Reused?**	Calculate Item Footprint?**	Default One-way Distance to Site (miles)	One-way Distance to Site Override (miles)	Number of One-way Trips to Site	Include Return Trip in Calculations?	Total Distance Transported (miles)	Mode of Transportation***	Transport Fuel Type	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Materials Transport (gallons)	Notes and Description of Materials
PVC	lb		0	Refined	Virgin	Yes	500	0	0	No	500						95 5' macro core sleeves
Sand	lb	1407.376	0.703688	Unrefined	Virgin	Yes	25	0	0	No	25						#2 silica sand
BENSEAL (Sodium Bentonite)	50 lb bag	2	0.05	Unrefined	Virgin	Yes	500	0	0	No	500						
PVC	lb	132	0.066	Refined	Virgin	Yes	500	0	0	No	500						well screen and casing
Portland cement, US average	lb	139.65	0.069825	Unrefined	Virgin	Yes	25	0	0	No	25						Drive Over Cover
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														

**** Please see the "Detailed Notes and Explanations" tab for instructions on specifying "User-Defined Materials" in the dropdown menu.***

***** Selections must be made in Columns F - H in order for the footprint calculations to be performed. Please see the "Detailed Notes and Explanations" tab for further information.***

****** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation, accounting for empty return trips, and other aspects of data entry in Columns L, N, O, and Q. Units are gallons for Fuel Used for Materials Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Input Worksheet for RI

Remedy Component that this Input worksheet is part of:	Component 1	Remedial Investigation

Waste Disposal and Transportation

Waste Destination*	Unit	Quantity	Tons	Default One-way Distance to Site (miles)	One-way Distance to Site Override (miles)	Number of One-way Trips to Site	Include Return Trip in Calculations?	Total Distance Transported (miles)	Mode of Transportation**	Transport Fuel Type	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Waste Transport (gallons)	Notes and Description of Waste
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											

** No footprint is calculated for the Recycled/Reused On-Site and Off-Site selections. Please see the "Detailed Notes and Explanations" tab for instructions on specifying "User-Defined" selections in the dropdown menu.*

*** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation, accounting for empty return trips, and other aspects of data entry in Columns I, K, L, and N. Units are gallons for Fuel Used for Waste Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.*

Type of Water Used

Source of Water Used*	Unit	Quantity	Tons	Source Location/Aquifer (optional)	Quality of Water Used (optional)	Water Uses (optional)	Fate of Used Water (optional)
Public Water	gal x 1000	0.02	0.0834			Saturating bentonite and mixing concrete for groundwater well installation	
Extracted Groundwater	gal x 1000	0.0285	0.118845			Purged groundwater for sampling	
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				

** Only the "Public Water" selection has an associated footprint. No footprint is calculated for the other water source selections.*

Note: Information entered in Columns F - V (Source/Quality/Use/Fate) is not compiled or reported by SEFA.

Input Worksheet for RI

Remedy Component that this Input worksheet is part of:	Component 1	Remedial Investigation

90 for everything + 6 DUP/

Other Energy Use and Air Emissions

Item		Units	Quantity	Notes
On-Site				
User-defined on-site conventional energy use #1	*User-Defined	TBD		
User-defined on-site conventional energy use #2	*User-Defined	TBD		
On-site HAP process emissions**		lbs		
On-site GHG emissions**		lbs CO2e		
On-site carbon storage**		lbs CO2e		
Landfill gas flared on-site		ccf CH4		
Other on-site NOx emissions or reductions**		lbs		
Other on-site SOx emissions or reductions**		lbs		
Other on-site PM emissions or reductions**		lbs		
Transportation		**Units**	**Quantity**	**Notes**
User-defined conventional energy transportation #1	*User-Defined	TBD	10	
User-defined conventional energy transportation #2	*User-Defined	TBD		

**** Enter units and conversion factors on "User Defined Factors" tab***
***** Enter a positive number for emissions and a negative number for reductions, avoidances, or storage***
See the "Detailed Notes and Explanations" tab for use of this table.

Other Voluntary Renewable Energy Use

Item		Units	Quantity	Notes
User-defined on-site renewable energy use #1	*User-Defined	TBD		
User-defined on-site renewable energy use #2	*User-Defined	TBD		
User-defined renewable energy transportation #1	*User-Defined	TBD		
User-defined renewable energy transportation #2	*User-Defined	TBD		
Voluntary purchase of renewable electricity**		MWh		
Voluntary purchase of RECs**		MWh		

**** Enter units and conversion factors on "User Defined Factors" tab***
***** Complete information on provider in the table to the right. No footprint reductions are associated with the voluntary purchases.***
See the "Detailed Notes and Explanations" tab for use of this table

Off-Site Laboratory Analysis

Parameter and Notes	Number of Samples	Comments
Off-site Laboratory Analysis - VOCs	113	
Off-site Laboratory Analysis - SVOCs	108	
Off-site Laboratory Analysis - Metals	103	
Off-site Laboratory Analysis - Mercury	103	
Off-site Laboratory Analysis - Other	103	
Off-site Laboratory Analysis - Other	103	
Off-site Laboratory Analysis - PCBs	103	
Off-site Laboratory Analysis - Other	103	
Off-site Laboratory Analysis - Other	108	
Off-site Laboratory Analysis - Other	103	
Off-site Laboratory Analysis - VOCs	10	
Totals	**1060**	

Description of purchased renewable electricity (green pricing product or green marketing product)	Provider:	
	Type of product:	
	Type of renewable energy source:	
	Date of renewable system installation:	
Description of purchased RECs	Provider:	
	Type of renewable energy source:	
	Date of renewable system installation:	
	Location of renewable system installation:	

Input Worksheet for SC

Please specify which Remedy Component this Input worksheet is part of: (Select "Off" to exclude this Input worksheet from calculations and results)	**Component 2**	**Site Controls**

General Scope

Crew mobilization and the establishment and maintenance of SESC measures, Storm Water Pollution Control, Dust Control, etc. for the duration of the remediation remedy implementation. Estimated Project duration is 147 days. Note: 1. All "Personnel Transportation" for the duration of the work has been captured in this Component as the same personnel will be onsite for each Component (2-5). 2. Remediation equipment mobilization is outlined in Component 3.

Example Items Eliminated through Screening Process

Other Notes and References

Assume 147 days, 2 additional months compared to Track 2 Alternative

Personnel Transportation

Participant	Number of Roundtrips to Site	Roundtrip Distance to Site (miles)	Mode of Transportation*	Transport Fuel Type*	Total Distance Transported (miles)	Default Fuel Usage Rate**	Fuel Usage Rate Override**	Fuel Used for Personnel Transport**	Activity or Notes
Gallagher Bassett Technical Services Technician									Environmental Monitoring summarized in Comp 6
Contractor (6 empl.)	1029	60	Car	Gasoline	61740	25		2469.6	
Total Safety (1 empl.)	147	42	Car	Gasoline	6174	25		247	Safety and Environmental Monitoring
ABC Tank Cleaning & Repairing	4	30	Light-Duty/Passenger Truck	Diesel	120	15.1		7.9	Tank Cleaning Company (example)

** See the "Detailed Notes and Explanations" tab for explanation of transport and fuel options.*

*** for biodiesel, B20, diesel, and gasoline, units are gallons for Fuel Used and miles/gallon for Fuel Usage Rate; for natural gas, units are hundreds of cubic feet (ccf) for Fuel Used and ccf/miles for Fuel Usage Rate; for electricity, units are miles/kWh for Fuel Usage Rate and the kWh (Fuel Used) are added to total grid electricity used (cell G69).*

On-Site Equipment Use and Transportation

Equipment Type*	HP*	Load Factor (%)*	Equipment Fuel Type**	Equipment Fuel Usage Rate	Equipment Hours Operated	Fuel Used for On-site Equipment	Equipment weight (tons)	Number of Equipment Roundtrips to Site	Roundtrip Distance to Site (miles)	Total Distance Transported (miles)	Mode of Transportation	Transport Fuel Type***	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Equipment Transport (gallons)	Activity or Notes

** HP and Load Factor must be entered by user in Columns C and D. Please see the "Detailed Notes and Explanations" tab for further explanation.*

*** For biodiesel, B20, diesel, gasoline, and liquified petroleum gas, units are gallons for Fuel Used for On-site Equipment and gallons/hr for Equipment Fuel Usage Rate; for compressed natural gas units are ccf (hundreds of cubic feet) for Fuel Used for On-site Equipment and ccf/hr for Equipment Fuel Usage Rate.*

**** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation and other aspects of data entry in Columns M, N, and P. Units are gallons for Fuel Used for Equipment Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.*

Input Worksheet for SC

Remedy Component that this Input worksheet is part of:	Component 2	Site Controls

On-Site Electricity Use

Equipment Type	HP	Load Factor (%)	Efficiency (%)	Electrical Rating (kW)	Hours Used	Energy Used (kWh)	Notes
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with known kW rating>							DustTrak II (ASM - 1)
<Equip. with known kW rating>							DustTrak II (ASM - 2)
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
Estimated Total Electricity Usage Based on Above						0	
Renewable Electricity Generated On-Site*							
Total Electricity Usage Based on Personnel Transportation						0	
Total Grid Electricity Used						0	

**** Electricity generated on-site from renewable resources, for which the facility retains the rights to the renewable energy (i.e., does not sell renewable energy certificates associated with the renewable energy generation).***

On-Site Natural Gas Use

Equipment Type	Power Rating (Btu/hr)	Efficiency (%)	Hours Used	Energy Required (Btu)	Natural Gas Used (ccf)	Notes
					0	
				0		
Totals			0	0	0	

Landfill Gas Combusted On-Site for Energy Use

Equipment Type	Landfill Gas (ccf)	% Methane by volume	Used for electricity?	Landfill Gas Methane Used (ccf)	Notes
				0	
				0	
				0	
Total				0	

Please see the "Detailed Notes and Explanations" tab for instructions on using the two tables above ("On-site Natural Gas Use" and "Landfill Gas Combusted On-Site for Energy Use"). In the two tables above, ccf = hundreds of cubic feet.

Materials Use and Transportation

Material Type*	Unit	Quantity	Tons	Is the Material Refined or Unrefined?**	Material Source: Virgin, Recycled, or Reused?**	Calculate Item Footprint?**	Default One-way Distance to Site (miles)	One-way Distance to Site Override (miles)	Number of One-way Trips to Site	Include Return Trip in Calculations?	Total Distance Transported (miles)	Mode of Transportation***	Transport Fuel Type	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Materials Transport (gallons)	Notes and Description of Materials
orange mesh fencing	ft	600	7.8	Refined	Virgin	Yes	500	60	1	No	60	Truck (mpg)	Diesel	6		10.000	
			0					60	1	No	60	Truck (mpg)	Diesel	6		10.000	
absorbent composite socks	ft	1200	7.8	Refined	Virgin	Yes	500	60	1	No	60	Truck (mpg)	Diesel	6		10.000	erosion control (assuming 600 ft, replaced once)
			0					60	1	No	60	Truck (mpg)	Diesel	6		10.000	
6-mil 40' x 100' polyurethane sheeting	rolls	10	0.595	Refined	Virgin	Yes	500	60	1	No	60	Truck (mpg)	Diesel	6		10.000	used for soil stockpiles & USTs
			0					60	1	No	60	Truck (mpg)	Diesel	6		10.000	
aggregate 2" stone	ton	120	120	Unrefined	Recycled	Yes	500	60	1	No	60	Truck (mpg)	Diesel	6		10.000	construction entrance pad (60 tons refreshed once)
			0					60	1	No	60	Truck (mpg)	Diesel	6		10.000	
filter cloth	lb	120	0.06	Refined	Virgin	Yes	500	60	1	No	60	Truck (mpg)	Diesel	6		10.000	construction entrance pad (based on Mirari 100x
			0					60	1	No	60	Truck (mpg)	Diesel	6		10.000	
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														

**** Please see the "Detailed Notes and Explanations" tab for instructions on specifying "User-Defined Materials" in the dropdown menu.***

***** Selections must be made in Columns F - H in order for the footprint calculations to be performed. Please see the "Detailed Notes and Explanations" tab for further information.***

****** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation, accounting for empty return trips, and other aspects of data entry in Columns L, N, O, and Q. Units are gallons for Fuel Used for Materials Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Input Worksheet for SC

Remedy Component that this Input worksheet is part of:	Component 2	Site Controls

Waste Disposal and Transportation

Waste Destination*	Unit	Quantity	Tons	Default One-way Distance to Site (miles)	One-way Distance to Site Override (miles)	Number of One-way Trips to Site	Include Return Trip in Calculations?	Total Distance Transported (miles)	Mode of Transportation**	Transport Fuel Type	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Waste Transport (gallons)	Notes and Description of Waste
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											

**** No footprint is calculated for the Recycled/Reused On-Site and Off-Site selections. Please see the "Detailed Notes and Explanations" tab for instructions on specifying "User-Defined" selections in the dropdown menu.***

***** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation, accounting for empty return trips, and other aspects of data entry in Columns I, K, L, and N. Units are gallons for Fuel Used for Waste Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Type of Water Used

Source of Water Used*	Unit	Quantity	Tons	Source Location/Aquifer (optional)	Quality of Water Used (optional)	Water Uses (optional)	Fate of Used Water (optional)
Public Water	gal x 1000	294	1225.98			Assuming 2,000 gal/day for tire washing, dust mitigation/control	
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				

**** Only the "Public Water" selection has an associated footprint. No footprint is calculated for the other water source selections.***

Note: Information entered in Columns F - V (Source/Quality/Use/Fate) is not compiled or reported by SEFA.

Input Worksheet for SC

Remedy Component that this Input worksheet is part of:	Component 2	Site Controls

Other Energy Use and Air Emissions

Item		Units	Quantity	Notes
On-Site				
User-defined on-site conventional energy use #1	*User-Defined	TBD		
User-defined on-site conventional energy use #2	*User-Defined	TBD		
On-site HAP process emissions**		lbs		
On-site GHG emissions**		lbs CO2e		
On-site carbon storage**		lbs CO2e		
Landfill gas flared on-site		ccf CH4		
Other on-site NOx emissions or reductions**		lbs		
Other on-site SOx emissions or reductions**		lbs		
Other on-site PM emissions or reductions**		lbs		
Transportation		Units	Quantity	Notes
User-defined conventional energy transportation #1	*User-Defined	TBD	10	
User-defined conventional energy transportation #2	*User-Defined	TBD		

**** Enter units and conversion factors on "User Defined Factors" tab***
***** Enter a positive number for emissions and a negative number for reductions, avoidances, or storage***
See the "Detailed Notes and Explanations" tab for use of this table.

Other Voluntary Renewable Energy Use

Item		Units	Quantity	Notes
User-defined on-site renewable energy use #1	*User-Defined	TBD		
User-defined on-site renewable energy use #2	*User-Defined	TBD		
User-defined renewable energy transportation #1	*User-Defined	TBD		
User-defined renewable energy transportation #2	*User-Defined	TBD		
Voluntary purchase of renewable electricity**		MWh		
Voluntary purchase of RECs**		MWh		

**** Enter units and conversion factors on "User Defined Factors" tab***
***** Complete information on provider in the table to the right. No footprint reductions are associated with the voluntary purchases.***
See the "Detailed Notes and Explanations" tab for use of this table

Off-Site Laboratory Analysis

Parameter and Notes	Number of Samples	Comments
Totals	**0**	

Description of purchased renewable electricity (green pricing product or green marketing product)	Provider:	
	Type of product:	
	Type of renewable energy source:	
	Date of renewable system installation:	
Description of purchased RECs	Provider:	
	Type of renewable energy source:	
	Date of renewable system installation:	
	Location of renewable system installation:	

Input Worksheet for Excavation

Please specify which Remedy Component this Input worksheet is part of: (Select "Off" to exclude this Input worksheet from calculations and results)	**Component 3**	**Excavation**

General Scope

Excavation and drilling of insitu soils located at the site, loading into tri-axle trucks for off-site disposal. Estimated Project duration 206 days. Note: 1. All "Personnel Transportation" for the duration of the work has been captured in Component 2 as the same personnel will be on-site for each Component (2-5).

Example Items Eliminated through Screening Process

Other Notes and References

Assume only soil exceeding UU and RRU SCOs is removed

Personnel Transportation

Participant	Number of Roundtrips to Site	Roundtrip Distance to Site (miles)	Mode of Transportation*	Transport Fuel Type*	Total Distance Transported (miles)	Default Fuel Usage Rate**	Fuel Usage Rate Override**	Fuel Used for Personnel Transport**	Activity or Notes
Gallagher Bassett Technical Services Technician									
Contractor (7 empl.)									
Total Safety (1 empl.)									
ABC Tank Cleaning & Repairing									

**** See the "Detailed Notes and Explanations" tab for explanation of transport and fuel options.***

***** for biodiesel, B20, diesel, and gasoline, units are gallons for Fuel Used and miles/gallon for Fuel Usage Rate; for natural gas, units are hundreds of cubic feet (ccf) for Fuel Used and ccf/miles for Fuel Usage Rate; for electricity, units are miles/kWh for Fuel Usage Rate and the kWh (Fuel Used) are added to total grid electricity used (cell G69).***

On-Site Equipment Use and Transportation

Equipment Type*	HP*	Load Factor (%)*	Equipment Fuel Type**	Equipment Fuel Usage Rate	Equipment Hours Operated	Fuel Used for On-site Equipment	Equipment weight (tons)	Number of Equipment Roundtrips to Site	Roundtrip Distance to Site (miles)	Total Distance Transported (miles)	Mode of Transportation	Transport Fuel Type***	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Equipment Transport (gallons)	Activity or Notes
Excavator - medium (175 HP)	165	75%	Diesel between 75 and 750 hp	6.799450549	1029	6996.634615	27.83	1	40	40	Truck (mpg)	Diesel	6		6.7	PC238 Excavator Specs (example)
Excavator - large (250 HP)	257	75%	Diesel between 75 and 750 hp	10.59065934	1029	10897.78846	40.2735	1	40	40	Truck (mpg)	Diesel	6		6.7	PC360 Excavator Specs (example)

**** HP and Load Factor must be entered by user in Columns C and D. Please see the "Detailed Notes and Explanations" tab for further explanation.***

***** For biodiesel, B20, diesel, gasoline, and liquified petroleum gas, units are gallons for Fuel Used for On-site Equipment and gallons/hr for Equipment Fuel Usage Rate; for compressed natural gas units are ccf (hundreds of cubic feet) for Fuel Used for On-site Equipment and ccf/hr for Equipment Fuel Usage Rate.***

****** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation and other aspects of data entry in Columns M, N, and P. Units are gallons for Fuel Used for Equipment Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Input Worksheet for Excavation

Remedy Component that this Input worksheet is part of:	Component 3	Excavation

On-Site Electricity Use

Equipment Type	HP	Load Factor (%)	Efficiency (%)	Electrical Rating (kW)	Hours Used	Energy Used (kWh)	Notes
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
Estimated Total Electricity Usage Based on Above						0	
Renewable Electricity Generated On-Site*							
Total Electricity Usage Based on Personnel Transportation						0	
Total Grid Electricity Used						0	

**** Electricity generated on-site from renewable resources, for which the facility retains the rights to the renewable energy (i.e., does not sell renewable energy certificates associated with the renewable energy generation).***

On-Site Natural Gas Use

Equipment Type	Power Rating (Btu/hr)	Efficiency (%)	Hours Used	Energy Required (Btu)	Natural Gas Used (ccf)	Notes
					0	
				0		
Totals			0	0	0	

Landfill Gas Combusted On-Site for Energy Use

Equipment Type	Landfill Gas (ccf)	% Methane by volume	Used for electricity?	Landfill Gas Methane Used (ccf)	Notes
				0	
				0	
				0	
Total				0	

Please see the "Detailed Notes and Explanations" tab for instructions on using the two tables above ("On-site Natural Gas Use" and "Landfill Gas Combusted On-Site for Energy Use"). In the two tables above, ccf = hundreds of cubic feet.

Materials Use and Transportation

Material Type*	Unit	Quantity	Tons	Is the Material Refined or Unrefined?**	Material Source: Virgin, Recycled, or Reused?**	Calculate Item Footprint?**	Default One-way Distance to Site (miles)	One-way Distance to Site Override (miles)	Number of One-way Trips to Site	Include Return Trip in Calculations?	Total Distance Transported (miles)	Mode of Transportation***	Transport Fuel Type	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Materials Transport (gallons)	Notes and Description of Materials
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
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			0														
			0														
			0														
			0														
			0														
			0														

**** Please see the "Detailed Notes and Explanations" tab for instructions on specifying "User-Defined Materials" in the dropdown menu.***

***** Selections must be made in Columns F - H in order for the footprint calculations to be performed. Please see the "Detailed Notes and Explanations" tab for further information.***

****** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation, accounting for empty return trips, and other aspects of data entry in Columns L, N, O, and Q. Units are gallons for Fuel Used for Materials Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Input Worksheet for Excavation

Remedy Component that this Input worksheet is part of:	Component 3	Excavation

Waste Disposal and Transportation

Waste Destination*	Unit	Quantity	Tons	Default One-way Distance to Site (miles)	One-way Distance to Site Override (miles)	Number of One-way Trips to Site	Include Return Trip in Calculations?	Total Distance Transported (miles)	Mode of Transportation**	Transport Fuel Type	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Waste Transport (gallons)	Notes and Description of Waste
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											

**** No footprint is calculated for the Recycled/Reused On-Site and Off-Site selections. Please see the "Detailed Notes and Explanations" tab for instructions on specifying "User-Defined" selections in the dropdown menu.***

***** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation, accounting for empty return trips, and other aspects of data entry in Columns I, K, L, and N. Units are gallons for Fuel Used for Waste Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Type of Water Used

Source of Water Used*	Unit	Quantity	Tons	Source Location/Aquifer (optional)	Quality of Water Used (optional)	Water Uses (optional)	Fate of Used Water (optional)
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				

**** Only the "Public Water" selection has an associated footprint. No footprint is calculated for the other water source selections.***

Note: Information entered in Columns F - V (Source/Quality/Use/Fate) is not compiled or reported by SEFA.

Input Worksheet for Excavation

Remedy Component that this Input worksheet is part of:	Component 3	Excavation

Other Energy Use and Air Emissions

Item		Units	Quantity	Notes
On-Site				
User-defined on-site conventional energy use #1	*User-Defined	TBD		
User-defined on-site conventional energy use #2	*User-Defined	TBD		
On-site HAP process emissions**		lbs		
On-site GHG emissions**		lbs CO2e		
On-site carbon storage**		lbs CO2e		
Landfill gas flared on-site		ccf CH4		
Other on-site NOx emissions or reductions**		lbs		
Other on-site SOx emissions or reductions**		lbs		
Other on-site PM emissions or reductions**		lbs		
Transportation		**Units**	**Quantity**	**Notes**
User-defined conventional energy transportation #1	*User-Defined	TBD	10	
User-defined conventional energy transportation #2	*User-Defined	TBD		

**** Enter units and conversion factors on "User Defined Factors" tab***
***** Enter a positive number for emissions and a negative number for reductions, avoidances, or storage***
See the "Detailed Notes and Explanations" tab for use of this table.

Other Voluntary Renewable Energy Use

Item		Units	Quantity	Notes
User-defined on-site renewable energy use #1	*User-Defined	TBD		
User-defined on-site renewable energy use #2	*User-Defined	TBD		
User-defined renewable energy transportation #1	*User-Defined	TBD		
User-defined renewable energy transportation #2	*User-Defined	TBD		
Voluntary purchase of renewable electricity**		MWh		
Voluntary purchase of RECs**		MWh		

**** Enter units and conversion factors on "User Defined Factors" tab***
***** Complete information on provider in the table to the right. No footprint reductions are associated with the voluntary purchases.***
See the "Detailed Notes and Explanations" tab for use of this table

Off-Site Laboratory Analysis

Parameter and Notes	Number of Samples	Comments
Totals	**0**	

Description of purchased renewable electricity (green pricing product or green marketing product)	Provider:	
	Type of product:	
	Type of renewable energy source:	
	Date of renewable system installation:	
Description of purchased RECs	Provider:	
	Type of renewable energy source:	
	Date of renewable system installation:	
	Location of renewable system installation:	

Input Worksheet for Waste T&D

Please specify which Remedy Component this Input worksheet is part of: (Select "Off" to exclude this Input worksheet from calculations and results)	**Component 4**	**Waste Transport & Disposal**

General Scope

Transportation and disposal of contaminated soil and fuel oil and gasoline USTs at approved permitted off-site disposal facilities, for the duration of the remediation remedy implementation. Note: 1. All "Personnel Transportation" for the duration of the work has been captured in Component 2 as the same personnel will be on-site for each Component (2-5). Equipment is summarized in Component 3.

Example Items Eliminated through Screening Process

Other Notes and References

Personnel Transportation

Participant	Number of Roundtrips to Site	Roundtrip Distance to Site (miles)	Mode of Transportation*	Transport Fuel Type*	Total Distance Transported (miles)	Default Fuel Usage Rate**	Fuel Usage Rate Override**	Fuel Used for Personnel Transport**	Activity or Notes
Gallagher Bassett Technical Services Technician									
Contractor (7 empl.)									
Total Safety (1 empl.)									
ABC Tank Cleaning & Repairing									

**** See the "Detailed Notes and Explanations" tab for explanation of transport and fuel options.***

***** for biodiesel, B20, diesel, and gasoline, units are gallons for Fuel Used and miles/gallon for Fuel Usage Rate; for natural gas, units are hundreds of cubic feet (ccf) for Fuel Used and ccf/miles for Fuel Usage Rate; for electricity, units are miles/kWh for Fuel Usage Rate and the kWh (Fuel Used) are added to total grid electricity used (cell G69).***

On-Site Equipment Use and Transportation

Equipment Type*	HP*	Load Factor (%)*	Equipment Fuel Type**	Equipment Fuel Usage Rate	Equipment Hours Operated	Fuel Used for On-site Equipment	Equipment weight (tons)	Number of Equipment Roundtrips to Site	Roundtrip Distance to Site (miles)	Total Distance Transported (miles)	Mode of Transportation	Transport Fuel Type***	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Equipment Transport (gallons)	Activity or Notes

**** HP and Load Factor must be entered by user in Columns C and D. Please see the "Detailed Notes and Explanations" tab for further explanation.***

***** For biodiesel, B20, diesel, gasoline, and liquified petroleum gas, units are gallons for Fuel Used for On-site Equipment and gallons/hr for Equipment Fuel Usage Rate; for compressed natural gas units are ccf (hundreds of cubic feet) for Fuel Used for On-site Equipment and ccf/hr for Equipment Fuel Usage Rate.***

****** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation and other aspects of data entry in Columns M, N, and P. Units are gallons for Fuel Used for Equipment Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Input Worksheet for Waste T&D

Remedy Component that this Input worksheet is part of:	Component 4	Waste Transport & Disposal

On-Site Electricity Use

Equipment Type	HP	Load Factor (%)	Efficiency (%)	Electrical Rating (kW)	Hours Used	Energy Used (kWh)	Notes
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
Estimated Total Electricity Usage Based on Above						0	
Renewable Electricity Generated On-Site*							
Total Electricity Usage Based on Personnel Transportation						0	
Total Grid Electricity Used						0	

**** Electricity generated on-site from renewable resources, for which the facility retains the rights to the renewable energy (i.e., does not sell renewable energy certificates associated with the renewable energy generation).***

On-Site Natural Gas Use

Equipment Type	Power Rating (Btu/hr)	Efficiency (%)	Hours Used	Energy Required (Btu)	Natural Gas Used (ccf)	Notes
					0	
				0		
Totals			0	0	0	

Landfill Gas Combusted On-Site for Energy Use

Equipment Type	Landfill Gas (ccf)	% Methane by volume	Used for electricity?	Landfill Gas Methane Used (ccf)	Notes
				0	
				0	
				0	
Total				0	

Please see the "Detailed Notes and Explanations" tab for instructions on using the two tables above ("On-site Natural Gas Use" and "Landfill Gas Combusted On-Site for Energy Use"). In the two tables above, ccf = hundreds of cubic feet.

Materials Use and Transportation

Material Type*	Unit	Quantity	Tons	Is the Material Refined or Unrefined?**	Material Source: Virgin, Recycled, or Reused?**	Calculate Item Footprint?**	Default One-way Distance to Site (miles)	One-way Distance to Site Override (miles)	Number of One-way Trips to Site	Include Return Trip in Calculations?	Total Distance Transported (miles)	Mode of Transportation***	Transport Fuel Type	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Materials Transport (gallons)	Notes and Description of Materials
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
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			0														
			0														
			0														
			0														
			0														

**** Please see the "Detailed Notes and Explanations" tab for instructions on specifying "User-Defined Materials" in the dropdown menu.***

***** Selections must be made in Columns F - H in order for the footprint calculations to be performed. Please see the "Detailed Notes and Explanations" tab for further information.***

****** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation, accounting for empty return trips, and other aspects of data entry in Columns L, N, O, and Q. Units are gallons for Fuel Used for Materials Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Input Worksheet for Waste T&D

Remedy Component that this Input worksheet is part of:	Component 4	Waste Transport & Disposal

Waste Disposal and Transportation

Waste Destination*	Unit	Quantity	Tons	Default One-way Distance to Site (miles)	One-way Distance to Site Override (miles)	Number of One-way Trips to Site	Include Return Trip in Calculations?	Total Distance Transported (miles)	Mode of Transportation**	Transport Fuel Type	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Waste Transport (gallons)	Notes and Description of Waste
			0		26	1	No	26	Truck (mpg)	Diesel	6		4.3	
Benson Scrap Metal	ton	8	8	50	26	1	No	26	Truck (mpg)	Diesel	6		4.3	example scrap metal facility for unearthed USTs
			0		29	1	No	29	Truck (mpg)	Diesel	6		4.8	
Clean Water of New York, Inc.	ton	20	20	50	29	1	No	29	Truck (mpg)	Diesel	6		4.8	Non-RCRA Non-DOT Used Oil/Oil Water Mixture
			0		40	232	No	9280	Truck (mpg)	Diesel	6		1546.7	
PPark NJ	ton	4623	4623	25	40	232	No	9280	Truck (mpg)	Diesel	6		1546.7	example soil disposal facility
			0											
			0											
			0											
			0											
			0											
			0											

**** No footprint is calculated for the Recycled/Reused On-Site and Off-Site selections. Please see the "Detailed Notes and Explanations" tab for instructions on specifying "User-Defined" selections in the dropdown menu.***

***** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation, accounting for empty return trips, and other aspects of data entry in Columns I, K, L, and N. Units are gallons for Fuel Used for Waste Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Type of Water Used

Source of Water Used*	Unit	Quantity	Tons	Source Location/Aquifer (optional)	Quality of Water Used (optional)	Water Uses (optional)	Fate of Used Water (optional)
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				

**** Only the "Public Water" selection has an associated footprint. No footprint is calculated for the other water source selections.***

Note: Information entered in Columns F - V (Source/Quality/Use/Fate) is not compiled or reported by SEFA.

Input Worksheet for Waste T&D

Remedy Component that this Input worksheet is part of:	Component 4	Waste Transport & Disposal

Other Energy Use and Air Emissions

Item		Units	Quantity	Notes
On-Site				
User-defined on-site conventional energy use #1	*User-Defined	TBD		
User-defined on-site conventional energy use #2	*User-Defined	TBD		
On-site HAP process emissions**		lbs		
On-site GHG emissions**		lbs CO2e		
On-site carbon storage**		lbs CO2e		
Landfill gas flared on-site		ccf CH4		
Other on-site NOx emissions or reductions**		lbs		
Other on-site SOx emissions or reductions**		lbs		
Other on-site PM emissions or reductions**		lbs		
Transportation		**Units**	**Quantity**	**Notes**
User-defined conventional energy transportation #1	*User-Defined	TBD	10	
User-defined conventional energy transportation #2	*User-Defined	TBD		

**** Enter units and conversion factors on "User Defined Factors" tab***
***** Enter a positive number for emissions and a negative number for reductions, avoidances, or storage***
See the "Detailed Notes and Explanations" tab for use of this table.

Other Voluntary Renewable Energy Use

Item		Units	Quantity	Notes
User-defined on-site renewable energy use #1	*User-Defined	TBD		
User-defined on-site renewable energy use #2	*User-Defined	TBD		
User-defined renewable energy transportation #1	*User-Defined	TBD		
User-defined renewable energy transportation #2	*User-Defined	TBD		
Voluntary purchase of renewable electricity**		MWh		
Voluntary purchase of RECs**		MWh		

**** Enter units and conversion factors on "User Defined Factors" tab***
***** Complete information on provider in the table to the right. No footprint reductions are associated with the voluntary purchases.***
See the "Detailed Notes and Explanations" tab for use of this table

Off-Site Laboratory Analysis

Parameter and Notes	Number of Samples	Comments
Totals	**0**	

Description of purchased renewable electricity (green pricing product or green marketing product)	Provider:	
	Type of product:	
	Type of renewable energy source:	
	Date of renewable system installation:	
Description of purchased RECs	Provider:	
	Type of renewable energy source:	
	Date of renewable system installation:	
	Location of renewable system installation:	

Input Worksheet for B&R

Please specify which Remedy Component this Input worksheet is part of: (Select "Off" to exclude this Input worksheet from calculations and results)	**Component 5**	**Backfill & Restoration**

General Scope

Importation of clean fill and backfill, grading and compaction to grade, for the duration of the temediation remedy. Note: 1. All "Personnel Transportation" for the duration of the work has been captured in Component 2 as the same personnel will be on-site for each Component (2-5). 2. Equipment is summarized in Component 3.

Example Items Eliminated through Screening Process

Other Notes and References

Personnel Transportation

Participant	Number of Roundtrips to Site	Roundtrip Distance to Site (miles)	Mode of Transportation*	Transport Fuel Type*	Total Distance Transported (miles)	Default Fuel Usage Rate**	Fuel Usage Rate Override**	Fuel Used for Personnel Transport**	Activity or Notes
Gallagher Bassett Technical Services Technician									
Contractor (7 empl.)									
Total Safety (1 empl.)									

** See the "Detailed Notes and Explanations" tab for explanation of transport and fuel options.*

*** for biodiesel, B20, diesel, and gasoline, units are gallons for Fuel Used and miles/gallon for Fuel Usage Rate; for natural gas, units are hundreds of cubic feet (ccf) for Fuel Used and ccf/miles for Fuel Usage Rate; for electricity, units are miles/kWh for Fuel Usage Rate and the kWh (Fuel Used) are added to total grid electricity used (cell G69).*

On-Site Equipment Use and Transportation

Equipment Type*	HP*	Load Factor (%)*	Equipment Fuel Type**	Equipment Fuel Usage Rate	Equipment Hours Operated	Fuel Used for On-site Equipment	Equipment weight (tons)	Number of Equipment Roundtrips to Site	Roundtrip Distance to Site (miles)	Total Distance Transported (miles)	Mode of Transportation	Transport Fuel Type***	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Equipment Transport (gallons)	Activity or Notes

** HP and Load Factor must be entered by user in Columns C and D. Please see the "Detailed Notes and Explanations" tab for further explanation.*

*** For biodiesel, B20, diesel, gasoline, and liquified petroleum gas, units are gallons for Fuel Used for On-site Equipment and gallons/hr for Equipment Fuel Usage Rate; for compressed natural gas units are ccf (hundreds of cubic feet) for Fuel Used for On-site Equipment and ccf/hr for Equipment Fuel Usage Rate.*

**** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation and other aspects of data entry in Columns M, N, and P. Units are gallons for Fuel Used for Equipment Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.*

Input Worksheet for B&R

Remedy Component that this Input worksheet is part of:	Component 5	Backfill & Restoration

On-Site Electricity Use

Equipment Type	HP	Load Factor (%)	Efficiency (%)	Electrical Rating (kW)	Hours Used	Energy Used (kWh)	Notes
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
Estimated Total Electricity Usage Based on Above						0	
Renewable Electricity Generated On-Site*							
Total Electricity Usage Based on Personnel Transportation						0	
Total Grid Electricity Used						0	

**** Electricity generated on-site from renewable resources, for which the facility retains the rights to the renewable energy (i.e., does not sell renewable energy certificates associated with the renewable energy generation).***

On-Site Natural Gas Use

Equipment Type	Power Rating (Btu/hr)	Efficiency (%)	Hours Used	Energy Required (Btu)	Natural Gas Used (ccf)	Notes
					0	
				0		
Totals			0	0	0	

Landfill Gas Combusted On-Site for Energy Use

Equipment Type	Landfill Gas (ccf)	% Methane by volume	Used for electricity?	Landfill Gas Methane Used (ccf)	Notes
				0	
				0	
				0	
Total				0	

Please see the "Detailed Notes and Explanations" tab for instructions on using the two tables above ("On-site Natural Gas Use" and "Landfill Gas Combusted On-Site for Energy Use"). In the two tables above, ccf = hundreds of cubic feet.

Materials Use and Transportation

Material Type*	Unit	Quantity	Tons	Is the Material Refined or Unrefined?**	Material Source: Virgin, Recycled, or Reused?**	Calculate Item Footprint?**	Default One-way Distance to Site (miles)	One-way Distance to Site Override (miles)	Number of One-way Trips to Site	Include Return Trip in Calculations?	Total Distance Transported (miles)	Mode of Transportation***	Transport Fuel Type	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Materials Transport (gallons)	Notes and Description of Materials
Clean Fill	ton	1000	1000	Unrefined	Recycled	Yes	500	40	50	No	2000	Truck (mpg)	Diesel	6		333.333	
			0					40	50	No	2000	Truck (mpg)	Diesel	6		333.333	
Allocco Recycled Stone	ton	3623	3623	Unrefined	Recycled	Yes	500	20	182	No	3640	Truck (mpg)	Diesel	6		606.667	
			0					20	182	No	3640	Truck (mpg)	Diesel	6		606.667	
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														

**** Please see the "Detailed Notes and Explanations" tab for instructions on specifying "User-Defined Materials" in the dropdown menu.***

***** Selections must be made in Columns F - H in order for the footprint calculations to be performed. Please see the "Detailed Notes and Explanations" tab for further information.***

****** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation, accounting for empty return trips, and other aspects of data entry in Columns L, N, O, and Q. Units are gallons for Fuel Used for Materials Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Input Worksheet for B&R

Remedy Component that this Input worksheet is part of:	Component 5	Backfill & Restoration

Waste Disposal and Transportation

Waste Destination*	Unit	Quantity	Tons	Default One-way Distance to Site (miles)	One-way Distance to Site Override (miles)	Number of One-way Trips to Site	Include Return Trip in Calculations?	Total Distance Transported (miles)	Mode of Transportation**	Transport Fuel Type	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Waste Transport (gallons)	Notes and Description of Waste
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											

** No footprint is calculated for the Recycled/Reused On-Site and Off-Site selections. Please see the "Detailed Notes and Explanations" tab for instructions on specifying "User-Defined" selections in the dropdown menu.*

*** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation, accounting for empty return trips, and other aspects of data entry in Columns I, K, L, and N. Units are gallons for Fuel Used for Waste Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.*

Type of Water Used

Source of Water Used*	Unit	Quantity	Tons	Source Location/Aquifer (optional)	Quality of Water Used (optional)	Water Uses (optional)	Fate of Used Water (optional)
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				

** Only the "Public Water" selection has an associated footprint. No footprint is calculated for the other water source selections.*

Note: Information entered in Columns F - V (Source/Quality/Use/Fate) is not compiled or reported by SEFA.

Input Worksheet for B&R

Remedy Component that this Input worksheet is part of:	Component 5	Backfill & Restoration

Other Energy Use and Air Emissions

Item		Units	Quantity	Notes
On-Site				
User-defined on-site conventional energy use #1	*User-Defined	TBD		
User-defined on-site conventional energy use #2	*User-Defined	TBD		
On-site HAP process emissions**		lbs		
On-site GHG emissions**		lbs CO2e		
On-site carbon storage**		lbs CO2e		
Landfill gas flared on-site		ccf CH4		
Other on-site NOx emissions or reductions**		lbs		
Other on-site SOx emissions or reductions**		lbs		
Other on-site PM emissions or reductions**		lbs		
Transportation		**Units**	**Quantity**	**Notes**
User-defined conventional energy transportation #1	*User-Defined	TBD	10	
User-defined conventional energy transportation #2	*User-Defined	TBD		

**** Enter units and conversion factors on "User Defined Factors" tab***
***** Enter a positive number for emissions and a negative number for reductions, avoidances, or storage***
See the "Detailed Notes and Explanations" tab for use of this table.

Other Voluntary Renewable Energy Use

Item		Units	Quantity	Notes
User-defined on-site renewable energy use #1	*User-Defined	TBD		
User-defined on-site renewable energy use #2	*User-Defined	TBD		
User-defined renewable energy transportation #1	*User-Defined	TBD		
User-defined renewable energy transportation #2	*User-Defined	TBD		
Voluntary purchase of renewable electricity**		MWh		
Voluntary purchase of RECs**		MWh		

**** Enter units and conversion factors on "User Defined Factors" tab***
***** Complete information on provider in the table to the right. No footprint reductions are associated with the voluntary purchases.***
See the "Detailed Notes and Explanations" tab for use of this table

Off-Site Laboratory Analysis

Parameter and Notes	Number of Samples	Comments
Totals	**0**	

Description of purchased renewable electricity (green pricing product or green marketing product)	Provider:	
	Type of product:	
	Type of renewable energy source:	
	Date of renewable system installation:	
Description of purchased RECs	Provider:	
	Type of renewable energy source:	
	Date of renewable system installation:	
	Location of renewable system installation:	

Input Worksheet for EPS

Please specify which Remedy Component this Input worksheet is part of: (Select "Off" to exclude this Input worksheet from calculations and results)	**Component 6**	**Endpoint Sampling**

General Scope

Scope of work includes endpoint sampling following site remediation

Example Items Eliminated through Screening Process

Other Notes and References

Assume site SCOs for SVOCs and metals due to UU and RRU exceedances

Personnel Transportation

Participant	Number of Roundtrips to Site	Roundtrip Distance to Site (miles)	Mode of Transportation*	Transport Fuel Type*	Total Distance Transported (miles)	Default Fuel Usage Rate**	Fuel Usage Rate Override**	Fuel Used for Personnel Transport**	Activity or Notes
Gallagher Bassett Technical Services	15	185	Car	Gasoline	2775	25	30	92.5	Environmental Monitoring and Endpoint Sampling
Lab Courier - Phoenix	8	110	Car	Gasoline	880	25		35.2	Sample pick-up from GBTS Poughkeepsie office

**** See the "Detailed Notes and Explanations" tab for explanation of transport and fuel options.***

***** for biodiesel, B20, diesel, and gasoline, units are gallons for Fuel Used and miles/gallon for Fuel Usage Rate; for natural gas, units are hundreds of cubic feet (ccf) for Fuel Used and ccf/miles for Fuel Usage Rate; for electricity, units are miles/kWh for Fuel Usage Rate and the kWh (Fuel Used) are added to total grid electricity used (cell G69).***

On-Site Equipment Use and Transportation

Equipment Type*	HP*	Load Factor (%)*	Equipment Fuel Type**	Equipment Fuel Usage Rate	Equipment Hours Operated	Fuel Used for On-site Equipment	Equipment weight (tons)	Number of Equipment Roundtrips to Site	Roundtrip Distance to Site (miles)	Total Distance Transported (miles)	Mode of Transportation	Transport Fuel Type***	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Equipment Transport (gallons)	Activity or Notes

**** HP and Load Factor must be entered by user in Columns C and D. Please see the "Detailed Notes and Explanations" tab for further explanation.***

***** For biodiesel, B20, diesel, gasoline, and liquified petroleum gas, units are gallons for Fuel Used for On-site Equipment and gallons/hr for Equipment Fuel Usage Rate; for compressed natural gas units are ccf (hundreds of cubic feet) for Fuel Used for On-site Equipment and ccf/hr for Equipment Fuel Usage Rate.***

****** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation and other aspects of data entry in Columns M, N, and P. Units are gallons for Fuel Used for Equipment Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Input Worksheet for EPS

Remedy Component that this Input worksheet is part of:	Component 6	Endpoint Sampling

On-Site Electricity Use

Equipment Type	HP	Load Factor (%)	Efficiency (%)	Electrical Rating (kW)	Hours Used	Energy Used (kWh)	Notes
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
Estimated Total Electricity Usage Based on Above						0	
Renewable Electricity Generated On-Site*							
Total Electricity Usage Based on Personnel Transportation						0	
Total Grid Electricity Used						0	

**** Electricity generated on-site from renewable resources, for which the facility retains the rights to the renewable energy (i.e., does not sell renewable energy certificates associated with the renewable energy generation).***

On-Site Natural Gas Use

Equipment Type	Power Rating (Btu/hr)	Efficiency (%)	Hours Used	Energy Required (Btu)	Natural Gas Used (ccf)	Notes
					0	
				0		
Totals			0	0	0	

Landfill Gas Combusted On-Site for Energy Use

Equipment Type	Landfill Gas (ccf)	% Methane by volume	Used for electricity?	Landfill Gas Methane Used (ccf)	Notes
				0	
				0	
				0	
Total				0	

Please see the "Detailed Notes and Explanations" tab for instructions on using the two tables above ("On-site Natural Gas Use" and "Landfill Gas Combusted On-Site for Energy Use"). In the two tables above, ccf = hundreds of cubic feet.

Materials Use and Transportation

Material Type*	Unit	Quantity	Tons	Is the Material Refined or Unrefined?**	Material Source: Virgin, Recycled, or Reused?**	Calculate Item Footprint?**	Default One-way Distance to Site (miles)	One-way Distance to Site Override (miles)	Number of One-way Trips to Site	Include Return Trip in Calculations?	Total Distance Transported (miles)	Mode of Transportation***	Transport Fuel Type	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Materials Transport (gallons)	Notes and Description of Materials
20-mil vapor barrier	sqft	13000	1.794	Refined	Virgin	Yes	500	20	1	No	20	Truck (mpg)	Diesel	6		3.333	Construction measure (not a component of the
			0					20	1	No	20	Truck (mpg)	Diesel	6		3.333	
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														

**** Please see the "Detailed Notes and Explanations" tab for instructions on specifying "User-Defined Materials" in the dropdown menu.***

***** Selections must be made in Columns F - H in order for the footprint calculations to be performed. Please see the "Detailed Notes and Explanations" tab for further information.***

****** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation, accounting for empty return trips, and other aspects of data entry in Columns L, N, O, and Q. Units are gallons for Fuel Used for Materials Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Input Worksheet for EPS

Remedy Component that this Input worksheet is part of:	Component 6	Endpoint Sampling

Waste Disposal and Transportation

Waste Destination*	Unit	Quantity	Tons	Default One-way Distance to Site (miles)	One-way Distance to Site Override (miles)	Number of One-way Trips to Site	Include Return Trip in Calculations?	Total Distance Transported (miles)	Mode of Transportation**	Transport Fuel Type	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Waste Transport (gallons)	Notes and Description of Waste
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											

** No footprint is calculated for the Recycled/Reused On-Site and Off-Site selections. Please see the "Detailed Notes and Explanations" tab for instructions on specifying "User-Defined" selections in the dropdown menu.*

*** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation, accounting for empty return trips, and other aspects of data entry in Columns I, K, L, and N. Units are gallons for Fuel Used for Waste Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.*

Type of Water Used

Source of Water Used*	Unit	Quantity	Tons	Source Location/Aquifer (optional)	Quality of Water Used (optional)	Water Uses (optional)	Fate of Used Water (optional)
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				

** Only the "Public Water" selection has an associated footprint. No footprint is calculated for the other water source selections.*

Note: Information entered in Columns F - V (Source/Quality/Use/Fate) is not compiled or reported by SEFA.

Input Worksheet for EPS

Remedy Component that this Input worksheet is part of:	Component 6	Endpoint Sampling

Other Energy Use and Air Emissions

Item		Units	Quantity	Notes
On-Site				
User-defined on-site conventional energy use #1	*User-Defined	TBD		
User-defined on-site conventional energy use #2	*User-Defined	TBD		
On-site HAP process emissions**		lbs		
On-site GHG emissions**		lbs CO2e		
On-site carbon storage**		lbs CO2e		
Landfill gas flared on-site		ccf CH4		
Other on-site NOx emissions or reductions**		lbs		
Other on-site SOx emissions or reductions**		lbs		
Other on-site PM emissions or reductions**		lbs		
Transportation		**Units**	**Quantity**	**Notes**
User-defined conventional energy transportation #1	*User-Defined	TBD	10	
User-defined conventional energy transportation #2	*User-Defined	TBD		

**** Enter units and conversion factors on "User Defined Factors" tab***
***** Enter a positive number for emissions and a negative number for reductions, avoidances, or storage***
See the "Detailed Notes and Explanations" tab for use of this table.

Off-Site Laboratory Analysis

Parameter and Notes	Number of Samples	Comments
Off-site Laboratory Analysis - SVOCs	35	
Off-site Laboratory Analysis - Metals	15	
Off-site Laboratory Analysis - VOCs	21	
Off-site Laboratory Analysis - Other	15	
Totals	**86**	

Other Voluntary Renewable Energy Use

Item		Units	Quantity	Notes
User-defined on-site renewable energy use #1	*User-Defined	TBD		
User-defined on-site renewable energy use #2	*User-Defined	TBD		
User-defined renewable energy transportation #1	*User-Defined	TBD		
User-defined renewable energy transportation #2	*User-Defined	TBD		
Voluntary purchase of renewable electricity**		MWh		
Voluntary purchase of RECs**		MWh		

**** Enter units and conversion factors on "User Defined Factors" tab***
***** Complete information on provider in the table to the right. No footprint reductions are associated with the voluntary purchases.***
See the "Detailed Notes and Explanations" tab for use of this table

Description of purchased renewable electricity (green pricing product or green marketing product)	Provider:	
	Type of product:	
	Type of renewable energy source:	
	Date of renewable system installation:	
Description of purchased RECs	Provider:	
	Type of renewable energy source:	
	Date of renewable system installation:	
	Location of renewable system installation:	

All Components - On-Site Footprint (Scope 1)

Contributors to Footprints	Units	Usage	Energy		GHG		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
On-Site														
On-site Renewable Energy														
Renewable electricity generated on-site	MWh	0	3.413	0										
Landfill gas combusted on-site for energy use	ccf CH4	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
On-site biodiesel use	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
On-site biodiesel use - User Defined	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
User-defined on-site renewable energy use #1	gal	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined on-site renewable energy use #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
On-site Renewable Energy Subtotals				**0**		**0**		**0**		**0**		**0**		**0**
Notes:														
On-site Conventional Energy														
On-site grid electricity	MWh	0	3.413	0										
On-site diesel use - Other	Gal	91.125	0.139	12.666375	22.5	2050.3125	0.17	15.49125	0.0054	0.492075	0.0034	0.309825	0.0000052	0.0004739
On-site diesel use <75 hp	Gal	0	0.139	0	22.21	0	0.1565	0	0.000145	0	0.0145	0	0.00004	0
On-site diesel use 75<hp<750	Gal	17894.423	0.139	2487.3248	22.24	397971.97	0.101	1807.3367	0.00013	2.326275	0.009	161.04981	0.00004	0.7157769
On-site diesel use >750 hp	Gal	0	0.139	0	22.24	0	0.149	0	0.00013	0	0.006	0	0.00004	0
On-site gasoline use - Other	Gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
On-site gasoline use <25 hp	Gal	0	0.124	0	17.48	0	0.037	0	0.00025	0	0.165	0	0.00008	0
On-site gasoline use >25 hp	Gal	0	0.124	0	19.93	0	0.032	0	0.00029	0	0.002	0	0.00009	0
On-site natural gas use	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
On-site compressed natural gas use - Other	ccf	0	NP		1957.835	0	16.0325	0	0.023045	0	0.2775	0	0	0
On-site compressed natural gas use	ccf	0	NP		1957.835	0	16.0325	0	0.023045	0	0.2775	0	0	0
On-site liquified petroleum gas use - Other	gal	0	NP		12.69	0	0.021	0	0.00013	0	0.001	0	0	0
On-site liquified petroleum gas use	gal	0	NP		12.69	0	0.021	0	0.00013	0	0.001	0	0	0
Other forms of on-site conventional energy use #1	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
Other forms of on-site conventional energy use #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
On-site Conventional Energy Subtotals				**2,500**		**400,022**		**1,823**		**3**		**161**		**1**
Notes:														
Other On-site Emissions														
On-site HAP process emissions	lbs	0											1	0
On-site GHG emissions	lbs CO2e	0			1	0								
On-site carbon storage	lbs CO2e	0			1	0								
GHG avoided by flaring on-site landfill methane	Lbs	0			-262	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Other on-site NOx emissions or reductions	lbs	0					1	0						
Other on-site SOx emissions or reductions	lbs	0							1	0				
Other on-site PM emissions or reductions	lbs	0									1	0		
User-defined recycled/reused on-site #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined recycled/reused on-site #3	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
Benson Scrap Metal	ton	8	0	0	0	0	0	0	0	0	0	0	0	0
Notes:														
On-site Totals				**2,499.99**		**400,022**		**1,823**		**3**		**161**		**1**

All Components - Electricity Generation Footprint (Scope 2)

Contributors to Footprints	Units	Usage	Energy		GHG		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Electricity Generation														
Grid electricity	MWh	0	6.929	0	N/A*	0	N/A*	0	N/A*	0	N/A*	0	N/A*	0
**** Conversion factors are not applied to grid electricity in the "All Components" tab since multiple fuel mixes may be used. The value for each cell shaded yellow in Row 51 is the sum of values from Components 1 - 6.***														
Voluntary purchase of renewable electricity	MWh	0												
Voluntary purchase of RECs	MWh	0												
Notes:														

All Components - Transportation Footprint (Scope 3a)

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Conventional Energy														
Transportation diesel use	gal	5200.666	0.139	722.89257	22.5	117014.99	0.17	884.11322	0.0054	28.083596	0.0034	17.682264	0.0000052	0.0270435
Transportation diesel use - car	gal	0	0.139	0	22.57	0	0.015	0	0.0002	0	0.003	0	0.00252	0
Transportation diesel use - passenger truck	gal	7.9	0.139	1.0981	22.545	178.1055	0.0585	0.46215	0.0002	0.00158	0.007	0.0553	0.002605	0.0205795
Transportation diesel use - User Defined	gal	0	0.139	0	22.5	0	0.17	0	0.0054	0	0.0034	0	0.0000052	0
Transportation gasoline use	gal	5	0.124	0.62	19.6	98	0.11	0.55	0.0045	0.0225	0.00054	0.0027	0.000039	0.000195
Transportation gasoline use - car	gal	2897.8	0.124	359.3272	19.77	57289.506	0.027	78.2406	0.00036	1.043208	0.003	8.6934	0.0067	19.41526
Transportation gasoline use - passenger truck	gal	0	0.124	0	19.79	0	0.035	0	0.00036	0	0.003	0	0.00661	0
Transportation gasoline use - User Defined	gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
Transportation natural gas use	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Transportation natural gas use - User Defined	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
User-defined conventional energy transportation #1	TBD	60	0	0	0	0	0	0	0	0	0	0	0	0
User-defined conventional energy transportation #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
Conventional Energy Subtotals				**1,084**		**174,581**		**963**		**29**		**26**		**19**
Notes:														
Renewable Energy														
Transportation biodiesel use	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
Transportation biodiesel use - User Defined	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
User-defined renewable energy transportation #1	TBD	0	Biodiesel		0	0	0	0	0	0	0	0	Ref.	
User-defined renewable energy transportation #2	TBD	0	mpg or pmp		0	0	0	0	0	0	0	0	0	0
Renewable Energy Subtotals				**0**		**0**		**0**		**0**		**0**		**0**
Notes:														
Transportation Totals				**1084**		**174581**		**963**		**29**		**26**		**19**

All Components - Off-Site Footprint (Scope 3b)

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Construction Materials														
Aluminum, Rolled Sheet	lb	0	0.0633	0	9.15	0	0.0148	0	0.0283	0	0.0088	0	0.00102	0
Asphalt, mastic	lb	0	0.0412	0	0.85	0	0.00271	0	0.00798	0	0.000766	0	0.00107	0
Asphalt, paving-grade	lb	0	0.5	0	8.58	0	0.0299	0	0.0969	0	0.0091	0	0.0133	0
Ethanol, Corn, 95%	lb	0	0.0318	0	-0.0199	0	0.00425	0	0.00303	0	0.000469	0	0.0000846	0
Ethanol, Corn, 99.7%	lb	0	0.0324	0	0.0591	0	0.00431	0	0.0031	0	0.000472	0	0.000087	0
Ethanol, Petroleum, 99.7%	lb	0	0.0205	0	1.25	0	0.00199	0	0.00214	0	0.000277	0	0.0000589	0
Gravel/Sand Mix, 65% Gravel	lb	0	0.0000248	0	0.0024	0	0.000018	0	4.52E-06	0	2.61E-06	0	3.08E-07	0
Gravel/sand/clay	lb	0	0.000028	0	0.00335	0	0.0000165	0	0.000015	0	0.000002	0	2.05E-10	0
HDPE	lb	0	0.0332	0	1.94	0	0.00325	0	0.00409	0	0.000439	0	0.0000641	0
Photovoltaic system (installed)	W	0	0.0336	0	4.47	0	0.015	0	0.032	0	0.00063	0	0.0000029	0
PVC	lb	132	0.0262	3.4584	2.02	266.64	0.004	0.528	0.00274	0.36168	0.000372	0.049104	0.000375	0.0495
Portland cement, US average	lb	0	0.0139	0	1.34	0	0.00654	0	0.0104	0	0.00378	0	0.00097	0
Ready-mixed concrete, 20 MPa	ft3	0	0.217	0	19.5	0	0.0975	0	0.154	0	0.057	0	0.0141	0
Round Gravel	lb	0	0.0000248	0	0.0024	0	0.000018	0	4.52E-06	0	2.61E-06	0	3.08E-07	0
Sand	lb	1407.376	0.0000248	0.0349029	0.0024	3.3777024	0.000018	0.0253328	4.52E-06	0.0063613	2.61E-06	0.0036733	3.08E-07	0.0004335
Stainless Steel	lb	0	0.0116	0	3.4	0	0.0075	0	0.012	0	0.0044	0	0.000144	0
Steel	lb	0	0.0044	0	1.1	0	0.0014	0	0.0017	0	0.00056	0	0.000067	0
Other refined construction materials	lb	0	0.01885	0	2.115	0	0.0040375	0	0.0051325	0	0.0014428	0	0.0001625	0
Other unrefined construction materials	lb	0	0.000028	0	0.00335	0	0.0000165	0	0.000015	0	0.000002	0	2.05E-10	0

Notes:

All Components - Off-Site Footprint (Scope 3b)

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Treatment Materials & Chemicals														
Cheese Whey	lbs	0	0.0025	0	0.031	0	0.000062	0	0.000033	0	0.000002	0	NP	
Emulsified vegetable oil	lbs	0	0.0077	0	3.44	0	0.0066	0	0.0019	0	0.000033	0	NP	
Granular activated carbon, primary	lbs	0	0.0356	0	4.82	0	0.0793	0	0.128	0	0.000987	0	0.000657	0
Granular activated carbon, regenerated	lbs	0	0.00873	0	1.7	0	0.00733	0	0.0129	0	0.000886	0	0.000671	0
Hydrogen Peroxide, 50% in H2O	lbs	0	0.00979	0	1.19	0	0.00142	0	0.0024	0	0.000308	0	0.0000629	0
Iron (II) Sulfate	lbs	0	0.00147	0	0.167	0	0.000316	0	0.000589	0	0.000103	0	0.000023	0
Lime, Hydrated, Packed	lbs	0	0.00206	0	0.762	0	0.000513	0	0.000358	0	0.00013	0	6.57E-06	0
Molasses	lbs	0	0.0044	0	0.48	0	0.0011	0	0.00024	0	0.0000041	0	NP	
Phosphoric Acid, 70% in H2O	lbs	0	0.0067	0	0.882	0	0.00282	0	0.0294	0	0.00171	0	0.000163	0
Potassium Permanganate	lbs	0	0.00981	0	1.16	0	0.00234	0	0.0032	0	0.000422	0	0.000122	0
Sodium Hydroxide, 50% in H2O	lbs	0	0.00977	0	1.09	0	0.00194	0	0.00352	0	0.000403	0	0.000129	0
Other Treatment Chemicals & Materials	lbs	0	0.015	0	1.67	0	0.003	0	0.0065	0	0.00061	0	0.000016	0
Notes:														
Fuel Processing														
Biodiesel produced	gal	0	0.029	0	-16.8	0	0.018	0	0.033	0	0.00082	0	NP	
Diesel produced	gal	23194.114	0.017	394.29994	3.02	70046.225	0.0051	118.28998	0.0062	143.80351	0.0017	39.429994	0.0011	25.513525
Gasoline produced	gal	2902.8	0.033	95.7924	2.8	8127.84	0.0046	13.35288	0.005	14.514	0.0015	4.3542	0.001	2.9028
Liquefied Petroleum Gas Produced	gal	0	0.088	0	1.47	0	0.0016	0	0.0024	0	0.0007	0	0.0003	0
Natural Gas - Compressed Produced	ccf	0	19.983	0	343.92	0	0.4732	0	2.1651	0	0.1846	0	0.2895	0
Natural Gas Produced	ccf	0	0.0052	0	2.2	0	0.0037	0	0.0046	0	0.000072	0	0.0000061	0
Fuel Processing Subtotals				**490.09234**		**78174.065**		**131.64286**		**158.31751**		**43.784194**		**28.416325**
Notes:														
Public water	gal x 1000	294.02	0.0092	2.704984	5	1470.1	0.0097	2.851994	0.0059	1.734718	0.016	4.70432	0.000015	0.0044103
User-defined water resource #1	gal x 1000	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined water resource #2	gal x 1000	0	0	0	0	0	0	0	0	0	0	0	0	0
Notes:														

All Components - Off-Site Footprint (Scope 3b)

			Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
Category	Units	Usage	Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Off-Site Services														
Hazardous waste incineration	lb	0	0.00609	0	2.43	0	0.0016	0	0.00167	0	0.000209	0	0.000087	0
Off-site waste water treatment (POTW)	gal x 1000	0	0.015	0	4.4	0	0.016	0	0.015	0	NP		NP	
Off-site non-hazardous waste landfill	ton	0	0.16	0	25	0	0.14	0	0.075	0	0.4	0	0.0014	0
Off-site hazardous waste landfill	ton	0	0.18	0	27.5	0	0.154	0	0.0825	0	0.44	0	0.00154	0
Off-site Laboratory Analysis - Other	sample	535	0.058071	31.068001	6.8534384	3666.5896	0.131402	70.300047	0.3038758	162.57354	0.0455698	24.379856	0.0330165	17.663843
Off-site Laboratory Analysis - Metals	sample	118	0.212	25.016	27.4693	3241.3774	0.6423	75.7914	1.5072	177.8496	0.2264	26.7152	0.1643	19.3874
Off-site Laboratory Analysis - Mercury	sample	103	0.0731715	7.5366617	9.325458	960.52217	0.2127439	21.912622	0.4982396	51.318679	0.0747359	7.6978018	0.0542332	5.5860155
Off-site Laboratory Analysis - Inorganic Anions	sample	0	0.0074025	0	0.6459478	0	0.0067681	0	0.0147929	0	0.0022024	0	0.0015542	0
Off-site Laboratory Analysis - Alkalinity	sample	0	0.0174398	0	1.3381922	0	0.0070106	0	0.0132496	0	0.00194	0	0.0012831	0
Off-site Laboratory Analysis - Perchlorate	sample	0	0.023885	0	1.8717054	0	0.0079807	0	0.0141535	0	0.0020547	0	0.0012875	0
Off-site Laboratory Analysis - Nitrogen/Nitrate	sample	0	0.0336475	0	4.29897	0	0.0954592	0	0.2226646	0	0.0335099	0	0.0242506	0
Off-site Laboratory Analysis - Sulfate	sample	0	0.0141225	0	1.4726728	0	0.0079807	0	0.0136024	0	0.0019797	0	0.0012015	0
Off-site Laboratory Analysis - PCBs	sample	103	0.0512769	5.2815207	5.224902	538.16491	0.0833339	8.5833896	0.1904774	19.619176	0.0284393	2.929252	0.0212083	2.18445
Off-site Laboratory Analysis - VOCs	sample	144	0.0762045	10.973446	9.016814	1298.4212	0.104498	15.047718	0.2270738	32.698627	0.0339508	4.888921	0.0235892	3.3968477
Off-site Laboratory Analysis - SVOCs	sample	143	0.0715602	10.233106	7.870422	1125.4703	0.1459445	20.870066	0.3373038	48.234443	0.0504853	7.2194036	0.0372577	5.3278568
Notes:														
Resource Extraction for Electricity														
Coal extraction and processing	MWh	0	3.1	0	180.0	0	0.8	0	0.2	0	0.0	0	NP	
Natural gas extraction and processing	MWh	0	1.6	0	270.0	0	0.2	0	13.0	0	0.0	0	NP	
Nuclear fuel extraction and processing	MWh	0	0.2	0	25.0	0	0.2	0	0.5	0	0.0	0	NP	
Oil extraction and processing	MWh	0	2.3	0	270.0	0	1.7	0	0.1	0	0.0	0	NP	
Other fuel extraction and processing	MWh	0	0	0	0	0	0	0	0	0	0	0	0	0
Resource Extraction Subtotals				**0**		**0**		**0**		**0**		**0**		**0**
Notes:														
Electricity Transmission														
Transmission and distribution losses	MWh	0	1.0342	0										
Notes:														

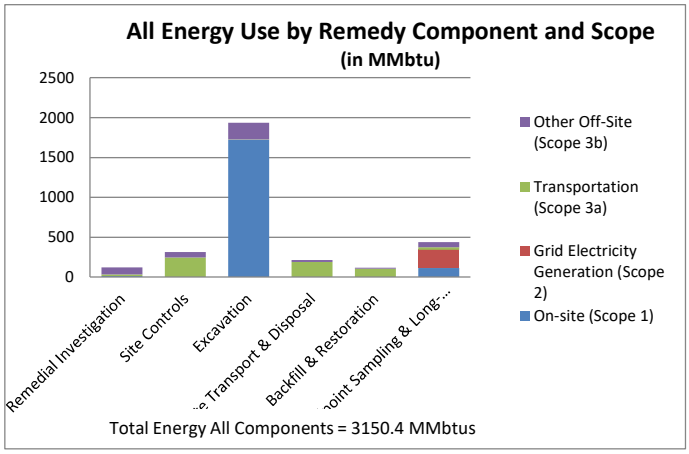
All Components - Off-Site Footprint (Scope 3b)

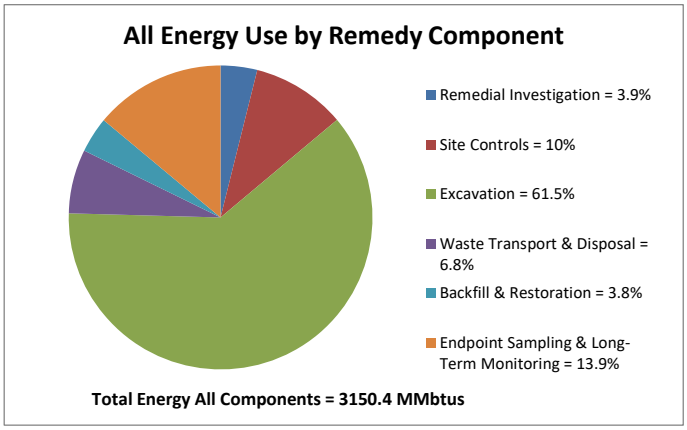
			Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
Category	Units	Usage	Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
User-defined Materials														
BENSEAL (Sodium Bentonite)	50 lb bag	2	0	0	0	0	0	0	0	0	0	0	0	0
orange mesh fencing	ft	600	0	0	0	0	0	0	0	0	0	0	0	0
absorbent composite socks	ft	1200	0	0	0	0	0	0	0	0	0	0	0	0
6-mil 40' x 100' polyurethane sheeting	rolls	10	0	0	0	0	0	0	0	0	0	0	0	0
aggregate 2" stone	ton	120	0	0	0	0	0	0	0	0	0	0	0	0
filter cloth	lb	120	0	0	0	0	0	0	0	0	0	0	0	0
20-mil vapor barrier	sqft	13000	0	0	0	0	0	0	0	0	0	0	0	0
Clean Fill	ton	1000	0	0	0	0	0	0	0	0	0	0	0	0
Allocco Recycled Stone	ton	3623	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #10	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #11	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #12	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #13	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #14	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #15	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #16	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #17	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #18	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #19	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #20	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
Notes:														
User-defined Waste Destinations														
Benson Scrap Metal	ton	8	0	0	0	0	0	0	0	0	0	0	0	0
Clean Water of New York, Inc.	ton	20	0	0	0	0	0	0	0	0	0	0	0	0
User-defined recycled/reused off-site #3	TBD	0	y(MMBtu/t		lbs CO2e/t		Dx(lbs/unit		Dx(lbs/unit)		M(lbs/unit)		APs(lbs/unit	
PPark NJ	ton	4623	0	0	0	0	0	0	0	0	0	0	0	0
User-defined non-hazardous waste destination #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined non-hazardous waste destination #3	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined hazardous waste destination #1	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined hazardous waste destination #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined hazardous waste destination #3	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
Notes:														
Off-site Totals				**586.39936**		**90744.728**		**347.55343**		**652.71433**		**122.37173**		**82.017082**

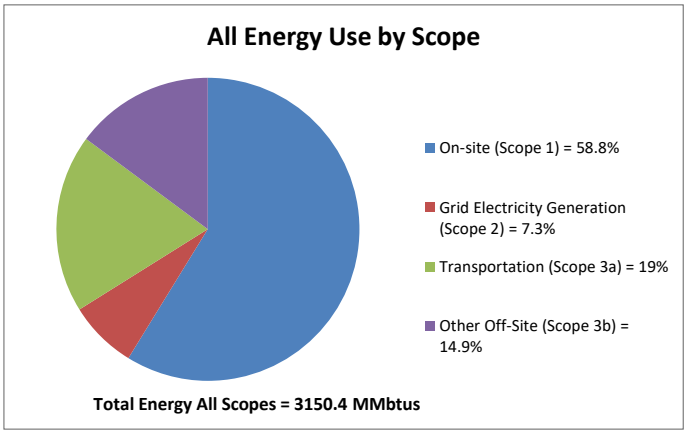
All Components - Intermediate Totals

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Total Grid Electricity Footprint														
On-site grid electricity	MWh	0	3.413	0										
Electricity Generation														
Grid electricity	MWh	0	6.929	0	1124.3	0	2.2421	0	4.6078874	0	0.057518	0	0.2102371	0
Resource Extraction for Electricity														
Coal extraction and processing	MWh	0	3.1	0	180.0	0	0.8	0	0.2	0	0.0	0	NP	
Natural gas extraction and processing	MWh	0	1.6	0	270.0	0	0.2	0	13.0	0	0.0	0	NP	
Nuclear fuel extraction and processing	MWh	0	0.2	0	25.0	0	0.2	0	0.5	0	0.0	0	NP	
Oil extraction and processing	MWh	0	2.3	0	270.0	0	1.7	0	0.1	0	0.0	0	NP	
Other fuel extraction and processing	MWh	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Electricity Transmission														
Transmission and distribution losses	MWh	0	1.0342	0	112.43	0	0.22421	0	0.4607887	0	0.0057518	0	0.0210237	0
Total Grid Electricity Footprint				**0**		**0**		**0**		**0**		**0**		**0**
Total Fuel Footprints														
Total Gasoline Footprint														
On-site gasoline use - Other	gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
On-site gasoline use <25 hp	gal	0	0.124	0	17.48	0	0.037	0	0.00025	0	0.165	0	0.00008	0
On-site gasoline use >25 hp	gal	0	0.124	0	19.93	0	0.032	0	0.00029	0	0.002	0	0.00009	0
Transportation gasoline use	gal	5	0.124	0.62	19.6	98	0.11	0.55	0.0045	0.0225	0.00054	0.0027	0.000039	0.000195
Transportation gasoline use - car	gal	2897.8	0.124	359.3272	19.77	57289.506	0.027	78.2406	0.00036	1.043208	0.003	8.6934	0.0067	19.41526
Transportation gasoline use - passenger truck	gal	0	0.124	0	19.79	0	0.035	0	0.00036	0	0.003	0	0.00661	0
Transportation gasoline use - User Defined	gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
Gasoline produced	gal	2902.8	0.033	95.7924	2.8	8127.84	0.0046	13.35288	0.005	14.514	0.0015	4.3542	0.001	2.9028
Total Gasoline Footprint		**2902.8**		**455.7396**		**65515.346**		**92.14348**		**15.579708**		**13.0503**		**22.318255**
Total Diesel Footprint														
On-site diesel use - Other	gal	91.125	0.139	12.666375	22.5	2050.3125	0.17	15.49125	0.0054	0.492075	0.0034	0.309825	0.0000052	0.0004739
On-site diesel use <75 hp	gal	0	0.139	0	22.21	0	0.1565	0	0.000145	0	0.0145	0	0.00004	0
On-site diesel use 75<hp<750	gal	17894.423	0.139	2487.3248	22.24	397971.97	0.101	1807.3367	0.00013	2.326275	0.009	161.04981	0.00004	0.7157769
On-site diesel use >750 hp	gal	0	0.139	0	22.24	0	0.149	0	0.00013	0	0.006	0	0.00004	0
Transportation diesel use	gal	5200.666	0.139	722.89257	22.5	117014.99	0.17	884.11322	0.0054	28.083596	0.0034	17.682264	0.0000052	0.0270435
Transportation diesel use - car	gal	0	0.139	0	22.57	0	0.015	0	0.0002	0	0.003	0	0.00252	0
Transportation diesel use - passenger truck	gal	7.9	0.139	1.0981	22.545	178.1055	0.0585	0.46215	0.0002	0.00158	0.007	0.0553	0.002605	0.0205795
Transportation diesel use - User Defined	gal	0	0.139	0	22.5	0	0.17	0	0.0054	0	0.0034	0	0.0000052	0
Diesel produced	gal	23194.114	0.017	394.29994	3.02	70046.225	0.0051	118.28998	0.0062	143.80351	0.0017	39.429994	0.0011	25.513525
Total Diesel Footprint		**23194.114**		**3618.2818**		**587261.6**		**2825.6933**		**174.70703**		**218.52719**		**26.277399**
Total Biodiesel Footprint														
On-site biodiesel use	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
On-site biodiesel use - User Defined	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
Transportation biodiesel use	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
Transportation biodiesel use - User Defined	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
Biodiesel produced	gal	0	0.029	0	-16.8	0	0.018	0	0.033	0	0.00082	0	NP	
Total Biodiesel Footprint		**0**		**0**		**0**		**0**		**0**		**0**		**0**
Total Natural Gas Footprint														
On-site natural gas use	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Transportation natural gas use	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Transportation natural gas use - User Defined	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Natural gas produced	ccf	0	0.0052	0	2.2	0	0.0037	0	0.0046	0	0.000072	0	0.0000061	0
Total Natural Gas Footprint		**0**		**0**		**0**		**0**		**0**		**0**		**0**
Total Liquified Petroleum Gas Footprint														
On-site liquified petroleum gas use - Other	ccf	0	NP		12.69	0	0.021	0	0.00013	0	0.001	0	0	0
On-site liquified petroleum gas use	ccf	0	NP		12.69	0	0.021	0	0.00013	0	0.001	0	0	0
Liquified petroleum gas produced	ccf	0	0.088	0	1.47	0	0.0016	0	0.0024	0	0.0007	0	0.0003	0
Total Natural Gas Footprint		**0**		**0**		**0**		**0**		**0**		**0**		**0**
Total Compressed Gas Footprint														
On-site compressed gas use - Other	ccf	0	NP		1957.835	0	16.0325	0	0.023045	0	0.2775	0	0	0
On-site compressed gas use	ccf	0	NP		1957.835	0	16.0325	0	0.023045	0	0.2775	0	0	0
Compressed gas produced	ccf	0	19.983	0	343.92	0	0.4732	0	2.1651	0	0.1846	0	0.2895	0
Total Natural Gas Footprint		**0**		**0**		**0**		**0**		**0**		**0**		**0**

Notes:







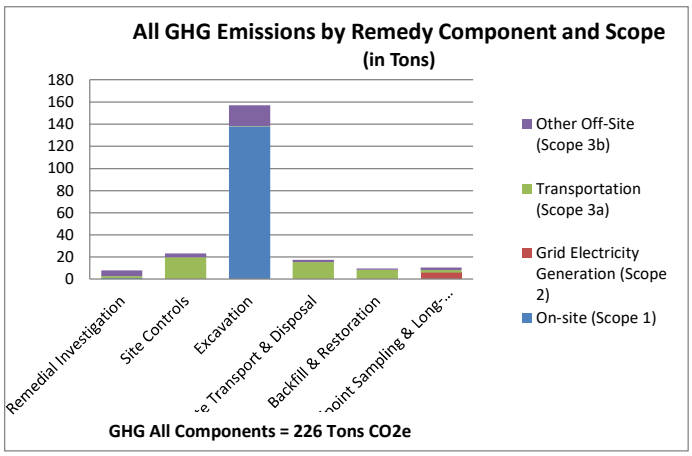
Total Energy
MMbtus

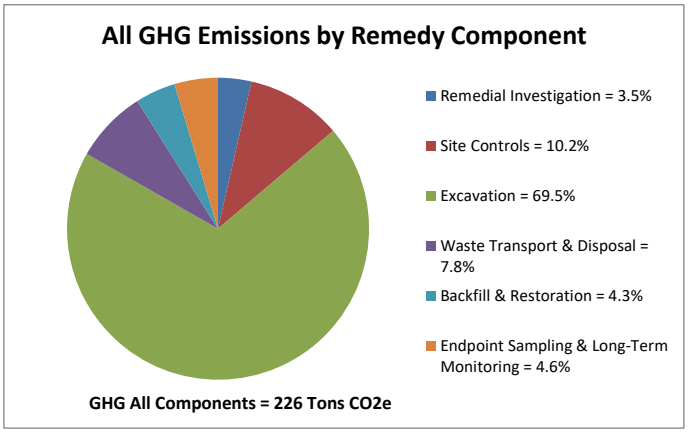
	Remedial I	Site Contr	Excavation	Waste Tra	Backfill & I	Endpoint S	Total	
On-site (Scope 1)	12.7	0.0	1,725.9	0.0	0.0	113.6	1,852.2	
Generation (Scope 2)	0.0	0.0	0.0	0.0	0.0	230.7	230.7	Electricity
sportation (Scope 3a)	19.6	248.7	1.9	191.6	106.6	31.4	599.7	Trans
er Off-Site (Scope 3b)	90.4	65.9	211.3	23.4	13.0	63.7	467.9	Oth
Total	122.7	314.7	1,939.1	215.0	119.6	439.4	3,150.4	

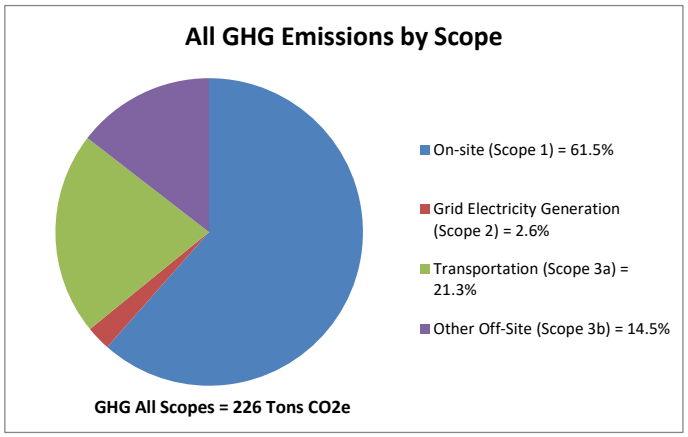
Remedial Investigation = 3.9%
Site Controls = 10%
Excavation = 61.5%
Waste Transport & Disposal = 6.8%
Backfill & Restoration = 3.8%
Endpoint Sampling & Long-Term Monitoring = 13.9%

On-site (Scope 1) = 58.8%
Grid Electricity Generation (Scope 2) = 7.3%
Transportation (Scope 3a) = 19%
Other Off-Site (Scope 3b) = 14.9%

Total Energy All Components = 3150.4 MMbtus
Total Energy All Scopes = 3150.4 MMbtus







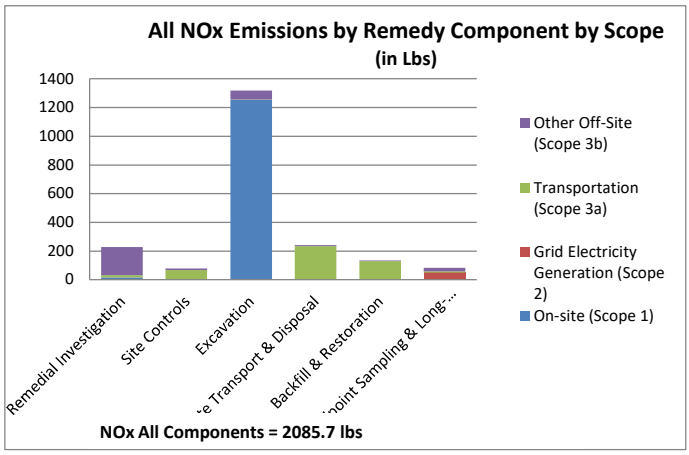
GHG
Tons CO2e

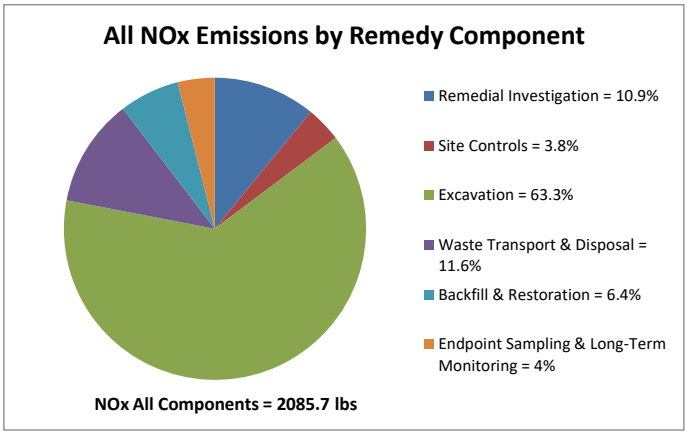
	Remedial I	Site Contr	Excavation	Waste Tra	Backfill & I	Endpoint S	Total	
On-site (Scope 1)	1.0	0.0	138.1	0.0	0.0	0.0	139.1	
Generation (Scope 2)	0.0	0.0	0.0	0.0	0.0	5.9	5.9	Electricity
sportation (Scope 3a)	1.6	19.8	0.2	15.5	8.6	2.5	48.2	Trans
er Off-Site (Scope 3b)	5.4	3.3	18.8	2.1	1.2	2.1	32.9	Oth
Total	8.0	23.2	157.0	17.6	9.8	10.5	226.0	

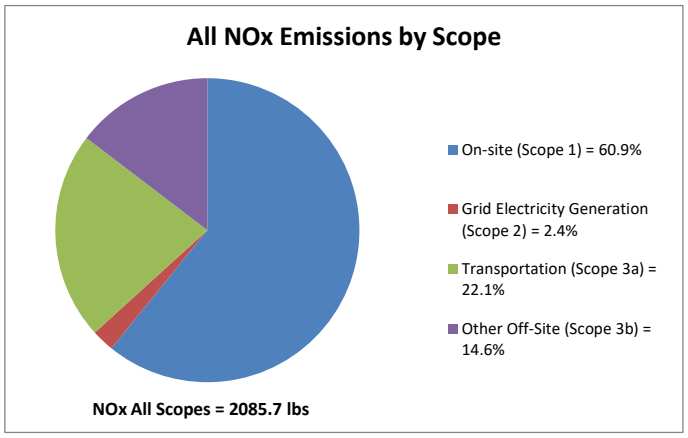
Remedial Investigation = 3.5%
Site Controls = 10.2%
Excavation = 69.5%
Waste Transport & Disposal = 7.8%
Backfill & Restoration = 4.3%
Endpoint Sampling & Long-Term Monitoring = 4.6%

On-site (Scope 1) = 61.5%
Grid Electricity Generation (Scope 2) = 2.6%
Transportation (Scope 3a) = 21.3%
Other Off-Site (Scope 3b) = 14.5%

GHG All Components = 226 Tons CO2e
GHG All Scopes = 226 Tons CO2e







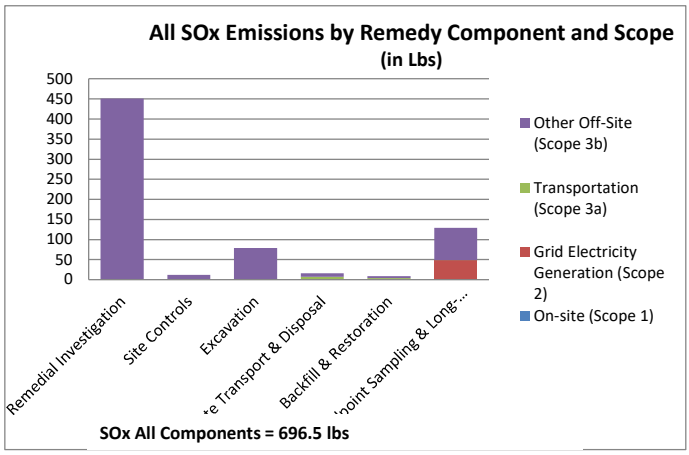
NOx lbs

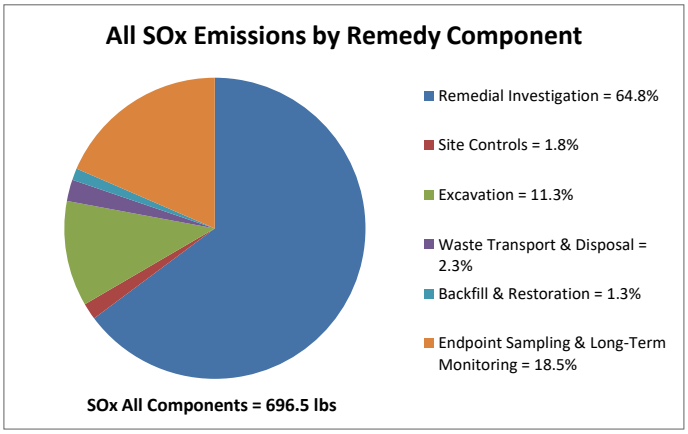
	Remedial I	Site Contr	Excavation	Waste Trai	Backfill & I	Endpoint S	Total	
On-site (Scope 1)	15.5	0.0	1,254.1	0.0	0.0	0.0	1,269.6	
Generation (Scope 2)	0.0	0.0	0.0	0.0	0.0	50.1	50.1	Electricity
sportation (Scope 3a)	17.1	68.4	2.3	234.3	130.3	8.7	461.1	Trans
er Off-Site (Scope 3b)	195.3	11.2	63.4	7.0	3.9	24.1	305.0	Oth
Total	228.0	79.6	1,319.7	241.3	134.2	82.9	2,085.7	

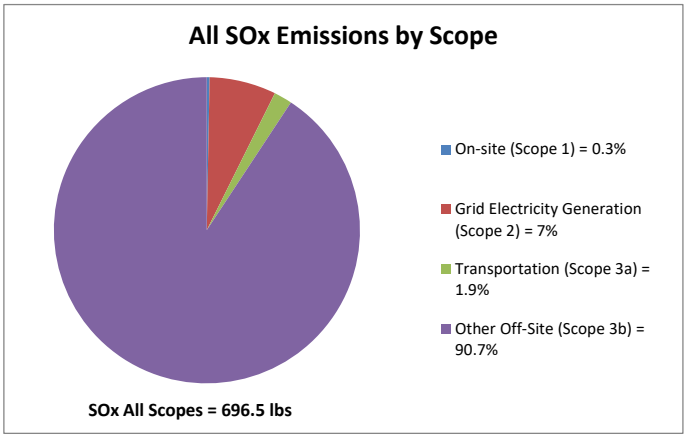
Remedial Investigation = 10.9%
Site Controls = 3.8%
Excavation = 63.3%
Waste Transport & Disposal = 11.6%
Backfill & Restoration = 6.4%
Endpoint Sampling & Long-Term Monitoring = 4%

On-site (Scope 1) = 60.9%
Grid Electricity Generation (Scope 2) = 2.4%
Transportation (Scope 3a) = 22.1%
Other Off-Site (Scope 3b) = 14.6%

NOx All Components = 2085.7 lbs
NOx All Scopes = 2085.7 lbs







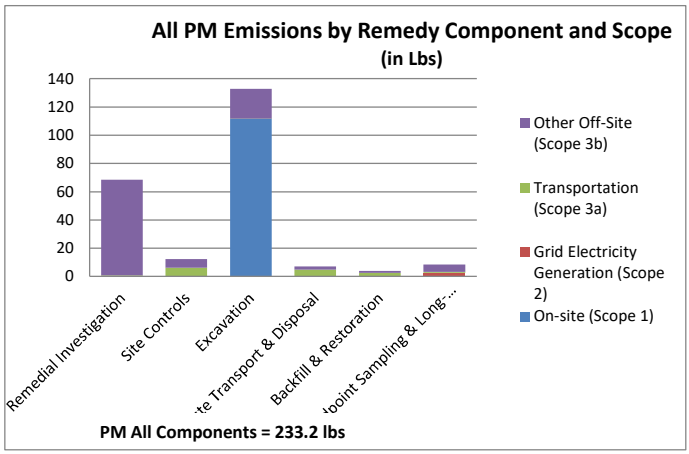
SOx lbs

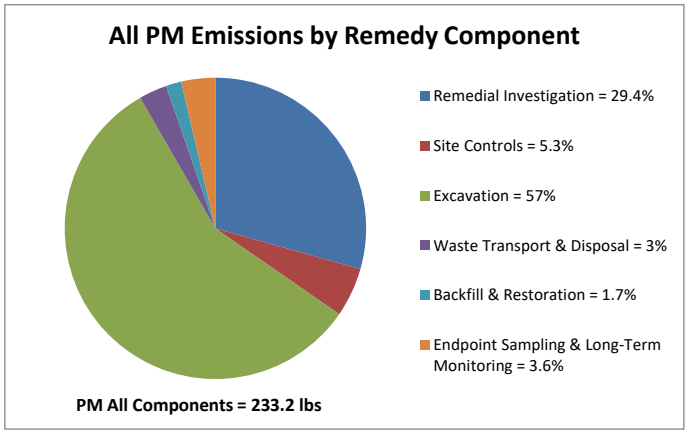
	Remedial I	Site Contr	Excavation	Waste Trai	Backfill & I	Endpoint S	Total	
On-site (Scope 1)	0.5	0.0	1.6	0.0	0.0	0.0	2.1	
Generation (Scope 2)	0.0	0.0	0.0	0.0	0.0	48.9	48.9	Electricity
sportation (Scope 3a)	0.5	1.2	0.1	7.4	4.1	0.2	13.6	Trans
er Off-Site (Scope 3b)	450.3	11.3	77.1	8.5	4.8	79.9	631.9	Oth
Total	451.3	12.5	78.8	16.0	8.9	129.0	696.5	

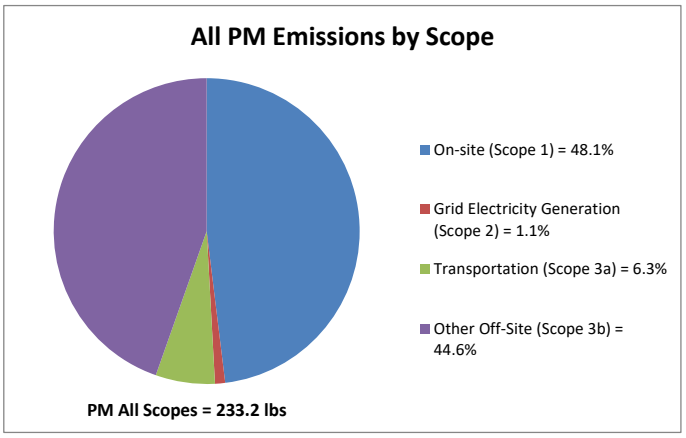
Remedial Investigation = 64.8%
Site Controls = 1.8%
Excavation = 11.3%
Waste Transport & Disposal = 2.3%
Backfill & Restoration = 1.3%
Endpoint Sampling & Long-Term Monitoring = 18.5%

On-site (Scope 1) = 0.3%
Grid Electricity Generation (Scope 2) = 7%
Transportation (Scope 3a) = 1.9%
Other Off-Site (Scope 3b) = 90.7%

SOx All Components = 696.5 lbs
SOx All Scopes = 696.5 lbs







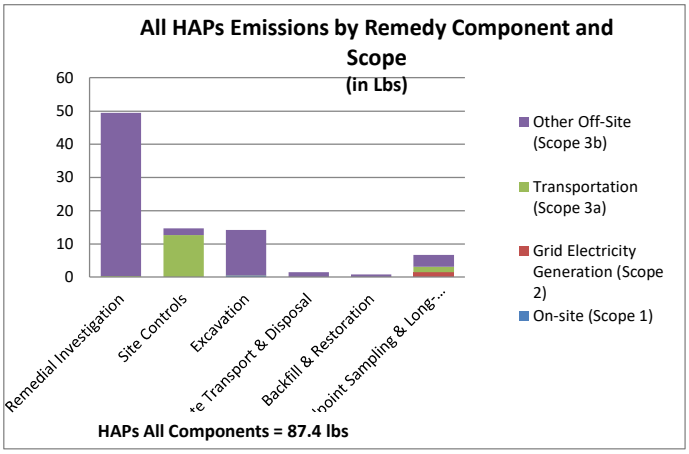
PM lbs

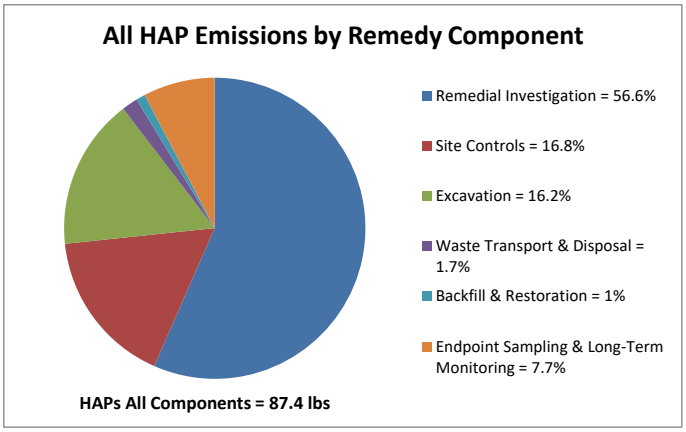
	Remedial I	Site Contr	Excavation	Waste Tra	Backfill & I	Endpoint S	Total	
On-site (Scope 1)	0.3	0.0	111.7	0.0	0.0	0.0	112.1	
Generation (Scope 2)	0.0	0.0	0.0	0.0	0.0	2.5	2.5	Electricity
sportation (Scope 3a)	0.5	6.1	0.0	4.7	2.6	0.8	14.6	Trans
er Off-Site (Scope 3b)	67.7	6.3	21.1	2.3	1.3	5.2	104.0	Oth
Total	68.5	12.3	132.9	7.0	3.9	8.5	233.2	

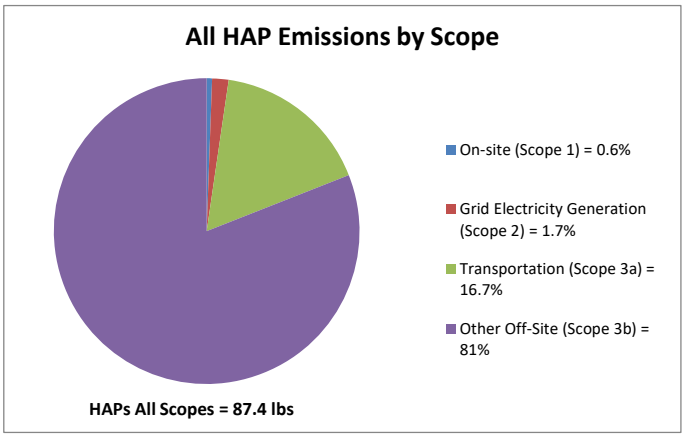
Remedial Investigation = 29.4%
Site Controls = 5.3%
Excavation = 57%
Waste Transport & Disposal = 3%
Backfill & Restoration = 1.7%
Endpoint Sampling & Long-Term Monitoring = 3.6%

On-site (Scope 1) = 48.1%
Grid Electricity Generation (Scope 2) = 1.1%
Transportation (Scope 3a) = 6.3%
Other Off-Site (Scope 3b) = 44.6%

PM All Components = 233.2 lbs
PM All Scopes = 233.2 lbs







HAPs
lbs

	Remedial I	Site Contr	Excavation	Waste Tra	Backfill & I	Endpoint S	Total
On-site (Scope 1)	0.0	0.0	0.5	0.0	0.0	0.0	0.5
Generation (Scope 2)	0.0	0.0	0.0	0.0	0.0	1.5	1.5
sportation (Scope 3a)	0.4	12.7	0.0	0.0	0.0	1.6	14.6
er Off-Site (Scope 3b)	49.1	2.0	13.7	1.5	0.8	3.6	70.8
Total	49.5	14.7	14.2	1.5	0.8	6.7	87.4

Remedial Investigation = 56.6%
Site Controls = 16.8%
Excavation = 16.2%
Waste Transport & Disposal = 1.7%
Backfill & Restoration = 1%
Endpoint Sampling & Long-Term Monitoring = 7.7%

On-site (Scope 1) = 0.6%
Grid Electricity Generation (Scope 2) = 1.7%
Transportation (Scope 3a) = 16.7%
Other Off-Site (Scope 3b) = 81%

HAPs All Components = 87.4 lbs
HAPs All Scopes = 87.4 lbs

Total Fuel Footprints		Remedial I	Site Contr	Excavation	Waste Tra	Backfill & I	Endpoint S	Total
Diesel (gal)	Transportation	89	107.9	13.4	1378.2	766.668	13.332	2368.5
	On-site equipment	0	0	12416.54	0	0	0	12416.54
asoline (ga	Transportation	58.5	1885	0	0	0	237.9	2181.4
	On-site equipment	0	0	0	0	0	0	0

Environmental Footprint Summary

Core Element	Metric		Unit of Measure	Footprint						
				Remedial Investigation	Site Controls	Excavation	Waste Transport & Disposal	Backfill & Restoration	Endpoint Sampling & Long-Term Monitoring	Total
Materials & Waste	M&W-1	Refined materials used on-site	Tons	0.1	12.1	0.0	0.0	0.0	52.5	64.7
	M&W-2	% of refined materials from recycled or reused material	%	0.0%	0.0%				0.0%	0.0%
	M&W-3	Unrefined materials used on-site	Tons	0.824	60.000	0.000	0.000	1,800.000	0.000	1,860.8
	M&W-4	% of unrefined materials from recycled or reused material	%	0.0%	100.0%			100.0%		100.0%
	M&W-5	On-site hazardous waste disposed of off-site	Tons	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	M&W-6	On-site non-hazardous waste disposed of off-site	Tons	0.0	0.0	0.0	2,037.0	0.0	0.0	2,037.0
	M&W-7	Recycled or reused waste	Tons	0.0	0.0	0.0	28.0	0.0	0.0	28.0
	M&W-8	% of total potential waste recycled or reused	%				1.4%			1.4%
Water (used on-site)	W-1	Public water use	MG	0.0	0.2	0.0	0.0	0.0	0.0	0.2
	W-2	Groundwater use	MG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	W-3	Surface water use	MG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	W-4	Reclaimed water use	MG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	W-5	Storm water use	MG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	W-6	User-defined water resource #1	MG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	W-7	User-defined water resource #2	MG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	W-8	Wastewater generated	MG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Energy	E-1	Total energy used (on-site and off-site)	MMBtu	122.7	314.7	1,939.1	215.0	119.6	439.4	3,150.4
	E-2	Energy voluntarily derived from renewable resources								
	E-2A	On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	E-2B	Voluntary purchase of renewable electricity	MWh	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	E-3	Voluntary purchase of RECs	MWh	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	E-4	On-site grid electricity use	MWh	0.000	0.000	0.000	0.000	0.000	33.288	33.3
Air	A-1	On-site NOx, SOx, and PM emissions	Pounds	16.3	0.0	1,367.4	0.0	0.0	0.0	1,383.7
	A-2	On-site HAP emissions	Pounds	0.0	0.0	0.5	0.0	0.0	0.0	0.5
	A-3	Total NOx, SOx, and PM emissions	Pounds	747.8	104.4	1,531.4	264.3	147.0	220.4	3,015.4
	A-3A	Total NOx emissions	Pounds	228.0	79.6	1,319.7	241.3	134.2	82.9	2,085.7
	A-3B	Total SOx emissions	Pounds	451.3	12.5	78.8	16.0	8.9	129.0	696.5
	A-3C	Total PM emissions	Pounds	68.5	12.3	132.9	7.0	3.9	8.5	233.2
	A-4	Total HAP emissions	Pounds	49.5	14.7	14.2	1.5	0.8	6.7	87.4
	A-5	Total greenhouse gas emissions	Tons CO2e*	8.0	23.2	157.0	17.6	9.8	10.5	226.0
Land & Ecosystems	Qualitative Description									

** Total greenhouse gases emissions (in CO2e) include consideration of CO2, CH4, and N2O (Nitrous oxide) emissions.*
"MMBtu" = millions of Btus
"MG" = millions of gallons
"CO2e" = carbon dioxide equivalents of global warming potential
"MWh" = megawatt hours (i.e., thousands of kilowatt-hours or millions of Watt-hours)
"Tons" = short tons (2,000 pounds)

The above metrics are consistent with EPA's Methodology for Understanding and Reducing a Project's Environmental Footprint (EPA 542-R-12-002), February 2012

Notes:

All - Energy & Air Compiled Results

Category	Total Energy	GHG	NOx	SOx	PM	NOx + SOx + PM	HAPs
	MMbtus	lbs CO2e	lbs	lbs	lbs	lbs	lbs
On-site (Scope 1)	**1,852**	**278,194**	**1,270**	**2**	**112**	**1,384**	**0**
Grid Electricity Generation (Scope 2)	**230.653**	**11,717**	**50**	**49**	**3**	**101**	**2**
Transportation (Scope 3a)	**600**	**96,417**	**461**	**14**	**15**	**489**	**15**
Other Off-Site (Scope 3b)	**468**	**64,590**	**300**	**627**	**104**	**1,031**	**71**
Remedy Totals	**3,150**	**450,919**	**2,081**	**692**	**233**	**3,005**	**87**

Values that are forwarded to the "Summary" tab are indicated in orange.

Voluntary Renewable Energy Use	Unit	Quantity	
On-site renewable energy generation or use	MMBtu	**0**	
On-site biodiesel use	MMBtu	**0**	
Biodiesel and other renewable resource use for transportation	MMBtu	**0**	
On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu	**0**	*(This value is the sum of the three rows above)*
Voluntary purchase of renewable electricity	MWh	**0**	
Voluntary purchase of RECs	MWh	**0**	

This worksheet is not intended for user input. Values on this worksheet are obtained from the following file:
Beach 19th - Track 2 SEFA_calculations.xlsx

Remedial Investigation - Energy & Air Compiled Results

Category	Total Energy	GHG	NOx	SOx	PM	NOx + SOx + PM	HAPs
	MMbtus	lbs CO2e	lbs	lbs	lbs	lbs	lbs
On-site (Scope 1)	**13**	**2,050**	**15**	**0**	**0**	**16**	**0**
Grid Electricity Generation (Scope 2)	**0.000**	**0**	**0**	**0**	**0**	**0**	**0**
Transportation (Scope 3a)	**20**	**3,158**	**17**	**1**	**0**	**18**	**0**
Other Off-Site (Scope 3b)	**90**	**10,829**	**195**	**450**	**68**	**713**	**49**
Remedy Totals	**123**	**16,037**	**228**	**451**	**68**	**748**	**49**

Values that are forwarded to the "Summary" tab are indicated in orange.

Voluntary Renewable Energy Use	Unit	Quantity	
On-site renewable energy generation or use	MMBtu	**0**	
On-site biodiesel use	MMBtu	**0**	
Biodiesel and other renewable resource use for transportation	MMBtu	**0**	
On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu	**0**	*(This value is the sum of the three rows above)*
Voluntary purchase of renewable electricity	MWh	**0**	
Voluntary purchase of RECs	MWh	**0**	

This worksheet is not intended for user input. Values on this worksheet are obtained from the following file:
Beach 19th - Track 2 SEFA_calculations.xlsx

Site Controls - Energy & Air Compiled Results

Category	Total Energy	GHG	NOx	SOx	PM	NOx + SOx + PM	HAPs
	MMbtus	lbs CO2e	lbs	lbs	lbs	lbs	lbs
On-site (Scope 1)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Grid Electricity Generation (Scope 2)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Transportation (Scope 3a)	**249**	**39,695**	**68**	**1**	**6**	**76**	**13**
Other Off-Site (Scope 3b)	**66**	**6,624**	**11**	**11**	**6**	**29**	**2**
Remedy Totals	**315**	**46,318**	**80**	**13**	**12**	**104**	**15**

Values that are forwarded to the "Summary" tab are indicated in orange.

Voluntary Renewable Energy Use	Unit	Quantity	
On-site renewable energy generation or use	MMBtu	**0**	
On-site biodiesel use	MMBtu	**0**	
Biodiesel and other renewable resource use for transportation	MMBtu	**0**	
On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu	**0**	*(This value is the sum of the three rows above)*
Voluntary purchase of renewable electricity	MWh	**0**	
Voluntary purchase of RECs	MWh	**0**	

This worksheet is not intended for user input. Values on this worksheet are obtained from the following file:
Beach 19th - Track 2 SEFA_calculations.xlsx

Excavation - Energy & Air Compiled Results

Category	Total Energy	GHG	NOx	SOx	PM	NOx + SOx + PM	HAPs
	MMbtus	lbs CO2e	lbs	lbs	lbs	lbs	lbs
On-site (Scope 1)	**1,726**	**276,144**	**1,254**	**2**	**112**	**1,367**	**0**
Grid Electricity Generation (Scope 2)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Transportation (Scope 3a)	**2**	**302**	**2**	**0**	**0**	**2**	**0**
Other Off-Site (Scope 3b)	**211**	**37,538**	**63**	**77**	**21**	**162**	**14**
Remedy Totals	**1,939**	**313,984**	**1,320**	**79**	**133**	**1,531**	**14**

Values that are forwarded to the "Summary" tab are indicated in orange.

Voluntary Renewable Energy Use	Unit	Quantity	
On-site renewable energy generation or use	MMBtu	**0**	
On-site biodiesel use	MMBtu	**0**	
Biodiesel and other renewable resource use for transportation	MMBtu	**0**	
On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu	**0**	*(This value is the sum of the three rows above)*
Voluntary purchase of renewable electricity	MWh	**0**	
Voluntary purchase of RECs	MWh	**0**	

This worksheet is not intended for user input. Values on this worksheet are obtained from the following file:
Beach 19th - Track 2 SEFA_calculations.xlsx

Waste Transport & Disposal - Energy & Air Compiled Results

Category	Total Energy	GHG	NOx	SOx	PM	NOx + SOx + PM	HAPs
	MMbtus	lbs CO2e	lbs	lbs	lbs	lbs	lbs
On-site (Scope 1)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Grid Electricity Generation (Scope 2)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Transportation (Scope 3a)	**192**	**31,010**	**234**	**7**	**5**	**246**	**0**
Other Off-Site (Scope 3b)	**23**	**4,162**	**7**	**9**	**2**	**18**	**2**
Remedy Totals	**215**	**35,172**	**241**	**16**	**7**	**264**	**2**

Values that are forwarded to the "Summary" tab are indicated in orange.

Voluntary Renewable Energy Use	Unit	Quantity	
On-site renewable energy generation or use	MMBtu	**0**	
On-site biodiesel use	MMBtu	**0**	
Biodiesel and other renewable resource use for transportation	MMBtu	**0**	
On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu	**0**	*(This value is the sum of the three rows above)*
Voluntary purchase of renewable electricity	MWh	**0**	
Voluntary purchase of RECs	MWh	**0**	

This worksheet is not intended for user input. Values on this worksheet are obtained from the following file:
Beach 19th - Track 2 SEFA_calculations.xlsx

Backfill & Restoration - Energy & Air Compiled Results

Category	Total Energy	GHG	NOx	SOx	PM	NOx + SOx + PM	HAPs
	MMbtus	lbs CO2e	lbs	lbs	lbs	lbs	lbs
On-site (Scope 1)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Grid Electricity Generation (Scope 2)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Transportation (Scope 3a)	**107**	**17,250**	**130**	**4**	**3**	**137**	**0**
Other Off-Site (Scope 3b)	**13**	**2,315**	**4**	**5**	**1**	**10**	**1**
Remedy Totals	**120**	**19,565**	**134**	**9**	**4**	**147**	**1**

Values that are forwarded to the "Summary" tab are indicated in orange.

Voluntary Renewable Energy Use	Unit	Quantity	
On-site renewable energy generation or use	MMBtu	**0**	
On-site biodiesel use	MMBtu	**0**	
Biodiesel and other renewable resource use for transportation	MMBtu	**0**	
On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu	**0**	*(This value is the sum of the three rows above)*
Voluntary purchase of renewable electricity	MWh	**0**	
Voluntary purchase of RECs	MWh	**0**	

This worksheet is not intended for user input. Values on this worksheet are obtained from the following file:
Beach 19th - Track 2 SEFA_calculations.xlsx

Endpoint Sampling & Long-Term Monitoring - Energy & Air Compiled Results

Category	Total Energy	GHG	NOx	SOx	PM	NOx + SOx + PM	HAPs
	MMbtus	lbs CO2e	lbs	lbs	lbs	lbs	lbs
On-site (Scope 1)	**114**	**0**	**0**	**0**	**0**	**0**	**0**
Grid Electricity Generation (Scope 2)	**231**	**11,717**	**50**	**49**	**3**	**101**	**2**
Transportation (Scope 3a)	**31**	**5,003**	**9**	**0**	**1**	**10**	**2**
Other Off-Site (Scope 3b)	**64**	**4,294**	**24**	**80**	**5**	**109**	**4**
Remedy Totals	**439**	**21,014**	**83**	**129**	**8**	**220**	**7**

Values that are forwarded to the "Summary" tab are indicated in orange.

Voluntary Renewable Energy Use	Unit	Quantity	
On-site renewable energy generation or use	MMBtu	**0**	
On-site biodiesel use	MMBtu	**0**	
Biodiesel and other renewable resource use for transportation	MMBtu	**0**	
On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu	**0**	*(This value is the sum of the three rows above)*
Voluntary purchase of renewable electricity	MWh	**0**	
Voluntary purchase of RECs	MWh	**0**	

This worksheet is not intended for user input. Values on this worksheet are obtained from the following file:
Beach 19th - Track 2 SEFA_calculations.xlsx

Input Worksheet for RI

Please specify which Remedy Component this Input worksheet is part of: (Select "Off" to exclude this Input worksheet from calculations and results)	Component 1	Remedial Investigation

General Scope

Remedial Investigation
Mobilization of 6610DT Geoprobe 5' macro-core rig and crewm and GBTS personnel to execute the extension of 30 borings from 25 to 30 feet bsg (3/19-3/25), installation of 14 soil vapor points (12 feet bsg; 3/25), and installation of 6 groundwater monitoring wells (32 feet bsg; 3/26).
Sampling of groundwater (Part 375, PFAS), soil (Full Part 375, PFAS), and soil vapor (TO-15 VOCs) was performed on 4/3/2025.
Misc. Tasks: GPR Utility/UST Markout

Example Items Eliminated through Screening Process

Drill tailings reused for well install from 0-10ft (not included in calculation)
Waste Disposal (N/A) - remaining drill tailings are stored in staged 55-gallon drums on-site

Other Notes and References

Soil tailings were reused in from 0 - 10 ft bsg in well install
All material transport during the RI is summarized in Personnel Transport
Telemetry used during drilling, battery packs charged nightly

Personnel Transportation

Participant	Number of Roundtrips to Site	Roundtrip Distance to Site (miles)	Mode of Transportation*	Transport Fuel Type*	Total Distance Transported (miles)	Default Fuel Usage Rate**	Fuel Usage Rate Override**	Fuel Used for Personnel Transport**	Activity or Notes
Gallagher Bassett Technical Services	5	185	Car	Gasoline	925	25	30	30.8	Hybrid Vehicle - transport to the site on 3/19 and back on 3/21, full
Lakewood	5	96	Heavy-Duty Truck	Diesel	480	7.55		63.6	Transport to the site 3/19-3/21, 3/25. 3/26, 3/27, 3/28 (subtract 2
York Analytical Lab Courier (to/from Site)	2	137	Car	Gasoline	274	25		11	Sample pickup on 3/21, 4/3
York Analytical Lab Courier (to/from GBTS Office)	2	146	Car	Gasoline	292	25		11.7	Sample pickup on 3/25, 3/37
X-Ray Locating (GPR Crew) Personnel	1	47	Heavy-Duty Truck	Gasoline	47	9.45		5	GPR Survey on 3/19

**** See the "Detailed Notes and Explanations" tab for explanation of transport and fuel options.***

***** for biodiesel, B20, diesel, and gasoline, units are gallons for Fuel Used and miles/gallon for Fuel Usage Rate; for natural gas, units are hundreds of cubic feet (ccf) for Fuel Used and ccf/miles for Fuel Usage Rate; for electricity, units are miles/kWh for Fuel Usage Rate and the kWh (Fuel Used) are added to total grid electricity used (cell G69).***

On-Site Equipment Use and Transportation

Equipment Type*	HP*	Load Factor (%)*	Equipment Fuel Type**	Equipment Fuel Usage Rate	Equipment Hours Operated	Fuel Used for On-site Equipment	Equipment weight (tons)	Number of Equipment Roundtrips to Site	Roundtrip Distance to Site (miles)	Total Distance Transported (miles)	Mode of Transportation	Transport Fuel Type***	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Equipment Transport (gallons)	Activity or Notes
Drilling - direct push (60 HP)	54	75%	Diesel	2.025	45	91.125	2.85	2	96	192	Truck (mpg)	Diesel	6	7.55	25.4	6610DT Geoprobe, 5' macro-core, transported on trailer attached
																GPR Equipment

**** HP and Load Factor must be entered by user in Columns C and D. Please see the "Detailed Notes and Explanations" tab for further explanation.***

***** For biodiesel, B20, diesel, gasoline, and liquified petroleum gas, units are gallons for Fuel Used for On-site Equipment and gallons/hr for Equipment Fuel Usage Rate; for compressed natural gas units are ccf (hundreds of cubic feet) for Fuel Used for On-site Equipment and ccf/hr for Equipment Fuel Usage Rate.***

****** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation and other aspects of data entry in Columns M, N, and P. Units are gallons for Fuel Used for Equipment Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Input Worksheet for RI

Remedy Component that this Input worksheet is part of:	Component 1	Remedial Investigation

On-Site Electricity Use

Equipment Type	HP	Load Factor (%)	Efficiency (%)	Electrical Rating (kW)	Hours Used	Energy Used (kWh)	Notes
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with known kW rating>							DustTrak II (ASM - 1)
<Equip. with known kW rating>							DustTrak II (ASM - 2)
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
Estimated Total Electricity Usage Based on Above						0	
Renewable Electricity Generated On-Site*							
Total Electricity Usage Based on Personnel Transportation						0	
Total Grid Electricity Used						0	

**** Electricity generated on-site from renewable resources, for which the facility retains the rights to the renewable energy (i.e., does not sell renewable energy certificates associated with the renewable energy generation).***

On-Site Natural Gas Use

Equipment Type	Power Rating (Btu/hr)	Efficiency (%)	Hours Used	Energy Required (Btu)	Natural Gas Used (ccf)	Notes
					0	
				0		
Totals			0	0	0	

Landfill Gas Combusted On-Site for Energy Use

Equipment Type	Landfill Gas (ccf)	% Methane by volume	Used for electricity?	Landfill Gas Methane Used (ccf)	Notes
				0	
				0	
				0	
Total				0	

Please see the "Detailed Notes and Explanations" tab for instructions on using the two tables above ("On-site Natural Gas Use" and "Landfill Gas Combusted On-Site for Energy Use"). In the two tables above, ccf = hundreds of cubic feet.

Materials Use and Transportation

Material Type*	Unit	Quantity	Tons	Is the Material Refined or Unrefined?**	Material Source: Virgin, Recycled, or Reused?**	Calculate Item Footprint?**	Default One-way Distance to Site (miles)	One-way Distance to Site Override (miles)	Number of One-way Trips to Site	Include Return Trip in Calculations?	Total Distance Transported (miles)	Mode of Transportation***	Transport Fuel Type	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Materials Transport (gallons)	Notes and Description of Materials
PVC	lb		0	Refined	Virgin	Yes	500	0	0	No	500						95 5' macro core sleeves
Sand	lb	1407.376	0.703688	Unrefined	Virgin	Yes	25	0	0	No	25						#2 silica sand
BENSEAL (Sodium Bentonite)	50 lb bag	2	0.05	Unrefined	Virgin	Yes	500	0	0	No	500						
PVC	lb	132	0.066	Refined	Virgin	Yes	500	0	0	No	500						well screen and casing
Portland cement, US average	lb	139.65	0.069825	Unrefined	Virgin	Yes	25	0	0	No	25						Drive Over Cover
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														

**** Please see the "Detailed Notes and Explanations" tab for instructions on specifying "User-Defined Materials" in the dropdown menu.***

***** Selections must be made in Columns F - H in order for the footprint calculations to be performed. Please see the "Detailed Notes and Explanations" tab for further information.***

****** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation, accounting for empty return trips, and other aspects of data entry in Columns L, N, O, and Q. Units are gallons for Fuel Used for Materials Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Input Worksheet for RI

Remedy Component that this Input worksheet is part of:	Component 1	Remedial Investigation

Waste Disposal and Transportation

Waste Destination*	Unit	Quantity	Tons	Default One-way Distance to Site (miles)	One-way Distance to Site Override (miles)	Number of One-way Trips to Site	Include Return Trip in Calculations?	Total Distance Transported (miles)	Mode of Transportation**	Transport Fuel Type	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Waste Transport (gallons)	Notes and Description of Waste
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											

**** No footprint is calculated for the Recycled/Reused On-Site and Off-Site selections. Please see the "Detailed Notes and Explanations" tab for instructions on specifying "User-Defined" selections in the dropdown menu.***

***** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation, accounting for empty return trips, and other aspects of data entry in Columns I, K, L, and N. Units are gallons for Fuel Used for Waste Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Type of Water Used

Source of Water Used*	Unit	Quantity	Tons	Source Location/Aquifer (optional)	Quality of Water Used (optional)	Water Uses (optional)	Fate of Used Water (optional)
Public Water	gal x 1000	0.02	0.0834			Saturating bentonite and mixing concrete for groundwater well installation	
Extracted Groundwater	gal x 1000	0.0285	0.118845			Purged groundwater for sampling	
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				

**** Only the "Public Water" selection has an associated footprint. No footprint is calculated for the other water source selections.***

Note: Information entered in Columns F - V (Source/Quality/Use/Fate) is not compiled or reported by SEFA.

Input Worksheet for RI

Remedy Component that this Input worksheet is part of:	Component 1	Remedial Investigation

90 for everything + 6 DUP/

Other Energy Use and Air Emissions

Item		Units	Quantity	Notes
On-Site				
User-defined on-site conventional energy use #1	*User-Defined	TBD		
User-defined on-site conventional energy use #2	*User-Defined	TBD		
On-site HAP process emissions**		lbs		
On-site GHG emissions**		lbs CO2e		
On-site carbon storage**		lbs CO2e		
Landfill gas flared on-site		ccf CH4		
Other on-site NOx emissions or reductions**		lbs		
Other on-site SOx emissions or reductions**		lbs		
Other on-site PM emissions or reductions**		lbs		
Transportation		**Units**	**Quantity**	**Notes**
User-defined conventional energy transportation #1	*User-Defined	TBD	10	
User-defined conventional energy transportation #2	*User-Defined	TBD		

**** Enter units and conversion factors on "User Defined Factors" tab***
***** Enter a positive number for emissions and a negative number for reductions, avoidances, or storage***
See the "Detailed Notes and Explanations" tab for use of this table.

Other Voluntary Renewable Energy Use

Item		Units	Quantity	Notes
User-defined on-site renewable energy use #1	*User-Defined	TBD		
User-defined on-site renewable energy use #2	*User-Defined	TBD		
User-defined renewable energy transportation #1	*User-Defined	TBD		
User-defined renewable energy transportation #2	*User-Defined	TBD		
Voluntary purchase of renewable electricity**		MWh		
Voluntary purchase of RECs**		MWh		

**** Enter units and conversion factors on "User Defined Factors" tab***
***** Complete information on provider in the table to the right. No footprint reductions are associated with the voluntary purchases.***
See the "Detailed Notes and Explanations" tab for use of this table

Off-Site Laboratory Analysis

Parameter and Notes	Number of Samples	Comments
Off-site Laboratory Analysis - VOCs	113	
Off-site Laboratory Analysis - SVOCs	108	
Off-site Laboratory Analysis - Metals	103	
Off-site Laboratory Analysis - Mercury	103	
Off-site Laboratory Analysis - Other	103	
Off-site Laboratory Analysis - Other	103	
Off-site Laboratory Analysis - PCBs	103	
Off-site Laboratory Analysis - Other	103	
Off-site Laboratory Analysis - Other	108	
Off-site Laboratory Analysis - Other	103	
Off-site Laboratory Analysis - VOCs	10	
Totals	**1060**	

Description of purchased renewable electricity (green pricing product or green marketing product)	Provider:	
	Type of product:	
	Type of renewable energy source:	
	Date of renewable system installation:	
Description of purchased RECs	Provider:	
	Type of renewable energy source:	
	Date of renewable system installation:	
	Location of renewable system installation:	

Input Worksheet for Site Controls

Please specify which Remedy Component this Input worksheet is part of: (Select "Off" to exclude this Input worksheet from calculations and results)	**Component 2**	**Site Controls**

General Scope

Crew mobilization and the establishment and maintenance of SESC measures, Storm Water Pollution Control, Dust Control, etc. for the duration of the remediation remedy implementation. Estimated Project duration is**102 days**. Note: 1. All "Personnel Transportation" for the duration of the work has been captured in this Component as the same personnel will be onsite for each Component (2-5). 2. Remediation equipment mobilization is outlined in Component 3.

Example Items Eliminated through Screening Process

Other Notes and References

Assume 102 days based on preliminary construction schedule (Jan. 1 - May 31st, ecluding weekends and federal holidays)

Personnel Transportation

Participant	Number of Roundtrips to Site	Roundtrip Distance to Site (miles)	Mode of Transportation*	Transport Fuel Type*	Total Distance Transported (miles)	Default Fuel Usage Rate**	Fuel Usage Rate Override**	Fuel Used for Personnel Transport**	Activity or Notes
Gallagher Bassett Technical Services Technician									Environmental Monitoring summarized in Comp 6
Contractor (7 empl.)	714	60	Car	Gasoline	42840	25		1713.6	
Total Safety (1 empl.)	102	42	Car	Gasoline	4284	25		171.4	Safety and Environmental Monitoring
ABC Tank Cleaning & Repairing	4	30	Light-Duty/Passenger Truck	Diesel	120	15.1		7.9	Tank Cleaning Company (example)

**** See the "Detailed Notes and Explanations" tab for explanation of transport and fuel options.***

***** for biodiesel, B20, diesel, and gasoline, units are gallons for Fuel Used and miles/gallon for Fuel Usage Rate; for natural gas, units are hundreds of cubic feet (ccf) for Fuel Used and ccf/miles for Fuel Usage Rate; for electricity, units are miles/kWh for Fuel Usage Rate and the kWh (Fuel Used) are added to total grid electricity used (cell G69).***

On-Site Equipment Use and Transportation

Equipment Type*	HP*	Load Factor (%)*	Equipment Fuel Type**	Equipment Fuel Usage Rate	Equipment Hours Operated	Fuel Used for On-site Equipment	Equipment weight (tons)	Number of Equipment Roundtrips to Site	Roundtrip Distance to Site (miles)	Total Distance Transported (miles)	Mode of Transportation	Transport Fuel Type***	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Equipment Transport (gallons)	Activity or Notes

**** HP and Load Factor must be entered by user in Columns C and D. Please see the "Detailed Notes and Explanations" tab for further explanation.***

***** For biodiesel, B20, diesel, gasoline, and liquified petroleum gas, units are gallons for Fuel Used for On-site Equipment and gallons/hr for Equipment Fuel Usage Rate; for compressed natural gas units are ccf (hundreds of cubic feet) for Fuel Used for On-site Equipment and ccf/hr for Equipment Fuel Usage Rate.***

****** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation and other aspects of data entry in Columns M, N, and P. Units are gallons for Fuel Used for Equipment Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Input Worksheet for Site Controls

Remedy Component that this Input worksheet is part of:	Component 2	Site Controls

On-Site Electricity Use

Equipment Type	HP	Load Factor (%)	Efficiency (%)	Electrical Rating (kW)	Hours Used	Energy Used (kWh)	Notes
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with known kW rating>							DustTrak II (ASM - 1)
<Equip. with known kW rating>							DustTrak II (ASM - 2)
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
Estimated Total Electricity Usage Based on Above						0	
Renewable Electricity Generated On-Site*							
Total Electricity Usage Based on Personnel Transportation						0	
Total Grid Electricity Used						0	

**** Electricity generated on-site from renewable resources, for which the facility retains the rights to the renewable energy (i.e., does not sell renewable energy certificates associated with the renewable energy generation).***

On-Site Natural Gas Use

Equipment Type	Power Rating (Btu/hr)	Efficiency (%)	Hours Used	Energy Required (Btu)	Natural Gas Used (ccf)	Notes
					0	
				0		
Totals			0	0	0	

Landfill Gas Combusted On-Site for Energy Use

Equipment Type	Landfill Gas (ccf)	% Methane by volume	Used for electricity?	Landfill Gas Methane Used (ccf)	Notes
				0	
				0	
				0	
Total				0	

Please see the "Detailed Notes and Explanations" tab for instructions on using the two tables above ("On-site Natural Gas Use" and "Landfill Gas Combusted On-Site for Energy Use"). In the two tables above, ccf = hundreds of cubic feet.

Materials Use and Transportation

Material Type*	Unit	Quantity	Tons	Is the Material Refined or Unrefined?**	Material Source: Virgin, Recycled, or Reused?**	Calculate Item Footprint?**	Default One-way Distance to Site (miles)	One-way Distance to Site Override (miles)	Number of One-way Trips to Site	Include Return Trip in Calculations?	Total Distance Transported (miles)	Mode of Transportation***	Transport Fuel Type	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Materials Transport (gallons)	Notes and Description of Materials
orange mesh fencing	ft	600	7.8	Refined	Virgin	Yes	500	60	1	No	60	Truck (mpg)	Diesel	6		10.000	
			0					60	1	No	60	Truck (mpg)	Diesel	6		10.000	
absorbent composite socks	ft	600	3.9	Refined	Virgin	Yes	500	60	1	No	60	Truck (mpg)	Diesel	6		10.000	erosion control
			0					60	1	No	60	Truck (mpg)	Diesel	6		10.000	
6-mil 40' x 100' polyurethane sheeting	rolls	7	0.4165	Refined	Virgin	Yes	500	60	1	No	60	Truck (mpg)	Diesel	6		10.000	used for soil stockpiles & USTs
			0					60	1	No	60	Truck (mpg)	Diesel	6		10.000	
aggregate 2" stone	ton	60	60	Unrefined	Recycled	Yes	500	60	1	No	60	Truck (mpg)	Diesel	6		10.000	construction entrance pad
			0					60	1	No	60	Truck (mpg)	Diesel	6		10.000	
filter cloth	lb	60	0.03	Refined	Virgin	Yes	500	60	1	No	60	Truck (mpg)	Diesel	6		10.000	construction entrance pad (based on Mirari 100x
			0					60	1	No	60	Truck (mpg)	Diesel	6		10.000	
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														

**** Please see the "Detailed Notes and Explanations" tab for instructions on specifying "User-Defined Materials" in the dropdown menu.***

***** Selections must be made in Columns F - H in order for the footprint calculations to be performed. Please see the "Detailed Notes and Explanations" tab for further information.***

****** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation, accounting for empty return trips, and other aspects of data entry in Columns L, N, O, and Q. Units are gallons for Fuel Used for Materials Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Input Worksheet for Site Controls

Remedy Component that this Input worksheet is part of:	Component 2	Site Controls

Waste Disposal and Transportation

Waste Destination*	Unit	Quantity	Tons	Default One-way Distance to Site (miles)	One-way Distance to Site Override (miles)	Number of One-way Trips to Site	Include Return Trip in Calculations?	Total Distance Transported (miles)	Mode of Transportation**	Transport Fuel Type	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Waste Transport (gallons)	Notes and Description of Waste
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											

**** No footprint is calculated for the Recycled/Reused On-Site and Off-Site selections. Please see the "Detailed Notes and Explanations" tab for instructions on specifying "User-Defined" selections in the dropdown menu.***

***** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation, accounting for empty return trips, and other aspects of data entry in Columns I, K, L, and N. Units are gallons for Fuel Used for Waste Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Type of Water Used

Source of Water Used*	Unit	Quantity	Tons	Source Location/Aquifer (optional)	Quality of Water Used (optional)	Water Uses (optional)	Fate of Used Water (optional)
Public Water	gal x 1000	204	850.68			Assuming 2,000 gal/day for tire washing, dust mitigation/control	
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				

**** Only the "Public Water" selection has an associated footprint. No footprint is calculated for the other water source selections.***

Note: Information entered in Columns F - V (Source/Quality/Use/Fate) is not compiled or reported by SEFA.

Input Worksheet for Site Controls

Remedy Component that this Input worksheet is part of:	Component 2	Site Controls

Other Energy Use and Air Emissions

Item		Units	Quantity	Notes
On-Site				
User-defined on-site conventional energy use #1	*User-Defined	TBD		
User-defined on-site conventional energy use #2	*User-Defined	TBD		
On-site HAP process emissions**		lbs		
On-site GHG emissions**		lbs CO2e		
On-site carbon storage**		lbs CO2e		
Landfill gas flared on-site		ccf CH4		
Other on-site NOx emissions or reductions**		lbs		
Other on-site SOx emissions or reductions**		lbs		
Other on-site PM emissions or reductions**		lbs		
Transportation		**Units**	**Quantity**	**Notes**
User-defined conventional energy transportation #1	*User-Defined	TBD	10	
User-defined conventional energy transportation #2	*User-Defined	TBD		

**** Enter units and conversion factors on "User Defined Factors" tab***
***** Enter a positive number for emissions and a negative number for reductions, avoidances, or storage***
See the "Detailed Notes and Explanations" tab for use of this table.

Other Voluntary Renewable Energy Use

Item		Units	Quantity	Notes
User-defined on-site renewable energy use #1	*User-Defined	TBD		
User-defined on-site renewable energy use #2	*User-Defined	TBD		
User-defined renewable energy transportation #1	*User-Defined	TBD		
User-defined renewable energy transportation #2	*User-Defined	TBD		
Voluntary purchase of renewable electricity**		MWh		
Voluntary purchase of RECs**		MWh		

**** Enter units and conversion factors on "User Defined Factors" tab***
***** Complete information on provider in the table to the right. No footprint reductions are associated with the voluntary purchases.***
See the "Detailed Notes and Explanations" tab for use of this table

Off-Site Laboratory Analysis

Parameter and Notes	Number of Samples	Comments
Totals	**0**	

Description of purchased renewable electricity (green pricing product or green marketing product)	Provider:	
	Type of product:	
	Type of renewable energy source:	
	Date of renewable system installation:	
Description of purchased RECs	Provider:	
	Type of renewable energy source:	
	Date of renewable system installation:	
	Location of renewable system installation:	

Input Worksheet for Excavation

Please specify which Remedy Component this Input worksheet is part of: (Select "Off" to exclude this Input worksheet from calculations and results)	**Component 3**	**Excavation**

General Scope

Excavation and drilling of insitu soils located at the site, loading into tri-axle trucks for off-site disposal. Estimated Project duration is 102 days. Note: 1. All "Personnel Transportation" for the duration of the work has been captured in Component 2 as the same personnel will be on-site for each Component (2-5).

Example Items Eliminated through Screening Process

Other Notes and References

Assume only soil exceeding RRU SCOs is removed

Personnel Transportation

Participant	Number of Roundtrips to Site	Roundtrip Distance to Site (miles)	Mode of Transportation*	Transport Fuel Type*	Total Distance Transported (miles)	Default Fuel Usage Rate**	Fuel Usage Rate Override**	Fuel Used for Personnel Transport**	Activity or Notes
Gallagher Bassett Technical Services Technician									
Contractor (7 empl.)									
Total Safety (1 empl.)									
ABC Tank Cleaning & Repairing									

**** See the "Detailed Notes and Explanations" tab for explanation of transport and fuel options.***

***** for biodiesel, B20, diesel, and gasoline, units are gallons for Fuel Used and miles/gallon for Fuel Usage Rate; for natural gas, units are hundreds of cubic feet (ccf) for Fuel Used and ccf/miles for Fuel Usage Rate; for electricity, units are miles/kWh for Fuel Usage Rate and the kWh (Fuel Used) are added to total grid electricity used (cell G69).***

On-Site Equipment Use and Transportation

Equipment Type*	HP*	Load Factor (%)*	Equipment Fuel Type**	Equipment Fuel Usage Rate	Equipment Hours Operated	Fuel Used for On-site Equipment	Equipment weight (tons)	Number of Equipment Roundtrips to Site	Roundtrip Distance to Site (miles)	Total Distance Transported (miles)	Mode of Transportation	Transport Fuel Type***	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Equipment Transport (gallons)	Activity or Notes
Excavator - medium (175 HP)	165	75%	Diesel between 75 and 750 hp	6.799450549	714	4854.807692	27.83	1	40	40	Truck (mpg)	Diesel	6		6.7	PC238 Excavator Specs (example)
Excavator - large (250 HP)	257	75%	Diesel between 75 and 750 hp	10.59065934	714	7561.730769	40.2735	1	40	40	Truck (mpg)	Diesel	6		6.7	PC360 Excavator Specs (example)

**** HP and Load Factor must be entered by user in Columns C and D. Please see the "Detailed Notes and Explanations" tab for further explanation.***

***** For biodiesel, B20, diesel, gasoline, and liquified petroleum gas, units are gallons for Fuel Used for On-site Equipment and gallons/hr for Equipment Fuel Usage Rate; for compressed natural gas units are ccf (hundreds of cubic feet) for Fuel Used for On-site Equipment and ccf/hr for Equipment Fuel Usage Rate.***

****** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation and other aspects of data entry in Columns M, N, and P. Units are gallons for Fuel Used for Equipment Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Input Worksheet for Excavation

Remedy Component that this Input worksheet is part of:	Component 3	Excavation

On-Site Electricity Use

Equipment Type	HP	Load Factor (%)	Efficiency (%)	Electrical Rating (kW)	Hours Used	Energy Used (kWh)	Notes
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
Estimated Total Electricity Usage Based on Above						0	
Renewable Electricity Generated On-Site*							
Total Electricity Usage Based on Personnel Transportation						0	
Total Grid Electricity Used						0	

**** Electricity generated on-site from renewable resources, for which the facility retains the rights to the renewable energy (i.e., does not sell renewable energy certificates associated with the renewable energy generation).***

On-Site Natural Gas Use

Equipment Type	Power Rating (Btu/hr)	Efficiency (%)	Hours Used	Energy Required (Btu)	Natural Gas Used (ccf)	Notes
					0	
				0		
Totals			0	0	0	

Landfill Gas Combusted On-Site for Energy Use

Equipment Type	Landfill Gas (ccf)	% Methane by volume	Used for electricity?	Landfill Gas Methane Used (ccf)	Notes
				0	
				0	
				0	
Total				0	

Please see the "Detailed Notes and Explanations" tab for instructions on using the two tables above ("On-site Natural Gas Use" and "Landfill Gas Combusted On-Site for Energy Use"). In the two tables above, ccf = hundreds of cubic feet.

Materials Use and Transportation

Material Type*	Unit	Quantity	Tons	Is the Material Refined or Unrefined?**	Material Source: Virgin, Recycled, or Reused?**	Calculate Item Footprint?**	Default One-way Distance to Site (miles)	One-way Distance to Site Override (miles)	Number of One-way Trips to Site	Include Return Trip in Calculations?	Total Distance Transported (miles)	Mode of Transportation***	Transport Fuel Type	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Materials Transport (gallons)	Notes and Description of Materials
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
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			0														
			0														
			0														
			0														

**** Please see the "Detailed Notes and Explanations" tab for instructions on specifying "User-Defined Materials" in the dropdown menu.***

***** Selections must be made in Columns F - H in order for the footprint calculations to be performed. Please see the "Detailed Notes and Explanations" tab for further information.***

****** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation, accounting for empty return trips, and other aspects of data entry in Columns L, N, O, and Q. Units are gallons for Fuel Used for Materials Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Input Worksheet for Excavation

Remedy Component that this Input worksheet is part of:	Component 3	Excavation

Waste Disposal and Transportation

Waste Destination*	Unit	Quantity	Tons	Default One-way Distance to Site (miles)	One-way Distance to Site Override (miles)	Number of One-way Trips to Site	Include Return Trip in Calculations?	Total Distance Transported (miles)	Mode of Transportation**	Transport Fuel Type	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Waste Transport (gallons)	Notes and Description of Waste
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											

**** No footprint is calculated for the Recycled/Reused On-Site and Off-Site selections. Please see the "Detailed Notes and Explanations" tab for instructions on specifying "User-Defined" selections in the dropdown menu.***

***** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation, accounting for empty return trips, and other aspects of data entry in Columns I, K, L, and N. Units are gallons for Fuel Used for Waste Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Type of Water Used

Source of Water Used*	Unit	Quantity	Tons	Source Location/Aquifer (optional)	Quality of Water Used (optional)	Water Uses (optional)	Fate of Used Water (optional)
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				

**** Only the "Public Water" selection has an associated footprint. No footprint is calculated for the other water source selections.***

Note: Information entered in Columns F - V (Source/Quality/Use/Fate) is not compiled or reported by SEFA.

Input Worksheet for Excavation

Remedy Component that this Input worksheet is part of:	Component 3	Excavation

Other Energy Use and Air Emissions

Item		Units	Quantity	Notes
On-Site				
User-defined on-site conventional energy use #1	*User-Defined	TBD		
User-defined on-site conventional energy use #2	*User-Defined	TBD		
On-site HAP process emissions**		lbs		
On-site GHG emissions**		lbs CO2e		
On-site carbon storage**		lbs CO2e		
Landfill gas flared on-site		ccf CH4		
Other on-site NOx emissions or reductions**		lbs		
Other on-site SOx emissions or reductions**		lbs		
Other on-site PM emissions or reductions**		lbs		
Transportation		**Units**	**Quantity**	**Notes**
User-defined conventional energy transportation #1	*User-Defined	TBD	10	
User-defined conventional energy transportation #2	*User-Defined	TBD		

**** Enter units and conversion factors on "User Defined Factors" tab***
***** Enter a positive number for emissions and a negative number for reductions, avoidances, or storage***
See the "Detailed Notes and Explanations" tab for use of this table.

Other Voluntary Renewable Energy Use

Item		Units	Quantity	Notes
User-defined on-site renewable energy use #1	*User-Defined	TBD		
User-defined on-site renewable energy use #2	*User-Defined	TBD		
User-defined renewable energy transportation #1	*User-Defined	TBD		
User-defined renewable energy transportation #2	*User-Defined	TBD		
Voluntary purchase of renewable electricity**		MWh		
Voluntary purchase of RECs**		MWh		

**** Enter units and conversion factors on "User Defined Factors" tab***
***** Complete information on provider in the table to the right. No footprint reductions are associated with the voluntary purchases.***
See the "Detailed Notes and Explanations" tab for use of this table

Off-Site Laboratory Analysis

Parameter and Notes	Number of Samples	Comments
Totals	**0**	

Description of purchased renewable electricity (green pricing product or green marketing product)	Provider:	
	Type of product:	
	Type of renewable energy source:	
	Date of renewable system installation:	
Description of purchased RECs	Provider:	
	Type of renewable energy source:	
	Date of renewable system installation:	
	Location of renewable system installation:	

Input Worksheet for Waste T&D

Please specify which Remedy Component this Input worksheet is part of: (Select "Off" to exclude this Input worksheet from calculations and results)	**Component 4**	**Waste Transport & Disposal**

General Scope

Transportation and disposal of contaminated soil and fuel oil and gasoline USTs at approved permitted off-site disposal facilities, for the duration of the remediation remedy implementation. Note: 1. All "Personnel Transportation" for the duration of the work has been captured in Component 2 as the same personnel will be on-site for each Component (2-5). Equipment is summarized in Component 3.

Example Items Eliminated through Screening Process

Other Notes and References

Personnel Transportation

Participant	Number of Roundtrips to Site	Roundtrip Distance to Site (miles)	Mode of Transportation*	Transport Fuel Type*	Total Distance Transported (miles)	Default Fuel Usage Rate**	Fuel Usage Rate Override**	Fuel Used for Personnel Transport**	Activity or Notes
Gallagher Bassett Technical Services Technician									
Contractor (7 empl.)									
Total Safety (1 empl.)									
ABC Tank Cleaning & Repairing									

**** See the "Detailed Notes and Explanations" tab for explanation of transport and fuel options.***

***** for biodiesel, B20, diesel, and gasoline, units are gallons for Fuel Used and miles/gallon for Fuel Usage Rate; for natural gas, units are hundreds of cubic feet (ccf) for Fuel Used and ccf/miles for Fuel Usage Rate; for electricity, units are miles/kWh for Fuel Usage Rate and the kWh (Fuel Used) are added to total grid electricity used (cell G69).***

On-Site Equipment Use and Transportation

Equipment Type*	HP*	Load Factor (%)*	Equipment Fuel Type**	Equipment Fuel Usage Rate	Equipment Hours Operated	Fuel Used for On-site Equipment	Equipment weight (tons)	Number of Equipment Roundtrips to Site	Roundtrip Distance to Site (miles)	Total Distance Transported (miles)	Mode of Transportation	Transport Fuel Type***	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Equipment Transport (gallons)	Activity or Notes

**** HP and Load Factor must be entered by user in Columns C and D. Please see the "Detailed Notes and Explanations" tab for further explanation.***

***** For biodiesel, B20, diesel, gasoline, and liquified petroleum gas, units are gallons for Fuel Used for On-site Equipment and gallons/hr for Equipment Fuel Usage Rate; for compressed natural gas units are ccf (hundreds of cubic feet) for Fuel Used for On-site Equipment and ccf/hr for Equipment Fuel Usage Rate.***

****** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation and other aspects of data entry in Columns M, N, and P. Units are gallons for Fuel Used for Equipment Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Input Worksheet for Waste T&D

Remedy Component that this Input worksheet is part of:	Component 4	Waste Transport & Disposal

On-Site Electricity Use

Equipment Type	HP	Load Factor (%)	Efficiency (%)	Electrical Rating (kW)	Hours Used	Energy Used (kWh)	Notes
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
Estimated Total Electricity Usage Based on Above						0	
Renewable Electricity Generated On-Site*							
Total Electricity Usage Based on Personnel Transportation						0	
Total Grid Electricity Used						0	

**** Electricity generated on-site from renewable resources, for which the facility retains the rights to the renewable energy (i.e., does not sell renewable energy certificates associated with the renewable energy generation).***

On-Site Natural Gas Use

Equipment Type	Power Rating (Btu/hr)	Efficiency (%)	Hours Used	Energy Required (Btu)	Natural Gas Used (ccf)	Notes
					0	
				0		
Totals			0	0	0	

Landfill Gas Combusted On-Site for Energy Use

Equipment Type	Landfill Gas (ccf)	% Methane by volume	Used for electricity?	Landfill Gas Methane Used (ccf)	Notes
				0	
				0	
				0	
Total				0	

Please see the "Detailed Notes and Explanations" tab for instructions on using the two tables above ("On-site Natural Gas Use" and "Landfill Gas Combusted On-Site for Energy Use"). In the two tables above, ccf = hundreds of cubic feet.

Materials Use and Transportation

Material Type*	Unit	Quantity	Tons	Is the Material Refined or Unrefined?**	Material Source: Virgin, Recycled, or Reused?**	Calculate Item Footprint?**	Default One-way Distance to Site (miles)	One-way Distance to Site Override (miles)	Number of One-way Trips to Site	Include Return Trip in Calculations?	Total Distance Transported (miles)	Mode of Transportation***	Transport Fuel Type	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Materials Transport (gallons)	Notes and Description of Materials
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
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			0														
			0														
			0														
			0														
			0														

**** Please see the "Detailed Notes and Explanations" tab for instructions on specifying "User-Defined Materials" in the dropdown menu.***

***** Selections must be made in Columns F - H in order for the footprint calculations to be performed. Please see the "Detailed Notes and Explanations" tab for further information.***

****** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation, accounting for empty return trips, and other aspects of data entry in Columns L, N, O, and Q. Units are gallons for Fuel Used for Materials Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Input Worksheet for Waste T&D

Remedy Component that this Input worksheet is part of:	Component 4	Waste Transport & Disposal

Waste Disposal and Transportation

Waste Destination*	Unit	Quantity	Tons	Default One-way Distance to Site (miles)	One-way Distance to Site Override (miles)	Number of One-way Trips to Site	Include Return Trip in Calculations?	Total Distance Transported (miles)	Mode of Transportation**	Transport Fuel Type	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Waste Transport (gallons)	Notes and Description of Waste
			0		26	1	No	26	Truck (mpg)	Diesel	6		4.3	
Benson Scrap Metal	ton	8	8	50	26	1	No	26	Truck (mpg)	Diesel	6		4.3	example scrap metal facility for unearthed USTs
			0		29	1	No	29	Truck (mpg)	Diesel	6		4.8	
Clean Water of New York, Inc.	ton	20	20	50	29	1	No	29	Truck (mpg)	Diesel	6		4.8	Non-RCRA Non-DOT Used Oil/Oil Water Mixture
			0		40	102	No	4080	Truck (mpg)	Diesel	6		680.0	
PPark NJ	ton	2037	2037	25	40	102	No	4080	Truck (mpg)	Diesel	6		680.0	example soil disposal facility
			0											
			0											
			0											
			0											
			0											
			0											

**** No footprint is calculated for the Recycled/Reused On-Site and Off-Site selections. Please see the "Detailed Notes and Explanations" tab for instructions on specifying "User-Defined" selections in the dropdown menu.***

***** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation, accounting for empty return trips, and other aspects of data entry in Columns I, K, L, and N. Units are gallons for Fuel Used for Waste Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Type of Water Used

Source of Water Used*	Unit	Quantity	Tons	Source Location/Aquifer (optional)	Quality of Water Used (optional)	Water Uses (optional)	Fate of Used Water (optional)
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				

**** Only the "Public Water" selection has an associated footprint. No footprint is calculated for the other water source selections.***

Note: Information entered in Columns F - V (Source/Quality/Use/Fate) is not compiled or reported by SEFA.

Input Worksheet for Waste T&D

Remedy Component that this Input worksheet is part of:	Component 4	Waste Transport & Disposal

Other Energy Use and Air Emissions

Item		Units	Quantity	Notes
On-Site				
User-defined on-site conventional energy use #1	*User-Defined	TBD		
User-defined on-site conventional energy use #2	*User-Defined	TBD		
On-site HAP process emissions**		lbs		
On-site GHG emissions**		lbs CO2e		
On-site carbon storage**		lbs CO2e		
Landfill gas flared on-site		ccf CH4		
Other on-site NOx emissions or reductions**		lbs		
Other on-site SOx emissions or reductions**		lbs		
Other on-site PM emissions or reductions**		lbs		
Transportation		**Units**	**Quantity**	**Notes**
User-defined conventional energy transportation #1	*User-Defined	TBD	10	
User-defined conventional energy transportation #2	*User-Defined	TBD		

**** Enter units and conversion factors on "User Defined Factors" tab***
***** Enter a positive number for emissions and a negative number for reductions, avoidances, or storage***
See the "Detailed Notes and Explanations" tab for use of this table.

Off-Site Laboratory Analysis

Parameter and Notes	Number of Samples	Comments
Totals	**0**	

Other Voluntary Renewable Energy Use

Item		Units	Quantity	Notes
User-defined on-site renewable energy use #1	*User-Defined	TBD		
User-defined on-site renewable energy use #2	*User-Defined	TBD		
User-defined renewable energy transportation #1	*User-Defined	TBD		
User-defined renewable energy transportation #2	*User-Defined	TBD		
Voluntary purchase of renewable electricity**		MWh		
Voluntary purchase of RECs**		MWh		

**** Enter units and conversion factors on "User Defined Factors" tab***
***** Complete information on provider in the table to the right. No footprint reductions are associated with the voluntary purchases.***
See the "Detailed Notes and Explanations" tab for use of this table

Description of purchased renewable electricity (green pricing product or green marketing product)	Provider:	
	Type of product:	
	Type of renewable energy source:	
	Date of renewable system installation:	
Description of purchased RECs	Provider:	
	Type of renewable energy source:	
	Date of renewable system installation:	
	Location of renewable system installation:	

Input Worksheet for B&R

Please specify which Remedy Component this Input worksheet is part of: (Select "Off" to exclude this Input worksheet from calculations and results)	**Component 5**	**Backfill & Restoration**

General Scope

Importation of clean fill and backfill, grading and compaction to grade, for the duration of the temediation remedy. Note: 1. All "Personnel Transportation" for the duration of the work has been captured in Component 2 as the same personnel will be on-site for each Component (2-5). 2. Equipment is summarized in Component 3.

Example Items Eliminated through Screening Process

Other Notes and References

Personnel Transportation

Participant	Number of Roundtrips to Site	Roundtrip Distance to Site (miles)	Mode of Transportation*	Transport Fuel Type*	Total Distance Transported (miles)	Default Fuel Usage Rate**	Fuel Usage Rate Override**	Fuel Used for Personnel Transport**	Activity or Notes
Gallagher Bassett Technical Services Technician									
Contractor (7 empl.)									
Total Safety (1 empl.)									

**** See the "Detailed Notes and Explanations" tab for explanation of transport and fuel options.***

***** for biodiesel, B20, diesel, and gasoline, units are gallons for Fuel Used and miles/gallon for Fuel Usage Rate; for natural gas, units are hundreds of cubic feet (ccf) for Fuel Used and ccf/miles for Fuel Usage Rate; for electricity, units are miles/kWh for Fuel Usage Rate and the kWh (Fuel Used) are added to total grid electricity used (cell G69).***

On-Site Equipment Use and Transportation

Equipment Type*	HP*	Load Factor (%)*	Equipment Fuel Type**	Equipment Fuel Usage Rate	Equipment Hours Operated	Fuel Used for On-site Equipment	Equipment weight (tons)	Number of Equipment Roundtrips to Site	Roundtrip Distance to Site (miles)	Total Distance Transported (miles)	Mode of Transportation	Transport Fuel Type***	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Equipment Transport (gallons)	Activity or Notes

**** HP and Load Factor must be entered by user in Columns C and D. Please see the "Detailed Notes and Explanations" tab for further explanation.***

***** For biodiesel, B20, diesel, gasoline, and liquified petroleum gas, units are gallons for Fuel Used for On-site Equipment and gallons/hr for Equipment Fuel Usage Rate; for compressed natural gas units are ccf (hundreds of cubic feet) for Fuel Used for On-site Equipment and ccf/hr for Equipment Fuel Usage Rate.***

****** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation and other aspects of data entry in Columns M, N, and P. Units are gallons for Fuel Used for Equipment Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Input Worksheet for B&R

Remedy Component that this Input worksheet is part of:	Component 5	Backfill & Restoration

On-Site Electricity Use

Equipment Type	HP	Load Factor (%)	Efficiency (%)	Electrical Rating (kW)	Hours Used	Energy Used (kWh)	Notes
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
Estimated Total Electricity Usage Based on Above						0	
Renewable Electricity Generated On-Site*							
Total Electricity Usage Based on Personnel Transportation						0	
Total Grid Electricity Used						0	

**** Electricity generated on-site from renewable resources, for which the facility retains the rights to the renewable energy (i.e., does not sell renewable energy certificates associated with the renewable energy generation).***

On-Site Natural Gas Use

Equipment Type	Power Rating (Btu/hr)	Efficiency (%)	Hours Used	Energy Required (Btu)	Natural Gas Used (ccf)	Notes
					0	
				0		
Totals			0	0	0	

Landfill Gas Combusted On-Site for Energy Use

Equipment Type	Landfill Gas (ccf)	% Methane by volume	Used for electricity?	Landfill Gas Methane Used (ccf)	Notes
				0	
				0	
				0	
Total				0	

Please see the "Detailed Notes and Explanations" tab for instructions on using the two tables above ("On-site Natural Gas Use" and "Landfill Gas Combusted On-Site for Energy Use"). In the two tables above, ccf = hundreds of cubic feet.

Materials Use and Transportation

Material Type*	Unit	Quantity	Tons	Is the Material Refined or Unrefined?**	Material Source: Virgin, Recycled, or Reused?**	Calculate Item Footprint?**	Default One-way Distance to Site (miles)	One-way Distance to Site Override (miles)	Number of One-way Trips to Site	Include Return Trip in Calculations?	Total Distance Transported (miles)	Mode of Transportation***	Transport Fuel Type	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Materials Transport (gallons)	Notes and Description of Materials
Clean Fill	ton	500	500	Unrefined	Recycled	Yes	500	40	25	No	1000	Truck (mpg)	Diesel	6		166.667	
			0					40	25	No	1000	Truck (mpg)	Diesel	6		166.667	
Allocco Recycled Stone	ton	1300	1300	Unrefined	Recycled	Yes	500	20	65	No	1300	Truck (mpg)	Diesel	6		216.667	
			0					20	65	No	1300	Truck (mpg)	Diesel	6		216.667	
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														

**** Please see the "Detailed Notes and Explanations" tab for instructions on specifying "User-Defined Materials" in the dropdown menu.***

***** Selections must be made in Columns F - H in order for the footprint calculations to be performed. Please see the "Detailed Notes and Explanations" tab for further information.***

****** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation, accounting for empty return trips, and other aspects of data entry in Columns L, N, O, and Q. Units are gallons for Fuel Used for Materials Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Input Worksheet for B&R

Remedy Component that this Input worksheet is part of:	Component 5	Backfill & Restoration

Waste Disposal and Transportation

Waste Destination*	Unit	Quantity	Tons	Default One-way Distance to Site (miles)	One-way Distance to Site Override (miles)	Number of One-way Trips to Site	Include Return Trip in Calculations?	Total Distance Transported (miles)	Mode of Transportation**	Transport Fuel Type	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Waste Transport (gallons)	Notes and Description of Waste
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											

** No footprint is calculated for the Recycled/Reused On-Site and Off-Site selections. Please see the "Detailed Notes and Explanations" tab for instructions on specifying "User-Defined" selections in the dropdown menu.*

*** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation, accounting for empty return trips, and other aspects of data entry in Columns I, K, L, and N. Units are gallons for Fuel Used for Waste Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.*

Type of Water Used

Source of Water Used*	Unit	Quantity	Tons	Source Location/Aquifer (optional)	Quality of Water Used (optional)	Water Uses (optional)	Fate of Used Water (optional)
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				

** Only the "Public Water" selection has an associated footprint. No footprint is calculated for the other water source selections.*

Note: Information entered in Columns F - V (Source/Quality/Use/Fate) is not compiled or reported by SEFA.

Input Worksheet for B&R

Remedy Component that this Input worksheet is part of:	Component 5	Backfill & Restoration

Other Energy Use and Air Emissions

Item		Units	Quantity	Notes
On-Site				
User-defined on-site conventional energy use #1	*User-Defined	TBD		
User-defined on-site conventional energy use #2	*User-Defined	TBD		
On-site HAP process emissions**		lbs		
On-site GHG emissions**		lbs CO2e		
On-site carbon storage**		lbs CO2e		
Landfill gas flared on-site		ccf CH4		
Other on-site NOx emissions or reductions**		lbs		
Other on-site SOx emissions or reductions**		lbs		
Other on-site PM emissions or reductions**		lbs		
Transportation		**Units**	**Quantity**	**Notes**
User-defined conventional energy transportation #1	*User-Defined	TBD	10	
User-defined conventional energy transportation #2	*User-Defined	TBD		

**** Enter units and conversion factors on "User Defined Factors" tab***
***** Enter a positive number for emissions and a negative number for reductions, avoidances, or storage***
See the "Detailed Notes and Explanations" tab for use of this table.

Other Voluntary Renewable Energy Use

Item		Units	Quantity	Notes
User-defined on-site renewable energy use #1	*User-Defined	TBD		
User-defined on-site renewable energy use #2	*User-Defined	TBD		
User-defined renewable energy transportation #1	*User-Defined	TBD		
User-defined renewable energy transportation #2	*User-Defined	TBD		
Voluntary purchase of renewable electricity**		MWh		
Voluntary purchase of RECs**		MWh		

**** Enter units and conversion factors on "User Defined Factors" tab***
***** Complete information on provider in the table to the right. No footprint reductions are associated with the voluntary purchases.***
See the "Detailed Notes and Explanations" tab for use of this table

Off-Site Laboratory Analysis

Parameter and Notes	Number of Samples	Comments
Totals	**0**	

Description of purchased renewable electricity (green pricing product or green marketing product)	Provider:	
	Type of product:	
	Type of renewable energy source:	
	Date of renewable system installation:	
Description of purchased RECs	Provider:	
	Type of renewable energy source:	
	Date of renewable system installation:	
	Location of renewable system installation:	

Input Worksheet for EPS & LTM

Please specify which Remedy Component this Input worksheet is part of: (Select "Off" to exclude this Input worksheet from calculations and results)	**Component 6**	**Endpoint Sampling & Long-Term Monitoring**

General Scope

Scope of work includes endpoint sampling following site remediation, and the installation and long-term monitoring of engineering controls

Example Items Eliminated through Screening Process

Other Notes and References

Assumptions: Long-Term Monitoring is for a duration of 25 years. Assume annual site visits in conformance with a NYSDEC-approved SMP. Assume that a SSDS fan will be operating 24/7 for 25 years. Assume any equipment or materials used during inspections/testing is minmal and insignificant for this analysis.
Assume site SCOs for SVOCs and metals due to RRU exceedances

Personnel Transportation

Participant	Number of Roundtrips to Site	Roundtrip Distance to Site (miles)	Mode of Transportation*	Transport Fuel Type*	Total Distance Transported (miles)	Default Fuel Usage Rate**	Fuel Usage Rate Override**	Fuel Used for Personnel Transport**	Activity or Notes
Gallagher Bassett Technical Services	10	185	Car	Gasoline	1850	25	30	61.7	Environmental Monitoring and Endpoint Sampling
Lab Courier - Phoenix	5	110	Car	Gasoline	550	25		22	Sample pick-up from GBTS Poughkeepsie office
Gallagher Bassett Technical Services	25	185	Car	Gasoline	4625	25	30	154.2	Long-Term Monitoring, SMP inspections

**** See the "Detailed Notes and Explanations" tab for explanation of transport and fuel options.***

***** for biodiesel, B20, diesel, and gasoline, units are gallons for Fuel Used and miles/gallon for Fuel Usage Rate; for natural gas, units are hundreds of cubic feet (ccf) for Fuel Used and ccf/miles for Fuel Usage Rate; for electricity, units are miles/kWh for Fuel Usage Rate and the kWh (Fuel Used) are added to total grid electricity used (cell G69).***

On-Site Equipment Use and Transportation

Equipment Type*	HP*	Load Factor (%)*	Equipment Fuel Type**	Equipment Fuel Usage Rate	Equipment Hours Operated	Fuel Used for On-site Equipment	Equipment weight (tons)	Number of Equipment Roundtrips to Site	Roundtrip Distance to Site (miles)	Total Distance Transported (miles)	Mode of Transportation	Transport Fuel Type***	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Equipment Transport (gallons)	Activity or Notes

**** HP and Load Factor must be entered by user in Columns C and D. Please see the "Detailed Notes and Explanations" tab for further explanation.***

***** For biodiesel, B20, diesel, gasoline, and liquified petroleum gas, units are gallons for Fuel Used for On-site Equipment and gallons/hr for Equipment Fuel Usage Rate; for compressed natural gas units are ccf (hundreds of cubic feet) for Fuel Used for On-site Equipment and ccf/hr for Equipment Fuel Usage Rate.***

****** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation and other aspects of data entry in Columns M, N, and P. Units are gallons for Fuel Used for Equipment Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Input Worksheet for EPS & LTM

Remedy Component that this Input worksheet is part of:	Component 6	Endpoint Sampling & Long-Term Monitoring

On-Site Electricity Use

Equipment Type	HP	Load Factor (%)	Efficiency (%)	Electrical Rating (kW)	Hours Used	Energy Used (kWh)	Notes
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with HP, Efficiency, and Hours>							
<Equip. with known kW rating>				0.152	219000	33288	SSDS Blower Fan - Fantech Model 220 as
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known kW rating>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
<Equip. with known total Energy Used>							
Estimated Total Electricity Usage Based on Above						33288	
Renewable Electricity Generated On-Site*							
Total Electricity Usage Based on Personnel Transportation						0	
Total Grid Electricity Used						33288	

**** Electricity generated on-site from renewable resources, for which the facility retains the rights to the renewable energy (i.e., does not sell renewable energy certificates associated with the renewable energy generation).***

On-Site Natural Gas Use

Equipment Type	Power Rating (Btu/hr)	Efficiency (%)	Hours Used	Energy Required (Btu)	Natural Gas Used (ccf)	Notes
					0	
				0		
Totals			0	0	0	

Landfill Gas Combusted On-Site for Energy Use

Equipment Type	Landfill Gas (ccf)	% Methane by volume	Used for electricity?	Landfill Gas Methane Used (ccf)	Notes
				0	
				0	
				0	
Total				0	

Please see the "Detailed Notes and Explanations" tab for instructions on using the two tables above ("On-site Natural Gas Use" and "Landfill Gas Combusted On-Site for Energy Use"). In the two tables above, ccf = hundreds of cubic feet.

Materials Use and Transportation

Material Type*	Unit	Quantity	Tons	Is the Material Refined or Unrefined?**	Material Source: Virgin, Recycled, or Reused?**	Calculate Item Footprint?**	Default One-way Distance to Site (miles)	One-way Distance to Site Override (miles)	Number of One-way Trips to Site	Include Return Trip in Calculations?	Total Distance Transported (miles)	Mode of Transportation***	Transport Fuel Type	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Materials Transport (gallons)	Notes and Description of Materials
20-mil vapor barrier	sqft	13000	1.794	Refined	Virgin	Yes	500	20	1	No	20	Truck (mpg)	Diesel	6		3.333	Construction measure (not a component of the
			0					20	1	No	20	Truck (mpg)	Diesel	6		3.333	
4" Perforated SDR 35 Radon Vent Pipe	ft	50	50.7	Refined	Virgin	Yes	500	20	1	No	20	Truck (mpg)	Diesel	6		3.333	
			0					20	1	No	20	Truck (mpg)	Diesel	6		3.333	
			0														Construction measure (not a component of the
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														
			0														

**** Please see the "Detailed Notes and Explanations" tab for instructions on specifying "User-Defined Materials" in the dropdown menu.***

***** Selections must be made in Columns F - H in order for the footprint calculations to be performed. Please see the "Detailed Notes and Explanations" tab for further information.***

****** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation, accounting for empty return trips, and other aspects of data entry in Columns L, N, O, and Q. Units are gallons for Fuel Used for Materials Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Input Worksheet for EPS & LTM

Remedy Component that this Input worksheet is part of:	Component 6	Endpoint Sampling & Long-Term Monitoring

Waste Disposal and Transportation

Waste Destination*	Unit	Quantity	Tons	Default One-way Distance to Site (miles)	One-way Distance to Site Override (miles)	Number of One-way Trips to Site	Include Return Trip in Calculations?	Total Distance Transported (miles)	Mode of Transportation**	Transport Fuel Type	Default Transport Fuel Usage Rate (gptm or mpg)	Transport Fuel Usage Rate Override (gptm or mpg)	Fuel Used for Waste Transport (gallons)	Notes and Description of Waste
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											
			0											

**** No footprint is calculated for the Recycled/Reused On-Site and Off-Site selections. Please see the "Detailed Notes and Explanations" tab for instructions on specifying "User-Defined" selections in the dropdown menu.***

***** Please see the "Detailed Notes and Explanations" tab for instructions on selecting mode of transportation, accounting for empty return trips, and other aspects of data entry in Columns I, K, L, and N. Units are gallons for Fuel Used for Waste Transport and miles/gallon (mpg) or gallons per ton-mile (gptm) for Transport Fuel Usage Rate.***

Type of Water Used

Source of Water Used*	Unit	Quantity	Tons	Source Location/Aquifer (optional)	Quality of Water Used (optional)	Water Uses (optional)	Fate of Used Water (optional)
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				
			0				

**** Only the "Public Water" selection has an associated footprint. No footprint is calculated for the other water source selections.***

Note: Information entered in Columns F - V (Source/Quality/Use/Fate) is not compiled or reported by SEFA.

Input Worksheet for EPS & LTM

Remedy Component that this Input worksheet is part of:	Component 6	Endpoint Sampling & Long-Term Monitoring

Other Energy Use and Air Emissions

Item		Units	Quantity	Notes
On-Site				
User-defined on-site conventional energy use #1	*User-Defined	TBD		
User-defined on-site conventional energy use #2	*User-Defined	TBD		
On-site HAP process emissions**		lbs		
On-site GHG emissions**		lbs CO2e		
On-site carbon storage**		lbs CO2e		
Landfill gas flared on-site		ccf CH4		
Other on-site NOx emissions or reductions**		lbs		
Other on-site SOx emissions or reductions**		lbs		
Other on-site PM emissions or reductions**		lbs		
Transportation		Units	Quantity	Notes
User-defined conventional energy transportation #1	*User-Defined	TBD	10	
User-defined conventional energy transportation #2	*User-Defined	TBD		

**** Enter units and conversion factors on "User Defined Factors" tab***
***** Enter a positive number for emissions and a negative number for reductions, avoidances, or storage***
See the "Detailed Notes and Explanations" tab for use of this table.

Other Voluntary Renewable Energy Use

Item		Units	Quantity	Notes
User-defined on-site renewable energy use #1	*User-Defined	TBD		
User-defined on-site renewable energy use #2	*User-Defined	TBD		
User-defined renewable energy transportation #1	*User-Defined	TBD		
User-defined renewable energy transportation #2	*User-Defined	TBD		
Voluntary purchase of renewable electricity**		MWh		
Voluntary purchase of RECs**		MWh		

**** Enter units and conversion factors on "User Defined Factors" tab***
***** Complete information on provider in the table to the right. No footprint reductions are associated with the voluntary purchases.***
See the "Detailed Notes and Explanations" tab for use of this table

Off-Site Laboratory Analysis

Parameter and Notes	Number of Samples	Comments
Off-site Laboratory Analysis - SVOCs	30	
Off-site Laboratory Analysis - Metals	10	
Off-site Laboratory Analysis - VOCs	20	
Totals	**60**	

Description of purchased renewable electricity (green pricing product or green marketing product)	Provider:	
	Type of product:	
	Type of renewable energy source:	
	Date of renewable system installation:	
Description of purchased RECs	Provider:	
	Type of renewable energy source:	
	Date of renewable system installation:	
	Location of renewable system installation:	

All Components - On-Site Footprint (Scope 1)

Contributors to Footprints	Units	Usage	Energy		GHG		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
On-Site														
On-site Renewable Energy														
Renewable electricity generated on-site	MWh	0	3.413	0										
Landfill gas combusted on-site for energy use	ccf CH4	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
On-site biodiesel use	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
On-site biodiesel use - User Defined	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
User-defined on-site renewable energy use #1	gal	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined on-site renewable energy use #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
On-site Renewable Energy Subtotals				**0**		**0**		**0**		**0**		**0**		**0**
Notes:														
On-site Conventional Energy														
On-site grid electricity	MWh	33.288	3.413	113.61194										
On-site diesel use - Other	Gal	91.125	0.139	12.666375	22.5	2050.3125	0.17	15.49125	0.0054	0.492075	0.0034	0.309825	0.0000052	0.0004739
On-site diesel use <75 hp	Gal	0	0.139	0	22.21	0	0.1565	0	0.000145	0	0.0145	0	0.00004	0
On-site diesel use 75<hp<750	Gal	12416.538	0.139	1725.8988	22.24	276143.82	0.101	1254.0704	0.00013	1.61415	0.009	111.74885	0.00004	0.4966615
On-site diesel use >750 hp	Gal	0	0.139	0	22.24	0	0.149	0	0.00013	0	0.006	0	0.00004	0
On-site gasoline use - Other	Gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
On-site gasoline use <25 hp	Gal	0	0.124	0	17.48	0	0.037	0	0.00025	0	0.165	0	0.00008	0
On-site gasoline use >25 hp	Gal	0	0.124	0	19.93	0	0.032	0	0.00029	0	0.002	0	0.00009	0
On-site natural gas use	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
On-site compressed natural gas use - Other	ccf	0	NP		1957.835	0	16.0325	0	0.023045	0	0.2775	0	0	0
On-site compressed natural gas use	ccf	0	NP		1957.835	0	16.0325	0	0.023045	0	0.2775	0	0	0
On-site liquified petroleum gas use - Other	gal	0	NP		12.69	0	0.021	0	0.00013	0	0.001	0	0	0
On-site liquified petroleum gas use	gal	0	NP		12.69	0	0.021	0	0.00013	0	0.001	0	0	0
Other forms of on-site conventional energy use #1	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
Other forms of on-site conventional energy use #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
On-site Conventional Energy Subtotals				**1,852**		**278,194**		**1,270**		**2**		**112**		**0**
Notes:														
Other On-site Emissions														
On-site HAP process emissions	lbs	0											1	0
On-site GHG emissions	lbs CO2e	0			1	0								
On-site carbon storage	lbs CO2e	0			1	0								
GHG avoided by flaring on-site landfill methane	Lbs	0			-262	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Other on-site NOx emissions or reductions	lbs	0					1	0						
Other on-site SOx emissions or reductions	lbs	0							1	0				
Other on-site PM emissions or reductions	lbs	0									1	0		
User-defined recycled/reused on-site #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined recycled/reused on-site #3	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
Benson Scrap Metal	ton	8	0	0	0	0	0	0	0	0	0	0	0	0
Notes:														
On-site Totals				**1,852.18**		**278,194**		**1,270**		**2**		**112**		**0**

All Components - Electricity Generation Footprint (Scope 2)

Contributors to Footprints	Units	Usage	Energy		GHG		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Electricity Generation														
Grid electricity	MWh	33.288	6.929	230.65255	N/A*	11717.376	N/A*	50.065152	N/A*	48.922042	N/A*	2.5119125	N/A*	1.5113916
**** Conversion factors are not applied to grid electricity in the "All Components" tab since multiple fuel mixes may be used. The value for each cell shaded yellow in Row 51 is the sum of values from Components 1 - 6.***														
Voluntary purchase of renewable electricity	MWh	0												
Voluntary purchase of RECs	MWh	0												
Notes:														

All Components - Transportation Footprint (Scope 3a)

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Conventional Energy														
Transportation diesel use	gal	2360.6	0.139	328.1234	22.5	53113.5	0.17	401.302	0.0054	12.74724	0.0034	8.02604	0.0000052	0.0122751
Transportation diesel use - car	gal	0	0.139	0	22.57	0	0.015	0	0.0002	0	0.003	0	0.00252	0
Transportation diesel use - passenger truck	gal	7.9	0.139	1.0981	22.545	178.1055	0.0585	0.46215	0.0002	0.00158	0.007	0.0553	0.002605	0.0205795
Transportation diesel use - User Defined	gal	0	0.139	0	22.5	0	0.17	0	0.0054	0	0.0034	0	0.0000052	0
Transportation gasoline use	gal	5	0.124	0.62	19.6	98	0.11	0.55	0.0045	0.0225	0.00054	0.0027	0.000039	0.000195
Transportation gasoline use - car	gal	2176.4	0.124	269.8736	19.77	43027.428	0.027	58.7628	0.00036	0.783504	0.003	6.5292	0.0067	14.58188
Transportation gasoline use - passenger truck	gal	0	0.124	0	19.79	0	0.035	0	0.00036	0	0.003	0	0.00661	0
Transportation gasoline use - User Defined	gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
Transportation natural gas use	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Transportation natural gas use - User Defined	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
User-defined conventional energy transportation #1	TBD	60	0	0	0	0	0	0	0	0	0	0	0	0
User-defined conventional energy transportation #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
Conventional Energy Subtotals				**600**		**96,417**		**461**		**14**		**15**		**15**
Notes:														
Renewable Energy														
Transportation biodiesel use	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
Transportation biodiesel use - User Defined	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
User-defined renewable energy transportation #1	TBD	0	Biodiesel		0	0	0	0	0	0	0	0	Ref.	
User-defined renewable energy transportation #2	TBD	0	mpg or pmp		0	0	0	0	0	0	0	0	0	0
Renewable Energy Subtotals				**0**		**0**		**0**		**0**		**0**		**0**
Notes:														
Transportation Totals				**600**		**96417**		**461**		**14**		**15**		**15**

All Components - Off-Site Footprint (Scope 3b)

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Construction Materials														
Aluminum, Rolled Sheet	lb	0	0.0633	0	9.15	0	0.0148	0	0.0283	0	0.0088	0	0.00102	0
Asphalt, mastic	lb	0	0.0412	0	0.85	0	0.00271	0	0.00798	0	0.000766	0	0.00107	0
Asphalt, paving-grade	lb	0	0.5	0	8.58	0	0.0299	0	0.0969	0	0.0091	0	0.0133	0
Ethanol, Corn, 95%	lb	0	0.0318	0	-0.0199	0	0.00425	0	0.00303	0	0.000469	0	0.0000846	0
Ethanol, Corn, 99.7%	lb	0	0.0324	0	0.0591	0	0.00431	0	0.0031	0	0.000472	0	0.000087	0
Ethanol, Petroleum, 99.7%	lb	0	0.0205	0	1.25	0	0.00199	0	0.00214	0	0.000277	0	0.0000589	0
Gravel/Sand Mix, 65% Gravel	lb	0	0.0000248	0	0.0024	0	0.000018	0	4.52E-06	0	2.61E-06	0	3.08E-07	0
Gravel/sand/clay	lb	0	0.000028	0	0.00335	0	0.0000165	0	0.000015	0	0.000002	0	2.05E-10	0
HDPE	lb	0	0.0332	0	1.94	0	0.00325	0	0.00409	0	0.000439	0	0.0000641	0
Photovoltaic system (installed)	W	0	0.0336	0	4.47	0	0.015	0	0.032	0	0.00063	0	0.0000029	0
PVC	lb	132	0.0262	3.4584	2.02	266.64	0.004	0.528	0.00274	0.36168	0.000372	0.049104	0.000375	0.0495
Portland cement, US average	lb	0	0.0139	0	1.34	0	0.00654	0	0.0104	0	0.00378	0	0.00097	0
Ready-mixed concrete, 20 MPa	ft3	0	0.217	0	19.5	0	0.0975	0	0.154	0	0.057	0	0.0141	0
Round Gravel	lb	0	0.0000248	0	0.0024	0	0.000018	0	4.52E-06	0	2.61E-06	0	3.08E-07	0
Sand	lb	1407.376	0.0000248	0.0349029	0.0024	3.3777024	0.000018	0.0253328	4.52E-06	0.0063613	2.61E-06	0.0036733	3.08E-07	0.0004335
Stainless Steel	lb	0	0.0116	0	3.4	0	0.0075	0	0.012	0	0.0044	0	0.000144	0
Steel	lb	0	0.0044	0	1.1	0	0.0014	0	0.0017	0	0.00056	0	0.000067	0
Other refined construction materials	lb	0	0.01885	0	2.115	0	0.0040375	0	0.0051325	0	0.0014428	0	0.0001625	0
Other unrefined construction materials	lb	0	0.000028	0	0.00335	0	0.0000165	0	0.000015	0	0.000002	0	2.05E-10	0

Notes:

All Components - Off-Site Footprint (Scope 3b)

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Treatment Materials & Chemicals														
Cheese Whey	lbs	0	0.0025	0	0.031	0	0.000062	0	0.000033	0	0.000002	0	NP	
Emulsified vegetable oil	lbs	0	0.0077	0	3.44	0	0.0066	0	0.0019	0	0.000033	0	NP	
Granular activated carbon, primary	lbs	0	0.0356	0	4.82	0	0.0793	0	0.128	0	0.000987	0	0.000657	0
Granular activated carbon, regenerated	lbs	0	0.00873	0	1.7	0	0.00733	0	0.0129	0	0.000886	0	0.000671	0
Hydrogen Peroxide, 50% in H2O	lbs	0	0.00979	0	1.19	0	0.00142	0	0.0024	0	0.000308	0	0.0000629	0
Iron (II) Sulfate	lbs	0	0.00147	0	0.167	0	0.000316	0	0.000589	0	0.000103	0	0.000023	0
Lime, Hydrated, Packed	lbs	0	0.00206	0	0.762	0	0.000513	0	0.000358	0	0.00013	0	6.57E-06	0
Molasses	lbs	0	0.0044	0	0.48	0	0.0011	0	0.00024	0	0.0000041	0	NP	
Phosphoric Acid, 70% in H2O	lbs	0	0.0067	0	0.882	0	0.00282	0	0.0294	0	0.00171	0	0.000163	0
Potassium Permanganate	lbs	0	0.00981	0	1.16	0	0.00234	0	0.0032	0	0.000422	0	0.000122	0
Sodium Hydroxide, 50% in H2O	lbs	0	0.00977	0	1.09	0	0.00194	0	0.00352	0	0.000403	0	0.000129	0
Other Treatment Chemicals & Materials	lbs	0	0.015	0	1.67	0	0.003	0	0.0065	0	0.00061	0	0.000016	0
Notes:														
Fuel Processing														
Biodiesel produced	gal	0	0.029	0	-16.8	0	0.018	0	0.033	0	0.00082	0	NP	
Diesel produced	gal	14876.163	0.017	252.89478	3.02	44926.014	0.0051	75.868434	0.0062	92.232213	0.0017	25.289478	0.0011	16.36378
Gasoline produced	gal	2181.4	0.033	71.9862	2.8	6107.92	0.0046	10.03444	0.005	10.907	0.0015	3.2721	0.001	2.1814
Liquefied Petroleum Gas Produced	gal	0	0.088	0	1.47	0	0.0016	0	0.0024	0	0.0007	0	0.0003	0
Natural Gas - Compressed Produced	ccf	0	19.983	0	343.92	0	0.4732	0	2.1651	0	0.1846	0	0.2895	0
Natural Gas Produced	ccf	0	0.0052	0	2.2	0	0.0037	0	0.0046	0	0.000072	0	0.0000061	0
Fuel Processing Subtotals				**324.88098**		**51033.934**		**85.902874**		**103.13921**		**28.561578**		**18.54518**
Notes:														
Public water	gal x 1000	204.02	0.0092	1.876984	5	1020.1	0.0097	1.978994	0.0059	1.203718	0.016	3.26432	0.000015	0.0030603
User-defined water resource #1	gal x 1000	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined water resource #2	gal x 1000	0	0	0	0	0	0	0	0	0	0	0	0	0
Notes:														

All Components - Off-Site Footprint (Scope 3b)

			Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
Category	Units	Usage	Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Off-Site Services														
Hazardous waste incineration	lb	0	0.00609	0	2.43	0	0.0016	0	0.00167	0	0.000209	0	0.000087	0
Off-site waste water treatment (POTW)	gal x 1000	0	0.015	0	4.4	0	0.016	0	0.015	0	NP		NP	
Off-site non-hazardous waste landfill	ton	0	0.16	0	25	0	0.14	0	0.075	0	0.4	0	0.0014	0
Off-site hazardous waste landfill	ton	0	0.18	0	27.5	0	0.154	0	0.0825	0	0.44	0	0.00154	0
Off-site Laboratory Analysis - Other	sample	520	0.058071	30.196935	6.8534384	3563.788	0.131402	68.329018	0.3038758	158.0154	0.0455698	23.696309	0.0330165	17.168595
Off-site Laboratory Analysis - Metals	sample	113	0.212	23.956	27.4693	3104.0309	0.6423	72.5799	1.5072	170.3136	0.2264	25.5832	0.1643	18.5659
Off-site Laboratory Analysis - Mercury	sample	103	0.0731715	7.5366617	9.325458	960.52217	0.2127439	21.912622	0.4982396	51.318679	0.0747359	7.6978018	0.0542332	5.5860155
Off-site Laboratory Analysis - Inorganic Anions	sample	0	0.0074025	0	0.6459478	0	0.0067681	0	0.0147929	0	0.0022024	0	0.0015542	0
Off-site Laboratory Analysis - Alkalinity	sample	0	0.0174398	0	1.3381922	0	0.0070106	0	0.0132496	0	0.00194	0	0.0012831	0
Off-site Laboratory Analysis - Perchlorate	sample	0	0.023885	0	1.8717054	0	0.0079807	0	0.0141535	0	0.0020547	0	0.0012875	0
Off-site Laboratory Analysis - Nitrogen/Nitrate	sample	0	0.0336475	0	4.29897	0	0.0954592	0	0.2226646	0	0.0335099	0	0.0242506	0
Off-site Laboratory Analysis - Sulfate	sample	0	0.0141225	0	1.4726728	0	0.0079807	0	0.0136024	0	0.0019797	0	0.0012015	0
Off-site Laboratory Analysis - PCBs	sample	103	0.0512769	5.2815207	5.224902	538.16491	0.0833339	8.5833896	0.1904774	19.619176	0.0284393	2.929252	0.0212083	2.18445
Off-site Laboratory Analysis - VOCs	sample	143	0.0762045	10.897242	9.016814	1289.4044	0.104498	14.94322	0.2270738	32.471553	0.0339508	4.8549701	0.0235892	3.3732585
Off-site Laboratory Analysis - SVOCs	sample	138	0.0715602	9.8753053	7.870422	1086.1182	0.1459445	20.140344	0.3373038	46.547924	0.0504853	6.9669769	0.0372577	5.1415681
Notes:														
Resource Extraction for Electricity														
Coal extraction and processing	MWh	1.99728	3.1	6.0992937	180.0	359.5104	0.8	1.5379056	0.2	0.299592	0.0	0.035951	NP	
Natural gas extraction and processing	MWh	3.3288	1.6	5.4319358	270.0	898.776	0.2	0.599184	13.0	43.2744	0.0	0.0236345	NP	
Nuclear fuel extraction and processing	MWh	0.66576	0.2	0.103507	25.0	16.644	0.2	0.099864	0.5	0.33288	0.0	0.0009986	NP	
Oil extraction and processing	MWh	1.6644	2.3	3.8204638	270.0	449.388	1.7	2.82948	0.1	0.1148436	0.0	0.0699048	NP	
Other fuel extraction and processing	MWh	0	0	0	0	0	0	0	0	0	0	0	0	0
Resource Extraction Subtotals				**15.4552**		**1724.3184**		**5.0664336**		**44.021716**		**0.130489**		**0**
Notes:														
Electricity Transmission														
Transmission and distribution losses	MWh	33.288	1.0342	34.42645										
Notes:														

All Components - Off-Site Footprint (Scope 3b)

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
User-defined Materials														
BENSEAL (Sodium Bentonite)	50 lb bag	2	0	0	0	0	0	0	0	0	0	0	0	0
orange mesh fencing	ft	600	0	0	0	0	0	0	0	0	0	0	0	0
absorbent composite socks	ft	600	0	0	0	0	0	0	0	0	0	0	0	0
6-mil 40' x 100' polyurethane sheeting	rolls	7	0	0	0	0	0	0	0	0	0	0	0	0
aggregate 2" stone	ton	60	0	0	0	0	0	0	0	0	0	0	0	0
filter cloth	lb	60	0	0	0	0	0	0	0	0	0	0	0	0
20-mil vapor barrier	sqft	13000	0	0	0	0	0	0	0	0	0	0	0	0
4" Perforated SDR 35 Radon Vent Pipe	ft	50	0	0	0	0	0	0	0	0	0	0	0	0
Clean Fill	ton	500	0	0	0	0	0	0	0	0	0	0	0	0
Allocco Recycled Stone	ton	1300	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #11	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #12	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #13	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #14	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #15	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #16	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #17	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #18	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #19	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined material #20	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
Notes:														
User-defined Waste Destinations														
Benson Scrap Metal	ton	8	0	0	0	0	0	0	0	0	0	0	0	0
Clean Water of New York, Inc.	ton	20	0	0	0	0	0	0	0	0	0	0	0	0
User-defined recycled/reused off-site #3	TBD	0	y(MMBtu/t		lbs CO2e/t		Ox(lbs/unit		Ox(lbs/unit		M(lbs/unit)		APs(lbs/unit	
PPark NJ	ton	2037	0	0	0	0	0	0	0	0	0	0	0	0
User-defined non-hazardous waste destination #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined non-hazardous waste destination #3	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined hazardous waste destination #1	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined hazardous waste destination #2	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
User-defined hazardous waste destination #3	TBD	0	0	0	0	0	0	0	0	0	0	0	0	0
Notes:														
Off-site Totals				**467.87658**		**64590.398**		**299.99013**		**627.01902**		**103.73767**		**70.61796**

All Components - Intermediate Totals

Category	Units	Usage	Energy		Greenhouse Gas		NOx		SOx		PM		HAPs	
			Conv. Factor	MMBtus	Conv. Factor	lbs CO2e	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs	Conv. Factor	lbs
Total Grid Electricity Footprint														
On-site grid electricity	MWh	33.288	3.413	113.61194										
Electricity Generation														
Grid electricity	MWh	33.288	6.929	230.65255	1124.3	37425.698	2.2421	74.635025	4.6078874	153.38736	0.057518	1.9146592	0.2102371	6.9983723
Resource Extraction for Electricity														
Coal extraction and processing	MWh	1.99728	3.1	6.0992937	180.0	359.5104	0.8	1.5379056	0.2	0.299592	0.0	0.035951	NP	
Natural gas extraction and processing	MWh	3.3288	1.6	5.4319358	270.0	898.776	0.2	0.599184	13.0	43.2744	0.0	0.0236345	NP	
Nuclear fuel extraction and processing	MWh	0.66576	0.2	0.103507	25.0	16.644	0.2	0.099864	0.5	0.33288	0.0	0.0009986	NP	
Oil extraction and processing	MWh	1.6644	2.3	3.8204638	270.0	449.388	1.7	2.82948	0.1	0.1148436	0.0	0.0699048	NP	
Other fuel extraction and processing	MWh	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Electricity Transmission														
Transmission and distribution losses	MWh	33.288	1.0342	34.42645	112.43	3742.5698	0.22421	7.4635025	0.4607887	15.338736	0.0057518	0.1914659	0.0210237	0.6998372
Total Grid Electricity Footprint				**394**		**42893**		**87**		**213**		**2**		**8**
Total Fuel Footprints														
Total Gasoline Footprint														
On-site gasoline use - Other	gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
On-site gasoline use <25 hp	gal	0	0.124	0	17.48	0	0.037	0	0.00025	0	0.165	0	0.00008	0
On-site gasoline use >25 hp	gal	0	0.124	0	19.93	0	0.032	0	0.00029	0	0.002	0	0.00009	0
Transportation gasoline use	gal	5	0.124	0.62	19.6	98	0.11	0.55	0.0045	0.0225	0.00054	0.0027	0.000039	0.000195
Transportation gasoline use - car	gal	2176.4	0.124	269.8736	19.77	43027.428	0.027	58.7628	0.00036	0.783504	0.003	6.5292	0.0067	14.58188
Transportation gasoline use - passenger truck	gal	0	0.124	0	19.79	0	0.035	0	0.00036	0	0.003	0	0.00661	0
Transportation gasoline use - User Defined	gal	0	0.124	0	19.6	0	0.11	0	0.0045	0	0.00054	0	0.000039	0
Gasoline produced	gal	2181.4	0.033	71.9862	2.8	6107.92	0.0046	10.03444	0.005	10.907	0.0015	3.2721	0.001	2.1814
Total Gasoline Footprint		**2181.4**		**342.4798**		**49233.348**		**69.34724**		**11.713004**		**9.804**		**16.763475**
Total Diesel Footprint														
On-site diesel use - Other	gal	91.125	0.139	12.666375	22.5	2050.3125	0.17	15.49125	0.0054	0.492075	0.0034	0.309825	0.0000052	0.0004739
On-site diesel use <75 hp	gal	0	0.139	0	22.21	0	0.1565	0	0.000145	0	0.0145	0	0.00004	0
On-site diesel use 75<hp<750	gal	12416.538	0.139	1725.8988	22.24	276143.82	0.101	1254.0704	0.00013	1.61415	0.009	111.74885	0.00004	0.4966615
On-site diesel use >750 hp	gal	0	0.139	0	22.24	0	0.149	0	0.00013	0	0.006	0	0.00004	0
Transportation diesel use	gal	2360.6	0.139	328.1234	22.5	53113.5	0.17	401.302	0.0054	12.74724	0.0034	8.02604	0.0000052	0.0122751
Transportation diesel use - car	gal	0	0.139	0	22.57	0	0.015	0	0.0002	0	0.003	0	0.00252	0
Transportation diesel use - passenger truck	gal	7.9	0.139	1.0981	22.545	178.1055	0.0585	0.46215	0.0002	0.00158	0.007	0.0553	0.002605	0.0205795
Transportation diesel use - User Defined	gal	0	0.139	0	22.5	0	0.17	0	0.0054	0	0.0034	0	0.0000052	0
Diesel produced	gal	14876.163	0.017	252.89478	3.02	44926.014	0.0051	75.868434	0.0062	92.232213	0.0017	25.289478	0.0011	16.36378
Total Diesel Footprint		**14876.163**		**2320.6815**		**376411.75**		**1747.1942**		**107.08726**		**145.42949**		**16.89377**
Total Biodiesel Footprint														
On-site biodiesel use	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
On-site biodiesel use - User Defined	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
Transportation biodiesel use	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
Transportation biodiesel use - User Defined	gal	0	0.127	0	22.3	0	0.2	0	0	0	0.00099	0	NP	
Biodiesel produced	gal	0	0.029	0	-16.8	0	0.018	0	0.033	0	0.00082	0	NP	
Total Biodiesel Footprint		**0**		**0**		**0**		**0**		**0**		**0**		**0**
Total Natural Gas Footprint														
On-site natural gas use	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Transportation natural gas use	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Transportation natural gas use - User Defined	ccf	0	0.103	0	13.1	0	0.01	0	0.0000063	0	0.00076	0	0.0000084	0
Natural gas produced	ccf	0	0.0052	0	2.2	0	0.0037	0	0.0046	0	0.000072	0	0.0000061	0
Total Natural Gas Footprint		**0**		**0**		**0**		**0**		**0**		**0**		**0**
Total Liquified Petroleum Gas Footprint														
On-site liquified petroleum gas use - Other	ccf	0	NP		12.69	0	0.021	0	0.00013	0	0.001	0	0	0
On-site liquified petroleum gas use	ccf	0	NP		12.69	0	0.021	0	0.00013	0	0.001	0	0	0
Liquified petroleum gas produced	ccf	0	0.088	0	1.47	0	0.0016	0	0.0024	0	0.0007	0	0.0003	0
Total Natural Gas Footprint		**0**		**0**		**0**		**0**		**0**		**0**		**0**
Total Compressed Gas Footprint														
On-site compressed gas use - Other	ccf	0	NP		1957.835	0	16.0325	0	0.023045	0	0.2775	0	0	0
On-site compressed gas use	ccf	0	NP		1957.835	0	16.0325	0	0.023045	0	0.2775	0	0	0
Compressed gas produced	ccf	0	19.983	0	343.92	0	0.4732	0	2.1651	0	0.1846	0	0.2895	0
Total Natural Gas Footprint		**0**		**0**		**0**		**0**		**0**		**0**		**0**

Notes:

APPENDIX H – Fact Sheet

10-16 Beach 19th Street

Brownfield Cleanup Program
Site No. C241276
Far Rockaway, Queens County

Department of Environmental Conservation

April 2026

Cleanup Proposed for Brownfield Site Contamination Public Comment Period Announced

The New York State Department of Environmental Conservation (DEC) is reviewing the Remedial Investigation Report and Remedial Action Work Plan for the 10-16 Beach 19th Street site ("site") located at 10-16 Beach 19th Street, Far Rockaway, Queens County.

The public is invited to comment on a proposed cleanup plan being reviewed by the New York State Department of Environmental Conservation (DEC), in consultation with the New York State Department of Health (NYSDOH). Please see the map for the site location.

Remedial Investigation Report & Remedial Action Work Plan

The Remedial Investigation Report (RIR) describes the results of the site investigation and recommends development of a cleanup plan to address the contamination that was found. DEC is accepting written comments about the proposed plan, called a "Draft Remedial Action Work Plan (RAWP)," which includes a cleanup alternatives analysis (AA), for 45 days, from **April 17, 2026 through June 3, 2026.**

The RIR and RAWP were submitted by 1016 Beach 19 Partners LLC ("applicant").

- Access the draft Remedial Investigation Report (RIR), RWP with AA, and other project documents online through the DECinfo Locator: https://extapps.dec.ny.gov/data/DecDocs/C241276/.
- Documents also are available at the location(s) identified under "Where to Find Information."
- Please submit comments to the DEC project manager listed under Project-Related Questions in the "Contact Information" area.

Based on the findings of the investigation, DEC in consultation with the New York State Department of Health (NYSDOH) has determined that the site does not pose a significant threat to public health or the environment. This decision is based on the nature of the existing contaminants identified at the site. To address this contamination, DEC has developed the proposed cleanup plan summarized below.

Highlights of the Remedial Investigation Report

Semi-volatile organic compounds (SVOCs) and metals were found in subsurface soils at concentrations above use-specific soil cleanup objectives. The SVOCs and metals are present at depths up to 10 feet below grade and are likely the result of past site uses and historic fill, which is present throughout the site. Chlorinated volatile organic compounds (CVOCs) were detected in soil vapor. Multiple potential underground storage tanks (USTs) were identified during the investigation. Petroleum-related contamination may be present at or around the USTs.

Draft Remedial Investigation Report and Draft Remedial Work Plan with Alternatives Analysis

The proposed Track 2 Restricted Residential Use remedy plan consists of:

- Excavation and off-site disposal of contaminated soil to approximately 11 feet below ground surface in select locations across the site;
- Removal of suspected Underground Storage Tanks;
- Installation of a Sub-Slab Depressurization System and vapor barrier within the proposed building;
- Collection and analysis of post-excavation soil samples to evaluate the effectiveness of the cleanup, as well as the completion of efficacy testing to assess the effectiveness of the vapor mitigation system;
- Importing clean material that meets the established Soil Cleanup Objectives for use as backfill;
- Implementing a Health and Safety Plan and Community Air Monitoring Plan during all ground intrusive activities;
- Implementation of a Site Management Plan (SMP) for long term maintenance of the remedial systems and the management of remaining contamination; and
- Recording of an Environmental Easement to ensure proper use of the site.

The proposed cleanup plan was developed by 1016 Beach 19 Partners LLC (“applicant”) after performing a detailed investigation of the site under New York's Brownfield Cleanup Program (BCP).

Next Steps

DEC will complete its review, make any necessary revisions and, if appropriate, approve the investigation report. The approved report will be made available to the public (see “Where to Find Information”). DEC will consider public comments on the Remedial Action Work Plan (RAWP), revise the remedy plan as necessary, and issue a final Decision Document. NYSDOH must concur with the proposed cleanup. After approval, the proposed cleanup becomes the selected cleanup. The applicant may then design and perform the cleanup action to address the site contamination, with oversight by DEC and NYSDOH.

DEC will keep the public informed throughout the investigation and cleanup of the site.

Site Description

The property is a 0.429-acre commercial parcel located on the eastern side of Beach 19th Street. Surrounding properties contain residential and commercial uses. The Site is adjoined to the north by an apartment building with a ground floor church, to the east by churches, to the south by retail buildings, and to the west by Beach 19th Street followed by residential buildings and a parking lot.

The Site is primarily covered by a one-story, partially demolished, vacant commercial building (comprised of three distinct sections with common walls). The northern and north-central portion of the property contains exterior asphalt pavement. Site uses included historical automotive repair activities from circa 1933 to 2021. Gasoline and other underground storage tankswere identified at the western portion of the Site.

It is anticipated that a Track 2 restricted residential cleanup will be completed at the site. Once the cleanup is complete, the site will be redeveloped with a 9-story residential building which will provide senior affordable housing.

Additional site details, including environmental and health assessment summaries, are available on DEC's Environmental Site Remediation Database (by entering the site ID, C241276) at: https://appfactory.dec.ny.gov/DERExternalSearch/ERDSearch

Brownfield Cleanup Program

New York's Brownfield Cleanup Program (BCP) encourages the voluntary cleanup of contaminated properties known as "brownfields" so that they can be reused and redeveloped. These uses may include recreation, housing, business or other uses. A brownfield site is any real property where a contaminant is present at levels exceeding the soil cleanup objectives or other health-based or environmental standards, criteria or guidance adopted by DEC that are applicable based on the reasonably anticipated use of the property, in accordance with applicable regulations.

For more information about the BCP, visit: https://dec.ny.gov/environmental-protection/site-cleanup/brownfield-and-state-superfund-programs/brownfield

Stay Informed with DEC Delivers

We encourage you to share this fact sheet with neighbors and tenants, and/or post this fact sheet in a prominent area of your building for others to see.

Sign up to receive site updates by email: https://dec.ny.gov/environmental-protection/site-cleanup/regional-remediation-project-information/environmental-cleanup-email-newsletters

Note: Please disregard if you already have signed up and received this fact sheet electronically.

DECinfo Locator

Interactive map to access DEC documents and public data about the environmental quality of specific sites: https://dec.ny.gov/maps/interactive-maps/decinfo-locator

CONTACT INFORMATION

Project-Related Questions

Erick Bower
Project Manager
NYSDEC, Division of Environmental Remediation
625 Broadway
Albany, NY 12233
p: (518) 402-9824
erick.bower@dec.ny.gov

Project-Related Health Questions

Michele Dolan
Project Manager
NYSDOH, Bureau of Environmental Exposure and Investigation
Empire State Plaza
Corning Tower, Room 1787
Albany, NY 12237
p: (518) 402-7860
beei@health.ny.gov

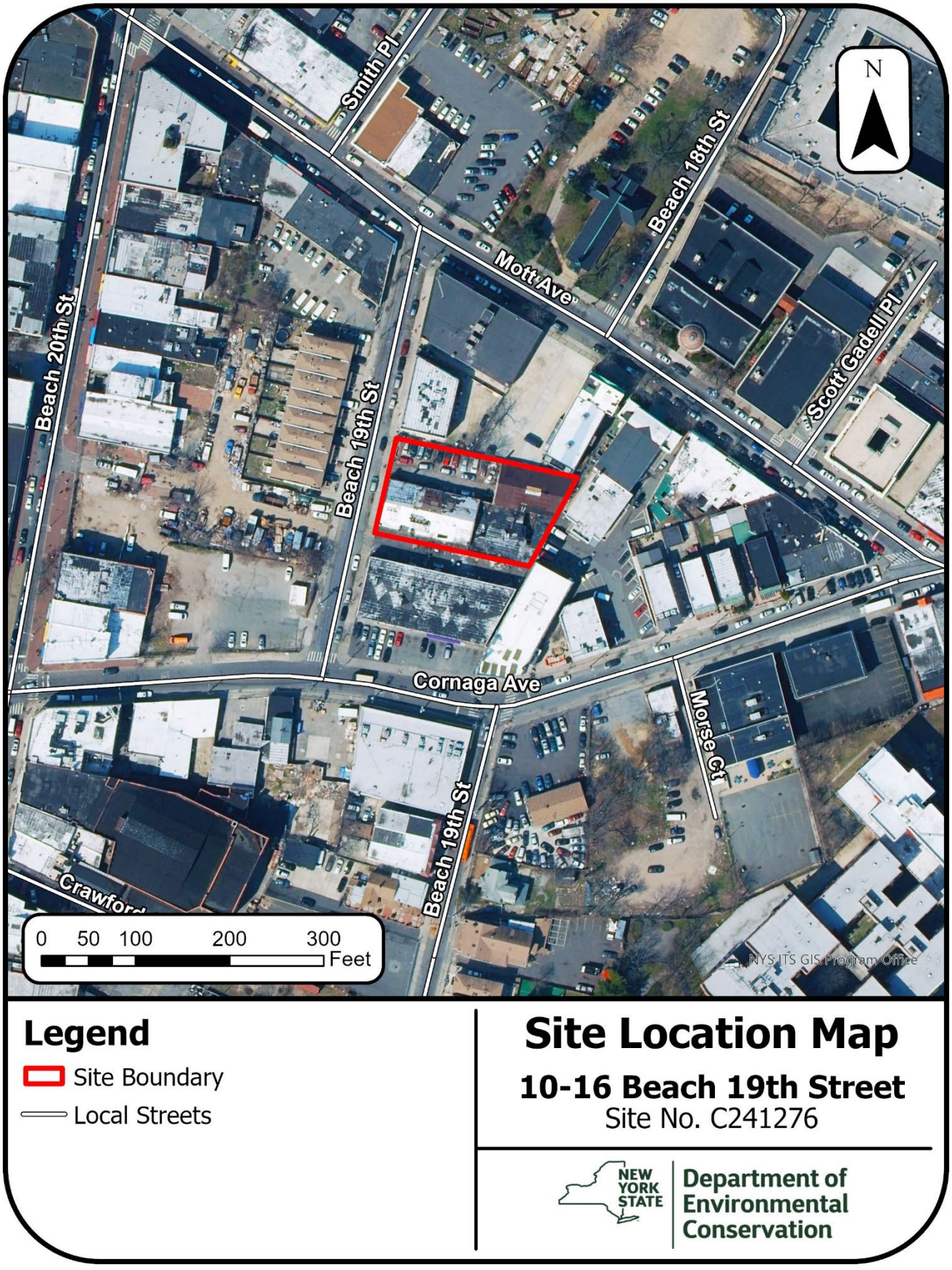
WHERE TO FIND INFORMATION

Access project documents through the DECinfo Locator and at these location(s):
https://extapps.dec.ny.gov/data/DecDocs/C241276/

Queens Public Library – Far Rockaway
1637 Central Avenue
Far Rockaway, NY 11691
(718) 327-2549

Queens Community Board 14
1931 Mott Avenue, Room 311
Far Rockaway, NY 11691
(718) 471-7300

Site Location



NEW YORK STATE | Department of Environmental Conservation

www.dec.ny.gov

Translation Available. Don't see your language? Ask!

English	To request to have this document translated into your preferred language, please contact the person below. There is no charge for the translation.
Español Spanish	Para solicitar la traducción de este documento al idioma que prefiera, comuníquese con la persona que aparece abajo. La traducción es gratis.
简体字 Simplified Chinese	如需将此文件翻译成您偏好的语言，请与以下人员联系。翻译服务免费。
Русский Russian	Чтобы запросить перевод этого документа на предпочитаемый вами язык, пожалуйста, свяжитесь с указанным ниже лицом. Перевод предоставляется бесплатно.
אידיש Yiddish	צו פארלאנגען צו האבן די דאקומענט איבערגעזעצט אין אייער שפראך, ביטע פארבינדט זיך מיט די מענטש אנגעוויזן אונטן. מען דארף נישט צאלן פארן איבערטייטשן.
বাঙালি Bengali	এই নথিটি আপনার পছন্দের ভাষায় অনুবাদ করার অনুরোধ করতে, অনুগ্রহ করে নীচে উল্লেখ করা ব্যক্তির সাথে যোগাযোগ করুন। অনুবাদের জন্য কোন অর্থ লাগবে না।
한국어 Korean	이 파일을 선호하는 언어로 번역하려면 아래 담당자에게 연락해 주세요. 번역 서비스는 무료입니다.
Kreyòl Ayisyen Haitian Creole	Pou w fè demann tradiksyon dokiman sa a nan lang ou prefere a, tanpri kontakte moun ki anba a. Ou p ap peye pou tradiksyon an.
Italiano Italian	Per richiedere la traduzione di questo documento nella tua lingua preferita, contatta la persona indicata qui sotto. La traduzione non prevede costi aggiuntivi.
العربية Arabic	لطلب ترجمة هذا المستند إلى لغتك المفضلة، يُرجى الاتصال بالشخص التالي. تقدم خدمات الترجمة مجانًا ودون تكلفة.
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Français French	Veuillez contacter la personne mentionnée ci-dessous afin de procéder à votre demande de traduction de document pour votre langage de préférence. La traduction est gratuite.
اردو Urdu	اس دستاویز کا ترجمہ آپ کی ترجیحی زبان میں کروانے کی درخواست کرنے کے لیے، براہ کرم ذیل کے فرد سے رابطہ کریں۔ اس ترجمہ کے لیے کوئی چارج نہیں ہے۔

Erick Bower | Phone: (518) 402-9824 | **Email:** erick.bower@dec.ny.gov

APPENDIX I – Soil Erosion and Sediment Control Plan

10-16 BEACH 19 STREET
QUEENS, NEW YORK 11691
SOIL EROSION & SEDIMENT CONTROL PHASE PLAN

OWNER: 1016 BEACH 19 PARTNERS LLC

ZONING INFORMATION

10-16 BEACH 19 STREET
QUEENS, NEW YORK 11691
BOROUGH: QUEENS
BLOCK: 15560
LOT: 8
LOT AREA: 18,694 SF
ZONING: R6, DFR, C2-4
BISWEB: 4448977

DRAWING LIST

1.	C-001	TITLE PAGE
2.	C-010	STORMWATER CONTROL & DEMOLITION PLAN
3.	C-020	SUPPORT OF EXCAVATION PLAN
4.	C-030	EXCAVATION PLAN
5.	C-040	FOUNDATION CONSTRUCTION PLAN
6.	C-050	REMOVAL OF TEMPORARY STORM CONTROLS
7.	C-060	GRADING AND LANDSCAPING PLANS
8.	C-301	RUNOFF CONTROL DETAILS
9 .	C-302	SOIL STABILIZATION DETAILS
10.	C-303	SEDIMENT CONTROL PLANNING DETAILS
11.	C-304	EROSION CONTROL PLANNING AND SITE MANAGEMENT DETAILS

PROJECT NARRATIVE

SOIL EROSION AND SEDIMENT CONTROL PLAN DURING PHASES OF CONSTRUCTION OF NEW MULTI-FAMILY RESIDENTIAL BUILDING



A EXISTING SITE SURVEY
PREPARED BY: CONTROL POINT ASSOCIATES INC, PC
SCALE: 1" = 30'-0"



1 NYC ZONING MAP
LOCATION OF PROPERTY
ZONING DISTRICT: R6/DFR/C2-4



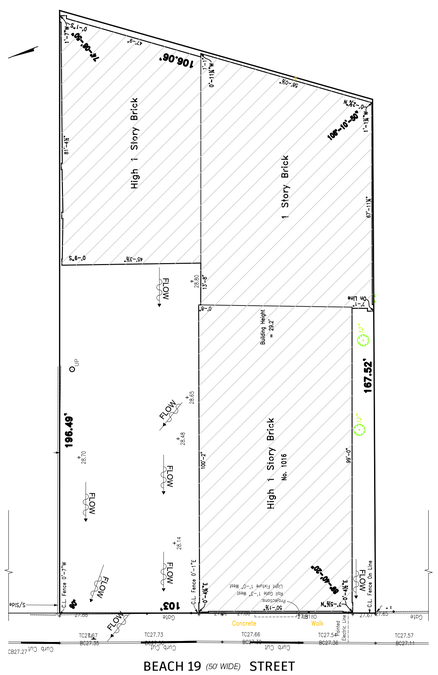
2 NYC TAX MAP
LOCATION OF PROPERTY
B: 15560 L: 8

DESCRIPTION OF EACH PHASE - SITE/CIVIL CONSTRUCTION SEQUENCING:

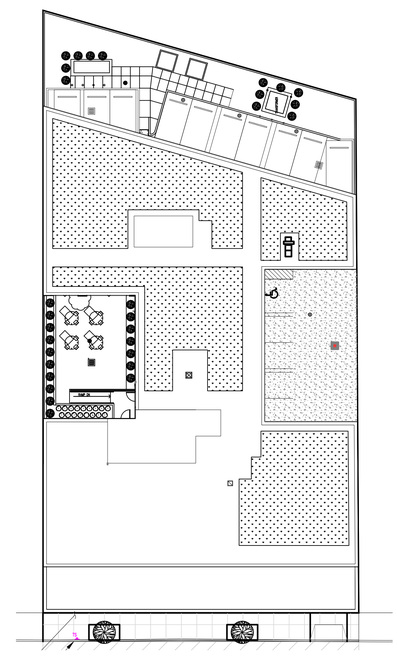
1. INSTALL ALL EROSION CONTROL AND SEDIMENT CONTROL MEASURES
2. PERFORM DEMOLITION, SITE GRUBBING, REMOVE ALL DEBRIS AND INSTALL SILT FENCE, EROSION CONTROL, AND CONSTRUCTION FENCE
3. INSTALL SUPPORT OF EXCAVATION TEMPORARY STRUCTURES AND STORMWATER STRUCTURES
4. PERFORM EXCAVATION TO BOTTOM OF PROPOSED FOOTINGS, CELLAR, AND PITS
5. INSTALL FOUNDATION. CONSTRUCT FORMWORK, INSTALL GRAVEL, REINFORCEMENT, PLACE CONCRETE
6. TRENCH FOR GAS, ELECTRIC, WATER, STORM AND SANITARY SEWER CONNECTIONS. INSTALL UTILITIES AND BACKFILL TRENCHES.
7. REMOVE TEMPORARY STORMWATER CONTROLS
8. PERFORM FINISH GRADING, REMOVE TEMP. EROSION CONTROL MEASURES, INSTALL NEW PERMANENT LANDSCAPING. SITE STABILIZATION (80% UNIFORM DENSITY OF VEGETATION) MUST BE ACHIEVED PRIOR TO REMOVING TEMPORARY EROSION CONTROL MEASURES.
9. INSTALL PAVED SURFACES, PERMEABLE PAVERS, ASPHALT AND CONCRETE PADS

PHASES (SEE SWPPP 3.2):

1. INSTALLATION OF STORMWATER CONTROLS
2. DEMOLITION, CLEARING AND GRUBBING,
3. SOE AND STORMWATER FACILITY INSTALLATION
4. EXCAVATION
5. CONSTRUCTION - FOUNDATION INSTALLATION
6. UTILITY INSTALL
7. REMOVAL OF TEMPORARY STORMWATER CONTROLS
8. GRADING AND LANDSCAPING
9. SURFACE COVER AND PAVEMENT INSTALLATION



B EXISTING FLOW PATHS
SCALE: 1" = 20'-0"



C PROPOSED BUILDING & COVERAGE
SCALE: 1" = 20'-0"

CIVIL ENGINEER:
KRYPTON ENGINEERING
307 McLean Avenue
YONKERS, NY 10705
(917) 475-6138
KRYPTONENG.COM

REV.	DATE	DESCRIPTION
	1-30-26	ISSUED TO DOB - PAA COMMUNITY FACILITY
	12-8-25	REVISED PER HCR COMMENTS
	11-3-25	ISSUED FOR PRICING
	3-20-25	ISSUED TO DOB
	10-30-24	REVISED PER NYCECC COMMENTS
	9-6-24	REVISED PER NYCECC COMMENTS
	8-22-24	ISSUED TO DOB
	5-1-24	ISSUED TO HPD - REVISED PER COMMENTS
	3-6-24	ISSUED TO DOB - ADDRESS AND BIN #
	12-20-23	ISSUED TO HPD
	12-08-23	ISSUED TO DOB
	9-27-23	ISSUED TO HPD

REVISIONS:

NEWMAN DESIGN
ARCHITECTURE • URBAN PLANNING
NEWMAN DESIGN ARCHITECTS PLLC
210 West Rogues Path • Cold Spring Hills, NY 11743
TEL: 212.673.3110 • TEL: 631.673.3111 • FAX: 631.673.2031
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PROJECT:

1020 BEACH 19TH STREET

1020 BEACH 19TH STREET — QUEENS N.Y.
BLOCK - 15560 — **LOT - 08**

TITLE:

SWPPP PLAN TITLE PAGE

Q01014357-I1

STAMP:



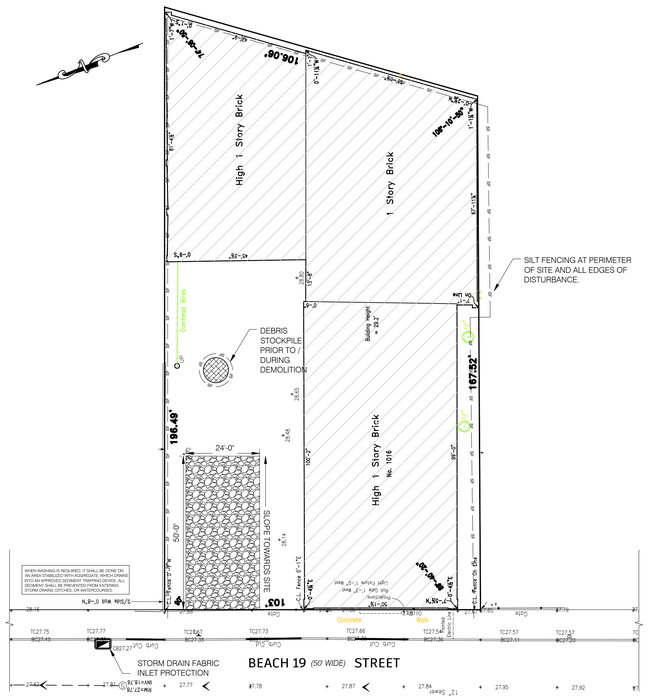
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JOB #: 26022
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DRAWING NO:
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FILE No. : KE# 26022

SHEET:
01 OF 11

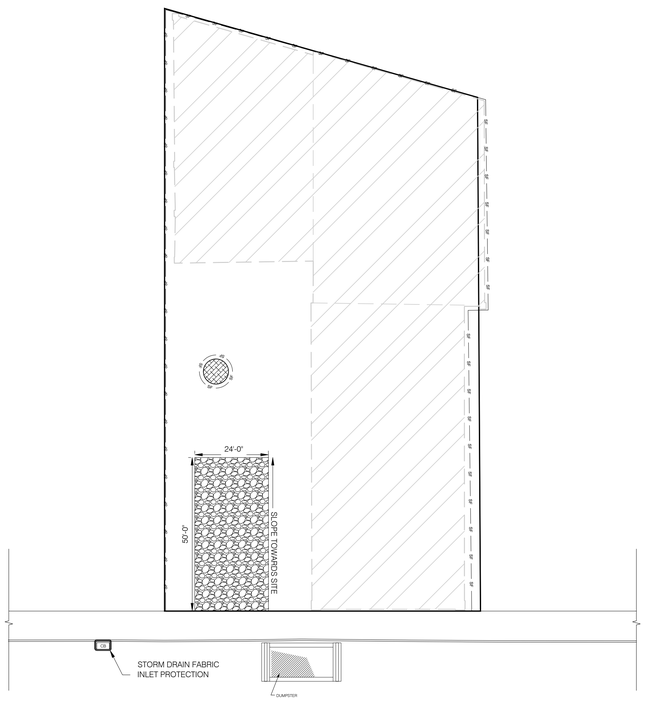
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1 INITIAL STORMWATER CONTROLS
WITH INITIAL SEDIMENT CONTROL MEASURES
SCALE: 1" = 20'-0"

N

Sediment and Stormwater Control			
Activity (In order of construction)	Erosion and sediment control practice	When will practice be installed	Maintenance, replacement and removal of ESCs.
	Stabilized Construction Entrance	Prior to, during demolition, prior to entering site with equipment	Augment entrance as required to comply with design detail once all clearing finished
	Dust Control	Practice will be installed prior to demolition or any work starting on project	Temporary or permanent stabilization methods including spray adhesives, driving areas, sprinkling, wind breaks, barriers etc will need to be in effect as needed during dry dust period
	Vegetation Protection	This practice will be installed prior to demolition	Construction limits should be identified and clearly marked to exclude equipment. Avoid spills of oil/gas and other contaminants. Obstructive and broken branches should be pruned properly. The branch collar on all branches whether living or dead should not be damaged.
	Reinforced Silt Fence	Prior to site disturbance but after clearing and grubbing	As grubbing and tree clearing is complete, place fencing around perimeter of project property. Maintain fence in place for full duration of project work and clear out and interceptions.
	Vehicle Washing	This practice will be installed for the entire duration of the construction of the proposed building	Washing shall be done on an area stabalized with aggregate, which drains into an approved sediment trapping device. All Sediment shall be prevented from entering storm drains, ditches or water courses.



2 DEMOLITION PLAN
WITH PROPOSED BUILDING OUTLINE
SCALE: 1" = 20'-0"

N

Demolition Plan			
Activity (In order of construction)	Erosion and sediment control practice	When will practice be installed	Maintenance, replacement and removal of ESCs.
	Demolition	After initial sediment controls	Removal of concrete walk, and concrete slab, and removal of fence
	Vehicle Washing	This practice will be installed for the entire duration of the construction of the proposed building	Washing shall be done on an area stabalized with aggregate, which drains into an approved sediment trapping device. All Sediment shall be prevented from entering storm drains, ditches or water courses.

CIVIL ENGINEER:
KRYPTON ENGINEERING
307 McLean Avenue
YONKERS, NY 10705
(917) 475-6138
KRYPTONENG.COM

REV.	DATE	DESCRIPTION
	1-30-26	ISSUED TO DOB - PAA COMMUNITY FACILITY
	12-8-25	REVISED PER HCR COMMENTS
	11-3-25	ISSUED FOR PRICING
	3-20-25	ISSUED TO DOB
	10-30-24	REVISED PER NYCECC COMMENTS
	9-6-24	REVISED PER NYCECC COMMENTS
	8-22-24	ISSUED TO DOB
	5-1-24	ISSUED TO HPD - REVISED PER COMMENTS
	3-6-24	ISSUED TO DOB - ADDRESS AND BIN #
	12-20-23	ISSUED TO HPD
	12-08-23	ISSUED TO DOB
	9-27-23	ISSUED TO HPD

REVISIONS:

NEWMAN DESIGN
ARCHITECTURE • URBAN PLANNING
NEWMAN DESIGN ARCHITECTS PLLC
210 West Rogues Path • Cold Spring Hills, NY 11743
TEL: 212.673.3110 • TEL: 631.673.3111 • FAX: 631.673.2031
www.ndarchitects.com

PROJECT:

1020 BEACH 19TH STREET

1020 BEACH 19TH STREET QUEENS N.Y.
BLOCK - 15560 **LOT - 08**

TITLE:

INITIAL STORMWATER CONTROL AND DEMOLITION PLAN

Q01014357-I1

STAMP:

STATE OF NEW YORK · JOSEPH J. VACCARO · 093362-1 · LICENSED PROFESSIONAL ENGINEER

DATE: 05-15-2026
JOB #: 26022
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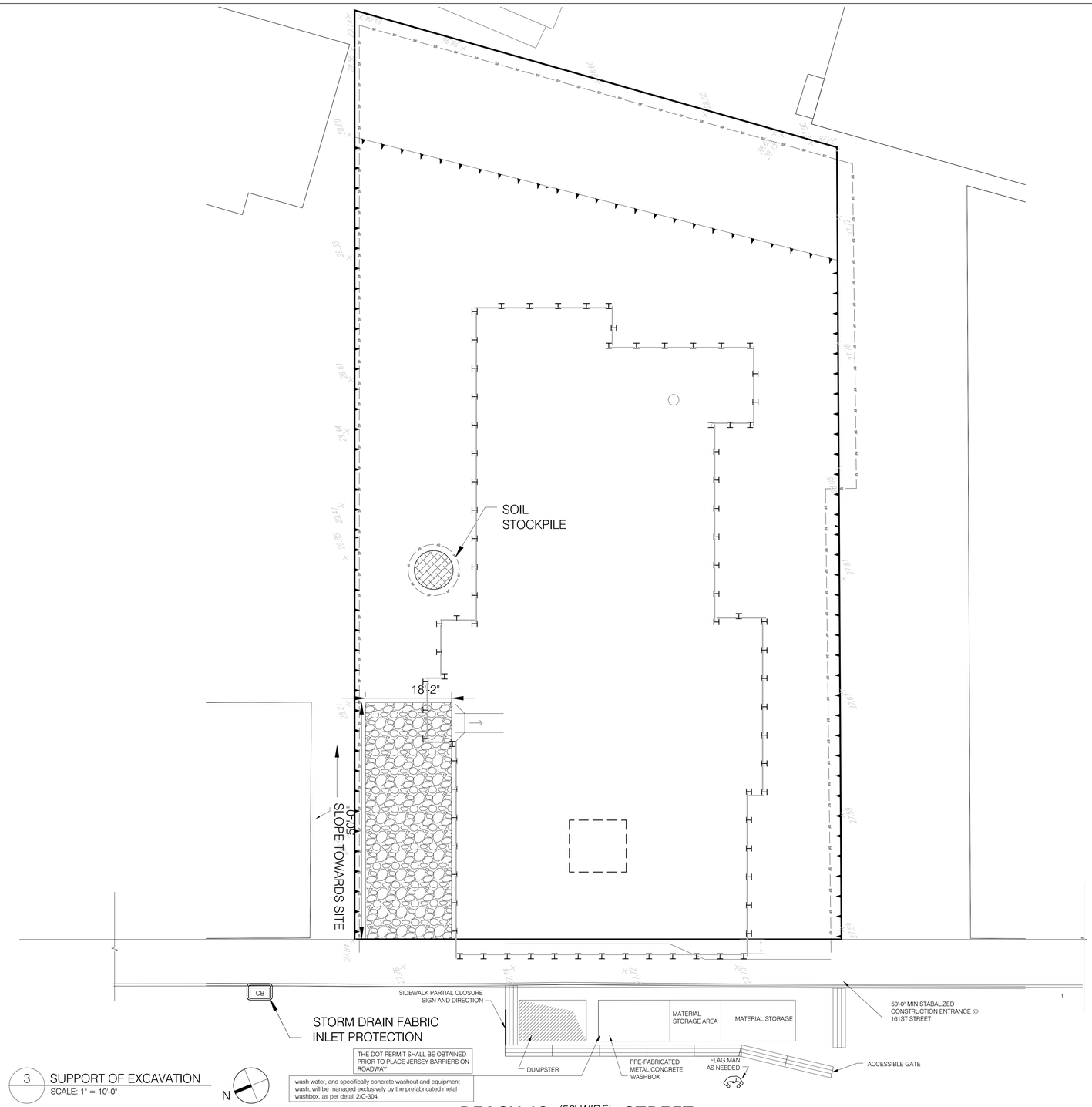
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FILE No. : KE# 26022 SHEET:

02 OF 11

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3 SUPPORT OF EXCAVATION
SCALE: 1" = 10'-0"

Support of Excavation

Activity (In order of construction)	Erosion and sediment control practice	When will practice be installed	Maintenance, replacement and removal of ESCs.
	Soldier pile and lagging retaining walls	This will be installed after demolition	Maintain temporary suppoirt of excavation (soldier pile and lagging retaining walls) Provide details as per SOE to maintain support of soil and minimizing silt washing though gaps in lagging.
	Vehicle Washing	This practice will be installed for the entire duration of the construction of the proposed building	Washing shall be done on an area stabalized with aggregate, which drains into an approved sediment trapping device. All Sediment shall be prevented from entering storm drains, ditches or water courses.

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	12-8-25	REVISED PER HCR COMMENTS
	11-3-25	ISSUED FOR PRICING
	3-20-25	ISSUED TO DOB
	10-30-24	REVISED PER NYCECC COMMENTS
	9-6-24	REVISED PER NYCECC COMMENTS
	8-22-24	ISSUED TO DOB
	5-1-24	ISSUED TO HPD - REVISED PER COMMENTS
	3-6-24	ISSUED TO DOB - ADDRESS AND BIN #
	12-20-23	ISSUED TO HPD
	12-08-23	ISSUED TO DOB
	9-27-23	ISSUED TO HPD

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PROJECT:

1020 BEACH 19TH STREET

1020 BEACH 19TH STREET QUEENS N.Y.
BLOCK - 15560 **LOT - 08**

TITLE:

SUPPORT OF EXCAVATION PLAN

Q01014357-I1

STAMP:



DATE: 05-15-2026
JOB #: 26022
DRAWN BY: PJM/JJV
SCALE: 30'-0" X 42'-0"

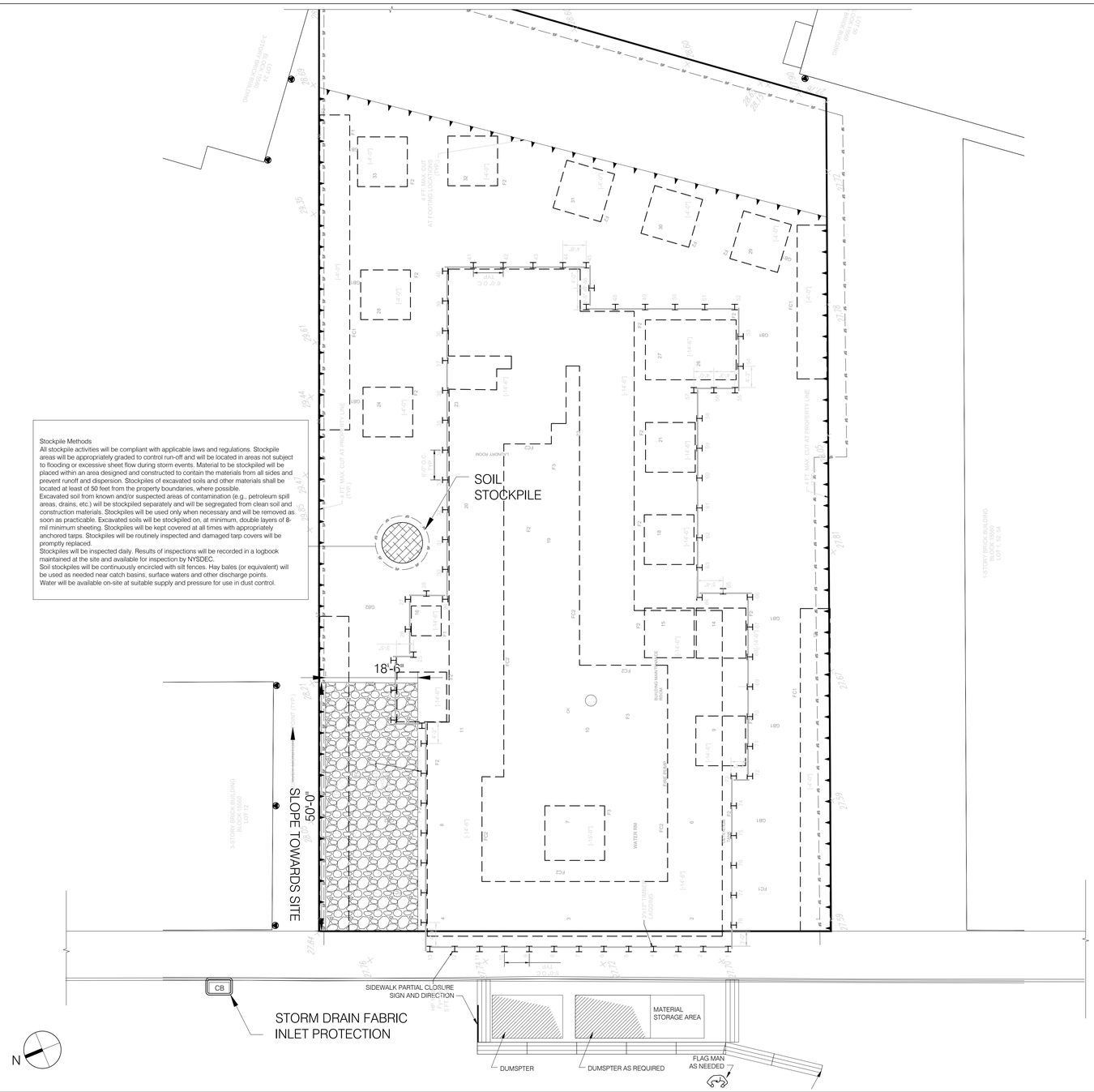
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EXCAVATION

Activity (In order of construction)	Erosion and sediment control practice	When will practice be installed	Maintenance, replacement and removal of ESCs.
	Stabilized Construction Entrance	Prior to, during demolition, prior to entering site with equipment	Augment entrance as required to comply with design detail once all clearing finished
	Dust Control	Practice will be installed prior to demolition	Temporary or permanent stabilization methods including spray adhesives, driving areas, sprinkling, wind breaks, barriers etc will need to be in effect as needed during dry dust period
	Vegetation Protection	This practice will be installed prior to demolition	Construction limits should be identified and clearly marked to exclude equipment. Avoid spills of oil/gas and other contaminants. Obstructive and broken branches should be pruned properly. The branch collar on all branches whether living or dead should not be damaged.
	Reinforced Silt Fence	Prior to site disturbance but after clearing and grubbing	As grubbing and tree clearing is complete, place fencing around perimeter of project property. Maintain fence in place for full duration of project work and clear out and interceptions.
	Sediment Trap - Temporary	Prior to, during demo	Sediment traps should be used to artificially break up the natural drainage area into smaller sections where a larger device (sediment basin) would be less effective.
	Vehicle Washing	When Required	Washing shall be done on an area stabalized with aggregate, which drains into an approved sediment trapping device. All Sediment shall be prevented from entering storm drains, ditches or water courses.
	Construction Ditch	Prior to demolition	Periodic inspection, sediment removal and any necessary repairs

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	5-1-24	ISSUED TO HPD - REVISED PER COMMENTS
	3-6-24	ISSUED TO DOB - ADDRESS AND BIN #
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PROJECT:

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1020 BEACH 19TH STREET QUEENS N.Y.
BLOCK - 15560 **LOT - 08**

TITLE:

EXCAVATION PLAN

Q01014357-I1

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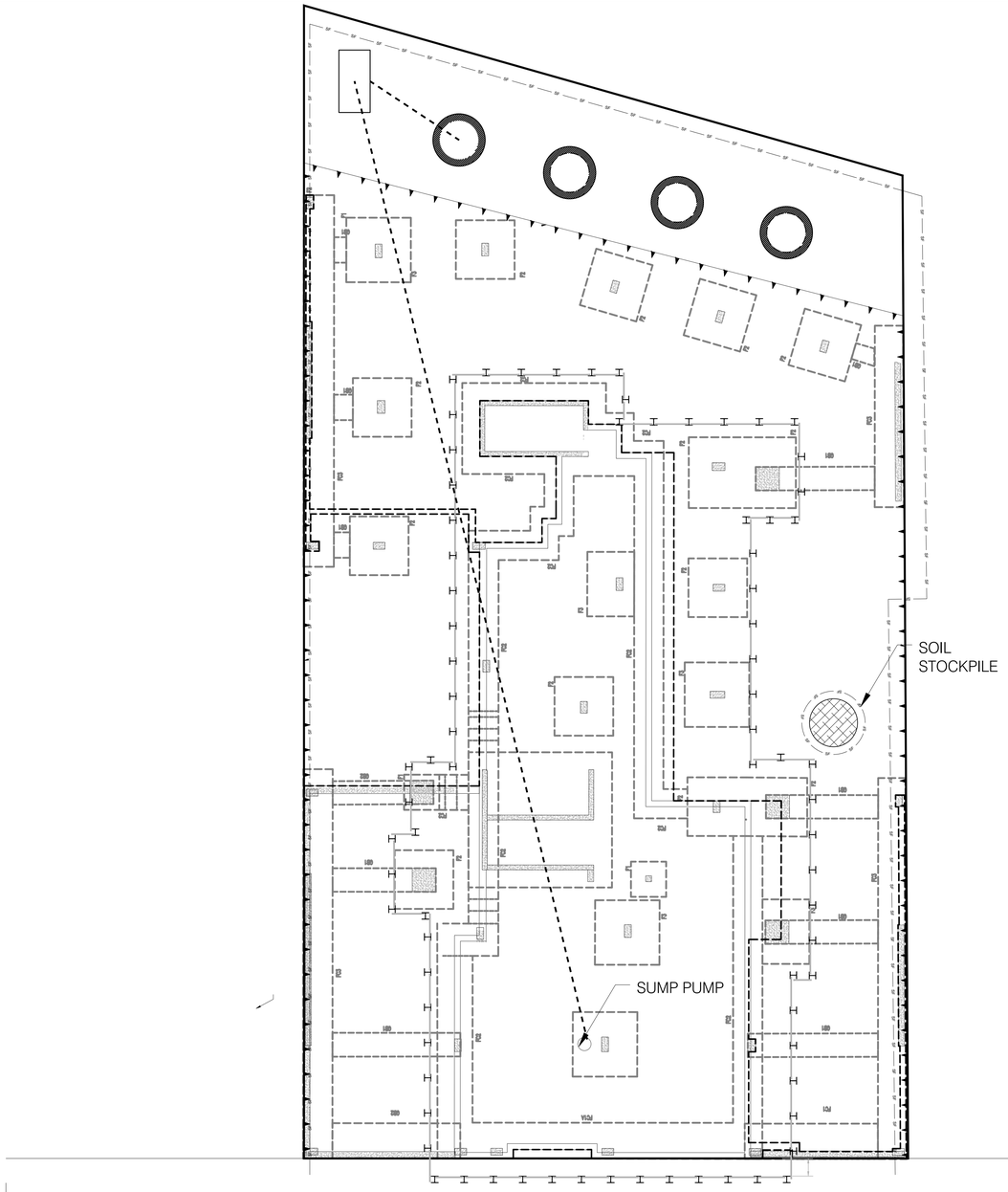
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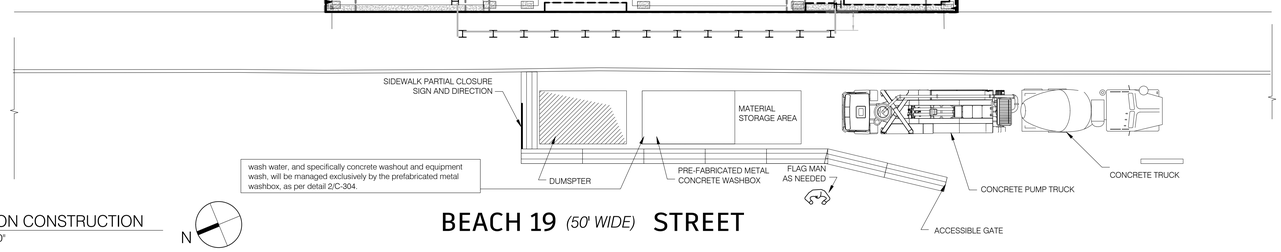
DATE: 05-15-2026
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5 FOUNDATION CONSTRUCTION
SCALE: 1" = 10'-0"

N

BEACH 19 *(50' WIDE)* STREET

CONSTRUCTION FOUNDATION

Activity (In order of construction)	Erosion and sediment control practice	When will practice be installed	Maintenance, replacement and removal of ESCs.
	CONCRETE TRUCK WASHOUT	This practice will be installed for the duration of the construction of the proposed building	Empy and remove washed out after it is 75% full.
	Vehicle Washing	This practice will be installed for the duration of the construction of the proposed building	Washing shall be done on an area stabalized with aggregate, which drains into an approved sediment trapping device. All Sediment shall be prevented from entering storm drains, ditches or water courses.

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PROJECT:

1020 BEACH 19TH STREET

1020 BEACH 19TH STREET QUEENS N.Y.
BLOCK - 15560 **LOT - 08**

TITLE:

CONSTRUCTION FOUNDATION PLAN

Q01014357-I1

STAMP:

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DATE: 05-15-2026
JOB #: 26022
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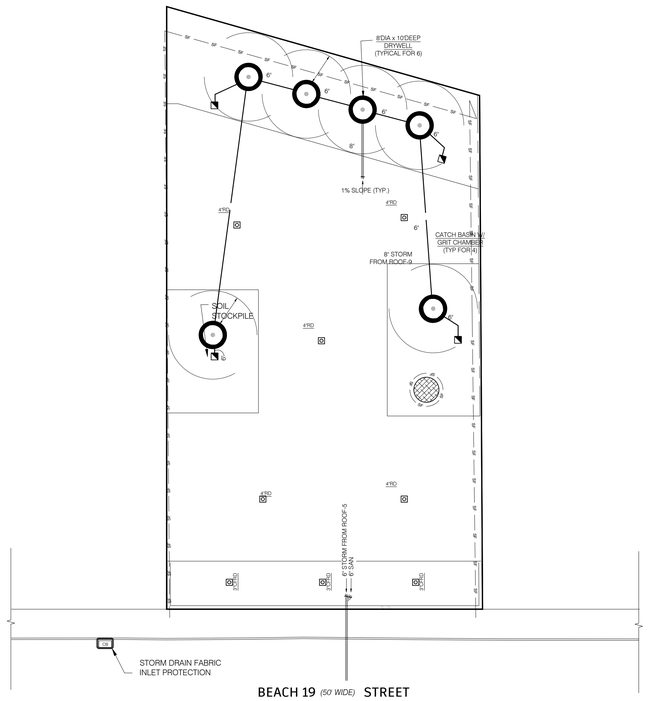
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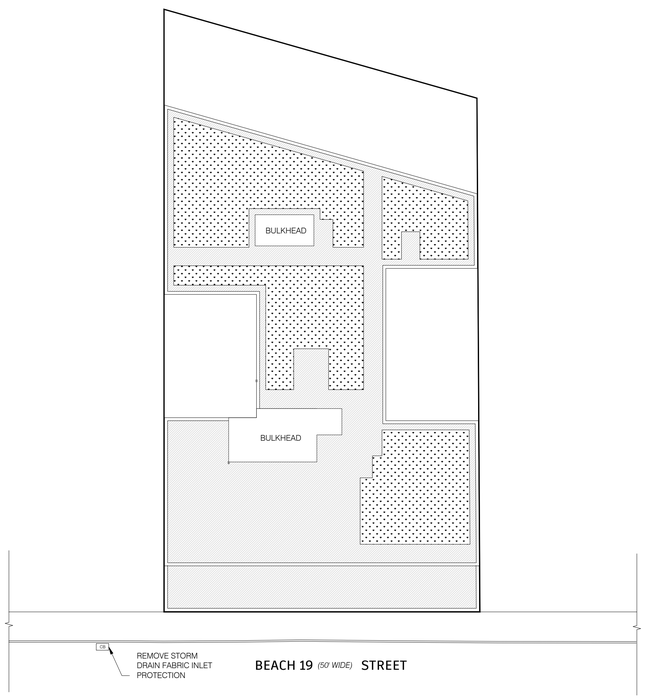
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6 UTILITY INSTALLATION
SCALE: 1" = 20'-0"

N

UTILITY INSTALLATION			
Activity (In order of construction)	Erosion and sediment control practice	When will practice be installed	Maintenance, replacement and removal of ESCs.
	Utility Trenching	Trenching, Utility Installation & Storm Water Gallery installation will all be preformed simulataneously in this phase	Maintenance requires removing debris every 1-2 weeks if accumulated in silt fence around the areas of trenching
	Temporary Construction Area Seeding	After	Seed all areas within 24 hours of completing backfill grading, Maintain areas until permanent surface is installed



7 REMOVE TEMPORARY STORM CONTROLS
SCALE: 1" = 20'-0"

N

REMOVE TEMPORARY STORM CONTROLS			
Activity (In order of construction)	Erosion and sediment control practice	When will practice be installed	Maintenance, replacement and removal of ESCs.
	Removal of Temporary Stormwater Controls	Practices will be removed	No maintenance required, SILT FENCE, inlet protection and vegetative protection will be removed

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PROJECT:

1020 BEACH 19TH STREET

1020 BEACH 19TH STREET QUEENS N.Y.
BLOCK - 15560 **LOT - 08**

TITLE:

UTILITY INSTALL AND TEMPORARY STORM PLAN

Q01014357-I1

STAMP:

STATE OF NEW YORK
JORGE J. VACCARO
093362
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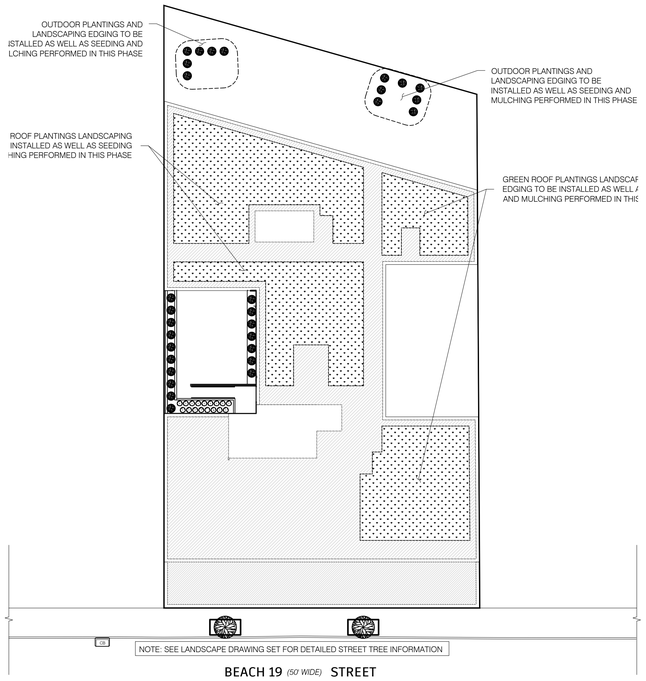
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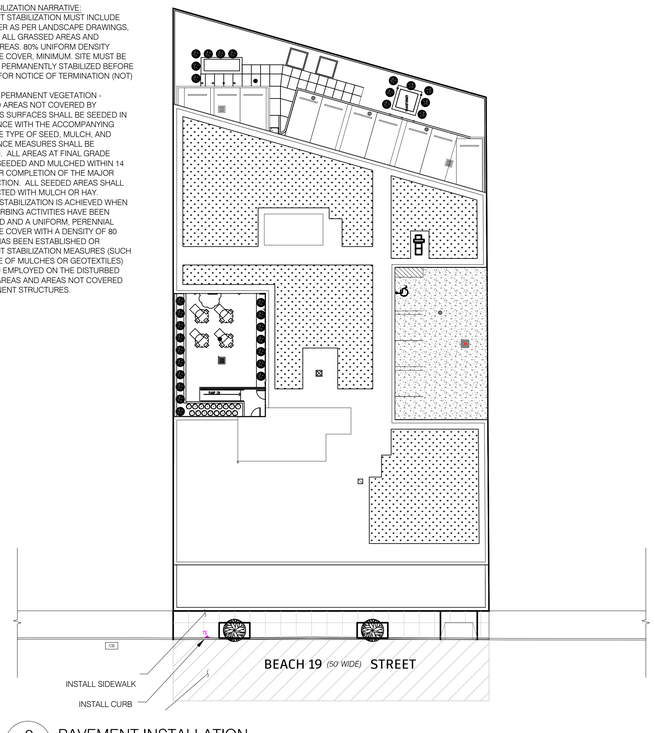


8 GRADING AND LANDSCAPING
SCALE: 1" = 20'-0"

Grading and Landscape			
Activity (In order of construction)	Erosion and sediment control practice	When will practice be installed	Maintenance, replacement and removal of ESCs.
	Temporary Area Seeding	Will be installed after removal of temporary storm water controls	Seed areas that are to be paved if exposed for more than 48 hours
	Mulching	Will be installed after removal of temporary storm water controls	No maintence is requred, several areas that are mulched can be used as a final landscaped condition
	Topsoiling	Will be installed after removal of temporary storm water controls	Spreading a specified quality and quantity of topsoil materials on graded or constructed subsoil areas to provide acceptable plant cover growing conditions, thereby reducing erosion; to reduce irrigation water needs; and to reduce the need for nitrogen fertilizer application.
	Permanent Construction Area Planting	Will be installed after removal of stormwater controls	No maintenance is required for this construction activity
	Trees, Shrubs and Vines	After all mulching and topsoiling	Establishing trees, shrubs, and vines or selectively reducing stand density and trimming woody plants to protect the soil and plant resources, improve an area for recreation and increase the attractiveness and usefulness of areas. Maintenance includes pruning, watering, mulching, wrapping, transplanting wild stock, and cleaning.

FINAL STABILIZATION NARRATIVE:
PERMANENT STABILIZATION MUST INCLUDE FINAL COVER AS PER LANDSCAPE DRAWINGS, INCLUDING ALL GRASSED AREAS AND PLANTED AREAS. 80% UNIFORM DENSITY VEGETATIVE COVER, MINIMUM. SITE MUST BE FULLY AND PERMANENTLY STABILIZED BEFORE APPLYING FOR NOTICE OF TERMINATION (NOT)

ESTABLISH PERMANENT VEGETATION - DISTURBED AREAS NOT COVERED BY IMPERVIOUS SURFACES SHALL BE SEEDED IN ACCORDANCE WITH THE ACCOMPANYING PLANS. THE TYPE OF SEED, MULCH, AND MAINTENANCE MEASURES SHALL BE FOLLOWED. ALL AREAS AT FINAL GRADE SHALL BE SEEDED AND MULCHED WITHIN 14 DAYS AFTER COMPLETION OF THE MAJOR CONSTRUCTION. ALL SEEDED AREAS SHALL BE PROTECTED WITH MULCH OR HAY.
FINAL SITE STABILIZATION IS ACHIEVED WHEN SOIL-DISTURBING ACTIVITIES HAVE BEEN COMPLETED AND A UNIFORM, PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 80 PERCENT HAS BEEN ESTABLISHED OR EQUIVALENT STABILIZATION MEASURES (SUCH AS THE USE OF MULCHES OR GEOTEXTILES) HAVE BEEN EMPLOYED ON THE DISTURBED UNPAVED AREAS AND AREAS NOT COVERED BY PERMANENT STRUCTURES.



9 PAVEMENT INSTALLATION
SCALE: 1" = 20'-0"

PAVEMENT INSTALLATINON			
Activity (In order of construction)	Erosion and sediment control practice	When will practice be installed	Maintenance, replacement and removal of ESCs.
	Concrete Truck Washout	During construction paving operations	Clear washout when 75% full

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PROJECT:

1020 BEACH 19TH STREET

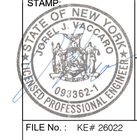
1020 BEACH 19TH STREET QUEENS N.Y.
BLOCK - 15560 **LOT - 08**

TITLE:

LANDSCAPING/PAVEMENT INSTALLATION PLAN

Q01014357-I1

STAMP:

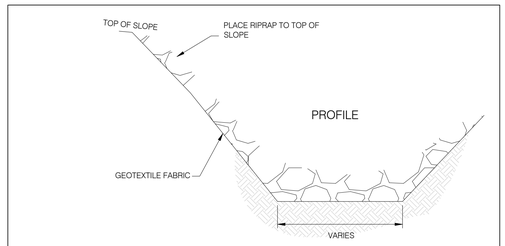


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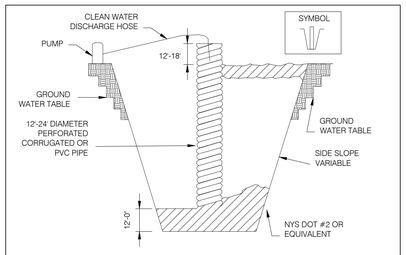
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TYPE OF TREATMENT	CHANNEL GRADE	A(5AC OR LESS)	B(5AC - 10AC)
1	0.5-3.0%	SEED AND STRAW MULCH	SEED AND STRAW MULCH
2	3.1-5.0%	SEED AND STRAW MULCH	SEED AND COVER USING RECP
3	5.1-8.0%	SEED AND COVER WITH RECP	LINED WITH 4-8" RIP-RAP OR GEOTEXILE
4	8.1-10%	LINED WITH 4-8" RP-RAP GTXL	SITE SPECIFIC DESIGN

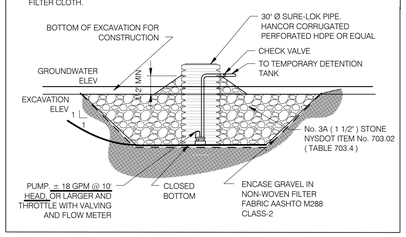
1. ONE LAYER OF APPROVED GEOTEXTILE FABRIC SHALL BE PLACED PRIOR TO PLACEMENT OF RIPRAP.
2. RIPRAP SHALL BE PLACED ALONG THE SLOPE OF THE DITCH OPPOSITE THE DRAINAGE PIPE BEGINNING ONE FOOT (1') BELOW THE BOTTOM OF THE PIPE AND EXTENDING UP THE SLOPE TWO FEET (2') ABOVE EXPCTED HIGH WATER OR TO THE TOP OF SLOPE.

1 CONSTRUCTION DITCH
SCALE: NTS



CONSTRUCTION SPECIFICATIONS

1. PIT DIMENSIONS ARE VARIABLE.
2. THE STANDPIPE SHOULD BE CONSTRUCTED BY PERFORATIING A 12'-24' DIAMETER CORRUGATED OR PVC PIPE.
3. A BASE OF NYS DOT #2 OR EQUIVALENT AGGREGATE SHOULD BE PLACED IN THE PIT TO A DEPTH OF 12'. AFTER INSTALLING THE STANDPIPE, THE PIT SURROUNDING THE STAND PIPE SHOULD BE BACKFILLED WITH NYS DOT #2 OR EQUIVALENT AGGREGATE.
4. THE STANDPIPE SHOULD EXTEND 12'-18' ABOVE THE LIP OF THE PIT.
5. IF DISCHARGE WILL BE PUMPED DIRECTLY TO A STORM DRAINAGE SYSTEM, THE STANDPIPE SHOULD BE WRAPPED WITH FILTERCLOTH BEFORE INSTALLATION. IT IS RECOMMENDED THAT 1/4" - 1/2" HARDWARE CLOTH MAY BE PLACED AROUND THE STANDPIPE, PRIOR TO ATTACHING THE FILTER CLOTH.



2 DEWATERING SUMP PIT
SCALE: NTS

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PROJECT:

1020 BEACH 19TH STREET

1020 BEACH 19TH STREET QUEENS N.Y.
BLOCK - 15560 **LOT - 08**

TITLE:

TYPICAL DETAILS FOR RUNOFF CONTROL

Q01014357-I1

STAMP:



DATE: 05-15-2026
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ESTABLISHING PERMANENT GRASSES WITH OTHER FORBS AND/OR SHRUBS TO PROVIDE A MINIMUM 80% PERENNIAL VEGETATIVE COVER ON AREAS DISTURBED BY CONSTRUCTION AND CRITICAL AREAS TO REDUCE EROSION AND SEDIMENT TRANSPORT. CRITICAL AREAS MAY INCLUDE BUT ARE NOT LIMITED TO STEEP EXCAVATED CUT OR FILL SLOPES AS WELL AS ERODING OR DENUDED NATURAL SLOPES AND AREAS SUBJECT TO EROSION. ALL WATER CONTROL MEASURES WILL BE INSTALLED AS NEEDED PRIOR TO FINAL GRADING AND SEEDBED PREPARATION. ANY SEVERELY COMPACTED SECTIONS WILL REQUIRE CHISELING OR DISKING TO PROVIDE AN ADEQUATE ROOTING ZONE, TO A MINIMUM DEPTH OF 12", SEE SOIL RESTORATION STANDARD. THE SEEDBED MUST BE PREPARED TO ALLOW GOOD SOIL TO SEED CONTACT, WITH THE SOIL NOT TOO SOFT AND NOT TOO COMPACT. ADEQUATE SOIL MOISTURE MUST BE PRESENT TO ACCOMPLISH THIS. IF SURFACE IS POWDER DRY OR STICKY WET, POSTPONE OPERATIONS UNTIL MOISTURE CHANGES TO A FAVORABLE CONDITION. IF SEEDING IS ACCOMPLISHED WITHIN 24 HOURS OF FINAL GRADING, ADDITIONAL SCARIFICATION IS GENERALLY NOT NEEDED, ESPECIALLY ON DITCH OR STREAM BANKS. REMOVE ALL STONES AND OTHER DEBRIS FROM THE SURFACE THAT ARE GREATER THAN 4 INCHES, OR THAT WILL INTERFERE WITH FUTURE MOWING OR MAINTENANCE. SOIL AMENDMENTS SHOULD BE INCORPORATED INTO THE UPPER 2 INCHES OF SOIL WHEN FEASIBLE. THE SOIL SHOULD BE TESTED TO DETERMINE THE AMOUNTS OF AMENDMENTS NEEDED.

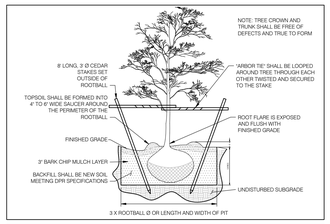
1 PERMANENT CONSTRUCTION AREA PLANTING
SCALE: NTS

TEMPORARY SEEDINGS MAY BE NECESSARY ON CONSTRUCTION SITES TO PROTECT AN AREA, OR SECTION, WHERE FINAL GRADING IS COMPLETE, WHEN PREPARING FOR WINTER WORK SHUTDOWN, OR TO PROVIDE COVER WHEN PERMANENT SEEDINGS ARE LIKELY TO FAIL DUE TO MID-SUMMER HEAT AND DROUGHT. THE INTENT IS TO PROVIDE TEMPORARY PROTECTIVE COVER DURING TEMPORARY SHUTDOWN OF CONSTRUCTION AND/OR WHILE WAITING FOR OPTIMAL PLANTING TIME.

WATER MANAGEMENT PRACTICES MUST BE INSTALLED AS APPROPRIATE FOR SITE CONDITIONS. THE AREA MUST BE ROUGH GRADED AND SLOPES PHYSICALLY STABLE. LARGE DEBRIS AND ROCKS ARE USUALLY REMOVED. SEEDBED MUST BE SEEDED WITHIN 24 HOURS OF DISTURBANCE OR SCARIFICATION OF THE SOIL SURFACE WILL BE NECESSARY PRIOR TO SEEDING.

MULCH THE AREA WITH HAY OR STRAW AT 2 TONS/ACRE (APPROX. 90 LBS./1000 SQ. FT. OR 2 BALES). QUALITY OF HAY OR STRAW MULCH ALLOWABLE WILL BE DETERMINED BASED ON LONG TERM USE AND VISUAL CONCERNS. MULCH ANCHORING WILL BE REQUIRED WHERE WIND OR AREAS OF CONCENTRATED WATER ARE OF CONCERN.

2 TEMPORARY CONSTRUCTION AREA SEEDING
SCALE: NTS



PRACTICE APPLIES ON ANY AREA PLANNED FOR RECREATION OR LANDSCAPE USE SUCH AS YARD AREA, LEISURE AREA, PICNIC AREAS AND PARK LANDS PROVIDING OUTDOOR RECREATIONAL OPPORTUNITIES. THE UTILIZATION OF TREE, SHRUBS AND VINES MAKE A RECREATION AREA MORE ATTRACTIVE AND INCREASE THE USEFUL NESS OF AREAS. CRITERIA SHOULD INCLUDE PLANNING PLANT MATERIALS, PLANT PROTECTION, APPROPRIATE TIME TO PLANT, SPACING, AND SITE PREPERATION.

3 TREES, SHRUBS AND VINES
SCALE: NTS

APPLYING COARSE PLANT RESIDUE OR CHIPS, OR OTHER SUITABLE MATERIALS, TO COVER THE SOIL SURFACE TO PROVIDE INITIAL EROSION CONTROL WHILE A SEEDING OR SHRUB PLANTING IS ESTABLISHING. MULCH WILL CONSERVE MOISTURE AND MODIFY THE SURFACE SOIL TEMPERATURE AND REDUCE FLUCTUATION OF BOTH. MULCH WILL PREVENT SOIL SURFACE CRUSTING AND AID IN WEED CONTROL. MULCH CAN ALSO BE USED ALONE FOR TEMPORARY STABILIZATION IN NONGROWING MONTHS. USE OF STONE AS A MULCH COULD BE MORE PERMANENT AND SHOULD NOT BE LIMITED TO NON-GROWING MONTHS.

THIS PRACTICE APPLIES ON SOILS SUBJECT TO EROSION AND ON NEW SEEDINGS AND SHRUB PLANTINGS. MULCH IS USEFUL ON SOILS WITH LOW INFILTRATION RATE BY RETAINING RUNOFF.

PREPARATION OF THE SOIL IS REQUIRED PRIOR TO MULCHING:
- SLOPE, GRADE AND SMOOTHING OF SITE TO FIT THE NEEDS OF THE SELECTED MULCH PRODUCTS.
- REMOVING ALL UNDESIRABLE STONES AND OTHER DEBRIS TO MEET TO MEET THE NEEDS OF THE ANCIPATED LAND USE AND MAINTENANCE REQUIRED.
- APPLY MULCH AFTER SOIL AMENDMENTS AND PLANTING IS ACCOMPLISHED OR SIMULTANEOUSLY IS HYDRPSEEDING IS USED.
- SELECT THE APPROPRIATE MULCH MATERAL AND APPLICATION RATE OR MATERIAL NEEDS. REFERENCE TABLE IN DEP EROSION AND SEDIMENT CONTROL BLUE BOOK PAGE 4.40.

4 MULCHING
SCALE: NTS

CIVIL ENGINEER:
KRYPTON ENGINEERING
307 McLean Avenue
YONKERS, NY 10705
(917) 475-6138
KRYPTONENG.COM

REV.	DATE	DESCRIPTION
	1-30-26	ISSUED TO DOB - PAA COMMUNITY FACILITY
	12-8-25	REVISED PER HCR COMMENTS
	11-3-25	ISSUED FOR PRICING
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	5-1-24	ISSUED TO HPD - REVISED PER COMMENTS
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PROJECT:

1020 BEACH 19TH STREET

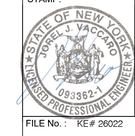
1020 BEACH 19TH STREET QUEENS N.Y.
BLOCK - 15560 **LOT - 08**

TITLE:

TYPICAL DETAILS FOR SOIL STABALIZATION

Q01014357-I1

STAMP:



DATE: 05-15-2026
JOB #: 26022
DRAWN BY: PJM/JJV
SCALE: 30'-0" X 42'-0"

DRAWING NO:
C-302.00

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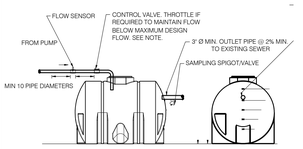
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SIZE CALCULATION *SEE NYS STANDARDS AND SPECS FOR EROSION AND SEDIMENT CONTROL PAGE 5.44 FOR MORE INFO*

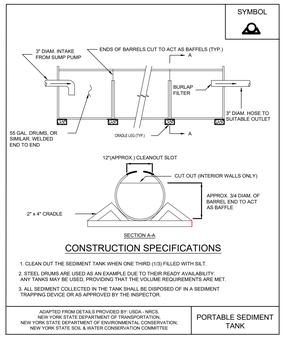
PUMPED FLOW DESIGN: 18 GALLON / MINUTE
-> CUBIC FEET REQUIRED = 288 CUBIC FEET = 2150 GALLONS

A SEDIMENT TANK IS A COMPARTMENTED TANK OR VESSEL CONTAINER TO WHICH SEDIMENT LADEN WATER IS PUMPED TO TRAP AND RETAIN THE SEDIMENT PRIOR TO RELEASING THE WATER TO DRAINAGEWAYS, AND RIGHTS-OF-WAY BELOW THE SEDIMENT TANK SITE.
A SEDIMENT TANK IS TO BE USED ON SITES WHERE EXCAVATIONS ARE DEEP, AND SPACE IS LIMITED, SUCH AS URBAN CONSTRUCTION, WHERE DIRECT DISCHARGE OF SEDIMENT LADEN WATER TO STREAM AND STORM DRAINAGE SYSTEMS IS TO BE AVOIDED.

- THE SEDIMENT TANK SHALL BE LOCATED FOR EASE OF CLEAN-OUT AND DISPOSAL OF THE TRAPPED SEDIMENT, AND TO MINIMIZE THE INTERFERENCE WITH CONSTRUCTINO ACTIVITIES AND PEDESTRIAN TRAFFIC.
- THE FOLLOWING FORMULA SHOULD BE USED IN DETERMINING THE STORAGE VOLUME OF THE SEDIMENT TANK.
  (G.M.P.) X 16 = CUBIC FOOT STORAGE.



OPTION A



CONSTRUCTION SPECIFICATIONS

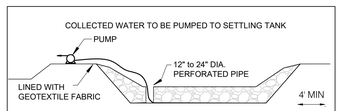
1. CLEAN OUT THE SEDIMENT TANK WHEN ONE THIRD (1/3) FILLED WITH SILT.
2. STEEL DRUMS ARE USED AS AN EXAMPLE DUE TO THEIR READY AVAILABILITY. ANY TANKS MAY BE USED, PROVIDING THAT THE VOLUME REQUIREMENTS ARE MET.
3. ALL SEDIMENT COLLECTED IN THE TANK SHALL BE DISPOSED OF IN A SEDIMENT-TRAPPING DEVICE OR AS APPROVED BY THE INSPECTOR.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

PORTABLE SEDIMENT TANK

OPTION B

1 SEDIMENT TANK - PORTABLE
SCALE: NTS



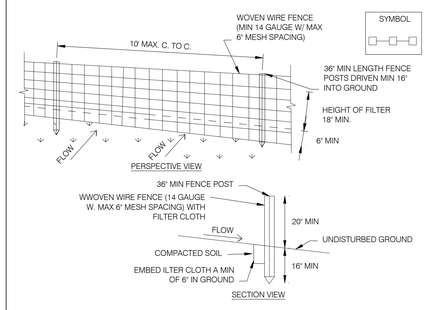
SEDIMENT TRAP TABLE:
TRAP NUMBER 1
1. THE DRAINAGE AREA TO THE TRAP IS 0.43 ACRE.
2. VOLUME OF SEDIMENT TRAP:
22 FT x 22 FT x 4 FT x 0.4 = 774 CF
X 2 = 1548

3. AS PER NYSDEP BLUE BOOK STANDARD OF 3,600 CF PER ACRE OF DRAINAGE AREA, THE EFFECTIVE
VOLUME MEETS THE CRITERIA.
REQUIRED VOLUME = 0.43 * 3600 = 1545 CF --> OK

4. STONE USED SHALL BE SMALL BE SMALL RIPRAP 4" TO 8".
5. BEDDING IS TO BE LINED WITH GEOTEXTILE FABRIC.
6. SUMP PIT DISCHARGE WILL BE PUMPED INTO A SETTLING TANK. PUMPED PIPE = 1.5" Ø

MAINTENANCE NOTES
1. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT
HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP.
2. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.

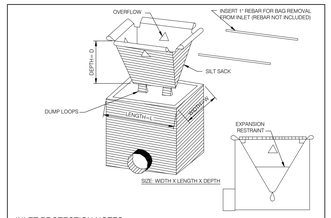
2 SEDIMENT TRAP
SCALE: NTS



CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FITLER COTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 6" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL VE OVERLAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER "X", MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
4. PREFABRICAED LINITS SHALL MEET THE MINIMUM REQUIREMENTS SHOWN.
5. MAINTENANCE SHALL BE PREFORMED AS NEEDED AND MATERIAL REMOVED WHEN BUDGES DEVELOP IN THE SILT FENCE.

3 SILT FENCE
SCALE: NTS

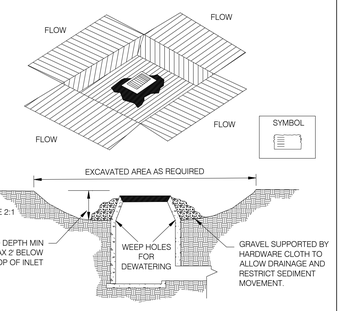


INLET PROTECTION NOTES:
1. SILT SACK FILTER FABRIC SHALL HAVE AN EOS OF 40 TO 85.
2. SILT SACK CAN EASILY FIT ANY SIZE INLET.
3. DESIGN FLOW AREA OF STORM DRAIN INLET OPENING: CATCH BASIN OPEN AREA: 3.67FT X 2.14FT X 0.3 + 2.36 CF 50% OPEN AREA: 2.36CF X 0.5 = 1.18 CF
4. SILT SACK IS INSTALLED BELOW THE INLET OPENING, ALLOWING FOR UNOBSTRUCTED FLOW AREA OF THE STORM DRAIN INLET OPENING.
5. SILT SACK IS TO HAVE 4-8 OVERFLOW HOLES TO MAINTAIN CAPACITY AND FLOW.
6. TO INSTALL SILT SACK, THE CATCH BASIN MUST BE REMOVED. SILT SACK SHOULD BE PLACED IN THE OPENING.
7. APPROX. SIX INCHES OF SILT SACK SHOULD BE PRESENT OUTSIDE OF FRAME TO HOLD AREA OF LIFTING STRAPS.
8. ROUTINE INSPECTIONS OF SILT SACKS COLLECTED SEDIMENT LEVEL ARE IMPORTANT TO PREVENT "PONDING" AROUND STORM DRAINS.
9. TO REMOVE SILT SACK, PLACE 2 1" PIECES OF REBAR THROUGH LIFTING STRAPS.
10. MAXIMUM DRAINAGE AREA IS 1 ACRE.

MAINTENANCE: INLET PROTECTION WILL BE CLEANED OUT DAILY, WHENEVER SEDIMENT OR DEBRIS IS PRESENT AND FOLLOWING ANY RAIN EVENT GREATER THAN 0.5 INCH.
REPLACEMENT: INLET PROTECTION WILL BE CHANGED OUT WHENEVER NECESSARY AND IF THERE IS ANY DAMAGES OR PERFORATIONS PRESENT. DURING IWNTER MONTHS INLET PROTECTION WILL BE CHANGED OUT LESS THAN EVERY THREE MONTHS.
REMOVAL: THIS MEASURE WILL BE REMOVED TEMORARILY FOLLOWING THE COMPLETION OF THIS ACTIVITY.
INSPECTIONS: WEEKLY AND AFTER RAIN EVENTS GREATER THAN 0.5 INCHES.

4 FABRIC INLET PROTECTION
AT EXISTING BASINS
SCALE: NTS

NOTE: IF APPLICABLE AT PROJECT SITE



EXCAVATED DROP INLET PROTECTION

1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER EXCAVATION.
2. GRADE APPROACH TO THE INLET UNIFORMLY AROUND THE BASIN.
3. WEEP HOLES SHALL BE PROTECTED BY GRAVEL.
4. UPON STABALIZATION OF CONTRIBUTING DRAINAGE AREA, SEAL WEEP HOLES, FILL EXCAVATION WITH STABLE SOIL TO FINAL GRADE. COMPACT IT PROPERLY AND STABALIZE WITH PERMANENT SEEDING.
MAXIMUM DRAINAGE AREA 1 ACRE

5 DROP INLET PROTECTION
AT NEW BASINS
SCALE: NTS

CIVIL ENGINEER:
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307 McLean Avenue
YONKERS, NY 10705
(917) 475-6138
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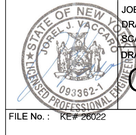
1020 BEACH 19TH STREET QUEENS N.Y.
BLOCK - 15560 **LOT - 08**

TITLE:

TYPICAL DETAILS FOR SEDIMENT CONTROL

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SCALE: 30'-0" X 42'-0"
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FILE No. : RE # 26022 SHEET:
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SITE POLLUTION PREVENTION

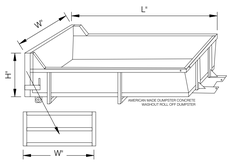
1. A SOLID WASTE MANAGEMENT PROGRAM WILL BE IMPLEMENTED TO SUPPORT PROPER SOLID WASTE DISPOSAL AND RECYCLING PRACTICES.
2. SOLID WASTE AND DEBRIS THAT CANNOT BE RECYCLED, REUSED, OR SALVAGED SHALL BE STORED IN ON-SITE COVERED CONTAINERS FOR OFF-SITE DISPOSAL.
3. THE CONTAINERS SHALL BE EMPTIED PERIODICALLY BY A LICENSED WASTE TRANSPORT SERVICE AND HAULED AWAY FROM THE SITE FOR PROPER DISPOSAL.
4. NO LOOSE MATERIALS SHALL BE ALLOWED AT THE PROJECT SITE AND ALL WASTE MATERIAL SHALL BE DISPOSED OF PROMPTLY AND PROPERLY.
5. NO WASTE MATERIAL SHALL BE BURIED ON-SITE. THE BURNING OF CRATES, WASTE, AND OTHER REFUSE IS NOT PERMITTED.

WASHING OF APPLICATORS AND CONTAINERS USED FOR PAINT, CONCRETE, OR OTHER MATERIALS

SPILL PREVENTION AND RESPONSE

1. THE OWNER SHALL BE NOTIFIED IN THE EVENT OF A NON-STORMWATER (FUEL, OIL, CHEMICAL, ETC.) SPILL OR RELEASE TO ENSURE PROPER REPORTING AND CLEAN UP.
2. THE OWNER SHALL PROCEED AS APPROPRIATE IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL ENVIRONMENTAL POLICIES AND PROCEDURES.
3. A SPILL OR RELEASE SHALL BE REPORTED TO THE NYSDEC SPILL HOTLINE (1-800-457-7362), AS APPLICABLE, WITHIN TWO HOURS OF THE RELEASE. THE CONTRACTOR IS TO RETAIN DOCUMENTATION CONTAINING THE NYS SPILL NUMBER AND SPILL INFORMATION TO PROVIDE TO THE OWNER AND THE QUALIFIED INSPECTOR. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE CLEANUP AND RESPONSE ACTIONS, IN ACCORDANCE WITH THE ON-SITE SPILL PREVENTION PROCEDURES MANUAL.
4. CONTAMINATED SOIL SHALL BE REMOVED FROM THE PROJECT SITE AND DISPOSED OF IN ACCORDANCE WITH THE PRODUCT SPECIFIC SAFETY DATA SHEETS (SDS) AND ENVIRONMENTAL GUIDANCE.

1 SITE POLLUTION PREVENTION MEASURES
SCALE: NTS



CONCRETE TRUCK WASHOUT

DESCRIPTION:
A TEMPORARY ABOVE GROUND PREFABRICAED WASHOUT TANK WHERE CONCRETE TRUCK MIXERS AND EQUIPMENT CAN BE WASHED AFTER THEIR LOADS HAVE BEEN DISCHARGED, TO PREVENT HIGHLY ALKALINE RUNOFF FROM ENTERING STORM DRAINAGE SYSTEMS OR LEACHING INTO SOIL.
THE PREFABRICATED WASHOUT FACILITY SHOULD BE SIZED TO CONTAIN SOLIDS, ASH WATER, AND RAINFALL AND SIZED TO ALLOW FOR THE EVAPORATION OF THE WASH WATER AND RAINFALL.
LOCATE THE FACILITY A MINIMUM OF 100 FEET FROM DRAINAGE SWALES, STORM DRAIN INLETS, WETLANDS, STREAM AND OTHER SURFACE WATERS. PREVENT SURFACE WATER FROM ENTERING THE STRUCTURE EXCESS FOR THE SCCESS ROAD. PROVIDE APPROPRIATE ACCESS WITH A GRAVEL ACCESS ROAD SLOPED DOWN TO THE STRUCTURE. SIGNS SHOULD BE PLACED TO DIRECT DRIVERS TO THE FACILITY AFTER THEIR LOADS ARE DISCHARGED. ALL WASHOUT FACILITIES WILL BE LOCATED AS SHOWN ON THE ESC PLAN AND WILL BE LINED TO PREVENT LEACHING OF LIQUIDS INTO THE GROUND. THE LINER SHOULD BE PLASTIC SHEETING WITH A MINIMUM THICKNESS OF 10 MILS WITH NO HOLES OR TEARS AND ANCHORED BEYOND THE TOP OF THE PIT WITH AN EARTHEN BERM, SANDBAGS, STONE OR OTHER STRUCTUREAL APPURTENANCE EXCEPT THE ACCESS POINT.

INSTALLATION:
APPROXIMATE DATE OF INSTALLATION IS TBD

MAINTENANCE REQUIREMENTS:
ALL CONCRETE WASHOUT FACILITIES SHALL BE INSPECTED DAILY. DAMAGED OR LEAKING FACILITIES SHALL BE DEACTIVIATED AND REPAIRED OR REPLACED IMMEDIATELY. EXCCESS RAINWATER THAT HAS ACCUMULATED OVER HARDENED CONCRETE SHOULD BE PUMPED TO A FRACTIONATION TANK.
ACCUMULATED HARDENED MATERIAL SHALL BE REMOVED WHEN 75% OF THE STORAGE CAPACITY OF THE STRUCTURE IS FILLED. ANY EXCESS WASH WATER SHALL BE PUMPED INTO A CONTAINMENT VESSEL AND PROPERLY DISPOSED OF OFF-SITE. DISPOSE OF THE HARDENED MATERIAL CONSTRUCTION/DEMOLITION LANDFILL. ON-SITE DISPOSAL MAY BE ALLOWED IF THIS HAS BEEN APPROVED AND ACCEPTED AS PART OF THE PROJECTS SWPPP. IN THAT CASE, THE MATERIAL SHOULD BE RECYCLED AS SPECIFIED, OR BURIED AND COVERED WITH A MINIMUM OF TW OFEET OF CLEAN COMPACTED EARTH FILL THAT IS PERMANENTLY STABALIZED TO PREVENT EROSION. THE PLASTIC LINER SHALL BE REPLACED WITH EACH CLEANING OF THE WASHOUT FACILITY. INSPECT THE PROJECT SITE FREQUENTLY TO ENSURE THAT NO CONCRETE DISCHARGES ARE TAKING PLACE IN NON-DESIGNATED AREAS.

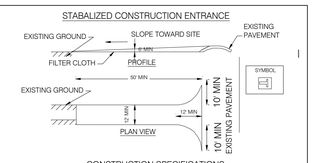
DESIGN SPECIFICATIONS:
ALL CONCRETE WASHOUT WATER, IF WASHED OUT ON SITE, SHALL BE COLLECTED IN WATER TIGHT CONTAINERS PLACED ON THE SITE FOR HOLDING PRIOR TO LEGAL DISPOSAL OFF SITE. WASH WATER IS NOT PERMITTED TO BE DISPOSED OF IN STORM, SANITARY, OR COMBINED SEWERS.

CONCRETE WASHOUT SIZING

WASHOUT SIZING:
7 GALLONS OF STORAGE REQUIRED PER CHUTE 50, GALLONS OF STORAGE REQUIRED PER DRUM. ALLOWABLE ACCUMULATED VOLUME IS 75%

2 CONCRETE TRUCK WASHOUT
SCALE: NTS

STABALIZED CONSTRUCTION ENTRANCE



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 1-4 INCH STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THNA 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.)
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ACCESS SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING OS IMPRACTICAL, A MOUNTABLE BERM WITH 5-1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED RO TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABALIZED WITH STONE AND WHICH DRAINS INTO AN APROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

STONE SIZE - USE 2 INCH STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT. LENGTH - NOT LESS THAN 50 FEET. THICKNESS - NOT LESS THAN 6 INCHES. WIDTH - 12 FOOR MINIMUM, BOT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS AND EGRESS OCCURS; 24 FOOT IF SINGLE ENTRANCE TO SITE. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE. STABILIZED CONSTRUCTION ENTRANCE SHALL BE SLOPED AWAY FROM THE PUBLIC RIGHT OF WAY, SO THAT NO WATER OR STORM WATER IS DRAINED ONTO THE PUBLIC RIGHT OF WAY.

SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE AND BACK INTO THE TIRE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPE WILL BE PERMITTED.

MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING INTO PUBLIC RIGHTS OF WAY. ALL SEDIMENT SPILLED, DROPPED WASHED OR TRACKED INTO PUBLIC RIGHTS OF WAY MUST BE REMOVED IMMEDIATELY.

WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABALIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN EVENT.

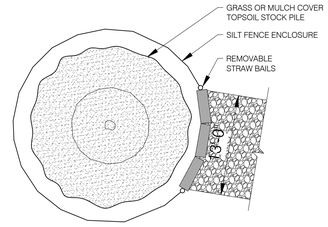
3 STABALIZED CONSTRUCTION ENTRANCE
SCALE: NTS

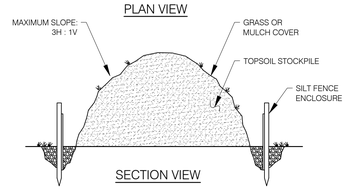
DESCRIPTION:
THE CONTROL OF DUST RESULTING FROM LAND-DISTURBING ACTIVITIES, TO PREVENT SURFACE AND AIR MOVEMENT OF DUST FROM DISTURBED SOIL SURFACES THAT MAY CAUSE OFF-SITE DAMAGE, HEALTH HAZARDS, AND TRAFFIC SAFETY PROBLEMS.

THIS PRACTICE APPLIES ON CONSTRUCTION ROADS, ACCESS POINTS, AND OTHER DISTURBED AREAS SUBJECT TO SURFACE DUST MOVEMENT AND DUST BLOWING WHERE OFF-SITE DAMAGE MAY OCCUR IF DUST IS NOT CONTROLLED.
CONSTRUCTION OPERATIONS SHOULD BE SCHEDULED TO MINIMIZE THE AMOUNT OF AREA DISTURBED AT ONE TIME. BUFFER AREAS OF VEGETATION SHOULD BE LEFT WHERE PRACTICAL. TEMPORARY OR PERMANENT STABILIZATION MEASURES SHALL BE INSTALLED. NO SPECIFIC DESIGN CRITERIA IS GIVEN; SEE CONSTRUCTION SPECIFICATIONS BELOW FOR COMMON METHODS OF DUST CONTROL.

WATER QUALITY MUST BE CONSIDERED WHEN MATERIALS ARE SELECTED FOR DUST CONTROL. WHERE THERE IS A POTENTIAL FOR THE MATERIAL TO WASH OFF TO A STREAM, INGREDIENT INFORMATION MUST BE PROVIDED TO THE NYSDEC. NO POLYMER APPLICATION SHALL TAKE PLACE WITHOUT WRITTEN APPROVAL FROM THE NYSDEC.

4 DUST CONTROL
SCALE: NTS





NOTES:
1-TOPSOIL REMOVED DURING SITE PREPARATION SHALL BE STOCKPILED ON-SITE FOR FUTURE USE IN SITE RECLAMATION AND REVEGATATION.

2- SOIL STOCKPILE SHALL BE ENCIRCLED WITH SILT FENCING WITH PASSAGEWAY PROVIDED FOR EQUIPMENT ACCESS.

3- PROVIDE TEMPORARY GRASS OR MULCH COVER IF STOCKPILE IS TO REMAIN UNDISTURBED FOR THIRTY DAYS OR MORE. TEMPORARY COVER SHALL CONSIST OF ONE OF THE FOLLOWING MEASURES:
- GRASS SEED: 1/2 LB. RYE GRASS /1000S.F
- MULCH: 100LBS OF STRAW OR HAY/1000S.F

99 SOIL STOCKPILE
SCALE: NTS

CIVIL ENGINEER:
KRYPTON ENGINEERING
307 McLean Avenue
YONKERS, NY 10705
(917) 475-6138
KRYPTONENG.COM

REV.	DATE	DESCRIPTION
	1-30-26	ISSUED TO DOB - PAA COMMUNITY FACILITY
	12-8-25	REVISED PER HCR COMMENTS
	11-3-25	ISSUED FOR PRICING
	3-20-25	ISSUED TO DOB
	10-30-24	REVISED PER NYCECC COMMENTS
	9-6-24	REVISED PER NYCECC COMMENTS
	8-22-24	ISSUED TO DOB
	5-1-24	ISSUED TO HPD - REVISED PER COMMENTS
	3-6-24	ISSUED TO DOB - ADDRESS AND BIN #
	12-20-23	ISSUED TO HPD
	12-08-23	ISSUED TO DOB
	9-27-23	ISSUED TO HPD

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PROJECT:

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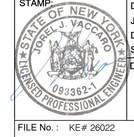
1020 BEACH 19TH STREET QUEENS N.Y.
BLOCK - 15560 **LOT - 08**

TITLE:

TYPICAL DETAILS FOR EROSION, PLANNING AND SITE MANAGEMENT

Q01014357-I1

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DATE: 05-15-2026
JOB #: 26022
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SCALE: 30'-0" X 42'-0"

DRAWING NO:

C-304.00

FILE No. : KE# 26022 SHEET:

11 OF 11

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APPENDIX J – SSDS Design Drawings

SSDS SUBMITTAL SCHEDULE

Submittal No.	Attachment/Detail Number	Design Document	Product Description
1	Detail 2, General Note 1 & 4	SSDS Design	1" to 1-1/2" Clean Crushed Stone (ASTM #5)
2	Detail 1, General Note 2	SSDS Design	Schedule 40 perforated PVC Pipe (4" Diameter)
3	General Note 1	SSDS Design	Non-woven Geotextile Filter Fabric (sub-slab piping wrap)
4	General Note 7 & 8	SSDS Design	Cast Iron Sleeve (sub-grade penetration through grade beams and foundation elements)
5	Detail 1 & 2	SSDS Design & Vapor Barrier System	Vapor Barrier/Waterproofing between bottom of slab and gas permeable layer (20 mil. minimum)
6	N/A	SSDS Design & Vapor Barrier System	Vapor Barrier/Waterproofing Membrane (at foundation/slab sidewalls)
7	Detail 4	SSDS Design	VAPOR PIN® (pre-installed in concrete slab for vapor monitoring)
8	Detail 1 & 3, General Note 3	SSDS Design	No-Hub Cast Iron non-perforated pipe and fittings (above slab pipeline - i.e. risers)
9	Detail 3, General Note 11, 12, & 16-19	SSDS Design	Powered Fan
10	General Notes 17, 18 & 19	SSDS Design	Warning Alarm (Radonaway checkpoint IIA or A/E) and U-manometer (located on first floor)

NOTE: The above listed submittals shall be provided to GBTS for review and approval prior to installation of the product

SSDS CONSTRUCTION PERIOD CHECKLIST

Activity Sequence No.	Prerequisite Tasks	Inspection Required? (Y/N)	Installation Task Description
1	Draft SSDS Design Review	N/A	Complete coordination of all SSDS components (piping, fittings, sleeves, risers, etc.) with all other building systems (incl. but not limited to mechanical, plumbing, electrical, sprinkler, IT, Communications, etc.)
2	Approved SSDS Design	N	Grade building footprint to Design subgrade elevation(s).
3	Approved Product Submittal, Activity Sequence No. 2	Y	Placement of Under Slab Clean Crushed ASTM #5 Stone Gas Permeable Layer to elevation of bottom of perforated pipe.
4	Approved Product Submittal, Activity Sequence No. 2 & 3	N	Installation of all Cast Iron Sleeves through grade beams/foundation walls/footings etc. as needed. Coordinate with installation of all foundation/footing elements.
5	Approved Product Submittal, Activity Sequence No. 2-4	Y	Placement of Perforated sub-slab piping within Gas Permeable Layer (Inc. filter fabric wrap around piping) to design elevation(s).
6	Approved Product Submittal, Activity Sequence No. 2-5	N	Installation of all elbows/fittings, etc. and vertical piping to above slab elevation.
7	Approved Product Submittal, Activity Sequence No. 2-6	N	Complete installation of Under Slab Clean Crushed ASTM #5 Stone Gas Permeable Layer to elevation of bottom of Slab.
8	Approved Product Submittal, Activity Sequence No. 2-7	Y	Install Vapor Barrier and/or Waterproofing Membrane (20 mil minimum) between slab and gas permeable layer and at foundation sidewalls.
9	Approved Product Submittal, Activity Sequence No. 2-8	Y	After installation of all Concrete Slabs, Foundations, Footings, Grade beams, etc., install VAPOR PIN® (pre-installed in concrete slab for vapor monitoring). All installed Vapor Pins shall be protected from damage and shall remain accessible regardless of proposed flooring finishes.
10	Approved Product Submittal, Activity Sequence No. 2-9	N	After construction of building structural elements (incl. columns, flooring slabs, wall chases, etc.) install all vertical No-Hub Cast Iron non-perforated riser piping and fittings (from above slab to above roof top). Note: All riser piping shall be stamped in multiple locations with a painted label identifying the pipe as "SSVS" prior to installation.
11	Approved Product Submittal, Activity Sequence No. 2-10	N/A	After installation of all SSDS piping (including sub-slab piping and vertical risers) GBTS performs a system test to determine appropriate sizing of the Powered Fan to achieve design requirements for negative system pressure.
12	Approved Product Submittal, Activity Sequence No. 2-11	N	After testing completion, Install properly sized Powered Fan (incl. electrical connections) above roof line near final riser discharge location. Locate final discharge at min. offsets/setbacks from building windows, doors and HVAC intake locations.
13	Approved Product Submittal, Activity Sequence No. 2-12	N	Install all Warning Alarm(s) (Radonaway Checkpoint IIA or A/E) and U-manometer(s) (Located on First Floor).
14	Approved Product Submittal, Activity Sequence No. 2-13	Y	Perform final system inspections and testing. Provide O&M manual to building management and set up a Monitoring and Maintenance Schedule for the SSDS with building management.

Note:
1. The above tasks are intended to be sequential in the installation process and may not include all required steps for the SSDS installation.
2. The contractor shall install the SSDS system in accordance with all plans, notes, and details as shown on the approved SSDS design documents.
3. The sequential order above is not intended to supersede the Contractors means and methods, but instead to identify critical inspection points during the construction of the system.
4. Any discrepancies found by the contractor/installer shall be brought to the attention of GBTS for evaluation, in the form of a Request for Information (RFI) prior to installation of system.
5. The contractor is responsible for assuring all coordination drawings and reviews have been completed prior to system installation.
6. The contractor is responsible for communicating with GBTS throughout the entire installation process to give GBTS adequate opportunity to perform all required inspections.

Notes:

1. Sub-slab piping shall be installed at least one inch (1") below the vapor barrier and twelve inches (12") inside the perimeter of the structure. All sub-slab piping shall be wrapped in non-woven geotextile filter fabric (or comparable product) and covered with at least one inch (1") of clean crushed stone meeting requirements for size 5.
2. Sub-slab piping material shall consist of 4" ID perforated Schedule 40 PVC unless otherwise noted. Perforations shall be ½" in diameter. Perforations shall extend around entire circumference of pipe. Piping shall be oriented such that water can drain out of perforations, or consist of at least one ½" hole every 10' at the bottom of the pipe to drain condensation. Coordinate location of subgrade piping within structural foundations, subgrade drainage and utility lines.
3. Above slab piping material shall consist of 4" ID non-perforated no-hub cast iron or galvanized steel per NYS building code. Risers are to run vertically to the roof inside indicated shafts and mounted to the nearest building column, beam or supporting structure. If any horizontal run is needed, the pipe shall have a slope of 1% towards the riser to sub-slab to facilitate drainage.
4. Gas permeable layer shall consist of 6" minimum of clean crushed stone meeting ASTM C33 requirements for size 5. Gas permeable layer shall extend throughout the entire horizontal extent of the building footprint and shall be trenched, as needed, to allow pipe penetrations through grade beams to be centered vertically.
5. Sub-slab piping shall be installed level with a 0% slope.
6. Subgrade piping installation will be coordinated with subgrade drainage structures, utility connections and structural foundations.
7. Subgrade piping that penetrates grade beams or other foundation elements shall be protected with a cast iron sleeve, as needed.
8. Penetrations through foundation elements shall be reviewed and approved by the structural engineer and are subject to change based upon final integration with building components.
9. Appropriate fire stop details shall be installed at any location in which SSDS piping penetrates a fire rated wall and all PVC joints shall be sealed according to the manufacturer's specifications.
10. Location of sub-slab piping, riser pipes and discharge point subject to change based upon final site design and integration with building components.
11. If installing as an active system, a powered fan shall be installed at each discharge point following specifications in Detail 3 – Rooftop Configuration; final specifications for the powered fan shall be provided following interim post installation field testing described in Note 16.
12. If installing as an active system, the powered fans shall be installed by a licensed electrical contractor in accordance with applicable codes and regulations utilizing a hard-wired electrical connection with a dedicated power switch and breaker.
13. Discharge points shall extend at least 3' above the roof, and at least 10' from other buildings, HVAC intakes, windows or doors. Re-routing of the discharge points at the roof level shall be provided with appropriate support to meet 10' clearance requirement.
14. Permanent sub-slab monitoring points (SSMPs) shall be pre-installed during vapor barrier installation for field-testing and monitoring purposes in accordance with Detail 4 – VAPOR PIN® Pre-Installation through Slab. Location and access to be coordinated with Architectural drawings.
15. Once installed, SSMPs shall be protected to prevent destruction during construction and shall remain accessible in perpetuity for testing purposes.
16. Interim post-installation testing, to be conducted after the installation of SSMPs and prior to the installation of the fans, shall be performed using a test fan/equipment provided by the environmental consultant. Acceptable negative pressure (-0.004 inches of water column or less) shall be met at all SSMPs during testing if system will be active. Final fan installed should meet or exceed performance parameters of the test fan/equipment.
17. If installing as active system, a warning alarm (Radonaway Checkpoint IIA or approved equal) shall be installed at each SSDS-riser by a licensed electrical contractor to indicate fan failures. Alarms to be located at visible and accessible location and to be coordinated with architect. Provide access panel, as needed.
18. A U-manometer or equivalent pressure gauge shall be installed at each riser at a visible location within the cellar as a visual indicator of negative pressure within riser pipe.
19. U-manometer, visible SSDS piping in the exterior and interior portions of the building, and powered fan shall be clearly labeled as "Sub-Slab Venting System" by means of tag, stencil or other approved marking.
20. General Contractor shall provide submittals and coordination drawings to architect.

Sheet List	
SSDS-001	Cover Sheet
SSDS-100	Cellar Under Slab SSDS Pipe
SSDS-101	Cellar Interior and 1st Floor Under Slab SSDS Pipe
SSDS-102	1st Floor Interior SSDS Pipe
SSDS-103	2nd Floor Interior SSDS Pipe
SSDS-104	3rd-5th Floor Interior SSDS Pipe
SSDS-105	6th Floor Interior SSDS Pipe
SSDS-106	7th-9th Floor Interior SSDS Pipe
SSDS-107	Roof Discharge Locations
SSDS-200	Schematic Details

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PROJECT:

1020 BEACH 19TH STREET

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BLOCK - 15560 **LOT - 08**

TITLE:

Cover Sheet

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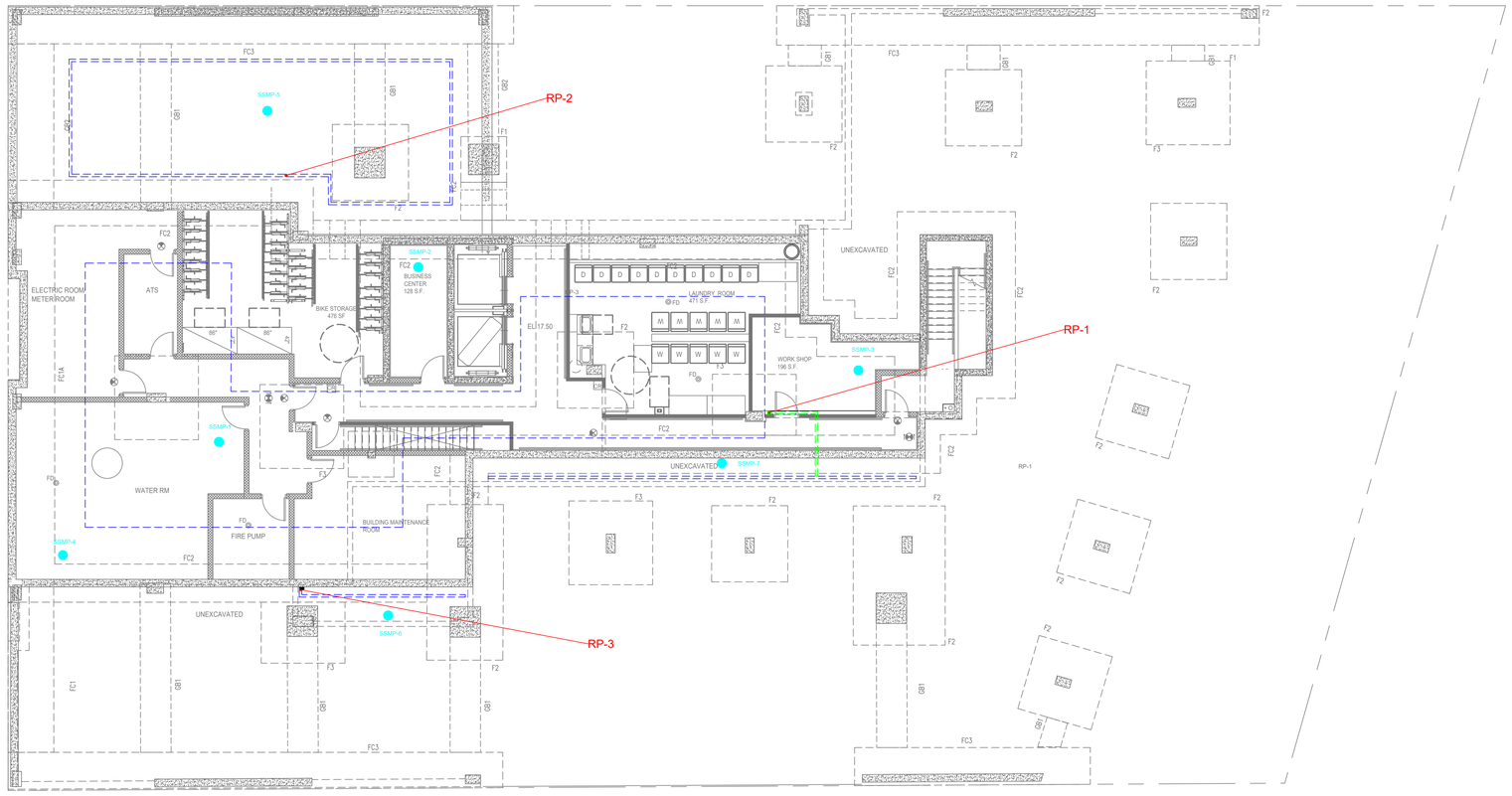
DRAWING NO:

SSDS-001

FILE No. :

SHEET:

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Legend:

- 4" Cast Iron/Galvanized Steel Pipe Run in Cellar Ceiling Under 1st Floor
- 4" Perforated Schedule 40 PVC Under Slab
- 4" Galvanized Steel or Cast Iron Riser Pipe from Below Slab to Roof
- Permanent Sub-Slab Monitoring Point (SSMP)

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BLOCK - 15560 **LOT - 08**

TITLE:

Cellar Under Slab SSDS Pipe

Q01014357-I1

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SCALE:	**SCALE**

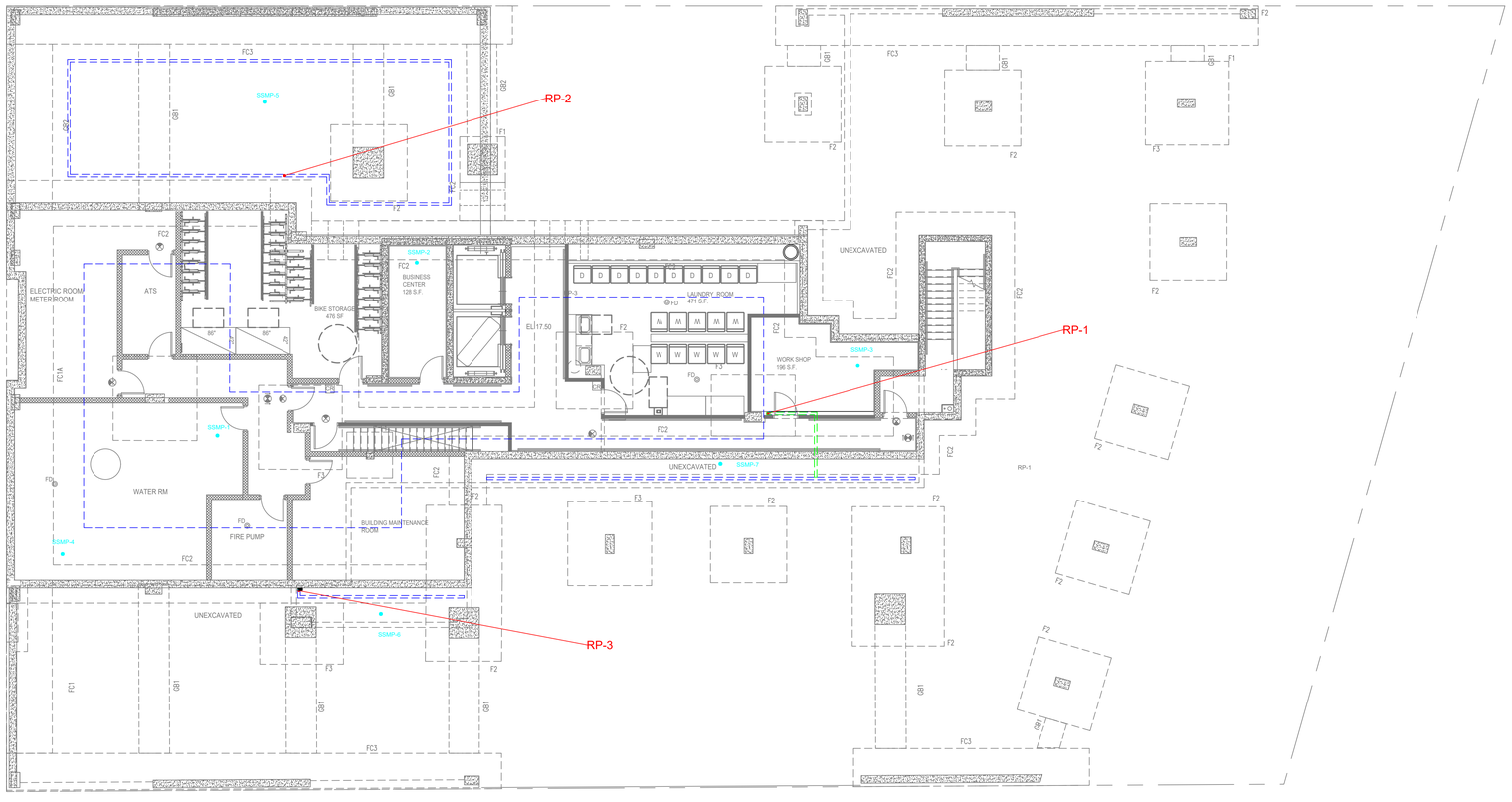
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SSDS-100

FILE No. :

SHEET:

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Legend:

- 4" Cast Iron/Galvanized Steel Pipe Run in Cellar Ceiling Under 1st Floor
- 4" Perforated Schedule 40 PVC Under Slab
- 4" Galvanized Steel or Cast Iron Riser Pipe from Below Slab to Roof
- Permanent Sub-Slab Monitoring Point (SSMP)

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PROJECT:

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BLOCK - 15560 **LOT - 08**

TITLE:

Cellar Interior and 1st Floor Under Slab SSDS Pipe

TITLE-4
Q01014357-I1

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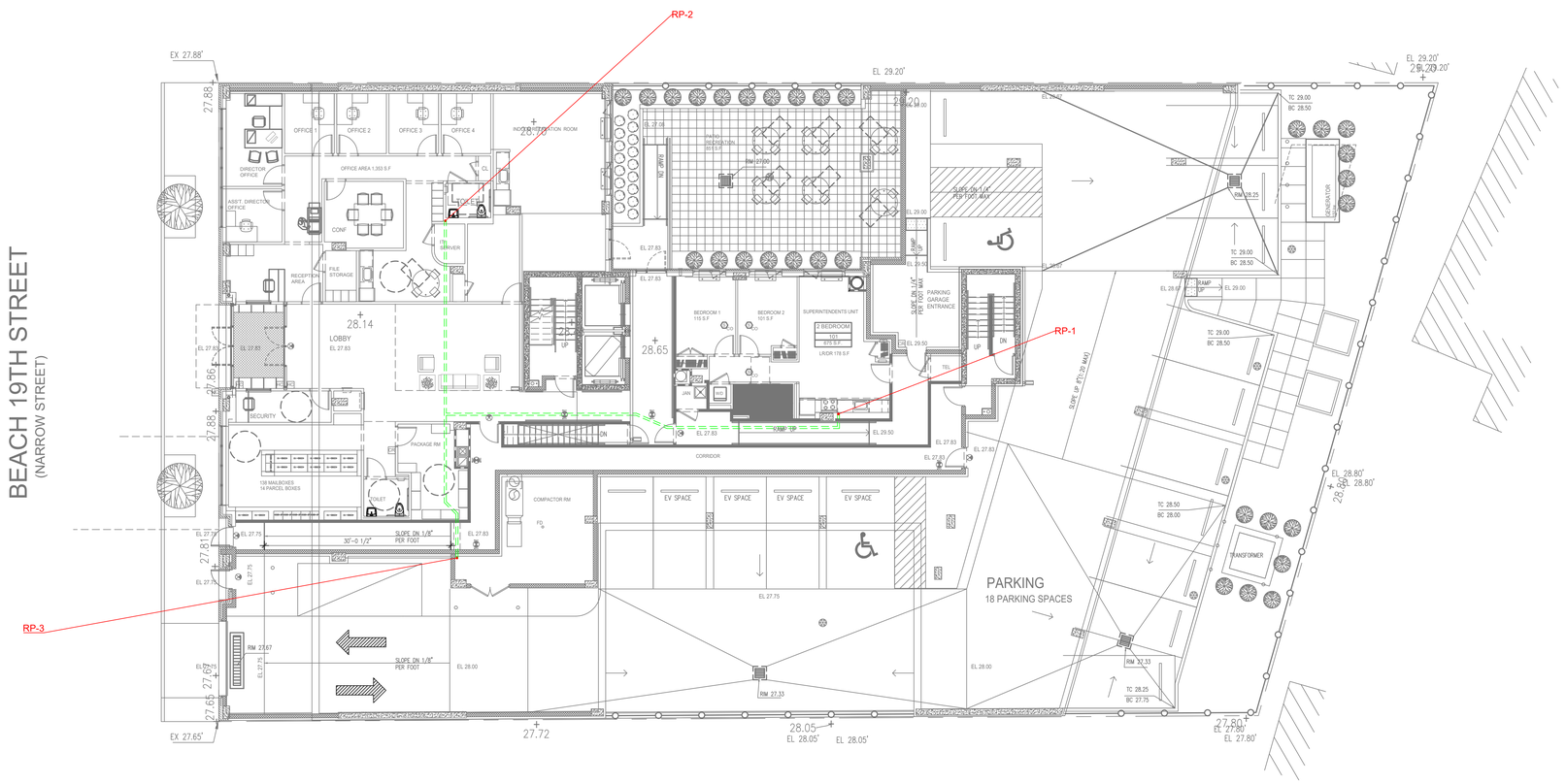
DRAWING NO:

SSDS-101

FILE No. :

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Legend:

- 4" Cast Iron/Galvanized Steel Pipe Run in Ceiling Plenum
- 4" Galvanized Steel or Cast Iron Riser Pipe from Below Slab to Roof

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BLOCK - 15560 **LOT - 08**

TITLE:

1st Floor Interior SSDS Pipe

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SCALE:	**SCALE**

DRAWING NO:

SSDS-102

FILE No. : SHEET:

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Legend:

- **4" Galvanized Steel or Cast Iron Riser Pipe from Below Slab to Roof**

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PROJECT:

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BLOCK - 15560 **LOT - 08**

TITLE:

2nd Floor Interior SSDS Pipe

Q01014357-I1

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Legend:

- 4" Galvanized Steel or Cast Iron Riser Pipe from Below Slab to Roof

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PROJECT:

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BLOCK - 15560 **LOT - 08**

TITLE:

3rd-5th Floor Interior SSDS Pipe

Q01014357-I1

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Legend:

- **4" Galvanized Steel or Cast Iron Riser Pipe from Below Slab to Roof**

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BLOCK - 15560 **LOT - 08**

TITLE:

6th Floor Interior SSDS Pipe

Q01014357-I1

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Legend:

- **4" Galvanized Steel or Cast Iron Riser Pipe from Below Slab to Roof**

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PROJECT:

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BLOCK - 15560 **LOT - 08**

TITLE:

7th-9th Floor Interior SSDS Pipe

Q01014357-I1

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STATE OF NEW YORK — DANIEL RELOCKER — 099410 — LICENSED PROFESSIONAL ENGINEER

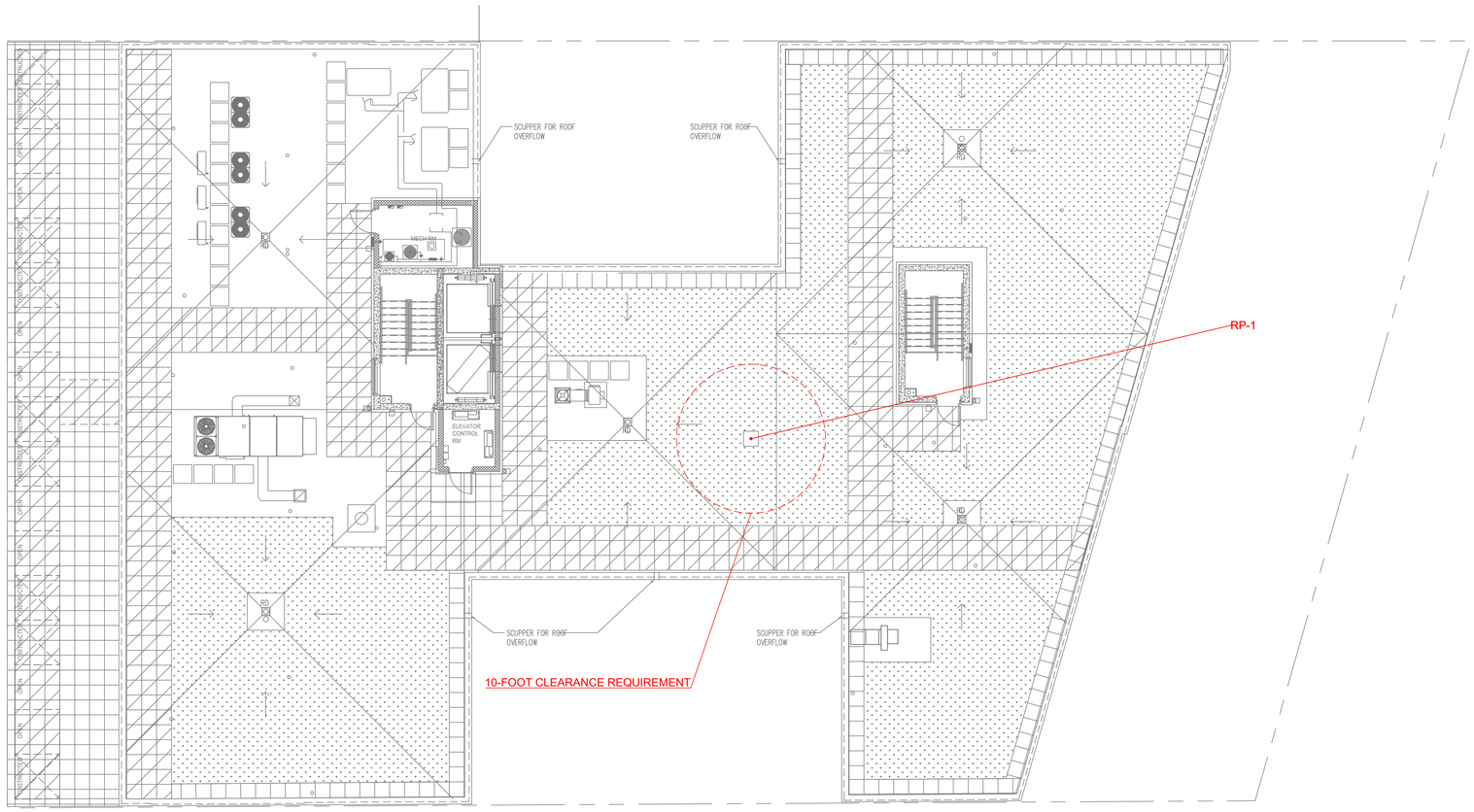
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SSDS-106

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Legend:

- **4" Galvanized Steel or Cast Iron Riser Pipe from Below Slab to Roof**

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TITLE:

Roof Discharge Locations

Q01014357-I1

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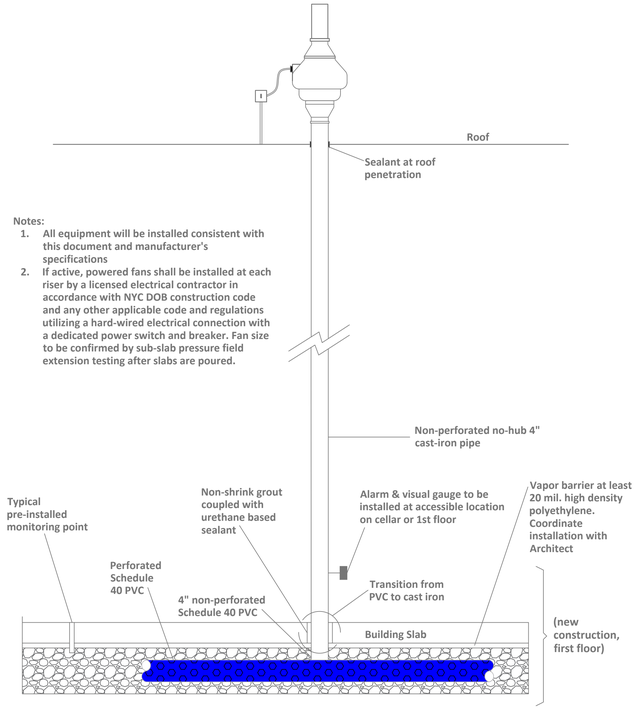
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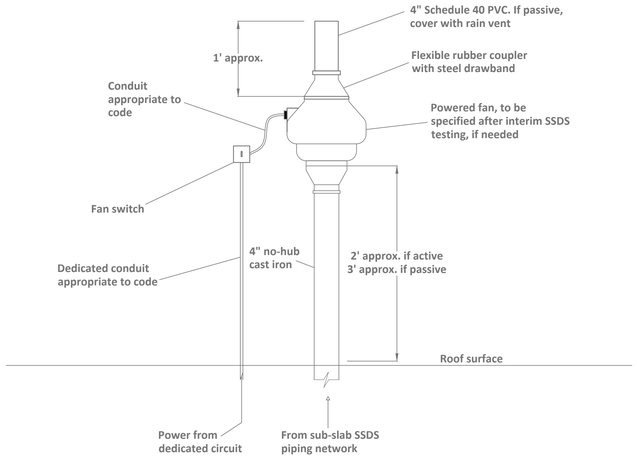
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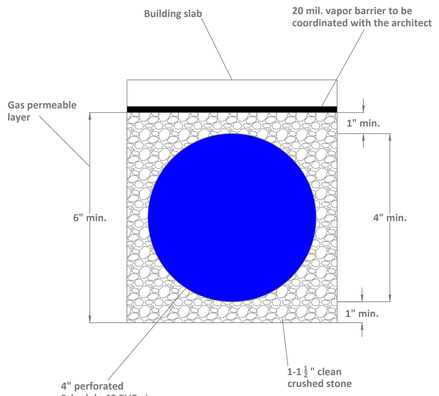
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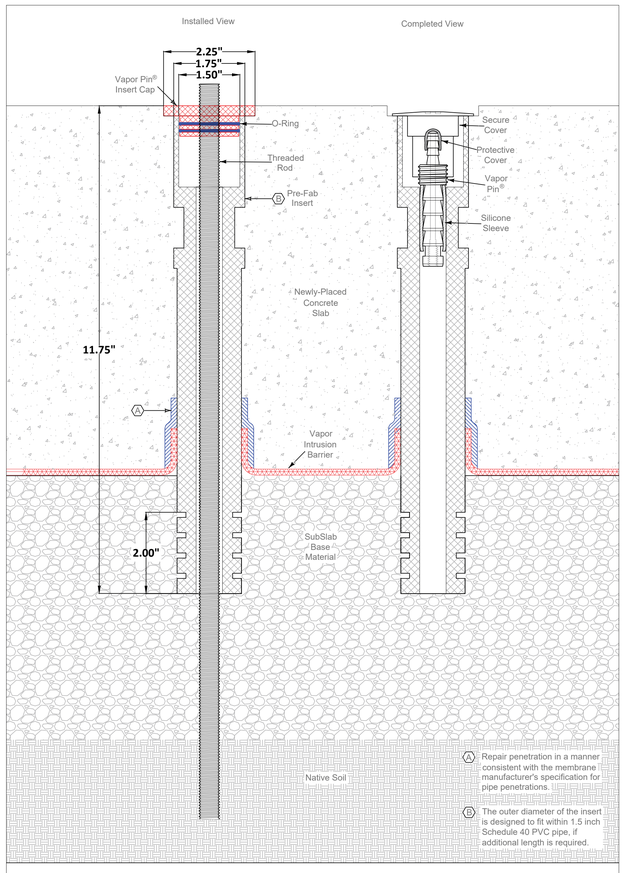
SYSTEM CONFIGURATION - NEW CONSTRUCTION CELLAR TO ROOFTOP 1



ROOF TOP CONFIGURATION - APPLICABLE TO ACTIVE SYSTEM CONFIGURATION 3



GAS PERMEABLE LAYER - SUB-SLAB CROSS SECTION 2



VAPOR PIN® Pre-Installation through Slab 4

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TITLE:

SSDS Schematic Details

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DRAWN BY: **XXX**
SCALE: **SCALE**

DRAWING NO:

SSDS-200

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