Remedial Action Work Plan (RAWP)

990 Niagara Street Site
BCP Site No. C915313
Buffalo, New York

November 2019, Revised March 2021 B0462-018-001

Prepared For:

990 NIAGARA LLC

Prepared By:

BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

In Association With:

TURNKEY
ENVIRONMENTAL
RESTORATION, LLC

2558 Hamburg Turnpike, Suite 300, Buffalo, New York 14218 | phone: (716) 856-0599 | fax: (716) 856-0583

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Prepared for:

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Benchmark Environmental Engineering & Science, PLLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716)856-0599

In Association With:

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716)856-0635

Certification

I, Thomas H. Forbes, certify that I am currently a NYS registered professional engineer and that this March 2021 Remedial Action Work Plan (RAWP) for the 990 Niagara Street Site (C915313) 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).

SEAL

3/23/21

Date

REMEDIAL ACTION WORK PLAN

990 Niagara Street Site

Table of Contents

Table of Contents

REMEDIAL ACTION WORK PLAN
990 Niagara Street Site

Table of Contents

LIST OF TABLES

LIST OF FIGURES

APPENDICES

1.0 INTRODUCTION

Benchmark Environmental Engineering and Science, PLLC (Benchmark), in association with TurnKey Environmental Restoration, LLC (TurnKey), referred to herein as Benchmark-TurnKey, has prepared this Remedial Action Work Plan (RAWP) on behalf of 990 Niagara LLC to present the proposed scope of work and implementation procedures for completion of remedial activities at the 990 Niagara Street Site, Brownfield Cleanup Program (BCP) Site C915313, located at 990 Niagara Street in the City of Buffalo, Erie County, New York (Site).

The remedial activities will be completed by 990 Niagara LLC, and their designated remedial contractors and subcontractors, with oversight provided by Benchmark-TurnKey. The work will be completed in accordance with 6NYCRR Part 375 and New York State Department of Environmental Conservation (NYSDEC) DER-10 guidelines.

1.1 Background and History

The BCP property located at 990 Niagara Street (Tax ID No. 99.49-6-8) is situated in a residential, commercial and industrial zoned area and consists of one parcel measuring 1.05 acres, which includes approximately 0.41 acres of vacant land on the northern portion of the Site, a small approximate 0.03-acre area of vacant land west adjacent to the building, and the remainder of the approximate 0.61 acres developed with the existing vacant industrial building (see Figures 1 and 2). The existing building was reportedly built in 1923 and measures 50,000 square feet. Former Site occupants include Hewitt Rubber, Buffalo Niagara Hudson Company, Buffalo General Electric Company, International Railway Co., Power House and Converter Station, Merchandising Export and Distributors, Trico Products Corp, and Multiform Desiccants. Historic Site uses included manufacturing, an automotive garage and repair.

1.2 Summary of Environmental Conditions

Benchmark-TurnKey completed a Phase II Environmental Investigation at the Site and documented their findings in a report dated November 2016. The work included collection of a transformer oil sample from a spill area from a vandalized transformer, collection four surface soil samples, completion of three interior hand core surface/near surface samples, and completion of 12 soil borings in interior and exterior areas. Elevated PID readings were identified at two locations during the work at SB-5 on the northern

portion of the Site (38 parts per million, ppm) and at TR-1 proximate to the transformer room (18.7 ppm). TR-1 is an interior soil/fill sample collected from beneath the transformer room floor Analytical results revealed the presence of elevated polycyclic aromatic hydrocarbons (PAHs) and metals in soil/fill samples collected from interior and exterior areas. In addition, a total polychlorinated biphenyl (PCB) concentration of 0.282 mg/kg in soil/fill beneath the transformer room floor at TR-1 slightly exceeds its respective USCO of 0.1 mg/kg. Analytical results of the transformer oil identified a PCB concentration of 8.46 milligrams per kilogram (mg/kg) indicating that the PCB concentration is above its respective USCO, but is well below the United States Environmental Protection Agency (USEPA) Toxic Substances and Control Act (TSCA) regulatory value of 50 mg/kg. Additional information on contamination at the Site is provided below in Section 1.2.3. PCB staining was observed on the concrete.

Benchmark-TurnKey completed and submitted to NYSDEC a Remedial Investigation Alternatives Analysis Report (RI/AA), dated February 2019, on behalf of 990 Niagara LLC. The Decision Document was executed by the Department on July 11, 2019. The RI/AA report included a detailed review of previous studies completed by Benchmark-TurnKey and others. The RI was completed in accordance with the approved RI Work Plan revised January 2018.

The purpose of the RI was to define the nature and extent of contamination on the BCP Site, and to collect data of sufficient quantity and quality to perform the remedial alternatives evaluation. The RI was completed across the BCP Site in interior and exterior areas to supplement previous environmental data and to delineate or identify areas requiring remediation. On-Site field activities included soil boring advancement; test pit excavations; surface soil/fill sampling; a gamma walkover, overburden monitoring well installations; and groundwater quality sample collection.

At the request of the Department, supplemental RI activities consisting of additional soil/fill sampling within the building footprint was completed by Benchmark-TurnKey. The work included two additional borings (SB-18 and SB-19) and additional sampling in the MW-4 and SB-17 areas.

Based on the data and analyses obtained during the RI and historic Phase II activities (see Table 2), the following environmental conditions exist at the Site:

1.2.1 Geology

- Fill with brick and glass fragments and intermingled slag (radiological survey results indicate that gamma concentrations at the Site are within range or below 1.5x background), sand, gravel, cinders and/or black fines were noted in the northern vacant land area to approximately 3 feet below ground surface (fbgs). Fill materials were also observed beneath the building within the building footprint at depths ranging between 0.25 fbgs and 6.5 fbgs at certain investigation locations.
- Minimal or no fill materials were identified within the existing building footprint at the following investigation locations: SB-8, SB-9, SB-11, SB-13, SB-14, and MW-5.
- Native soil consisting of very tight sandy lean clay was noted across the Site to top of bedrock encountered as deep as 27 fbgs during the RI.
- Bedrock was encountered at three RI locations (MW-1, MW-2 and MW-3) at depths ranging between 24 fbgs and 27 fbgs.

1.2.2 Hydrogeology

In accordance with the RI Work Plan, a total of six soil borings (three interior and three exterior) were converted into monitoring wells. Static groundwater levels measured in wells MW-1, MW-3, and MW-5 were 22.9 fbgs, 23.75 fbgs and 10.4 fbgs, respectively. The static groundwater level at MW-2 was 8.55 fbgs; MW-2 was installed differently than the other wells as MW-2 was advanced into bedrock for geotechnical purposes then grouted back to the bedrock/overburden interface so well MW-2 sits on the top of bedrock at approximately 25 fbgs. The other wells were installed to a depth above the bedrock interface; bedrock was encountered at MW-1 at approximately 27 fbgs, and MW-3 at approximately 26 fbgs and the bottom of the monitoring wells are approximately one foot above bedrock at 26 fbgs and 25 fbgs, respectively. Therefore, Benchmark-TurnKey suspects that the elevated groundwater level at MW-2 when compared to the other on-Site wells is representative of an artesian effect, which provides a water level not representative of overburden groundwater. Interior wells MW-4 and MW-6 were dry at the time of development and sampling activities thus MW-4 and MW-6 could not be sampled.

Groundwater at the Site generally flows in a northwesterly direction.

1.2.3 Contamination

1.2.3.1 Surface Soil/Fill

The surface soil/fill is impacted by semi-volatile organic compounds (SVOCS) exceeding Unrestricted Use Soil Cleanup Objectives (USCOs) at six of nine surface soil/fill sample locations. The highest total SVOC concentration of 3,701 mg/kg was identified at SS-4 collected in the small vacant land area west adjacent to the existing building. Metals exceed USCOs at six of nine surface soil/fill sample locations. Specifically, individual concentrations of cadmium, arsenic, lead, zinc and/or mercury exceed their respective Part 375 USCOs at certain sample locations. Pesticides 4,4'-DDT and endrin exceed their respective USCOs at SS-5. Herbicides and PCBs were not detected above laboratory detection limits. Surface soil samples exceeding USCOs are shown on Figure 3.

1.2.3.2 Subsurface Soil/Fill

No odors or elevated photoionization detector (PID) readings were identified during the RI; however, during Benchmark-TurnKey's 2016 Phase II, an elevated PID reading of 37.8 parts per million (ppm) was identified at SB-5 at one fbgs (Figure 3). In addition, petroleum-like odors were identified at SB-5 at depths ranging between one fbgs and two fbgs. The second highest PID reading identified during the 2016 Phase II was 18.7 ppm proximate to the transformer room at TR-1.

VOCs were either non-detect or at concentrations significantly below USCOs in soil/fill samples collected as part of the historic Phase II and RI activities completed at the Site.

One or more individual SVOC exceeded USCOs in fill at 3 of the 20 RI sample locations at SB-17 (0.25-1.25 fbgs), MW-2 (0-2 fbgs) and MW-4 (0.5-1.25 fbgs) and several SVOCs exceeded USCOs in 3 of the 11 2016 Phase II sample locations at SB-10 (8-12 fbgs), AR-1 (14-20"), and AR-2 (16-18"). The highest detected SVOCs were at MW-4 (0.5-1.25) including concentrations of 65 mg/kg for benzo(a)anthracene, 52 mg/kg for benzo(a)pyrene, 59 mg/kg for benzo(b)fluoranthene, 28 mg/kg for benzo(k)fluoranthene, 59 mg/kg for chrysene, and 30 mg/kg for indeno(1,2,3-cd)pyrene. Maximum values of phenanthrene and naphthalene were detected at AR-1 (14-20") with concentrations of 14 mg/kg and 32 mg/kg, respectively. Metals exceeding their respective USCOs include lead at SB-10 (8-12 fbgs, 150 mg/kg) and SB-17 (0.25-1.25 fbgs, 144 mg/kg), cadmium at MW-2 (0-2 fbgs, 3.8 mg/kg), zinc at MW-2 (0-2 fbgs, 1020 mg/kg) and MW-6 (2-4 fbgs, 118 mg/kg)

and mercury at SB-10 (8-12 fbgs, 0.31 mg/kg) and AR-1 (14-20", 0.27 mg/kg). Arsenic exceeded its USCO of 13 mg/kg during the 2016 Phase II at TR-1 (8-14") with a concentration of 45 mg/kg and during the RI at SB-19 (0.25-1.25 fbgs) with a concentration of 36 mg/kg.

Pesticides and herbicides were reported as non-detect or at trace (estimated) concentrations below USCOs during the RI.

PCBs were reported as non-detect during the RI. Sample TR-1 (8-14") collected during the 2016 Phase II from soil/fill beneath the transformer room floor exhibited a total PCB concentration of 0.282 mg/kg exceeding its respective USCO (0.1 mg/kg) but not its RRSCO (1 mg/kg).

No USCO exceedances were identified in soil/fill within the building footprint at SB-12, SB-15 and SB-18. Further, as indicated above, minimal or no fill materials were identified within the existing building footprint at the following investigation locations: SB-8, SB-9, SB-11, SB-13, SB-14, and MW-5.

Subsurface soil analytical data, including the supplemental sampling data requested by the Department, is summarized on Table 2 and locations with USCO exceedances are shown on Figure 3. The Supplemental Soil/Fill Analytical Data Package is provided in Appendix D.

1.2.3.3 Transformer Oil Sampling

As indicated above, analytical results of the transformer oil in the vandalized transformer identified a PCB concentration of 8.46 mg/kg. According to TSCA regulations, a transformer is considered a "PCB Transformer" if the PCB concentration is greater than 500 mg/kg, a "PCB-Containing Transformer" if the PCB concentration is between 50 and 500 mg/kg, and a "Non-PCB Transformer" if the PCB concentration is less than 50 mg/kg. The concentration of PCBs in the transformer oil is well below 50 mg/kg;. therefore, per USEPA 40 CFR 761, the vandalized transformer is considered a non-PCB transformer/release.

The three remaining unvandalized transformers were not sampled during the RI, but such will be sampled and handled appropriately during removal activities completed as part of the remedial measure at the Site.

1.2.3.4 Groundwater

VOCs, SVOCs, metals, pesticides, and herbicides were either non-detect or at concentrations below Groundwater Quality Standards/Guidance Values (GWQS/GV). PCBs were non-detect except for an estimated PCB concentration of 0.67 ug/L at MW-5, which slightly exceeds its respective GWQS/GV of 0.09 ug/L (see Figure 3). MW-5 is located proximate to the transformer room where the transformer oil release occurred. MW-5 was installed to approximately 15 fbgs and had an approximate one-foot water column at the time of sampling. MW-5 went dry during development and sampling and the turbidity of recharged groundwater was out-of-range, indicating turbidity greater than 1,000 NTU. As such, the slightly elevated PCB concentration identified at MW-5 may be related to the turbidity of the groundwater sample. As detailed below in Section 3.5, supplemental groundwater sampling for PCBs will be completed proximate to MW-5 subsequent to source removal activities.

Low level (e.g., totals between 16.74 nanograms per liter (ng/L) and 18.81 ng/L mostly estimated concentrations of per- and polyfluoroalkyl substances (PFAs) were detected in the overburden groundwater samples collected from groundwater wells MW-1 through MW-3.

As previously indicated, overburden groundwater flows in a northwesterly direction.

1.2.3.5 Contamination Summary

Based on the investigation activities detailed above, areas requiring remediation in order to achieve the planned unrestricted use (Track 1) cleanup, include the Northern and Western Exterior Areas and building interior areas including the SB-19 Area, Transformer Room Area, MW-4/SB-10 Area, and the Southern Building Area. Additional information relative to planned remedial activities in these areas is provided below in Section 3.

1.3 Primary Constituents of Concern (COCs)

Based on the historic use of the Site as well as results of the Phase II investigation and RI activities, the COCs are presented below:

- ***Soil/Fill:*** SVOCs, metals and PCBs (TR-1 area).
- ***Groundwater:*** PCBs (MW-5 area).

1.4 Standards, Criteria and Guidance

In accordance with the approved Decision Document (DD) for the Site, the remedy must conform to promulgated standards, criteria and guidance (SCGs) that are directly applicable or that are relevant and appropriate for the Site.

The soil cleanup objectives (SCOs) relevant to the planned unrestricted use (Track 1) cleanup approach for the Site are the 6NYCRR Part 375 USCOs. Supplemental SCOs for the Site are identified in the Commissioner Policy 51 (CP-51) on Soil Cleanup Guidance.

990 Niagara LLC plans to achieve a Track 1 cleanup across the entire Site in interior and exterior areas. As previously discussed with the Department and as indicated in the DD, in the event that a Track 1 cleanup cannot be achieved within the building (i.e., due to unforeseen complications), it will be a dual track cleanup with a Track 1 Unrestricted Cleanup achieved on the northern exterior portion of the Site and a Track 4 Restricted-Residential Use Cleanup achieved within the building footprint. If this is the case, as per the DD, a Track 4 Restricted-Residential cleanup will require a cover system, an institutional control/environmental easement, and a Site Management Plan.

1.5 Remedial Action Objectives

The remedial actions for the 990 Niagara Street Site must satisfy Remedial Action Objectives (RAOs). RAOs are site-specific statements that convey the goals for minimizing substantial risks to public health and the environment. For the 990 Niagara Street Site, appropriate RAOs have been defined as:

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.

RAOs for Environmental Protection

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

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.

RAOs for Environmental Protection

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

1.6 Project Organization and Responsibilities

The remedial actions will be completed by remedial construction specialty contractors under contract to 990 Niagara LLC and/or Benchmark-TurnKey. 990 Niagara LLC and Benchmark-TurnKey will monitor the activities, in consultation with the NYSDEC and the New York State Department of Health (NYSDOH), to verify that the work is performed in accordance with the Brownfield Cleanup Agreement (BCA), the approved RAWP, 6NYCRR Part 375, and NYSDEC DER-10 guidance.

2.0 PRE-REMEDIATION TASKS

2.1 Public Information and Outreach

The NYSDEC will prepare a fact sheet containing information about the planned remedial work, which will be made available to the public electronically via the Department's email subscription service. Furthermore, a copy of this RAWP will be made available for public review at the NYSDEC Region 9 office and Buffalo and Erie County Public Library – Niagara Branch, which is the designated document repository.

2.2 Utility Clearance

Prior to intrusive activities, Dig Safely New York (Call 811) will be contacted by the site contractor at a minimum of three business days in advance of the work and informed of the intent to perform exaction work at the Site.

2.3 Access Controls

Daily work areas will be identified with construction cones and/or fencing. Work areas will be determined daily based on the planned remedial activities and may change throughout the workday to ensure safe operations. Access control will consider Site worker and public safety.

2.4 Health and Safety Plan

Benchmark-TurnKey's Health and Safety Plan (HASP), included as Appendix A, was prepared and will be enforced in accordance with the requirements of 29CFR 1910.120. Benchmark-TurnKey will be responsible for Site control and the health and safety of its authorized Site workers.

2.4.1 Dust Monitoring and Controls

A Community Air Monitoring Plan (CAMP), which is included as Appendix B, will be implemented during interior and exterior intrusive activities in accordance with DER-10, Appendix A1 (Generic CAMP). If community air monitoring indicates the need for dust suppression, the contractor will apply a water spray across the excavation and surrounding areas, and on-site haul roads as necessary to mitigate airborne dust formation and migration. Potable water will either be obtained from a public hydrant, provided by an off-site water

service or provided via a water truck with water from an off-site source. Other dust suppression techniques that may be used to supplement the water spray include:

- Hauling materials in properly tarped containers or vehicles.
- Restricting vehicle speeds on-Site.
- Hydro-seeding of final grades.

2.4.2 Erosion and Sediment Control

Provisions will be made for erosion and sedimentation control (silt fencing) at the downgradient Site perimeter during remediation and redevelopment activities. The storm water controls will be in place prior to disturbance of soil/fill materials and be maintained throughout excavation activities, at which point the ground elevation will be below that of surrounding soils.

The current concrete, asphalt and gravel surface appears to be suitable as a construction entrance/exit for construction traffic. A stabilized construction entrance comprised of run-of-crush stone will be provided at the Site, if needed, in exterior areas not currently covered by asphalt/concrete. The stone will be approved for import per Sections 3.2 and 3.3 and removed with the final fill excavation work. Provisions will be made to keep surrounding sidewalks and roadways free of soil from construction and trucking activities.

2.5 Waste Characterization

The soil/fill disposal facility has yet to be chosen; however, waste characterization samples will be collected in accordance with the selected landfill analytical disposal requirements. Pre-characterization of the soil/fill will allow for direct loading and off-site transportation at the time of the impacted soil/fill excavation. Based on the results of the waste characterization sampling, impacted soil will be managed according to all federal, state and local waste disposal regulations.

2.6 Transformer Sampling and Removal Activities

As previously indicated, one of four total transformers have been sampled for PCBs to-date. One transformer sample from each of the three additional transformers that have yet to be sampled, will be collected for PCB analysis. Transformer oil will be removed from each transformer and managed according to all federal, state and local waste disposal

regulations. Once the transformer oil is removed, each transformer casing will be removed and shipped off-site for disposal/recycling.

In the event that transformer oil analytical results yield a PCB concentration above the USEPA TSCA regulated level of 50 mg/kg (PCB-containing transformer) or 500 mg/kg (PCB transformer), the transformer oil will be managed in accordance with applicable regulations.

3.0 REMEDIAL ACTION ACTIVITIES

The NYSDEC will be notified at least 5 business days in advance of any planned remedial activities. Waste characterization sampling, excavation, post-excavation confirmatory sampling, and backfilling/site grading activities will be performed in accordance with this work plan.

3.1 Remedial Excavation Activities

Remedial work will be documented by an experienced Benchmark-TurnKey professional, which will involve excavation to the approximate horizontal and vertical limits identified below and as shown on Figure 3. The impacted soil/fill will be direct-loaded into dump trucks for off-site disposal where conditions allow. However, as there is insufficient access for a dump truck within the building, soil removed from within the building footprint and the west exterior area will be transported within the building by skidsteer or tractor bucket and stockpiled on the northern portion of the Site; this stockpiled soil will be loaded into dump trucks. Any soil/fill that is stockpiled on the northern portion of the Site will be covered with poly sheeting when it is not in the process of being loaded into dump trucks. We anticipate completion of interior and western exterior excavation work first, followed by excavation of the north exterior area. Remedial activities will include the following major elements:

- Excavation and off-site disposal of all on-Site soil/fill which exceed USCOs, as defined by 6 NYCRR Part 375-6.8(a). Due to the ubiquitous nature of the constituents observed in the Site soil/fill and the extent to which they exceed the USCOs, the entire northern vacant portion of the Site, the western vacant portion of the Site and certain areas below the slab of the existing building will require excavation. The depth of excavation will vary throughout these areas due to the variability of fill and SCO exceedances. Benchmark-TurnKey estimates that approximately 7,000 tons of fill material will be removed from the Site. Concrete removed to access subsurface soils from beneath the building foundation will also be removed from the Site.
- Collection of post-excavation confirmatory and documentation samples. Confirmatory samples will be collected from the native sandy lean clay soils at a frequency of one sample from the excavation bottom for every 900 square feet of bottom area (estimated 35 samples). In addition, confirmatory samples will be collected from excavation sidewall at a frequency of one sample for every 30 linear feet of sidewall (estimated 59 samples). Sampling frequency may be reduced if agreed in writing by the Department.

- Unknown piping was observed west of the building. This piping will be traced and removed and if an underground storage tank (UST) is encountered, it will be removed and closed following DER-10 Section 5.5.

Additional information relative to each respective remedial area and planned post-excavation confirmatory and documentation sampling is provided below:

3.1.1 North Exterior Area

- Remedial Contractor will excavate the designated North Exterior Area to a target depth of approximately 4 fbgs, estimated at approximately 4,180 tons. Soil/fill will be transported off-site for disposal at a permitted commercial solid waste disposal facility by licensed haulers.
- Post-excavation samples will be collected by the Scientist or Engineer at a frequency up to one per 900 square feet at the bottom of the excavation and up to one per 30-feet along perimeter sidewalls. If the existing building foundation hinders collection of wall samples from the southern wall of the excavation, bottom samples will be collected every 30-feet in-lieu of wall samples. All post-excavation soil samples will be analyzed for PAHs and Target Analyte List (TAL) metals. [Based on previous sampling data from across the Site, PAHs and metals are the primary constituents of concern.]
- Following excavation, the Remedial Contractor will backfill the Northern Exterior Area with material meeting the requirements of 6 NYCRR Part 375-6.7(d).

3.1.2 West Exterior Area

- Prior to excavation activities in the West Exterior Area, a section of the building wall will be removed to allow access for excavation equipment.
- Remedial Contractor will excavate the designated West Exterior Area to a target depth of approximately 2 fbgs, estimated at approximately 84 tons. Soil/fill will be transported off-site for disposal at a permitted commercial solid waste disposal facility by licensed haulers. If necessary, additional soil/fill will be excavated if contamination is observed at a depth greater than 2 fbgs.
- The unknown piping will be traced with the excavator as an attempt to determine the nature of the piping. As indicated above, if a UST is encountered, it will be removed and closed following DER-10 Section 5.5, and soil confirmatory samples will be collected to determine if additional excavation is necessary surrounding the UST. If any liquid or contaminated material is observed within the piping, the piping and its contents will be characterized and properly disposed.
- Post-excavation samples will be collected by the Scientist or Engineer at a frequency up to one per 900 square feet at the bottom of the excavation and up to one per 30-

feet along perimeter sidewalls. If the existing building foundation hinders collection of wall samples from the north or east walls of the excavation, bottom samples will be collected every 30-feet in-lieu of wall samples. All samples will be analyzed for PAHs and TAL metals.

- Following excavation, the Remedial Contractor will backfill the West Exterior Area with material meeting the requirements of 6 NYCRR Part 375-6.7(d).

3.1.3 Former Transformer Area

- Subsequent to transformer and concrete removal activities, Remedial Contractor will excavate the designated Former Transformer Area to a target depth of approximately 3 fbgs, estimated at approximately 168 tons.
- Soil/fill will be transported off-site for disposal at a permitted commercial solid waste disposal facility by licensed haulers.
- If transformer oil is present in the subsurface, such will be displaced into 55-gallon drums for off-site disposal. Any PCB remediation waste encountered during remedial activities will be characterized, and properly disposed according to 40 CFR part 761 and in consultation with the NYSDEC and NYSDOH.
- Post-excavation samples will be collected by the Scientist or Engineer at a frequency up to one per 900 square feet at the bottom of the excavation and up to one per 30-feet along perimeter sidewalls. If the existing building foundation hinders collection of wall samples, bottom samples will be collected every 30-feet in-lieu of wall samples. All samples will be analyzed for PAHs, TAL metals and PCBs.
- Following excavation, the Remedial Contractor will backfill the Former Transformer Area with material meeting the requirements of 6 NYCRR Part 375-6.7(d).

3.1.4 SB-19 Area

- Remedial Contractor will excavate the designated SB-19 Area to a target depth of approximately 2.5 fbgs, estimated at approximately 134 tons. Soil/fill will be transported off-site for disposal at a permitted commercial solid waste disposal facility by licensed haulers.
- Post-excavation samples will be collected by the Scientist or Engineer at a frequency up to one per 900 square feet at the bottom of the excavation and up to one per 30-feet along perimeter sidewalls. All samples will be analyzed for PAHs and TAL metals.
- Following excavation, the Remedial Contractor will backfill the SB-19 Area with material meeting the requirements of 6 NYCRR Part 375-6.7(d).

3.1.5 MW-4/SB-10 Area

- Remedial Contractor will excavate the designated MW-4/SB-10 Area to target depth of approximately 3 fbgs in the MW-4 Area and up to 12 fbgs in the SB-10 Area, estimated at a total of approximately 878 tons. Slightly elevated concentrations of two PAHs (benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene) and two metals (lead and mercury) were identified during the RI in native soils from 8-12 fbgs at SB-10. This data is inconsistent with other native soil samples collected from the Site as no regulatory exceedances were identified in the other native soil samples selected for laboratory analysis. As such, Benchmark-TurnKey suspects that the sample from SB-12 may not be indicative of site conditions. Excavation to a shallower depth (i.e., removal of fill materials to a depth of approximately 1 fbgs) may be determined to be sufficient to achieve USCOs. Soil/fill will be transported off-site for disposal at a permitted commercial solid waste disposal facility by licensed haulers.
- Post-excavation samples will be collected by the Scientist or Engineer at a frequency up to one per 900 square feet at the bottom of the excavation and up to one per 30-feet along perimeter sidewalls. All samples will be analyzed for PAHs and TAL metals.
- Following excavation, the Remedial Contractor will backfill the MW-4/SB-10 Area with material meeting the requirements of 6 NYCRR Part 375-6.7(d).

3.1.6 Southern Building Area

- Remedial Contractor will excavate the designated Southern Building Area to a target depth of approximately 4 fbgs, estimated at approximately 1,252 tons. Soil/fill will be transported off-site for disposal at a permitted commercial solid waste disposal facility by licensed haulers.
- Post-excavation samples will be collected by the Scientist or Engineer at a frequency up to one per 900 square feet at the bottom of the excavation and up to one per 30-feet along perimeter sidewalls. If the existing building foundation hinders collection of wall samples from the southern wall of the excavation, bottom samples will be collected every 30-feet in-lieu of wall samples. All samples will be analyzed for PAHs and TAL metals.
- Following excavation, the Remedial Contractor will backfill the Southern Building Area with material meeting the requirements of 6 NYCRR Part 375-6.7(d).

As with any remedial excavation, actual site conditions (e.g., visual and/or confirmatory sample analytical results) will dictate final excavation limits. Final excavation limits will be surveyed with a handheld Trimble GeoXH GPS unit and average excavation

depths will be manually measured in the field. Horizontal limits and locations of final remedial excavations will be presented on the Site Map in the FER.

Care will be taken to minimize dust formation during excavation and loading and to prevent any dust or mud from being tracked off-Site. The excavation equipment will have sufficient boom length to allow for placement of soil/fill directly into the truck bed if ground surface conditions are conducive to truck traffic (e.g. dry and firm). Side dumping (i.e., with a front-end loader) will only be permitted if ground conditions are not conducive to truck traffic and fugitive dust can be consistently controlled within the Community Air Monitoring Plan action limits.

Regarding the post excavation soil sampling specified above, an equivalent Category B deliverables package will be furnished with the data to allow data evaluation and preparation of a Data Usability Summary Report (DUSR) by an independent, third party data validation expert. Expedited turnaround times may be requested for the analytical results to minimize the time that the excavation(s) remains open. Quality Assurance (QA) samples will be collected to support the verification sample data evaluation. The QA samples will include a minimum of one matrix spike, one matrix spike duplicate, and one blind duplicate per 20 verification samples. Dedicated equipment will be used to avoid the need for equipment blanks.

3.2 Placement of Backfill

Following NYSDEC concurrence that the remedial excavation is complete, the excavation will be backfilled with material meeting the requirements of 6 NYCRR Part 375-6.7(d), in accordance with DER-10 requirements. Prior to backfilling, an import of backfill material form will be submitted to the NYSDEC for approval. If post-excavation bottom sampling confirms that native soil concentrations are below USCOs, no demarcation layer will be placed along the excavation bottom.

Backfill material may consist of the following materials:

- Gravel, rock, or stone, consisting of virgin material, from a permitted mine or quarry may be imported, without chemical testing, if it contains less than 10% by weight material which would pass through a size 80 sieve and is approved by NYSDEC.
- Recycled concrete or brick from a NYSDEC-registered construction and demolition debris processing facility may be imported, without chemical testing, if the material conforms to the requirements of Section 304 of the New York State Department of Transportation Standard Specifications Construction and

Materials Volume 1 (2002) and contains less than 10% by weight material which would pass through a size 80 sieve and is approved by NYSDEC.

- Imported soil/fill originating from known off-site sources having no evidence of disposal or releases of hazardous substances, hazardous, toxic or radioactive wastes, or petroleum that meets the chemical criteria of Table 1. No off-site materials meeting the definition of a solid waste as defined in 6NYCRR, Part 360-1.2(a) shall be used as backfill.

Imported soil/fill material will be subject to characterization requirements in accordance with DER-10 Table 5.4(e)10, or as otherwise approved by NYSDEC prior to import to the Site. Characterization testing will be performed by an independent, NYSDOH ELAP-approved laboratory. An equivalent Category B deliverables package will be furnished with the data to allow data evaluation and preparation of a Data Usability Summary Report by an independent, third party data validation expert. QA samples will be collected to support the data evaluation. The QA samples will include a minimum of one matrix spike, one matrix spike duplicate, and one blind duplicate per 20 verification samples.

3.3 Off-Site Source Backfill Characterization Requirements

Backfill being imported to the Site, which is not deemed exempt from chemical testing, will be subject to the characterization requirements in accordance with DER-10 Table 5.4(e)10 included below. Characterization testing will be performed by an independent, NYSDOH Environmental Laboratory Approval Program (ELAP)-approved laboratory. An equivalent Category B deliverables package will be furnished with the data to allow data evaluation and preparation of a DUSR by an independent, third-party data validation expert.

Required Minimum Number of Samples for Soil Imported to a Site			
Soil Quantity (CY)	VOCs	SVOCs, Inorganics, PCBs/Pesticides, 1,4-dioxane and PFAS	
	Discrete Samples	Composite	Grab/Composite Samples
0-50	1	1	3-5 grab samples from different locations in the fill being provided will comprise a composite sample for analysis.
50-100	2	1	
100-200	3	1	
200-300	4	1	
300-400	4	2	
400-500	5	2	
500-800	6	2	
800-1,000	7	2	
>1,000	Add an additional 2 VOC and 1 composite for each additional 1,000 CY or consult with DER		

3.4 Groundwater Management

Based on the depth to water measured during the RI, groundwater should not be encountered during the excavation. However, any groundwater or significant surface water run-in encountered during impacted soil/fill removal will be handled on-site prior to discharge to the municipal sewer. In general, a portable water frac (storage) tank will be brought on-site and water removed from excavations will be stored/settled in the tank and, if deemed necessary, pumped through a bag or cartridge filter prior to treatment using granular activated carbon (GAC). Following completion of excavation work, settled solids remaining in the tank and spent filter bags will be disposed off-site.

If the accumulated waters require treatment, the spent GAC will be characterized and regenerated off-site or disposed at a permitted disposal facility in accordance with applicable federal and state regulations. The storage tank will be decontaminated via pressure washing. Benchmark-TurnKey or the Site Owners will coordinate with the City of Buffalo/Buffalo Sewer Authority to obtain any necessary temporary sewer discharge permits.

3.5 Post-Remediation Groundwater Sampling

As indicated in the DD, groundwater monitoring for PCBs will be performed following excavation of impacted materials to confirm the discrete low-level PCB impacts observed in groundwater (MW-5) are mitigated via excavation of soil exceeding USCOs. Benchmark-TurnKey will collect one post-remediation groundwater sample for PCB analysis from MW-5 provided that this well is not within the excavation limits and/or damaged

during remediation activities. In the event that MW-5 is within the excavation limits or damaged, such will be reinstalled in its same general location proximate to the transformer and groundwater from the reinstalled MW-5 well will be collected and analyzed for PCBs.

3.6 Post-Remediation Redevelopment

During post-remedial redevelopment activities, it is expected that native sandy lean clay material will be excavated at some locations to install, footers, utilities, etc. The disposition of displaced native material will be as follows:

- Soil intermingled with fill material from off-site boundaries will be characterized and disposed at a permitted Subtitle D landfill.
- Native material that does not appear to be intermingled with fill may be tested per DER-10 and, if found to meet USCOs, can be re-used on-site or sent off-site for reuse with NYSDEC permission. Native materials exceeding USCOs may be allowable for re-use off-site depending on the concentrations. Any such off-site use would require NYSDEC permission and may necessitate a beneficial use determination (BUD) application and approval request. Alternatively, if the materials are found to be solid waste they will need to be disposed at a permitted Subtitle D landfill.

4.0 REMEDIAL ACTIVITIES SUPPORT DOCUMENTS

4.1 Health and Safety Protocols

Benchmark-TurnKey has prepared a HASP for use by our employees in accordance with 40 CFR 300.150 of the NCP and 29 CFR 1910.120. The HASP, provided in Appendix A, includes the following site-specific information:

- A hazard assessment.
- Training requirements.
- Definition of exclusion, contaminant reduction, and other work zones.
- Monitoring procedures for Site operations.
- Safety procedures.
- Personal protective clothing and equipment requirements for various field operations.
- Disposal and decontamination procedures.

The HASP also includes a contingency plan that addresses potential site-specific emergencies, and a Community Air Monitoring Plan as described above.

Health and safety activities will be monitored throughout the remedial field activities. A member of the field team will be designated to serve as the Site Safety and Health Officer (SSHO). The SSHO will report directly to the Project Manager and the Corporate Health and Safety Coordinator. The HASP will be subject to revision as necessary, based on new information that is discovered during the field investigation and/or remedial activities.

4.2 Community Air Monitoring

Real-time community air monitoring will be performed during all exterior and interior intrusive remedial activities at the Site. A Community Air Monitoring Plan is included as Appendix B.. Particulate and VOC monitoring will be performed along the downwind perimeter of the work area during subgrade excavation, grading, and soil/fill handling activities in accordance with this plan. The CAMP is consistent with the requirements for community air monitoring at remediation sites as established by the NYSDOH and NYSDEC. Accordingly, it follows procedures and practices outlined under DER-10 Appendix 1A (NYSDOH's Generic Community Air Monitoring Plan) and Appendix 1B (Fugitive Dust and Particulate Monitoring).

4.3 Citizen Participation Activities and Fact Sheets

NYSDEC will coordinate and lead community relations throughout the course of the project with support from Benchmark-TurnKey as requested. A Citizen Participation (CP) Plan has previously been prepared as a separate document and submitted to the NYSDEC. A copy of the approved CP Plan was placed at the designated document repository.

The NYSDEC, with input from Benchmark-TurnKey and 990 Niagara LLC, will issue project-related fact sheets to keep the public informed of BCP activities.

5.0 REPORTING AND SCHEDULE

Benchmark-TurnKey environmental professionals will be on-site full-time during all major remedial activities to monitor and document: construction stake-out; record drawings; daily reports of remediation activities; community air monitoring results; post-excavation sampling and analysis; and progress photographs and sketches. Documentation will include, at a minimum, daily reports of Remedial Action activities, community air monitoring results, photographs and sketches. CAMP results will be submitted to the NYSDOH and NYSDEC weekly, and the NYSDEC and NYSDOH will be notified of any exceedances as soon as possible on the same day of the occurrence. Appendix C contains sample project documentation forms.

The completed reports will be available on-site and submitted to the NYSDEC as part of the Final Engineering Report (FER). The NYSDEC will be promptly notified of problems requiring modifications to this Work Plan prior to proceeding or completion of the construction item.

Photo documentation of the remedial activities will be prepared by a field representative throughout the duration of the project as necessary to convey typical work activities, changed conditions, and/or special circumstances. If determined to be necessary, periodic on-site construction progress meetings will be held to which NYSDEC will receive an invitation. Full details of the remedial activities will be included in the FER.

Work will commence upon NYSDEC approval of the work plan, anticipated September 2019.

6.0 REMEDIAL ACTIVITIES REPORTING

6.1 Final Engineering Report

A FER will be prepared at the conclusion of remedial activities. The FER will include the following information and documentation, consistent with the NYSDEC's DER-10 Technical Guidance for Site Remediation:

- A certification by a licensed NYS Professional Engineer in accordance with Section 1.5 of DER-10.
- Background and Site description.
- Planimetric map showing the areas remediated, including significant site features.
- Map showing the lateral limits of any excavations.
- Tabular summaries of unit quantities including: volume of soil excavated and disposition of excavated soil; and, origin and volume of imported soil.
- Planimetric map showing location of all verification and other sampling locations with sample identification labels/codes.
- Tabular comparison of verification and other sample analytical results to SCOs. An explanation shall be provided for any results exceeding acceptance criteria.
- Documentation on the disposition of impacted soil removed.
- Copies of daily inspection reports and, if applicable, problem identification and corrective measure reports.
- Photo documentation of remedial activities.
- Text describing the remedial activities performed; a description of any deviations from the Work Plan and associated corrective measures taken; and other pertinent information necessary to document that the Site activities were carried out in accordance with this Work Plan.
- Analytical data packages and DUSR of post-excavation data by a qualified, independent data validation expert.

6.2 Site Management Plan

A Site Management Plan (SMP) is not required since the Site will be remediated to NYSDEC Part 375 USCOs. In the event the remedy does not achieve Track 1 unrestricted criteria, the need for a SMP and environmental easement will be discussed with the NYSDEC.

7.0 REFERENCES

1. New York State Department of Environmental Conservation. *DER-10 Technical Guidance for Site Investigation and Remediation.* May 2010.
2. New York State Department of Environmental Conservation. *6 NYCRR Part 375 Environmental Remediation Programs Subparts 375-1 to 375-4 and 375-6.* Effective December 14, 2006.
3. Benchmark-TurnKey, Phase II Environmental Investigation Report *990 Niagara Street Site, Buffalo, New York.* November 2016.
4. Benchmark-TurnKey, Brownfield Cleanup Program Application, *990 Niagara Street Site, Buffalo, New York.* December 2016.
5. Benchmark-TurnKey, RI Work Plan *990 Niagara Street Site, Buffalo, New York.* Revised January 2018.
6. Benchmark-TurnKey, Remedial Investigation/Alternatives Analysis Report *990 Niagara Street Site, Buffalo, New York.* February 2019.

TABLES

TABLE 1

CRITERIA FOR IMPORTED SOILS

Remedial Action Work Plan
990 Niagara Street Site (C915313)
Buffalo, New York

Parameter	Soil Criteria[1]
Volatile Organic Compounds (mg/kg)	
1,1,1-Trichloroethane	0.68
1,1-Dichloroethane	0.27
1,1-Dichloroethene	0.33
1,2-Dichlorobenzene	1.1
1,2-Dichloroethane	0.02
1,2-Dichloroethene(cis)	0.25
1,2-Dichloroethene(trans)	0.19
1,3-Dichlorobenzene	2.4
1,4-Dichlorobenzene	1.8
Acetone	0.05
Benzene	0.06
Butylbenzene	12
Carbon tetrachloride	0.76
Chlorobenzene	1.1
Chloroform	0.37
Ethylbenzene	1
Hexachlorobenzene	0.33
Methyl ethyl ketone	0.12
Methyl tert-butyl ether	0.93
Methylene chloride	0.05
Propylbenzene-n	3.9
Sec-Butylbenzene	11
Tert-Butylbenzene	5.9
Tetrachloroethene	1.3
Toluene	0.7
Trichloroethene	0.47
Trimethylbenzene-1,2,4	3.6
Trimethylbenzene-1,3,5	8.4
Vinyl chloride	0.02
Xylene (mixed)	0.26
Semi-Volatile Organic Compounds (mg/kg)	
Acenaphthene	20
Acenaphthylene	100
Anthracene	100
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Benzo(g,h,i)perylene	100
Benzo(k)fluoranthene	0.8
Chrysene	1
Dibenz(a,h)anthracene	0.33
Fluoranthene	100
Fluorene	30
Indeno(1,2,3-cd)pyrene	0.5
m-Cresol(s)	0.33
Naphthalene	12
o-Cresol(s)	0.33
p-Cresol(s)	0.33
Pentachlorophenol	0.8
Phenanthrene	100
Phenol	0.33
1,4-Dioxane	0.1
Pyrene	100

TABLE 1

CRITERIA FOR IMPORTED SOILS

Remedial Action Work Plan
990 Niagara Street Site (C915313)
Buffalo, New York

Parameter	Soil Criteria[1]
Metals (mg/kg)	
Arsenic	13
Barium	350
Beryllium	7.2
Cadmium	2.5
Chromium, Hexavalent[2]	1
Chromium, Trivalent[2]	30
Copper	50
Cyanide	27
Lead	63
Manganese	1600
Mercury (total)	0.18
Nickel	30
Selenium	3.9
Silver	2
Zinc	109
PCBs/Pesticides (mg/kg)	
2,4,5-TP Acid (Silvex)	3.8
4,4'-DDE	0.0033
4,4'-DDT	0.0033
4,4'-DDD	0.0033
Aldrin	0.005
Alpha-BHC	0.02
Beta-BHC	0.036
Chlordane (alpha)	0.094
Delta-BHC	0.04
Dibenzofuran	7
Dieldrin	0.005
Endosulfan I	2.4
Endosulfan II	2.4
Endosulfan sulfate	2.4
Endrin	0.014
Heptachlor	0.042
Lindane	0.1
Polychlorinated biphenyls	0.1

Notes:

1. Soil criteria used are Unrestricted Use Soil Cleanup Objectives per 6 NYCRR 375-6.8(b).
2. The SCO for Hexavalent or Trivalent Chromium is considered to be met if the analysis for the total species of this contaminant is below the specific SCO for Hexavalent Chromium.

TABLE 2

SUMMARY OF SUBSURFACE SOIL/FILL ANALYTICAL DATA (RI AND HISTORIC PHASE II)

990 NIAGARA STREET SITE

BUFFALO, NEW YORK

PARAMETER [1]	Unrestricted Use SCOs [2]	Restricted Residential Use SCOs [2]	SOIL/FILL SAMPLE LOCATION (DEPTH)																																
			SB-1 (0-4')	SB-2 (4-8')	SB-5 (0-2')	SB-6 (0-4')	SB-7 (0-4')	SB-9 (0-4')	SB-10 (8-12')	SB-12 (4-8')	SB-13 (8-10')	SB-14 (8-10')	SB-15 (1-3')	SB-16 (10-12')	SB-17 (4-6')	SB-17 (.25-1.25 ft)	SB-18 (.25-1.25 ft)	SB-19 (.25-1.25 ft)	MW-1 (22-24')	MW-2 (0-2')	MW-3 (20-22')	MW-4 (16'18')	MW-4 (.5-1.25 ft)	MW-5 (0.5-2')	MW-6 (2-4')	TP-1 (5-7')	TP-2 (8-10')	TP-3 (2-4')	TP-4 (1-3')	TP-5 (9-11')	AR-1 (14-20")	AR-2 (16-18")	TR-1 (8-14")
SAMPLE DATE			9/1/2016								8/29/2018		8/30/2018	8/29/2018	8/30/2018	4/18/2019	4/18/2019	4/18/2019	9/12/2018	9/13/2018	9/12/2018	8/30/2018	4/18/2019	8/29/2018	8/30/2018	8/27/2018						9/1/2016		
Volatile Organic Compounds (VOCs) - mg/Kg [3]																																			
1,1,1-Trichloroethane	**0.68**	**100**	--	--	0.00031 J	--	--	--	--	--	--	--	--	ND	--	--	ND	ND	ND	--	ND	ND	--	ND	ND	ND	--	ND	--	--	--	--	--
Acetone	**0.05**	**100**	--	--	ND	--	--	--	--	--	--	--	--	0.006 J	--	--	0.0075 J vs	ND	0.013 J	--	0.0082 J	0.0081	--	0.0055 J	0.0091 J	ND	--	ND	--	--	--	--	--
Chloroform			--	--	ND	--	--	--	--	--	--	--	--	ND	--	--	0.0004 J vs	ND	ND	--	ND	ND	--	ND	ND	ND	--	ND	--	--	--	--	--
Methylene chloride	**0.05**	**100**	--	--	ND	--	--	--	--	--	--	--	--	ND	--	--	0.008 vs	ND	ND	--	ND	ND	--	ND	ND	ND	--	ND	--	--	--	--	--
Tetrachloroethene	**1.3**	**19**	--	--	0.00063 J	--	--	--	--	--	--	--	--	ND	--	--	ND	ND	ND	--	ND	ND	--	ND	ND	ND	--	ND	--	--	--	--	--
Toluene	**0.7**	**100**	--	--	ND	--	--	--	--	--	--	--	--	ND	--	--	ND	ND	ND	--	ND	ND	--	ND	ND	ND	--	0.00033 J	--	--	--	--	--
Trichloroethene	**0.47**	**21**	--	--	0.0095	--	--	--	--	--	--	--	--	ND	--	--	ND	ND	ND	--	ND	ND	--	ND	ND	ND	--	ND	--	--	--	--	--
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg [3]																																			
2-Methylnaphthalene	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.063 J	0.067 J	ND	0.049 J	ND	ND	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	**20**	**100**	ND	ND	ND	ND	ND	ND	0.073 J	0.064 J	ND	ND	ND	0.063 J	0.053 J	0.15 J	ND	ND	0.25	ND	ND	5.1	ND	ND	ND	ND	ND	ND	ND	ND	13	1.1	ND
Acenaphthylene	**100**	**100**	ND	ND	ND	0.079 J	ND	ND	0.15 J	ND	ND	ND	ND	ND	ND	0.038 J	ND	ND	ND	ND	ND	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	**100**	**100**	ND	ND	ND	0.17	ND	0.4 J	0.31	0.16	ND	ND	0.055 J	0.11 J	0.12 J	0.46 J	ND	ND	0.55	ND	ND	31	ND	ND	ND	ND	ND	ND	ND	ND	26	2.4	ND
Benzo(a)anthracene	**1**	**1**	0.24	0.062 J	ND	0.54	ND	0.1 J	1	0.4	ND	ND	0.16 J	0.4	0.38	**1.3**	0.032 J	0.026 J	0.024 J	0.96	ND	ND	**65**	ND	ND	ND	ND	ND	ND	ND	**28**	**4.5**	ND
Benzo(a)pyrene	**1**	**1**	0.23	ND	ND	0.53	ND	0.1 J	1	0.34	ND	ND	0.13 J	0.37	0.33	**1.2**	0.037 J		ND	0.8	ND	ND	**52**	ND	ND	ND	ND	ND	ND	0.076 J	**24**	**4.1**	ND
Benzo(b)fluoranthene	**1**	**1**	0.3	0.056 J	ND	0.7	ND	0.11 J	**1.2**	0.42	ND	ND	0.18	0.43	0.38	**1.5**	0.038 J	0.033 J	0.039 J	**1.1**	ND	ND	**59**	ND	ND	ND	ND	ND	ND	0.1 J	**29**	**5.2**	ND
Benzo(ghi)perylene	**100**	**100**	0.14 J	ND	ND	0.33	ND	0.067 J	0.59	0.16	ND	ND	0.11 J	0.33	0.28	0.87	ND	ND	ND	0.51	ND	ND	32	ND	ND	ND	ND	ND	ND	0.08 J	12	2.2	ND
Benzo(k)fluoranthene	**0.8**	**3.9**	0.13	ND	ND	0.24	ND	0.036 J	0.46	0.15	ND	ND	ND	ND	ND	0.8	ND	ND	ND	0.45	ND	ND	**28**	ND	ND	ND	ND	ND	ND	ND	**11**	**1.7**	ND
Bis(2-ethylhexyl) phthalate	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.23	0.75	ND	ND	0.5	ND	0.57	ND	ND	--	0.46 J	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.045 J	ND	ND	ND	ND	ND	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	**1**	**3.9**	0.24	0.06	ND	0.57	ND	0.1 J	1	0.36	ND	ND	0.14 J	0.44	0.36	**1.4**	ND	0.043 J	ND	0.94	ND	ND	**59**	ND	ND	ND	ND	ND	ND	0.055 J	**25**	**4.2**	ND
Dibenzo(a,h)anthracene	**0.33**	**0.33**	0.036 J	ND	ND	0.07 J	ND	0.023 J	0.13	0.049 J	ND	ND	ND	ND	ND	0.3 J	ND	ND	ND	0.14 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**3.6**	**0.67**	ND
Dibenzofuran	**7**	**59**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.028 J	ND	ND	ND	0.024 J	ND	0.15 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	**100**	**100**	0.37	0.11	ND	1.2	0.026 J	0.17	1.9	0.67	ND	ND	0.25	0.83	0.68	2.7	ND	0.033 J	0.048 J	2.3	ND	ND	95	ND	ND	ND	ND	0.028 J	0.033 J	0.1 J	58	9.4	ND
Fluorene	**30**	**100**	ND	ND	ND	0.074 J	ND	ND	0.096 J	0.063 J	ND	ND	ND	0.032 J	0.043 J	0.17 J	ND	ND	ND	0.24	ND	ND	9.6	ND	ND	ND	ND	ND	ND	ND	15	1	ND
Indeno(1,2,3-cd)pyrene	**0.5**	**0.5**	0.16	ND	ND	0.36	ND	0.057 J	**0.63**	0.19	ND	ND	0.098 J	0.22	0.24	**0.8**	ND	ND	ND	0.5	ND	ND	**30**	ND	ND	ND	ND	ND	0.032 J	0.071 J	**14**	**2.5**	ND
Naphthalene	**12**	**100**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.11 J	ND	0.038 J	ND	0.076 J	ND	ND	2.5 J	ND	ND	ND	ND	ND	ND	ND	**32**	0.85	ND
Phenanthrene	**100**	**100**	0.13	0.098 J	ND	0.72	ND	0.2	1.3	0.54	ND	ND	0.16	0.74	0.54	2.1	ND	0.06 J	0.064 J	2.2	ND	ND	65	ND	ND	ND	ND	ND	ND	0.03 J	68	8.3	4.7
Pyrene	**100**	**100**	0.32	0.085 J	ND	0.94	0.022 J	0.17	1.9	0.55	ND	ND	0.21	1	0.71	2.2	ND	0.04 J	0.045 J	2	ND	ND	84	ND	ND	ND	ND	ND	0.027 J	0.085 J	45	7	ND
Total PAHs	--	--	2.296 J	0.469 J	0 J	6.523 J	0.048 J	1.533 J	11.739 J	4.116 J	0 J	0 J	1.493 J	4.993 J	4.116 J	16.098 J	ND	ND	ND	13.166	0 J	0 J	627.2 J	0 J	0 J	0 J	0 J	0.028 J	0.092 J	0.597 J	403.6 J	55.12 J	4.7 J
		Total SVOCs	2.296 J	0.469 J	0 J	6.523 J	0.048 J	1.533 J	11.739 J	4.116 J	0 J	0 J	1.493 J	5.268 J	4.866 J	16.098 J	ND	ND	ND	14.036	0 J	0 J	627.2 J	0.46 J	0.2 J	0 J	0 J	0.028 J	0.092 J	0.597 J	403.6 J	55.12 J	4.7 J
Pesticides and Herbicides - mg/Kg [3]																																			
4,4'-DDT	**0.0033**	**7.9**	--	--	--	--	--	--	--	--	--	--	--	0.0017 J	--	ND	0.00077 J	0.00077 J	ND	--	ND	ND	ND	0.00057 J	0.00057 J	ND	--	ND	--	--	--	--	--
Metals - mg/Kg																																			
Aluminum	--	--	--	--	--	--	--	--	--	--	11600 B	12100 B	4210 B	10600 B	4020 B	ND	3370	5190	11500 F2	9120	12700 B	12100 B	ND	15500 B	13300 B	12300 B	12100 B	12100 B	15700 B	14000 B	--	--	--
Antimony	--	--	--	--	--	--	--	--	--	--	0.7 J-	1.1 J	0.61 J	0.72 J	0.95 J	ND	ND	ND	1 J	ND	ND	0.84 J	ND	1.3 J	0.74 J	0.61 J	0.7 J	0.61 J	0.89 J	0.9 J	--	--	--
Arsenic	**13**	**16**	--	2.6	2.4	4	1.2	--	10	3.8	2.4	3.1	3.5	2.4	4.3	6.8	9.1	**36**	2.8	2.4	2.3	2.3	5.5	3.7	2.4	2.6	2.9	2.8	3.3	3.5	2.8	4.3	**45**
Barium	**350**	**400**	--	38	30	38	120	--	50	20	72.8 J	116	28.4	74.9	39.5	88.3	92.6 B^	96 B^	54.7 J	118	96.6	72.6	37.6	93	76.7	82.4	79.9	66.2	80.6	98.5	26	36	140
Beryllium	**7.2**	**72**	--	--	--	--	--	--	--	--	0.49	0.5	0.2 J	0.44	0.2 J	ND	0.46	0.6	0.5	0.43	0.56	0.48	ND	0.64	0.52	0.5	0.51	0.48	0.62	0.65	--	--	--
Cadmium	**2.5**	**4.3**	--	ND	ND	0.06 J	ND	--	0.75	ND	0.15 J	0.14 J	0.12 J	0.12 J	0.14 J	0.28	0.18 J	0.28	0.16 J	**3.8**	0.14 J	0.12 J	0.21 J	0.11 J	0.15 J	0.15 J	0.11 J	0.12 J	0.06 J	0.12 J	0.31 J	0.26 J	0.76
Calcium	--	--	--	--	--	--	--	--	--	--	67300 J-	63200 B	40600 B	74200 B	49900 B	ND	10000 B	27600 B	67600 J	126000	53000 B	70800 B	ND	65300 B	11100 B	72900 B	59500 B	65000 B	40300 B	72000 B	--	--	--
Chromium	**30**	**180**	--	9.1	6.9	5.9	1.1	--	12	4.5	15.8 J-	16.7	5.2	14.3	5.5	12.9 B	11.6 B	7.9 B	14.5	13.8	16.3	15.9	6.6 B	19.3	15.8	16.4	15.5	15.3	18.8	18	6.6	4.4	15
Cobalt	--	--	--	--	--	--	--	--	--	--	7.8	8.5	3	6.2	3.9	ND	7.5	5.4	7.3	9.4	7.9	7.4	ND	10.6	7.4	6.4	7.4	7.9	10.6	8.4	--	--	--
Copper	**50**	**270**	--	--	--	--	--	--	--	--	27.5 J	15.6	12.8	13.4	24.9	ND	21	19.5	13.9	15.8	14	14	ND	15.8	14.8	12.2	13.4	15.9	18.2	16.5	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	14400 J-	15500 B	8020 B	14200 B	11200 B	ND	22200 B	20300 B	14900	11700	16400 B	15000 B	ND	18900 B	14900 B	14100	15000	14700	24500	16900	--	--	--
Lead	**63**	**400**	--	8.3	27	48	2.3	--	**150**	22	14.6	14	31.8	10.7	31	**144**	50	20.7	14.6	18.3	12	13.5	40.7	16.3	18.8	12.7	12.9	12.9	19.4	16.7	27	23	48
Magnesium	--	--	--	--	--	--	--	--	--	--	29000 B, F2	26300 B	9160 B	31800 B	17600 B	ND	1990 B	7610 B	28800 J	22300	27100 B	30400 B	ND	25500 B	7250 B	24100 B	25700 B	25900 B	17300 B	24600 B	--	--	--
Manganese	**1600**	**2000**	--	--	--	--	--	--	--	--	423 J-	437 B	273 B	524 B	355 B	ND	64.6	94.7	376 B	430	379 B	429 B	ND	487 B	430 B	360 B	398 B	394 B	561 B	427 B	--	--	--
Mercury	**0.18**	**0.81**	--	ND	ND	0.1	ND	--	**0.31**	0.1	0.0098 J	ND	0.072	0.01 J	0.094	ND	0.01 J	0.033	0.011 J	ND	ND	0.01 J	0.075	0.01 J	0.083	0.011 J	0.015 J	0.033	0.044	0.02 J	**0.27**	0.06 J	0.08 J
Nickel	**30**	**310**	--	--	--	--	--	--	--	--	15.9	17.9	7.9	14.4	9	ND	21.4	15.3	16.2	18.7	17.6	16	ND	22.8	13.8	15.8	16.7	16.3	24.4	19.9	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	3960 J	4170	958	3640	998	ND	1050	1260	4110 J	3390	4560	4240	ND	5170	2520	4270	4150	4310	4410	4690	--	--	--
Selenium	**3.9**	**180**	--	ND	ND	ND	1.1	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	**2**	**180**	--	ND	ND	ND	0.26 J	--	0.14 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	--	--	--	--	--	--	--	--	--	--	301	330	150	293	210	ND	607 B	234 B	290	325	260	289	ND	391	356	366	247	274	186	331	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	ND	0.38 J	0.39 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.36 J	ND	0.34 J	0.36 J	ND	ND	ND	--	--	--
Vanadium	--	--	--	--	--	--	--	--	--	--	24.8	27	9.6	23.5	9.7	ND	19.3	13.3	23.3	17.4	25.4	26.5	ND	31	25.2	24.2	24.3	26	28.3	28.1	--	--	--
Zinc	**109**	**10000**	--	--	--	--	--	--	--	--	52.9 J-	60.2 ^	38 ^	49.8 ^	34.9 ^	ND	23.4	27.9	51.5 J-	**1020 ^**	54.3 ^	50.7 ^	ND	60.3 ^	**118 ^**	61.6	54.5	54.7	69	60.3	--	--	--
Polychlorinated biphenyls (PCBs) - mg/Kg																																			
Total PCBs	**0.1**	**1**	--	--	--	--	--	--	ND	--	--	--	--	ND	--	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	--	ND	--	--	--	--	**0.282**

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per 6NYCRR Part 375 Soil Cleanup Objectives (SCOs).
3. Sample results were reported by the laboratory in ug/kg and converted to mg/kg for comparisons to SCOs

Definitions:

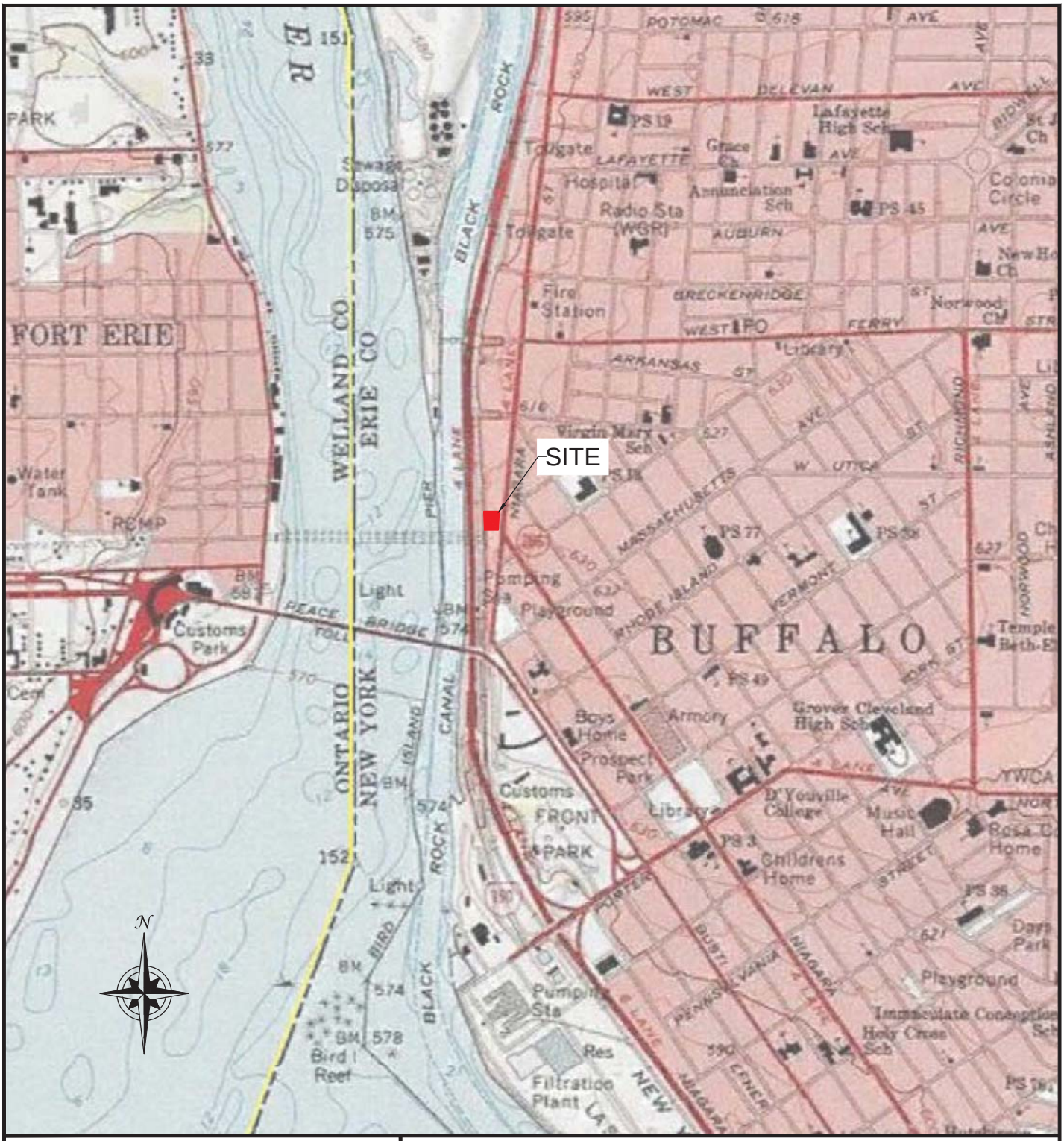
ND = Parameter not detected above laboratory detection limit.
"--" = No value available for the parameter. Or parameter not analysed for.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
J- = The analyte was positively identified; the associated numerical value is an approximate concentration of the analyte in the sample.
B = The compound was found in the blank and sample.
F2 = MS/MSD RPD exceeds control limits.
^ = Instrument related QC is outside acceptance limit.

= Samples collected by Benchmark-TurnKey during Phase II Environmental Investigation (Report dated November 2016).
= Supplemental sampling completed by Benchmark-TurnKey, as requested by the NYSDEC, April 2019.
Bold = Result exceeds Unrestricted Use SCOs.
Bold = Result exceeds Restricted Residential Use SCOs.

FIGURES

F:\CAD\Benchmark\990 Niagara LLC\990 Niagara Street\RAWP\Figure 1; Site Location and Vicinity Map.dwg

FIGURE 1



BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

IN ASSOCIATION WITH

TURNKEY ENVIRONMENTAL RESTORATION, LLC

2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

PROJECT NO.: 0395-016-002

DATE: AUGUST 2019

DRAFTED BY: CMS

SITE LOCATION AND VICINITY MAP

REMEDIAL ACTION WORK PLAN

990 NIAGARA STREET

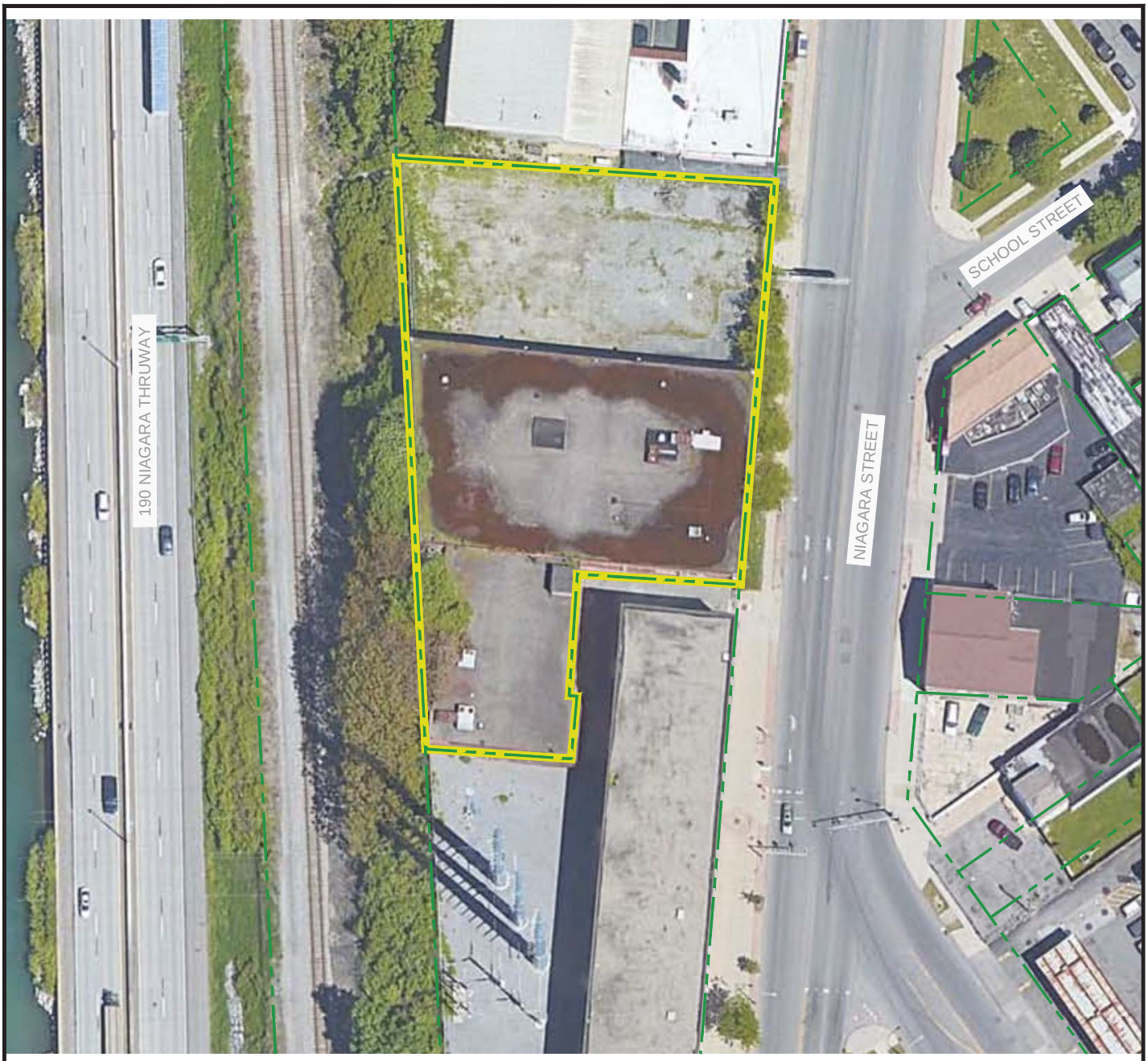
BUFFALO, NEW YORK

PREPARED FOR

990 NIAGARA LLC

F:\CAD\Benchmark\990 Niagara LLC\990 Niagara Street\RAWP\Figure 2; Site Plan Aerial.dwg

FIGURE 2



LEGEND:

BCP SITE BOUNDARY

PARCEL BOUNDARY

80' 0' 80' 160'

N

SCALE: 1 INCH = 80 FEET
SCALE IN FEET
(approximate)

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC
IN ASSOCIATION WITH
TURNKEY ENVIRONMENTAL RESTORATION, LLC

2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

PROJECT NO.: 0395-016-002

DATE: AUGUST 2019

DRAFTED BY: CMS

SITE PLAN (AERIAL)

REMEDIAL ACTION WORK PLAN

990 NIAGARA STREET
BUFFALO, NEW YORK

PREPARED FOR
990 NIAGARA LLC

F:\CAD\Benchmark\990 Niagara LLC\990 Niagara Street\RAWP\Figure 3; Planned Remedial Excavation Areas.dwg, 8/27/2020 2:30:41 PM

LEGEND:

- BCP SITE AND PROPERTY BOUNDARY
- PARCEL BOUNDARY
- EXISTING BUILDING
- TR-1 HISTORIC TRANSFORMER ROOM SOIL SAMPLE LOCATION
- AR-1 HISTORIC AUTO REPAIR AREA SOIL SAMPLE LOCATION
- SS-1 HISTORIC SURFACE SOIL SAMPLE LOCATION
- SB-1 HISTORIC SOIL BORING LOCATION
- TP-1 TEST PIT LOCATION
- MW-1 MONITORING WELL LOCATION
- SB-13 SOIL BORING LOCATION
- SS-5 SURFACE SOIL SAMPLE LOCATION
- GROUNDWATER QUALITY EXCEEDANCE - PCBs ONLY
- ELEVATED PID READINGS IN SOIL
- PCBS EXCEEDING USCO AND GCS
- METALS EXCEEDING USCO
- SVOCs EXCEEDING USCOS
- SVOCs AND METALS EXCEEDING USCOS
- PROPOSED REMEDIAL EXCAVATION AREA
- × APPROXIMATE POST-EXCAVATION SAMPLE LOCATION

NOTES:

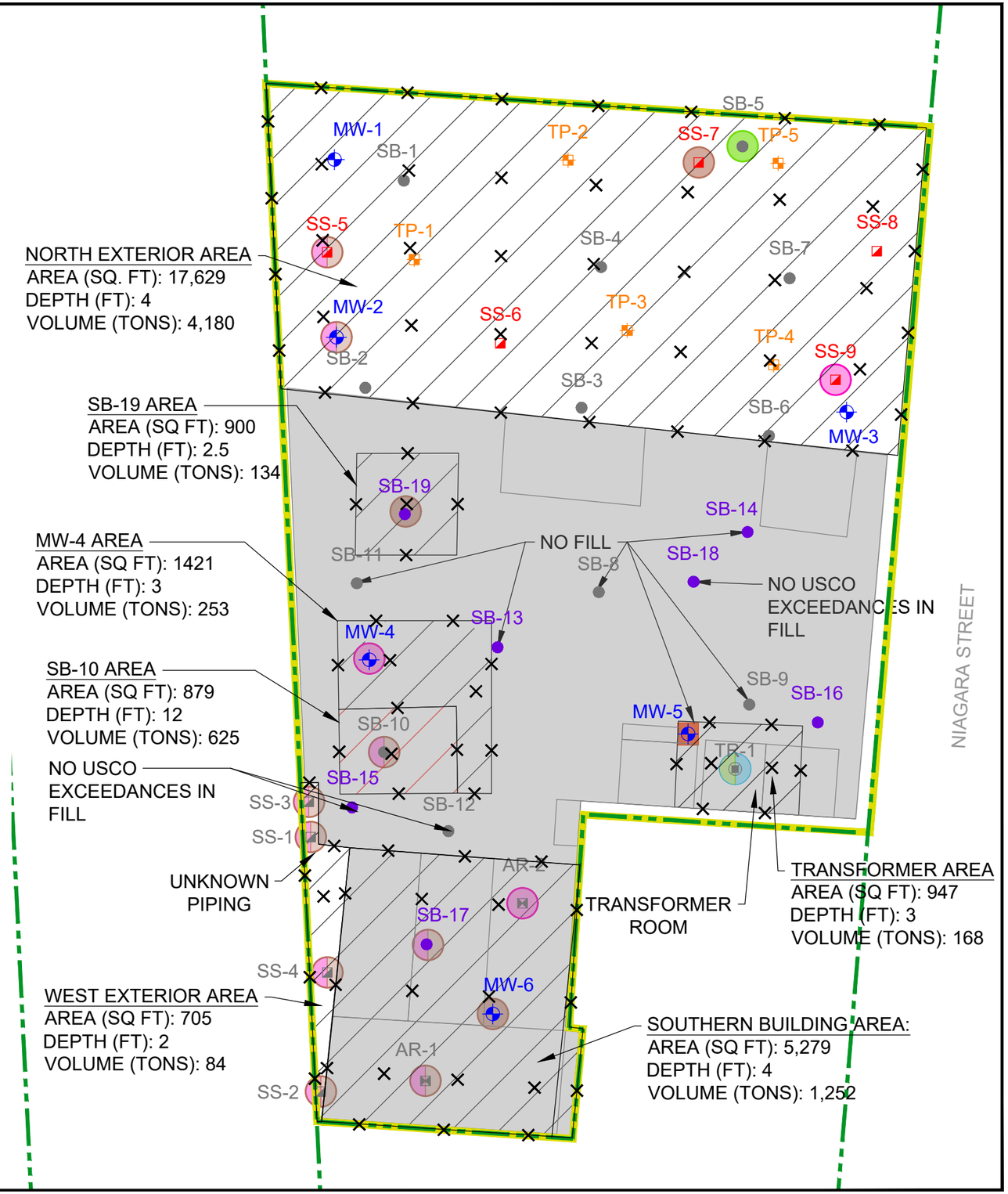
1. USCOs MEANS NYSDEC PART 375 UNRESTRICTED SOIL CLEANUP OBJECTIVE.
2. SVOCs MEANS SEMIVOLATILE ORGANIC COMPOUNDS.
3. PID MEANS PHOTOIONIZATION DETECTOR READING FROM FIELD SCREENING OF SOIL SAMPLES.
4. ESTIMATED TOTAL REMEDIAL EXCAVATION VOLUME: 6,696 TONS
5. POST-EXCAVATION SAMPLES WILL BE COLLECTED AT A FREQUENCY UP TO ONE PER 900 SQUARE FEET AT THE BOTTOM OF THE EXCAVATION AND UP TO ONE PER 30-FEET ALONG PERIMETER SIDEWALLS.

N

35' 0' 35' 70'

SCALE: 1 INCH = 35 FEET
SCALE IN FEET
(approximate)

DATE: AUGUST 2019
DRAFTED BY: RFL/CMS



TURNKEY ENVIRONMENTAL RESTORATION, LLC

IN ASSOCIATION WITH

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

JOB NO.: 0395-016-001

PLANNED REMEDIAL EXCAVATION AREAS

REMEDIAL ACTION WORK PLAN
990 NIAGARA STREET
BUFFALO, NEW YORK

PREPARED FOR
990 NIAGARA LLC

FIGURE 3

APPENDIX A

HEALTH & SAFETY PLAN (HASP)

SITE HEALTH AND SAFETY PLAN
for
BROWNFIELD CLEANUP PROGRAM
REMEDIAL ACTIVITIES

990 NIAGARA STREET SITE

BUFFALO, NEW YORK

September 2020 B0462-018-001

Prepared for:

990 Niagara LLC

Prepared By:

Benchmark Environmental Engineering & Science, PLLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0599

In Association With:

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

990 NIAGARA STREET SITE
HEALTH AND SAFETY PLAN FOR REMEDIAL ACTIVITIES

ACKNOWLEDGEMENT

Plan Reviewed by (initial):

Corporate Health and Safety Director: Thomas H. Forbes, P.E.

Project Manager: Michael A. Lesakowski

Designated Site Safety and Health Officer: Bryan Mayback

Acknowledgement:
I acknowledge that I have reviewed the information contained in this site-specific Health and Safety Plan, and understand the hazards associated with performance of the field activities described herein. I agree to comply with the requirements of this plan.

NAME (PRINT)	SIGNATURE	DATE

BENCHMARK TURNKEY

990 NIAGARA STREET SITE
HEALTH AND SAFETY PLAN FOR REMEDIAL ACTIVITIES

TABLE OF CONTENTS

990 NIAGARA STREET SITE
HEALTH AND SAFETY PLAN FOR REMEDIAL ACTIVITIES

TABLE OF CONTENTS

990 NIAGARA STREET SITE
HEALTH AND SAFETY PLAN FOR REMEDIAL ACTIVITIES

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ATTACHMENTS

1.0 INTRODUCTION

1.1 General

In accordance with OSHA requirements contained in 29 CFR 1910.120, this Health and Safety Plan (HASP) describes the specific health and safety practices and procedures to be employed by Benchmark Environmental Engineering & Science, PLLC and TurnKey Environmental Restoration, LLC employees (referred to jointly hereafter as "Benchmark-TurnKey") during remedial activities at the 990 Niagara Street Site (Site) located in Buffalo, Erie County, New York. This HASP presents procedures for Benchmark-TurnKey employees who will be involved with remediation field activities; it does not cover the activities of other contractors, subcontractors or other individuals on the Site. These firms will be required to develop and enforce their own HASPs as discussed in Section 2.0. Benchmark-TurnKey accepts no responsibility for the health and safety of contractor, subcontractor or other personnel.

This HASP presents information on known Site health and safety hazards using available historical information, and identifies the equipment, materials and procedures that will be used to eliminate or control these hazards. Environmental monitoring will be performed during the course of field activities to provide real-time data for on-going assessment of potential hazards.

1.2 Background

The Site consists of one parcel, identified as 990 Niagara Street, totaling approximately 1.05 acres, located in the City of Buffalo, Erie County, New York. Currently, approximately 40 percent of the Site is vegetated or gravel/weathered asphalt and the remaining 60 percent is covered by an impervious structure. According to the Erie County Real Property & GIS Web page (**http://www2.erie.gov/ecrpts/index.php?q=real-property-parcel-search**) 990 Niagara is the only address associated with this property.

Based on a previous Phase I ESA, Former Site occupants included Hewitt Rubber, Buffalo Niagara Hudson Company, Buffalo General Electric Company, International Railway Co., Power House and Converter Station, Merchandising Export and Distributors, and Multiform Desiccants.

Based on a review of Historic Sanborn maps, former site uses include manufacturing, automotive garage and repair. Trico Products Corp was a former operator of the Site.

1.3 Known and Suspected Environmental Conditions

Previous investigations have shown that former operations have impacted the Site, which will require remediation prior to redevelopment. The findings of the previous investigation included:

- On-Site soil/fill materials are impacted with semi-volatile organic compounds (SVOCs), metals, and polychlorinated biphenyls (PCBs) exceeding Part 375 Soil Cleanup Objectives (SCOs). Elevated SVOCs, metals, and/or PCBs were detected in soil/fill samples collected from across the Site at concentrations exceeding Part 375 Unrestricted SCOs (USCOs), Restricted Residential SCOs (RRSCOs), and Commercial SCOs (CSCOs).
- Chlorinated VOCs were detected at SB-5 (0-2') completed on the northern exterior portion of the Site; however, the concentrations did not exceed USCOs.
- A transformer room with a capacitor and four transformers (apparently privately owned) on the concrete ground surface is present along the southern interior wall of the eastern portion of the building. Such will require removal and proper off-site disposal prior to remediation activities.

1.4 Parameters of Interest

Based on the previous investigations and Site uses, constituents of potential concern (COPCs) in soil and groundwater at the Site include:

- **Semi-Volatile Organic Compounds (SVOCs)** – SVOCs present at elevated concentrations include polycyclic aromatic hydrocarbons (PAHs), which are byproducts of incomplete combustion and impurities in petroleum products.
- **Inorganic Compound** – The inorganic COPC potentially present at elevated concentrations are metals, including arsenic, cadmium, lead, and mercury, and PCBs.

1.5 Overview of Remedial Activities

Benchmark-TurnKey personnel will be on-site to observe and perform remedial activities. The field activities to be completed as part of the remediation project are described below.

- Excavation and off-site disposal of SVOCs- and metals-impacted soil/fill exceeding USCOs. Additional excavation and off-site disposal will be completed in areas exhibiting field evidence of impact including the transformer release and SB-5 areas.
- Performing verification sampling and analysis.
- Managing groundwater if encountered during remedial activities.
- Backfilling and compaction of clean imported material approved by the Department.
- Removal of the capacitor and four apparently inactive transformers from the northern portion of the building.

2.0 ORGANIZATIONAL STRUCTURE

This section of the HASP describes the lines of authority, responsibility and communication as they pertain to health and safety functions at the Site. The purpose of this chapter is to identify the personnel who impact the development and implementation of the HASP and to describe their roles and responsibilities. This chapter also identifies other contractors and subcontractors involved in work operations and establish the lines of communications among them for health and safety matters. The organizational structure described in this chapter is consistent with the requirements of 29 CFR 1910.120(b)(2). This section will be reviewed by the Project Manager and updated as necessary to reflect the current organizational structure at this Site.

2.1 Roles and Responsibilities

Benchmark-TurnKey personnel on the Site must comply with the minimum requirements of this HASP. The specific responsibilities and authority of management, safety and health, and other personnel on this Site are detailed in the following paragraphs.

2.1.1 Corporate Health and Safety Director

The Benchmark-TurnKey Corporate Health and Safety Director is ***Mr. Thomas H. Forbes, P.E.*** The Corporate Health and Safety Director responsible for developing and implementing the Health and Safety program and policies for Benchmark Environmental Engineering & Science, PLLC and TurnKey Environmental Restoration, LLC, and consulting with corporate management to ensure adequate resources are available to properly implement these programs and policies. The Corporate Health and Safety Director coordinates Benchmark-TurnKey's Health and Safety training and medical monitoring programs and assists project management and field staff in developing site-specific health and safety plans.

2.1.2 Project Manager

The Project Manager for this Site is ***Mr. Michael A. Lesakowski.*** The Project Manager has the responsibility and authority to direct all Benchmark-TurnKey work operations at the Site. The Project Manager coordinates safety and health functions with the Site Safety and Health Officer, and bears ultimate responsibility for proper implementation of this HASP. He may delegate authority to expedite and facilitate any application of the

program, including modifications to the overall project approach as necessary to circumvent unsafe work conditions. Specific duties of the Project Manager include:

- Preparing and coordinating the Site work plan.
- Providing Benchmark-TurnKey workers with work assignments and overseeing their performance.
- Coordinating health and safety efforts with the Site Safety and Health Officer (SSHO).
- Reviewing the emergency response coordination plan to assure its effectiveness.
- Serving as the primary liaison with Site contractors and the property owner.

2.1.3 Site Safety and Health Officer

The Site Safety and Health Officer (SSHO) for this Site is ***Mr. Bryan Mayback***. The SSHO reports to the Project Manager. The SSHO is on-site or readily accessible to the Site during work operations and has the authority to halt Site work if unsafe conditions are detected. The specific responsibilities of the SSHO are:

- Managing the safety and health functions for Benchmark-TurnKey personnel on the Site.
- Serving as the point of contact for safety and health matters.
- Ensuring that Benchmark-TurnKey field personnel working on the Site have received proper training (per 29 CFR Part 1910.120(e)), that they have obtained medical clearance to wear respiratory protection (per 29 CFR Part 1910.134), and that they are properly trained in the selection, use and maintenance of personal protective equipment, including qualitative respirator fit testing.
- Performing or overseeing Site monitoring as required by the HASP.
- Assisting in the preparation and review of the HASP.
- Maintaining site-specific safety and health records as described in this HASP.
- Coordinating with the Project Manager, Site Workers, and Contractor's SSHO as necessary for safety and health efforts.

2.1.4 Site Workers

Site workers are responsible for: complying with this HASP or a more stringent HASP, if appropriate (i.e., Contractor and Subcontractor's HASP); using proper PPE; reporting unsafe acts and conditions to the SSHO; and following the safety and health instructions of the Project Manager and SSHO.

2.1.5 Other Site Personnel

Other Site personnel who will have health and safety responsibilities will include the Test Pit Contractor and Drilling Contractor, who will be responsible for developing, implementing and enforcing a Health and Safety Plan equally stringent or more stringent than Benchmark-TurnKey's HASP. Benchmark-TurnKey assumes no responsibility for the health and safety of anyone outside its direct employ. Each Contractor's HASP shall cover all non- Benchmark/TurnKey Site personnel. Each Contractor shall assign a SSHO who will coordinate with Benchmark-TurnKey's SSHO as necessary to ensure effective lines of communication and consistency between contingency plans.

In addition to Benchmark-TurnKey and Contractor personnel, other individuals who may have responsibilities in the work zone include subcontractors and governmental agencies performing Site inspection work (i.e., the New York State Department of Environmental Conservation (NYSDEC)). The Contractor shall be responsible for ensuring that these individuals have received OSHA-required training (29 CFR 1910.120(e)), including initial, refresher and site-specific training, and shall be responsible for the safety and health of these individuals while they are on-site.

3.0 HAZARD EVALUATION

Due to the presence of certain contaminants at the Site, the possibility exists that workers will be exposed to hazardous substances during field activities. The principal points of exposure would be through direct contact with and incidental ingestion of soil, and through the inhalation of contaminated particles or vapors. Other points of exposure may include direct contact with groundwater. In addition, the use of drilling and/or medium to large-sized construction equipment (e.g., excavator) will also present conditions for potential physical injury to workers. Further, since work will be performed outdoors, the potential exists for heat/cold stress to impact workers, especially those wearing protective equipment and clothing. Adherence to the medical evaluations, worker training relative to chemical hazards, safe work practices, proper personal protection, environmental monitoring, establishment work zones and Site control, appropriate decontamination procedures and contingency planning outlined herein will reduce the potential for chemical exposures and physical injuries.

3.1 Chemical Hazards

As discussed in Section 1.3, historic activities have potentially resulted in impacts to Site soils and groundwater. Table 1 lists exposure limits for airborne concentrations of the COPCs identified in Section 1.4 of this HASP. Brief descriptions of the toxicology of the prevalent COPCs and related health and safety guidance and criteria are provided below.

1. **Polycyclic Aromatic Hydrocarbons (PAHs)** are formed as a result of the pyrolysis and incomplete combustion of organic matter such as fossil fuel. PAH aerosols formed during the combustion process disperse throughout the atmosphere, resulting in the deposition of PAH condensate in soil, water and on vegetation. In addition, several products formed from petroleum processing operations (e.g., roofing materials and asphalt) also contain elevated levels of PAHs. Hence, these compounds are widely dispersed in the environment. PAHs are characterized by a molecular structure containing three or more fused, unsaturated carbon rings. Seven of the PAHs are classified by USEPA as probable human carcinogens (USEPA Class B2). These are benzo(a)pyrene; benzo(a)anthracene; benzo(b)fluoranthene; benzo(k) fluoranthene; chrysene; dibenz(a,h)anthracene; and indeno(1,2,3-cd)pyrene. The primary route of exposure to PAHs is through incidental ingestion and inhalation of contaminated particulates. PAHs are characterized by an organic odor, and exist as oily liquids in pure form. Acute exposure symptoms may include acne-type blemishes in areas of the skin exposed to sunlight.

2. **Arsenic (CAS #7440-38-2)** is a naturally occurring element and is usually found combined with one or more elements, such as oxygen or sulfur. Inhalation is a more important exposure route than ingestion. First phase exposure symptoms include nausea, vomiting, diarrhea and pain in the stomach. Prolonged contact is corrosive to the skin and mucus membranes. Arsenic is considered a Group A human carcinogen by the USEPA. Exposure via inhalation is associated with an increased risk of lung cancer. Exposure via the oral route is associated with an increased risk of skin cancer.

3. **Cadmium (CAS #7440-43-9)** is a natural element and is usually combined with one or more elements, such as oxygen, chloride or sulfur. Breathing high levels of cadmium severely damages the lungs and can cause death. Ingestion of high levels of cadmium severely irritates the stomach, leading to vomiting and diarrhea. Long term exposure to lower levels of cadmium leads to a buildup of this substance in the kidneys and possible kidney disease. Other potential long term effects are lung damage and fragile bones. Cadmium is suspected to be a human carcinogen.

4. **Lead (CAS #7439-92-1)** can affect almost every organ and system in our bodies. The most sensitive is the central nervous system, particularly in children. Lead also damages kidneys and the immune system. The effects are the same whether it is breathed or swallowed. Lead may decrease reaction time, cause weakness in fingers, wrists or ankles and possibly affect memory. Lead may cause anemia.

5. **Mercury (CAS #7439-97-6)** is used in industrial applications for the production of caustic and chlorine, and in electrical control equipment and apparatus. Over-exposure to mercury may cause coughing, chest pains, bronchitis, pneumonia, indecision, headaches, fatigue and salivation. Mercury is a skin and eye irritant.

6. **Polychlorinated Biphenyls (PCBs)** are associated with former substations, rail yards, and hydraulic pump houses on the Site. PCBs can be absorbed into the body by inhalation of its aerosol, through the skin, and by ingestion. Repeated or prolonged contact with skin may cause dermatitis. PCBs may have effects on the liver. Animal tests show that PCBs possibly cause toxic effects in human reproduction. In the food chain, bioaccumulation takes place, specifically in aquatic organisms. A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C.

With respect to the anticipated remedial activities discussed in Section 1.5, possible routes of exposure to the above-mentioned contaminants are presented in Table 2. The use of proper respiratory equipment, as outlined in Section 7.0 of this HASP, will minimize the

potential for exposure to airborne contamination. Exposure to contaminants through dermal and other routes will also be minimized through the use of protective clothing (Section 7.0), safe work practices (Section 6.0), and proper decontamination procedures (Section 12.0).

3.2 Physical Hazards

Remediation field activities at the 990 Niagara Street Site may present the following physical hazards:

- Physical injury during heavy construction equipment use, such as backhoes, excavators and drilling equipment.
- Heat/cold stress to employees during the summer/winter months (see Section 10).
- Slip and fall injuries due to rough, uneven terrain and/or open excavations.

These hazards represent only some of the possible means of injury that may be present during remedial and sampling activities at the Site. Since it is impossible to list all potential sources of injury, it shall be the responsibility of each individual to exercise proper care and caution during all phases of the work.

4.0 TRAINING

4.1 Site Workers

Personnel performing remedial activities at the Site (such as, but not limited to, equipment operators, general laborers, and drillers) and who may be exposed to hazardous substances, health hazards, or safety hazards and their supervisors/managers responsible for the Site shall receive training in accordance with 29 CFR 1910.120(e) before they are permitted to engage in operations in the exclusion zone or contaminant reduction zone. This training includes an initial 40-hour Hazardous Waste Site Worker Protection Course, an 8-hour Annual Refresher Course subsequent to the initial 40-hour training, and 3 days of actual field experience under the direct supervision of a trained, experienced supervisor. Additional site-specific training shall also be provided by the SSHO prior to the start of field activities. A description of topics to be covered by this training is provided below.

4.1.1 Initial and Refresher Training

Initial and refresher training is conducted by a qualified instructor as specified under OSHA 29 CFR 1910.120(e)(5), and is specifically designed to meet the requirements of OSHA 29 CFR 1910.120(e)(3) and 1910.120(e)(8). The training covers, as a minimum, the following topics:

- OSHA HAZWOPER regulations.
- Site safety and hazard recognition, including chemical and physical hazards.
- Medical monitoring requirements.
- Air monitoring, permissible exposure limits, and respiratory protection level classifications.
- Appropriate use of personal protective equipment (PPE), including chemical compatibility and respiratory equipment selection and use.
- Work practices to minimize risk.
- Work zones and Site control.
- Safe use of engineering controls and equipment.
- Decontamination procedures.
- Emergency response and escape.

- Confined space entry procedures.
- Heat and cold stress monitoring.
- Elements of a Health and Safety Plan.
- Spill containment.

Initial training also incorporates workshops for PPE and respiratory equipment use (Levels A, B and C), and respirator fit testing. Records and certification received from the course instructor documenting each employee's successful completion of the training identified above are maintained on file at Benchmark-TurnKey's Buffalo, NY office. Contractors and Subcontractors are required to provide similar documentation of training for all their personnel who will be involved in on-site work activities.

Any employee who has not been certified as having received health and safety training in conformance with 29 CFR 1910.120(e) is prohibited from working in the exclusion and contamination reduction zones, or to engage in any on-site work activities that may involve exposure to hazardous substances or wastes.

4.1.2 Site Training

Site workers are given a copy of the HASP and provided a site-specific briefing prior to the commencement of work to ensure that employees are familiar with the HASP and the information and requirements it contains. The Site briefing shall be provided by the SSHO prior to initiating field activities and shall include:

- Names of personnel and alternates responsible for Site safety and health.
- Safety, health and other hazards present on the Site.
- The site lay-out including work zones and places of refuge.
- The emergency communications system and emergency evacuation procedures.
- Use of PPE.
- Work practices by which the employee can minimize risks from hazards.
- Safe use of engineering controls and equipment on the site.
- Medical surveillance, including recognition of symptoms and signs of over-exposure as described in Chapter 5 of this HASP.
- Decontamination procedures as detailed in Chapter 12 of this HASP.

- The emergency response plan as detailed in Chapter 15 of this HASP.
- Confined space entry procedures, if required, as detailed in Chapter 13 of this HASP.
- The spill containment program as detailed in Chapter 9 of this HASP.
- Site control as detailed in Chapter 11 of this HASP.

Supplemental health and safety briefings will also be conducted by the SSHO on an as-needed basis during the course of the work. Supplemental briefings are provided as necessary to notify employees of any changes to this HASP as a result of information gathered during ongoing Site characterization and analysis. Conditions for which the SSHO may schedule additional briefings include, but are not limited to: a change in Site conditions (e.g., based on monitoring results); changes in the work schedule/plan; newly discovered hazards; and safety incidents occurring during Site work.

4.2 Supervisor Training

On-site safety and health personnel who are directly responsible for or who supervise the safety and health of workers engaged in hazardous waste operations (i.e., SSHO) shall receive, in addition to the appropriate level of worker training described in Section 4.1, above, 8 additional hours of specialized supervisory training, in compliance with 29 CFR 1910.120(e)(4).

4.3 Emergency Response Training

Emergency response training is addressed in Appendix A of this HASP, Emergency Response Plan.

4.4 Site Visitors

Each Contractor's SSHO will provide a site-specific briefing to Site visitors and other non- Benchmark-TurnKey personnel who enter the Site beyond the Site entry point. The site-specific briefing will provide information about Site hazards, the Site layout including work zones and places of refuge, the emergency communications system and emergency evacuation procedures, and other pertinent safety and health requirements as appropriate.

Site visitors will not be permitted to enter the exclusion zone or contaminant reduction zones unless they have received the level of training required for Site workers as described in Section 4.1.

5.0 MEDICAL MONITORING

Medical monitoring examinations are provided to Benchmark-TurnKey employees as stipulated under 29 CFR Part 1910.120(f). These exams include initial employment, annual and employment termination physicals for Benchmark-TurnKey employees involved in hazardous waste site field operations. Post-exposure examinations are also provided for employees who may have been injured, received a health impairment, or developed signs or symptoms of over-exposure to hazardous substances or were accidentally exposed to substances at concentrations above the permissible exposure limits without necessary personal protective equipment. Such exams are performed as soon as possible following development of symptoms or the known exposure event.

Medical evaluations are performed by Health Works, an occupational health care provider under contract with Benchmark-TurnKey. Health Works is located in Seneca Square Plaza, 1900 Ridge Road, West Seneca, New York 14224. The facility can be reached at (716) 823-5050 to schedule routine appointments or post-exposure examinations.

Medical evaluations are conducted according to the Benchmark-TurnKey Medical Monitoring Program and include an evaluation of the workers' ability to use respiratory protective equipment. The examinations include:

- Occupational/medical history review.
- Physical exam, including vital sign measurement.
- Spirometry testing.
- Eyesight testing.
- Audio testing (minimum baseline and exit, annual for employees routinely exposed to greater than 85db).
- EKG (for employees >40 years age or as medical conditions dictate).
- Chest X-ray (baseline and exit, and every 5 years).
- Blood biochemistry (including blood count, white cell differential count, serum multiplastic screening).
- Medical certification of physical requirements (i.e., sight, musculoskeletal, cardiovascular) for safe job performance and to wear respiratory protection equipment.

The purpose of the medical evaluation is to determine an employee's fitness for duty

on hazardous waste sites; and to establish baseline medical data.

In conformance with OSHA regulations, Benchmark-TurnKey will maintain and preserve medical records for a period of 30 years following termination of employment. Employees are provided a copy of the physician's post-exam report, and have access to their medical records and analyses.

6.0 SAFE WORK PRACTICES

Benchmark-TurnKey employees shall conform to the following safe work practices during on-site work activities conducted within the exclusion and contamination reduction zones:

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth contact is strictly prohibited.
- The hands and face must be thoroughly washed upon leaving the work area and prior to engaging in any activity indicated above.
- Respiratory protective equipment and clothing must be worn by all personnel entering the Site as required by the HASP or as modified by the Site safety officer. Excessive facial hair (i.e., beards, long mustaches or sideburns) that interferes with the satisfactory respirator-to-face seal is prohibited.
- Contact with surfaces/materials either suspected or known to be contaminated will be avoided to minimize the potential for transfer to personnel, cross contamination and need for decontamination.
- Medicine and alcohol can synergize the effects of exposure to toxic chemicals. Due to possible contraindications, use of prescribed drugs should be reviewed with the Benchmark-TurnKey occupational physician. Alcoholic beverage and illegal drug intake are strictly forbidden during the workday.
- Personnel shall be familiar with standard operating safety procedures and additional instructions contained in this Health and Safety Plan.
- On-site personnel shall use the "buddy" system. No one may work alone (i.e., out of earshot or visual contact with other workers) in the exclusion zone.
- Personnel and equipment in the contaminated area shall be minimized, consistent with effective Site operations.
- Employees have the obligation to immediately report and if possible, correct unsafe work conditions.
- Use of contact lenses on-site will not be permitted. Spectacle kits for insertion into full-face respirators will be provided for Benchmark-TurnKey employees, as requested and required.

The recommended specific safety practices for working around the contractor's equipment (e.g., backhoes, bulldozers, excavators, drill rigs etc.) are as follows:

- Although the Contractor and subcontractors are responsible for their equipment and safe operation of the Site, Benchmark-TurnKey personnel are also responsible for their own safety.
- Subsurface work will not be initiated without first clearing underground utility services.
- Heavy equipment should not be operated within 20 feet of overhead wires. This distance may be increased if windy conditions are anticipated or if lines carry high voltage. The Site should also be sufficiently clear to ensure the project staff can move around the heavy machinery safely.
- Care should be taken to avoid overhead wires when moving heavy-equipment from location to location.
- Hard hats, safety boots and safety glasses should be worn in the vicinity of heavy equipment. Hearing protection is also recommended.
- The work Site should be kept neat. This will prevent personnel from tripping and will allow for fast emergency exit from the Site.
- Proper lighting must be provided when working at night.
- Construction activities should be discontinued during an electrical storm or severe weather conditions.
- The presence of combustible gases should be checked before igniting any open flame.
- Personnel shall stand upwind of any construction operation when not immediately involved in sampling/logging/observing activities.
- Personnel will not approach the edge of an unsecured trench/excavation closer than two feet.

7.0 PERSONAL PROTECTIVE EQUIPMENT

7.1 Equipment Selection

Personal protective equipment (PPE) will be donned when work activities may result in exposure to physical or chemical hazards beyond acceptable limits, and when such exposure can be mitigated through appropriate PPE. The selection of PPE will be based on an evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the Site, the task-specific conditions and duration, and the hazards and potential hazards identified at the Site.

Equipment designed to protect the body against contact with known or suspect chemical hazards are grouped into four categories according to the degree of protection afforded. These categories designated A through D consistent with United States Environmental Protection Agency (USEPA) Level of Protection designation, are:

- **Level A:** Should be selected when the highest level of respiratory, skin and eye protection is needed.
- **Level B:** Should be selected when the highest level of respiratory protection is needed, but a lesser level of skin protection is required. Level B protection is the minimum level recommended on initial Site entries until the hazards have been further defined by on-site studies. Level B (or Level A) is also necessary for oxygen-deficient atmospheres.
- **Level C:** Should be selected when the types of airborne substances are known, the concentrations have been measured and the criteria for using air-purifying respirators are met. In atmospheres where no airborne contaminants are present, Level C provides dermal protection only.
- **Level D:** Should not be worn on any Site with elevated respiratory or skin hazards. This is generally a work uniform providing minimal protection.

OSHA requires the use of certain PPE under conditions where an immediate danger to life and health (IDLH) may be present. Specifically, OSHA 29 CFR 1910.120(g)(3)(iii) requires use of a positive pressure self-contained breathing apparatus, or positive pressure air-line respirator equipped with an escape air supply when chemical exposure levels present a substantial possibility of immediate serious injury, illness or death, or impair the ability to escape. Similarly, OSHA 29 CFR 1910.120(g)(3)(iv) requires donning totally-encapsulating chemical protective suits (with a protection level equivalent to Level A protection) in

conditions where skin absorption of a hazardous substance may result in a substantial possibility of immediate serious illness, injury or death, or impair the ability to escape.

In situations where the types of chemicals, concentrations, and possibilities of contact are unknown, the appropriate level of protection must be selected based on professional experience and judgment until the hazards can be further characterized. The individual components of clothing and equipment must be assembled into a full protective ensemble to protect the worker from site-specific hazards, while at the same time minimizing hazards and drawbacks of the personal protective gear itself. Ensemble components are detailed below for levels A/B, C, and D protection.

7.2 Protection Ensembles

7.2.1 Level A/B Protection Ensemble

Level A/B ensembles include similar respiratory protection, however Level A provides a higher degree of dermal protection than Level B. Use of Level A over Level B is determined by: comparing the concentrations of identified substances in the air with skin toxicity data, and assessing the effect of the substance (by its measured air concentrations or splash potential) on the small area of the head and neck unprotected by Level B clothing. The recommended PPE for level A/B is:

- Pressure-demand, full-face piece self-contained breathing apparatus (MSHA/NIOSH approved) or pressure-demand supplied-air respirator with escape self-contained breathing apparatus (SCBA).
- Chemical-resistant clothing. For Level A, clothing consists of totally-encapsulating chemical resistant suit. Level B incorporates hooded one-or two-piece chemical splash suit.
- Inner and outer chemical resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

7.2.2 Level C Protection Ensemble

Level C protection is distinguished from Level B by the equipment used to protect the respiratory system, assuming the same type of chemical-resistant clothing is used. The main selection criterion for Level C is that conditions permit wearing an air-purifying device.

The device (when required) must be an air-purifying respirator (MSHA/NIOSH approved) equipped with filter cartridges. Cartridges must be able to remove the substances encountered. Respiratory protection will be used only with proper fitting, training and the approval of a qualified individual. In addition, an air-purifying respirator can be used only if: oxygen content of the atmosphere is at least 19.5% in volume; substances are identified and concentrations measured; substances have adequate warning properties; the individual passes a qualitative fit-test for the mask; and an appropriate cartridge/canister is used, and its service limit concentration is not exceeded. Recommended PPE for Level C conditions includes:

- Full-face piece, air-purifying respirator equipped with MSHA and NIOSH approved organic vapor/acid gas/dust/mist combination cartridges or as designated by the SSHO.
- Chemical-resistant clothing (hooded, one or two-piece chemical splash suit or disposable chemical-resistant one-piece suit).
- Inner and outer chemical-resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

An air-monitoring program is part of all response operations when atmospheric contamination is known or suspected. It is particularly important that the air be monitored thoroughly when personnel are wearing air-purifying respirators. Continual surveillance using direct-reading instruments is needed to detect any changes in air quality necessitating a higher level of respiratory protection.

7.2.3 Level D Protection Ensemble

As indicated above, Level D protection is primarily a work uniform. It can be worn in areas where only boots can be contaminated, where there are no inhalable toxic substances and where the atmospheric contains at least 19.5% oxygen. Recommended PPE for Level D includes:

- Coveralls.
- Safety boots/shoes.
- Safety glasses or chemical splash goggles.

- Hardhat.
- Optional gloves; escape mask; face shield.

7.2.4 Recommended Level of Protection for Site Tasks

Based on current information regarding both the contaminants suspected to be present at the Site and the various tasks that are included in the remedial activities, the minimum required levels of protection for these tasks shall be as identified in Table 3.

8.0 EXPOSURE MONITORING

8.1 General

Based on the results of historic sample analysis and the nature of the proposed work activities at the Site, the possibility exist that organic vapors and/or particulates may be released to the air during intrusive construction activities. Ambient breathing zone concentrations may at times, exceed the permissible exposure limits (PELs) established by OSHA for the individual compounds (see Table 1), in which case respiratory protection will be required. Respiratory and dermal protection may be modified (upgraded or downgraded) by the SSHO based upon real-time field monitoring data.

8.1.1 On-Site Work Zone Monitoring

Benchmark-TurnKey personnel will conduct routine, real-time air monitoring during all exterior and interior intrusive construction phases such as excavation, backfilling, drilling, etc. The work area will be monitored at regular intervals using a photoionization detector (PID) and a particulate meter. Observed values will be recorded and maintained as part of the permanent field record.

Additional air monitoring measurements may be made by Benchmark-TurnKey personnel to verify field conditions during subcontractor oversight activities. Monitoring instruments will be protected from surface contamination during use. Additional monitoring instruments may be added if the situations or conditions change. Monitoring instruments will be calibrated in accordance with manufacturer's instructions before use.

8.1.2 Off-Site Community Air Monitoring

In addition to on-Site monitoring within the work zone(s), monitoring at the down-wind portion of the Site perimeter will be conducted. This will provide a real-time method for determination of vapor and/or particulate releases to the surrounding community as a result of ground intrusive investigation work.

Ground intrusive activities are defined in the Generic Community Air Monitoring Plan(RAWP Appendix B). Ground intrusive activities include soil/piping excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells. Non-intrusive activities include the collection of soil and sediment samples or the collection of groundwater samples from existing wells. Continuous monitoring is required for ground

intrusive activities and periodic monitoring is required for non-intrusive activities. Periodic monitoring consists of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring while bailing a well, and taking a reading prior to leaving a sampling location. This may be upgraded to continuous if the sampling location is in close proximity to individuals not involved in the Site activity (i.e., on a curb of a busy street). The action levels in Section 8.2 will be used during periodic monitoring.

Community air monitoring will be completed during exterior and interior intrusive activities. Additionally, during interior intrusive work, ventilation of exhaust will be completed to prevent exhaust from accumulating within the building during remedial work.

8.2 Monitoring Action Levels

8.2.1 On-Site Work Zone Action Levels

The PID, or other appropriate instrument(s), will be used by Benchmark-TurnKey personnel to monitor organic vapor concentrations as specified in this HASP. In addition, fugitive dust/particulate concentrations will be monitored during major soil intrusion (i.e., well/boring installation) using a real-time particulate monitor as specified in this plan. In the absence of such monitoring, appropriate respiratory protection for particulates shall be donned. Sustained readings obtained in the breathing zone may be interpreted (with regard to other Site conditions) as follows for Benchmark-TurnKey personnel:

- Total atmospheric concentrations of unidentified vapors or gases ranging from 0 to 1 ppm above background on the PID) - Continue operations under Level D (see Appendix A).
- Total atmospheric concentrations of unidentified vapors or gases yielding sustained readings from >1 ppm to 5 ppm above background on the PID (vapors not suspected of containing high levels of chemicals toxic to the skin) - Continue operations under Level C (see Appendix A).
- Total atmospheric concentrations of unidentified vapors or gases yielding sustained readings of >5 ppm to 50 ppm above background on the PID - Continue operations under Level B (see Attachment 1), re-evaluate and alter (if possible) construction methods to achieve lower vapor concentrations.
- Total atmospheric concentrations of unidentified vapors or gases above 50 ppm on the PID - Discontinue operations and exit the work zone immediately.

The particulate monitor will be used to monitor respirable dust concentrations during intrusive activities and during handling of Site soil/fill. Action levels based on the instrument readings shall be as follows:

- Less than 50 mg/m3 - Continue field operations.
- 50-150 mg/m3 - Don dust/particulate mask or equivalent
- Greater than 150 mg/m3 - Don dust/particulate mask or equivalent. Initiate engineering controls to reduce respirable dust concentration (viz., wetting of excavated soils or tools at discretion of Site Health and Safety Officer).

Readings from the field equipment will be recorded and documented on the appropriate Project Field Forms. Instruments will be calibrated before use on a daily basis and the procedure will be documented on the appropriate Project Field Forms.

8.2.2 Community Air Monitoring Action Levels

In addition to the action levels prescribed in Section 8.2.1 for Benchmark-TurnKey personnel on-site, the following criteria shall also be adhered to for the protection of downwind receptors consistent with NYSDOH requirements (see Attachment C):

o **ORGANIC VAPOR PERIMETER MONITORING:**

- If the sustained ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone exceeds 5 ppm above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the sustained organic vapor decreases below 5 ppm over background, work activities can resume with continued monitoring.
- If the sustained ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone are greater than 5 ppm over background but less than 25 ppm for the 15-minute average, activities can resume provided that: the organic vapor level 200 feet downwind of the working site or half the distance to the nearest off-site residential or commercial structure, whichever is less, but in no case less than 20 feet, is below 5 ppm over background; and more frequent intervals of monitoring, as directed by the Site Health and Safety Officer, are conducted.
- If the sustained organic vapor level is above 25 ppm at the perimeter of the exclusion zone for the 15-minute average, the Site Health and Safety Officer must be notified and work activities shut down. The Site Health and Safety Officer will determine

when re-entry of the exclusion zone is possible and will implement downwind air monitoring to ensure vapor emissions do not impact the nearest off-site residential or commercial structure at levels exceeding those specified in the ***Organic Vapor Contingency Monitoring Plan*** below. All readings will be recorded and will be available for NYSDEC and New York State Department of Health (NYSDOH) personnel to review.

- **ORGANIC VAPOR CONTINGENCY MONITORING PLAN:**

  - If the sustained organic vapor level is greater than 5 ppm over background 200 feet downwind from the work area or half the distance to the nearest off-site residential or commercial property, whichever is less, all work activities must be halted.
  - If, following the cessation of the work activities or as the result of an emergency, sustained organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest off-site residential or commercial property from the work area, then the air quality must be monitored within 20 feet of the perimeter of the nearest off-site residential or commercial structure (20-foot zone).
  - If efforts to abate the emission source are unsuccessful and if sustained organic vapor levels approach or exceed 5 ppm above background within the 20-foot zone for more than 30 minutes, or are sustained at levels greater than 10 ppm above background for longer than one minute, then the ***Major Vapor Emission Response Plan*** (see below) will automatically be placed into effect.

- **MAJOR VAPOR EMISSION RESPONSE PLAN:**

  Upon activation, the following activities will be undertaken:

  1. All Emergency Response Contacts as listed in this Health and Safety Plan and the Emergency Response Plan (Appendix A) will be advised.
  2. The local police authorities will immediately be contacted by the Site Health and Safety Officer and advised of the situation.
  3. Frequent air monitoring will be conducted at 30-minute intervals within the 20-foot zone. If two sustained successive readings below action levels are measured, air monitoring may be halted or modified by the Site Health and Safety Officer.

The following personnel are to be notified in the listed sequence in the event that a Major Vapor Emission Plan is activated:

Responsible Person	Contact	Phone Number
SSHO	Police	911
SSHO	State Emergency Response Hotline	(800) 457-7362

Additional emergency numbers are listed in the Emergency Response Plan included as Appendix A.

- **EXPLOSIVE VAPORS:**
  - Sustained atmospheric concentrations of greater than 10% LEL in the work area - Initiate combustible gas monitoring at the downwind portion of the Site perimeter.
  - Sustained atmospheric concentrations of greater than 10% LEL at the downwind Site perimeter – Halt work and contact local Fire Department.

- **AIRBORNE PARTICULATE COMMUNITY AIR MONITORING**
  - Respirable (PM-10) particulate monitoring will be performed on a continuous basis at the upwind and downwind perimeter of the exclusion zone. The monitoring will be performed using real-time monitoring equipment capable of measuring PM-10 and integrating over a period of 15-minutes for comparison to the airborne particulate action levels. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities. All readings will be recorded and will be available for NYSDEC and NYSDOH review. Readings will be interpreted as follows:
  - If the downwind PM-10 particulate level is 100 micrograms per cubic meter (ug/m^3) greater than the background (upwind perimeter) reading 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 provided that the downwind PM-10 particulate levels do not exceed 150 ug/m^3 above the upwind level and that visible dust is not migrating from the work area.
  - If, after implementation of dust suppression techniques downwind PM-10 levels are greater than 150 ug/m^3 above the upwind level, work activities must be stopped and dust suppression controls re-evaluated. Work can resume provided that

supplemental dust suppression measures and/or other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 ug/m^3 of the upwind level and in preventing visible dust migration.

Pertinent emergency response information including the telephone number of the Fire Department is included in the Emergency Response Plan (Appendix A).

9.0 SPILL RELEASE/RESPONSE

This chapter of the HASP describes the potential for and procedures related to spills or releases of known or suspected petroleum and/or hazardous substances on the Site. The purpose of this Section of the HASP is to plan appropriate response, control, counter-measures and reporting, consistent with OSHA requirements in 29 CFR 1910.120(b)(4)(ii)(J) and (j)(1)(viii). The spill containment program addresses the following elements:

- Potential hazardous material spills and available controls.
- Initial notification and evaluation.
- Spill response.
- Post-spill evaluation.

9.1 Potential Spills and Available Controls

An evaluation was conducted to determine the potential for hazardous material and oil/petroleum spills at this Site. For the purpose of this evaluation, hazardous materials posing a significant spill potential are considered to be:

- CERCLA Hazardous Substances as identified in 40 CFR Part 302, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).
- Extremely Hazardous Substances as identified in 40 CFR Part 355, Appendix A, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).
- Hazardous Chemicals as defined under Section 311(e) of the Emergency Planning and Community Right-To-Know Act of 1986, where such chemicals are present or will be stored in excess of 10,000 lbs.
- Toxic Chemicals as defined in 40 CFR Part 372, where such chemicals are present or will be stored in excess of 10,000 lbs.
- Chemicals regulated under 6NYCRR Part 597, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).

Oil/petroleum products are considered to pose a significant spill potential whenever the following situations occur:

- The potential for a "harmful quantity" of oil (including petroleum and non-petroleum-based fuels and lubricants) to reach navigable waters of the U.S. exists (40

CFR Part 112.4). Harmful quantities are considered by USEPA to be volumes that could form a visible sheen on the water or violate applicable water quality standards.

- The potential for any amount of petroleum to reach any waters of NY State, including groundwater, exists. Petroleum, as defined by NY State in 6NYCRR Part 612, is a petroleum-based heat source, energy source, or engine lubricant/maintenance fluid.
- The potential for any release, to soil or water, of petroleum from a bulk storage facility regulated under 6NYCRR Part 612. A regulated petroleum storage facility is defined by NY State as a site having stationary tank(s) and intra-facility piping, fixtures and related equipment with an aggregate storage volume of 1,100 gallons or greater.

9.2 Initial Spill Notification and Evaluation

Any worker who discovers a hazardous substance or oil/petroleum spill will immediately notify the Project Manager and SSHO. The worker will, to the best of his/her ability, report the material involved, the location of the spill, the estimated quantity of material spilled, the direction/flow of the spill material, related fire/explosion incidents, if any, and any associated injuries. The Emergency Response Plan presented in Attachment H2 of this HASP will immediately be implemented if an emergency release has occurred.

Following initial report of a spill, the Project Manager will make an evaluation as to whether the release exceeds RQ levels. If an RQ level is exceeded, the Project Manager will notify the Site owner and NYSDEC at 1-800-457-7362 within 2 hours of spill discovery. The Project Manager will also determine what additional agencies (e.g., USEPA) are to be contacted regarding the release, and will follow-up with written reports as required by the applicable regulations.

9.3 Spill Response

For spill situations, the following general response guidelines will apply:

- Only those personnel involved in overseeing or performing containment operations will be allowed within the spill area. If necessary, the area will be roped, ribboned, or otherwise blocked off to prevent unauthorized access.
- Appropriate PPE, as specified by the SSHO, will be donned before entering the spill area.
- Ignition points will be extinguished/removed if fire or explosion hazards exist.

- Surrounding reactive materials will be removed.
- Drains or drainage in the spill area will be blocked to prevent inflow of spilled materials or applied materials.

For minor spills, the Contractor will maintain a Spill Control and Containment Kit in the Field Office or other readily accessible storage location. The kit will consist of, at a minimum, a 50 lb. bag of "speedy dry" granular absorbent material, absorbent pads, shovels, empty 5-gallon pails and an empty open-top 55-gallon drum. Spilled materials will be absorbed, and shoveled into a 55-gallon drum for proper disposal (NYSDEC approval will be secured for on-site treatment of the impacted soils/absorbent materials, if applicable). Impacted soils will be hand-excavated to the point that no visible signs of contamination remains, and will be drummed with the absorbent.

In the event of a major release or a release that threatens surface water, a spill response contractor will be called to the Site. The response contractor may use heavy equipment (e.g., excavator, backhoe, etc.) to berm the soils surrounding the spill Site or create diversion trenching to mitigate overland migration or release to navigable waters. Where feasible, pumps will be used to transfer free liquid to storage containers. Spill control/cleanup contractors in the Western New York area that may be contacted for assistance include:

- The Environmental Service Group of NY, Inc.: (716) 695-6720
- Environmental Products and Services, Inc.: (716) 447-4700
- Op-Tech: (716) 873-7680

9.4 Post-Spill Evaluation

If a reportable quantity of hazardous material or oil/petroleum is spilled as determined by the Project Manager, a written report will be prepared as indicated in Section 9.2. The report will identify the root cause of the spill, type and amount of material released, date/time of release, response actions, agencies notified and/or involved in cleanup, and procedures to be implemented to avoid repeat incidents. In addition, all re-useable spill cleanup and containment materials will be decontaminated, and spill kit supplies/disposable items will be replenished.

10.0 HEAT/COLD STRESS MONITORING

Since some of the work activities at the Site will be scheduled for both the summer and winter months, measures will be taken to minimize heat/cold stress to Benchmark-TurnKey employees. The Site Safety and Health Officer and/or his or her designee will be responsible for monitoring Benchmark-TurnKey field personnel for symptoms of heat/cold stress.

10.1 Heat Stress Monitoring

Personal protective equipment may place an employee at risk of developing heat stress, a common and potentially serious illnesses often encountered at construction, landfill, waste disposal, industrial or other unsheltered sites. The potential for heat stress is dependent on a number of factors, including environmental conditions, clothing, workload, physical conditioning and age. Personal protective equipment may severely reduce the body's normal ability to maintain temperature equilibrium (via evaporation and convection), and require increased energy expenditure due to its bulk and weight.

Proper training and preventive measures will mitigate the potential for serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat related illness. To avoid heat stress, the following steps should be taken:

- Adjust work schedules.
- Modify work/rest schedules according to monitoring requirements.
- Mandate work slowdowns as needed.
- Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat (i.e., eight fluid ounces must be ingested for approximately every 1 lb of weight lost). The normal thirst mechanism is not sensitive enough to ensure that enough water will be consumed to replace lost perspiration. When heavy sweating occurs, workers should be encouraged to drink more.
- Train workers to recognize the symptoms of heat related illness.

Heat-Related Illness - Symptoms:

- Heat rash may result from continuous exposure to heat or humid air.
- Heat cramps are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include: muscle spasms; pain in the hands, feet and abdomen.
- Heat exhaustion occurs from increased stress on various body organs including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include: pale, cool, moist skin; heavy sweating; dizziness; nausea; fainting.
- Heat stroke is the most serious form of heat stress. Temperature regulation fails and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and death occur. Competent medical help must be obtained. Signs and symptoms are: red, hot, usually dry skin; lack of or reduced perspiration; nausea; dizziness and confusion; strong, rapid pulse; coma.

The monitoring of personnel wearing protective clothing should commence when the ambient temperature is 70 degrees Fahrenheit or above. For monitoring the body's recuperative ability to excess heat, one or more of the following techniques should be used as a screening mechanism.

- Heart rate may be measured by the radial pulse for 30 seconds as early as possible in the resting period. The rate at the beginning of the rest period should not exceed 100 beats per minute. If the rate is higher, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest periods stay the same, If the pulse rate is 100 beats per minute at the beginning of the nest rest period, the following work cycle should be further shortened by 33%.
- Body temperature may be measured orally with a clinical thermometer as early as possible in the resting period. Oral temperature at the beginning of the rest period should not exceed 99.6 degrees Fahrenheit. If it does, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest period remains the same. However, if the oral temperature exceeds 99.6 degrees Fahrenheit at the beginning of the next period, the work cycle may be further shortened by 33%. Oral temperature should be measured at the end of the rest period to make sure that it has dropped below 99.6 degrees Fahrenheit. No Benchmark-TurnKey employee will be permitted to continue wearing semi-permeable or impermeable garments when his/her oral temperature exceeds 100.6 degrees Fahrenheit.

10.2 Cold Stress Monitoring

Exposure to cold conditions may result in frostbite or hypothermia, each of which progresses in stages as shown below.

- **Frostbite** occurs when body tissue (usually on the extremities) begins to freeze. The three states of frostbite are:
    1. **Frost nip** - This is the first stage of the freezing process. It is characterized by a whitened area of skin, along with a slight burning or painful sensation. Treatment consists of removing the victim from the cold conditions, removal of boots and gloves, soaking the injured part in warm water (102 to 108 degrees Fahrenheit) and drinking a warm beverage. Do not rub skin to generate friction/ heat.
    2. **Superficial Frostbite** - This is the second stage of the freezing process. It is characterized by a whitish gray area of tissue, which will be firm to the touch but will yield little pain. The treatment is identical for Frost nip.
    3. **Deep Frostbite** - In this final stage of the freezing process the affected tissue will be cold, numb and hard and will yield little to no pain. Treatment is identical to that for Frost nip.

- **Hypothermia** is a serious cold stress condition occurring when the body loses heat at a rate faster than it is produced. If untreated, hypothermia may be fatal. The stages of hypothermia may not be clearly defined or visible at first, but generally include:
    1. Shivering
    2. Apathy (i.e., a change to an indifferent or uncaring mood)
    3. Unconsciousness
    4. Bodily freezing

    Employees exhibiting signs of hypothermia should be treated by medical professionals. Steps that can be taken while awaiting help include:

    1. Remove the victim from the cold environment and remove wet or frozen clothing. (Do this carefully as frostbite may have started.)
    2. Perform active re-warming with hot liquids for drinking (Note: do not give the victim any liquid containing alcohol or caffeine) and a warm water bath (102 to 108 degrees Fahrenheit).
    3. Perform passive re-warming with a blanket or jacket wrapped around the victim.

In any potential cold stress situation, it is the responsibility of the Site Health and Safety Officer to encourage the following:

- Education of workers to recognize the symptoms of frostbite and hypothermia.
- Workers should dress warmly, with more layers of thin clothing as opposed to one thick layer.
- Personnel should remain active and keep moving.
- Personnel should be allowed to take shelter in a heated areas, as necessary.
- Personnel should drink warm liquids (no caffeine or alcohol if hypothermia has set in).
- For monitoring the body's recuperation from excess cold, oral temperature recordings should occur:
  - At the Site Safety Technicians discretion when suspicion is based on changes in a worker's performance or mental status.
  - At a workers request.
  - As a screening measure, two times per shift, under unusually hazardous conditions (e.g., wind chill less than 20 degrees Fahrenheit or wind chill less than 30 degrees Fahrenheit with precipitation).
  - As a screening measure, whenever anyone worker on-site develops hypothermia.

Any person developing moderate hypothermia (a core body temperature of 92 degrees Fahrenheit) will not be allowed to return to work for 48 hours without the recommendation of a qualified medical doctor.

11.0 WORK ZONES AND SITE CONTROL

Work zones around the areas designated for construction activities will be established on a daily basis and communicated to employees and other Site users by the SSHO. It shall be each Contractor's Site Safety and Health Officer's responsibility to ensure that Site workers are aware of the work zone boundaries and to enforce proper procedures in each area. The zones will include:

- Exclusion Zone ("Hot Zone"): The area where contaminated materials may be exposed, excavated or handled and all areas where contaminated equipment or personnel may travel. Flagging tape will delineate the zone. Personnel entering the Exclusion Zone must wear the prescribed level of personal protective equipment identified in Section 7.
- Contamination Reduction Zone: The zone where decontamination of personnel and equipment takes place. Any potentially contaminated clothing, equipment and samples must remain in the Contamination Reduction Zone until decontaminated.
- Support Zone: The part of the site that is considered non-contaminated or "clean." Support equipment will be located in this zone, and personnel may wear normal work clothes within this zone.

In the absence of other task-specific work zone boundaries established by the SSHO, the following boundaries will apply to investigation and construction activities involving disruption or handling of Site soils or groundwater:

- Exclusion Zone: 50 foot radius from the outer limit of the sampling/construction activity.
- Contaminant Reduction Zone: 100 foot radius from the outer limit of the sampling/construction activity.
- Support Zone: Areas outside the Contaminant Reduction Zone.

Access of non-essential personnel to the Exclusion and Contamination Reduction Zones will be strictly controlled by the SSHO. Only personnel who are essential to the completion of the task will be allowed access to these areas and only if they are wearing the prescribed level of protection. Entrance of personnel must be approved by the SSHO.

The SSHO will maintain a Health and Safety Logbook containing the names of Benchmark-TurnKey workers and their level of protection. The zone boundaries may be changed by the SSHO as environmental conditions warrant, and to respond to the necessary changes in work locations on-site.

12.0 DECONTAMINATION

12.1 Decontamination for Benchmark-TurnKey Employees

The degree of decontamination required is a function of a particular task and the environment within which it occurs. The following decontamination procedure will remain flexible, thereby allowing the decontamination crew to respond appropriately to the changing environmental conditions that may arise at the Site. Benchmark-TurnKey personnel on-site shall follow the procedure below, or the Contractor's procedure (if applicable), whichever is more stringent.

Station 1 - Equipment Drop: Deposit visibly contaminated (if any) re-useable equipment used in the contamination reduction and exclusion zones (tools, containers, monitoring instruments, radios, clipboards, etc.) on plastic sheeting.

Station 2 - Boots and Gloves Wash and Rinse: Scrub outer boots and outer gloves. Deposit tape and gloves in waste disposal container.

Station 3 - Tape, Outer Boot and Glove Removal: Remove tape, outer boots and gloves. Deposit tape and gloves in waste disposal container.

Station 4 - Canister or Mask Change: If worker leaves exclusive zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot cover donned, and worker returns to duty.

Station 5 - Outer Garment/Face Piece Removal: Protective suit removed and deposited in separate container provided by Contractor. Face piece or goggles are removed if used. Avoid touching face with fingers. Face piece and/or goggles deposited on plastic sheet. Hard hat removed and placed on plastic sheet.

Station 6 - Inner Glove Removal: Inner gloves are the last personal protective equipment to be removed. Avoid touching the outside of the gloves with bare fingers. Dispose of these gloves in waste disposal container.

Following PPE removal, personnel shall wash hands, face and forearms with absorbent wipes. If field activities proceed for duration of 6 consecutive months or longer, shower facilities will be provided for worker use in accordance with OSHA 29 CFR 1910.120(n).

12.2 Decontamination for Medical Emergencies

In the event of a minor, non-life threatening injury, personnel should follow the decontamination procedures as defined, and then administer first-aid.

In the event of a major injury or other serious medical concern (e.g., heat stroke), immediate first-aid is to be administered and the victim transported to the hospital in lieu of further decontamination efforts unless exposure to a Site contaminant would be considered "Immediately Dangerous to Life or Health."

12.3 Decontamination of Field Equipment

The Contractor in accordance with his approved Health and Safety Plan in the Contamination Reduction Zone will conduct decontamination of heavy equipment. As a minimum, this will include manually removing heavy soil contamination, followed by steam cleaning on an impermeable pad.

Benchmark-TurnKey personnel will conduct decontamination of tools used for sample collection purposes. It is expected that tools will be constructed of nonporous, nonabsorbent materials (i.e., metal), which will aid in the decontamination effort. Any tool or part of a tool made of porous, absorbent material (i.e., wood) will be placed into suitable containers and prepared for disposal.

Decontamination of bailers, split-spoons, spatula knives, and other tools used for environmental sampling and examination shall be as follows:

- Disassemble the equipment
- Water wash to remove visible foreign matter.
- Wash with detergent.
- Rinse parts with distilled-deionized water.
- Allow to air dry.
- Wrap parts in aluminum foil or polyethylene.

13.0 CONFINED SPACE ENTRY

OSHA 29 CFR 1910.146 identifies a confined space as a space that is large enough and so configured that an employee can physically enter and do assigned work, has limited or restricted means for entry and exit, and is not intended for continuous employee occupancy. Confined spaces include, but are not limited to, trenches, storage tanks, process vessels, pits, sewers, tunnels, underground utility vaults, pipelines, sumps, wells, and excavations.

Confined space entry by Benchmark-TurnKey employees is not anticipated to be necessary to complete the remediation activities identified in Section 2.0. In the event that the scope of work changes or confined space entry appears necessary, the Project Manager will be consulted to determine if feasible engineering alternatives to confined space entry can be implemented. If confined space entry by Benchmark-TurnKey employees cannot be avoided through reasonable engineering measures, task-specific confined space entry procedures will be developed and a confined-space entry permit will be issued through Benchmark-TurnKey's corporate Health and Safety Director. Benchmark-TurnKey employees shall not enter a confined space without these procedures and permits in place.

14.0 FIRE PREVENTION AND PROTECTION

14.1 General Approach

Recommended practices and standards of the National Fire Protection Association (NFPA) and other applicable regulations will be followed in the development and application of Project Fire Protection Programs. When required by regulatory authorities, the project management will prepare and submit a Fire Protection Plan for the approval of the contracting officers, authorized representative or other designated official. Essential considerations for the Fire Protection Plan will include:

- Proper Site preparation and safe storage of combustible and flammable materials.
- Availability of coordination with private and public fire authorities.
- Adequate job-site fire protection and inspections for fire prevention.
- Adequate indoctrination and training of employees.

14.2 Equipment and Requirements

Fire extinguishers will be provided by each Contractor and are required on heavy equipment and in each field trailer. Fire extinguishers will be inspected, serviced, and maintained in accordance with the manufacturer's instructions. As a minimum, extinguishers shall be checked monthly and weighed semi-annually, and recharged if necessary. Recharge or replacement shall be mandatory immediately after each use.

14.3 Flammable and Combustible Substances

Storage, handling or use of flammable and combustible substances will be under the supervision of qualified persons. Tanks, containers and pumping equipment, whether portable or stationary, used for the storage and handling of flammable and combustible liquids, will meet the recommendations of the National Fire Protection Association.

14.4 Hot Work

If the scope of work necessitates welding or blowtorch operation, the hot work permit presented in Appendix B will be completed by the SSHO and reviewed/issued by the Project Manager.

15.0 EMERGENCY INFORMATION

In accordance with OSHA 29 CFR Part 1910, an Emergency Response Plan is attached to this HASP as Appendix A. The hospital route map is presented within Appendix A as Figure 1.

16.0 REFERENCES

1. New York State Department of Environmental Conservation. *DER-10; Technical Guidance for Site Investigation and Remediation.* May 2010.

TABLES

TABLE 1
TOXICITY DATA FOR CONSTITUENTS OF POTENTIAL CONCERN

990 NIAGARA STREET SITE
BUFFALO, NEW YORK

Parameter	Synonyms	CAS No.	Code	Concentration Limits [1]		
				PEL	TLV	IDLH
Volatile Organic Compounds (VOCs): ppm						
1,1,1-Trichloroethane	Methylchloroform, Methyltrichloromethane, Trichloromethylmethane, and Trichloromethane	71-55-6	*none*	350	350	700
Trichloroethene	TCE	79-01-6	*Ca*	100	50	1000
Tetrachloroethene	PCE, perchloroethene, perc	127-18-4	*Ca*	100	100	150
Semi-volatile Organic Compounds (SVOCs) [2] : ppm						
Acenaphthene	*none*	83-32-9	*none*	--	--	--
Acenaphthylene	*none*	208-96-8	*none*	--	--	--
Anthracene	*none*	120-12-7	*none*	--	--	--
Benzo(a)anthracene	*none*	56-55-3	*none*	--	--	--
Benzo(a)pyrene	*none*	50-32-8	*none*	--	--	--
Benzo(b)fluoranthene	*none*	205-99-2	*none*	--	--	--
Benzo(ghi)perylene	*none*	191-24-2	*none*	--	--	--
Benzo(k)fluoranthene	*none*	207-08-9	*none*	--	--	--
Chrysene	*none*	218-01-9	*none*	--	--	--
Dibenz(a,h)anthracene	*none*	53-70-3	*none*	--	--	--
Fluoranthene	*none*	206-44-0	*none*	--	--	--
Fluorene	*none*	86-73-7	*none*	--	--	--
Indeno(1,2,3-cd)pyrene	*none*	193-39-5	*none*	--	--	--
Naphthalene	Naphthalin, Tar camphor, White tar	91-20-3	*none*	10	10	250
Phenanthrene	*none*	85-01-8	*none*	--	--	--
Pyrene	*none*	129-00-0	*none*	--	--	--
Polychorinated Biphenyls (PCBs) : ppm						
Aroclor 1242	Chlorodiphenyl, 42% chlorine	53469-21-9	*none*	--	--	--
Aroclor 1260	Chlorodiphenyl, 60% chlorine	11096-82-5	*none*	--	--	--
Inorganic Compounds [2] : mg/m [3]						
Arsenic	*none*	7440-38-2	Ca	0.01	0.01	5
Cadmium	*none*	7440-43-9	Ca	0.005	0.01	9
Lead	*none*	7439-92-1	*none*	0.05	0.15	100
Mercury	*none*	7439-97-6	C-0.1	0.1	0.05	10

Notes:

1. Concentration limits as reported by NIOSH Pocket Guide to Chemical Hazards, February 2004 (NIOSH Publication No. 97-140, fourth printing with changes and updates).
2. " -- " = concentration limit not available; exposure should be minimized to the extent feasible through appropriate engineering controls & PPE.

Explanation:

Ca = NIOSH considers constituent to be a potential occupational carcinogen.
C-## = Ceiling Level equals the maximum exposure concentration allowable during the work day.
IDLH = Immediately Dangerous to Life or Health.
ND indicates that an IDLH has not been determined.
TLV = Threshold Limit Value, established by American Conference of Industrial Hygienists (ACGIH), equals the maximum exposure concentration allowable for 8 hours/day @ 40 hours/week.

TLVs are the amounts of chemicals in the air that almost all healthy adult workers are predicted to be able to tolerate without adverse effects. There are three types.
TLV-TWA (TLV-Time-Weighted Average) which is averaged over the normal eight-hour day/forty-hour work week. (Most TLVs.)
TLV-STEL or Short Term Exposure Limits are 15 minute exposures that should not be exceeded for even an instant. It is not a stand alone value but is accompanied by the TLV-TWA.
TLV-C or Ceiling limits are the concentration that should not be exceeded during any part of the working exposure.
Unless the initials "STEL" or "C" appear in the Code column, the TLV value should be considered to be the eight-hour TLV-TWA.

PEL = Permissible Exposure Limit, established by OSHA, equals the maximium exposure conconcentration allowable for 8 hours per day @ 40 hours per week

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TURNKEY ENVIRONMENTAL RESTORATION, LLC

TABLE 2
POTENTIAL ROUTES OF EXPOSURE TO THE CONSTITUENTS OF POTENTIAL CONCERN

990 NIAGARA STREET SITE
BUFFALO, NEW YORK

Activity [1]	Direct Contact with Soil/Fill	Inhalation of Vapors or Dust	Direct Contact with Water
Remedial Investigation Tasks			
1. Excavation of Impacted Soil/Fill, Off-Site Disposal, & Backfill	**x**	**x**	**x**
2. Post-Excavation Sampling	**x**	**x**	
3. Waste Characterization Sampling	**x**	**x**	

Notes:
1. Activity as described in Section 1.5 of the Health and Safety Plan.

TABLE 3
REQUIRED LEVELS OF PROTECTION FOR REMEDIAL TASKS

990 NIAGARA STREET SITE
BUFFALO, NEW YORK

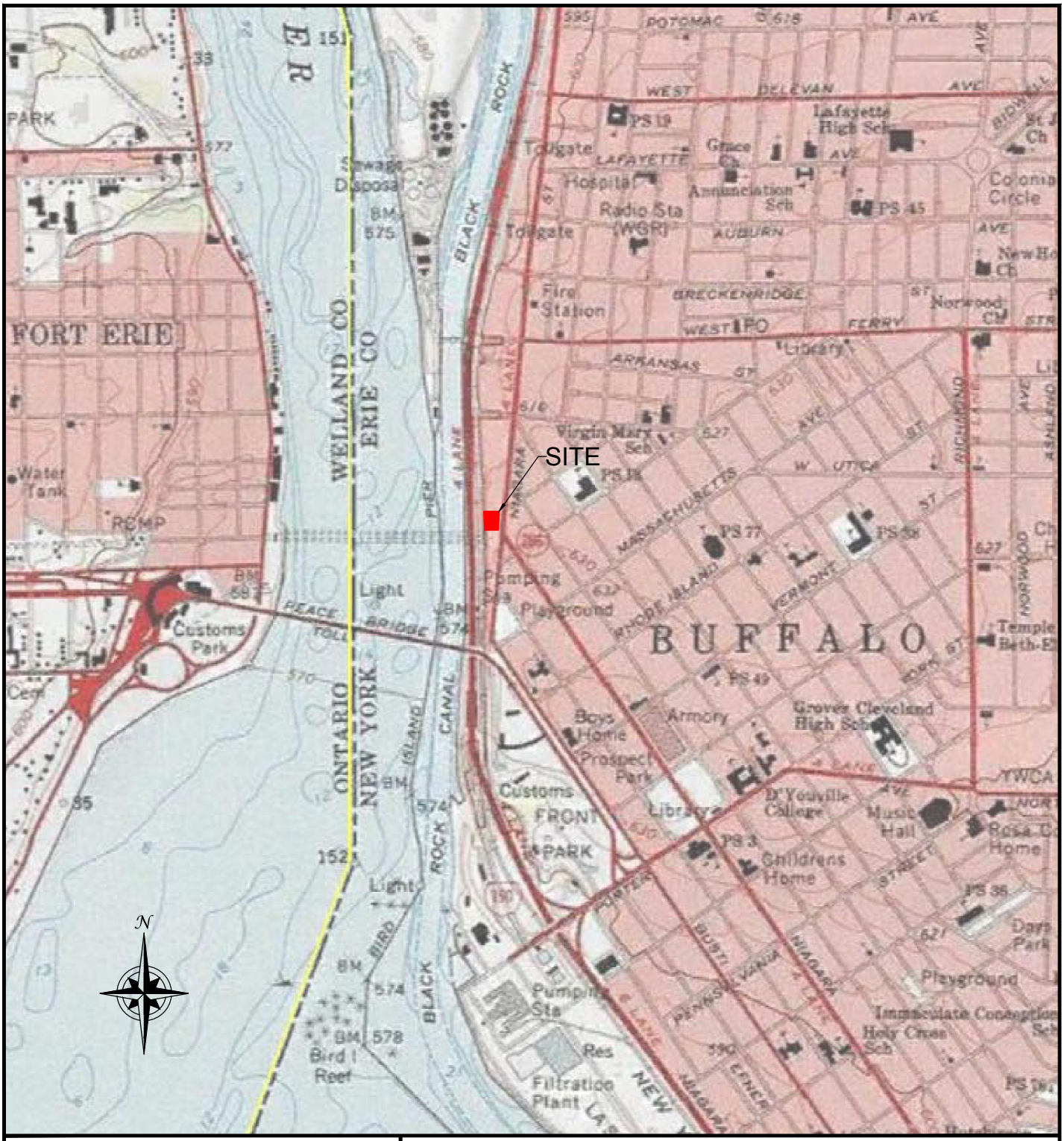
Activity	Respiratory Protection [1]	Clothing	Gloves [2]	Boots [2, 3]	Other Required PPE/ Modifications [2, 4]
Remedial Action Tasks					
1. Excavation of Impacted Soil/Fill, Off-Site Disposal, & Backfill	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS
2. Post-Excavation Sampling	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	SGSS
3. Waste Characterization Sampling	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	SGSS

Notes:
1. Respiratory equipment shall conform to guidelines presented in Section 7.0 of this HASP. The Level C requirement is an air-purifying respirator equiped with organic compound/acid gas/dust cartridge.
2. HH = hardhat; L= Latex; L/N = latex inner glove, nitrile outer glove; N = Nitrile; S = Saranex; SG = safety glasses; SGSS = safety glasses with sideshields; STSS = steel toe safety shoes.
3. Latex outer boot (or approved overboot) required whenever contact with contaminated materials may occur. SSHO may downgrade to STSS (steel-toed safety shoes) if contact will be limited to cover/replacement soils.
4. Dust masks shall be donned as directed by the SSHO (site safety and health officer) or site safety technician whenever potentially contaminated airborne particulates (i.e., dust) are present

FIGURES

F:\CAD\TurnKey\Legacy Development\990 Niagara Street\RI Work Plan\HASP\Figure 1; Site Location and Vicinity Map.dwg

FIGURE 1



BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TURNKEY ENVIRONMENTAL RESTORATION, LLC

2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

PROJECT NO.: 0395-016-002

DATE: JULY 2017

DRAFTED BY: RFL/CCB

SITE LOCATION AND VICINITY MAP

HEALTH AND SAFETY PLAN FOR RI ACTIVITIES

990 NIAGARA STREET

BUFFALO, NEW YORK

PREPARED FOR

990 NIAGARA LLC

ATTACHMENT A

EMERGENCY RESPONSE PLAN

BENCHMARK TURNKEY

EMERGENCY RESPONSE PLAN
for
BROWNFIELD CLEANUP PROGRAM
REMEDIAL ACTIVITIES

990 NIAGARA STREET SITE
BUFFALO, NEW YORK

August 2019 B0462-018-001

Prepared for:

990 Niagara LLC

Prepared By:

Benchmark Environmental Engineering & Science, PLLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0599

In Association With:

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

990 NIAGARA STREET SITE
HEALTH AND SAFETY PLAN FOR REMEDIAL ACTIVITIES
APPENDIX A: EMERGENCY RESPONSE PLAN

TABLE OF CONTENTS

LIST OF FIGURES

1.0 GENERAL

This report presents the site-specific Emergency Response Plan (ERP) referenced in the Site Health and Safety Plan (HASP) prepared for remedial activities at the 990 Niagara Street Site in Buffalo, New York. This appendix of the HASP describes potential emergencies that may occur at the Site; procedures for responding to those emergencies; roles and responsibilities during emergency response; and training all workers must receive in order to follow emergency procedures. This ERP also describes the provisions this Site has made to coordinate its emergency response planning with other contractors on-site and with off-site emergency response organizations.

This ERP is consistent with the requirements of 29 CFR 1910.120(l) and provides the following site-specific information:

- Pre-emergency planning.
- Personnel roles, lines of authority, and communication.
- Emergency recognition and prevention.
- Safe distances and places of refuge.
- Evacuation routes and procedures.
- Decontamination procedures.
- Emergency medical treatment and first aid.
- Emergency alerting and response procedures.
- Critique of response and follow-up.
- Emergency personal protective equipment (PPE) and equipment.

2.0 PRE-EMERGENCY PLANNING

This Site has been evaluated for potential emergency occurrences, based on site hazards, the required work tasks, the site topography, and prevailing weather conditions. The results of that evaluation indicate the potential for the following site emergencies to occur at the locations indicated.

Type of Emergency:

1. Medical, due to physical injury

Source of Emergency:

1. Slip/trip/fall

Location of Source:

1. Non-specific

3.0 ON-SITE EMERGENCY RESPONSE EQUIPMENT

Emergency procedures may require specialized equipment to facilitate worker rescue, contamination control and reduction, or post-emergency clean up. Emergency response equipment available on the Site is listed below. The equipment inventory and storage locations are based on the potential emergencies described above. This equipment inventory is designed to meet on-site emergency response needs and any specialized equipment needs that off-site responders might require because of the hazards at this Site but not ordinarily stocked.

Any additional personal protective equipment (PPE) required and stocked for emergency response is also listed in below. During an emergency, the Emergency Response Coordinator (ERC) is responsible for specifying the level of PPE required for emergency response. At a minimum, PPE used by emergency responders will comply with Section 7.0, Personal Protective Equipment, of this HASP. Emergency response equipment is inspected at regular intervals and maintained in good working order. The equipment inventory is replenished as necessary to maintain response capabilities.

Emergency Equipment	Quantity	Location
First Aid Kit	1	Site Vehicle
Chemical Fire Extinguisher	2 (minimum)	Heavy equipment and Site Vehicle

Emergency PPE	Quantity	Location
Full-face respirator	1 for each worker	Site Vehicle
Chemical-resistant suits	4 (minimum)	Site Vehicle

4.0 EMERGENCY PLANNING MAPS

An area-specific map of the Site will be developed on a daily basis during performance of field activities. The map will be marked to identify critical on-site emergency planning information, including: emergency evacuation routes, a place of refuge, an assembly point, and the locations of key site emergency equipment. Site zone boundaries will be shown to alert responders to known areas of contamination. There are no major topographical features, however the direction of prevailing winds/weather conditions that could affect emergency response planning are also marked on the map. The map will be posted at site-designated place of refuge and inside the Benchmark-TurnKey personnel field vehicle.

5.0 EMERGENCY CONTACTS

The following identifies the emergency contacts for this ERP.

Emergency Telephone Numbers:

Project Manager: *Michael Lesakowski*
Work: (716) 856-0599
Mobile: (716) 818-3954

Corporate Health and Safety Director: *Thomas H. Forbes*
Work: (716) 856-0599
Mobile: (716) 864-1730

Site Safety and Health Officer (SSHO): *Rick L. Dubisz*
Work: (716) 856-0599
Mobile: (716) 998-4334

Alternate SSHO: *Nathan Munley*
Work: (716) 856-0599
Mobile: (716) 289-1072

BUFFALO GENERAL MEDICAL CENTER (ER):	(716) 826-7000
FIRE:	911
AMBULANCE:	911
BUFFALO POLICE:	911
STATE EMERGENCY RESPONSE HOTLINE:	(800) 457-7362
NATIONAL RESPONSE HOTLINE:	(800) 424-8802
NYSDOH:	(716) 847-4385
NYSDEC:	(716) 851-7220
NYSDEC 24-HOUR SPILL HOTLINE:	(800) 457-7252

The Site location is:

990 Niagara Street
Buffalo, New York 14213
Site Phone Number: (Insert Cell Phone or Field Trailer): _____

6.0 EMERGENCY ALERTING & EVACUATION

Internal emergency communication systems are used to alert workers to danger, convey safety information, and maintain site control. Any effective system can be employed. Two-way radio headsets or field telephones are often used when work teams are far from the command post. Hand signals and air-horn blasts are also commonly used. Every system must have a backup. It shall be the responsibility of each contractor's SSHO to ensure personnel entering the site understand an adequate method of internal communication. Unless personnel are otherwise informed, the following signals shall be used.

1. Emergency signals by portable air horn, siren, or whistle: two short blasts, personal injury; continuous blast, emergency requiring site excavation.
2. Visual signals: hand gripping throat, out of air/cannot breathe; hands on top of head, need assistance; thumbs up, affirmative/ everything is OK; thumbs down, no/ negative; grip partner's wrist or waist, leave area immediately.

If evacuation notice is given, site workers leave the worksite with their respective buddies, if possible, by way of the nearest exit. Emergency decontamination procedures detailed in Section 12.0 of the HASP are followed to the extent practical without compromising the safety and health of site personnel. The evacuation routes and assembly area will be determined by conditions at the time of the evacuation based on wind direction, the location of the hazard source, and other factors as determined by rehearsals and inputs from emergency response organizations. Wind direction indicators are located so that workers can determine a safe up wind or cross wind evacuation route and assembly area if not informed by the emergency response coordinator at the time the evacuation alarm sounds. Since work conditions and work zones within the site may be changing on daily basis, it shall be the responsibility of the construction SSHO to review evacuation routes and procedures as necessary and to inform all Benchmark-TurnKey workers of any changes.

Personnel exiting the site will gather at a designated assembly point. To determine that everyone has successfully exited the site, personnel will be accounted for at the assembly site. If any worker cannot be accounted for, notification is given to the SSHO (***Rick Dubisz*** or ***Nathan Munley***) so that appropriate action can be initiated. Contractors and subcontractors on this site have coordinated their emergency response plans to ensure that these plans are compatible and that source(s) of potential emergencies are recognized, alarm

systems are clearly understood, and evacuation routes are accessible to all personnel relying upon them.

7.0 EXTREME WEATHER CONDITIONS

In the event of adverse weather conditions, the SSHO in conjunction with the Contractor's SSHO will determine if engineering operations can continue without sacrificing the health and safety of site personnel. Items to be considered prior to determining if work should continue include but are not limited to:

- Potential for heat/cold stress.
- Weather-related construction hazards (e.g., flooding or wet conditions producing undermining of structures or sheeting, high wind threats, etc.).
- Limited visibility.
- Potential for electrical storms.
- Limited site access/egress (e.g., due to heavy snow)

8.0 EMERGENCY MEDICAL TREATMENT & FIRST AID

Personnel Exposure:

The following general guidelines will be employed in instances where health impacts threaten to occur acute exposure is realized:

- Skin Contact: Use copious amounts of soap and water. Wash/rinse affected area for at least 15 minutes. Decontaminate and provide medical attention. Eyewash stations will be provided on site. If necessary, transport to Hospital.
- Inhalation: Move to fresh air and, if necessary, transport to Hospital.
- Ingestion: Decontaminate and transport to Hospital.

Personal Injury:

Minor first-aid will be applied on-site as deemed necessary. In the event of a life threatening injury, the individual should be transported to Hospital via ambulance. The SSHO will supply available chemical specific information to appropriate medical personnel as requested.

First aid kits will conform to Red Cross and other applicable good health standards, and shall consist of a weatherproof container with individually sealed packages for each type of item. First aid kits will be fully equipped before being sent out on each job and will be checked weekly by the SSHO to ensure that the expended items are replaced.

Directions to Buffalo General Medical Center (see Figure 1):

The following directions describe the best route from the Site to Buffalo General Medical Center located 2.3 miles away:

- Head **south** on **Niagara Street**
- Turn **left** to stay on **Niagara Street**
- Turn **left** onto **Porter Avenue**
- At traffic circle continue **straight** onto **North Street**
- Turn **right** onto **Ellicott Street**
- Turn **left** onto **High Street**
- Buffalo General Medical Center is located at **100 High Street, Buffalo, New York**

9.0 EMERGENCY RESPONSE CRITIQUE & RECORD KEEPING

Following an emergency, the SSHO and Project Manager shall review the effectiveness of this Emergency Response Plan (ERP) in addressing notification, control and evacuation requirements. Updates and modifications to this ERP shall be made accordingly. It shall be the responsibility of each contractor to establish and assure adequate records of the following:

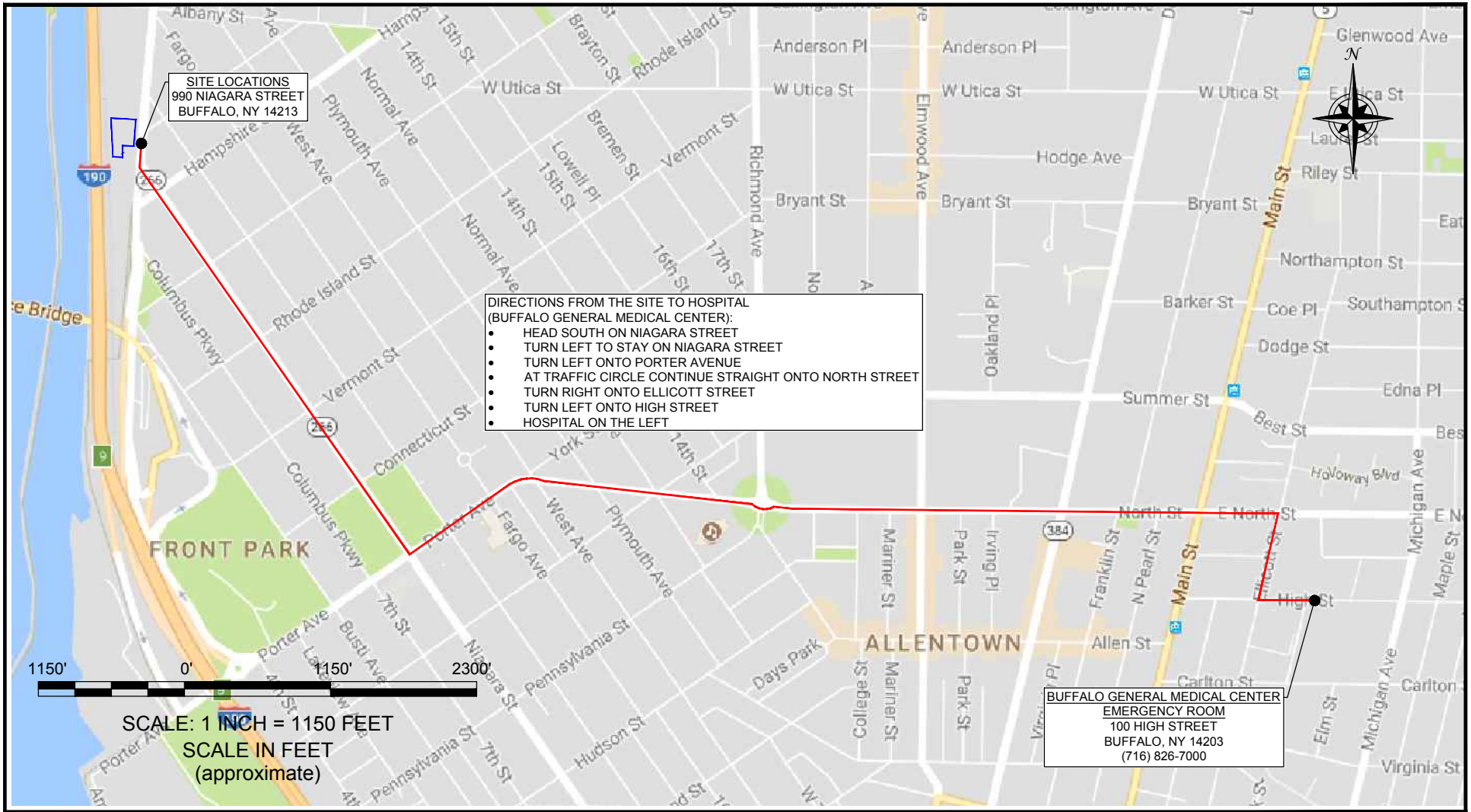
- Occupational injuries and illnesses.
- Accident investigations.
- Reports to insurance carrier or State compensation agencies.
- Reports required by the client.
- Records and reports required by local, state, federal and/or international agencies.
- Property or equipment damage.
- Third party injury or damage claims.
- Environmental testing logs.
- Explosive and hazardous substances inventories and records.
- Records of inspections and citations.
- Safety training.

10.0 EMERGENCY RESPONSE TRAINING

Persons who enter the worksite, including visitors, shall receive a site-specific briefing about anticipated emergency situations and the emergency procedures by the SSHO. Where this site relies on off-site organizations for emergency response, the training of personnel in those off-site organizations has been evaluated and is deemed adequate for response to this site.

FIGURES

F:\CAD\TurnKey\Legacy Development\990 Niagara Street\RI Work Plan\HASP\ERP\Figure 1; Hospital Route Map.dwg



HOSPITAL ROUTE MAP

EMERGENCY RESPONSE PLAN

990 NIAGARA STREET SITE
BUFFALO, NEW YORK

PREPARED FOR
990 NIAGARA LLC

FIGURE 1

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC
TURNKEY ENVIRONMENTAL RESTORATION, LLC
2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

PROJECT NO.: 0395-016-002

DATE: AUGUST 2017

DRAFTED BY: CCB

ATTACHMENT B

HOT WORK PERMIT FORM

HOT WORK PERMIT

PART 1 - INFORMATION

Issue Date:	
Date Work to be Performed: Start:	Finish (permit terminated):
Performed By:	
Work Area:	
Object to be Worked On:	

PART 2 - APPROVAL

(for 1, 2 or 3: mark Yes, No or NA)*

Will working be on or in:	Finish (permit terminated):	
1. Metal partition, wall, ceiling covered by combustible material?	yes	no
2. Pipes, in contact with combustible material?	yes	no
3. Explosive area?	yes	no

* = If any of these conditions exist (marked "yes"), a permit will not be issued without being reviewed and approved by Thomas H. Forbes (Corporate Health and Safety Director). Required Signature below.

PART 3 - REQUIRED CONDITIONS**

(Check all conditions that must be met)

	PROTECTIVE ACTION		PROTECTIVE EQUIPMENT
	Specific Risk Assessment Required		Goggles/visor/welding screen
	Fire or spark barrier		Apron/fireproof clothing
	Cover hot surfaces		Welding gloves/gauntlets/other:
	Move movable fire hazards, specifically		Wellintons/Knee pads
	Erect screen on barrier		Ear protection: Ear muffs/Ear plugs
	Restrict Access		B.A.: SCBA/Long Breather
	Wet the ground		Respirator: Type:
	Ensure adequate ventilation		Cartridge:
	Provide adequate supports		Local Exhaust Ventilation
	Cover exposed drain/floor or wall cracks		Extinguisher/Fire blanket
	Fire watch (must remain on duty during duration of permit)		Personal flammable gas monitor
	Issue additional permit(s):		

Other precautions:

** Permit will not be issued until these conditions are met.

SIGNATURES

Orginating Employee:	Date:
Project Manager:	Date:
Part 2 Approval:	Date:

APPENDIX B

COMMUNITY AIR MONITORING PLAN (CAMP)

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 C2
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50^{o} C (14 to 122^{o} F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

APPENDIX C

PROJECT DOCUMENTATION FORMS

BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

DAILY LOG				
	DATE			
	NO.			
	SHEET		OF	

FIELD ACTIVITY DAILY LOG

PROJECT NAME:	PROJECT NO.
PROJECT LOCATION:	CLIENT:
FIELD ACTIVITY:	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

TIME	DESCRIPTION

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:

WEATHER CONDITIONS:	IMPORTANT TELEPHONE CALLS:
A.M.:	
P.M.:	

PERSONNEL ON SITE:

SIGNATURE DATE:

BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

DAILY LOG	DATE			
	NO.			
	SHEET		OF	

FIELD ACTIVITY DAILY LOG
(CONTINUED)

PROJECT NAME:	PROJECT NO.

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

TIME	DESCRIPTION

SIGNATURE DATE:

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

DAILY LOG	DATE			
	NO.			
	SHEET		OF	

FIELD ACTIVITY DAILY LOG
(CONTINUED)

PROJECT NAME:	PROJECT NO.

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

TIME	DESCRIPTION

REFERENCED PROJECT FIELD FORMS:

☐ Aquifer Test Data Sheet	☐ Impacted Soil Excavation Log	☐ Soil Gas Survey Log
☐ Chain-of-Custody Form	☐ Impacted Soil Transportation Log	☐ Step-Drawdown Test Data Sheet
☐ Construction Sample Summary Log	☐ Monitoring Well Inspection Form	☐ Survey Elevation Log
☐ Corrective Measures Report	☐ Nuclear Densitometer Field Log	☐ Tailgate Safety Meeting Form
☐ Daily Drilling Report	☐ Photographic Log	☐ Test Pit Excavation Log
☐ Drilling Safety Checklist	☐ Pipe Leakage Testing Log	☐ Underground/Overhead Utility Checklist
☐ Equipment Calibration Log	☐ Post-Closure Field Inspection Report	☐ Variance Log
☐ Field Borehole Log	☐ Pressure Packer Testing Log	☐ Water Level Monitoring Record
☐ Field Borehole/Monitoring Well Installation Log	☐ Problem Identification Report	☐ Water Quality Field Collection Log
☐ Field Investigation Report	☐ Real-Time Air Monitoring Log	☐ Water Sample Collection Log
☐ Field Slug Test Log	☐ Record of Telecom Meeting	☐ Well Abandonment/Decomm. Log
☐ Groundwater Elevation Log	☐ Sample Summary Collection Log	☐ Well Completion Detail
☐ GW Well Development and Purge Log	☐ Sediment Sample Collection Log	☐
☐ Hot Work Permit	☐ Seep Sample Collection Log	☐
☐ IDW Container Log	☐ Seepage Meter Sample Collection Log	☐

SIGNATURE DATE:

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

DAILY LOG	DATE			
	REPORT NO.			
	PAGE		OF	

PROBLEM IDENTIFICATION REPORT

Date:

Project:

Job No:

Location:

CQA Monitor(s):

Client:

Contractor:

Contractor's Supervisor:

WEATHER CONDITIONS:

Ambient Air Temp. - A.M.:

Ambient Air Temp. - P.M.:

Wind Direction:

Wind Speed:

Precipitation:

Problem Description:

Problem Location (reference test location, sketch on back of form as appropriate):

Problem Causes:

Suggested Corrective Measures or Variances:

Linked to Corrective Measures Report No. *or Variance Log No.*

Approvals (initial):

CQA Engineer:

Project Manager:

Signed:

CQA Representative

BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

DAILY LOG	DATE			
	REPORT NO.			
	PAGE		OF	

CORRECTIVE MEASURES REPORT

Date:

Project:

Job No:

Location:

CQA Monitor(s):

Client:

Contractor:

Contractor's Supervisor:

WEATHER CONDITIONS:

Ambient Air Temp. - A.M.:

Ambient Air Temp. - P.M.:

Wind Direction:

Wind Speed:

Precipitation:

Corrective Measures Undertaken (reference Problem Identification Report No.)

Retesing Location:

Suggested Method of Minimizing Re-Occurrence:

Approvals (initial):

CQA Engineer:

Project Manager:

Signed:

CQA Representative

APPENDIX D

SUPPLEMENTAL SOIL/FILL ANALYTICAL DATA PACKAGE

BENCHMARK TURNKEY

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

Laboratory Job ID: 480-152346-1
Client Project/Site: Benchmark - 990 Niagara St. site

For:
Benchmark Env. Eng. & Science, PLLC
2558 Hamburg Turnpike
Suite 300
Lackawanna, New York 14218

Attn: Mr. Michael Lesakowski

Authorized for release by:
5/10/2019 11:40:55 AM

Brian Fischer, Manager of Project Management
(716)504-9835
brian.fischer@testamericainc.com

Table of Contents

Definitions/Glossary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 990 Niagara St. site

Job ID: 480-152346-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
vs	Reported analyte concentrations are below 200 ug/kg and may be biased low due to the sample not being collected according to 5035A-L low-level specifications.

GC/MS Semi VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 480-152346-1

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-152346-1

Comments
No additional comments.

Receipt
The samples were received on 4/19/2019 2:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.3º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC/MS Semi VOA
Method(s) 8270D: The continuing calibration verification (CCV) associated with batch 480-471693 recovered above the upper control limit for Pentachlorophenol. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: SB-18-.25-1.25FT (480-152346-1) and SB-19-.25-1.25FT (480-152346-2).

Method(s) 8270D: The laboratory control sample (LCS) for preparation batch 480-470311 and analytical batch 480-471693 recovered outside control limits for the following analytes: Pentachlorophenol. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA
Method(s) 8082A: The following samples are associated with a continuing calibration verification (CCV 480-469954/5 and/or 480-469954/31) that had recoveries for the surrogate Decachlorobiphenyl that were below acceptance limits: SB-18-.25-1.25FT (480-152346-1) and SB-19-.25-1.25FT (480-152346-2). The secondary surrogate Tetrachloro-m-xylene is within limits. Therefore, the data has been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
Method(s) 6010C: The continuing calibration blank (CCB 480-470386/23) contained Total Barium above the reporting limit (RL). All reported samples associated with this CCB were either below the laboratory's standard reporting limit for this analyte or contained this analyte at a concentration greater than 10X the value found in the CCB; therefore, re-analysis of samples (LCSSRM 480-469958/2-A) and (MB 480-469958/1-A) was not performed.

Method(s) 6010C: The low level continuing calibration verification (CCVL 480-470386/24) recovered above the upper control limit for Total Barium. The samples associated with this CCVL were either less than the reporting limit (RL) for this analyte or contained this analyte at a concentration greater than 10X the value found in the CCVL; therefore, re-analysis of samples (LCSSRM 480-469958/2-A) and (MB 480-469958/1-A) was not performed.

Method(s) 6010C: The low level continuing calibration verification (CCVL 480-470386/36) recovered above the upper control limit for Total Barium. The samples associated with this CCVL were either less than the reporting limit (RL) for this analyte or contained this analyte at a concentration greater than 10X the value found in the CCVL; therefore, re-analysis of samples SB-18-.25-1.25FT (480-152346-1) and SB-19-.25-1.25FT (480-152346-2) was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
Method(s) 3550C: The following samples required a Florisil clean-up, via EPA Method 3620C, to reduce matrix interferences: SB-18-.25-1.25FT (480-152346-1), SB-19-.25-1.25FT (480-152346-2), (480-152346-A-1 MS) and (480-152346-A-1 MSD).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 990 Niagara St. site

Job ID: 480-152346-1

Client Sample ID: SB-18-.25-1.25FT — Lab Sample ID: 480-152346-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	7.5	J vs	29	4.9	ug/Kg	1	☼	8260C	Total/NA
Chloroform	0.37	J vs	5.8	0.36	ug/Kg	1	☼	8260C	Total/NA
Methylene Chloride	8.0	vs	5.8	2.7	ug/Kg	1	☼	8260C	Total/NA
2-Methylnaphthalene	63	J	200	40	ug/Kg	1	☼	8270D	Total/NA
Benzo[a]anthracene	32	J	200	20	ug/Kg	1	☼	8270D	Total/NA
Benzo[a]pyrene	37	J	200	29	ug/Kg	1	☼	8270D	Total/NA
Benzo[b]fluoranthene	38	J	200	32	ug/Kg	1	☼	8270D	Total/NA
Bis(2-ethylhexyl) phthalate	660		200	68	ug/Kg	1	☼	8270D	Total/NA
Chrysene	56	J	200	44	ug/Kg	1	☼	8270D	Total/NA
Dibenzofuran	23	J	200	23	ug/Kg	1	☼	8270D	Total/NA
Naphthalene	37	J	200	26	ug/Kg	1	☼	8270D	Total/NA
Phenanthrene	51	J	200	29	ug/Kg	1	☼	8270D	Total/NA
Pyrene	35	J	200	23	ug/Kg	1	☼	8270D	Total/NA
4,4'-DDT	0.77	J	2.0	0.46	ug/Kg	1	☼	8081B	Total/NA
Aluminum	3370		11.5	5.1	mg/Kg	1	☼	6010C	Total/NA
Arsenic	9.1		2.3	0.46	mg/Kg	1	☼	6010C	Total/NA
Barium	92.6	B ^	0.58	0.13	mg/Kg	1	☼	6010C	Total/NA
Beryllium	0.46		0.23	0.032	mg/Kg	1	☼	6010C	Total/NA
Cadmium	0.18	J	0.23	0.035	mg/Kg	1	☼	6010C	Total/NA
Calcium	10000	B	57.6	3.8	mg/Kg	1	☼	6010C	Total/NA
Chromium	11.6	B	0.58	0.23	mg/Kg	1	☼	6010C	Total/NA
Cobalt	7.5		0.58	0.058	mg/Kg	1	☼	6010C	Total/NA
Copper	21.0		1.2	0.24	mg/Kg	1	☼	6010C	Total/NA
Iron	22200	B	11.5	4.0	mg/Kg	1	☼	6010C	Total/NA
Lead	50.0		1.2	0.28	mg/Kg	1	☼	6010C	Total/NA
Magnesium	1990	B	23.0	1.1	mg/Kg	1	☼	6010C	Total/NA
Manganese	64.6		0.23	0.037	mg/Kg	1	☼	6010C	Total/NA
Nickel	21.4		5.8	0.26	mg/Kg	1	☼	6010C	Total/NA
Potassium	1050		34.5	23.0	mg/Kg	1	☼	6010C	Total/NA
Sodium	607	B	161	15.0	mg/Kg	1	☼	6010C	Total/NA
Vanadium	19.3		0.58	0.13	mg/Kg	1	☼	6010C	Total/NA
Zinc	23.4		2.3	0.74	mg/Kg	1	☼	6010C	Total/NA
Mercury	0.010	J	0.024	0.0097	mg/Kg	1	☼	7471B	Total/NA

Client Sample ID: SB-19-.25-1.25FT — Lab Sample ID: 480-152346-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
2-Methylnaphthalene	67	J	190	39	ug/Kg	1	☼	8270D	Total/NA
Benzo[a]anthracene	26	J	190	19	ug/Kg	1	☼	8270D	Total/NA
Benzo[b]fluoranthene	33	J	190	31	ug/Kg	1	☼	8270D	Total/NA
Bis(2-ethylhexyl) phthalate	500		190	66	ug/Kg	1	☼	8270D	Total/NA
Chrysene	43	J	190	43	ug/Kg	1	☼	8270D	Total/NA
Dibenzofuran	24	J	190	23	ug/Kg	1	☼	8270D	Total/NA
Fluoranthene	33	J	190	20	ug/Kg	1	☼	8270D	Total/NA
Naphthalene	38	J	190	25	ug/Kg	1	☼	8270D	Total/NA
Phenanthrene	60	J	190	28	ug/Kg	1	☼	8270D	Total/NA
Pyrene	40	J	190	23	ug/Kg	1	☼	8270D	Total/NA
4,4'-DDT	0.77	J	2.0	0.46	ug/Kg	1	☼	8081B	Total/NA
Aluminum	5190		11.4	5.0	mg/Kg	1	☼	6010C	Total/NA
Arsenic	36.0		2.3	0.46	mg/Kg	1	☼	6010C	Total/NA
Barium	96.0	B ^	0.57	0.13	mg/Kg	1	☼	6010C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Buffalo

Client Sample ID: SB-19-.25-1.25FT (Continued)
Lab Sample ID: 480-152346-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Beryllium	0.60		0.23	0.032	mg/Kg	1	☼	6010C	Total/NA
Cadmium	0.28		0.23	0.034	mg/Kg	1	☼	6010C	Total/NA
Calcium	27600	B	56.9	3.8	mg/Kg	1	☼	6010C	Total/NA
Chromium	7.9	B	0.57	0.23	mg/Kg	1	☼	6010C	Total/NA
Cobalt	5.4		0.57	0.057	mg/Kg	1	☼	6010C	Total/NA
Copper	19.5		1.1	0.24	mg/Kg	1	☼	6010C	Total/NA
Iron	20300	B	11.4	4.0	mg/Kg	1	☼	6010C	Total/NA
Lead	20.7		1.1	0.27	mg/Kg	1	☼	6010C	Total/NA
Magnesium	7610	B	22.8	1.1	mg/Kg	1	☼	6010C	Total/NA
Manganese	94.7		0.23	0.036	mg/Kg	1	☼	6010C	Total/NA
Nickel	15.3		5.7	0.26	mg/Kg	1	☼	6010C	Total/NA
Potassium	1260		34.1	22.8	mg/Kg	1	☼	6010C	Total/NA
Selenium	1.1	J	4.6	0.46	mg/Kg	1	☼	6010C	Total/NA
Sodium	234	B	159	14.8	mg/Kg	1	☼	6010C	Total/NA
Vanadium	13.3		0.57	0.13	mg/Kg	1	☼	6010C	Total/NA
Zinc	27.9		2.3	0.73	mg/Kg	1	☼	6010C	Total/NA
Mercury	0.033		0.022	0.0088	mg/Kg	1	☼	7471B	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 990 Niagara St. site

Job ID: 480-152346-1

Client Sample ID: SB-18-.25-1.25FT
Date Collected: 04/18/19 09:30
Date Received: 04/19/19 14:40

Lab Sample ID: 480-152346-1
Matrix: Solid
Percent Solids: 85.0

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	5.8	0.42	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
1,1,2,2-Tetrachloroethane	ND	vs	5.8	0.94	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	5.8	1.3	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
1,1,2-Trichloroethane	ND	vs	5.8	0.76	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
1,1-Dichloroethane	ND	vs	5.8	0.71	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
1,1-Dichloroethene	ND	vs	5.8	0.71	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
1,2,4-Trichlorobenzene	ND	vs	5.8	0.35	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
1,2,4-Trimethylbenzene	ND	vs	5.8	1.1	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
1,2-Dibromo-3-Chloropropane	ND	vs	5.8	2.9	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
1,2-Dibromoethane	ND	vs	5.8	0.75	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
1,2-Dichlorobenzene	ND	vs	5.8	0.46	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
1,2-Dichloroethane	ND	vs	5.8	0.29	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
1,2-Dichloropropane	ND	vs	5.8	2.9	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
1,3,5-Trimethylbenzene	ND	vs	5.8	0.38	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
1,3-Dichlorobenzene	ND	vs	5.8	0.30	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
1,4-Dichlorobenzene	ND	vs	5.8	0.82	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
2-Butanone (MEK)	ND	vs	29	2.1	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
2-Hexanone	ND	vs	29	2.9	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
4-Isopropyltoluene	ND	vs	5.8	0.47	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
4-Methyl-2-pentanone (MIBK)	ND	vs	29	1.9	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Acetone	**7.5**	**J vs**	29	4.9	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Benzene	ND	vs	5.8	0.29	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Bromodichloromethane	ND	vs	5.8	0.78	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Bromoform	ND	vs	5.8	2.9	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Bromomethane	ND	vs	5.8	0.52	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Carbon disulfide	ND	vs	5.8	2.9	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Carbon tetrachloride	ND	vs	5.8	0.56	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Chlorobenzene	ND	vs	5.8	0.77	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Chloroethane	ND	vs	5.8	1.3	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Chloroform	**0.37**	**J vs**	5.8	0.36	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Chloromethane	ND	vs	5.8	0.35	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
cis-1,2-Dichloroethene	ND	vs	5.8	0.75	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
cis-1,3-Dichloropropene	ND	vs	5.8	0.84	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Cyclohexane	ND	vs	5.8	0.82	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Dibromochloromethane	ND	vs	5.8	0.75	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Dichlorodifluoromethane	ND	vs	5.8	0.48	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Ethylbenzene	ND	vs	5.8	0.40	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Isopropylbenzene	ND	vs	5.8	0.88	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
m,p-Xylene	ND	vs	12	0.98	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Methyl acetate	ND	vs	29	3.5	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Methyl tert-butyl ether	ND	vs	5.8	0.57	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Methylcyclohexane	ND	vs	5.8	0.89	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Methylene Chloride	**8.0**	**vs**	5.8	2.7	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
n-Butylbenzene	ND	vs	5.8	0.51	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
N-Propylbenzene	ND	vs	5.8	0.47	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
o-Xylene	ND	vs	5.8	0.76	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
sec-Butylbenzene	ND	vs	5.8	0.51	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Styrene	ND	vs	5.8	0.29	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
tert-Butylbenzene	ND	vs	5.8	0.61	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 990 Niagara St. site

Job ID: 480-152346-1

Client Sample ID: SB-18-.25-1.25FT
Date Collected: 04/18/19 09:30
Date Received: 04/19/19 14:40

Lab Sample ID: 480-152346-1
Matrix: Solid
Percent Solids: 85.0

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	ND	vs	5.8	0.78	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Toluene	ND	vs	5.8	0.44	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
trans-1,2-Dichloroethene	ND	vs	5.8	0.60	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
trans-1,3-Dichloropropene	ND	vs	5.8	2.6	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Trichloroethene	ND	vs	5.8	1.3	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Trichlorofluoromethane	ND	vs	5.8	0.55	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Vinyl chloride	ND	vs	5.8	0.71	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1
Xylenes, Total	ND	vs	12	0.98	ug/Kg	☼	04/25/19 13:56	04/26/19 07:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*64 - 126*	*04/25/19 13:56*	*04/26/19 07:54*	*1*
4-Bromofluorobenzene (Surr)	*96*		*72 - 126*	*04/25/19 13:56*	*04/26/19 07:54*	*1*
Dibromofluoromethane (Surr)	*108*		*60 - 140*	*04/25/19 13:56*	*04/26/19 07:54*	*1*
Toluene-d8 (Surr)	*103*		*71 - 125*	*04/25/19 13:56*	*04/26/19 07:54*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-Trichlorophenol	ND		200	54	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
2,4,6-Trichlorophenol	ND		200	40	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
2,4-Dichlorophenol	ND		200	21	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
2,4-Dimethylphenol	ND		200	48	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
2,4-Dinitrophenol	ND		1900	920	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
2,4-Dinitrotoluene	ND		200	41	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
2,6-Dinitrotoluene	ND		200	23	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
2-Chloronaphthalene	ND		200	33	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
2-Chlorophenol	ND		200	36	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
2-Methylnaphthalene	**63**	**J**	200	40	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
2-Methylphenol	ND		200	23	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
2-Nitroaniline	ND		390	29	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
2-Nitrophenol	ND		200	56	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
3,3'-Dichlorobenzidine	ND		390	230	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
3-Nitroaniline	ND		390	55	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
4,6-Dinitro-2-methylphenol	ND		390	200	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
4-Bromophenyl phenyl ether	ND		200	28	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
4-Chloro-3-methylphenol	ND		200	49	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
4-Chloroaniline	ND		200	49	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
4-Chlorophenyl phenyl ether	ND		200	25	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
4-Methylphenol	ND		390	23	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
4-Nitroaniline	ND		390	100	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
4-Nitrophenol	ND		390	140	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Acenaphthene	ND		200	29	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Acenaphthylene	ND		200	26	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Acetophenone	ND		200	27	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Anthracene	ND		200	49	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Atrazine	ND		200	69	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Benzaldehyde	ND		200	160	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Benzo[a]anthracene	**32**	**J**	200	20	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Benzo[a]pyrene	**37**	**J**	200	29	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Benzo[b]fluoranthene	**38**	**J**	200	32	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Benzo[g,h,i]perylene	ND		200	21	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1

Client Sample ID: SB-18-.25-1.25FT
Lab Sample ID: 480-152346-1
Date Collected: 04/18/19 09:30
Matrix: Solid
Date Received: 04/19/19 14:40
Percent Solids: 85.0

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[k]fluoranthene	ND		200	26	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Biphenyl	ND		200	29	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
bis (2-chloroisopropyl) ether	ND		200	40	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Bis(2-chloroethoxy)methane	ND		200	42	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Bis(2-chloroethyl)ether	ND		200	26	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Bis(2-ethylhexyl) phthalate	**660**		200	68	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Butyl benzyl phthalate	ND		200	33	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Caprolactam	ND		200	60	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Carbazole	ND		200	23	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Chrysene	**56**	**J**	200	44	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Dibenz(a,h)anthracene	ND		200	35	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Dibenzofuran	**23**	**J**	200	23	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Diethyl phthalate	ND		200	26	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Dimethyl phthalate	ND		200	23	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Di-n-butyl phthalate	ND		200	34	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Di-n-octyl phthalate	ND		200	23	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Fluoranthene	ND		200	21	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Fluorene	ND		200	23	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Hexachlorobenzene	ND		200	27	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Hexachlorobutadiene	ND		200	29	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Hexachlorocyclopentadiene	ND		200	27	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Hexachloroethane	ND		200	26	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Indeno[1,2,3-cd]pyrene	ND		200	25	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Isophorone	ND		200	42	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Naphthalene	**37**	**J**	200	26	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Nitrobenzene	ND		200	22	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
N-Nitrosodi-n-propylamine	ND		200	34	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
N-Nitrosodiphenylamine	ND		200	160	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Pentachlorophenol	ND	*	390	200	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Phenanthrene	**51**	**J**	200	29	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Phenol	ND		200	30	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1
Pyrene	**35**	**J**	200	23	ug/Kg	☼	04/29/19 15:31	05/08/19 12:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*94*		*54 - 120*	*04/29/19 15:31*	*05/08/19 12:51*	*1*
2-Fluorobiphenyl	*102*		*60 - 120*	*04/29/19 15:31*	*05/08/19 12:51*	*1*
2-Fluorophenol	*88*		*52 - 120*	*04/29/19 15:31*	*05/08/19 12:51*	*1*
Nitrobenzene-d5	*91*		*53 - 120*	*04/29/19 15:31*	*05/08/19 12:51*	*1*
Phenol-d5	*90*		*54 - 120*	*04/29/19 15:31*	*05/08/19 12:51*	*1*
p-Terphenyl-d14	*106*		*65 - 121*	*04/29/19 15:31*	*05/08/19 12:51*	*1*

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		2.0	0.38	ug/Kg	☼	04/26/19 15:09	04/28/19 11:12	1
4,4'-DDE	ND		2.0	0.41	ug/Kg	☼	04/26/19 15:09	04/28/19 11:12	1
4,4'-DDT	**0.77**	**J**	2.0	0.46	ug/Kg	☼	04/26/19 15:09	04/28/19 11:12	1
Aldrin	ND		2.0	0.48	ug/Kg	☼	04/26/19 15:09	04/28/19 11:12	1
alpha-BHC	ND		2.0	0.35	ug/Kg	☼	04/26/19 15:09	04/28/19 11:12	1
cis-Chlordane	ND		2.0	0.97	ug/Kg	☼	04/26/19 15:09	04/28/19 11:12	1
beta-BHC	ND		2.0	0.35	ug/Kg	☼	04/26/19 15:09	04/28/19 11:12	1

Client Sample ID: SB-18-.25-1.25FT
Lab Sample ID: 480-152346-1
Date Collected: 04/18/19 09:30
Matrix: Solid
Date Received: 04/19/19 14:40
Percent Solids: 85.0

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
delta-BHC	ND		2.0	0.36	ug/Kg	☼	04/26/19 15:09	04/28/19 11:12	1
Dieldrin	ND		2.0	0.47	ug/Kg	☼	04/26/19 15:09	04/28/19 11:12	1
Endosulfan I	ND		2.0	0.38	ug/Kg	☼	04/26/19 15:09	04/28/19 11:12	1
Endosulfan II	ND		2.0	0.35	ug/Kg	☼	04/26/19 15:09	04/28/19 11:12	1
Endosulfan sulfate	ND		2.0	0.36	ug/Kg	☼	04/26/19 15:09	04/28/19 11:12	1
Endrin	ND		2.0	0.39	ug/Kg	☼	04/26/19 15:09	04/28/19 11:12	1
Endrin aldehyde	ND		2.0	0.50	ug/Kg	☼	04/26/19 15:09	04/28/19 11:12	1
Endrin ketone	ND		2.0	0.48	ug/Kg	☼	04/26/19 15:09	04/28/19 11:12	1
gamma-BHC (Lindane)	ND		2.0	0.36	ug/Kg	☼	04/26/19 15:09	04/28/19 11:12	1
trans-Chlordane	ND		2.0	0.62	ug/Kg	☼	04/26/19 15:09	04/28/19 11:12	1
Heptachlor	ND		2.0	0.42	ug/Kg	☼	04/26/19 15:09	04/28/19 11:12	1
Heptachlor epoxide	ND		2.0	0.50	ug/Kg	☼	04/26/19 15:09	04/28/19 11:12	1
Methoxychlor	ND		2.0	0.40	ug/Kg	☼	04/26/19 15:09	04/28/19 11:12	1
Toxaphene	ND		20	11	ug/Kg	☼	04/26/19 15:09	04/28/19 11:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*76*		*45 - 120*	*04/26/19 15:09*	*04/28/19 11:12*	*1*
DCB Decachlorobiphenyl	*88*		*45 - 120*	*04/26/19 15:09*	*04/28/19 11:12*	*1*
Tetrachloro-m-xylene	*82*		*30 - 124*	*04/26/19 15:09*	*04/28/19 11:12*	*1*
Tetrachloro-m-xylene	*62*		*30 - 124*	*04/26/19 15:09*	*04/28/19 11:12*	*1*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.24	0.048	mg/Kg	☼	04/25/19 07:03	04/27/19 02:27	1
PCB-1221	ND		0.24	0.048	mg/Kg	☼	04/25/19 07:03	04/27/19 02:27	1
PCB-1232	ND		0.24	0.048	mg/Kg	☼	04/25/19 07:03	04/27/19 02:27	1
PCB-1242	ND		0.24	0.048	mg/Kg	☼	04/25/19 07:03	04/27/19 02:27	1
PCB-1248	ND		0.24	0.048	mg/Kg	☼	04/25/19 07:03	04/27/19 02:27	1
PCB-1254	ND		0.24	0.11	mg/Kg	☼	04/25/19 07:03	04/27/19 02:27	1
PCB-1260	ND		0.24	0.11	mg/Kg	☼	04/25/19 07:03	04/27/19 02:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*103*		*60 - 154*	*04/25/19 07:03*	*04/27/19 02:27*	*1*
Tetrachloro-m-xylene	*88*		*60 - 154*	*04/25/19 07:03*	*04/27/19 02:27*	*1*
DCB Decachlorobiphenyl	*107*		*65 - 174*	*04/25/19 07:03*	*04/27/19 02:27*	*1*
DCB Decachlorobiphenyl	*93*		*65 - 174*	*04/25/19 07:03*	*04/27/19 02:27*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		19	6.1	ug/Kg	☼	04/25/19 06:56	04/27/19 14:09	1
Silvex (2,4,5-TP)	ND		19	6.9	ug/Kg	☼	04/25/19 06:56	04/27/19 14:09	1
2,4-D	ND		19	12	ug/Kg	☼	04/25/19 06:56	04/27/19 14:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*57*		*28 - 129*	*04/25/19 06:56*	*04/27/19 14:09*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**3370**		11.5	5.1	mg/Kg	☼	04/26/19 11:45	04/29/19 14:04	1
Antimony	ND		17.3	0.46	mg/Kg	☼	04/26/19 11:45	04/29/19 14:04	1
Arsenic	**9.1**		2.3	0.46	mg/Kg	☼	04/26/19 11:45	04/29/19 14:04	1

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 990 Niagara St. site

Job ID: 480-152346-1

Client Sample ID: SB-18-.25-1.25FT
Date Collected: 04/18/19 09:30
Date Received: 04/19/19 14:40

Lab Sample ID: 480-152346-1
Matrix: Solid
Percent Solids: 85.0

Method: 6010C - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	92.6	B ^	0.58	0.13	mg/Kg	☼	04/26/19 11:45	04/29/19 14:04	1
Beryllium	0.46		0.23	0.032	mg/Kg	☼	04/26/19 11:45	04/29/19 14:04	1
Cadmium	0.18	J	0.23	0.035	mg/Kg	☼	04/26/19 11:45	04/29/19 14:04	1
Calcium	10000	B	57.6	3.8	mg/Kg	☼	04/26/19 11:45	04/29/19 14:04	1
Chromium	11.6	B	0.58	0.23	mg/Kg	☼	04/26/19 11:45	04/29/19 14:04	1
Cobalt	7.5		0.58	0.058	mg/Kg	☼	04/26/19 11:45	04/29/19 14:04	1
Copper	21.0		1.2	0.24	mg/Kg	☼	04/26/19 11:45	04/29/19 14:04	1
Iron	22200	B	11.5	4.0	mg/Kg	☼	04/26/19 11:45	04/29/19 14:04	1
Lead	50.0		1.2	0.28	mg/Kg	☼	04/26/19 11:45	04/29/19 14:04	1
Magnesium	1990	B	23.0	1.1	mg/Kg	☼	04/26/19 11:45	04/29/19 14:04	1
Manganese	64.6		0.23	0.037	mg/Kg	☼	04/26/19 11:45	04/29/19 14:04	1
Nickel	21.4		5.8	0.26	mg/Kg	☼	04/26/19 11:45	04/29/19 14:04	1
Potassium	1050		34.5	23.0	mg/Kg	☼	04/26/19 11:45	04/29/19 14:04	1
Selenium	ND		4.6	0.46	mg/Kg	☼	04/26/19 11:45	04/29/19 14:04	1
Silver	ND		0.69	0.23	mg/Kg	☼	04/26/19 11:45	04/29/19 14:04	1
Sodium	607	B	161	15.0	mg/Kg	☼	04/26/19 11:45	04/29/19 14:04	1
Thallium	ND		6.9	0.35	mg/Kg	☼	04/26/19 11:45	04/29/19 14:04	1
Vanadium	19.3		0.58	0.13	mg/Kg	☼	04/26/19 11:45	04/29/19 14:04	1
Zinc	23.4		2.3	0.74	mg/Kg	☼	04/26/19 11:45	04/29/19 14:04	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.010	J	0.024	0.0097	mg/Kg	☼	04/28/19 13:50	04/28/19 15:38	1

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 990 Niagara St. site

Job ID: 480-152346-1

Client Sample ID: SB-19-.25-1.25FT
Date Collected: 04/18/19 11:00
Date Received: 04/19/19 14:40

Lab Sample ID: 480-152346-2
Matrix: Solid
Percent Solids: 85.4

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	5.8	0.42	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
1,1,2,2-Tetrachloroethane	ND	vs	5.8	0.94	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	5.8	1.3	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
1,1,2-Trichloroethane	ND	vs	5.8	0.76	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
1,1-Dichloroethane	ND	vs	5.8	0.71	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
1,1-Dichloroethene	ND	vs	5.8	0.71	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
1,2,4-Trichlorobenzene	ND	vs	5.8	0.35	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
1,2,4-Trimethylbenzene	ND	vs	5.8	1.1	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
1,2-Dibromo-3-Chloropropane	ND	vs	5.8	2.9	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
1,2-Dibromoethane	ND	vs	5.8	0.75	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
1,2-Dichlorobenzene	ND	vs	5.8	0.45	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
1,2-Dichloroethane	ND	vs	5.8	0.29	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
1,2-Dichloropropane	ND	vs	5.8	2.9	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
1,3,5-Trimethylbenzene	ND	vs	5.8	0.37	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
1,3-Dichlorobenzene	ND	vs	5.8	0.30	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
1,4-Dichlorobenzene	ND	vs	5.8	0.81	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
2-Butanone (MEK)	ND	vs	29	2.1	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
2-Hexanone	ND	vs	29	2.9	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
4-Isopropyltoluene	ND	vs	5.8	0.47	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
4-Methyl-2-pentanone (MIBK)	ND	vs	29	1.9	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Acetone	ND	vs	29	4.9	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Benzene	ND	vs	5.8	0.29	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Bromodichloromethane	ND	vs	5.8	0.78	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Bromoform	ND	vs	5.8	2.9	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Bromomethane	ND	vs	5.8	0.52	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Carbon disulfide	ND	vs	5.8	2.9	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Carbon tetrachloride	ND	vs	5.8	0.56	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Chlorobenzene	ND	vs	5.8	0.77	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Chloroethane	ND	vs	5.8	1.3	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Chloroform	ND	vs	5.8	0.36	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Chloromethane	ND	vs	5.8	0.35	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
cis-1,2-Dichloroethene	ND	vs	5.8	0.74	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
cis-1,3-Dichloropropene	ND	vs	5.8	0.84	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Cyclohexane	ND	vs	5.8	0.81	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Dibromochloromethane	ND	vs	5.8	0.74	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Dichlorodifluoromethane	ND	vs	5.8	0.48	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Ethylbenzene	ND	vs	5.8	0.40	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Isopropylbenzene	ND	vs	5.8	0.88	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
m,p-Xylene	ND	vs	12	0.98	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Methyl acetate	ND	vs	29	3.5	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Methyl tert-butyl ether	ND	vs	5.8	0.57	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Methylcyclohexane	ND	vs	5.8	0.88	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Methylene Chloride	ND	vs	5.8	2.7	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
n-Butylbenzene	ND	vs	5.8	0.51	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
N-Propylbenzene	ND	vs	5.8	0.47	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
o-Xylene	ND	vs	5.8	0.76	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
sec-Butylbenzene	ND	vs	5.8	0.51	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Styrene	ND	vs	5.8	0.29	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
tert-Butylbenzene	ND	vs	5.8	0.60	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1

Client Sample ID: SB-19-.25-1.25FT
Lab Sample ID: 480-152346-2
Date Collected: 04/18/19 11:00
Matrix: Solid
Date Received: 04/19/19 14:40
Percent Solids: 85.4

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	ND	vs	5.8	0.78	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Toluene	ND	vs	5.8	0.44	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
trans-1,2-Dichloroethene	ND	vs	5.8	0.60	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
trans-1,3-Dichloropropene	ND	vs	5.8	2.6	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Trichloroethene	ND	vs	5.8	1.3	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Trichlorofluoromethane	ND	vs	5.8	0.55	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Vinyl chloride	ND	vs	5.8	0.71	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1
Xylenes, Total	ND	vs	12	0.98	ug/Kg	☼	04/25/19 13:56	04/26/19 08:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*64 - 126*	*04/25/19 13:56*	*04/26/19 08:20*	*1*
4-Bromofluorobenzene (Surr)	*96*		*72 - 126*	*04/25/19 13:56*	*04/26/19 08:20*	*1*
Dibromofluoromethane (Surr)	*109*		*60 - 140*	*04/25/19 13:56*	*04/26/19 08:20*	*1*
Toluene-d8 (Surr)	*103*		*71 - 125*	*04/25/19 13:56*	*04/26/19 08:20*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-Trichlorophenol	ND		190	52	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
2,4,6-Trichlorophenol	ND		190	39	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
2,4-Dichlorophenol	ND		190	20	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
2,4-Dimethylphenol	ND		190	47	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
2,4-Dinitrophenol	ND		1900	890	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
2,4-Dinitrotoluene	ND		190	40	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
2,6-Dinitrotoluene	ND		190	23	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
2-Chloronaphthalene	ND		190	32	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
2-Chlorophenol	ND		190	35	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
2-Methylnaphthalene	**67**	**J**	190	39	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
2-Methylphenol	ND		190	23	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
2-Nitroaniline	ND		370	28	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
2-Nitrophenol	ND		190	54	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
3,3'-Dichlorobenzidine	ND		370	230	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
3-Nitroaniline	ND		370	53	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
4,6-Dinitro-2-methylphenol	ND		370	190	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
4-Bromophenyl phenyl ether	ND		190	27	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
4-Chloro-3-methylphenol	ND		190	48	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
4-Chloroaniline	ND		190	48	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
4-Chlorophenyl phenyl ether	ND		190	24	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
4-Methylphenol	ND		370	23	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
4-Nitroaniline	ND		370	100	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
4-Nitrophenol	ND		370	140	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Acenaphthene	ND		190	28	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Acenaphthylene	ND		190	25	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Acetophenone	ND		190	26	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Anthracene	ND		190	48	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Atrazine	ND		190	67	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Benzaldehyde	ND		190	150	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Benzo[a]anthracene	**26**	**J**	190	19	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Benzo[a]pyrene	ND		190	28	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Benzo[b]fluoranthene	**33**	**J**	190	31	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Benzo[g,h,i]perylene	ND		190	20	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1

Client Sample ID: SB-19-.25-1.25FT
Lab Sample ID: 480-152346-2
Date Collected: 04/18/19 11:00
Matrix: Solid
Date Received: 04/19/19 14:40
Percent Solids: 85.4

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[k]fluoranthene	ND		190	25	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Biphenyl	ND		190	28	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
bis (2-chloroisopropyl) ether	ND		190	39	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Bis(2-chloroethoxy)methane	ND		190	41	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Bis(2-chloroethyl)ether	ND		190	25	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Bis(2-ethylhexyl) phthalate	**500**		190	66	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Butyl benzyl phthalate	ND		190	32	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Caprolactam	ND		190	58	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Carbazole	ND		190	23	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Chrysene	**43**	**J**	190	43	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Dibenz(a,h)anthracene	ND		190	34	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Dibenzofuran	**24**	**J**	190	23	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Diethyl phthalate	ND		190	25	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Dimethyl phthalate	ND		190	23	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Di-n-butyl phthalate	ND		190	33	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Di-n-octyl phthalate	ND		190	23	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Fluoranthene	**33**	**J**	190	20	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Fluorene	ND		190	23	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Hexachlorobenzene	ND		190	26	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Hexachlorobutadiene	ND		190	28	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Hexachlorocyclopentadiene	ND		190	26	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Hexachloroethane	ND		190	25	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Indeno[1,2,3-cd]pyrene	ND		190	24	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Isophorone	ND		190	41	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Naphthalene	**38**	**J**	190	25	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Nitrobenzene	ND		190	22	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
N-Nitrosodi-n-propylamine	ND		190	33	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
N-Nitrosodiphenylamine	ND		190	160	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Pentachlorophenol	ND	*	370	190	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Phenanthrene	**60**	**J**	190	28	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Phenol	ND		190	30	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1
Pyrene	**40**	**J**	190	23	ug/Kg	☼	04/29/19 15:31	05/08/19 13:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*83*		*54 - 120*	*04/29/19 15:31*	*05/08/19 13:19*	*1*
2-Fluorobiphenyl	*92*		*60 - 120*	*04/29/19 15:31*	*05/08/19 13:19*	*1*
2-Fluorophenol	*78*		*52 - 120*	*04/29/19 15:31*	*05/08/19 13:19*	*1*
Nitrobenzene-d5	*82*		*53 - 120*	*04/29/19 15:31*	*05/08/19 13:19*	*1*
Phenol-d5	*82*		*54 - 120*	*04/29/19 15:31*	*05/08/19 13:19*	*1*
p-Terphenyl-d14	*106*		*65 - 121*	*04/29/19 15:31*	*05/08/19 13:19*	*1*

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		2.0	0.38	ug/Kg	☼	04/26/19 15:09	04/28/19 11:32	1
4,4'-DDE	ND		2.0	0.41	ug/Kg	☼	04/26/19 15:09	04/28/19 11:32	1
4,4'-DDT	**0.77**	**J**	2.0	0.46	ug/Kg	☼	04/26/19 15:09	04/28/19 11:32	1
Aldrin	ND		2.0	0.48	ug/Kg	☼	04/26/19 15:09	04/28/19 11:32	1
alpha-BHC	ND		2.0	0.35	ug/Kg	☼	04/26/19 15:09	04/28/19 11:32	1
cis-Chlordane	ND		2.0	0.97	ug/Kg	☼	04/26/19 15:09	04/28/19 11:32	1
beta-BHC	ND		2.0	0.35	ug/Kg	☼	04/26/19 15:09	04/28/19 11:32	1

Client Sample ID: SB-19-.25-1.25FT
Lab Sample ID: 480-152346-2
Date Collected: 04/18/19 11:00
Matrix: Solid
Date Received: 04/19/19 14:40
Percent Solids: 85.4

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
delta-BHC	ND		2.0	0.36	ug/Kg	☼	04/26/19 15:09	04/28/19 11:32	1
Dieldrin	ND		2.0	0.47	ug/Kg	☼	04/26/19 15:09	04/28/19 11:32	1
Endosulfan I	ND		2.0	0.37	ug/Kg	☼	04/26/19 15:09	04/28/19 11:32	1
Endosulfan II	ND		2.0	0.35	ug/Kg	☼	04/26/19 15:09	04/28/19 11:32	1
Endosulfan sulfate	ND		2.0	0.36	ug/Kg	☼	04/26/19 15:09	04/28/19 11:32	1
Endrin	ND		2.0	0.39	ug/Kg	☼	04/26/19 15:09	04/28/19 11:32	1
Endrin aldehyde	ND		2.0	0.50	ug/Kg	☼	04/26/19 15:09	04/28/19 11:32	1
Endrin ketone	ND		2.0	0.48	ug/Kg	☼	04/26/19 15:09	04/28/19 11:32	1
gamma-BHC (Lindane)	ND		2.0	0.36	ug/Kg	☼	04/26/19 15:09	04/28/19 11:32	1
trans-Chlordane	ND		2.0	0.62	ug/Kg	☼	04/26/19 15:09	04/28/19 11:32	1
Heptachlor	ND		2.0	0.42	ug/Kg	☼	04/26/19 15:09	04/28/19 11:32	1
Heptachlor epoxide	ND		2.0	0.50	ug/Kg	☼	04/26/19 15:09	04/28/19 11:32	1
Methoxychlor	ND		2.0	0.40	ug/Kg	☼	04/26/19 15:09	04/28/19 11:32	1
Toxaphene	ND		20	11	ug/Kg	☼	04/26/19 15:09	04/28/19 11:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*73*		*45 - 120*	*04/26/19 15:09*	*04/28/19 11:32*	*1*
DCB Decachlorobiphenyl	*67*		*45 - 120*	*04/26/19 15:09*	*04/28/19 11:32*	*1*
Tetrachloro-m-xylene	*67*		*30 - 124*	*04/26/19 15:09*	*04/28/19 11:32*	*1*
Tetrachloro-m-xylene	*51*		*30 - 124*	*04/26/19 15:09*	*04/28/19 11:32*	*1*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.29	0.056	mg/Kg	☼	04/25/19 07:03	04/27/19 06:58	1
PCB-1221	ND		0.29	0.056	mg/Kg	☼	04/25/19 07:03	04/27/19 06:58	1
PCB-1232	ND		0.29	0.056	mg/Kg	☼	04/25/19 07:03	04/27/19 06:58	1
PCB-1242	ND		0.29	0.056	mg/Kg	☼	04/25/19 07:03	04/27/19 06:58	1
PCB-1248	ND		0.29	0.056	mg/Kg	☼	04/25/19 07:03	04/27/19 06:58	1
PCB-1254	ND		0.29	0.13	mg/Kg	☼	04/25/19 07:03	04/27/19 06:58	1
PCB-1260	ND		0.29	0.13	mg/Kg	☼	04/25/19 07:03	04/27/19 06:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*134*		*60 - 154*	*04/25/19 07:03*	*04/27/19 06:58*	*1*
Tetrachloro-m-xylene	*112*		*60 - 154*	*04/25/19 07:03*	*04/27/19 06:58*	*1*
DCB Decachlorobiphenyl	*141*		*65 - 174*	*04/25/19 07:03*	*04/27/19 06:58*	*1*
DCB Decachlorobiphenyl	*109*		*65 - 174*	*04/25/19 07:03*	*04/27/19 06:58*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		19	6.1	ug/Kg	☼	04/25/19 06:56	04/27/19 21:06	1
Silvex (2,4,5-TP)	ND		19	6.9	ug/Kg	☼	04/25/19 06:56	04/27/19 21:06	1
2,4-D	ND		19	12	ug/Kg	☼	04/25/19 06:56	04/27/19 21:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*106*		*28 - 129*	*04/25/19 06:56*	*04/27/19 21:06*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**5190**		11.4	5.0	mg/Kg	☼	04/26/19 11:45	04/29/19 14:08	1
Antimony	ND		17.1	0.46	mg/Kg	☼	04/26/19 11:45	04/29/19 14:08	1
Arsenic	**36.0**		2.3	0.46	mg/Kg	☼	04/26/19 11:45	04/29/19 14:08	1

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 990 Niagara St. site

Job ID: 480-152346-1

Client Sample ID: SB-19-.25-1.25FT
Date Collected: 04/18/19 11:00
Date Received: 04/19/19 14:40

Lab Sample ID: 480-152346-2
Matrix: Solid
Percent Solids: 85.4

Method: 6010C - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	96.0	B ^	0.57	0.13	mg/Kg	☼	04/26/19 11:45	04/29/19 14:08	1
Beryllium	0.60		0.23	0.032	mg/Kg	☼	04/26/19 11:45	04/29/19 14:08	1
Cadmium	0.28		0.23	0.034	mg/Kg	☼	04/26/19 11:45	04/29/19 14:08	1
Calcium	27600	B	56.9	3.8	mg/Kg	☼	04/26/19 11:45	04/29/19 14:08	1
Chromium	7.9	B	0.57	0.23	mg/Kg	☼	04/26/19 11:45	04/29/19 14:08	1
Cobalt	5.4		0.57	0.057	mg/Kg	☼	04/26/19 11:45	04/29/19 14:08	1
Copper	19.5		1.1	0.24	mg/Kg	☼	04/26/19 11:45	04/29/19 14:08	1
Iron	20300	B	11.4	4.0	mg/Kg	☼	04/26/19 11:45	04/29/19 14:08	1
Lead	20.7		1.1	0.27	mg/Kg	☼	04/26/19 11:45	04/29/19 14:08	1
Magnesium	7610	B	22.8	1.1	mg/Kg	☼	04/26/19 11:45	04/29/19 14:08	1
Manganese	94.7		0.23	0.036	mg/Kg	☼	04/26/19 11:45	04/29/19 14:08	1
Nickel	15.3		5.7	0.26	mg/Kg	☼	04/26/19 11:45	04/29/19 14:08	1
Potassium	1260		34.1	22.8	mg/Kg	☼	04/26/19 11:45	04/29/19 14:08	1
Selenium	1.1	J	4.6	0.46	mg/Kg	☼	04/26/19 11:45	04/29/19 14:08	1
Silver	ND		0.68	0.23	mg/Kg	☼	04/26/19 11:45	04/29/19 14:08	1
Sodium	234	B	159	14.8	mg/Kg	☼	04/26/19 11:45	04/29/19 14:08	1
Thallium	ND		6.8	0.34	mg/Kg	☼	04/26/19 11:45	04/29/19 14:08	1
Vanadium	13.3		0.57	0.13	mg/Kg	☼	04/26/19 11:45	04/29/19 14:08	1
Zinc	27.9		2.3	0.73	mg/Kg	☼	04/26/19 11:45	04/29/19 14:08	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.033		0.022	0.0088	mg/Kg	☼	04/28/19 13:50	04/28/19 15:39	1

Surrogate Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 990 Niagara St. site

Job ID: 480-152346-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Solid | **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(64-126)	(72-126)	(60-140)	(71-125)
480-152346-1	SB-18-.25-1.25FT	114	96	108	103
480-152346-2	SB-19-.25-1.25FT	112	96	109	103
LCS 480-469779/1-A	Lab Control Sample	107	109	104	103
MB 480-469779/2-A	Method Blank	107	102	103	104

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid | **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	FBP	2FP	NBZ	PHL	TPHd14
Lab Sample ID	Client Sample ID	(54-120)	(60-120)	(52-120)	(53-120)	(54-120)	(65-121)
480-152346-1	SB-18-.25-1.25FT	94	102	88	91	90	106
480-152346-2	SB-19-.25-1.25FT	83	92	78	82	82	106
LCS 480-470311/2-A	Lab Control Sample	98	95	82	87	84	105
MB 480-470311/1-A	Method Blank	66	95	82	88	86	110

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
PHL = Phenol-d5
TPHd14 = p-Terphenyl-d14

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Solid | **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCBP1	DCBP2	TCX1	TCX2
Lab Sample ID	Client Sample ID	(45-120)	(45-120)	(30-124)	(30-124)
480-152346-1	SB-18-.25-1.25FT	76	88	82	62
480-152346-1 MS	SB-18-.25-1.25FT	77	81	82	62
480-152346-1 MSD	SB-18-.25-1.25FT	73	77	80	58
480-152346-2	SB-19-.25-1.25FT	73	67	67	51
LCS 480-470017/2-A	Lab Control Sample	73	82	79	57
MB 480-470017/1-A	Method Blank	76	79	80	54

Surrogate Legend

DCBP = DCB Decachlorobiphenyl
TCX = Tetrachloro-m-xylene

Surrogate Summary

Client: Benchmark Env. Eng. & Science, PLLC
Job ID: 480-152346-1
Project/Site: Benchmark - 990 Niagara St. site

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Solid
Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		TCX1	TCX2	DCBP1	DCBP2
Lab Sample ID	Client Sample ID	(60-154)	(60-154)	(65-174)	(65-174)
480-152346-1	SB-18-.25-1.25FT	103	88	107	93
480-152346-1 MS	SB-18-.25-1.25FT	149	117	130	119
480-152346-1 MSD	SB-18-.25-1.25FT	147	123	149	123
480-152346-2	SB-19-.25-1.25FT	134	112	141	109
LCS 480-469633/2-A	Lab Control Sample	150	118	130	118
MB 480-469633/1-A	Method Blank	120	96	108	98

Surrogate Legend

TCX = Tetrachloro-m-xylene

DCBP = DCB Decachlorobiphenyl

Method: 8151A - Herbicides (GC)

Matrix: Solid
Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DCPAA1
Lab Sample ID	Client Sample ID	(28-129)
480-152346-1	SB-18-.25-1.25FT	57
480-152346-1 MS	SB-18-.25-1.25FT	56
480-152346-1 MSD	SB-18-.25-1.25FT	55
480-152346-2	SB-19-.25-1.25FT	106
LCS 480-469630/2-A	Lab Control Sample	56
MB 480-469630/1-A	Method Blank	53

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 480-469779/2-A
Matrix: Solid
Analysis Batch: 469791

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 469779

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.36	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.81	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0	1.1	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
1,1,2-Trichloroethane	ND		5.0	0.65	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
1,1-Dichloroethane	ND		5.0	0.61	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
1,1-Dichloroethene	ND		5.0	0.61	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
1,2,4-Trichlorobenzene	ND		5.0	0.30	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
1,2,4-Trimethylbenzene	ND		5.0	0.96	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
1,2-Dibromo-3-Chloropropane	ND		5.0	2.5	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
1,2-Dibromoethane	ND		5.0	0.64	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
1,2-Dichlorobenzene	ND		5.0	0.39	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
1,2-Dichloroethane	ND		5.0	0.25	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
1,2-Dichloropropane	ND		5.0	2.5	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
1,3,5-Trimethylbenzene	ND		5.0	0.32	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
1,3-Dichlorobenzene	ND		5.0	0.26	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
1,4-Dichlorobenzene	ND		5.0	0.70	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
2-Butanone (MEK)	ND		25	1.8	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
2-Hexanone	ND		25	2.5	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
4-Isopropyltoluene	ND		5.0	0.40	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
4-Methyl-2-pentanone (MIBK)	ND		25	1.6	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Acetone	ND		25	4.2	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Benzene	ND		5.0	0.25	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Bromodichloromethane	ND		5.0	0.67	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Bromoform	ND		5.0	2.5	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Bromomethane	ND		5.0	0.45	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Carbon disulfide	ND		5.0	2.5	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Carbon tetrachloride	ND		5.0	0.48	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Chlorobenzene	ND		5.0	0.66	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Chloroethane	ND		5.0	1.1	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Chloroform	ND		5.0	0.31	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Chloromethane	ND		5.0	0.30	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
cis-1,2-Dichloroethene	ND		5.0	0.64	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
cis-1,3-Dichloropropene	ND		5.0	0.72	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Cyclohexane	ND		5.0	0.70	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Dibromochloromethane	ND		5.0	0.64	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Dichlorodifluoromethane	ND		5.0	0.41	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Ethylbenzene	ND		5.0	0.35	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Isopropylbenzene	ND		5.0	0.75	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
m,p-Xylene	ND		10	0.84	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Methyl acetate	ND		25	3.0	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Methyl tert-butyl ether	ND		5.0	0.49	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Methylcyclohexane	ND		5.0	0.76	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Methylene Chloride	ND		5.0	2.3	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
n-Butylbenzene	ND		5.0	0.44	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
N-Propylbenzene	ND		5.0	0.40	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
o-Xylene	ND		5.0	0.65	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
sec-Butylbenzene	ND		5.0	0.44	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Styrene	ND		5.0	0.25	ug/Kg		04/25/19 13:56	04/26/19 01:25	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-469779/2-A
Matrix: Solid
Analysis Batch: 469791

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 469779

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
tert-Butylbenzene	ND		5.0	0.52	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Tetrachloroethene	ND		5.0	0.67	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Toluene	ND		5.0	0.38	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
trans-1,2-Dichloroethene	ND		5.0	0.52	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
trans-1,3-Dichloropropene	ND		5.0	2.2	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Trichloroethene	ND		5.0	1.1	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Trichlorofluoromethane	ND		5.0	0.47	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Vinyl chloride	ND		5.0	0.61	ug/Kg		04/25/19 13:56	04/26/19 01:25	1
Xylenes, Total	ND		10	0.84	ug/Kg		04/25/19 13:56	04/26/19 01:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*64 - 126*	*04/25/19 13:56*	*04/26/19 01:25*	*1*
4-Bromofluorobenzene (Surr)	*102*		*72 - 126*	*04/25/19 13:56*	*04/26/19 01:25*	*1*
Dibromofluoromethane (Surr)	*103*		*60 - 140*	*04/25/19 13:56*	*04/26/19 01:25*	*1*
Toluene-d8 (Surr)	*104*		*71 - 125*	*04/25/19 13:56*	*04/26/19 01:25*	*1*

Lab Sample ID: LCS 480-469779/1-A
Matrix: Solid
Analysis Batch: 469791

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 469779

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	50.0	48.2		ug/Kg		96	77 - 121
1,1,2,2-Tetrachloroethane	50.0	47.7		ug/Kg		95	80 - 120
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	47.5		ug/Kg		95	60 - 140
1,1,2-Trichloroethane	50.0	52.0		ug/Kg		104	78 - 122
1,1-Dichloroethane	50.0	50.8		ug/Kg		102	73 - 126
1,1-Dichloroethene	50.0	46.4		ug/Kg		93	59 - 125
1,2,4-Trichlorobenzene	50.0	39.6		ug/Kg		79	64 - 120
1,2,4-Trimethylbenzene	50.0	42.9		ug/Kg		86	74 - 120
1,2-Dibromo-3-Chloropropane	50.0	39.9		ug/Kg		80	63 - 124
1,2-Dibromoethane	50.0	51.9		ug/Kg		104	78 - 120
1,2-Dichlorobenzene	50.0	46.5		ug/Kg		93	75 - 120
1,2-Dichloroethane	50.0	52.3		ug/Kg		105	77 - 122
1,2-Dichloropropane	50.0	52.2		ug/Kg		104	75 - 124
1,3,5-Trimethylbenzene	50.0	43.7		ug/Kg		87	74 - 120
1,3-Dichlorobenzene	50.0	45.7		ug/Kg		91	74 - 120
1,4-Dichlorobenzene	50.0	44.8		ug/Kg		90	73 - 120
2-Butanone (MEK)	250	263		ug/Kg		105	70 - 134
2-Hexanone	250	253		ug/Kg		101	59 - 130
4-Isopropyltoluene	50.0	42.1		ug/Kg		84	74 - 120
4-Methyl-2-pentanone (MIBK)	250	250		ug/Kg		100	65 - 133
Acetone	250	246		ug/Kg		98	61 - 137
Benzene	50.0	51.6		ug/Kg		103	79 - 127
Bromodichloromethane	50.0	50.3		ug/Kg		101	80 - 122
Bromoform	50.0	54.4		ug/Kg		109	68 - 126
Bromomethane	50.0	49.4		ug/Kg		99	37 - 149
Carbon disulfide	50.0	46.7		ug/Kg		93	64 - 131
Carbon tetrachloride	50.0	49.6		ug/Kg		99	75 - 135

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-469779/1-A
Matrix: Solid
Analysis Batch: 469791

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 469779

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chlorobenzene	50.0	50.1		ug/Kg		100	76 - 124
Chloroethane	50.0	41.9		ug/Kg		84	69 - 135
Chloroform	50.0	52.4		ug/Kg		105	80 - 120
Chloromethane	50.0	42.8		ug/Kg		86	63 - 127
cis-1,2-Dichloroethene	50.0	50.4		ug/Kg		101	81 - 120
cis-1,3-Dichloropropene	50.0	50.5		ug/Kg		101	80 - 120
Cyclohexane	50.0	43.7		ug/Kg		87	65 - 120
Dibromochloromethane	50.0	51.2		ug/Kg		102	76 - 125
Dichlorodifluoromethane	50.0	39.0		ug/Kg		78	57 - 142
Ethylbenzene	50.0	48.5		ug/Kg		97	80 - 120
Isopropylbenzene	50.0	42.5		ug/Kg		85	72 - 120
m,p-Xylene	50.0	47.3		ug/Kg		95	70 - 130
Methyl acetate	100	99.7		ug/Kg		100	55 - 136
Methyl tert-butyl ether	50.0	48.8		ug/Kg		98	63 - 125
Methylcyclohexane	50.0	43.7		ug/Kg		87	60 - 140
Methylene Chloride	50.0	45.5		ug/Kg		91	61 - 127
Naphthalene	50.0	42.5		ug/Kg		85	38 - 137
n-Butylbenzene	50.0	40.4		ug/Kg		81	70 - 120
N-Propylbenzene	50.0	45.1		ug/Kg		90	70 - 130
o-Xylene	50.0	46.5		ug/Kg		93	70 - 130
sec-Butylbenzene	50.0	42.3		ug/Kg		85	74 - 120
Styrene	50.0	47.3		ug/Kg		95	80 - 120
tert-Butylbenzene	50.0	41.7		ug/Kg		83	73 - 120
Tetrachloroethene	50.0	49.8		ug/Kg		100	74 - 122
Toluene	50.0	49.5		ug/Kg		99	74 - 128
trans-1,2-Dichloroethene	50.0	51.6		ug/Kg		103	78 - 126
trans-1,3-Dichloropropene	50.0	49.3		ug/Kg		99	73 - 123
Trichloroethene	50.0	50.8		ug/Kg		102	77 - 129
Trichlorofluoromethane	50.0	49.0		ug/Kg		98	65 - 146
Vinyl chloride	50.0	44.9		ug/Kg		90	61 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*64 - 126*
4-Bromofluorobenzene (Surr)	*109*		*72 - 126*
Dibromofluoromethane (Surr)	*104*		*60 - 140*
Toluene-d8 (Surr)	*103*		*71 - 125*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 480-470311/1-A
Matrix: Solid
Analysis Batch: 471693

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 470311

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-Trichlorophenol	ND		170	46	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
2,4,6-Trichlorophenol	ND		170	34	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
2,4-Dichlorophenol	ND		170	18	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
2,4-Dimethylphenol	ND		170	41	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
2,4-Dinitrophenol	ND		1600	780	ug/Kg		04/29/19 15:31	05/08/19 06:23	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-470311/1-A
Matrix: Solid
Analysis Batch: 471693

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 470311

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dinitrotoluene	ND		170	35	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
2,6-Dinitrotoluene	ND		170	20	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
2-Chloronaphthalene	ND		170	28	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
2-Chlorophenol	ND		170	31	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
2-Methylnaphthalene	ND		170	34	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
2-Methylphenol	ND		170	20	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
2-Nitroaniline	ND		330	25	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
2-Nitrophenol	ND		170	48	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
3,3'-Dichlorobenzidine	ND		330	200	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
3-Nitroaniline	ND		330	47	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
4,6-Dinitro-2-methylphenol	ND		330	170	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
4-Bromophenyl phenyl ether	ND		170	24	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
4-Chloro-3-methylphenol	ND		170	42	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
4-Chloroaniline	ND		170	42	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
4-Chlorophenyl phenyl ether	ND		170	21	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
4-Methylphenol	ND		330	20	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
4-Nitroaniline	ND		330	88	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
4-Nitrophenol	ND		330	120	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Acenaphthene	ND		170	25	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Acenaphthylene	ND		170	22	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Acetophenone	ND		170	23	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Anthracene	ND		170	42	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Atrazine	ND		170	59	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Benzaldehyde	ND		170	130	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Benzo[a]anthracene	ND		170	17	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Benzo[a]pyrene	ND		170	25	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Benzo[b]fluoranthene	ND		170	27	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Benzo[g,h,i]perylene	ND		170	18	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Benzo[k]fluoranthene	ND		170	22	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Biphenyl	ND		170	25	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
bis (2-chloroisopropyl) ether	ND		170	34	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Bis(2-chloroethoxy)methane	ND		170	36	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Bis(2-chloroethyl)ether	ND		170	22	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Bis(2-ethylhexyl) phthalate	ND		170	58	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Butyl benzyl phthalate	ND		170	28	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Caprolactam	ND		170	51	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Carbazole	ND		170	20	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Chrysene	ND		170	38	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Dibenz(a,h)anthracene	ND		170	30	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Dibenzofuran	ND		170	20	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Diethyl phthalate	ND		170	22	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Dimethyl phthalate	ND		170	20	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Di-n-butyl phthalate	ND		170	29	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Di-n-octyl phthalate	ND		170	20	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Fluoranthene	ND		170	18	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Fluorene	ND		170	20	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Hexachlorobenzene	ND		170	23	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Hexachlorobutadiene	ND		170	25	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Hexachlorocyclopentadiene	ND		170	23	ug/Kg		04/29/19 15:31	05/08/19 06:23	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-470311/1-A
Matrix: Solid
Analysis Batch: 471693

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 470311

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachloroethane	ND		170	22	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Indeno[1,2,3-cd]pyrene	ND		170	21	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Isophorone	ND		170	36	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Naphthalene	ND		170	22	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Nitrobenzene	ND		170	19	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
N-Nitrosodi-n-propylamine	ND		170	29	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
N-Nitrosodiphenylamine	ND		170	140	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Pentachlorophenol	ND		330	170	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Phenanthrene	ND		170	25	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Phenol	ND		170	26	ug/Kg		04/29/19 15:31	05/08/19 06:23	1
Pyrene	ND		170	20	ug/Kg		04/29/19 15:31	05/08/19 06:23	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*66*		*54 - 120*	*04/29/19 15:31*	*05/08/19 06:23*	*1*
2-Fluorobiphenyl	*95*		*60 - 120*	*04/29/19 15:31*	*05/08/19 06:23*	*1*
2-Fluorophenol	*82*		*52 - 120*	*04/29/19 15:31*	*05/08/19 06:23*	*1*
Nitrobenzene-d5	*88*		*53 - 120*	*04/29/19 15:31*	*05/08/19 06:23*	*1*
Phenol-d5	*86*		*54 - 120*	*04/29/19 15:31*	*05/08/19 06:23*	*1*
p-Terphenyl-d14	*110*		*65 - 121*	*04/29/19 15:31*	*05/08/19 06:23*	*1*

Lab Sample ID: LCS 480-470311/2-A
Matrix: Solid
Analysis Batch: 471693

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 470311

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4,5-Trichlorophenol	1640	1520		ug/Kg		93	59 - 126
2,4,6-Trichlorophenol	1640	1500		ug/Kg		91	59 - 123
2,4-Dichlorophenol	1640	1470		ug/Kg		90	61 - 120
2,4-Dimethylphenol	1640	1420		ug/Kg		86	59 - 120
2,4-Dinitrophenol	3280	2970		ug/Kg		91	41 - 146
2,4-Dinitrotoluene	1640	1760		ug/Kg		107	63 - 120
2,6-Dinitrotoluene	1640	1580		ug/Kg		96	66 - 120
2-Chloronaphthalene	1640	1470		ug/Kg		89	57 - 120
2-Chlorophenol	1640	1300		ug/Kg		79	53 - 120
2-Methylnaphthalene	1640	1460		ug/Kg		89	59 - 120
2-Methylphenol	1640	1370		ug/Kg		84	54 - 120
2-Nitroaniline	1640	1570		ug/Kg		96	61 - 120
2-Nitrophenol	1640	1400		ug/Kg		85	56 - 120
3,3'-Dichlorobenzidine	3280	2920		ug/Kg		89	54 - 120
3-Nitroaniline	1640	1400		ug/Kg		85	48 - 120
4,6-Dinitro-2-methylphenol	3280	3460		ug/Kg		106	49 - 122
4-Bromophenyl phenyl ether	1640	1510		ug/Kg		92	58 - 120
4-Chloro-3-methylphenol	1640	1510		ug/Kg		92	61 - 120
4-Chloroaniline	1640	1320		ug/Kg		80	38 - 120
4-Chlorophenyl phenyl ether	1640	1530		ug/Kg		93	63 - 124
4-Methylphenol	1640	1390		ug/Kg		85	55 - 120
4-Nitroaniline	1640	1520		ug/Kg		93	56 - 120
4-Nitrophenol	3280	3240		ug/Kg		99	43 - 147

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-470311/2-A
Matrix: Solid
Analysis Batch: 471693

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 470311

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	1640	1470		ug/Kg		90	62 - 120
Acenaphthylene	1640	1640		ug/Kg		100	58 - 121
Acetophenone	1640	1370		ug/Kg		84	54 - 120
Anthracene	1640	1530		ug/Kg		93	62 - 120
Atrazine	3280	3110		ug/Kg		95	60 - 127
Benzaldehyde	3280	2490		ug/Kg		76	10 - 150
Benzo[a]anthracene	1640	1560		ug/Kg		95	65 - 120
Benzo[a]pyrene	1640	1510		ug/Kg		92	64 - 120
Benzo[b]fluoranthene	1640	1630		ug/Kg		99	64 - 120
Benzo[g,h,i]perylene	1640	1530		ug/Kg		93	45 - 145
Benzo[k]fluoranthene	1640	1630		ug/Kg		99	65 - 120
Biphenyl	1640	1560		ug/Kg		95	59 - 120
bis (2-chloroisopropyl) ether	1640	1220		ug/Kg		74	44 - 120
Bis(2-chloroethoxy)methane	1640	1410		ug/Kg		86	55 - 120
Bis(2-chloroethyl)ether	1640	1380		ug/Kg		84	45 - 120
Bis(2-ethylhexyl) phthalate	1640	1760		ug/Kg		107	61 - 133
Butyl benzyl phthalate	1640	1660		ug/Kg		101	61 - 129
Caprolactam	3280	2960		ug/Kg		90	47 - 120
Carbazole	1640	1610		ug/Kg		98	65 - 120
Chrysene	1640	1510		ug/Kg		92	64 - 120
Dibenz(a,h)anthracene	1640	1560		ug/Kg		95	54 - 132
Dibenzofuran	1640	1560		ug/Kg		95	63 - 120
Diethyl phthalate	1640	1640		ug/Kg		100	66 - 120
Dimethyl phthalate	1640	1650		ug/Kg		101	65 - 124
Di-n-butyl phthalate	1640	1550		ug/Kg		95	58 - 130
Di-n-octyl phthalate	1640	1710		ug/Kg		104	57 - 133
Fluoranthene	1640	1500		ug/Kg		92	62 - 120
Fluorene	1640	1580		ug/Kg		97	63 - 120
Hexachlorobenzene	1640	1550		ug/Kg		95	60 - 120
Hexachlorobutadiene	1640	1300		ug/Kg		80	45 - 120
Hexachlorocyclopentadiene	1640	1410		ug/Kg		86	47 - 120
Hexachloroethane	1640	1200		ug/Kg		73	41 - 120
Indeno[1,2,3-cd]pyrene	1640	1570		ug/Kg		96	56 - 134
Isophorone	1640	1450		ug/Kg		88	56 - 120
Naphthalene	1640	1310		ug/Kg		80	55 - 120
Nitrobenzene	1640	1370		ug/Kg		84	54 - 120
N-Nitrosodi-n-propylamine	1640	1360		ug/Kg		83	52 - 120
Pentachlorophenol	3280	4040	*	ug/Kg		123	51 - 120
Phenanthrene	1640	1600		ug/Kg		98	60 - 120
Phenol	1640	1360		ug/Kg		83	53 - 120
Pyrene	1640	1510		ug/Kg		92	61 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*98*		*54 - 120*
2-Fluorobiphenyl	*95*		*60 - 120*
2-Fluorophenol	*82*		*52 - 120*
Nitrobenzene-d5	*87*		*53 - 120*
Phenol-d5	*84*		*54 - 120*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-470311/2-A
Matrix: Solid
Analysis Batch: 471693

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 470311

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
p-Terphenyl-d14	*105*		*65 - 121*

Method: 8081B - Organochlorine Pesticides (GC)

Lab Sample ID: MB 480-470017/1-A
Matrix: Solid
Analysis Batch: 470139

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 470017

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		1.7	0.32	ug/Kg		04/26/19 15:09	04/28/19 09:54	1
4,4'-DDE	ND		1.7	0.35	ug/Kg		04/26/19 15:09	04/28/19 09:54	1
4,4'-DDT	ND		1.7	0.39	ug/Kg		04/26/19 15:09	04/28/19 09:54	1
Aldrin	ND		1.7	0.41	ug/Kg		04/26/19 15:09	04/28/19 09:54	1
alpha-BHC	ND		1.7	0.30	ug/Kg		04/26/19 15:09	04/28/19 09:54	1
cis-Chlordane	ND		1.7	0.82	ug/Kg		04/26/19 15:09	04/28/19 09:54	1
beta-BHC	ND		1.7	0.30	ug/Kg		04/26/19 15:09	04/28/19 09:54	1
delta-BHC	ND		1.7	0.31	ug/Kg		04/26/19 15:09	04/28/19 09:54	1
Dieldrin	ND		1.7	0.40	ug/Kg		04/26/19 15:09	04/28/19 09:54	1
Endosulfan I	ND		1.7	0.32	ug/Kg		04/26/19 15:09	04/28/19 09:54	1
Endosulfan II	ND		1.7	0.30	ug/Kg		04/26/19 15:09	04/28/19 09:54	1
Endosulfan sulfate	ND		1.7	0.31	ug/Kg		04/26/19 15:09	04/28/19 09:54	1
Endrin	ND		1.7	0.33	ug/Kg		04/26/19 15:09	04/28/19 09:54	1
Endrin aldehyde	ND		1.7	0.42	ug/Kg		04/26/19 15:09	04/28/19 09:54	1
Endrin ketone	ND		1.7	0.41	ug/Kg		04/26/19 15:09	04/28/19 09:54	1
gamma-BHC (Lindane)	ND		1.7	0.30	ug/Kg		04/26/19 15:09	04/28/19 09:54	1
trans-Chlordane	ND		1.7	0.53	ug/Kg		04/26/19 15:09	04/28/19 09:54	1
Heptachlor	ND		1.7	0.36	ug/Kg		04/26/19 15:09	04/28/19 09:54	1
Heptachlor epoxide	ND		1.7	0.43	ug/Kg		04/26/19 15:09	04/28/19 09:54	1
Methoxychlor	ND		1.7	0.34	ug/Kg		04/26/19 15:09	04/28/19 09:54	1
Toxaphene	ND		17	9.6	ug/Kg		04/26/19 15:09	04/28/19 09:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*76*		*45 - 120*	*04/26/19 15:09*	*04/28/19 09:54*	*1*
DCB Decachlorobiphenyl	*79*		*45 - 120*	*04/26/19 15:09*	*04/28/19 09:54*	*1*
Tetrachloro-m-xylene	*80*		*30 - 124*	*04/26/19 15:09*	*04/28/19 09:54*	*1*
Tetrachloro-m-xylene	*54*		*30 - 124*	*04/26/19 15:09*	*04/28/19 09:54*	*1*

Lab Sample ID: LCS 480-470017/2-A
Matrix: Solid
Analysis Batch: 470139

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 470017

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
4,4'-DDD	16.5	15.5		ug/Kg		94	56 - 120
4,4'-DDE	16.5	15.0		ug/Kg		91	44 - 120
4,4'-DDT	16.5	15.7		ug/Kg		95	38 - 120
Aldrin	16.5	12.3		ug/Kg		75	38 - 120
alpha-BHC	16.5	14.0		ug/Kg		84	39 - 120
cis-Chlordane	16.5	12.8		ug/Kg		77	47 - 120

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCS 480-470017/2-A
Matrix: Solid
Analysis Batch: 470139

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 470017

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
beta-BHC	16.5	15.6		ug/Kg		94	40 - 120
delta-BHC	16.5	16.4		ug/Kg		99	45 - 120
Dieldrin	16.5	15.6		ug/Kg		95	58 - 120
Endosulfan I	16.5	13.1		ug/Kg		79	49 - 120
Endosulfan II	16.5	15.9		ug/Kg		96	55 - 120
Endosulfan sulfate	16.5	12.4		ug/Kg		75	49 - 124
Endrin	16.5	16.2		ug/Kg		98	58 - 120
Endrin aldehyde	16.5	10.2		ug/Kg		62	37 - 121
Endrin ketone	16.5	15.2		ug/Kg		92	46 - 123
gamma-BHC (Lindane)	16.5	13.3		ug/Kg		81	50 - 120
trans-Chlordane	16.5	13.4		ug/Kg		81	48 - 120
Heptachlor	16.5	16.0		ug/Kg		97	50 - 120
Heptachlor epoxide	16.5	14.6		ug/Kg		88	50 - 120
Methoxychlor	16.5	15.6		ug/Kg		94	58 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*73*		*45 - 120*
DCB Decachlorobiphenyl	*82*		*45 - 120*
Tetrachloro-m-xylene	*79*		*30 - 124*
Tetrachloro-m-xylene	*57*		*30 - 124*

Lab Sample ID: 480-152346-1 MS
Matrix: Solid
Analysis Batch: 470139

Client Sample ID: SB-18-.25-1.25FT
Prep Type: Total/NA
Prep Batch: 470017

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
4,4'-DDD	ND		19.0	17.3		ug/Kg	☼	91	37 - 126
4,4'-DDE	ND		19.0	17.4		ug/Kg	☼	92	34 - 120
4,4'-DDT	0.77	J	19.0	15.9		ug/Kg	☼	80	43 - 123
Aldrin	ND		19.0	15.6		ug/Kg	☼	82	37 - 125
alpha-BHC	ND		19.0	15.5		ug/Kg	☼	82	39 - 120
cis-Chlordane	ND		19.0	14.9		ug/Kg	☼	78	35 - 120
beta-BHC	ND		19.0	17.4		ug/Kg	☼	92	36 - 120
delta-BHC	ND		19.0	18.9		ug/Kg	☼	99	34 - 120
Dieldrin	ND		19.0	17.0		ug/Kg	☼	89	45 - 120
Endosulfan I	ND		19.0	14.8		ug/Kg	☼	78	39 - 120
Endosulfan II	ND		19.0	17.3		ug/Kg	☼	91	34 - 126
Endosulfan sulfate	ND		19.0	13.6		ug/Kg	☼	72	27 - 130
Endrin	ND		19.0	18.2		ug/Kg	☼	96	47 - 121
Endrin aldehyde	ND		19.0	10.6		ug/Kg	☼	56	33 - 123
Endrin ketone	ND		19.0	16.0		ug/Kg	☼	84	43 - 126
gamma-BHC (Lindane)	ND		19.0	14.9		ug/Kg	☼	78	50 - 120
trans-Chlordane	ND		19.0	15.6		ug/Kg	☼	82	31 - 120
Heptachlor	ND		19.0	17.0		ug/Kg	☼	89	42 - 120
Heptachlor epoxide	ND		19.0	16.8		ug/Kg	☼	88	40 - 120
Methoxychlor	ND		19.0	16.3		ug/Kg	☼	86	44 - 150

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 480-152346-1 MS
Matrix: Solid
Analysis Batch: 470139

Client Sample ID: SB-18-.25-1.25FT
Prep Type: Total/NA
Prep Batch: 470017

Surrogate	MS %Recovery	MS Qualifier	Limits
DCB Decachlorobiphenyl	77		45 - 120
DCB Decachlorobiphenyl	81		45 - 120
Tetrachloro-m-xylene	82		30 - 124
Tetrachloro-m-xylene	62		30 - 124

Lab Sample ID: 480-152346-1 MSD
Matrix: Solid
Analysis Batch: 470139

Client Sample ID: SB-18-.25-1.25FT
Prep Type: Total/NA
Prep Batch: 470017

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
4,4'-DDD	ND		19.4	17.1		ug/Kg	☼	88	37 - 126	1	21
4,4'-DDE	ND		19.4	17.6		ug/Kg	☼	91	34 - 120	1	18
4,4'-DDT	0.77	J	19.4	16.3		ug/Kg	☼	80	43 - 123	2	25
Aldrin	ND		19.4	16.0		ug/Kg	☼	82	37 - 125	3	12
alpha-BHC	ND		19.4	15.7		ug/Kg	☼	81	39 - 120	1	15
cis-Chlordane	ND		19.4	15.2		ug/Kg	☼	78	35 - 120	2	23
beta-BHC	ND		19.4	18.7		ug/Kg	☼	96	36 - 120	7	19
delta-BHC	ND		19.4	18.8		ug/Kg	☼	97	34 - 120	0	14
Dieldrin	ND		19.4	17.3		ug/Kg	☼	89	45 - 120	2	12
Endosulfan I	ND		19.4	15.2		ug/Kg	☼	78	39 - 120	2	18
Endosulfan II	ND		19.4	17.4		ug/Kg	☼	89	34 - 126	0	26
Endosulfan sulfate	ND		19.4	13.3		ug/Kg	☼	69	27 - 130	2	35
Endrin	ND		19.4	17.9		ug/Kg	☼	92	47 - 121	2	20
Endrin aldehyde	ND		19.4	12.9		ug/Kg	☼	66	33 - 123	19	47
Endrin ketone	ND		19.4	15.9		ug/Kg	☼	82	43 - 126	0	37
gamma-BHC (Lindane)	ND		19.4	15.1		ug/Kg	☼	78	50 - 120	1	12
trans-Chlordane	ND		19.4	16.7		ug/Kg	☼	86	31 - 120	7	15
Heptachlor	ND		19.4	17.0		ug/Kg	☼	87	42 - 120	0	22
Heptachlor epoxide	ND		19.4	17.9		ug/Kg	☼	92	40 - 120	6	15
Methoxychlor	ND		19.4	16.4		ug/Kg	☼	84	44 - 150	1	24

Surrogate	MSD %Recovery	MSD Qualifier	Limits
DCB Decachlorobiphenyl	73		45 - 120
DCB Decachlorobiphenyl	77		45 - 120
Tetrachloro-m-xylene	80		30 - 124
Tetrachloro-m-xylene	58		30 - 124

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 480-469633/1-A
Matrix: Solid
Analysis Batch: 469954

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 469633

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.19	0.037	mg/Kg		04/25/19 07:03	04/27/19 00:52	1
PCB-1221	ND		0.19	0.037	mg/Kg		04/25/19 07:03	04/27/19 00:52	1
PCB-1232	ND		0.19	0.037	mg/Kg		04/25/19 07:03	04/27/19 00:52	1
PCB-1242	ND		0.19	0.037	mg/Kg		04/25/19 07:03	04/27/19 00:52	1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Lab Sample ID: MB 480-469633/1-A
Matrix: Solid
Analysis Batch: 469954

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 469633

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1248	ND		0.19	0.037	mg/Kg		04/25/19 07:03	04/27/19 00:52	1
PCB-1254	ND		0.19	0.089	mg/Kg		04/25/19 07:03	04/27/19 00:52	1
PCB-1260	ND		0.19	0.089	mg/Kg		04/25/19 07:03	04/27/19 00:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*120*		*60 - 154*	*04/25/19 07:03*	*04/27/19 00:52*	*1*
Tetrachloro-m-xylene	*96*		*60 - 154*	*04/25/19 07:03*	*04/27/19 00:52*	*1*
DCB Decachlorobiphenyl	*108*		*65 - 174*	*04/25/19 07:03*	*04/27/19 00:52*	*1*
DCB Decachlorobiphenyl	*98*		*65 - 174*	*04/25/19 07:03*	*04/27/19 00:52*	*1*

Lab Sample ID: LCS 480-469633/2-A
Matrix: Solid
Analysis Batch: 469954

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 469633

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-1016	1.82	2.17		mg/Kg		119	51 - 185
PCB-1260	1.82	2.05		mg/Kg		113	61 - 184

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*150*		*60 - 154*
Tetrachloro-m-xylene	*118*		*60 - 154*
DCB Decachlorobiphenyl	*130*		*65 - 174*
DCB Decachlorobiphenyl	*118*		*65 - 174*

Lab Sample ID: 480-152346-1 MS
Matrix: Solid
Analysis Batch: 469954

Client Sample ID: SB-18-.25-1.25FT
Prep Type: Total/NA
Prep Batch: 469633

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-1016	ND		2.60	2.84		mg/Kg	☼	109	50 - 177
PCB-1260	ND		2.60	2.75		mg/Kg	☼	106	33 - 200

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Tetrachloro-m-xylene	*149*		*60 - 154*
Tetrachloro-m-xylene	*117*		*60 - 154*
DCB Decachlorobiphenyl	*130*		*65 - 174*
DCB Decachlorobiphenyl	*119*		*65 - 174*

Lab Sample ID: 480-152346-1 MSD
Matrix: Solid
Analysis Batch: 469954

Client Sample ID: SB-18-.25-1.25FT
Prep Type: Total/NA
Prep Batch: 469633

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-1016	ND		2.25	2.76		mg/Kg	☼	122	50 - 177	3	50
PCB-1260	ND		2.25	2.68		mg/Kg	☼	119	33 - 200	3	50

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Lab Sample ID: 480-152346-1 MSD
Matrix: Solid
Analysis Batch: 469954

Client Sample ID: SB-18-.25-1.25FT
Prep Type: Total/NA
Prep Batch: 469633

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*147*		*60 - 154*
Tetrachloro-m-xylene	*123*		*60 - 154*
DCB Decachlorobiphenyl	*149*		*65 - 174*
DCB Decachlorobiphenyl	*123*		*65 - 174*

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 480-469630/1-A
Matrix: Solid
Analysis Batch: 470091

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 469630

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		16	5.2	ug/Kg		04/25/19 06:56	04/27/19 12:10	1
Silvex (2,4,5-TP)	ND		16	5.9	ug/Kg		04/25/19 06:56	04/27/19 12:10	1
2,4-D	ND		16	10	ug/Kg		04/25/19 06:56	04/27/19 12:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*53*		*28 - 129*	*04/25/19 06:56*	*04/27/19 12:10*	*1*

Lab Sample ID: LCS 480-469630/2-A
Matrix: Solid
Analysis Batch: 470091

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 469630

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4,5-T	66.3	39.2		ug/Kg		59	41 - 120
Silvex (2,4,5-TP)	66.3	37.7		ug/Kg		57	39 - 125
2,4-D	66.3	45.6		ug/Kg		69	40 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*56*		*28 - 129*

Lab Sample ID: 480-152346-1 MS
Matrix: Solid
Analysis Batch: 470091

Client Sample ID: SB-18-.25-1.25FT
Prep Type: Total/NA
Prep Batch: 469630

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4,5-T	ND		77.3	45.3		ug/Kg	☼	59	29 - 123
Silvex (2,4,5-TP)	ND		77.3	42.8		ug/Kg	☼	55	22 - 140
2,4-D	ND		77.3	52.7		ug/Kg	☼	68	32 - 115

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*56*		*28 - 129*

Method: 8151A - Herbicides (GC) (Continued)

Lab Sample ID: 480-152346-1 MSD
Matrix: Solid
Analysis Batch: 470091

Client Sample ID: SB-18-.25-1.25FT
Prep Type: Total/NA
Prep Batch: 469630

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,4,5-T	ND		78.1	41.1		ug/Kg	☼	53	29 - 123	10	50
Silvex (2,4,5-TP)	ND		78.1	40.7		ug/Kg	☼	52	22 - 140	5	50
2,4-D	ND		78.1	51.9		ug/Kg	☼	66	32 - 115	1	50

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*55*		*28 - 129*

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-469958/1-A
Matrix: Solid
Analysis Batch: 470386

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 469958

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	4.4	mg/Kg		04/26/19 11:45	04/29/19 12:45	1
Antimony	ND		14.9	0.40	mg/Kg		04/26/19 11:45	04/29/19 12:45	1
Arsenic	ND		2.0	0.40	mg/Kg		04/26/19 11:45	04/29/19 12:45	1
Barium	0.128	J ^	0.50	0.11	mg/Kg		04/26/19 11:45	04/29/19 12:45	1
Beryllium	ND		0.20	0.028	mg/Kg		04/26/19 11:45	04/29/19 12:45	1
Cadmium	ND		0.20	0.030	mg/Kg		04/26/19 11:45	04/29/19 12:45	1
Calcium	12.32	J	49.8	3.3	mg/Kg		04/26/19 11:45	04/29/19 12:45	1
Chromium	0.214	J	0.50	0.20	mg/Kg		04/26/19 11:45	04/29/19 12:45	1
Cobalt	ND		0.50	0.050	mg/Kg		04/26/19 11:45	04/29/19 12:45	1
Copper	ND		1.0	0.21	mg/Kg		04/26/19 11:45	04/29/19 12:45	1
Iron	6.95	J	10	3.5	mg/Kg		04/26/19 11:45	04/29/19 12:45	1
Lead	ND		1.0	0.24	mg/Kg		04/26/19 11:45	04/29/19 12:45	1
Magnesium	2.50	J	19.9	0.92	mg/Kg		04/26/19 11:45	04/29/19 12:45	1
Manganese	ND		0.20	0.032	mg/Kg		04/26/19 11:45	04/29/19 12:45	1
Nickel	ND		5.0	0.23	mg/Kg		04/26/19 11:45	04/29/19 12:45	1
Potassium	ND		29.9	19.9	mg/Kg		04/26/19 11:45	04/29/19 12:45	1
Selenium	ND		4.0	0.40	mg/Kg		04/26/19 11:45	04/29/19 12:45	1
Silver	ND		0.60	0.20	mg/Kg		04/26/19 11:45	04/29/19 12:45	1
Sodium	48.67	J	139	13.0	mg/Kg		04/26/19 11:45	04/29/19 12:45	1
Thallium	ND		6.0	0.30	mg/Kg		04/26/19 11:45	04/29/19 12:45	1
Vanadium	ND		0.50	0.11	mg/Kg		04/26/19 11:45	04/29/19 12:45	1
Zinc	ND		2.0	0.64	mg/Kg		04/26/19 11:45	04/29/19 12:45	1

Lab Sample ID: LCSSRM 480-469958/2-A
Matrix: Solid
Analysis Batch: 470386

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 469958

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	10100	8643		mg/Kg		85.6	41.6 - 123.8
Antimony	173	63.19		mg/Kg		36.5	10.0 - 134.1
Arsenic	221	177.0		mg/Kg		80.1	63.8 - 119.0
Barium	288	233.8	^	mg/Kg		81.2	70.5 - 117.4

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LCSSRM 480-469958/2-A
Matrix: Solid
Analysis Batch: 470386

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 469958

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec. Limits
Beryllium	102	83.11		mg/Kg		81.5	71.2 - 118.6
Cadmium	153	119.3		mg/Kg		78.0	68.6 - 115.0
Calcium	5190	4003		mg/Kg		77.1	65.7 - 115.6
Chromium	179	143.7		mg/Kg		80.3	65.4 - 121.2
Cobalt	182	173.9		mg/Kg		95.5	71.4 - 119.2
Copper	113	96.22		mg/Kg		85.1	71.4 - 118.6
Iron	15000	13310		mg/Kg		88.7	35.7 - 160.7
Lead	74.5	73.59		mg/Kg		98.8	67.8 - 130.3
Magnesium	2570	2109		mg/Kg		82.1	55.6 - 124.1
Manganese	348	301.8		mg/Kg		86.7	71.3 - 118.4
Nickel	98.0	89.92		mg/Kg		91.8	63.8 - 118.4
Potassium	2630	2199		mg/Kg		83.6	51.7 - 119.0
Selenium	54.4	44.25		mg/Kg		81.3	53.3 - 130.0
Silver	75.5	61.33		mg/Kg		81.2	66.6 - 121.7
Sodium	226	215.8		mg/Kg		95.5	39.2 - 133.2
Thallium	64.7	58.79		mg/Kg		90.9	55.0 - 126.0
Vanadium	62.7	55.84		mg/Kg		89.1	53.3 - 132.4
Zinc	281	226.3		mg/Kg		80.5	65.8 - 122.4

Method: 7471B - Mercury (CVAA)

Lab Sample ID: MB 480-470155/1-A
Matrix: Solid
Analysis Batch: 470176

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 470155

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.018	0.0074	mg/Kg		04/28/19 13:50	04/28/19 15:14	1

Lab Sample ID: LCSSRM 480-470155/2-A ^5
Matrix: Solid
Analysis Batch: 470176

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 470155

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	4.85	3.26		mg/Kg		67.2	46.0 - 107.0

QC Association Summary

Client: Benchmark Env. Eng. & Science, PLLC
Job ID: 480-152346-1
Project/Site: Benchmark - 990 Niagara St. site

GC/MS VOA

Prep Batch: 469779

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-152346-1	SB-18-.25-1.25FT	Total/NA	Solid	5035A_L	
480-152346-2	SB-19-.25-1.25FT	Total/NA	Solid	5035A_L	
MB 480-469779/2-A	Method Blank	Total/NA	Solid	5035A_L	
LCS 480-469779/1-A	Lab Control Sample	Total/NA	Solid	5035A_L	

Analysis Batch: 469791

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-152346-1	SB-18-.25-1.25FT	Total/NA	Solid	8260C	469779
480-152346-2	SB-19-.25-1.25FT	Total/NA	Solid	8260C	469779
MB 480-469779/2-A	Method Blank	Total/NA	Solid	8260C	469779
LCS 480-469779/1-A	Lab Control Sample	Total/NA	Solid	8260C	469779

GC/MS Semi VOA

Prep Batch: 470311

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-152346-1	SB-18-.25-1.25FT	Total/NA	Solid	3550C	
480-152346-2	SB-19-.25-1.25FT	Total/NA	Solid	3550C	
MB 480-470311/1-A	Method Blank	Total/NA	Solid	3550C	
LCS 480-470311/2-A	Lab Control Sample	Total/NA	Solid	3550C	

Analysis Batch: 471693

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-152346-1	SB-18-.25-1.25FT	Total/NA	Solid	8270D	470311
480-152346-2	SB-19-.25-1.25FT	Total/NA	Solid	8270D	470311
MB 480-470311/1-A	Method Blank	Total/NA	Solid	8270D	470311
LCS 480-470311/2-A	Lab Control Sample	Total/NA	Solid	8270D	470311

GC Semi VOA

Prep Batch: 469630

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-152346-1	SB-18-.25-1.25FT	Total/NA	Solid	8151A	
480-152346-2	SB-19-.25-1.25FT	Total/NA	Solid	8151A	
MB 480-469630/1-A	Method Blank	Total/NA	Solid	8151A	
LCS 480-469630/2-A	Lab Control Sample	Total/NA	Solid	8151A	
480-152346-1 MS	SB-18-.25-1.25FT	Total/NA	Solid	8151A	
480-152346-1 MSD	SB-18-.25-1.25FT	Total/NA	Solid	8151A	

Prep Batch: 469633

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-152346-1	SB-18-.25-1.25FT	Total/NA	Solid	3550C	
480-152346-2	SB-19-.25-1.25FT	Total/NA	Solid	3550C	
MB 480-469633/1-A	Method Blank	Total/NA	Solid	3550C	
LCS 480-469633/2-A	Lab Control Sample	Total/NA	Solid	3550C	
480-152346-1 MS	SB-18-.25-1.25FT	Total/NA	Solid	3550C	
480-152346-1 MSD	SB-18-.25-1.25FT	Total/NA	Solid	3550C	

Analysis Batch: 469954

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-152346-1	SB-18-.25-1.25FT	Total/NA	Solid	8082A	469633
480-152346-2	SB-19-.25-1.25FT	Total/NA	Solid	8082A	469633

GC Semi VOA (Continued)

Analysis Batch: 469954 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 480-469633/1-A	Method Blank	Total/NA	Solid	8082A	469633
LCS 480-469633/2-A	Lab Control Sample	Total/NA	Solid	8082A	469633
480-152346-1 MS	SB-18-.25-1.25FT	Total/NA	Solid	8082A	469633
480-152346-1 MSD	SB-18-.25-1.25FT	Total/NA	Solid	8082A	469633

Prep Batch: 470017

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-152346-1	SB-18-.25-1.25FT	Total/NA	Solid	3550C	
480-152346-2	SB-19-.25-1.25FT	Total/NA	Solid	3550C	
MB 480-470017/1-A	Method Blank	Total/NA	Solid	3550C	
LCS 480-470017/2-A	Lab Control Sample	Total/NA	Solid	3550C	
480-152346-1 MS	SB-18-.25-1.25FT	Total/NA	Solid	3550C	
480-152346-1 MSD	SB-18-.25-1.25FT	Total/NA	Solid	3550C	

Analysis Batch: 470091

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-152346-1	SB-18-.25-1.25FT	Total/NA	Solid	8151A	469630
480-152346-2	SB-19-.25-1.25FT	Total/NA	Solid	8151A	469630
MB 480-469630/1-A	Method Blank	Total/NA	Solid	8151A	469630
LCS 480-469630/2-A	Lab Control Sample	Total/NA	Solid	8151A	469630
480-152346-1 MS	SB-18-.25-1.25FT	Total/NA	Solid	8151A	469630
480-152346-1 MSD	SB-18-.25-1.25FT	Total/NA	Solid	8151A	469630

Analysis Batch: 470139

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-152346-1	SB-18-.25-1.25FT	Total/NA	Solid	8081B	470017
480-152346-2	SB-19-.25-1.25FT	Total/NA	Solid	8081B	470017
MB 480-470017/1-A	Method Blank	Total/NA	Solid	8081B	470017
LCS 480-470017/2-A	Lab Control Sample	Total/NA	Solid	8081B	470017
480-152346-1 MS	SB-18-.25-1.25FT	Total/NA	Solid	8081B	470017
480-152346-1 MSD	SB-18-.25-1.25FT	Total/NA	Solid	8081B	470017

Metals

Prep Batch: 469958

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-152346-1	SB-18-.25-1.25FT	Total/NA	Solid	3050B	
480-152346-2	SB-19-.25-1.25FT	Total/NA	Solid	3050B	
MB 480-469958/1-A	Method Blank	Total/NA	Solid	3050B	
LCSSRM 480-469958/2-A	Lab Control Sample	Total/NA	Solid	3050B	

Prep Batch: 470155

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-152346-1	SB-18-.25-1.25FT	Total/NA	Solid	7471B	
480-152346-2	SB-19-.25-1.25FT	Total/NA	Solid	7471B	
MB 480-470155/1-A	Method Blank	Total/NA	Solid	7471B	
LCSSRM 480-470155/2-A ^5	Lab Control Sample	Total/NA	Solid	7471B	

Analysis Batch: 470176

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-152346-1	SB-18-.25-1.25FT	Total/NA	Solid	7471B	470155

Metals (Continued)

Analysis Batch: 470176 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-152346-2	SB-19-.25-1.25FT	Total/NA	Solid	7471B	470155
MB 480-470155/1-A	Method Blank	Total/NA	Solid	7471B	470155
LCSSRM 480-470155/2-A ^5	Lab Control Sample	Total/NA	Solid	7471B	470155

Analysis Batch: 470386

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-152346-1	SB-18-.25-1.25FT	Total/NA	Solid	6010C	469958
480-152346-2	SB-19-.25-1.25FT	Total/NA	Solid	6010C	469958
MB 480-469958/1-A	Method Blank	Total/NA	Solid	6010C	469958
LCSSRM 480-469958/2-A	Lab Control Sample	Total/NA	Solid	6010C	469958

General Chemistry

Analysis Batch: 469519

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-152346-1	SB-18-.25-1.25FT	Total/NA	Solid	Moisture	
480-152346-2	SB-19-.25-1.25FT	Total/NA	Solid	Moisture	

Lab Chronicle

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 990 Niagara St. site

Job ID: 480-152346-1

Client Sample ID: SB-18-.25-1.25FT
Lab Sample ID: 480-152346-1
Date Collected: 04/18/19 09:30
Matrix: Solid
Date Received: 04/19/19 14:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	469519	04/24/19 12:11	CMK	TAL BUF

Client Sample ID: SB-18-.25-1.25FT
Lab Sample ID: 480-152346-1
Date Collected: 04/18/19 09:30
Matrix: Solid
Date Received: 04/19/19 14:40
Percent Solids: 85.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_L			469779	04/25/19 13:56	LCH	TAL BUF
Total/NA	Analysis	8260C		1	469791	04/26/19 07:54	LCH	TAL BUF
Total/NA	Prep	3550C			470311	04/29/19 15:31	SGD	TAL BUF
Total/NA	Analysis	8270D		1	471693	05/08/19 12:51	RJS	TAL BUF
Total/NA	Prep	3550C			470017	04/26/19 15:09	SGD	TAL BUF
Total/NA	Analysis	8081B		1	470139	04/28/19 11:12	JLS	TAL BUF
Total/NA	Prep	3550C			469633	04/25/19 07:03	SMP	TAL BUF
Total/NA	Analysis	8082A		1	469954	04/27/19 02:27	W1T	TAL BUF
Total/NA	Prep	8151A			469630	04/25/19 06:56	SMP	TAL BUF
Total/NA	Analysis	8151A		1	470091	04/27/19 14:09	MAN	TAL BUF
Total/NA	Prep	3050B			469958	04/26/19 11:45	JMP	TAL BUF
Total/NA	Analysis	6010C		1	470386	04/29/19 14:04	LMH	TAL BUF
Total/NA	Prep	7471B			470155	04/28/19 13:50	BMB	TAL BUF
Total/NA	Analysis	7471B		1	470176	04/28/19 15:38	BMB	TAL BUF

Client Sample ID: SB-19-.25-1.25FT
Lab Sample ID: 480-152346-2
Date Collected: 04/18/19 11:00
Matrix: Solid
Date Received: 04/19/19 14:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	469519	04/24/19 12:11	CMK	TAL BUF

Client Sample ID: SB-19-.25-1.25FT
Lab Sample ID: 480-152346-2
Date Collected: 04/18/19 11:00
Matrix: Solid
Date Received: 04/19/19 14:40
Percent Solids: 85.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_L			469779	04/25/19 13:56	LCH	TAL BUF
Total/NA	Analysis	8260C		1	469791	04/26/19 08:20	LCH	TAL BUF
Total/NA	Prep	3550C			470311	04/29/19 15:31	SGD	TAL BUF
Total/NA	Analysis	8270D		1	471693	05/08/19 13:19	RJS	TAL BUF
Total/NA	Prep	3550C			470017	04/26/19 15:09	SGD	TAL BUF
Total/NA	Analysis	8081B		1	470139	04/28/19 11:32	JLS	TAL BUF
Total/NA	Prep	3550C			469633	04/25/19 07:03	SMP	TAL BUF
Total/NA	Analysis	8082A		1	469954	04/27/19 06:58	W1T	TAL BUF
Total/NA	Prep	8151A			469630	04/25/19 06:56	SMP	TAL BUF
Total/NA	Analysis	8151A		1	470091	04/27/19 21:06	MAN	TAL BUF

Lab Chronicle

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 990 Niagara St. site

Job ID: 480-152346-1

Client Sample ID: SB-19-.25-1.25FT
Date Collected: 04/18/19 11:00
Date Received: 04/19/19 14:40

Lab Sample ID: 480-152346-2
Matrix: Solid
Percent Solids: 85.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			469958	04/26/19 11:45	JMP	TAL BUF
Total/NA	Analysis	6010C		1	470386	04/29/19 14:08	LMH	TAL BUF
Total/NA	Prep	7471B			470155	04/28/19 13:50	BMB	TAL BUF
Total/NA	Analysis	7471B		1	470176	04/28/19 15:39	BMB	TAL BUF

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Accreditation/Certification Summary

Client: Benchmark Env. Eng. & Science, PLLC
Job ID: 480-152346-1
Project/Site: Benchmark - 990 Niagara St. site

Laboratory: Eurofins TestAmerica, Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
New York	NELAP	2	10026	03-31-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

Method Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 990 Niagara St. site

Job ID: 480-152346-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL BUF
8081B	Organochlorine Pesticides (GC)	SW846	TAL BUF
8082A	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	SW846	TAL BUF
8151A	Herbicides (GC)	SW846	TAL BUF
6010C	Metals (ICP)	SW846	TAL BUF
7471B	Mercury (CVAA)	SW846	TAL BUF
Moisture	Percent Moisture	EPA	TAL BUF
3050B	Preparation, Metals	SW846	TAL BUF
3550C	Ultrasonic Extraction	SW846	TAL BUF
5035A_L	Closed System Purge and Trap	SW846	TAL BUF
7471B	Preparation, Mercury	SW846	TAL BUF
8151A	Extraction (Herbicides)	SW846	TAL BUF

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 990 Niagara St. site

Job ID: 480-152346-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-152346-1	SB-18-.25-1.25FT	Solid	04/18/19 09:30	04/19/19 14:40
480-152346-2	SB-19-.25-1.25FT	Solid	04/18/19 11:00	04/19/19 14:40

Chain of Custody Record

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☐

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client: Turnkey ENV. Restoration	Project Manager: Bryan Mayhall / Brian Fischer	Date: 4/18/14	Chain of Custody Number: 190695
Address: 2558 Hamburg Pike	Telephone Number (Area Code)/Fax Number: 716-713-3937	Lab Number:	Page 1 of 1
City: Buffalo / State: NY / Zip Code: 14218	Site Contact: Nick Surace	Lab Contact: Brian Fischer	
Project Name and Location (State): 990 Niagara Street	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.: Bo1162-018-001			

480-152346 Chain of Custody

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: TCLP-SVOA's	TCL SVOC's	TAL Metals	PCB's	Pesticides	herbicides
SB-18 :25-1.25 Ft	4/18/14	9:30				X	X						X	X	X	X	X	X
SB-19 ,25-1.5 Ft	4/18/14	11:00				X	X						X	X	X	X	X	X

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify): Cat B, Hyspec levels

1. Relinquished By	Date: 4/18/14	Time: 14:00	1. Received By	Date: 4/15/14	Time: 14:40
2. Relinquished By	Date: 4/15/14	Time: 15:30	2. Received By	Date:	Time:
3. Relinquished By	Date:	Time:	3. Received By	Date: 4-19-14	Time: 15:30

Comments

2-3 #1

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Login Sample Receipt Checklist

Client: Benchmark Env. Eng. & Science, PLLC

Job Number: 480-152346-1

Login Number: 152346
List Number: 1
Creator: Harper, Marcus D

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	TURNKEY
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

Laboratory Job ID: 480-152344-1
Client Project/Site: Benchmark - 990 Niagara St. site

For:
Benchmark Env. Eng. & Science, PLLC
2558 Hamburg Turnpike
Suite 300
Lackawanna, New York 14218

Attn: Mr. Michael Lesakowski

Joseph V. Giacomazza

Authorized for release by:
5/6/2019 3:50:44 PM
Joe Giacomazza, Project Management Assistant II
joe.giacomazza@testamericainc.com

Designee for

Brian Fischer, Manager of Project Management
(716)504-9835
brian.fischer@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 990 Niagara St. site

Job ID: 480-152344-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 480-152344-1

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-152344-1

Comments
No additional comments.

Receipt
The samples were received on 4/19/2019 1:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.9º C.

GC/MS Semi VOA
Method(s) 8270D: The following sample required a dilution due to the nature of the sample matrix: MW-4 .25-1.25FT (480-152344-2). Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

Method(s) 8270D: The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-4 .25-1.25FT (480-152344-2). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 990 Niagara St. site

Job ID: 480-152344-1

Client Sample ID: SB-17 .25-1.25FT

Lab Sample ID: 480-152344-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acenaphthene	150	J	190	28	ug/Kg	1	☼	8270D	Total/NA
Acenaphthylene	38	J	190	25	ug/Kg	1	☼	8270D	Total/NA
Anthracene	460		190	48	ug/Kg	1	☼	8270D	Total/NA
Benzo[a]anthracene	1300		190	19	ug/Kg	1	☼	8270D	Total/NA
Benzo[a]pyrene	1200		190	28	ug/Kg	1	☼	8270D	Total/NA
Benzo[b]fluoranthene	1500		190	31	ug/Kg	1	☼	8270D	Total/NA
Benzo[g,h,i]perylene	870		190	20	ug/Kg	1	☼	8270D	Total/NA
Benzo[k]fluoranthene	800		190	25	ug/Kg	1	☼	8270D	Total/NA
Chrysene	1400		190	43	ug/Kg	1	☼	8270D	Total/NA
Dibenz(a,h)anthracene	300		190	34	ug/Kg	1	☼	8270D	Total/NA
Fluoranthene	2700		190	20	ug/Kg	1	☼	8270D	Total/NA
Fluorene	170	J	190	23	ug/Kg	1	☼	8270D	Total/NA
Indeno[1,2,3-cd]pyrene	800		190	24	ug/Kg	1	☼	8270D	Total/NA
Naphthalene	110	J	190	25	ug/Kg	1	☼	8270D	Total/NA
Phenanthrene	2100		190	28	ug/Kg	1	☼	8270D	Total/NA
Pyrene	2200		190	23	ug/Kg	1	☼	8270D	Total/NA
Arsenic	6.8		2.3	0.46	mg/Kg	1	☼	6010C	Total/NA
Barium	88.3		0.58	0.13	mg/Kg	1	☼	6010C	Total/NA
Cadmium	0.28		0.23	0.035	mg/Kg	1	☼	6010C	Total/NA
Chromium	12.9	B	0.58	0.23	mg/Kg	1	☼	6010C	Total/NA
Lead	144		1.2	0.28	mg/Kg	1	☼	6010C	Total/NA
Mercury	0.16		0.023	0.0095	mg/Kg	1	☼	7471B	Total/NA

Client Sample ID: MW-4 .25-1.25FT

Lab Sample ID: 480-152344-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acenaphthene	5100		3500	510	ug/Kg	20	☼	8270D	Total/NA
Acenaphthylene	10000		3500	450	ug/Kg	20	☼	8270D	Total/NA
Anthracene	31000		3500	850	ug/Kg	20	☼	8270D	Total/NA
Benzo[a]anthracene	65000		3500	350	ug/Kg	20	☼	8270D	Total/NA
Benzo[a]pyrene	52000		3500	510	ug/Kg	20	☼	8270D	Total/NA
Benzo[b]fluoranthene	59000		3500	550	ug/Kg	20	☼	8270D	Total/NA
Benzo[g,h,i]perylene	32000		3500	370	ug/Kg	20	☼	8270D	Total/NA
Benzo[k]fluoranthene	28000		3500	450	ug/Kg	20	☼	8270D	Total/NA
Chrysene	59000		3500	770	ug/Kg	20	☼	8270D	Total/NA
Fluoranthene	95000		3500	370	ug/Kg	20	☼	8270D	Total/NA
Fluorene	9600		3500	410	ug/Kg	20	☼	8270D	Total/NA
Indeno[1,2,3-cd]pyrene	30000		3500	430	ug/Kg	20	☼	8270D	Total/NA
Naphthalene	2500	J	3500	450	ug/Kg	20	☼	8270D	Total/NA
Phenanthrene	65000		3500	510	ug/Kg	20	☼	8270D	Total/NA
Pyrene	84000		3500	410	ug/Kg	20	☼	8270D	Total/NA
Arsenic	5.5		2.0	0.41	mg/Kg	1	☼	6010C	Total/NA
Barium	37.6		0.51	0.11	mg/Kg	1	☼	6010C	Total/NA
Cadmium	0.21		0.20	0.030	mg/Kg	1	☼	6010C	Total/NA
Chromium	6.6	B	0.51	0.20	mg/Kg	1	☼	6010C	Total/NA
Lead	40.7		1.0	0.24	mg/Kg	1	☼	6010C	Total/NA
Mercury	0.075		0.021	0.0086	mg/Kg	1	☼	7471B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 990 Niagara St. site

Job ID: 480-152344-1

Client Sample ID: SB-17 .25-1.25FT

Date Collected: 04/18/19 12:15
Date Received: 04/23/19 13:30

Lab Sample ID: 480-152344-1

Matrix: Solid
Percent Solids: 86.9

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	150	J	190	28	ug/Kg	☼	04/29/19 06:40	05/03/19 06:02	1
Acenaphthylene	38	J	190	25	ug/Kg	☼	04/29/19 06:40	05/03/19 06:02	1
Anthracene	460		190	48	ug/Kg	☼	04/29/19 06:40	05/03/19 06:02	1
Benzo[a]anthracene	1300		190	19	ug/Kg	☼	04/29/19 06:40	05/03/19 06:02	1
Benzo[a]pyrene	1200		190	28	ug/Kg	☼	04/29/19 06:40	05/03/19 06:02	1
Benzo[b]fluoranthene	1500		190	31	ug/Kg	☼	04/29/19 06:40	05/03/19 06:02	1
Benzo[g,h,i]perylene	870		190	20	ug/Kg	☼	04/29/19 06:40	05/03/19 06:02	1
Benzo[k]fluoranthene	800		190	25	ug/Kg	☼	04/29/19 06:40	05/03/19 06:02	1
Chrysene	1400		190	43	ug/Kg	☼	04/29/19 06:40	05/03/19 06:02	1
Dibenz(a,h)anthracene	300		190	34	ug/Kg	☼	04/29/19 06:40	05/03/19 06:02	1
Fluoranthene	2700		190	20	ug/Kg	☼	04/29/19 06:40	05/03/19 06:02	1
Fluorene	170	J	190	23	ug/Kg	☼	04/29/19 06:40	05/03/19 06:02	1
Indeno[1,2,3-cd]pyrene	800		190	24	ug/Kg	☼	04/29/19 06:40	05/03/19 06:02	1
Naphthalene	110	J	190	25	ug/Kg	☼	04/29/19 06:40	05/03/19 06:02	1
Phenanthrene	2100		190	28	ug/Kg	☼	04/29/19 06:40	05/03/19 06:02	1
Pyrene	2200		190	23	ug/Kg	☼	04/29/19 06:40	05/03/19 06:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*98*		*60 - 120*	*04/29/19 06:40*	*05/03/19 06:02*	*1*
Nitrobenzene-d5 (Surr)	*91*		*53 - 120*	*04/29/19 06:40*	*05/03/19 06:02*	*1*
p-Terphenyl-d14 (Surr)	*104*		*65 - 121*	*04/29/19 06:40*	*05/03/19 06:02*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.8		2.3	0.46	mg/Kg	☼	04/30/19 11:19	05/02/19 17:20	1
Barium	88.3		0.58	0.13	mg/Kg	☼	04/30/19 11:19	05/02/19 17:20	1
Cadmium	0.28		0.23	0.035	mg/Kg	☼	04/30/19 11:19	05/02/19 17:20	1
Chromium	12.9	B	0.58	0.23	mg/Kg	☼	04/30/19 11:19	05/02/19 17:20	1
Lead	144		1.2	0.28	mg/Kg	☼	04/30/19 11:19	05/02/19 17:20	1
Selenium	ND		4.6	0.46	mg/Kg	☼	04/30/19 11:19	05/02/19 17:20	1
Silver	ND		0.69	0.23	mg/Kg	☼	04/30/19 11:19	05/02/19 17:20	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.16		0.023	0.0095	mg/Kg	☼	04/28/19 13:50	04/28/19 15:40	1

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 990 Niagara St. site

Job ID: 480-152344-1

Client Sample ID: MW-4 .25-1.25FT

Date Collected: 04/18/19 11:15
Date Received: 04/23/19 13:30

Lab Sample ID: 480-152344-2

Matrix: Solid
Percent Solids: 96.8

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	5100		3500	510	ug/Kg	☼	04/29/19 06:40	05/03/19 06:26	20
Acenaphthylene	10000		3500	450	ug/Kg	☼	04/29/19 06:40	05/03/19 06:26	20
Anthracene	31000		3500	850	ug/Kg	☼	04/29/19 06:40	05/03/19 06:26	20
Benzo[a]anthracene	65000		3500	350	ug/Kg	☼	04/29/19 06:40	05/03/19 06:26	20
Benzo[a]pyrene	52000		3500	510	ug/Kg	☼	04/29/19 06:40	05/03/19 06:26	20
Benzo[b]fluoranthene	59000		3500	550	ug/Kg	☼	04/29/19 06:40	05/03/19 06:26	20
Benzo[g,h,i]perylene	32000		3500	370	ug/Kg	☼	04/29/19 06:40	05/03/19 06:26	20
Benzo[k]fluoranthene	28000		3500	450	ug/Kg	☼	04/29/19 06:40	05/03/19 06:26	20
Chrysene	59000		3500	770	ug/Kg	☼	04/29/19 06:40	05/03/19 06:26	20
Dibenz(a,h)anthracene	ND		3500	610	ug/Kg	☼	04/29/19 06:40	05/03/19 06:26	20
Fluoranthene	95000		3500	370	ug/Kg	☼	04/29/19 06:40	05/03/19 06:26	20
Fluorene	9600		3500	410	ug/Kg	☼	04/29/19 06:40	05/03/19 06:26	20
Indeno[1,2,3-cd]pyrene	30000		3500	430	ug/Kg	☼	04/29/19 06:40	05/03/19 06:26	20
Naphthalene	2500	J	3500	450	ug/Kg	☼	04/29/19 06:40	05/03/19 06:26	20
Phenanthrene	65000		3500	510	ug/Kg	☼	04/29/19 06:40	05/03/19 06:26	20
Pyrene	84000		3500	410	ug/Kg	☼	04/29/19 06:40	05/03/19 06:26	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*82*		*60 - 120*	*04/29/19 06:40*	*05/03/19 06:26*	*20*
Nitrobenzene-d5 (Surr)	*78*		*53 - 120*	*04/29/19 06:40*	*05/03/19 06:26*	*20*
p-Terphenyl-d14 (Surr)	*102*		*65 - 121*	*04/29/19 06:40*	*05/03/19 06:26*	*20*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.5		2.0	0.41	mg/Kg	☼	04/30/19 11:19	05/02/19 17:24	1
Barium	37.6		0.51	0.11	mg/Kg	☼	04/30/19 11:19	05/02/19 17:24	1
Cadmium	0.21		0.20	0.030	mg/Kg	☼	04/30/19 11:19	05/02/19 17:24	1
Chromium	6.6	B	0.51	0.20	mg/Kg	☼	04/30/19 11:19	05/02/19 17:24	1
Lead	40.7		1.0	0.24	mg/Kg	☼	04/30/19 11:19	05/02/19 17:24	1
Selenium	ND		4.1	0.41	mg/Kg	☼	04/30/19 11:19	05/02/19 17:24	1
Silver	ND		0.61	0.20	mg/Kg	☼	04/30/19 11:19	05/02/19 17:24	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.075		0.021	0.0086	mg/Kg	☼	04/28/19 13:50	04/28/19 15:44	1

Surrogate Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 990 Niagara St. site

Job ID: 480-152344-1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)		
		FBP	NBZ	TPHd14
Lab Sample ID	Client Sample ID	(60-120)	(53-120)	(65-121)
480-152344-1	SB-17 .25-1.25FT	98	91	104
480-152344-2	MW-4 .25-1.25FT	82	78	102
LCS 480-470182/2-A	Lab Control Sample	96	92	101
MB 480-470182/1-A	Method Blank	101	94	107

Surrogate Legend

FBP = 2-Fluorobiphenyl
NBZ = Nitrobenzene-d5 (Surr)
TPHd14 = p-Terphenyl-d14 (Surr)

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 480-470182/1-A
Matrix: Solid
Analysis Batch: 470767

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 470182

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		170	25	ug/Kg		04/29/19 06:40	05/02/19 23:05	1
Acenaphthylene	ND		170	22	ug/Kg		04/29/19 06:40	05/02/19 23:05	1
Anthracene	ND		170	42	ug/Kg		04/29/19 06:40	05/02/19 23:05	1
Benzo[a]anthracene	ND		170	17	ug/Kg		04/29/19 06:40	05/02/19 23:05	1
Benzo[a]pyrene	ND		170	25	ug/Kg		04/29/19 06:40	05/02/19 23:05	1
Benzo[b]fluoranthene	ND		170	27	ug/Kg		04/29/19 06:40	05/02/19 23:05	1
Benzo[g,h,i]perylene	ND		170	18	ug/Kg		04/29/19 06:40	05/02/19 23:05	1
Benzo[k]fluoranthene	ND		170	22	ug/Kg		04/29/19 06:40	05/02/19 23:05	1
Chrysene	ND		170	38	ug/Kg		04/29/19 06:40	05/02/19 23:05	1
Dibenz(a,h)anthracene	ND		170	30	ug/Kg		04/29/19 06:40	05/02/19 23:05	1
Fluoranthene	ND		170	18	ug/Kg		04/29/19 06:40	05/02/19 23:05	1
Fluorene	ND		170	20	ug/Kg		04/29/19 06:40	05/02/19 23:05	1
Indeno[1,2,3-cd]pyrene	ND		170	21	ug/Kg		04/29/19 06:40	05/02/19 23:05	1
Naphthalene	ND		170	22	ug/Kg		04/29/19 06:40	05/02/19 23:05	1
Phenanthrene	ND		170	25	ug/Kg		04/29/19 06:40	05/02/19 23:05	1
Pyrene	ND		170	20	ug/Kg		04/29/19 06:40	05/02/19 23:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*101*		*60 - 120*	*04/29/19 06:40*	*05/02/19 23:05*	*1*
Nitrobenzene-d5 (Surr)	*94*		*53 - 120*	*04/29/19 06:40*	*05/02/19 23:05*	*1*
p-Terphenyl-d14 (Surr)	*107*		*65 - 121*	*04/29/19 06:40*	*05/02/19 23:05*	*1*

Lab Sample ID: LCS 480-470182/2-A
Matrix: Solid
Analysis Batch: 470767

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 470182

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	1640	1550		ug/Kg		94	62 - 120
Acenaphthylene	1640	1600		ug/Kg		97	58 - 121
Anthracene	1640	1590		ug/Kg		97	62 - 120
Benzo[a]anthracene	1640	1640		ug/Kg		99	65 - 120
Benzo[a]pyrene	1640	1620		ug/Kg		99	64 - 120
Benzo[b]fluoranthene	1640	1670		ug/Kg		101	64 - 120
Benzo[g,h,i]perylene	1640	1790		ug/Kg		109	45 - 145
Benzo[k]fluoranthene	1640	1630		ug/Kg		99	65 - 120
Chrysene	1640	1630		ug/Kg		99	64 - 120
Dibenz(a,h)anthracene	1640	1750		ug/Kg		106	54 - 132
Fluoranthene	1640	1640		ug/Kg		99	62 - 120
Fluorene	1640	1610		ug/Kg		98	63 - 120
Indeno[1,2,3-cd]pyrene	1640	1690		ug/Kg		103	56 - 134
Naphthalene	1640	1480		ug/Kg		90	55 - 120
Phenanthrene	1640	1610		ug/Kg		98	60 - 120
Pyrene	1640	1650		ug/Kg		100	61 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl	*96*		*60 - 120*
Nitrobenzene-d5 (Surr)	*92*		*53 - 120*
p-Terphenyl-d14 (Surr)	*101*		*65 - 121*

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-470276/1-A
Matrix: Solid
Analysis Batch: 471065

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 470276

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		2.0	0.40	mg/Kg		04/30/19 11:19	05/02/19 15:48	1
Barium	ND		0.51	0.11	mg/Kg		04/30/19 11:19	05/02/19 15:48	1
Cadmium	ND		0.20	0.030	mg/Kg		04/30/19 11:19	05/02/19 15:48	1
Chromium	0.243	J	0.51	0.20	mg/Kg		04/30/19 11:19	05/02/19 15:48	1
Lead	ND		1.0	0.24	mg/Kg		04/30/19 11:19	05/02/19 15:48	1
Selenium	ND		4.0	0.40	mg/Kg		04/30/19 11:19	05/02/19 15:48	1
Silver	ND		0.61	0.20	mg/Kg		04/30/19 11:19	05/02/19 15:48	1

Lab Sample ID: LCSSRM 480-470276/2-A
Matrix: Solid
Analysis Batch: 471065

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 470276

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	221	173.8		mg/Kg		78.6	63.8 - 119.0
Barium	288	241.6		mg/Kg		83.9	70.5 - 117.4
Cadmium	153	120.9		mg/Kg		79.0	68.6 - 115.0
Chromium	179	143.6		mg/Kg		80.2	65.4 - 121.2
Lead	74.5	73.10		mg/Kg		98.1	67.8 - 130.3
Selenium	54.4	41.03		mg/Kg		75.4	53.3 - 130.0
Silver	75.5	59.00		mg/Kg		78.1	66.6 - 121.7

Method: 7471B - Mercury (CVAA)

Lab Sample ID: MB 480-470155/1-A
Matrix: Solid
Analysis Batch: 470176

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 470155

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.018	0.0074	mg/Kg		04/28/19 13:50	04/28/19 15:14	1

Lab Sample ID: LCSSRM 480-470155/2-A ^5
Matrix: Solid
Analysis Batch: 470176

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 470155

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	4.85	3.26		mg/Kg		67.2	46.0 - 107.0

QC Association Summary

Client: Benchmark Env. Eng. & Science, PLLC
Job ID: 480-152344-1
Project/Site: Benchmark - 990 Niagara St. site

GC/MS Semi VOA

Prep Batch: 470182

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-152344-1	SB-17 .25-1.25FT	Total/NA	Solid	3550C	
480-152344-2	MW-4 .25-1.25FT	Total/NA	Solid	3550C	
MB 480-470182/1-A	Method Blank	Total/NA	Solid	3550C	
LCS 480-470182/2-A	Lab Control Sample	Total/NA	Solid	3550C	

Analysis Batch: 470767

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-152344-1	SB-17 .25-1.25FT	Total/NA	Solid	8270D	470182
480-152344-2	MW-4 .25-1.25FT	Total/NA	Solid	8270D	470182
MB 480-470182/1-A	Method Blank	Total/NA	Solid	8270D	470182
LCS 480-470182/2-A	Lab Control Sample	Total/NA	Solid	8270D	470182

Metals

Prep Batch: 470155

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-152344-1	SB-17 .25-1.25FT	Total/NA	Solid	7471B	
480-152344-2	MW-4 .25-1.25FT	Total/NA	Solid	7471B	
MB 480-470155/1-A	Method Blank	Total/NA	Solid	7471B	
LCSSRM 480-470155/2-A ^5	Lab Control Sample	Total/NA	Solid	7471B	

Analysis Batch: 470176

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-152344-1	SB-17 .25-1.25FT	Total/NA	Solid	7471B	470155
480-152344-2	MW-4 .25-1.25FT	Total/NA	Solid	7471B	470155
MB 480-470155/1-A	Method Blank	Total/NA	Solid	7471B	470155
LCSSRM 480-470155/2-A ^5	Lab Control Sample	Total/NA	Solid	7471B	470155

Prep Batch: 470276

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-152344-1	SB-17 .25-1.25FT	Total/NA	Solid	3050B	
480-152344-2	MW-4 .25-1.25FT	Total/NA	Solid	3050B	
MB 480-470276/1-A	Method Blank	Total/NA	Solid	3050B	
LCSSRM 480-470276/2-A	Lab Control Sample	Total/NA	Solid	3050B	

Analysis Batch: 471065

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-152344-1	SB-17 .25-1.25FT	Total/NA	Solid	6010C	470276
480-152344-2	MW-4 .25-1.25FT	Total/NA	Solid	6010C	470276
MB 480-470276/1-A	Method Blank	Total/NA	Solid	6010C	470276
LCSSRM 480-470276/2-A	Lab Control Sample	Total/NA	Solid	6010C	470276

General Chemistry

Analysis Batch: 469519

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-152344-1	SB-17 .25-1.25FT	Total/NA	Solid	Moisture	
480-152344-2	MW-4 .25-1.25FT	Total/NA	Solid	Moisture	

Lab Chronicle

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 990 Niagara St. site

Job ID: 480-152344-1

Client Sample ID: SB-17 .25-1.25FT
Lab Sample ID: 480-152344-1
Date Collected: 04/18/19 12:15
Matrix: Solid
Date Received: 04/23/19 13:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	469519	04/24/19 12:11	CMK	TAL BUF

Client Sample ID: SB-17 .25-1.25FT
Lab Sample ID: 480-152344-1
Date Collected: 04/18/19 12:15
Matrix: Solid
Date Received: 04/23/19 13:30
Percent Solids: 86.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550C			470182	04/29/19 06:40	SMP	TAL BUF
Total/NA	Analysis	8270D		1	470767	05/03/19 06:02	RJS	TAL BUF
Total/NA	Prep	3050B			470276	04/30/19 11:19	JMP	TAL BUF
Total/NA	Analysis	6010C		1	471065	05/02/19 17:20	LMH	TAL BUF
Total/NA	Prep	7471B			470155	04/28/19 13:50	BMB	TAL BUF
Total/NA	Analysis	7471B		1	470176	04/28/19 15:40	BMB	TAL BUF

Client Sample ID: MW-4 .25-1.25FT
Lab Sample ID: 480-152344-2
Date Collected: 04/18/19 11:15
Matrix: Solid
Date Received: 04/23/19 13:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	469519	04/24/19 12:11	CMK	TAL BUF

Client Sample ID: MW-4 .25-1.25FT
Lab Sample ID: 480-152344-2
Date Collected: 04/18/19 11:15
Matrix: Solid
Date Received: 04/23/19 13:30
Percent Solids: 96.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550C			470182	04/29/19 06:40	SMP	TAL BUF
Total/NA	Analysis	8270D		20	470767	05/03/19 06:26	RJS	TAL BUF
Total/NA	Prep	3050B			470276	04/30/19 11:19	JMP	TAL BUF
Total/NA	Analysis	6010C		1	471065	05/02/19 17:24	LMH	TAL BUF
Total/NA	Prep	7471B			470155	04/28/19 13:50	BMB	TAL BUF
Total/NA	Analysis	7471B		1	470176	04/28/19 15:44	BMB	TAL BUF

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Accreditation/Certification Summary

Client: Benchmark Env. Eng. & Science, PLLC
Job ID: 480-152344-1
Project/Site: Benchmark - 990 Niagara St. site

Laboratory: Eurofins TestAmerica, Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
New York	NELAP	2	10026	03-31-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

Method Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 990 Niagara St. site

Job ID: 480-152344-1

Method	Method Description	Protocol	Laboratory
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL BUF
6010C	Metals (ICP)	SW846	TAL BUF
7471B	Mercury (CVAA)	SW846	TAL BUF
Moisture	Percent Moisture	EPA	TAL BUF
3050B	Preparation, Metals	SW846	TAL BUF
3550C	Ultrasonic Extraction	SW846	TAL BUF
7471B	Preparation, Mercury	SW846	TAL BUF

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: Benchmark Env. Eng. & Science, PLLC
Project/Site: Benchmark - 990 Niagara St. site

Job ID: 480-152344-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-152344-1	SB-17 .25-1.25FT	Solid	04/18/19 12:15	04/23/19 13:30
480-152344-2	MW-4 .25-1.25FT	Solid	04/18/19 11:15	04/23/19 13:30

Chain of Custody Record

TAL-4124 (1007)

Temperature on Receipt ______

Drinking Water? Yes ☐ No ☐

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client: TurnKey ENV Restoration	Project Manager: Bryan Mayback / Brian Fischer	Date: 4/18/19	Chain of Custody Number: 190696
Address: 2558 Hamburg TPke	Telephone Number (Area Code)/Fax Number: 716-713-3437	Lab Number	Page 1 of 1
City: Buffalo; State: NY; Zip Code: 14218	Site Contact: Nick Sorrani; Lab Contact: Brian Fischer	Analysis (Attach list if more space is needed)	
Project Name and Location (State): 990 Niagara Street	Carrier/Waybill Number		Special Instructions/ Conditions of Receipt
Contract/Purchase Order/Quote No.: B0462-018-001			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	TCL SVOCs	TAL Metals
SB-17 .25-1.25 Ft	4/18/19	12:15				X	X						X	X
MW-4 .25-1.25 Ft	4/18/19	11:15				X	X						X	X

480-152344 Chain of Custody

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other ______

QC Requirements (Specify): Cat B, NYSDEC Cat B

	Date	Time		Date	Time
1. Relinquished By: [signature]	4/18/19	14:00	1. Received By: [signature]	4/15/15	14:40
2. Relinquished By: [signature]	4/15/15	13:30	2. Received By		
3. Relinquished By			3. Received By: [signature]	4-19-19	1330

Comments: 1.9 #1

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Login Sample Receipt Checklist

Client: Benchmark Env. Eng. & Science, PLLC

Job Number: 480-152344-1

Login Number: 152344
List Number: 1
Creator: Harper, Marcus D

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	TURNKEY
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

APPENDIX E

ELECTRONIC COPY

BENCHMARK TURNKEY