Remedial Investigation Work Plan

1827 Fillmore Avenue Site
Buffalo, New York

November 2017 B0421-017-001

Prepared For:

1827 Fillmore LLC

Prepared By:

Benchmark Environmental Engineering & Science, PLLC

In Association With:

TurnKey Environmental Restoration, LLC

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1.0 INTRODUCTION

This document presents the proposed scope of work and implementation procedures for completion of a Remedial Investigation (RI) at the 1827 Fillmore Avenue Site (Site) located in the City of Buffalo, Erie County, New York (see Figures 1 and 2).

The Applicant, 1827 Fillmore LLC, has elected to pursue cleanup and redevelopment of the Site under the New York State Brownfield Cleanup Program (BCP) and has submitted a BCP Application to the New York State Department of Environmental Conservation (NYSDEC) in conjunction with the RI Work Plan.

The RI work will be completed by Benchmark Environmental Engineering & Science, PLLC, in association with TurnKey Environmental Restoration, LLC (Benchmark-TurnKey), on behalf of the Applicant. The work will be completed in accordance with NYSDEC DER-10 guidelines.

1.1 Background

The Site, addressed at 1827 Fillmore Avenue in the City of Buffalo, consists of one (1) parcel totaling 17.15 acres. The Site is currently vacant land with green areas, asphalt paved areas, former roadways and includes one (1) vacant seven-story brick building that was historically used residentially as apartments (one of six buildings historically associated with the Kensington Heights Towers Apartments).

The Site was used as a stone quarry from at least 1917 through at least 1927. Sometime between the 1940s and 1950s, prior to development of the Kensington Heights Towers in 1958, the stone quarry was backfilled with unknown fill materials. The Kensington Heights apartments were built as low-income housing, formally as a federal/state development. The Site was improved with six (6), seven-story brick apartment buildings with 67 units per building, open space, and on-Site parking. The Site has been vacant since the 1980s. From 2009 to 2014 asbestos abatement and demolition of five (5) of the six (6) buildings were demolished. The single building that remains is a shell.

1.2 Project Objectives

For sites entering the BCP at the point of investigation, NYSDEC requires completion of a RI. The primary objectives of the RI are to:

- Collect additional media samples, under appropriate quality assurance/quality control criteria, to better delineate the nature and extent of contamination.
- Assess the groundwater flow direction and groundwater quality conditions at the Site.
- Determine if the concentrations of constituents of concern in site media pose potential unacceptable risks to human health and the environment.
- Provide the data needed to evaluate potential remedial measures and determine appropriate actions to address potential risks.

As part of the RI, sampling data will be used to evaluate whether remedial alternatives can meet the objectives. The intended uses of these data dictate the confidence levels. Two (2) data confidence levels will be employed in the RI: screening level data and definitive level data. In general, screening level confidence will apply to field measurements, including photoionization detector (PID) measurements, groundwater elevation measurements, and field analyses (i.e., pH, temperature, dissolved oxygen, specific conductivity, and turbidity). Definitive level confidence will apply to samples for chemical analysis. The applicability of these levels of data will be further specified in the Quality Assurance Project Plan (QAPP) in Section 4.0. Sampling and analytical acceptance and performance criteria such as precision, accuracy, representativeness, comparability, completeness, and sensitivity, are defined in the QAPP.

The cleanup objectives employed during the remedial measures will be a Track 4 cleanup using 6NYCRR Part 375 commercial soil cleanup objectives (CSCOs); however, the applicant may choose to remediate to a higher level of cleanup (e.g., unrestricted, residential, restricted residential) during the course of remedial work.

1.3 Project Organization and Responsibilities

The Applicant, 1827 Fillmore LLC, has applied to the New York State BCP as a non-responsible party (Volunteer) per ECL§27-1405. Benchmark-TurnKey will manage the brownfield cleanup on behalf of the Applicant. The NYSDEC Division of Environmental Remediation (Region 9), in consultation with the New York State Department of Health (NYSDOH), shall monitor the remedial actions to verify that the work is performed in accordance with the Brownfield Cleanup Agreement (BCA), the approved RI Work Plan, and NYSDEC DER-10 guidance.

Benchmark-TurnKey personnel and subcontractors for this project have not been determined at this time. Once pricing is secured, subcontract agreements are in place, and a field schedule determined, resumes for the selected project team will be provided to NYSDEC, if requested. Benchmark-TurnKey's Project Officer's résumés, however, have been included in Appendix A. The table below presents the planned project team.

Company	Role	Name	Contact Information
Benchmark	Principal Engineer	Tom Forbes, P.E.	(716) 856-0599
Benchmark-TurnKey	Sr. Project Manager/Principal	Mike Lesakowski	(716) 856-0635
Benchmark-TurnKey	Field Team Leader/SSHO	Bryan Mayback	(716) 856-0599
Benchmark-TurnKey	Qualified Environmental Professional/Scientist	TBD	(716) 856-0599
1827 Fillmore LLC	Facility Contact	Thomas J. Quatroche, Jr.	(716) 898-5503
Test America	Analytical Testing	Brian Fischer	(716) 504-9835
Earth Dimensions	Drilling/Excavation Services	Brian Bartron	(716) 655-1717
Data Validation Services	DUSR	Judy Harry	(518) 251-4429

2.0 SITE DESCRIPTION

2.1 General

The Site is located in a highly developed residential, commercial and industrial area of the City of Buffalo, Erie County, New York. The Site is bound by the Kensington Expressway (Route 33) to the north with commercial and residential properties beyond; Buffalo Public School #89, Dr. Lydia T. Wright School of Excellence and athletic fields to the south with Appenheimer Avenue beyond; Erie County Medical Center (ECMC) and Buffalo Public School #84 to the east; and Fillmore Avenue to the west with commercial properties and the Kensington Expressway beyond (see Figure 2).

2.2 Site Topography and Drainage

Based on a topographic map (see Figure 1), the Site slopes from a high point along the east side of the property (east of the existing structure) to a low point near the west side of the Site (Fillmore Avenue). The difference in elevation is 13 feet with a range between 677 and 664 feet above mean sea level. Currently, approximately 70 percent of the Site is vegetated, and 30 percent of the Site is covered by impervious structures including one (1) abandoned building, asphalt parking areas and roadways.

Precipitation (i.e., rain or melting snow) moves to the storm drains via overland flow. Surface water infiltration and shallow groundwater flow are likely impacted by various cycles of development and filling, as well as utility lines and foundations.

2.3 Geology and Hydrogeology

2.3.1 Overburden

Based on the New York State Surficial Geologic Map of New York[1], surficial soil at the Site is described as a lacustrine silt and clay. However, due to a heavy urbanization and industrial past, surface soils within the City of Buffalo are characterized as urban land (Ud) with level to gently sloping land in which 80 percent or more of the soil surface is covered

[1] Surficial Geologic Map of New York, Niagara Sheet, Compiled and edited by Donald H. Cadwell, University of the State of New York, The State Education Department, 1988.

by asphalt, concrete, buildings, or other impervious structures, typical of an urban environment.

The U.S. Department of Agriculture (USDA) Soil Conservation Service soil survey map of Erie County indicates that 100 percent of the Site consists of Urban Land (Ud), previously described. The geology of the Site will be further investigated as part of the RI activities.

2.3.2 Bedrock

Based on the New York State Geologic Map of New York[2], the Site is situated over the Onondaga Formation of the Middle Devonian Series. The Onondaga Formation is comprised of varying texture bedrock from coarse to very finely crystalline with a dark gray to tan color and chert and fossils within. The Onondaga has an approximated thickness of 110 to 160 feet. Structurally, the bedrock formations strike in an east-west direction and exhibit a regional dip that approximates 40 feet per mile (3 to 5 degrees) toward the south and southwest. An intersecting, orthogonal pattern of fractures and joint sets are common throughout the bedrock strata. The depth to and type of bedrock below the Site has not been determined.

2.3.3 Hydrogeology

The Site is located in the Erie-Niagara River Basin. In the Erie-Niagara Basin, the major areas of groundwater are within coarser overburden deposits and limestone and shale bedrock. Regional groundwater appears to flow west or southwest towards Scajaquada Creek and the Niagara River. Local groundwater flow, however, may be influenced by subsurface features, such as excavations, utilities, and localized fill-conditions. On-Site groundwater flow patterns and quality will be determined during RI activities.

2.4 Climate

Upstate New York has a cold continental climate; the average annual temperature in Buffalo is 48.25°F. The average annual precipitation for Buffalo is reportedly 40.47 inches and average annual snowfall is 94 inches. Average monthly temperatures range from 19°F in January to 80°F in July. Winds are generally from the southwest.

[2] Geologic Map of New York, Niagara Sheet, Compiled and Edited by Lawrence V. Rickard and Donald W. Fisher, University of the State of New York, The State Education Department, March 1970.

2.5 Population and Land Use

The City of Buffalo, which encompasses 40.38 square miles, has a population of 261,310[3]. The Site is located in Census Tract 170 and currently zoned R3, Dwelling District.

The surrounding land is used for mixed purposes and includes open space, neighborhood center, employment, general residential and institutional properties.

2.6 City of Buffalo Green Code

According to the City of Buffalo Green Code Land Use Plan (September 2016), the project area is planned as a transition from a residential zoned area to employment. Employment is described in the Land Use Plan as including strip retail, flex commercial and manufacturing districts.

According to the Buffalo Green Code Unified Development Ordinance Zoning Map (October 12, 2016), the anticipated zoning for the Site are primarily classified as Flex Commercial (D-C). Flex Commercial D-C zones are described as located within general commercial and mixed-use areas, which typically benefit from flexible form standards and separate from, but within close proximity to, residential neighborhoods.

2.7 Utilities and Groundwater Use

The subject property has access to all major public and private utilities, including potable water (Erie County Water Authority), sanitary and storm sewers (Buffalo Sewer Authority), electric (National Grid), and natural gas (National Fuel). Utilities are located in the right-of-way along Fillmore Avenue. Utilities from the former Kensington Heights Towers may remain on-Site.

Groundwater at the Site is assigned Class "GA" by 6NYCRR Part 701.15. There are currently no deed restrictions on the use of groundwater at the Site; however, the City of Buffalo has a city-wide groundwater use restriction. There are no groundwater supply wells on the Site. Municipal water is available to the Site and all surrounding properties. The municipal water is supplied by the Buffalo Water Authority.

[3] 2013 US Census Bureau

2.8 Wetlands and Floodplains

There are no State or Federal wetlands located on Site. According to the NYSDEC Environmental Resource Mapper, the nearest NYSDEC-regulated freshwater emergent wetland (PEM1Fx) is located 1.3 miles to the northeast of the Site.

2.9 Previous Investigations

A summary of Benchmark-TurnKey's review of historical documents as well as previous environmental investigation findings completed for the 1827 Fillmore Avenue Site is provided below. These reports are included in Appendix B.

2.9.1 Historic Sanborn Maps

Sanborn maps serve to reveal former buildings, building uses, and man-made works such as canals, lagoons and railroads that may have been altered or may no longer be in existence. The following table summarizes available Sanborn maps for the Site provided in a previous assessment as reviewed by Benchmark-TurnKey. Attachment 3 includes copies of the Sanborn Maps.

YEAR	SITE OBSERVATIONS
1917	Stone Quarry.
1939	The Site appears vacant with an access road or railroad spur running through the Site.
1950	Residential; New York State Emergency Housing Project.
1986	Vacant Residential; Buffalo Municipal Housing Authority – Kensington Heights Apartments.

2.9.2 Historic Aerial Photograph

Historical aerial photographs serve to reveal former topography, buildings, structures, and man-made works such as canals, lagoons, and railroads that may have been altered or may no longer exist. Historical aerial photographs were obtained by Benchmark-TurnKey for additional historical information relative to the Site. Attachment 3 includes a copy of the aerial photograph provided by Erie County Public Works Department. Note that the only aerial photograph available pre-dating development of the Kensington Heights Towers Historic was dated 1927.

YEAR	SITE OBSERVATIONS
1927	Numerous disturbances appear on-Site. The disturbances are presumably associated with the former stone quarry operation.

2.9.3 Phase I Environmental Site Assessment – 2008

"Phase I Environmental Assessment, Kensington Heights, 1827 Fillmore, Buffalo, NY," performed by Fifty-Six Services, Inc. for EI Team, dated March 2008. Fifty-Six Services identified the Site as being vacant at the time of the assessment with various vandalized containers containing oils along with vandalized transformers with oil staining on basement concrete floors. Fifty-Six Services reportedly observed evidence (fill caps, vent pipes) of two (2) underground storage tanks (USTs) at the time of their site reconnaissance; however, the report does not included tank-related information such as the size, contents or locations of the tanks.

Fifty-Six Services identified regulatory listings for the Site including one (1) leaking underground storage tank (LUST) for the Site with a status of "closed," a Resource Conservation and Recovery Act Large Quantity Generator (RCRA-LQG), a New York State Manifest and a registered aboveground storage tank (AST) facility. No additional information is provided.

Per Fifty-Six Services, "the Site has been left with extensive asbestos contamination (pipe insulation, etc.) and vandalism of electrical equipment in the basement has caused suspect polychlorinated biphenyl (PCB) contamination. The Site has also been used to dump trees and debris." Asbestos and lead surveys were reportedly completed by Fifty-Six Services in March 2008.

Fifty-Six Services concluded that the assessment revealed "extensive evidence of suspect potential environmental risks, and/or recognized environmental conditions (RECs) indicating the presence of hazardous conditions associated with the subject site."

2.9.4 Miscellaneous Documents Provided to Benchmark-TurnKey – 2008-2010

A 2008 Civil Site Utility Plan (see Appendix B), included in a Site Demo Plan, shows many utilities on-Site identified as "to be removed." Based on this information, TurnKey

suspects that buried utilities such as electric, telephone, natural gas, water and sanitary/storm sewer lines were removed as part of previous demolition activities.

In June 2009, Cambria Construction began asbestos abatement and demolition of the existing six (6) abandoned building on-Site. During that time, the upper approximate 3 to 4 inches of surface soil/fill had been bulldozed to the center of the Site to be used for re-grading after demolition work. [The mound currently remains present on the central portion of the Site and Benchmark-TurnKey is unaware of soil/fill samples collected from the mound for laboratory analysis.] Note that the mound was not required to be addressed under the Environmental Protection Agency (EPA) Compliance Order discussed below, nor was it acknowledged in the BMHA Work Plan also discussed below.

In January 2010, the NYSDEC and New York State Department of Labor (NYSDOL) performed a Site inspection and ceased all abatement and demolition work on-Site due to multiple violations. It had been found that workers were instructed to illegally dump asbestos containing materials (ACMs) within former elevator shafts within the buildings. In addition, ACMs were not properly wetted (standard practice for ACM removal activities) prior to being placed into closed dumpsters.

HLM Holdings hired Stohl Environmental, LLC (Stohl Environmental) to perform a Post-Remediation Hazardous Materials Inspection as of January 29, 2010.

2.9.5 Post Remediation Hazardous Materials Inspection – January 2010

A January 29, 2010 Post Remediation Hazardous Materials Inspection performed by Stohl Environmental, LLC identified the presence of multiple suspect asbestos containing building materials. Stohl Environmental noted that suspect remaining PCB residue in each building's basement transformer room, as mentioned in Fifty-Six Service's March 2008 Phase I Environmental Assessment, had not been cleaned or tested. Stohl Environmental recommended that additional asbestos and PCB inspection and sample analysis should be performed.

On March 2, 2010, notes from EI Team's Weekly Meeting minutes state that Fifty-Six Services claimed that PCB testing in the boiler room came back negative. However, in a Pre-Demolition Asbestos Assessment Report prepared by Fifty-Six Services on March 9, 2010, did not include the PCB results.

2.9.6 Additional Miscellaneous Documents Provided to Benchmark-TurnKey - 2010-2012

In July 2010 Cambria Construction resigned from the project and the re-abatement work was never completed. In spring of 2011, BMHA hired Apollo Contracting to finish the project. In June and July of 2011, Fifty-Six Services completed reports for each of the six (6) buildings; however, the reports only dealt with ACM.

On September 6, 2011, the BMHA received compliance order CAA-02-2011-1021 from the USEPA for violations of Section 112 of the CAA and the National Emission Standard for Asbestos, 40 C.F.R. Part 61, Subpart M for improper asbestos abatement and building demolition.

A September 12, 2011 Visual Survey and Bulk Sampling of Suspect Materials/Debris Report, prepared by Stohl Environmental, identified the presence of scattered asbestos debris on-Site through a visual assessment and laboratory analysis of 11 samples. The most prevalent type of asbestos debris identified by Stohl Environmental was transite cement board.

Stohl Environmental prepared a Visual Survey of Surficial Asbestos Materials/Debris Report, dated October 10, 2011, for the Kensington Heights Complex. The assessment was completed to visually locate surfical asbestos debris located on-Site, including areas around all buildings. The visual inspection revealed the presence of scattered asbestos debris (i.e., transite cement board, window caulk, thermal system insulation, floor tile and mastic) on ground surfaces throughout the Site. Stohl Environmental recommended additional inspection of staged on-Site backfill.

Apollo Contracting resigned from the project in December 2011 and BMHA hired Aria Contracting to complete the abatement work in accordance with the approved Work Plan. Aria Contracting completed asbestos abatement by removing 63,000 square feet of asbestos containing material from each of the buildings. Five (5) of the six (6) buildings had been demolished and soil surrounding each demolished buildings in a 25 foot perimeter was removed to a depth of 2 inches. Note that soil surrounding the existing building has apparently not been screened or removed.

BMHA prepared an Asbestos Abatement Work Plan for Compliance with EPA Order CAA-02-2011-1021, approved by the NYSDOL February 16, 2012.

2.9.7 Previous Brownfield Cleanup Program Application - 2013

On May 31, 2013, Kensington Heights Revitalization Corporation applied the entire parcel addressed at 1827 Fillmore Avenue to the New York State Brownfield Cleanup Program; however, the application was denied on August 14, 2013 based on the pending EPA Consent Order related violations of the CAA.

2.9.8 Subsurface Soil Investigation – August 2013

MS Analytical (MSA) completed a subsurface soil investigation at the Site in August 2013 with completion of 50 soil borings (SB-1 through SB-50) across the Site and 18 soil/fill samples selected for laboratory analysis from depths ranging between 4 and 20 feet below ground surface (fbgs). The work was documented in a Draft Phase II Environmental Site Assessment report prepared by MSA dated March 25, 2013. MSA was limited in their soil boring placement to specific portions of the Site due to areas of asbestos concern at the time of the investigation.

Subsurface conditions were described by MSA as fill material consisting of clay, sand and gravel with sporadic occurrences of ash. Groundwater was encountered at select borings including SB-15, SB-27, SB-37, SB-43 and SB-44 at depths ranging between 14 and 18 fbgs.

The highest PID reading identified during the work was 37.6 ppm at SB-43 (6-8' interval) completed on the west-central portion of the Site.

Analytical laboratory results have established that on-Site soil/fill materials are impacted with polycyclic aromatic hydrocarbons (PAHs) and metals exceeding Part 375 Unrestricted SCOS, Residential SCOs, Restricted Residential SCOs, Commercial SCOs and/or ISCOs (USCOs, RSCOs, RRSCOs, CSCOs and ISCOs, respectively).

It should be noted that MSA's report included a review of previous studies associated with the adjacent Dr. Lydia T. Wright School of Excellence Campus East School #89. The reports included a 2001 Phase II Environmental Site Assessment a 2002 Soil Management Plan, both prepared by Panamerican Environmental, Inc. (PEI) and URS Corporation (URS). According to MSA, the adjacent property was used as a stone quarry of which the Site was a part. Fill consisting of ash, sand, gravel, clay, silt and miscellaneous building debris was encountered during the investigation. Elevated concentrations of PAHs and metals were identified in soil/fill samples selected for laboratory analysis from the adjacent property. MSA noted that it does not appear that the studies involved soil/fill sampling at the subject site.

MSA concluded that the Site appears to meet BCP criteria and the report should be provided to the NYSDEC as part of the BCP application.

2.9.9 EPA Compliance Summary Report for Asbestos Abatement – October 2014

Surface soil from additional contaminated areas determined by Stohl Environmental has been abated to a depth of 2 inches. According to the EPA Compliance Summary Report completed by Stohl Environmental, on October 31, 2014 all work was done in accordance with the approved EPA Work Plan and the NYSDOL confirmed that all friable asbestos has been removed. It is unclear whether further testing was completed proximate to the existing building and soil mound on the central portion of the Site. The work included:

a. During asbestos abatement activities from 2009 to 2010 a portion of the Site's upper 3 to 4 inches of topsoil had been bulldozed to the center of the Site to be used for re-grading after demolition work. The mound was not required to be addressed under the EPA Compliance Order, nor was it acknowledged in the BMHA Work Plan. There are no records indicating that the mound of topsoil has been tested or addressed.
b. Soil surrounding each of the five (5) demolished buildings in a 25 foot radius was removed to a depth of 2 inches.

Stohl Environmental concluded that "all items included in the EPA Compliance Order CAA-02-2011-1021 have been addressed" and they also indicated that "the New York State DOL confirmed, by visual inspection, that all friable asbestos has been removed."

2.9.10 Previous Brownfield Cleanup Program Application - 2015

As indicated above, the Site has previously been subject to cleanup activities under the USEPA Consent Order CAA-02-2011-1021. However, all asbestos abatement work was completed under Consent Order with EPA on October 31, 2014.

The Site was entered in to the BCP in May 2015 and the BCA was executed in July 2015 (Site #C915279); however, the BCA was terminated by the NYSDEC on January 24, 2017 due to failure to submit a Remedial Investigation Work Plan within 30 days of the effective date of the BCA.

2.9.11 Phase I Environmental Site Assessment - 2017

Benchmark completed a Phase I Environmental Site Assessment for the Site in July 2017. The Site was identified as vacant land with one (1) building shell at the time of Benchmark's assessment.

Benchmark identified the following potential environmental concerns at the time of the site reconnaissance:

- The Site includes a vacant building shell with an inactive boiler and an empty approximate 10,000-gallon AST presumed by Benchmark to have historically contained fuel oil. [It should be noted that as-built site drawings dated 1955, reviewed by Benchmark as part of the Phase I, suggest that the five former apartment buildings had similar fuel oil fired heating systems.]
- An additional AST, an approximate 275-gallon tank, was observed on the exterior portion of the Site southwest of the existing building. Benchmark suspects that the tank historically contained gasoline or diesel fuel.
- An inactive incinerator with ash waste was noted within the building near the inactive boiler.
- A large soil/fill mound covered with dense vegetation was noted southwest of the existing building on the central portion of the Site. Benchmark understands that the mound consists of soil/fill from the upper approximate 3 to 4 inches of surface material that had previously been bulldozed to the center of the Site to be used for regrading after historic demolition work.
- In addition, a small additional apparent soil/fill mound covered with vegetation was noted east of the existing building.
- Benchmark is aware of the history of the Site in that fill materials from unknown origins were historically brought to the Site to bring former quarry areas (virtually the entire Site) to grade.
- Evidence of previous soil borings was noted on exterior portions of the Site; Benchmark is aware of a previous Phase II Environmental Investigation completed by others.
- Dumped materials including apparent landscaping wastes with mulch, soil and wood were noted on the southern portion of the Site and demolition debris with brick, concrete and asphalt were noted east of the existing building. Additional scattered debris (e.g., plastic, wood, general trash, etc.) were noted across the Site.

The following RECs were identified for the Site by Benchmark:

- Known impacted fill materials brought to the Site from unknown origins to bring former quarry areas to grade are considered RECs as previous sampling data indicates the presence of elevated PAHs and metals across the Site.
- There is the potential for additional environmental impacts on-Site, including asbestos, especially within the two soil/fill mounds given the past history of the Site.
- The AST observed during TurnKey's site visit and the USTs identified in the 2008 Phase I completed by Fifty-Six Services are considered RECs due to the potential for impacts.
- The inactive incinerator within the existing building is considered a REC due to the potential for impacted ash materials within the unit.

Benchmark concluded that further work appears warranted and environmental conditions will be further characterized through completion of the RI.

Copies of the environmental reports are provided electronically in Appendix B.

2.10 Primary Constituents of Potential Concern (COPCs)

Based on findings to date, the Constituents of Potential Concern (COPCs) are presented by media below:

- ***Soil:*** volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), Metals, and ACMs

3.0 REMEDIAL INVESTIGATION SCOPE OF WORK

The RI scope of work is focused on defining the nature and extent of contamination on-Site; identifying the source(s) of contamination; defining chemical constituent migration pathways; qualitatively assessing human health and ecological risks (if necessary); and, obtaining data of sufficient quantity and quality to perform an alternatives analysis.

Field team personnel will collect environmental samples in accordance with the rationale and protocols described in the QAPP in Section 4. USEPA and NYSDEC-approved sample collection and handling techniques will be used. Samples for chemical analysis will be analyzed in accordance with USEPA SW-846 methodology with an equivalent Category B deliverable package to meet the definitive-level data requirements. Analytical results will be evaluated by a third-party data validation expert in accordance with provisions described in the QAPP. Data submittals will be provided to the NYSDEC in accordance with the most current electronic data deliverables (EDD) protocols.

During intrusive outdoor RI activities, a Community Air Monitoring Plan (CAMP) will be followed. 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 NYSDEC's DER-10 (May 2010) Appendix 1A (NYSDOH's Generic Community Air Monitoring Plan) and Appendix 1B (Fugitive Dust and Particulate Monitoring).

The investigation approach is described below. Figure 3 presents the proposed RI sample locations, and Table 1 identifies the planned sampling and analytical program.

3.1 Field Investigation Activities

An investigation will be completed on the accessible portions of the Site to further assess potential impacts related to the historic use of the Site.

The site investigation will include excavation of exploratory test pits (TPs); advancement of boreholes (SBs) to install groundwater monitoring wells (MWs); collection of soil and groundwater samples; collection of an ash sample from the basement incinerator; and, assessment of a basement AST. Soil and groundwater samples will be collected using dedicated sampling tools. Representative samples will be placed in pre-cleaned laboratory provided sample bottles/containers, cooled to 4ºC in the field (as appropriate), and

transported under chain-of-custody command to a NYSDOH Environmental Laboratory Approval Program (ELAP)-certified analytical laboratory.

The previous Phase II investigation completed at the Site did not identify VOCs as a concern. However, we will evaluate the entire Site for all parameters, including VOCs. DER-10 indicates that "if VOCs are confirmed in the subsurface, the investigation should evaluate any subsurface utilities, structures (with both basement and slab on grade) and/or other preferential pathways to identify additional sampling that may be warranted to determine whether actions are needed to address exposures associated with soil vapor intrusion, as a result of the soil contamination." Based on this information, as the Site is unoccupied and as demolition of the existing building is planned, completion of a soil vapor study within the building is not planned. However, based on the data collected during the RI, in consultation with the Department, we will complete a soil vapor assessment if a VOC concern is identified.

Additional information relative to the scope of work is provided below.

3.1.1 Utility Clearance

Prior to any intrusive activities, Dig Safely New York (Call 811) will be contacted by the Site contractor a minimum of three (3) business days in advance of the work and informed of the intent to perform excavation work at the Site. If underground utilities are present on the property and anticipated to interfere with intrusive activities, the Applicant and NYSDEC will be contacted to discuss mitigating measures.

3.1.2 Soil/Fill Investigation

The soil/fill investigation will consist of 30 TPs, 8 SBs/MWs, collection of 15 surface soil samples, and additional soil sampling within a large soil/fill mound on the central portion of the Site and a small additional soil/fill mound located east of the existing building. The sampling work will be completed across the Site as shown on Figure 3. We have reviewed all of the documentation provided by the property owner and none of the information included tank closure documents. As such, TP investigation locations TP-7, TP-12, TP-14, TP-17 and TP-25 are included in possible former tank locations in former building areas to explore for potential buried tanks. Further, the TPs will assess backfill materials and whether concrete foundations remain in former building locations.

Benchmark-TurnKey will oversee the work and create a field log (including photographs) for investigation locations. Real time air and particulate monitoring will be conducted during intrusive activities using a PID and particulate monitor in accordance with the CAMP.

Excavated soil/fill will be placed on the ground adjacent to the test pit and boring locations. Soil/fill samples will be collected at two-foot intervals for classification, potential laboratory analysis, and field screening with a PID with a 10.6 eV lamp.

Upon reaching the completion depth of each location, field visual/olfactory and PID results will be reviewed. If significant field evidence of impact is encountered, test pits will be expanded or supplemental step-back borings will be advanced in an attempt to delineate the extent of the impacts.

The sample interval identified as the most impacted (i.e., greatest PID scan result and/or evidence of visual/ olfactory impact) at each investigation location will be selected for laboratory analysis. If differentiable impacts and/or fill layers are noted within a particular location, additional samples may be collected from more than one (1) depth interval to characterize the differentiable impacts/layers in that location. In the event that either the impacts are ubiquitous from grade to final depth or no impacts were identified, the soil/fill directly above water table will be selected for analysis. If the impacts are ubiquitous from grade to final depth or no impacts were identified and water is not encountered at a particular sample location, the sample interval will be selected based on the professional discretion of the field personnel and in consultation with the NYSDEC. Excavated soil/fill shall be returned to the test pit in the general order that it was excavated.

3.1.2.1 Surface Soil/Fill Investigation

Fifteen surface soil samples (SS-1 through SS-15) will be collected across the Site. The samples will be collected from 0 to 2 inches below the vegetative cover to allow for an assessment of human exposure via incidental soil ingestion, inhalation of soil, or dermal contact with soil. The surface soil samples will be analyzed in accordance with the sampling and analysis plan (see Table 1). Specifically, all 15 surface soil samples will be analyzed for target compound list (TCL) SVOCs (+ 20 tentatively identified compounds (TICs) in four random samples) and Target Analyte List (TAL) metals. Five (5) of the surface soil samples will also be analyzed for PCBs, herbicides and pesticides. If elevated PID readings are noted during field screening, laboratory analysis may be expanded to include VOCs in consultation

with NYSDEC. The soil/fill samples will be analyzed in accordance with USEPA SW 846 methodology with equivalent NYSDEC Category B deliverables to allow for independent third-party data usability assessment.

3.1.2.2 Subsurface Soil/Fill Investigation

The subsurface soil/fill investigation will consist of 30 TPs and 8 SBs across the Site to further delineate the extent of contamination identified during previous investigations and to further characterize the Site.

Thirty TPs (designated TP-1 through TP-30) will be completed with a track excavator at the approximate locations shown on Figure 3. The TPs will be advanced to an approximate depth of 15 fbgs or equipment refusal. Subsurface conditions such as unstable excavation sidewalls or the water table may limit the depth of the test pit excavations. In certain sample locations, the NYSDEC will be notified if such conditions are identified. Further, due to the previous development at the Site, there are numerous former buried utility locations. If any former utility locations appear to be a preferential pathway/conduit for environmental impacts, we will further assess based on the data collected, in consultation with the Department.

The test pit samples will be analyzed in accordance with the sampling and analysis plan (see Table 1). Specifically, 30 soil/fill samples will be analyzed for TCL SVOCs (+ 20 TICs in three random samples) and TAL Metals with ten (10) of the soil/fill samples also be analyzed for TCL + CP-51 VOCs (+ 10 TICs in three random samples), PCBs, herbicides and pesticides.

Samples will be collected from the test pits in the assessment areas in the upper 15 fbgs and submitted for analysis to assess the full lateral and vertical extent of subsurface soil. Therefore, at least five (5) soil samples collected from each of the intervals 0-5 fbgs, 5-10 fbgs, and 10-15 fbgs (or within the unsaturated five-foot interval directly above the water table) to fully assess the Site horizontally and vertically in the upper 15 fbgs.

Eight (8) soil boring/monitoring wells (MW-1 through MW-8) will be completed at the approximate locations shown on Figure 3 to collect soil samples and allow for the installation of MWs. SBs will be advanced to a maximum depth of 25 feet, at least five (5) feet into the upper water bearing zone, or until equipment refusal, whichever is shallower.

The soil boring samples will be analyzed in accordance with the sampling and analysis plan (see Table 1) with eight (8) soil samples analyzed for TCL SVOCs (+ 20 TICs in one

sample) and TAL Metals. Four (4) of the samples will also be analyzed for TCL+CP-51 VOCs (+ 10 TICs in one sample), PCBs, herbicides and pesticides. The five (5) samples with the highest total metals concentrations will be analyzed for Toxicity Characteristic Leaching Procedure (TCLP) metals.

The soil/fill samples will be analyzed in accordance with USEPA SW 846 methodology with equivalent NYSDEC Category B deliverables to allow for independent third-party data usability assessment.

Field personnel will be prepared to collect additional samples, in consultation with the Applicant and NYSDEC, if additional potential impacts are noted during the investigation.

3.1.2.3 Soil/Fill Mounds Investigation

Benchmark-TurnKey understands that the Site's upper 3 to 4 inches of topsoil had previously been bulldozed to the central portion of the Site by others and was to be used for re-grading purposes after the demolition work. As such, a large soil/fill mound, estimated at approximately 10,000 cubic yards (CY), remains on the central portion of the Site. A small additional soil/fill mound, estimated at approximately 200 CY, exists to the east of the existing building. There are no records indicating that the mounds of soil/fill have been tested.

Three (3) representative soil/fill samples (P-1 through P-3) will be collected from the large mound located in the central portion of the Site and one (1) soil/fill sample (P-4) will be collected from the smaller mound for characterization purposes in the approximate locations shown on Figure 3. Three (3) samples from the large mound and one (1) from the small mound will allow us to assess whether asbestos is present in soil and to determine whether additional characterization for off-site disposal or reuse is appropriate. The samples will be collected using an excavator and will be analyzed in accordance with the sampling and analysis plan shown on Table 1. Specifically, for initial characterization purposes, each soil/fill sample will be analyzed for asbestos. Depending upon the asbestos results, additional sampling to assess potential on-Site reuse or off-Site disposal will be discussed with the Department.

3.1.2.4 Miscellaneous Debris

There is miscellaneous debris/dumped materials on-Site that will be inspected. A field determination will be made as to whether further testing or analysis will need to be completed.

3.1.3 Incinerator Ash Sampling

A representative sample will be collected from ash remaining within the incinerator unit and analyzed by the laboratory for parameters required by the disposal facility.

3.1.4 Fuel Oil AST Investigation

A visual inspection of the basement AST will be completed. If an environmental concern is identified such as evidence of staining or a potential release to the environment, sampling may be required, which will be discussed with the Department at that time.

3.1.5 Groundwater Investigation

Eight (8) groundwater monitoring wells will be installed at the Site to assess groundwater flow direction and groundwater quality. Figure 3 identifies the planned groundwater monitoring well locations. Monitoring well installation, well development, and groundwater sample collection details are discussed in the following sections.

3.1.5.1 Monitoring Well Installation

The SBs will be completed with a drill rig capable of advancing hollow stem augers to install 2-inch inside diameter PVC monitoring wells. Each well location will be advanced to a target minimum of five (5) feet below the first encountered groundwater or a target maximum depth of 25 fbgs. In the absence of groundwater contact during boring advancement within the upper 25 feet, no well will be placed. Non-dedicated drilling tools and equipment will be decontaminated between boring locations using potable tap water and a phosphate-free detergent (e.g., Alconox).

Subsequent to boring completion, a 2-inch ID diameter flush-joint Schedule 40 PVC monitoring well will be installed at each location. Each well will be constructed with a minimum 5-foot flush-joint Schedule 40 PVC, 0.010-inch machine slotted well screen. Each well screen and attached riser will be placed at the bottom of each borehole and a silica sand filter pack (size #0) will be installed from the base of the well to a minimum of two (2) feet above the top of the screen. A bentonite chip seal will then be installed and allowed to

hydrate sufficiently to mitigate the potential for downhole grout contamination. The newly installed monitoring wells will be completed with stick-up casings over the riser, and lockable J-plugs with keyed-alike locks.

3.1.5.2 Well Development

After installation, but not within 24 hours, the newly installed monitoring wells will be developed in accordance with Benchmark-TurnKey and NYSDEC protocols. Development of the monitoring wells will be accomplished via surge and purge methodology. Field parameters including pH, temperature, turbidity, dissolved oxygen (DO), oxidation-reduction potential (ORP) and specific conductance will be measured periodically (i.e., every well volume or as necessary) during development. Field measurements will continue until they became relatively stable. Stability will be defined as variation between measurements of approximately 10 percent or less with no overall upward or downward trend in the measurements. A minimum of ten (10) well volumes will be evacuated from each monitoring well. Development water from the monitoring wells will be discharged to the ground surface in the vicinity of the monitoring well being developed. If light non-aqueous phase liquid (LNAPL), dense non-aqueous phase liquid (DNAPL), odors, or sheen are encountered during well development water will be containerized in NYSDOT-approved drums and labeled per monitoring well location. Based on the RI groundwater analytical results, it will be determined, in consultation with NYSDEC, if the containerized development water is acceptable for surface discharge, or requires subsequent on-site treatment and/or off-site disposal.

3.1.5.3 Groundwater Sample Collection

Sampling will be performed as soon as practical after purging as long as the well has recovered sufficiently to sample or within 24 hours after evacuation if the well recharges slowly. Prior to sample collection, static water levels will be measured and recorded from all on-site monitoring wells to facilitate the preparation of a Site-wide isopotential map. Following water level measurement, field personnel will purge and sample monitoring wells using a submersible pump with dedicated pump tubing following low-flow/minimal drawdown purge and sample collection procedures. In the event of pump failure or the saturated unit does not permit the proper implementation of low-flow sampling, a dedicated polyethylene bailer will be used to purge and sample the well. Groundwater will be evacuated

from each well at a low-flow rate (typically less than 0.1 L/min) while maintaining a generally consistent water level. Field measurements for pH, temperature, turbidity, DO, ORP, specific conductance and water level, as well as visual and olfactory field observations will be periodically recorded and monitored for stabilization. Low-flow purging will be considered complete when pH, specific conductivity, DO, ORP, and temperature stabilize and when turbidity measurements fall below 50 Nephelometric Turbidity Units (NTU), or become stable above 50 NTU regardless of volume purged. Purging via disposable bailer, if necessary, will be considered complete following the removal of three (3) well volumes and field parameter stabilization or to well dryness, whichever occurs first. In general, stability is defined as variation between field measurements of 10 percent or less and no overall upward or downward trend in the measurements. Upon stabilization of field parameters, groundwater samples will be collected and analyzed.

Prior to, and immediately following collection of groundwater samples, field measurements for pH, specific conductance, temperature, dissolved oxygen, turbidity and water level, as well as visual and olfactory field observations will be recorded. Collected groundwater samples will be placed in pre-cleaned, pre-preserved laboratory provided sample bottles, cooled to 4°C in the field, and transported under chain-of-custody command to a NYSDOH-approved laboratory for analysis.

3.1.5.4 Groundwater Sample Analyses

A total of eight (8) groundwater samples will be collected and analyzed for parameters identified in Table 1, in accordance with USEPA SW 846 methodology with equivalent NYSDEC Category B deliverables to allow for independent third-party data usability assessment. Due to the nature of the Site, as turbidity levels are anticipated to exceed 50 NTUs, groundwater samples will be filtered in the laboratory for dissolved metals analysis.

3.2 Field Specific Quality Assurance/Quality Control Sampling

In addition to the soil/fill and groundwater samples described above, field-specific quality assurance/quality control (QA/QC) samples will be collected and analyzed to ensure the reliability of the generated data as described in the QAPP (see Section 4.0) and to support the required third-party data usability assessment effort. Site-specific QA/QC

samples will include matrix spikes, matrix spike duplicates, blind duplicates, and trip blanks (see Table 1).

3.3 Decontamination and Investigation-Derived Waste Management

Every attempt will be made to use dedicated sampling equipment during the RI; however, if non-dedicated equipment is required and/or used, the equipment will be decontaminated, at a minimum, with a non-phosphate detergent (i.e., Alconox®) and potable water mixture, rinsed with distilled water, and air-dried before each use in accordance with Benchmark-TurnKey's field operating procedures (FOPs) presented in Appendix E. Decontaminated sampling equipment will be kept in a clean environment prior to sample collection. Heavy equipment, such as an excavator and drilling tools, will be decontaminated by the subcontractor, as necessary.

Investigation-generated drilling spoils will be placed on plastic next to each boring/well location pending results of the RI laboratory analytical data. Groundwater or decontamination rinse water not exhibiting gross contamination (i.e., visible product, odor, sheen, elevated PID) will be either returned to the borehole from which it was removed or discharged to the ground surface (groundwater and rinse water). Investigative-derived waste (IDW), and those materials exhibiting gross contamination, will be placed in sealed NYSDOT-approved drums and labeled for subsequent characterization and disposal. IDW drums that are generated will be labeled alpha-numerically with regard to contents, origin, and date of generation using a paint stick marker on two (2) sides and the top of each drum. Characterization analytical results of containerized IDW material will be used to determine if spoils can be returned to the ground surface, used on-site, or require treatment and/or off-site disposal. Drums will be securely staged on-site pending characterization analyses and remedial measures assessment. Field personnel will coordinate the on-site handling and temporary storage of IDW drums, including transportation, characterization sampling, and off-site disposal arrangements, as necessary.

Discarded personal protective equipment (PPE) (i.e., latex gloves, Tyvek, paper towels, etc.) and disposable sampling equipment (i.e., bailers or stainless steel spoons) will be placed in sealed plastic garbage bags and disposed as municipal solid waste.

3.4 Site Mapping

A Site map will be developed and include investigation locations and relevant Site features. Benchmark-TurnKey will employ a Trimble GeoXT handheld GPS unit to identify investigation locations relative to State planar grid coordinates. Monitoring well elevations will be measured by Benchmark-TurnKey's surveyor. An isopotential map showing the general direction of groundwater flow will be prepared based on groundwater elevation measurements relative to United States Geological Survey (USGS) vertical datum. Maps will be provided with the RI Report.

4.0 QUALITY ASSURANCE PROJECT PLAN

A QAPP has been prepared in support of the RI activities. The QAPP dictates implementation of the investigation tasks delineated in this Work Plan. A Sampling and Analysis Plan (SAP) identifying methods for sample collection, decontamination, handling, and shipping is provided below.

The QAPP will assure the accuracy and precision of data collection during the Site characterization and data interpretation periods. The QAPP identifies procedures for sample collection to mitigate the potential for cross-contamination, as well as analytical requirements necessary to allow for independent data validation. The QAPP has been prepared in accordance with USEPA's Requirements for QAPPs for Environmental Data Operations; the EPA Region II Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Quality Assurance Manual; and NYSDEC's DER-10 Technical Guidance for Site Investigation and Remediation.

4.1 Scope of the QAPP

This QAPP has been prepared to provide quality assurance (QA) guidelines to be implemented during the RI activities. This document may be modified for subsequent phases of investigative work, as necessary. The QAPP provides:

- A means to communicate to the persons executing the various activities exactly what is to be done, by whom, and when.
- A culmination to the planning process that ensures that the program includes provisions for obtaining quality data (e.g., suitable methods of field operations).
- A historical record that documents the investigation in terms of the methods used; and the planned calibration standards and frequencies, and auditing.
- A document that can be used by the Project Managers and QA Officer to assess if the activities planned are being implemented and their importance for accomplishing the goal of quality data.
- A plan to document and track project data and results.
- Detailed descriptions of the data documentation materials and procedures, project files, and tabular and graphical reports.

The QAPP is primarily concerned with the QA/QC aspects of the procedures involved in the collection, preservation, packaging, and transportation of samples; field

testing; record keeping; data management; chain-of-custody procedures; laboratory analyses; and other necessary matters to assure that the investigation activities, once complete, will yield data whose integrity can be defended.

QA refers to the conduct of planned and systematic actions necessary to perform satisfactorily task-specific activities and to provide information and data confidence as a result of such activities. The QA for task-specific activities includes the development of procedures, auditing, monitoring and surveillance of the performance.

QC refers to the activity performed to determine if the work activities conform to the requirements. This includes activities such as inspections of the work activities in the field (e.g., verification that the items and materials installed conform to applicable codes and design specifications). QA is an overview monitoring of the performance of QC activities through audits rather than first time inspections.

4.2 QAPP Organization and Responsibility

The principal organizations involved in verifying achievement of data collection goals for the 1827 Fillmore Avenue Site include: NYSDEC, NYSDOH, 1827 Fillmore LLC (Volunteer), Benchmark Environmental Engineering & Science, PLLC in association with TurnKey Environmental Restoration, LLC (Volunteer's Consultant), drilling subcontractor(s), independent environmental laboratory, and independent third party data validator. Roles, responsibilities, and required qualifications of these organizations are discussed in the following subsections.

4.2.1 NYSDEC and NYSDOH

It is the responsibility of NYSDEC, in conjunction with the NYSDOH, to review the RI Work Plan and supporting documents for completeness and conformance with the site-specific cleanup objectives and to make a decision to accept or reject these documents based on this review. The NYSDEC also has the responsibility and authority to review and approve QA documentation collected during Brownfield cleanup construction and confirm that the QA Plan was followed.

4.2.2 Volunteer

1827 Fillmore LLC (Volunteer) will be responsible for complying with the QA requirements as specified herein and monitoring and controlling the quality of the Brownfield cleanup construction either directly or through their designated environmental consultant and/or legal counsel. The Volunteer will also have the authority to select Remedial Action Contractor(s) to assist them in fulfilling these responsibilities. The designated Project Manager is responsible for implementing the project and has the authority to commit the resources necessary to meet project objectives and requirements.

4.2.3 Benchmark-TurnKey

Benchmark-TurnKey is the Volunteer's consultant on this project and is responsible for the performance of services required to implement each phase of the RI Work Plan including, but not limited to, field operations, laboratory testing, data management, data analysis, and reporting. Any one member of Benchmark-TurnKey's staff may fill more than one of the identified project positions. The various quality assurances, field, laboratory and management responsibilities of key project personnel are defined below.

- *Principal Engineer:* *Thomas H. Forbes, P.E.*
  The Principal Engineer has the responsibility for ensuring conformance with the BCP program requirements. The Principal Engineer will report directly to the Volunteer and NYSDEC/NYSDOH Project Coordinators and is responsible for project oversight. The Principal Engineer will:
  - Define project objectives and develop a detailed work plan schedule.
  - Acquire and apply technical and corporate resources as needed to assure performance within budget and schedule constraints.
  - Review the work performed on the project to assure its quality, responsiveness, and timeliness.
  - Certify deliverables before their submission to NYSDEC.

- *Benchmark-TurnKey Senior Project Manager (PM):* *Michael A. Lesakowski*
  The Benchmark-TurnKey PM has the responsibility for ensuring that the project meets the Work Plan objectives. The PM will report directly to the Volunteer's Project Coordinator and the NYSDEC/NYSDOH Project Coordinators and is responsible for technical and project oversight. The PM will:
  - Define project objectives and develop a detailed work plan schedule.

- Establish project policy and procedures to address the specific needs of the project as a whole, as well as the objectives of each task.
- Acquire and apply technical and corporate resources as needed to assure performance within budget and schedule constraints.
- Develop and meet ongoing project and/or task staffing requirements, including mechanisms to review and evaluate each task product.
- Review the work performed on each task to assure its quality, responsiveness, and timeliness.
- Review and analyze overall task performance with respect to planned requirements and authorizations.
- Review and approve all deliverables before their submission to NYSDEC.
- Develop and meet ongoing project and/or task staffing requirements, including mechanisms to review and evaluate each task product.
- Ultimately be responsible for the preparation and quality of interim and final reports.
- Represent the project team at meetings.

- *Benchmark-TurnKey FTL/SSHO:* *Bryan W. Mayback*

  The Field Team Leader (FTL) has the responsibility for implementation of specific project tasks identified at the Site, and is responsible for the supervision of project field personnel, subconsultants, and subcontractors. The FTL reports directly to the Project Manager. The FTL will:

  - Define daily work activities.
  - Orient field staff concerning the project's special considerations.
  - Monitor and direct subcontractor personnel.
  - Review the work performed on each task to ensure its quality, responsiveness, and timeliness.
  - Assure that field activities, including sample collection and handling, are carried out in accordance with this QAPP.

  For this project the FTL will also serve as the Site Safety and Health Officer (SSHO). As such, he is responsible for implementing the procedures and required components of the Site Health and Safety Plan (HASP), determining levels of protection needed during field tasks, controlling site entry/exit, briefing the field team and subcontractors on site-specific health and safety issues, and all other responsibilities as identified in the HASP.

4.3 Quality Assurance (QA) Responsibilities

The QA Officer will have direct access to corporate executive staff as necessary, to resolve any QA dispute, and is responsible for auditing the implementation of the QA program in conformance with the demands of specific investigations and Benchmark-TurnKey policies, and NYSDEC requirements. The QA Officer has sufficient authority to stop work on the investigation as deemed necessary in the event of serious QA issues.

- *Project QA Officer:* *Lori E. Riker, P.E.*
  Specific function and duties include:
  - Performing QA audits on various phases of the field operations.
  - Reviewing and approving QA plans and procedures.
  - Providing QA technical assistance to project staff.
  - Reporting on the adequacy, status, and effectiveness of the QA program on a regular basis to the Project Manager for technical operations.
  - Responsible for assuring third party data review of all sample results from the analytical laboratory.

4.4 Field Responsibilities

Benchmark-TurnKey field staff for this project is drawn from a pool of qualified resources. The Project Manager will use staff to gather and analyze data, and to prepare various task reports and support materials. The designated technical team members are experienced professionals who possess the degree of specialization and technical competence required to effectively and efficiently perform the required work.

4.5 Quality Assurance Objectives for Measurement Data

The overall objectives and criteria for assuring quality for this effort are discussed below. This QAPP addresses how the acquisition and handling of samples and the review and reporting of data will be documented. The objectives of this QAPP are to address the following:

- The procedures to be used to collect, preserve, package, and transport groundwater samples.
- Field data collection.
- Record keeping.

- Data management.
- Chain-of-custody procedures.
- Precision, accuracy, completeness, representativeness, decision rules, comparability and level of quality control effort conformance for sample analysis and data management by TestAmerica under EPA analytical methods.

4.6 Level of QC Effort for Sample Parameters

Field blank, method blank, trip blank, field duplicate, laboratory duplicate, laboratory control, standard reference materials (SRM) and matrix spike samples will be analyzed to assess the quality of the data resulting from the field sampling and analytical programs. QC samples are discussed below.

- Field and trip blanks consisting of distilled water will be submitted to the analytical laboratories to provide the means to assess the quality of the data resulting from the field-sampling program. Field (equipment) blank samples are analyzed to check for procedural chemical constituents at the facility that may cause sample contamination. Trip blanks are used to assess the potential for contamination of samples due to contaminant migration during sample shipment and storage.
- Method blank samples are generated within the laboratory and used to assess contamination resulting from laboratory procedures.
- Duplicate samples are analyzed to check for sampling and analytical reproducibility.
- MS/MSD and MS/Duplicate samples provide information about the effect of the sample matrix on the digestion and measurement methodology. Depending on site-specific circumstances, one (1) MS/MSD or MS/Duplicate should be collected for every 20 or fewer investigative samples to be analyzed for organic and inorganic chemicals of a given matrix (see Table 1).

The general level of QC effort will be one (1) field (blind) duplicate and one (1) field blank (when non-dedicated equipment is used) for every 20 or fewer investigative samples of a given matrix. Additional sample volume will also be provided to the laboratory to allow one (1) site-specific MS/MSD or MS/Duplicate for every 20 or fewer investigative samples of a given matrix. One (1) trip blank consisting of distilled, deionized water will be included along with each sample delivery group of aqueous VOC samples.

4.7 Sampling and Analysis Plan

Methods and protocol to be used to collect environmental samples (i.e., soil, groundwater, surface water, and sediment) for this investigation are described in the Benchmark-TurnKey FOPs, summarized on Table 3 and presented in Appendix E.

Table 1 summarizes the number and types of environmental samples to be collected. Table 2 summarizes sample parameter lists, holding times, and sample container requirements. The sampling program and related Site activities are discussed below. To the extent allowed by existing physical conditions at the facility, sample collection efforts will adhere to the specific methods presented herein. If alternative sampling locations or procedures are implemented in response to facility specific constraints, each will be selected on the basis of meeting data objectives. Such alternatives will be approved by NYSDEC before implementation and subsequently documented for inclusion in the project file.

4.7.1 Custody Procedures

Sample custody is controlled and maintained through the chain-of-custody procedures. Chain of custody is the means by which the possession and handling of samples will be tracked from the source (field) to their final disposition, the laboratory. A sample is considered to be in a person's custody if it is in the person's possession or it is in the person's view after being in his or her possession or it was in that person's possession and that person has locked it in a vehicle or room. Sample containers will be cleaned and preserved at the laboratory before shipment to the Site. The following section and FOPs for Sampling, Labeling, Storage, and Shipment describe procedures for maintaining sample custody from the time samples are collected to the time they are received by the analytical laboratory.

4.7.2 Sample Storage

Samples are stored in secure limited-access areas. Walk-in coolers or refrigerators are maintained at 4°C, ±2°C, or as required by the applicable regulatory program. The temperatures of refrigerated storage areas are monitored and recorded a minimum of once per day. Deviations of temperature from the applicable range require corrective action, including moving samples to another storage location if necessary.

4.7.3 Sample Custody

Sample custody is defined by this document as when any of the following occur:

- It is in someone's actual possession.
- It is in someone's view after being in his or her physical possession.
- It was in someone's possession and then locked, sealed, or secured in a manner that prevents unsuspected tampering.
- It is placed in a designated and secured area.

Samples are removed from storage areas by the sample custodian or analysts and transported to secure laboratory areas for analysis. Access to the laboratory and sample storage areas is restricted to laboratory personnel and escorted visitors only; and areas of the laboratory are therefore considered secure. If required by the applicable regulatory program, internal chain-of-custody is documented in a log by the person moving the samples between laboratory and storage areas.

Laboratory documentation used to establish chain of custody (COC) and sample identification may include the following:

- Field COC forms or other paperwork that arrives with the sample.
- The laboratory COC.
- Sample labels or tags are attached to each sample container.
- Sample custody seals.
- Sample preparation logs (i.e., extraction and digestion information) recorded in hardbound laboratory books that are filled out in legible handwriting, and signed and dated by the chemist.
- Sample analysis logs (e.g., metals, GC/MS, etc.) information recorded in hardbound laboratory books that are filled out in legible handwriting, and signed and dated by the chemist.
- Sample storage log (same as the laboratory COC).
- Sample disposition log, which documents sample disposal by a contracted waste disposal company.

4.7.4 Sample Tracking

Samples are maintained in the appropriate coolers prior to and after analysis. The analysts remove and return their samples as needed. Samples that require internal COC are relinquished to the analysts by the sample custodians. The analyst and sample custodian must sign the original COC relinquishing custody of the samples from the sample custodian to the analyst. When the samples are returned, the analyst will sign the original COC returning sample custody to the sample custodian. Sample extracts are relinquished to the instrumentation analysts by the preparatory analysts. Each preparation department tracks internal COC through their logbooks/spreadsheets.

Any change in the sample during the time of custody will be noted on the COC (e.g., sample breakage or depletion).

4.8 Calibration Procedures and Frequency

This section describes the calibration procedures and the frequency at which these procedures will be performed for both field and laboratory instruments.

4.8.1 Field Instrument Calibration

Quantitative field data to be obtained during groundwater sampling include pH, turbidity, oxidation-reduction potential, specific conductance, temperature, and depth to groundwater. Quantitative water level measurements will be obtained with an electronic sounder or steel tape, which require no calibration. Quantitative field data to be obtained during soil sampling include screening for the presence of volatile organic constituents using a PID.

FOPs describe the field instruments used to monitor for these parameters and the calibration methods, standards, and frequency requirements for each instrument (see Appendix E). Calibration results will be recorded on the appropriate field forms and in the Project Field Book.

4.9 Analytical Procedures

Samples collected during this investigation field sampling activities will be analyzed by a NYSDOH-approved laboratory. FOPs for collecting and preserving groundwater and soil samples are included in Appendix E and summarized on Table 3.

4.10 Data Usability Evaluation

Data usability evaluation procedures shall be performed for both field and laboratory operations as described below.

4.10.1 Procedures Used to Evaluate Field Data Usability

Procedures to validate field data for this project will be facilitated by adherence to the FOPs in Appendix E. The performance of field activities, calibration checks of field instruments at the beginning of each day of use, manual checks of field calculations, checking for transcription errors, and review of field log books is the responsibility of the FTL.

4.10.2 Procedures Used to Evaluate Laboratory Data Usability

As outlined in the NYSDEC Data Usability Summary Report (DUSR) description, data evaluation will be performed by the third party data validator using guidance from the methods and quality control criteria from the USEPA's Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review and National Functional Guidelines for Inorganic Data Review. The data review guidance will be used only to the extent that it is applicable to the SW-846 methods; SW-846 methodologies will be followed primarily and given preference over CLP when differences occur. Results of blanks, surrogate spikes, MS/MSDs, and laboratory control samples will be reviewed/ evaluated by the data validator. Sample analytical data for each sample matrix shall be evaluated. The third party data validation expert will also evaluate the overall completeness of the data package. Completeness checks will be administered on data to determine whether deliverables specified in this QAPP are present. The reviewer will determine whether required items are present and request copies of missing deliverables.

5.0 INVESTIGATION SUPPORT DOCUMENTS

5.1 Health and Safety Protocols

Benchmark-TurnKey has prepared a Site-Specific HASP for use by its employees in accordance with 40 CFR 300.150 of the NCP and 29 CFR 1910.120. The HASP, provided in Appendix C, 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 CAMP that describes required particulate and air monitoring to protect the neighboring community during intrusive site investigation and remediation activities.

Health and safety activities will be monitored throughout the field investigation. A member of the field team will be designated to serve as the SSHO throughout the field program. This person 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.

5.1.1 Community Air Monitoring

Real-time community air monitoring will be performed during intrusive RI activities at the Site. A CAMP is included within Benchmark-TurnKey's HASP (see Appendix C). Particulate and VOC monitoring will be performed along the downwind perimeter of the work area during intrusive investigation activities, piping 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

NYSDEC's DER-10 (May 2010) Appendix 1A (NYSDOH's Generic Community Air Monitoring Plan) and Appendix 1B (Fugitive Dust and Particulate Monitoring). Weekly CAMP data reports will be provided electronically to the NYSDOH Project Manager. At a minimum, the reports will include daily CAMP data and a figure showing work zones, CAMP monitoring stations, and wind directions. All individual CAMP exceedances and associated corrective actions will be communicated to the Department and NYSDOH within one (1) day of the exceedance.

5.2 Citizen Participation Activities

NYSDEC will coordinate and lead community relations throughout the course of the project. Benchmark-TurnKey will support NYSDEC's community relations activities, as necessary. A Citizen Participation Plan will be prepared by Benchmark-TurnKey and submitted to NYSDEC under separate cover. The Citizen Participation Plan will follow NYSDEC's template for Sites entering the BCP at the point of site investigation.

6.0 REPORTING AND SCHEDULE

Upon completion of the RI fieldwork, a comprehensive RI Report will be prepared summarizing the tasks completed as described below.

6.1 Remedial Investigation Reporting

The RI Report will include the following information and documentation, consistent with the NYSDEC's DER-10 Technical Guidance for Site Investigation and Remediation.

- Introduction and background.
- A description of the site and the investigation areas.
- A description of the field procedures and methods used during the RI.
- A discussion of the nature and rationale for any significant variances from the scope of work described in this RI Work Plan.
- The data obtained during the RI and historical data considered by Benchmark-TurnKey to be of useable quality including geochemical data, field measurements, etc.
- Comparative criteria that may be used to calculate cleanup levels during the AA process, such as NYSDEC SCOs and other pertinent regulatory standards or criteria.
- A discussion of contaminant fate and transport. This will provide a description of the hydrologic parameters of the Site, and an evaluation of the lateral and vertical movement of groundwater.
- Conclusions regarding the extent and character of environmental impact in the media being investigated.
- The conclusions of the qualitative human health and environmental risk assessments, including any recommendations for more detailed assessments, if applicable. A qualitative off-site exposure assessment will also be provided.
- Supporting materials for RI data including boring logs, monitoring well construction diagrams, laboratory analytical reports, and similar information.
- Data generated for the Site will be reported to NYSDEC electronically via EQuIS software where it will be stored in NYSDEC's Environmental Information Management System (EIMS).

In addition, Benchmark-TurnKey will require third-party data review by a qualified, independent data validation expert. Specifically, a DUSR will be prepared, with appropriate

data qualifiers added to the results. The DUSR will follow NYSDEC format per the NYSDEC's September 1997 DUSR guidelines and May 2010 DER-10 guidance. The DUSR and any necessary qualifications to the data will be appended to the RI Report.

6.2 Alternatives Analysis Report

An AA Report is developed to provide a forum for evaluating and selecting a recommended remedial approach, in accordance with DER-10. The results of the RI will be used to establish remedial goals and remedial action objectives (RAOs). A list of RAOs will be developed based on findings of the RI and the requirement for the selected remedial measures to be protective of human health and the environment under the proposed future use scenario. Proposed SCOs for the property will also be presented based on the proposed future use of the Site. SCOs will be based on published standards, criteria, and guidance (SCGs) and other NYSDEC and NYSDOH-accepted values.

Based on the RAOs and SCOs, volumes and areas of media potentially requiring remediation will be calculated. General response actions (GRAs) will then be delineated to address each of the site remedial areas. These GRAs will form the foundation for the development and screening of applicable remedial alternatives against the following criteria as described in 6NYCRR 375-1.8(f) and DER-10-4.2:

- Overall Protectiveness of Public Health and the Environment
- Conformance with SCGs
- Long-term Effectiveness & Permanence
- Reduction in Toxicity, Mobility, or Volume of Contamination through Treatment
- Short-Term Impacts and Effectiveness
- Implementability
- Cost Effectiveness
- Community Acceptance
- Land Use

In addition, the criteria of community acceptance will be considered based on public comments on the RI/AA Report and proposed remedial action. Following the screening of alternatives, a comparative analysis will be performed against the above criteria. The

comparative analysis will allow for better understanding of the relative advantages and disadvantages of each of the alternatives and facilitate identification of a recommended remedial approach.

6.3 Project Schedule

Figure 4 presents the tentative project schedule for the major tasks to be performed in support of the RI.

7.0 REFERENCES

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

2. U.S. Climate Data website (www.usclimatedata.com/). Climate Buffalo - New York.

3. Fifty-Six Services, Inc. *Phase I Environmental Site Assessment, Kensington Heights, 1827 North Fillmore, Buffalo, New York.* March 2008.

4. Stohl Environmental, LLC. *Post Remediation Hazardous Materials Inspection, Former BMHA Housing Towers – Kensington Heights, Buffalo, New York.* February 2010.

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6. Stohl Environmental, LLC. *Visual Survey and Bulk Sampling of Suspect Materials/Debris, Kensington Heights Complex.* September 2011.

7. Stohl Environmental, LLC. *Visual Survey of Surficial Asbestos Materials/Debris, Kensington Heights Complex.* October 2011

8. United States Environmental Protection Agency Compliance Order, Index No. CAA-02-2011-1021, September 6, 2011.

9. Buffalo Municipal Housing Authority. *Work Plan for Compliance with EPA Order CAA-02-2011-1021 – Kensington Heights, Buffalo, New York.* February 2012.

10. Stohl Environmental, LLC. *Brownfield Cleanup Program Application, Kensington Heights Apartments, Buffalo, New York.* May 2013.

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12. Stohl Environmental, LLC. EPA Compliance Summary Report for Asbestos Abatement, *Kensington Heights Complex – 1827 N. Fillmore Avenue, Buffalo, New York.* October 2014.

13. Stohl Environmental, LLC. *Brownfield Cleanup Program Application, Kensington Heights Towers, Buffalo, New York.* December 2014.

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15. U.S. Environmental Protection Agency. *Requirements for Quality Assurance Project Plans for Environmental Data Operations (EPA QA/R-5)*. October 1998.

16. U.S. Environmental Protection Agency, Region II. *CERCLA Quality Assurance Manual, Revision I*. October 1989.

17. U.S. Environmental Protection Agency. *National Functional Guidelines for Organic Data Review (EPA-540/R-94-012)*. 1994a.

18. U.S. Environmental Protection Agency. *National Functional Guidelines for Inorganic Data Review (EPA-540/R-94-013)*. 1994b.

TABLES

TABLE 1
SAMPLING AND ANALYSIS PLAN

1827 FILLMORE AVENUE SITE
BUFFALO, NEW YORK

Location	Number of Planned Locations	Matrix	Parameter[1]							
			TCL + CP-51 VOCs (+10 TICs)[2]	TCL SVOCs (+20 TICs)[3]	TAL Metals[4]	PCBs	Herbicides	Pesticides	TCLP Metals[5]	Asbestos
Soil/Fill										
Surface Soil	15	Soil/Fill	-	15	15	5	5	5	-	-
Test Pits	30	Soil/Fill	10	30	30	10	10	10	-	-
Soil Borings (MWs)	8	Soil/Fill	4	8	8	4	4	4	-	-
Soil Mounds	4	Soil/Fill	-	-	-	-	-	-	-	4
Blind Duplicate[6]	-	Soil/Fill	1	3	3	1	1	1	-	-
MS/MSD[6]	-	Soil/Fill	1	3	3	1	1	1	-	-
Soil Subtotal			16	59	59	21	21	21	0	4
Groundwater[4]										
Monitoring Well	8	Groundwater	8	8	8	4	4	4	-	-
Blind Duplicate[6]	-	Groundwater	1	1	1	1	1	1	-	-
MS/MSD[6]	-	Groundwater	1	1	1	1	1	1	-	-
Trip Blank[7]	-	Water	1	-	-	-	-	-	-	-
Groundwater Subtotal			11	10	10	6	6	6	0	0
Sampling Totals			**27**	**69**	**69**	**27**	**27**	**27**	**0**	**4**

Notes:

1. Analyses will be performed via USEPA SW-846 methodology with equivalent Category B deliverables package except for asbestos, which will be analyzed by PLM.
2. Soil/fill from three random test pits and one random soil boring will be analyzed for 10 VOC TICs. All groundwater samples will be analyzed for 10 VOC TICs.
3. Soil/fill from four random surface soil samples, three random test pits and one random soil boring will be analyzed for 20 SVOC TICs. All groundwater samples will be analyzed for 20 SVOC TICs.
4. Groundwater samples will be filtered in the laboratory for dissolved metals analysis.
5. TCLP metals analysis will be completed on the five soil boring or test pit soil sample exhibiting the highest total metals concentrations.
6. Blind duplicate and MS/MSD samples will be collected at a frequency of 1 per 20 samples/media collected.
7. Trip blanks will be submitted to the laboratory each day aqueous volatile organic samples are collected.

TABLE 2
SAMPLE CONTAINER, VOLUME, PRESERVATION &
HOLDING TIME REQUIREMENTS

1827 FILLMORE AVENUE SITE
BUFFALO, NEW YORK

Matrix	Parameter [1]	Method [2]	Container Type	Minimum Volume	Preservation (Cool to 2-4 °C for all samples)	Holding Time from Sample Date
Soil/Fill	TCL + CP-51 VOCs	5035/8260B	En Core Sampler	(3) 5 gram samples	Cool to 2-4°C, Zero Headspace	48 hours extraction/14 days
	TCL SVOCs	8270C	WMG	4 oz.	Cool to 2-4°C	14 days extract/40 days
	TAL Metals	6010B	WMG	4 oz.	Cool to 2-4°C	6 months/Hg 28 days
	Pesticides	8081	WMG	8 oz.	Cool to 2-4°C	14 days extract/40 days
	Herbicides	8151	WMG	8 oz.	Cool to 2-4°C	14 days extract/40 days
	PCBs	8082	WMG	8 oz.	Cool to 2-4°C	14 days extract/40 days
	Asbestos	PLM	WMG	4 oz.	NA	NA
Groundwater	TCL + CP-51 VOCs	8260B	glass vial	3-4 oz.	HCl to pH<2, Zero Headspace Cool to 2-4°C	14 days
	TCL SVOCs	8270C	amber glass	2000 mL	Cool to 2-4°C	7 days extract/40 days
	TAL Metals	6010B	plastic	600 mL	HNO_3 to pH<2, Cool to 2-4°C	6 months/Hg 28 days
	Pesticides	8081	amber glass	1000 mL	Cool to 2-4°C	7 days extract/40 days
	Herbicides	8151	amber glass	1000 mL	Cool to 2-4°C	7 days extract/40 days
	PCBs	8082	amber glass	1000 mL	Cool to 2-4°C	7 days extract/40 days

Notes:

1. EPA-approved methods published in Note 2 may be used.
2. Test Methods for Evaluating Solid Wastes, USEPA SW-846, Update III, 1991.

Acronyms:

VOCs = Volatile Organic Compounds
SVOCs = Semi-Volatile Organic Compounds
TCL = Target Compound List
TAL = Target Analyte List
PCBs = Polychlorinated Biphenyls
WMG = Wide Mouth Glass

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TURNKEY ENVIRONMENTAL RESTORATION, LLC

TABLE 3
SUMMARY OF FIELD OPERATING PROCEDURES

1827 FILLMORE AVENUE SITE
BUFFALO, NEW YORK

TurnKey FOP No.	Procedure
001.1	Abandonment of Borehole Procedures
007.0	Calibration and Maintenance of Portable Dissolved Oxygen Meter
008.0	Calibration and Maintenance of Portable Field pH/Eh Meter
009.0	Calibration and Maintenance of Portable Field Turbidity Meter
011.0	Calibration and Maintenance of Portable Photoionization Detector
012.0	Calibration and Maintenance of Portable Specific Conductance Meter
013.0	Composite Sample Collection Procedure for Non-Volatile Organic Analysis
015.0	Documentation Requirements for Drilling and Well Installation
017.0	Drill Site Selection Procedure
018.0	Drilling and Excavation Equipment Decontamination Procedures
021.0	Establishing Horizontal and Vertical Control
022.0	Groundwater Level Measurement
023.1	Groundwater Purging Procedures Prior to Sample Collection
024.1	Groundwater Sample Collection Procedures
026.1	Hollow Stem Auger (HSA) Drilling Procedures
031.2	Low Flow (Minimal Drawdown) Groundwater Purging & Sampling Procedure
032.1	Management of Investigation-Derived Waste (IDW)
033.0	Monitoring Well Construction for Hollow Stem Auger Boreholes
036.0	Monitoring Well Development Procedures
040.1	Non-Disposable and Non-Dedicated Sampling Equipment Decontamination
046.0	Sample Labeling, Storage and Shipment Procedures
047.0	Screening of Soil Samples for Organic Vapors During Drilling Activities
054.2	Soil Description Procedures Using The Visual-Manual Method
063.2	Surface and Subsurface Soil Sampling Procedures
065.1	Test Pit Excavation & Logging Procedures
073.1	Real-Time Air Monitoring During Intrusive Activities
076.0	"Before Going Into the Field" Procedure
078.0	Geoprobe Drilling Procedure
079.0	Stockpile Sampling Procedures for Chemical Analysis
080.0	Stockpile-Borrow Source Sampling Procedures for Physical Analysis
084.0	Calibration and Maintenance of Portable Particulate Meter
085.0	Field Quality Control Procedures

FIGURES

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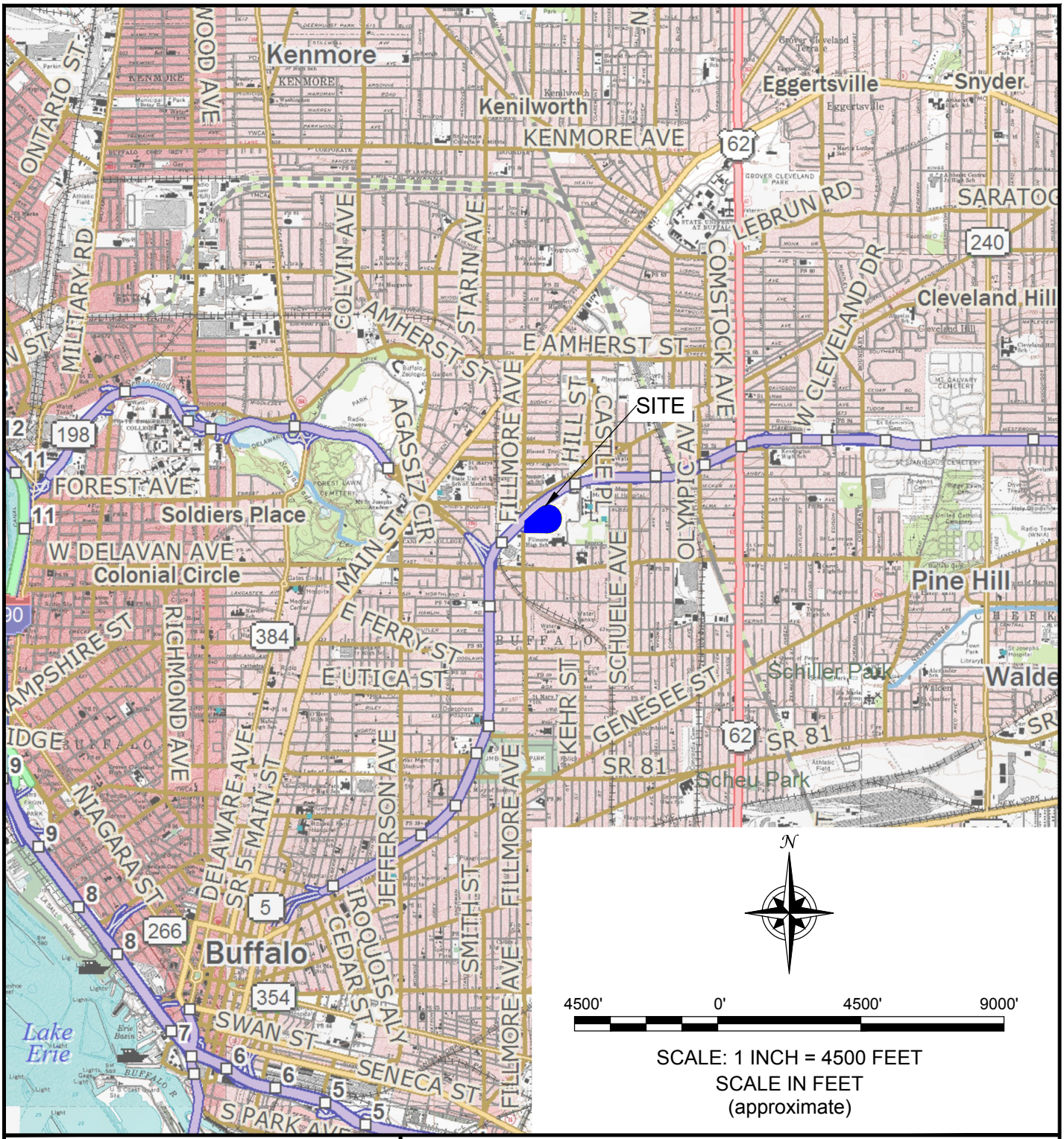
FIGURE 1



SCALE: 1 INCH = 4500 FEET
SCALE IN FEET
(approximate)

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

PROJECT NO.: 0421-017-001

DATE: JUNE 2017

DRAFTED BY: CCB

SITE LOCATION & VICINITY MAP

REMEDIAL INVESTIGATION WORK PLAN

1827 FILLMORE AVENUE SITE
BUFFALO, NEW YORK

PREPARED FOR
1827 FILLMORE LLC

F:\CAD\Benchmark\Rupp, Baase, Pfalzgraf & Cunningham LLC\1827 Fillmore Avenue\03 - RI Work Plan\Figure 2; Site Plan.dwg

DATE: JUNE 2017
DRAFTED BY: CCB

FIGURE 2

SITE PLAN (AERIAL)

REMEDIAL INVESTIGATION WORK PLAN

1827 FILLMORE AVENUE SITE
BUFFALO, NEW YORK

PREPARED FOR
1827 FILLMORE LLC

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

JOB NO.: 0421-017-001

F:\CAD\Benchmark\Rupp, Baase, Pfalzgraf & Cunningham LLC\1827 Fillmore Avenue\03 - RI Work Plan\Figure 3, Proposed Remedial Investigation Sample LocationsRFL.dwg

LEGEND:

- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- APPROXIMATE LIMITS OF SOIL MOUND
- SB-1 ● HISTORIC SOIL BORING LOCATION
- TP-1 PLANNED RI TEST PIT (30)
- MW-1● PLANNED RI SOIL BORING/MONITORING WELL (8)
- SS-1 PLANNED RI SURFACE SOIL SAMPLE (15)
- P-1 × PLANNED SOIL MOUND SAMPLE LOCATION

APPROXIMATE BASEMENT AST & INCINERATOR LOCATIONS

KENSINGTON EXP. (RTE. 33)

FILLMORE AVE

GLENNY DR

100' 0' 100' 200'

SCALE: 1 INCH = 100 FEET
SCALE IN FEET
(approximate)

N

DATE: JUNE 2017
DRAFTED BY: CCB

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

TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 0421-017-001

PLANNED REMEDIAL INVESTIGATION LOCATIONS

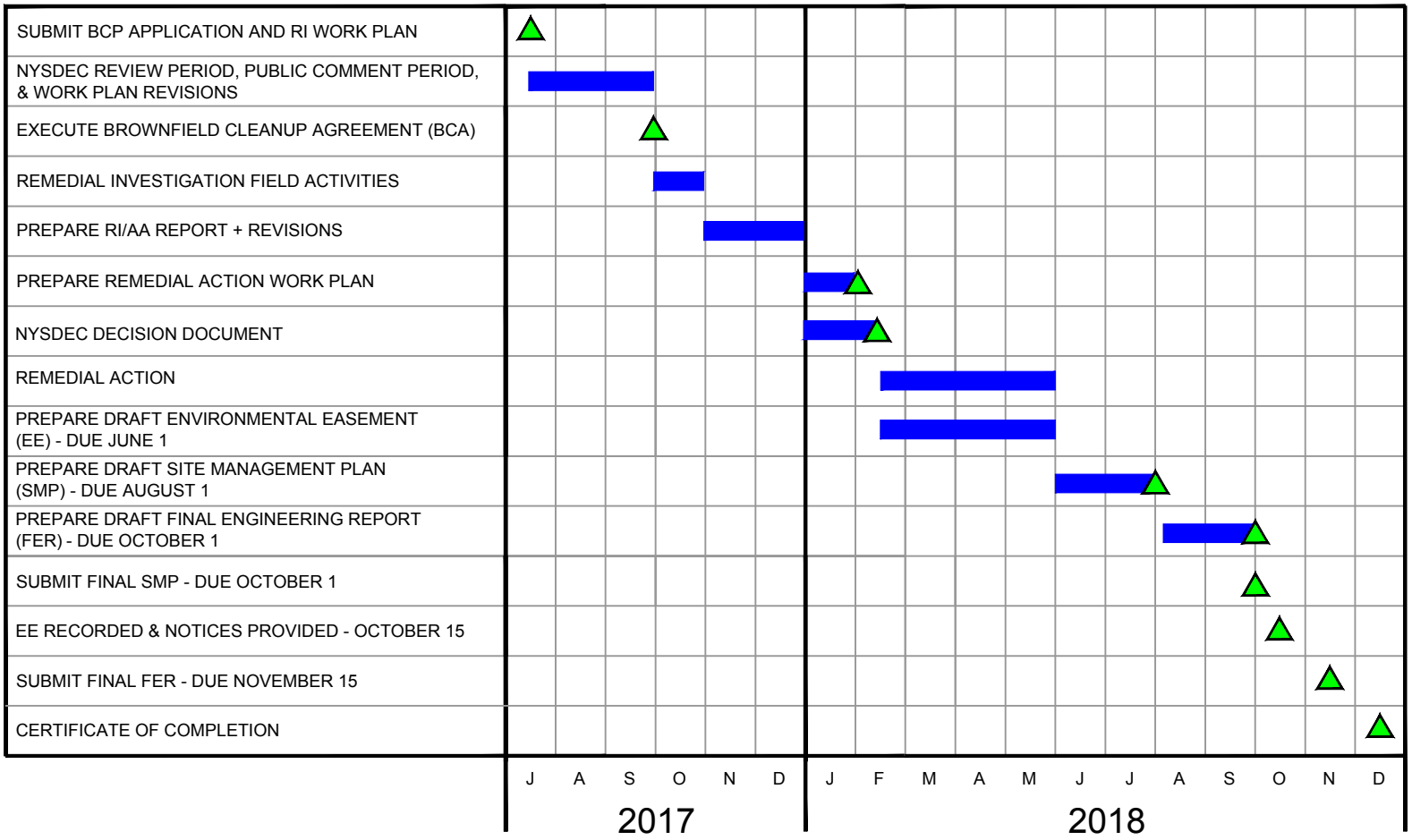
REMEDIAL INVESTIGATION WORK PLAN
1827 FILLMORE AVENUE SITE
BUFFALO, NEW YORK

PREPARED FOR
1827 FILLMORE LLC

FIGURE 3

F:\CAD\Benchmark\Rupp, Baase, Pfalzgraf & Cunningham LLC\1827 Fillmore Avenue\03 - RI Work Plan\Figure 4; Preliminary Project Schedule.dwg

PROJECT TASKS:



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TURNKEY ENVIRONMENTAL RESTORATION, LLC

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

PROJECT NO.: 0421-017-001

DATE: JUNE 2017

DRAFTED BY: CCB

PROJECT SCHEDULE

REMEDIAL INVESTIGATION WORK PLAN

1827 FILLMORE AVENUE SITE
BUFFALO, NEW YORK

PREPARED FOR
1827 FILLMORE LLC

FIGURE 4

APPENDIX A

RESUMES

EDUCATION

BS (Chemical Engineering) 1988; State University of New York at Buffalo
Graduate of State University of New York at Buffalo School of Management Center for Entrepreneurial Leadership; 2002
Graduate-level courses in Biological Principles of Engineering and Hazardous Waste Management through the State University of New York at Buffalo Department of Environmental Engineering

REGISTRATION AND AFFILIATIONS

Professional Engineer, New York
Professional Engineer, Ohio
Professional Engineer, Pennsylvania
ISO 14000 Certified Lead Auditor - April 1998
Member - American Institute of Chemical Engineers
Member – New York Water Environment Association, Inc.

SUMMARY OF EXPERIENCE

Mr. Forbes has over 28 years of environmental engineering experience, with a particular focus on brownfield and hazardous waste site investigation and remediation; petroleum-impacted site remediation; due diligence for environmentally-impaired properties; groundwater and industrial wastewater treatment; and environmental regulatory compliance. Investigations and cleanups Mr. Forbes has directed have included well over 100 sites contaminated with a wide range of materials, including chlorinated solvents, PCBs, dioxins, heavy metals, cyanide, radioactive isotopes, and petroleum contamination. He has evaluated and successfully implemented on a conventional and design-build basis cost-saving and innovative treatment technologies (e.g. in-situ and ex-situ physical-chemical, thermal, and biological treatment) as well as removal and containment methods for remediation.

REPRESENTATIVE PROJECT EXPERIENCE

June 1998 to Present: Benchmark Environmental Engineering & Science, PLLC

- Currently serving as Project Manager for remediation of spill area soils associated with the Lehigh Valley Railroad Derailment National Priority List (NPL) Site in LeRoy, NY. Developed and implemented a USEPA-approved comprehensive remedial design to address chlorinated solvents in site soils via insitu soil vapor extraction. Remedial work is underway.

- Project Officer for ongoing monitoring and remedial measures during redevelopment of the Riverbend Site in Buffalo, NY for a new solar panel manufacturing operation.

- Served as Project Officer for NYSDEC Brownfield Cleanup Program (BCP) investigation and remediation of the former Millard Fillmore Gates Circle hospital complex in Buffalo, NY.

- Project officer for NYSDEC BCP investigation and cleanup of 154 South Ogden Street in concert with construction of the South Buffalo Charter School.

- Serving as project manager for remedial investigation, alternatives analysis, and remedial construction to facilitate redevelopment of over 450-acres of former steel manufacturing site

property encompassing 33 separate BCP sub-parcel sites in Lackawanna, New York. Contaminants of concern primarily include petroleum organics/solvents and heavy metals.

- Project manager for RI/FS, remedial design and remedial construction at the Sycamore Village Site, a 4-acre NY State Environmental Restoration Program (ERP) site in Buffalo, NY. Responsible for all technical and administrative aspects of the project, involving removal of over 18,000 cubic yards of soil from an impacted residential neighborhood and site restoration.

- Assisted western NY client's legal counsel prepare legal defense related to a multi-PRP suit by Orange County Water District, Fullerton, CA for primary drinking water aquifer contamination by chlorinated solvents and emergent organic contaminants. Served as technical consultant during mediation and settlement discussions; prepared expert report and lead technical arguments on behalf of defendant to support bankruptcy claim dismissal.

- Served as project manager and supervising contractor for design-build remedial activities at the Markhams National Priority List (NPL) site in Dayton, NY. Successfully implemented remedial measures leading to USEPA-designated Preliminary Site Closeout status in October 2008 and delisting in 2009.

- Served as project manager representing multiple potential responsible party (PRP)-led remedial construction activities to address heavy metal and chlorinated solvent impacts at the Peter Cooper Landfill NPL site. Responsible for oversight and coordination of RI/FS planning and implementation activities, lead technical contact with USEPA, and remedial measures design and construction. Achieved site closeout in 2011.

- Served as project manager for design-build cleanup of the Urbana Landfill Site, a Class 2 Hazardous Waste Landfill Site. Designed and successfully implemented a Soil Vapor Extraction system to address source area chlorinated organics in soils, achieving soil cleanup goals with 12 months, Also responsible for design, startup and continued operation of a downgradient perimeter groundwater extraction well system and groundwater remediation utilizing advanced oxidation treatment.

- Assisted in the development of a voluntary cleanup plan for remediation of a 120-acre former steel manufacturing site in Buffalo, NY which was contaminated with volatile organic compounds, heavy metals, poly-nuclear aromatic hydrocarbons. Specific assistance involved design of a soil vapor extraction (SVE) system to address VOC and SVOC source area impacts proximate to a residential neighborhood and development and implementation of a Community Air Monitoring Plan involving quantitative monitoring (Summa Canister and respirable particulate analysis) and qualitative monitoring (field instruments).

- Served as Project Manager for RI/FS and cleanup activities related to solvent releases from a former paint and specialty coatings manufacturing facility in Buffalo, NY. The work, carried out under NY State Superfund program, included insitu treatment of soils and groundwater impacted by chlorinated and non-chlorinated volatile organics and heavy metals.

- Assisted confidential client's legal counsel negotiate a consent decree with New Mexico Environment Department related to cleanup of chlorinated solvent releases to the fractured bedrock aquifer from a former manufacturing operation in Albuquerque, NM. Presently managing insitu groundwater cleanup and monitoring work.

- Currently serving as Project Manager for NY State Voluntary Cleanup efforts for chlorinated solvent cleanup at a former degreasing and electroplating facility in Rochester, NY. Designed and implemented interim remedial measures involving low-profile air stripping and insitu hydrogen infusion.

- Served as Project Manager for multiple EPA Pilot-Grant funded investigations for City of Buffalo Department of Strategic Planning.

- Managed design-build cleanup of former New 7th Street Brownfield Cleanup Program Site in Buffalo, New York. The project involved design-build removal of several hundred tons of petroleum-impacted soil and fill material and preparation of related engineering reports resulting in Certificate of Completion issuance.

- Led remedial efforts for petroleum releases at a Western New York refinery and major oil storage facility, achieving site inactivation within 3 months of the release.

- Managed spill site investigation and cleanup work including underground storage tank removal work at numerous petroleum and chemical spill sites in Western New York.

- Led design-build construction of a 5 MGD capacity cooling water pH adjustment system for PVS Chemical Corporation. The project included design of feed forward pH control system, adjustment tank and mixer construction, process and chemical feed piping modifications to neutralize sulfuric acid discharges. Successfully implemented startup and demonstration testing.

- Designed a 75 gpm groundwater treatment system and served as quality assurance officer for remedial efforts at the Steelfields site (former LTV Steel/Hanna Furnace Site), Buffalo, NY. The treatment system removes petroleum-based volatile organic and semi-volatile organic compounds prior to discharge to the Buffalo Sewer Authority.

June 1988 to June 1998 **Malcolm Pirnie, Inc.**

- Assisted the City of Buffalo Department of Community Development in implementing an emergency PCB-contaminated soil removal effort from a residential neighborhood in Buffalo, NY. Responsibilities included coordination of hazmat excavation contractor and secure landfill, preparation of an emergency excavation and confirmatory sampling plan, and oversight of community air monitoring during the removal work.

- Designed and successfully implemented an innovative groundwater treatment system for the Mercury Aircraft, Inc. Class 2 hazardous waste site in Dresden, New York. Responsibilities included preparation of design plans and specifications for an advanced oxidation process and low profile air stripper, construction oversight and treatment system start-up.

- Performed a Feasibility Study and prepared an Engineering Design Report for remediation of PCB-contaminated soils and sediments at the Columbus McKinnon Corporation, Tonawanda, New York. Responsibilities included detailed evaluation of several remedial processes, completion of design calculations and remedial cost estimates, and preparation of a final report for submission to NYSDEC.

- Assisted in performance of a Feasibility Study for the West Valley Nuclear Demonstration Site. The Feasibility Study evaluated alternatives for remediation of groundwater contaminated with radioactive isotopes from a former containment area release.

- Assisted in the design and performed start-up of a groundwater remediation system for Moog, Inc., an aerospace parts manufacturer. The project, performed on a design-build basis, involved preparation of design plans, securing contractor bids for construction, and start-up of the remediation system, which incorporates filtration and air stripping to remove chlorinated volatile organic contaminants from groundwater.

- Designed and implemented groundwater monitoring well decommissioning procedures for the Love Canal site, Niagara Falls NY. The project was performed on behalf of NYSDEC and included abandoning of monitoring wells no longer used in the Love Canal landfill or in adjoining neighborhoods.

- Prepared an environmental monitoring plan for remediation of PCB-contaminated sediments in the St. Lawrence River along the General Motors, Inc. Powertrain Division facility in Massena, New York.

- Assisted in the performance of a Feasibility Study for remediation of volatile organic, PCB and heavy metal-contaminated soils and ground water at the Rochester Fire Academy, Rochester, New York.

PUBLICATIONS/PRESENTATIONS

Forbes, Thomas H. and Frappa, Richard H. "Innovative Remedial Measures for the Mercury Aircraft Site" Proceedings of the Purdue University 50th Annual Industrial Waste Conference, May 1995.

Frappa, Richard H., Forbes, Thomas H. and McManus, Anne Marie "A Blast to Remediate" Industrial Wastewater, July/August 1996.

Forbes, Thomas H. and McManus, Anne Marie "Advanced Oxidation Technology and Application" Proceedings of the University at Buffalo 28th Mid-Atlantic Industrial and Hazardous Waste Conference, July 1996.

Forbes, Thomas H. et al - "Pay to Throw in Buffalo" Proceedings of 1997 Solid Waste Association of North America annual conference.

Forbes, T.H. & Werthman, P.H. "Development of Site-Specific Cleanup Levels for Commercial Redevelopment of a Large Former Steel Works," presented at the Brownfields 2000 Conference, Atlantic City NJ, October 2000.

Forbes, Thomas H. and Frappa, Richard H. "Innovative Remedial Measures Almost 10 Years Later at the Former Mercury Aircraft Site" Proceedings of the National Groundwater Association Northeast Conference, October 2002.

Forbes, Thomas H. "Ins and Outs of the New York State Brownfield Cleanup Program" Air & Waste Management Association, Niagara Frontier Section, Annual Environmental Seminar (presentation), April 2006.

Forbes, Thomas H. "Brownfield Redevelopment" Proceedings of Half Moon Seminar's "New York Environmental Compliance for Design Professionals" conference, September 2008.

Forbes, Thomas H. "New York State Brownfield Cleanup Program Update" Air & Waste Management Association Annual Environmental Seminar (presentation), April 2009.

MICHAEL A. LESAKOWSKI
SR. PROJECT MANAGER

SUMMARY OF EXPERIENCE

Michael A. Lesakowski is a Principal and Senior Project Manager with the Benchmark and TurnKey Companies. Mr. Lesakowski has 20 years of experience in the environmental engineering and consulting field at numerous industrial, commercial and hazardous waste sites throughout the northeast United States. Mr. Lesakowski has been involved with all aspects of projects within the New York Brownfield Cleanup Program (BCP), New York State Superfund Program and the New York Petroleum Spills Department. Mr. Lesakowski has completed over 1,000 Phase I Environmental Site Assessments and more than 200 Phase II Site Investigations associated with property acquisition and divestiture, including several multi-site portfolio environmental due diligence assignments, working with purchasers and lenders to facilitate multi-million dollar real estate transactions.

Mr. Lesakowski has managed assessments, investigations and remediation projects on properties with a multitude of historic uses (including petroleum refineries, storage terminals, gas stations, automobile dealerships, rail yards, foundries, drycleaners, steel manufacturing, metallurgical plants, metal plating operations, junk yards), media types (including surface and subsurface soil, groundwater, sediments, soil vapor, indoor air, building materials) and contaminants (including volatile organic compounds, semi-volatile organic compounds, PCBs, heavy metals).

From 2010 through 2013, Mr. Lesakowski played a key role in developing a liability transfer arrangement of a former petroleum refinery in Olean, New York comprised of three BCP sites. Major tasks included technical review of historic Remedial Investigation data, remedial alternative selection and cost estimating, preparation of technical and liability transfer program proposal and negotiation with ExxonMobil technical and business representatives. The deal involved purchase of three New York Brownfield Cleanup Program (BCP) sites that required a multi-million dollar remedial cleanup, with two of three Certificates of Completion secured in 2015 and third planned to be secured in mid-2016.

Mr. Lesakowski is currently managing fifteen New York BCP sites, two NY Superfund Sites, and several New York Spill Sites. Some highlighted projects in western New York currently managed by Mr. Lesakowski include six BCP sites that were part of the historic Socony-Vacuum petroleum refinery in Olean (aka ExxonMobil Legacy Site) the former Trico Building, 300 and 399 Ohio Street BCP Sites proximate the Buffalo River, former Buffalo Gun Club BCP Site in Amherst, Seneca Harbor Hotel in Watkins Glen and the former Batavia Gas Light Company manufactured gas plant (MGP) site.

EDUCATION

Master of Science (Environmental Engineering Science), University of Buffalo, 2008
Bachelor of Science (Biology), State University of New York at Fredonia, 1994

BRYAN W. MAYBACK
SENIOR PROJECT SCIENTIST

EDUCATION

Bachelors of Science (Earth Sciences, Environmental Concentration) 2002; State University of New York, College at Buffalo
Associates in Applied Science (graduated with high distinction), Environmental Technology (1999) Trocaire College, Buffalo, New York

REGISTRATION AND AFFILIATIONS

Hazardous Material Handling 40 hour (OSHA)
Hazardous Material Handling 8 hour Supervisor Training (OSHA)
Environmental Site Assessments for Property Transfer (ASTM Conference)
New York State and EPA Certified Asbestos Air and Project Monitoring Technician
Construction Safety Training 10 hour (OSHA)

SUMMARY OF EXPERIENCE

Since 2002, Bryan Mayback has been involved in various aspects of the environmental field. While with one of the largest due diligence firms in the northeast, Mr. Mayback was involved with hundreds of lenderbased environmental studies. These studies included Phase I and Phase II environmental site assessments in Western New York and throughout the U.S. Mr. Mayback provided project management as well as the completion of the field work, written reports, and final report reviews. He has also provided consulting services for major petroleum companies such as ExxonMobil. Mr. Mayback was involved with large scale excavation projects (removal of up to 15,000 tons of impacted soil and treatment of over 200,000 gallons of groundwater), sensitive receptor surveys, hydrogeologic studies, impact delineation studies, and pilot testing relative to alternative remedial measures (other than soil excavation). He has performed groundwater monitoring activities, including well gauging, purging (bailers and low-flow) and sampling. Through the years, Mr. Mayback has been responsible for the closure/reclassification of many NYSDEC listed spills based on results of remedial activities that he was involved with and proposed.

REPRESENTATIVE PROJECT EXPERIENCE

June 2009 to July 2014: **RJS Environmental, Inc.**
Vice President (2009), President

- **Environmental Due Diligence Projects.** Project Officer and Manager for all Environmental Site Assessment projects including Phase I and intrusive (Phase II) studies, for banks, developers, lawyers, owners, etc. Responsible for client communications, report reviews, and project management ensuring projects are completed on time and within budget.

September 2007 – June 2009 **Groundwater and Environmental Services, Inc**

- **Major Petroleum Companies, NY**. Provided consulting services for ExxonMobil and other major petroleum companies that facilitated active New York State DEC listed spills towards closure. These sites were environmentally challenged properties in differing stages of remediation located mostly in Western New York. As Case Manager/Environmental Scientist provided oversight for various environmental activities, including soil excavation, dewatering/groundwater treatment and discharge, soil

boring and monitoring well installation, remedial pilot testing, test pits and product recovery. Also responsible for completion and review of Remedial Action Work Plans, Excavation Reports, Quarterly Site Monitoring Reports, and pilot test reports for submittal to the NYSDEC and ExxonMobil.

November 2002 – September 2007 **Lender Consulting Services**

- As Senior Environmental Analyst, involved in developing hundreds of lender-based Phase I and Phase II environmental site assessments (including site inspections, municipal record reviews, soil/groundwater sampling, and UST removals) in Western New York as well as throughout the U.S. Responsible for review of Environmental Site Assessment Reports, and training and supervising staff involved in site assessments. Communicated property related potential environmental issues and solutions to clients.

Summer 2000 **AFI Environmental**

- As Environmental Specialist, supervised the removal of impacted soil via excavation at a site in Buffalo, New York. Groundwater was treated with activated carbon and discharged to the storm sewer. Also Constructed a remediation field for impacted soil and groundwater; collected soil and groundwater samples for laboratory analysis; and reviewed analytical data and report preparation.

APPENDIX B

PREVIOUS INVESTIGATIONS

(PROVIDED ELECTRONICALLY ON ENCLOSED CD)

APPENDIX C

SITE-SPECIFIC HEALTH AND SAFETY PLAN AND COMMUNITY AIR MONITORING PROGRAM

BENCHMARK TURNKEY

SITE HEALTH AND SAFETY PLAN
for
BROWNFIELD CLEANUP PROGRAM
RI ACTIVITIES

1827 FILLMORE AVENUE SITE

BUFFALO, NEW YORK

June 2017 0421-017-001

Prepared for:

1827 Fillmore LLC

Prepared By:

Benchmark Environmental Engineering & Science, PLLC
2558 Hamburg Turnpike, Suite 300
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In Association With:

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1827 FILLMORE AVENUE SITE
HEALTH AND SAFETY PLAN FOR RI 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 C. Hann

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

1827 FILLMORE AVENUE SITE
HEALTH AND SAFETY PLAN FOR RI ACTIVITIES

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1827 FILLMORE AVENUE SITE
HEALTH AND SAFETY PLAN FOR RI ACTIVITIES

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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 Investigation (RI) activities at the 1827 Fillmore Avenue Site (Site) located in Buffalo, Erie County, New York. This HASP presents procedures for Benchmark-TurnKey employees who will be involved with RI 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 1827 Fillmore Avenue, totaling approximately +/- 17.15 acres, located in the City of Buffalo, Erie County, New York. The Site is currently vacant with green areas, asphalt paved areas, former roadways and improved with one (1) vacant seven-story brick building that was historically used residentially as apartments. According to the Erie County Real Property & GIS Web page (**http://www2.erie.gov/ecrpts/index.php?q=real-property-parcel-search**) 1827 Fillmore is the only address associated with this property.

From at least 1917 the Site was utilized as a stone quarry. Sometime between the 1940s and 1950s, prior to development of the Kensington Heights Towers in 1958, the stone quarry was backfilled with unknown fill materials. The Kensington Heights apartments were built as low-income housing, formally as a federal/state development. The

Site was improved with six (6), seven-story brick apartment buildings with approximately 67 units per building, open space, and on-Site parking. The Site has been vacant since the 1980s. From 2009 to 2014 asbestos abatement and demolition of five (5) of the six (6) buildings were demolished. The single building that remains is a shell.

1.3 Known and Suspected Environmental Conditions

Previous investigations have confirmed that historic operation as a stone quarry, which was backfilled with unknown materials prior to the 1958 construction of low-income housing impacted that Site, which will require remediation prior to redevelopment. Previous investigation findings include:

- On-Site soil/fill materials are impacted with polycyclic aromatic hydrocarbons (PAHs) and metals exceeding Part 375 Soil Cleanup Objectives (SCOs). Elevated PAHs and metals were detected in numerous soil/fill samples collected from across the Site at concentrations exceeding Part 375 Unrestricted SCOs (USCOs), Residential SCOs (RSCOs), Restricted Residential SCOs (RRSCOs), Commercial SCOs (CSCOs) and/or Industrial SCOs (ISCOs). Based on site history, it is also possible that VOC-impacted soils exist on-Site.
- One (1) aboveground storage tank (AST) and two (2) underground storage tanks (USTs) were observed (i.e. fill caps, vent pipes) during a site inspection completed as part of a 2008 Phase I Environmental Site Assessment. The report does not include any information relative to the USTs such as size, locations, contents, etc. Further, there are no records related to removal of the USTs. Therefore, there is the potential for remaining USTs at the Site.
- Given the past history of asbestos violations, there is a possibility that asbestos exists in soil from previous demolition activities. It is also possible that the existing building contains asbestos.

The RI will be performed in support of the BCP to determine the nature and extent of impacts from these known and suspect environmental conditions on this parcel.

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:

- **Volatile Organic Compounds (VOCs)** – The VOC COPC present at elevated concentration is acetone.

- **Semi-Volatile Organic Compounds (SVOCs)** – SVOCs present at elevated concentrations may include dibenzofuran, pentachlorophenol, phenol, and 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 include arsenic, barium, beryllium, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, silver, zinc, and asbestos.

1.5 Overview of RI Activities

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

1. **Surface Soil/Fill Sampling:** Benchmark-TurnKey will collect surface soil/fill samples from the upper one foot of soil below any topsoil/vegetative cover to determine the nature and extent of impacts in the surface soil/fill.
2. **Subsurface Soil/Fill Sampling:** Benchmark-TurnKey will collect subsurface soil/fill samples from soil borings and test pits to determine the nature and extent of impacts in the subsurface soil/fill.
3. **Asbestos Soil/Fill Pile Sampling:** Benchmark-TurnKey will collect soil/fill samples from the soil/fill pile in the center of the Site to determine whether asbestos contamination exists.
4. **Monitoring Well Installation/Development and Sampling:** Benchmark-TurnKey will observe the installation on-site groundwater monitoring wells, develop the wells, and collect groundwater samples for the purpose of determining the nature and extent of impacts.

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. **Acetone (CAS #67-64-1)** a colorless liquid used as a solvent and an antiseptic. It is one of the ketone bodies produced during ketoacidosis. Most commonly used as a laboratory solvent.

2. **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.

3. **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.

4. **Barium (CAS #7440-39-3)** is found in waste streams from a large number of industrial uses. Acute exposures to barium may cause gastrointestinal disturbances and muscular weakness. Long term exposures may cause hypertension.

5. **Beryllium (CAS #7440-41-7)** is a naturally occurring element and can be found in electronic products such as televisions, calculators, and personal computers. Short-term inhalation of high levels of beryllium can cause inflammation of the lungs. Long-term inhalation exposure can cause beryllium disease, in which granulomatous lesions develop in the lung. Beryllium is a suspected human carcinogen.

6. **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.

7. **Chromium (CAS #7440-47-3)** trivalent chromium occurs in trace amounts in foods and waters, and appears to be benign. In contrast, hexavalent chromium is very toxic and mutagenic when inhaled. In the body, chromium (VI) is reduced by several mechanisms to chromium (III) and excreted from the body; whereas the chromate ion is transferred into the cell. The acute toxicity of chromium (VI) is due to its strong oxidation properties. In the blood stream, it damages the kidneys, the liver and blood cells through oxidation reactions. Hemolysis, renal and liver failure are the results of these damages.

8. **Copper (CAS #7440-50-8)** is a naturally occurring metal in the environment in

rocks, soil, water and air. The most common use of copper is to make wire, pipes, and sheet metal. High levels of copper exposure may cause irritation of the nose, mouth, and eyes, vomiting, diarrhea, stomach cramps, and death.

9. **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.

10. **Manganese (CAS #7439-96-5)** is a naturally occurring metal found in rocks and soil. Manganese is commonly used in steel production to improve hardness and strength. It may also be found as an additive in gasoline. The primary route of exposure of manganese is through ingestion. The most common health problems associated with manganese involve the nervous system.

11. **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.

12. **Nickel (CAS #7440-02-0)** is very abundant natural element. Nickel is most commonly used to make stainless steel. Nickel can be combined with other metals to form alloys used to make coins, jewelry, valves and heat exchangers. Organ systems affected by nickel include heart and blood vessels, skin, immune system, and respiratory. Nickel is suspected to be a human carcinogen.

13. **Selenium (CAS #7782-49-2)** is not a very common naturally occuring mineral. Selenium is most commonly produced from selenide in many sulfide ores, such as those of copper, nickel, or lead. Selenium has historically been used in the electronics industry due to its physical and chemical properties. Selenium is toxic in high doses.

14. **Silver (CAS #7440-22-4)** has a number of uses including jewelry, coins, solar panels, water infiltration, and X-ray and photographic technology. Diluted silver nitrate solutions are used as disinfectants and microbiocides.

15. **Zinc (CAS #7440-66-6)** is a naturally occurring inorganic element and is usually found combined with one or more elements, such as oxygen, chlorine and chrome. Inhalation of zinc compounds such as zinc chloride, zinc chromate or zinc oxide is a more common exposure route than inhalation of pure zinc. The effects of inhalation

exposure symptoms for these compounds vary but may include nausea, fatigue and muscle/joint pain. Prolonged contact is corrosive to the skin and mucus membranes and lungs.

16. **Asbestos (CAS #1332-21-4)** is a name given to a group of six different fibrous minerals that occur naturally in the environment. Asbestos is commonly used in building materials, friction products, heat-resistant products, packaging, gaskets, and coatings. The most common route of asbestos exposure is by inhalation. Inhaling high levels of asbestos over a long period of time may cause scar-like tissue in the lungs and in the membrane that surrounds the lungs, this disease is called asbestosis. Symptoms of asbestosis include difficulty breathing, coughing, and in severe cases heart enlargement. Asbestos is a known human carcinogen.

With respect to the anticipated RI 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

RI field activities at the 1827 Fillmore Avenue 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 RI operations 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 RI 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 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 and attached as Appendix C. 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 below will be used during periodic monitoring.

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 (Appendix 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 RI 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

1827 FILLMORE AVENUE SITE
BUFFALO, NEW YORK

Parameter	Synonyms	CAS No.	Code	Concentration Limits [1]		
				PEL	TLV	IDLH
Volatile Organic Compounds (VOCs): ppm						
Acetone	Propanone	67-64-1	*none*	500	250	2500
Semi-volatile Organic Compounds (SVOCs)[2] : ppm						
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(k)fluoranthene	*none*	207-08-9	*none*	--	--	--
Chrysene	*none*	218-01-9	*none*	--	--	--
Dibenz(a,h)anthracene	*none*	53-70-3	*none*	--	--	--
Dibenzofuran	*none*	132-64-9	*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
Pentachlorophenol	*none*	87-86-5	*none*	0.5	0.5	0.23
Phenol	Carbolic Acid	108-95-2	*none*	5	5	250
Inorganic Compounds[2] : mg/m [3]						
Arsenic	*none*	7440-38-2	Ca	0.01	0.01	5
Barium	*none*	7440-39-3	*none*	--	0.5	--
Beryllium	*none*	7440-41-7	Ca	0.0002	0.00005	4
Cadmium	*none*	7440-43-9	Ca	0.005	0.01	9
Chromium	*none*	7440-47-3	*none*	1	0.5	250
Copper	*none*	7440-50-8	*none*	1	1	100
Lead	*none*	7439-92-1	*none*	0.05	0.15	100
Manganese	*none*	7439-96-5	*none*	0.2	0.2	500
Mercury	*none*	7439-97-6	C-0.1	0.1	0.05	10
Nickel	*none*	7440-02-0	Ca	0.5	1.5	10
Selenium	*none*	7782-49-2	*none*	0.2	0.2	1
Silver	*none*	7440-22-4	*none*	0.01	0.01	10
Zinc	*none*	7440-66-6	*none*	--	--	--
Asbestos	*none*	1332-21-4	Ca	0.1	0.1	--

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

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

1827 FILLMORE AVENUE SITE
BUFFALO, NEW YORK

Activity [1]	Direct Contact with Soil/Fill	Inhalation of Vapors or Dust	Direct Contact with Water
Remedial Investigation Tasks			
1. Soil Sampling	x	x	
2. Monitoring Well Installation/Development and Sampling	x	x	x

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

TABLE 3
REQUIRED LEVELS OF PROTECTION FOR RI TASKS

1827 FILLMORE AVENUE SITE
BUFFALO, NEW YORK

Activity	Respiratory Protection [1]	Clothing	Gloves [2]	Boots [2, 3]	Other Required PPE/ Modifications [2, 4]
Remedial Investigation Tasks					
1. Soil Sampling	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS
2. Monitoring Well Installation/ Development and Sampling	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS

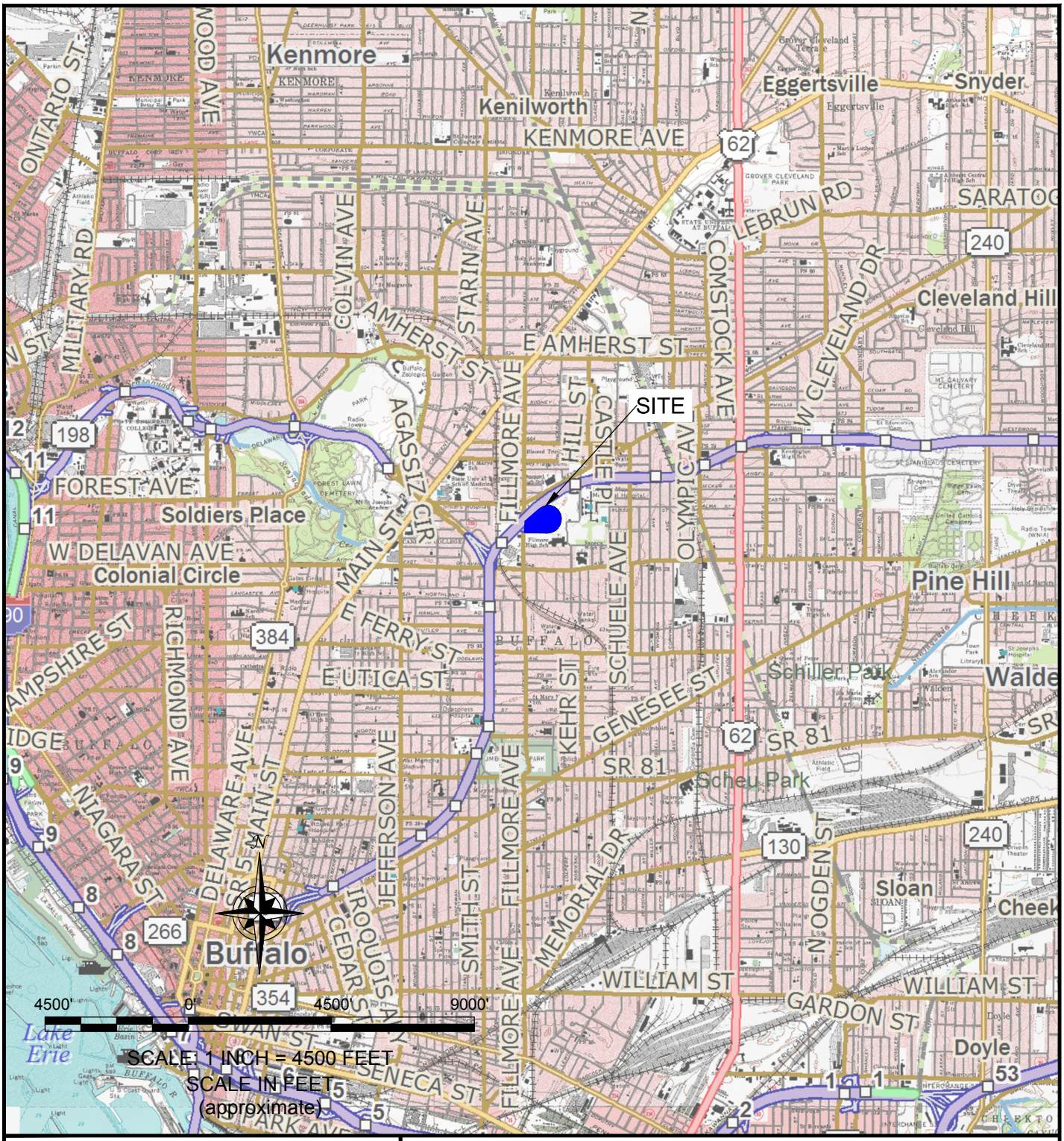
Notes:

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; SGSS = safety glasses with sideshields
3. Latex outer boot (or approved overboot) required whenever contact with contaminated materials may occur.
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 in significant amounts in the breathing zone. Goggles may be substituted with safety glasses w/side-shields whenever contact with contaminated liquids is not anticipated.

FIGURES

F:\CAD\Benchmark\Rupp, Baase, Pfalzgraf & Cunningham LLC\1827 Fillmore Avenue\03 - RI Work Plan\HASP\Figure 1; Site Location & 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.: 0421-017-001

DATE: JUNE 2017

DRAFTED BY: CCB

SITE LOCATION & VICINITY MAP

HEALTH AND SAFETY PLAN

1827 FILLMORE AVENUE SITE
BUFFALO, NEW YORK

PREPARED FOR

1827 FILLMORE LLC

ATTACHMENT A

EMERGENCY RESPONSE PLAN

BENCHMARK TURNKEY

EMERGENCY RESPONSE PLAN
for
BROWNFIELD CLEANUP PROGRAM
RI ACTIVITIES

1827 FILLMORE AVENUE SITE
BUFFALO, NEW YORK

June 2017 0421-017-001

Prepared for:
1827 Fillmore 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
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1827 FILLMORE AVENUE SITE
HEALTH AND SAFETY PLAN FOR RI 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 Investigation (RI) activities at the 1827 Fillmore Avenue 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): ***Bryan C. Hann***
Work: (716) 856-0635
Mobile: (716) 870-1165

Alternate SSHO: ***Nathan Munley***
Work: (716) 856-0635
Mobile: (716) 289-1072

ERIE COUNTY MEDICAL CENTER (ER):	(800) 729-5433
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:

1827 Fillmore Avenue
Buffalo, New York 14214
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 (***Bryan Hann*** 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 Erie County Medical Center (see Figure 1):

The following directions describe the best route from the Site to Erie County Medical Center located 1.2 miles away:

- Head **north** on **Fillmore Avenue** toward **Kensington Avenue**
- Turn **right** at the first cross street onto **Kensington Avenue**
- Turn **right** onto **Grider Street**
- Turn **right**
- Erie County Medical Center is located at **462 Grider 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:

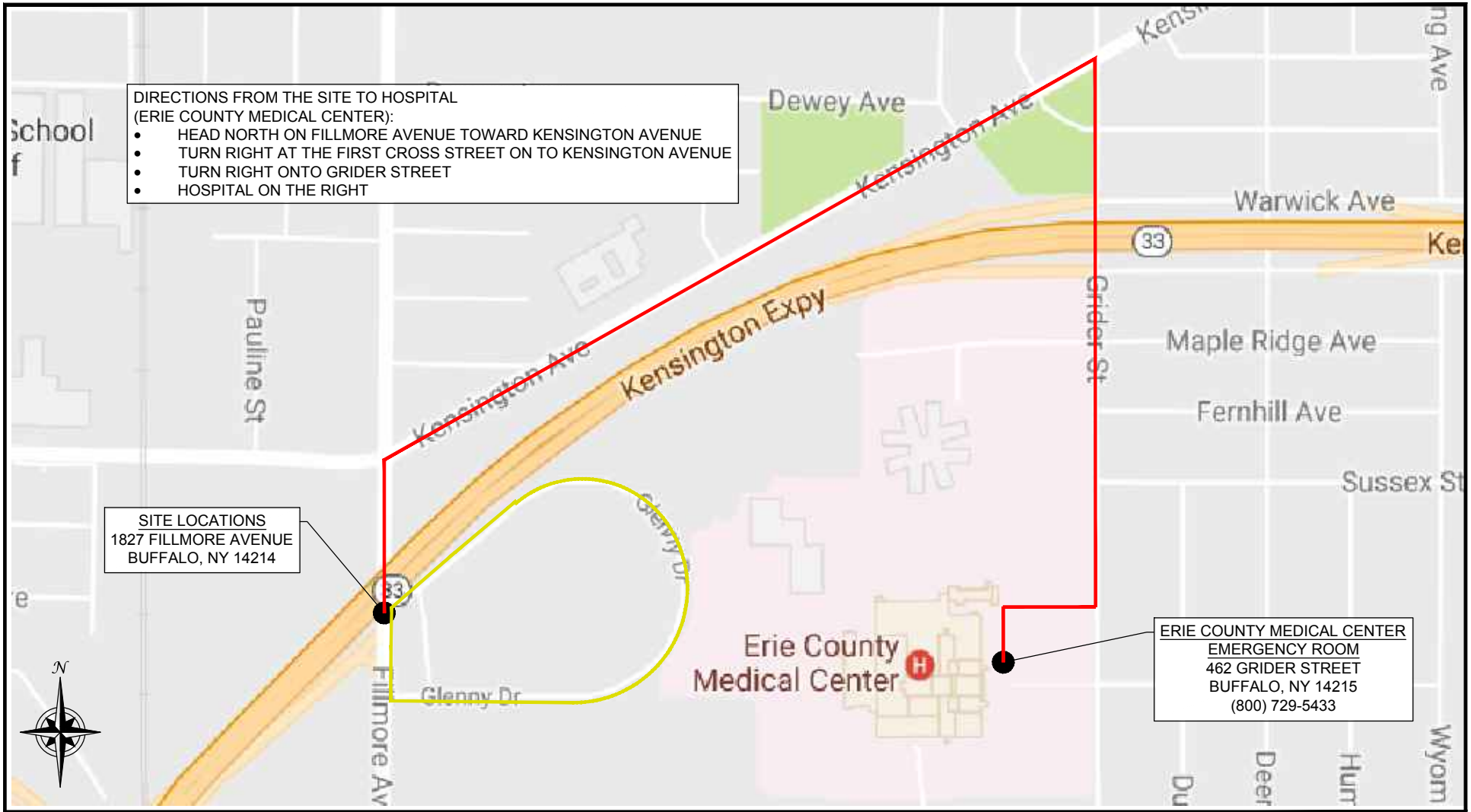
- Occupational injuries and illnesses.
- Accident investigations.
- Reports to insurance carrier or State compensation agencies.
- Reports required by the client.
- Records and reports required by local, state, federal and/or international agencies.
- Property or equipment damage.
- Third party injury 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\Benchmark\Rupp, Baase, Pfalzgraf & Cunningham LLC\1827 Fillmore Avenue\03 - RI Work Plan\HASP\Figure 1; Hospital Route Map.dwg



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PROJECT NO.: 0421-017-001

DATE: JUNE 2017

DRAFTED BY: CCB

HOSPITAL ROUTE MAP

EMERGENCY RESPONSE PLAN

1827 FILLMORE AVENUE SITE
BUFFALO, NEW YORK

PREPARED FOR

1827 FILLMORE LLC

FIGURE 1

ATTACHMENT B

HOT WORK PERMIT FORM

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

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:

ATTACHMENT C

NYSDOH GENERIC COMMUNITY AIR MONITORING PLAN

BENCHMARK TURNKEY

Appendix C1
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 D

PROJECT DOCUMENTATION FORMS

BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

INSPECTOR'S DAILY REPORT

Page _____ of _____

CONTRACTOR:	JOB NO.:
CLIENT:	DATE:

LOCATION:		DAY: Su M Tu W Th F Sa	
WEATHER:	TEMP: °F	START:	END:

WORK PERFORMED:

TEST PERFORMED:	QA PERSONNEL:
	SIGNATURE:

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

INSPECTOR'S DAILY REPORT

(CONTINUED) Page ____ of ____

CONTRACTOR:	JOB NO.:
CLIENT:	DATE:

MEETINGS HELD & RESULTS:

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Front Loader Ton		
Superintendent						Bulldozer		
Laborer-Foreman						DJ Dump Truck		
Laborer						Water Truck		
Operating Engineer			Equipment			Backhoe		
Carpenter			Generators			Excavator		
Ironworker			Welding Equipment			Pad foot roller		
Concrete Finisher			Roller					
			Paving Equipment					
			Air Compressor					

REMARKS:

REFERENCES TO OTHER FORMS:

SAMPLES COLLECTED:

Sample Number:
Approx. Location of Stockpile:
No. of Stockpile
Date of Collection:
Weather:
Field Observations:

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 &
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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 E

FIELD OPERATING PROCEDURES

(PROVIDED ELECTRONICALLY ON ENCLOSED CD)

APPENDIX F

ELECTRONIC COPY