REMEDIAL ACTION WORK PLAN

FORMER PILGRIM VILLAGE FAMILY APARTMENTS
TAX MAP ID NO.: 100.72-1-1.1
BUFFALO, NEW YORK 14209
NYSDEC SITE NO.: C915362

Prepared for:

SAA EVI MC Family, LLC
150 2nd Avenue, Suite 300
Miami, Florida 33131

Prepared by:

BE3CORP
BRYDGES ENGINEERING IN ENVIRONMENT & ENERGY
960 Busti Avenue
Buffalo, New York, 14213

MAY 2021

Table of Contents

TABLES

RI/AAR Tables

FIGURES

RI/AAR Figures

Remedy/Redevelopment Figures

APPENDICES

1.0 INTRODUCTION

SAA/EVI MC Family, LLC (SAA/EVI), owner of the Former Pilgrim Village Family Apartments (New York State Department of Environmental Conservation [NYSDEC] Site # C915362) located at 1100 Michigan Avenue in Buffalo, New York (Site), has entered a Brownfield Cleanup Program (BCP) Agreement (Index No. C915362-09-20) with the NYSDEC under the Voluntary section of the "Brownfield Cleanup Program Act." SAA/EVI has contracted BE3 Corp. (BE3) to conduct a Remedial Investigation (RI), prepare an Alternatives Analysis Report (AAR), and a Remedial Action Work Plan (RAWP), as required by the BCA, and complete remedial measures, as necessary. This document presents details of a RAWP designed to support the implementation of a Remediation Action (RA) at the Site. A site location map is included as **Figure 1**.

The RA includes excavation/removal of impacted fill/soils and off-site landfill disposal; backfilling excavations with clean off-site fill material and/or hardscape; and limited groundwater treatment all to meet 6 New York Codes, Rules and Regulations (NYCRR) Part 375 Unrestricted Use (Track 1) requirements. The RA also includes the implementation of an Interim Site Management Plan (SMP) for limited groundwater monitoring and Environmental Easement (EE). If a Track 1 cleanup is determined to be unachievable during the RA, then a Track 2 cleanup will be implemented which will require the SMP and the EE.

The RI and environmental studies/investigations (refer to Section 2) completed at the Site have concluded: there are impacted fill/soils across the Site and petroleum impacted groundwater at the northeast corner of the Site. The impacted media are due to releases and past uses of the property. Site fill/soils have been impacted with primarily semi-volatile organic compounds (SVOCs) in the form of polycyclic aromatic hydrocarbons (PAHs) and inorganic compounds (metals) with minor exceedances of a few pesticide and total PCBs in limited site locations. Petroleum related volatile organic compounds (VOCs) and SVOCs were detected in one groundwater monitoring well (Well MW2) in the northeast corner of the site at concentrations above NYSDEC Technical and Operational Guidance Series (TOGS) guidance values. Refer to **Figures 3 through 5** for RI sample locations and exceedance values.

1.1 SITE HISTORY AND DESCRIPTION

The former Pilgrim Village Family Apartment complex is bounded by Best Street, Michigan Avenue, East North Street, and Ellicott Street. The portion that was the subject of the RI is in the northeast corner of the property. The entire complex has a total area of approximately 7.9 acres; however, the subject Site is approximately 2.59 acres. The Family Apartments site includes three apartment buildings, two of which are approximately 3400 square feet (sf) and each have five individual apartment units. The third building is approximately 5,000 sf and has seven individual apartment units. Prior to the apartment complex, the property was occupied by dense residential housing with several small shops from the late 1800s through the mid-1970s. A gasoline filling station was located on the northeast corner of the property at Michigan Avenue and Best Street from at least 1951 through at least the 1960s. The property is approximately 643 feet above sea level, which is one of the highest points in the City of Buffalo. There are no major changes in topography through the Site. Site soil can be described as urban land that is typically identified as impacted from historical commercial and industrial use. Approximately 50 percent of the Site is currently covered by impervious features such as buildings, streets, and paved parking lots. The current buildings will be demolished and replaced with a new building, paved parking, and greenspace.

In the early 1800s, the adjacent property to the east and the school property further east was set aside as a "Potter's Field" where victims of cholera epidemics, poor, indigent, and those without religious affiliation could be buried. The cemetery was located on a parcel of former farmland bounded by Best, Cemetery (later Prospect and Masten Streets), North Street, and Michigan Avenue. It remained in use as a pauper (or strangers) burying ground for approximately 40 years. It stopped being used as a cemetery by at least the mid-1880s. In 1885, the City hired Frederick Law Olmsted to convert the land into a public park overlooking the city. In 1895, the City decided to build a 2nd high school on the part of the cemetery land. Masten Park High School opened in 1897 under the leadership of Frank Fosdick but burned down in March of 1912. The new Masten Park High School was designed by architects Esenwein and Johnson using the template of their 1903 Lafayette High School design and opened in the fall of 1914. In 1927, the school was renamed "Fosdick-Masten Park High School." The site became the present City Honors School in 1980. Human burials from the former potter's field were discovered during renovations on the adjacent school property in 2007. Based on the historical maps, it does not appear that human burials ever existed on the subject property.

1.2 CONTEMPLATED USE OF THE SITE

The proposed re-development of the site will create affordable housing units and approximately 5,000 sf of commercial space. There will be commensurate parking for the residential units and commercial space.

2.0 ENVIRONMENTAL CONDITIONS/PAST INVESTIGATIONS

Phase I Environmental Site Assessment (ESA) prepared for Key Bank, Campus Square, 903 Ellicott St. & 1100 Michigan Ave., Buffalo, New York, prepared by AEI Consultants; dated: June 2014

The following REC was identified: A service / filling station, with underground storage tanks, operated on the subject property at the corner of Michigan Avenue and Best Street from approximately 1931 to 1968. The subsequent Phase II ESA advanced soil borings in the former gasoline filling station at the northeast property corner where soil samples were obtained. No volatile organic compounds or semi-volatile organic compounds were detected above NYSDEC Part 375 SCOs for unrestricted site use. PCBs and herbicides were not detected in the submitted samples.

Limited Site Characterization Report prepared for McGuire Development Co., Pilgrim Village Apartments, Buffalo New York, prepared by C & S Companies, dated July 2019

The Limited Site Characterization was conducted on the entire Pilgrim Village Site. Urban fill was encountered throughout the Site from the surface to six to ten feet bgs. Despite petroleum-like odors in two locations, VOC and SVOC concentrations were below the SCOs in those locations. The analytical results indicate that the urban fill contains concentrations of metals above NYSDEC SCOs, with elevated concentrations of lead, mercury, and/or zinc.

Phase II Environmental Site Assessment (ESA) Report prepared for SAAKC, Pilgrim Village-1100 Michigan Avenue, Buffalo, New York, prepared by BE3 Corp, dated April 2020.

The purpose of this assessment was to identify potential contamination in the near-surface soil at 1100 Michigan Street, Buffalo NY. Previous Phase II ESA results indicated elevated levels of metal compounds above SCOs in soils at the property and at adjacent properties. Field observations and laboratory results indicate that there are urban fill conditions in the near-surface soil resulting in compounds above residential SCOs across the property. The fill depth varied from about one foot to four feet bgs across the property typically over reddish-brown silty clay which is common native soils in this area.

Pre-Demolition Asbestos Inspection Report prepared for SAA/EVI, Pilgrim Village Apartment Buildings, Buffalo, New York, prepared by AMD Environmental Services, Dated October 2020.

The scope of services included the identification of suspect asbestos containing building materials in areas of planned renovations; sampling and analysis of the suspect materials; and identifying the locations, estimated quantities, and condition of the confirmed asbestos containing materials. Sampling and analysis of the suspect materials under Polarized Light Microscopy (PLM) and under Transmission Electron Microscopy (TEM) revealed the following materials as asbestos containing building materials (ACBM):

- All Flooring Materials (Linoleum and Floor Tiles)
- All Flooring Mastic

RI/AAR prepared for SAA EVI MC Family, LLC; Former Pilgrim Village Family Apartments, City of Buffalo, New York, prepared by BE3 Corp, Dated February 2021.

The RI was completed in accordance with a defined scope of work and approved RIWP. The following provides a summary of the investigation activities:

- Assessment of soil conditions using borings, test pits, and GPR and collecting and analyzing 23 samples across the property (including one duplicate sample).
- Assessment of groundwater conditions by installing five overburden groundwater wells and collecting and analyzing six groundwater samples (including one duplicate).
- Completing a pre-demolition asbestos inspection in all site buildings in preparation of demolition activities.

The results of the investigation indicate that metal compounds are present above NYSDEC Unrestricted SCOs over approximately half of the site with a few discrete areas above Restricted Residential SCOs. SVOCs greater than Restricted Residential SCOs are limited to a couple discrete areas. PCBs, pesticides, and VOCs were detected in select samples that exceeded the NYSDEC Unrestricted SCOs. Petroleum-impacted soil was identified in the northeast corner of the Site where reportedly there was a gasoline filling station with USTs. The soil samples collected from “native” soils did not contain target analytes exceeding NYSDEC SCOs. Eight petroleum related VOCs were detected in groundwater at monitoring well MW2, installed in the northeast corner of the Site where the former fueling station was located (refer to **Figure 6**). Concentrations in the two samples collected (Sample MW2 and duplicate Sample MW12) were greater than the NYSDEC TOGS values. The groundwater sample at MW3 contained one VOC exceeding the NYSDEC TOGS value. The SVOC, naphthalene, was detected in Sample MW1 at a concentration greater than the NYSDEC TOGS value. Two metals were detected in almost all groundwater samples at concentrations greater than the NYSDEC TOGS values (i.e., magnesium and sodium).

Based on these results, it is recommended proceeding with Alternative 1 site remediation to meet Track 1: NYSDEC Unrestricted Use SCOs that fully satisfies the remedial action objectives and

is most protective of human health and the environment by addressing the contaminated media in soil and groundwater.

3.0 SUMMARY OF REMEDIAL OBJECTIVES AND REMEDY

3.1 REMEDIAL ACTION OBJECTIVES

The final remedial measures for the site must satisfy Remedial Action Objectives (RAOs). RAOs are site-specific statements that convey the goals for minimizing or eliminating substantial risks to public health and the environment. The primary RAOs identified for the site are:

Groundwater

Human Health Protection RAOs

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

Environmental Protection RAOs

- Restore groundwater aquifer to pre-disposal/pre-release conditions, to the extent practicable.

Soil

Public Health Protection RAOs

- Prevent ingestion/direct contact with contaminated soil.

Environmental Protection RAOs

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

Soil Vapor

Public Health Protection RAOs

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

3.2 IDENTIFICATION OF STANDARDS, CRITERIA, AND GUIDANCE

Standards, Criteria, and Guidance (SCG) are promulgated requirements (i.e., standards and criteria) and non-promulgated guidance that govern activities that may affect the environment and are used by the NYSDEC at various stages in the investigation and remediation of a site. The following are the primary SCGs for this project:

- NYSDEC 6 NYCRR Part 375 – Environmental Remediation Programs December 2006.
- NYSDEC DER-10 – Technical Guidance for Site Investigations and Remediation May 2010.
- NYSDEC - Technical and Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations June 1998 (TOGS).
- NYSDEC Policy – CP-51- Soil Cleanup Guidance; Date Issued: October 21, 2010; and,
- NYSDEC - Sampling, Analysis, and Assessment OF Per-and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs Issued January 17, 2020.

3.3 REMEDY

The RA includes a Track 1 – Unrestricted Use remedy. The buildings will not be occupied during the implementation of the remedy. The details of this remedy are depicted in **Figures 7 and 8** and include:

1. A Track 1 Unrestricted Use remedy necessitates remediation of all soil/fill across the Site where concentrations exceed the Unrestricted SCOs. Based on RI data It is estimated that this would require soil removal to a depth of approximately 5 feet (approximate fill and natural soil interface) across the entire Site including any subsurface debris or anomalies encountered during remediation (e.g., USTs, piping, concrete, etc.). Soil beneath the buildings that exceeds 6 NYCRR Part 375 Unrestricted SCOs will also be removed. Based on the area of the Site, approximately 20,500 cubic yards of soil will be removed and disposed of at a local permitted landfill with approval from the NYSDEC. If the soil requires an alternative disposal method, approval will be received from the NYSDEC prior to soil leaving the Site.
2. The three existing apartment building complexes and paved areas on Site will also be removed including: floor slabs; basement foundations where present and soil beneath the buildings/paved areas that exceeds Unrestricted SCOs.
3. Monitoring wells installed during the RI will be decommissioned/removed per NYSDEC CP-43 prior to any excavation.
4. All excavated areas will be backfilled with clean soil or hardscape to meet new development grades.
5. Once contamination sources are removed from the Site; a limited groundwater treatment program will be established in the vicinity of the petroleum impacted groundwater at the location of monitoring well (MW2) located at the northeast corner of the Site (refer to **Figure 8**). The proposed groundwater remedy includes the chemical oxidation using persulfate with either ferrous iron or alkaline activation, as an aqueous amendment distributed through direct push injection points evenly distributed throughout the treatment area in the vicinity of Well MW2 and the historic gas station (refer to **Figure 8**).
6. Once contamination sources are removed from the site, a groundwater monitoring program of the limited groundwater treatment program will be established (i.e., engineering control - EC) to assess attenuation/treatment of contamination in groundwater over a maximum five-year period. An interim EE or SMP may be required for this alternative to accommodate the groundwater system for up to five years.

The remedial approach to implement the remedy is discussed in **Section 5.0**.

4.0 REMEDIAL CONSTRUCTION REQUIREMENTS/SUBMITTALS

Before initiating remedial activities, the selected contractor will complete the following tasks**:**

- Submit a site-specific Health and Safety Plan (HASP) to cover his workers and the public (will be attached to the HASP provided in **Appendix A**).
- Submit a site-specific operations/work plan.
- Submit an Erosion and Sediment Control Plan.
- Contact the Underground Facilities Protection Organization and have all subsurface facilities marked.
- Establish contractor work limits within the staked property boundary.

- Install safety fencing around all work areas to restrict and control public access to the site; and,
- Procure all work permits and off-site road permits required by law for the off-site removal/disposal of soils and materials. These should also include standard permitting activities that would be associated with remedial and construction activities such as stormwater, utilities, building, traffic, etc. Otherwise, all requirements are addressed through NYSDEC and New York State Department of Health (NYSDOH).

BE3/NYSDEC will be responsible for reviewing all submittals for conformance with the RAWP. The contractor's work plan shall include, but not limited to, the following:

- Detailed construction schedule that meets the overall project schedule provided in the bid documents.
- A HASP pertaining to the specific remedial work tasks for the protection of his workers and the public.
- Sequence and methods to be used to accomplish the work.
- Off-site transport and end disposal destinations for contaminated soils.
- All disposal facilities must be NYSDEC approved with permits supplied to owner/engineer.
- Procedure to handle site drainage during construction to prevent contaminated water and/or sediment leaving the Site (silt fences, etc.) and rainwater from entering excavations.
- Decontamination procedures for the excavation equipment to prevent tracking contaminated soil off-site, and cleaning roads/sidewalks if material is tracked off-site.
- Locations of off-site fill sources and clean verification per Division of Environmental Remediation (DER)-10 requirements; and,
- End use verification to meet NYSDEC tracking requirements (Bills of Lading, etc.).

Upon acceptance of the contractor's work plan by BE3, the Owner, and NYSDEC, the contractor will commence implementation of the plan and complete all work within the approved project schedule.

4.1 Contractor Health and Safety Requirements

The remedial contractor will prepare a site-specific HASP pertaining to the remedial work for the protection of his site workers, the public and the environment. It should be noted that the building will not be occupied during remediation. The contractor's HASP, at a minimum, must comply with all Federal and State regulations; requirements of the Community and Environmental Response Plan (CERP) provided in **Appendix G**; requirements of the Community Air Monitoring Plan (CAMP) in **Appendix I**; and the requirements of the HASP provided in **Appendix A** including, but not limited to, the following:

- Occupational Safety Health Administration (OSHA) Regulations 29 Code of Federal Regulations (CFR) 1910 120.
- OSHA Regulations 29 CFR 1926; and,
- All applicable laws and regulations regarding the handling and treatment of petroleum containing USTs and excavation/handling of impacted soils.

The HASP shall, at a minimum, address the following subject areas as deemed necessary by the Contractor's health and safety personnel in accordance with OSHA Part 29 CFR 1910.120 and applicable New York State regulations:

- On-site health and safety organization.
- Hazard analysis of each site task and operation to be performed.
- Provisions for employee training to ensure compliance with 29 CFR 1910.120(e). Personal protective equipment (PPE) to be used by employees for each of the site tasks and operations being conducted to eliminate potential exposures, as required by the PPE programs in 1910.120(g)(5).
- Personnel and equipment decontamination procedures in accordance with 1910.120(k), as applicable.
- Standard Operating Safety Procedures, engineering controls and work practices.
- First aid requirements.
- Confined space entry requirements, if applicable, meeting requirements of 29 CFR1910.146.
- Dust control measures that comply with actions levels of the **Appendix I** CAMP.
- A spill containment program meeting the requirements of 1910.120(j).
- Heat/cold stress monitoring; and,
- Record keeping procedures.

The contractor will comply with the odor control requirements specified in the CERP in **Appendix G**.

5.0 REMEDIAL APPROACH

Remediate the site to meet: Track 1 – Unrestricted Use cleanup requirements for soils and treat groundwater by an aqueous amendment distributed through direct push injection points.

5.1 SOIL REMOVAL AND REPLACEMENT

5.1.1 Soil Sampling for Disposal Purposes

Prior to excavation of soils, the contractor will, at the request and direction of their approved landfill for soil disposal, collect soil samples from excavation areas for analysis as requested by the landfill to determine acceptability for disposal to meet landfill permit requirements. At a minimum, it is anticipated that the landfill will request Part 375 analysis be performed and possibly toxicity characteristic leaching procedure (TCLP) analysis for certain constituents to determine if any of the compound concentrations fall into the hazardous waste category. The number of soil samples is indeterminate currently. Results of the soil sampling must be provided to the owner's site representative prior to excavation and removal of material.

5.1.2 Soil and Building Foundation Excavation

Prior to excavation activities at the site, an underground utility location service will be contacted by the remediation contractor to obtain utility clearances. The contractor's erosion and sediment controls shall be in place (silt fences, filter sock, berms, etc.) before excavation begins to prevent contaminated water and/or sediment from leaving the Site and rain from entering excavations. Stormwater encountered during excavation that has been impacted by contaminated soils will be pumped to a temporary storage tank. The water will be sampled and analyzed to determine if it can be discharged to the Buffalo Sewer Authority via permit or required to be sent to a disposal facility. If the confirmation samples indicate the Site is "clean", stormwater encountered during

new construction activities shall contain a dewatering system providing for a sump setting and filter-bag sediment screen prior to discharge to the Buffalo Sewer Authority via permit. A stormwater pollution prevention plan (SWPPP) is included in **Appendix H**.

Monitoring wells installed during the RI will be decommissioned/removed in accordance with NYSDEC's CP-43: Groundwater Monitoring Well Decommissioning Policy. Buildings as noted on **Figure 7** will be demolished and floor slabs/foundations removed and, after examination/testing, will be sent to either a landfill or recycler.

All open areas across the site will be cleared and grubbed including existing asphalt/concrete surface areas, as necessary. All surface material will be disposed of off-site at an approved landfill. The RI and previous investigations indicate that open areas of the Site are covered by fill soils most likely brought in from off-site over time. The RI and previous investigations also indicate that the fill soils across the site are impacted with concentrations of PAHs and metal compounds that exceed Unrestricted Use SCOs to an approximate depth of 5 feet bgs across the site. All impacted soil exceeding Unrestricted Use SCOs will be removed from across the site as shown on **Figure 7**.

Remediation will include either adding clean fill/hardscape or removal of fill followed by addition of clean fill/hardscape. When removal is planned, the contractor will excavate Impacted soil across the area until Unrestricted Use SCOs have been achieved. Surface restoration would only require soil/hardscape needed to restore/construct to new development design plan grade. Backfill for proposed hardscape areas will include approved clean stone/gravel base and asphalt/concrete. Backfill for proposed greenspace areas will be with approved clean soil/stone and topsoil all to meet Part 375-6.8(a) Unrestricted SCOs. In general, clean fill or hardscape will be placed over the site in areas where the site will be raised to meet final site grades or to backfill excavated areas where Unrestricted Use SCOs have been achieved.

Buried utilities for the new development may be installed during remediation and excavated material from utility trenches will be assessed during excavation. Material determined by visual assessment to be clean will be stockpiled for sampling/testing to determine reuse. All utility trenches will be backfilled with clean soil/stone, including a minimum of one foot of stone below and around utility lines.

Impacted soil will be directly loaded into trucks for off-site disposal at a NYSDEC approved landfill. If impacted soil needs to be stockpiled for any reason before off-site transport the soils will be placed on minimum 6-mil plastic sheeting and covered with 6-mil plastic upon completion of stockpiling. All trucks for transport will be 9-A approved permitted trucks to haul non-hazardous waste. The excavations will be surveyed by the contractor for excavation and fill quantities which will also be included in the Final Engineering Report (FER).

Clean fill identified through visual, olfactory, and PID screening process will be stockpiled on site on 6-mil plastic sheeting for potential re-use on the property as clean fill that meets redevelopment design/construction requirements. This material will be covered to prevent wind and rain erosion. The material will be sampled and analyzed for the Part 375 constituents noted above to assess if it meets Unrestricted Use SCOs before re-use. Stockpiled soil for possible reuse on site must meet the requirements of DER-10 Table 5.4(e)4-Reuse of Soil and the number of confirmation samples collected must adhere to the requirements of Table DER-10 5.4(e)10 and levels of contamination must meet DER-10 Appendix 5 SCOs.

If rainwater is encountered in any of the excavation areas the contractor will collect and pump the water into drums or a “Frac” tank depending on quantity. The contractor will have any collected water sampled for disposal characterization for either disposal at an approved off-site facility or possible onsite treatment (carbon filtered, etc.) for disposal to the local municipal sewer system. For disposal to a municipal sewer system the contractor will perform all required testing by the municipality and secure appropriate permits for discharge. Sediments/liquids in buried piping encountered during excavation outside the buildings will be handled as above. Piping will be removed and disposed offsite at an approved disposal facility.

5.1.3 Fill Material

All imported fill materials to backfill excavations or to establish site grades shall be obtained from “virgin” sources and be tested to ensure they meet imported soil requirements of DER-10 Appendix 5 “Allowable Constituent Levels for Imported Fill for Rest requirements and Soil Subdivision 5.4(e).” DER-10 imported fill requirements are provided in **Appendix E**. The owner’s environmental consultant and NYSDEC will approve all backfill material and sources before brought to the Site. Stone/gravel from a permitted/approved NYSDOH/NYSDEC quarry maybe used for backfill without analytical testing provided the material contains less than 10 percent by weight of material which would pass through a size 80 sieve. Fill material will be placed and compacted to meet new development construction requirements.

5.1.4 Confirmation Soil Sampling

Confirmatory soil samples will be collected from the excavation base and sidewalls. All confirmation soil samples from the excavations will be collected in conformance with DER-10 Section 5.4(b) 2 through 5 to determine final frequency and sample locations.

The collection of soil samples for laboratory analysis will be performed pursuant to the **Appendix D** Field Sampling Plan and NYSDEC guidance. The sample locations will be located by a field GPS so that the approximate locations are documented. All soil samples will be analyzed for TCL VOCs; TCL SVOCs; and arsenic, barium, lead, mercury, and zinc, which are the contaminants of concern based on the RI and previous investigations. In addition, 25 percent of the samples will be analyzed for TAL metals, TCL PCBs, and TCL pesticides. Please note that samples will not be analyzed for tentatively identified compounds (TICs) or emerging contaminants (PFAS and 1,4-dioxane). These samples will be collected across the site. The results will be compared to 6 NYCRR Part 375 Unrestricted SCOs. All sample analysis will comply with the quality assurance/quality control (QA/QC) plan provided in **Appendix C**. The NYSDEC will be notified prior to the collection of confirmation samples, and the sample frequencies are listed in the table below.

Location	Perimeter (feet)	Area (square feet)	Sidewall Samples	Bottom Samples	Notes
Former Historic Gas Station Area	400	9,500	13*	11*	DER-10 frequency (30LF/900SF)
Remaining Site Area	1,400	102,000	35*	64*	Approved frequency (40LF/1,600SF)

* Includes QA/QC samples

A physical inspection (visual/olfactory) along with photoionization detector (PID) screening will be conducted during excavation operations to assess the presence of any "hot spots" that will need to be removed. Where the sidewalls of excavation are at the property boundary and the inspection notes possible impacts, confirmation soil samples will be collected every 50 feet and analyzed for TCL VOCs, TCL SVOCs, and TAL metals to assess if soils exceeding 6 NYCRR Part 375 Unrestricted Use SCOs extend off-site. Note that this will not affect the completion of the remedy for Pilgrim Village Family; however, will be used by NYSDEC for information purposes only.

5.1.5 CERP and CAMP

Dust, VOC, and odor control measures with air monitoring will be implemented during all ground intrusive activities to minimize inhalation exposures and create a public record. Air monitoring will be in accordance with NYSDOH Generic CAMP (DER Appendix 1A) and Fugitive Dust and Particulate Monitoring (DER-10 Appendix 1B). CAMP data will be provided daily to the NYSDEC and NYSDOH and notification of any exceedances will be sent separately to NYSDEC and NYSDOH. The requirements of the CERP in **Appendix G** and the CAMP in **Appendix I** will be implemented for managing VOCs, odors and particulates during all work activities that involve the excavation and handling of Site soils.

5.2 GROUNDWATER TREATMENT AND MONITORING

After conducting the RA, groundwater samples will be collected from the former gas station area. If groundwater remediation is warranted after excavation of soil/fill, Institutional Control in the form of an EE and Engineering Control in the form of a SMP would be implemented.

Several petroleum related VOCs have been detected above TOGS groundwater Guidelines in the groundwater from Monitoring Well MW2 located in the northeast corner of the Site at the historic gas station location (refer to **Figure 6**). The petroleum related groundwater impact appears to be localized (Well MW2) with no petroleum impact appearing in any of the other Site monitoring wells. As discussed in Section 5.1.2, impacted soil across the entire Site will be removed until Unrestricted Use SCOs have been achieved. An estimated 5 feet of impacted soil will be removed from the northeast corner of the Site and the depth to groundwater in Well MW2 is approximately 10.5 feet bgs.

Although removing the solid phase contamination will limit most chances for groundwater contamination, it would be appropriate to have a secondary aqueous phase treatment approach emplaced following excavation to assure no offsite migration of aqueous phase contaminants. Groundwater monitoring will be required irrespective of whether an engineered groundwater treatment system is used, or if soil excavation is considered sufficient to eliminate most groundwater risk. As indicated below, four perimeter monitoring wells will be installed and monitored over time (maximum 5 years) for all potential aqueous phase VOCs.

The proposed groundwater remedy includes chemical oxidation using persulfate with either ferrous iron or alkaline activation, as an aqueous amendment throughout a localized volume in the vicinity of Well MW2 and the historic gas station (refer to **Figures 7 and 8**). The specific type of activation will depend on the concentration of native ferrous iron, and the geochemistry of the groundwater following excavation of the soils. The exact mass of persulfate will be quantified following excavation to address all potential groundwater residuals; however, based on available data it is not expected to be a large mass. Persulfate will be added at a 1.5:1 stoichiometry (persulfate: oxidizable contaminants) to limit the possibility of sulfate and/or sulfide from interfering with downgradient subsurface infrastructure. The persulfate will be added as an aqueous phase

volume (not super-saturated slurry) through direct push injection points evenly distributed throughout the treatment area (assume 10 push points). The area will then be backfilled with clean fill or hardscape to meet new development grades. Additional details regarding the groundwater treatment are included in Appendix K.

To monitor treatment results, monitoring wells will be located on all sides of the treatment area. **Figure 8** illustrates a potential configuration; however, exact monitoring well locations will be established in the SMP. In addition to contaminant VOCs, groundwater will be analyzed for: sulfate, sulfide, ferrous iron, pH (and other field monitoring parameters such as dissolved oxygen), and methane. Monitoring Wells MW1 and MW4, which were installed during the RI, will be sampled, and used for south and west groundwater delineation. The groundwater metals. QA/QC samples will be collected in accordance with the QA/AC Plan which is included in Appendix C.

An alternative strategy that maybe considered is in situ granular-activated carbon (GAC), should post-excavation data suggest that persulfate is not the most appropriate long-term groundwater treatment technology. If this alternative strategy is selected, a proposal will be submitted later.

5.3 Soil Vapor Evaluation

Upon completion of "hot spot" soil removal, backfilling of the Site, and installation of the groundwater treatment system, an evaluation of soil vapor in the vicinity of the historic gas station will be performed. The details of the soil vapor evaluation will be presented to the NYSDEC once an assessment of the effectiveness of the groundwater treatment and "hot spot" removal is completed (e.g., confirmation soil and groundwater sampling). However, it is anticipated that per DER-10 Section 3.6 and NYSDOH October 2006 guidance that at least two rounds of sampling will be completed that could include exterior soil vapor and indoor air sampling.

5.4 Asbestos Abatement

Asbestos-Containing Materials (ACM) will be removed during demolition per the recommendations of the Pre-Demolition Asbestos Inspection Report provided in **Appendix J**.

6.0 OVERSIGHT AND REPORTING

As required by BCP regulations, the owner's engineer/consultant will provide construction oversight services during all construction activities detailed in the work plan and prepare a FER at the completion of construction in NYSDEC template format. The FER will describe all the details of the construction and include copies of contractor submittals, disposal records, daily inspection reports, CAMP data, and a certification that all work was completed in conformance with the approved work plan and be signed and stamped by a professional engineer licensed in the State of New York. All reports will be provided electronically in a format acceptable to New York.

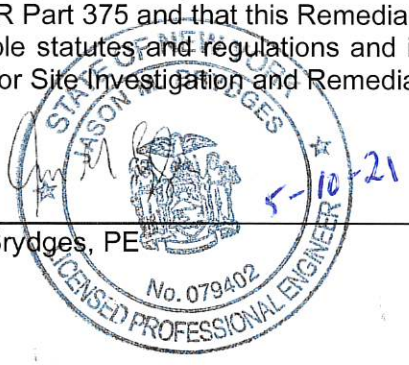
All soil confirmation samples and groundwater samples collected during remediation will be submitted to Environmental Data Usability (EDU), a third-party data validation company, for preparation and submission of Data Usability Summary Reports (DUSRs). BE3 will prepare Electronic Data Deliverables (EDDs) for all samples that incorporate laboratory and DUSR data. The EDDs will be submitted to the NYSDEC for uploading to the NYSDEC EQuIS

system.

NYSDEC's project manager will be notified if any confirmation samples do not meet Site SCOs to determine if additional sampling or remedial work is required.

7.0 WORK PLAN CERTIFICATION

I, Jason M. Brydges, certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Remedial Action Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).



Jason M. Brydges, PE

RI/AAR TABLES

TABLE 1
WELL DEVELOPMENT AND SAMPLING LOG

	Monitoring Well Number				
	MW1	**MW2**	**MW3**	**MW4**	**MW5**
Development Data					
Development Date	1/21/2021	1/21/2021	1/21/2021	1/21/2021	1/21/2021
Time Development Initiated	12:00	12:45	13:30	14:30	15:15
Time Development Completed	12:30	13:20	14:10	15:05	15:45
Measured Depth to Water (ft below TOC)	15.11	10.31	9.79	7.95	9.19
Total Volume Pumped (gallons)	3	5	4	8	5
Development Method	Bailer	Bailer	Bailer	Bailer	Bailer
Water Level Measurement Data					
Date Water Level Measured	1/22/2021	1/22/2021	1/22/2021	1/22/2021	1/22/2021
Time Water Level Measured	9:00	9:05	9:10	9:15	9:20
Measured Depth to Water (ft below TOC)	15.29	10.35	9.93	7.73	10.52
Height of TOC above ground surface (ft)	-0.37	-0.38	-0.36	-0.47	-0.31
Measured Depth to Water (ft bgs)	15.66	10.73	10.29	8.20	10.83
Approx Ground Surface Elevation (ft)	651.6	644.8	645.6	641.9	646.2
Approx Water Level Elevation (ft)	635.94	634.11	635.26	633.70	635.41
Sampling Data					
Date Sampled	1/22/2021	1/22/2021	1/22/2021	1/22/2021	1/22/2021
Time Sampled	11:35	12:00	12:30	13:00	13:25
Measured Depth to Water (ft below TOC)	15.29	10.35	9.93	7.73	10.52
Total Depth of Well (ft below TOC)	19.10	19.20	16.30	22.80	18
Water Column in Well (ft)	3.81	8.85	6.37	15.07	7.48
Gallons per Foot	0.16	0.16	0.16	0.16	0.16
Water Column Volume (gallons)	0.61	1.42	1.02	2.41	1.20
Total Volume Pumped (gallons)	-	-	-	-	-
Sampling Method	Bailer	Bailer	Bailer	Bailer	Bailer
Diameter of Well Casing	2-inch	2-inch	2-inch	2-inch	2-inch
Water Quality Data					
Date Measured	1/21/2021	1/21/2021	1/21/2021	1/21/2021	1/21/2021
Temperature (°C)	11.7	10.9	11.1	10.9	10.6
pH (Standard Units)	7.30	7.05	7.18	7.11	7.20
Specific Conductivity (µS/cm)	1,117	1,104	953	744	869
Turbidity (NTU)	72.0	>1,000	>1,000	>1,000	>1,000
Remarks		Duplicate Sample MW12			

Notes:
Water quality parameters were measured with a YSI 556 and turbidimeter

- = Not applicable or not measured
TOC = Top of casing
bgs = Below ground surface
ft = Feet
°C = Degrees Celsius
µS/cm = Microsiemens per Centimeter
NTU = Nephelometric Turbidity Units

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS

Parameter Tested	Sample Identification, Approximate Sample Depth in Feet Below Ground Surface, and Sample Date											NYSDEC Soil Cleanup Objectives (SCOs)		
	B1S1 0.3-1	B2S1 0.3-1	B3S1 0.5-2	B4S1 0.1-0.3	B5S2 4-6	B6S1 0.5-2	B7S1 0.5-4	B7S10~ 0.5-4	B8S1 0.1-0.3	B9S1 4-5	B10S1 0.5-4	Unrestricted	Residential	Restricted Residential
	1/7/2021													
METALS (ppm)														
Aluminum	14,700	13,300	-	8,280	11,900	11,700	9,090	9,750	10,000	18,700	10,700	-	-	-
Antimony	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Arsenic	4.45	4.85	-	2.89	6.24	2.72	3.37	4.07	3.11	6.82	6.33	13	16	16
Barium	85.5	44.8	-	55.8	62.3	60.5	62.5	68.8	100	145	91.9	350	350	400
Beryllium	0.235 J	0.234 J	-	ND	0.181 J	0.151	ND	ND	0.424	0.379	0.219 J	7.2	14	72
Cadmium	0.396	0.557	-	0.463	0.586	0.608	0.446	0.529	0.607	0.644	0.684	2.5	2.5	4.3
Calcium	46,500	134,000	-	11,600	30,200	14,000	19,700	19,000	22,700	54,200	18,600	-	-	-
Chromium	16.6	17.3	-	9.65	14.4	14.2	10.8	12.6	9.68	22.9	13.3	30	36	180
Cobalt	8.02	8.11	-	3.69	7.91	5.91	4.56	5.02	4.14	12.5	7.30	-	-	-
Copper	16.6	14.2	-	15.6	15.5	11.8	14.3	16.3	12.7	21.0	24.5	50	270	270
Iron	18,600	16,300	-	9,690	17,300	13,700	11,800	12,400	11,400	24,300	15,700	-	-	-
Lead	49.7	8.37	-	77.0	7.61	33.6	103	138	49.3	10.9	114	63	400	400
Magnesium	14,800	70,900	-	4,290	14,600	7,060	9,690	8,990	4,370	15,000	7,470	-	-	-
Manganese	340	365	-	400	332	410	318	299	500	892	449	1,600	2,000	2,000
Total Mercury	0.0872	0.0357	-	0.220	0.00957	0.104	0.543	0.256	0.168	0.0189	0.395	0.18	0.81	0.81
Nickel	17.4	18.1	-	6.44	16.9	11.8	9.27	10.3	6.79	25.6	14.0	30	140	310
Potassium	3,020	4,650	-	755	2,580	1,710	1,440	1,440	933	4,750	1,790	-	-	-
Selenium	0.807 J	0.995 J	-	2.10	1.59	1.03 J	1.54	1.65	2.27	2.21	2.06	3.9	36	180
Silver	0.700	0.652	-	0.522 J	0.537 J	0.430 J	0.448 J	0.472 J	0.542	0.808	0.695	2	36	180
Sodium	338	303	-	101 J	231	91.7 J	197	199	161	243	108 J	-	-	-
Thallium	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Vanadium	24.7	20.3	-	16.0	22.2	22.1	17.8	19.0	16.8	31.5	20.4	-	-	-
Zinc	71.9	33.0	-	105	71.5	78.8	97.1	113	81.0	62.2	143	109	2,200	10,000
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) (ppm)														
2-Methylnapthalene	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Acenaphthene	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	20	100	100
Anthracene	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	100	100	100
Benzo(a)anthracene	ND	ND	-	ND	ND	ND	ND	0.167 J	ND	ND	0.18 J	1	1	1
Benzo(a)pyrene	ND	ND	-	ND	ND	ND	ND	0.157 J	ND	ND	ND	1	1	1
Benzo(b)fluoranthene	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	1	1	1
Benzo(g,h,i)perylene	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	100	100	100
Benzo(k)fluoranthene	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	0.8	1	3.9
Carbazole	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Chrysene	ND	0.226 J	-	ND	ND	ND	ND	ND	ND	ND	ND	1	1	3.9
Dibenz(a,h)anthracene	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	0.33	0.33	0.33
Dibenzofuran	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Fluoranthene	ND	0.603	-	ND	ND	ND	ND	0.298 J	ND	ND	0.317 J	100	100	100
Fluorene	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	30	100	100
Indeno(1,2,3-cd)pyrene	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	0.5	0.5	0.5
Naphthalene	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	12	100	100
Phenanthrene	ND	0.389	-	ND	ND	ND	ND	ND	ND	ND	0.214 J	100	100	100
Pyrene	ND	0.455	-	ND	ND	ND	ND	0.248 J	ND	ND	0.226 J	100	100	100
1,4-Dioxane	-	-	ND	-	-	-	-	-	ND	-	-	0.1	9.8	13
Other SVOCs	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	Various	Various	Various
Total Reported TICs	1.06	ND	-	3.3	ND	0.952	0.485	0.542	2.74	ND	1.1	-	-	-

Notes: All units in parts per million (ppm)

ND Analyte not detected

4.45 Analyte detected

77.0 Reported concentration greater than or equal to the NYSDEC Unrestricted SCO

J Estimated concentration

~ Duplicate of preceeding sample

- Not applicable or sample not tested for this analyte

TICs Tentatively Identified Compounds

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS

Parameter Tested	Sample Identification, Approximate Sample Depth in Feet Below Ground Surface, and Sample Date											NYSDEC Soil Cleanup Objectives (SCOs)		
	B1S1 0.3-1	B2S1 0.3-1	B3S1 0.5-2	B4S1 0.1-0.3	B5S2 4-6	B6S1 0.5-2	B7S1 0.5-4	B7S10~ 0.5-4	B8S1 0.1-0.3	B9S1 4-5	B10S1 0.5-4	Unrestricted	Residential	Restricted Residential
	1/7/2021													
VOLATILE ORGANIC COMPOUNDS (VOCs) (ppm)														
1,2,4-Trimethylbenzene	ND	ND	-	-	ND	ND	ND	ND	-	ND	**0.00974**	3.6	47	52
1,3,5-Trimethylbenzene	ND	ND	-	-	ND	ND	ND	ND	-	ND	**0.00457 J**	8.4	47	52
Acetone	**0.0235 J**	**0.0223 J**	-	-	**0.0373**	ND	ND	ND	-	ND	ND	0.05	100	100
Ethylbenzene	ND	ND	-	-	ND	ND	ND	ND	-	ND	**0.0122**	1	30	41
n-Butylbenzene	ND	ND	-	-	ND	ND	ND	ND	-	ND	**0.00552**	-	-	-
n-Propylbenzene	ND	ND	-	-	ND	ND	ND	ND	-	ND	**0.00881**	3.9	100	100
Xylenes (mixed)	ND	ND	-	-	ND	ND	ND	ND	-	ND	**0.00600**	0.26	100	100
Other VOCs	ND	ND	-	-	ND	ND	ND	ND	-	ND	ND	Various	Various	Various
Total Reported TICs	ND	ND	-	-	ND	ND	ND	ND	-	**1.65**	**0.321**	-	-	-
CHLORINATED PESTICIDES/CHLORINATED HERBICIDES/POLYCHLORINATED BIPHENYLS (PCBs) (ppm)														
4,4-DDD	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	0.0033	2.6	13
4,4-DDE	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	0.0033	1.8	8.9
4,4-DDT	ND	ND	-	ND	ND	**0.00263 J**	ND	ND	ND	ND	ND	0.0033	1.7	7.9
Aldrin	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	0.005	0.019	0.097
cis-Chlordane	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	0.094	0.91	4.2
delta-BHC	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	0.04	100	100
Dieldrin	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	0.005	0.039	0.2
Endosulfan Sulfate	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	2.4	4.8	24
Endrin	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	0.014	2.2	11
Endrin Aldehyde	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Endrin Ketone	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	0.014	2.2	11
gamma-BHC (Lindane)	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	0.1	0.28	1.3
trans-Chlordane	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Other Pesticides	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	Various	Various	Various
Chlorinated Herbicides	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	Various	Various	Various
Total PCBs	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	0.1	1	1
EMERGING CONTAMINANTS PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) (ppm)														
Perfluorobutanoic Acid (PFBA)	-	-	**0.000033 J**	-	-	-	-	-	**0.000027 J**	-	-	-	-	-
Perfluorooctanoic Acid (PFOA)	-	-	ND	-	-	-	-	-	ND	-	-	0.00066	0.0066	0.033
Perfluorooctanesulfonic Acid (PFOS)	-	-	ND	-	-	-	-	-	ND	-	-	0.00088	0.0088	0.044
Total PFOA/PFOS	-	-	ND	-	-	-	-	-	ND	-	-	0.0015	0.015	0.077
Other PFAS	-	-	ND	-	-	-	-	-	ND	-	-	Various	Various	Various

Notes: All units in parts per million (ppm)
ND Analyte not detected
1.65 Analyte detected
J Estimated concentration
- Not applicable or sample not tested for this analyte
~ Duplicate of preceeding sample
TICs Tentatively Identified Compounds

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS

Parameter Tested	Sample Identification, Approximate Sample Depth in Feet Below Ground Surface, and Sample Date												NYSDEC Soil Cleanup Objectives (SCOs)		
	B11S1 0.5-3.5	B12S1 2-5	B13S1 4-5	B14S1 1.5-6	B15S1 0.2-0.5	B17S1 0.2-0.5	B17S2 9-11	B18S1 0.2-2	B19S1 0.2-0.5	B21S1 5-7	B22S1 1-4	TP1 4-4.5	Unrestricted	Residential	Restricted Residential
	1/7/2021			1/8/2021								2/3/2021			
METALS (ppm)															
Aluminum	10,500	11,900	12,200	7,480	10,400	9,740	2,340	12,200	11,600	3,250	7,920	10,000	-	-	-
Antimony	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Arsenic	6.33	7.15	3.03	4.30	19.3	5.87	1.01	4.77	3.28	1.75	2.44	7.10	13	16	16
Barium	107	109	71.0	60.4	97.7	95.1	8.96	109	66.5	13.0	27.1	969	350	350	400
Beryllium	0.316	0.193 J	0.154 J	ND	0.178 J	ND	ND	0.197 J	ND	ND	ND	ND	7.2	14	72
Cadmium	1.13	0.837	0.662	0.625	0.595	0.720	0.224 J	0.716	0.530	0.287	0.265 J	0.953	2.5	2.5	4.3
Calcium	47,000	18,500	47,800	9,140	26,200	19,100	55,300	10,500	4,800	58,400	8,330	27,400	-	-	-
Chromium	12.8	14.3	15.0	9.95	11.4	11.8	3.53	13.9	14.4	7.13	8.32	15.6	30	36	180
Cobalt	4.48	6.71	7.10	6.50	6.9	6.34	1.67 J	7.73	6.73	2.11	3.63	5.04	-	-	-
Copper	27.0	19.4	15.0	17.5	18.1	17.7	5.50	19.5	15.2	5.64	10.4	26.8	50	270	270
Iron	13,200	14,400	17,800	11,000	17,400	13,500	4,720	15,300	15,900	6,310	8,460	13,300	-	-	-
Lead	166	270	8.64	182	125	178	5.57	196	45.0	5.43	22.7	2,530	63	400	400
Magnesium	6,590	6,970	17,200	3,900	12,600	9,980	20,200	5,390	2,960	24,500	5,150	11,200	-	-	-
Manganese	732	404	366	261	469	405	213	721	189	212	123	358	1,600	2,000	2,000
Total Mercury	ND	0.406	0.00816 J	0.153	0.166	0.331	ND	0.251	67.7	0.00785 J	0.0354	0.189	0.18	0.81	0.81
Nickel	9.62	13.3	16.1	11.1	10.8	10.7	2.85	11.0	11.0	3.77	6.53	13.2	30	140	310
Potassium	1,320	1,760	2,850	1,530	1,500	1,480	624	1,440	1,230	778	870	2,250	-	-	-
Selenium	1.91	2.27	1.04 J	1.31	0.667 J	1.79	0.773 J	2.05	1.71	0.874 J	0.959 J	0.817 J	3.9	36	180
Silver	0.704	0.606 J	0.608	0.418 J	1.11	0.568	ND	0.626	0.455 J	ND	ND	ND	2	36	180
Sodium	222	173	188	93.5 J	121 J	84.2 J	109 J	80.4 J	ND	128 J	106 J	309	-	-	-
Thallium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Vanadium	18.4	21.8	21.9	16.3	19.5	19.9	7.00	23.8	24.8	9.49	14.1	20.5	-	-	-
Zinc	246	146	57.8	120	124	136	43.4	128	79.5	41.8	67.8	822	109	2,200	10,000
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) (ppm)															
2-Methylnapthalene	0.34	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Acenaphthene	0.99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	20	100	100
Anthracene	2.62	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	100	100	100
Benzo(a)anthracene	5.68	ND	ND	0.377	ND	ND	ND	ND	ND	ND	0.502	0.179 J	1	1	1
Benzo(a)pyrene	3.72	ND	ND	0.296 J	ND	ND	ND	ND	ND	ND	0.405	ND	1	1	1
Benzo(b)fluoranthene	3.03	ND	ND	0.251 J	ND	ND	ND	ND	ND	ND	0.378	ND	1	1	1
Benzo(g,h,i)perylene	1.89	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.272 J	ND	100	100	100
Benzo(k)fluoranthene	2.78	ND	ND	0.223 J	ND	ND	ND	ND	ND	ND	0.247 J	ND	0.8	1	3.9
Carbazole	1.59	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Chrysene	3.48	ND	ND	0.333	ND	ND	ND	ND	ND	ND	0.411	0.235 J	1	1	3.9
Dibenz(a,h)anthracene	0.767	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.33	0.33	0.33
Dibenzofuran	0.766	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Fluoranthene	12	ND	ND	0.682	ND	ND	ND	ND	ND	ND	1.31	0.407	100	100	100
Fluorene	11.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.196 J	30	100	100
Indeno(1,2,3-cd)pyrene	2.04	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.291 J	ND	0.5	0.5	0.5
Naphthalene	0.932	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.263 J	12	100	100
Phenanthrene	9.2	ND	ND	0.486	ND	ND	ND	ND	ND	ND	0.525	0.701	100	100	100
Pyrene	6.89	ND	ND	0.509	ND	ND	ND	ND	ND	ND	0.824	0.422	100	100	100
1,4-Dioxane	-	ND	-	-	-	-	-	-	-	-	ND	-	0.1	9.8	13
Other SVOCs	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	Various	Various	Various
Total Reported TICs	25	5.1	ND	0.331	0.72	1.31	ND	2.21	ND	ND	11.7	-	-	-	-

Notes: All units in parts per million (ppm)

ND Analyte not detected

2.01 Analyte detected

0.306 Reported concentration greater than or equal to the NYSDEC Unrestricted SCO

1.21 Reported concentration greater than or equal to the NYSDEC Residential SCO

31.6 Reported concentration greater than or equal to the NYSDEC Restricted Residential SCO

J Estimated concentration

- Not applicable or sample not tested for this analyte

TICs Tentatively Identified Compounds

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS

Parameter Tested	Sample Identification, Approximate Sample Depth in Feet Below Ground Surface, and Sample Date												NYSDEC Soil Cleanup Objectives (SCOs)		
	B11S1 0.5-3.5	B12S1 2-5	B13S1 4-5	B14S1 1.5-6	B15S1 0.2-0.5	B17S1 0.2-0.5	B17S2 9-11	B18S1 0.2-2	B19S1 0.2-0.5	B21S1 5-7	B22S1 1-4	TP1 4-4.5	Unrestricted	Residential	Restricted Residential
	1/7/2021			1/8/2021								2/3/2021			
VOLATILE ORGANIC COMPOUNDS (VOCs) (ppm)															
1,2,4-Trimethylbenzene	ND	ND	ND	ND	-	-	ND	ND	-	ND	ND	**2.04**	3.6	47	52
1,2-Dichlorobenzene	ND	ND	ND	ND	-	-	ND	ND	-	ND	ND	**0.166**	1.1	100	100
1,3,5-Trimethylbenzene	ND	ND	ND	ND	-	-	ND	ND	-	ND	ND	**0.0993**	8.4	47	52
1,4-Dichlorobenzene	ND	ND	ND	ND	-	-	ND	ND	-	ND	ND	**0.0753**	1.8	9.8	13
Acetone	ND	**0.0478**	**0.0228 J**	ND	-	-	ND	ND	-	ND	**0.133**	ND	0.05	100	100
Benzene	ND	ND	ND	ND	-	-	ND	ND	-	ND	ND	**0.0186 J**	0.06	2.9	4.8
Cyclohexane	ND	ND	ND	ND	-	-	ND	ND	-	ND	ND	**0.302**	-	-	-
Ethylbenzene	ND	ND	ND	ND	-	-	ND	ND	-	ND	ND	**0.0548**	1	30	41
Isopropylbenzene	ND	ND	ND	ND	-	-	ND	ND	-	ND	ND	**0.484**	-	-	-
Mehylcyclohexane	ND	ND	ND	ND	-	-	ND	ND	-	ND	ND	**1.63**	-	-	-
n-Butylbenzene	ND	ND	ND	ND	-	-	ND	ND	-	ND	ND	**1.23**	12	100	100
n-Propylbenzene	ND	ND	ND	ND	-	-	ND	ND	-	ND	ND	**1.18**	3.9	100	100
p-Isopropyltoluene	ND	ND	ND	ND	-	-	ND	ND	-	ND	ND	**0.106**	-	-	-
sec-Butylbenzene	ND	ND	ND	ND	-	-	ND	ND	-	ND	ND	**0.403**	11	100	100
Xylenes (mixed)	ND	ND	ND	ND	-	-	ND	ND	-	ND	ND	**0.405**	0.26	100	100
Other VOCs	ND	ND	ND	ND	-	-	ND	ND	-	ND	ND	ND	Various	Various	Various
Total Reported TICs	ND	ND	ND	ND	-	-	ND	ND	-	ND	ND	-	-	-	-
CHLORINATED PESTICIDES/CHLORINATED HERBICIDES/POLYCHLORINATED BIPHENYLS (PCBs) (ppm)															
4,4-DDD	ND	ND	ND	**0.00301 J**	ND	ND	ND	ND	ND	ND	ND	ND	0.0033	2.6	13
4,4-DDE	**0.00392**	ND	ND	**0.00279 J**	ND	ND	ND	ND	ND	ND	ND	**0.00307 J**	0.0033	1.8	8.9
4,4-DDT	**0.00790**	ND	ND	**0.0291**	ND	**0.00243 J**	ND	ND	ND	ND	ND	ND	0.0033	1.7	7.9
Aldrin	**0.00236 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.005	0.019	0.097
beta-BHC	ND	ND	ND	**ND**	ND	ND	ND	ND	ND	ND	ND	**0.00656**	0.09	0.072	0.36
cis-Chlordane	ND	ND	ND	**0.00205 J**	ND	ND	ND	ND	ND	ND	ND	ND	0.094	0.91	4.2
delta-BHC	**0.00318**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.04	100	100
Dieldrin	ND	ND	ND	**0.00750**	ND	ND	ND	ND	ND	ND	ND	ND	0.005	0.039	0.2
Endosulfan Sulfate	ND	ND	ND	**0.0185**	ND	ND	**ND**	ND	ND	ND	ND	ND	2.4	4.8	24
Endrin	**0.00218 J**	ND	ND	**0.00362**	ND	ND	ND	ND	ND	ND	ND	ND	0.014	2.2	11
Endrin Aldehyde	ND	ND	ND	**0.0138**	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Endrin Ketone	**0.00862**	ND	ND	**0.00984**	ND	ND	ND	ND	ND	ND	ND	ND	0.014	2.2	11
gamma-BHC (Lindane)	**0.00706**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.00542**	0.1	0.28	1.3
Heptachlor	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.00303 J**	0.38	0.42	2.1
Heptachlor Epoxide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.00423**	-	-	-
trans-Chlordane	ND	ND	ND	**0.00153 J**	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Other Pesticides	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	Various	Various	Various
Chlorinated Herbicides	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	Various	Various	Various
Total PCBs	**0.0352**	ND	ND	**0.470**	ND	ND	ND	ND	ND	ND	ND	ND	0.1	1	1
EMERGING CONTAMINANTS PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) (ppm)															
Perfluorobutanoic Acid (PFBA)	-	ND	-	-	-	-	-	-	-	-	ND	-	-	-	-
Perfluorooctanoic Acid (PFOA)	-	ND	-	-	-	-	-	-	-	-	ND	-	0.00066	0.0066	0.033
Perfluorooctanesulfonic Acid (PFOS)	-	ND	-	-	-	-	-	-	-	-	ND	-	0.00088	0.0088	0.044
Total PFOA/PFOS	-	ND	-	-	-	-	-	-	-	-	ND	-	0.0015	0.015	0.077
Other PFAS	-	ND	-	-	-	-	-	-	-	-	ND	-	Various	Various	Various

Notes: All units in parts per million (ppm)
ND Analyte not detected
2.01 Analyte detected
0.306 Reported concentration greater than or equal to the NYSDEC Unrestricted SCO
J Estimated concentration
- Not applicable or sample not tested for this analyte
TICs Tentatively Identified Compounds

TABLE 3
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

Parameter Tested	Sample Identification, Approximate Groundwater Depth Below Top of Casing, and Sample Date							NYSDEC TOGS 1.1.1 GA
	MW1 15.29	MW2 10.35	MW12~ 10.35	MW3 9.93	MW4 7.73	MW5 10.52	Trip Blank TBF	
	1/22/2021							
METALS (mg/L)								
Arsenic	**0.00901 J**	**0.00818 J**	ND	ND	ND	ND	-	0.025
Barium	**0.263**	**0.379**	**0.372**	**0.231**	**0.219**	**0.216**	-	1
Calcium	**150**	**170**	**168**	**115**	**123**	**144**	-	-
Magnesium	**84.2**	**62.9**	**63.3**	**30.4**	**41.8**	**31.3**	-	35
Manganese	**0.125**	**0.0597**	**0.0664**	**0.0683**	**0.0673**	**0.0430**	-	0.3
Potassium	**25.0**	**29.4**	**25.5**	**5.17**	**7.62**	**8.06**	-	-
Sodium	**533**	**242**	**268**	**23.4**	**87.8**	**58.7**	-	20
Other Metals	ND	ND	ND	ND	ND	ND	-	Various
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) (mg/L)								
2-Methylnapthalene	**0.0165**	ND	ND	ND	ND	ND	-	-
Naphthalene	**0.0768**	ND	ND	ND	ND	**0.00959 J**	-	0.01
1,4-Dioxane	-	ND	-	-	ND	ND	-	-
Other SVOCs	ND	ND	ND	ND	ND	ND	-	Various
Total Reported TICs	**0.498**	**0.515**	**0.626**	**0.417**	**0.326**	**0.239**	-	-
VOLATILE ORGANIC COMPOUNDS (VOCs) (mg/L)								
1,2,4-Trimethylbenzene	ND	**0.172**	**0.175**	ND	ND	**0.00195 J**	ND	0.005
1,3,5-Trimethylbenzene	ND	**0.0334**	**0.0343**	ND	ND	ND	ND	0.005
Acetone	**0.00923 J**	ND	ND	**0.0767**	ND	**0.0399**	ND	0.05
Cyclohexane	ND	**0.0903**	**0.0938**	ND	ND	ND	ND	-
Ethylbenzene	ND	**0.0701**	**0.0698**	ND	ND	ND	ND	0.005
Isopropylbenzene	ND	**0.0128**	**0.0128**	ND	ND	ND	ND	0.005
Methylcyclohexane	ND	**0.0881**	**0.0910**	ND	ND	ND	ND	-
n-Butylbenzene	ND	**0.00537**	**0.00539**	ND	ND	**0.00408**	ND	0.005
n-Propylbenzene	ND	**0.0403**	**0.0402**	ND	ND	ND	ND	0.005
sec-Butylbenzene	ND	**0.00172 J**	**0.00167 J**	ND	ND	ND	ND	0.005
Toluene	ND	**0.00366**	**0.00350**	ND	ND	ND	ND	0.005
Trichloroethene (TCE)	ND	ND	ND	ND	ND	ND	ND	0.005
m,p-Xylene	ND	**0.24**	**0.246**	ND	ND	ND	ND	0.01
o-Xylene	ND	**0.0127**	**0.0129**	ND	ND	ND	ND	0.005
Other VOCs	ND	ND	ND	ND	ND	ND	ND	Various
Total Reported TICs	**3.78**	**2.16**	**2.17**	**0.00904**	ND	**0.472**	ND	-
CHLORINATED PESTISIDES/CHLORINATED HERBICIDES/POLYCHLORINATED BIPHENYLS (PCBs) (mg/L)								
Pestisides	ND	ND	ND	ND	ND	ND	-	Various
Herbicides	ND	ND	ND	ND	ND	ND	-	Various
Total PCBs	ND	ND	ND	ND	ND	ND	-	0.005

Notes: All units in milligrams per liter (mg/L)

NYSDEC New York State Department of Environmental Conservation

TOGS Technical and Operational Guidance Series

ND Analyte not detected

1.19 Analyte detected

1.23 Analyte exceeds NYSDEC TOGS guidance value

J Estimated concentration

- Not applicable or sample not analyzed for this analyte

~ Duplicate of Sample MW2

TABLE 3
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

Parameter Tested	Sample Identification, Approximate Groundwater Depth Below Top of Casing, and Sample Date							NYSDEC Sampling, Analysis, and Assessment of PFAS Guidance
	MW1 15.29	MW2 10.35	MW12~ 10.35	MW3 9.93	MW4 7.73	MW5 10.52	Trip Blank TBF	
	1/22/2021							
EMERGING CONTAMINANTS PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) (ppt)								
Perfluorobutanoic Acid (PFBA)	-	**2.97**	-	-	**3.76**	**3.16**	-	100
Perfluoropentanoic Acid (PFPeA)	-	**1.90**	-	-	**1.28 J**	**2.30**	-	100
Perfluorobutanesulfonic Acid (PFBS)	-	**0.416 J**	-	-	**0.256 J**	**0.874 J**	-	100
Perfluorohexanoic Acid (PFHxA)	-	**1.82**	-	-	**1.27 J**	**1.98**	-	100
Perfluoroheptanoic Acid (PFHpA)	-	**0.629 J**	-	-	**0.398 J**	**0.904 J**	-	100
Perfluorohexanesulfonic Acid (PFHxS)	-	ND	-	-	ND	ND	-	100
Perfluorooctanoic Acid (PFOA)	-	**1.69 J**	-	-	**0.902 J**	**2.06**	-	10
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	-	ND	-	-	ND	ND	-	100
Perfluoroheptanesulfonic Acid (PFHpS)	-	ND	-	-	ND	ND	-	100
Perfluorononanoic Acid (PFNA)	-	**0.336 J**	-	-	ND	**0.385 J**	-	100
Perfluorooctanesulfonic Acid (PFOS)	-	**0.528 J**	-	-	ND	**0.563 J**	-	10
Perfluorodecanoic Acid (PFDA)	-	ND	-	-	ND	**0.470 J**	-	100
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	-	ND	-	-	ND	ND	-	100
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	-	ND	-	-	ND	**1.84 J**	-	100
Perfluoroundecanoic Acid (PFUnA)	-	ND	-	-	ND	**0.533 J**	-	100
Perfluorodecanesulfonic Acid (PFDS)	-	ND	-	-	ND	ND	-	100
Perfluorooctanesulfonamide (FOSA)	-	ND	-	-	ND	ND	-	100
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA).	-	ND	-	-	ND	ND	-	100
Perfluorododecanoic Acid (PFDoA)	-	ND	-	-	ND	ND	-	100
Perfluorotridecanoic Acid (PFTrDA)	-	ND	-	-	ND	**0.392 J**	-	100
Perfluorotetradecanoic Acid (PFTA)	-	ND	-	-	ND	ND	-	100
Total PFOA/PFOS	-	**2.22 J**	-	-	**0.902 J**	**2.62 J**	-	20
Total PFAS	-	**10.3**	-	-	**7.87**	**15.5**	-	500

Notes: All PFAS units are in parts per trillion (ppt)
NYSDEC New York State Department of Environmental Conservation
TOGS Technical and Operational Guidance Series
ND Analyte not detected
2.97 Analyte detected
J Estimated concentration
~ Duplicate of Sample MW2

TABLE 4
BORING, WELL, AND TEST PIT GPS COORDINATES

Number	Latitude	Longitude
Borings		
B1	42.903306	-78.863924
B2	42.903009	-78.863953
B3	42.902865	-78.863511
B4	42.902916	-78.863171
B5	42.903029	-78.862713
B6	42.903404	-78.862739
B7	42.903496	-78.862941
B8	42.903633	-78.862759
B9	42.903793	-78.862774
B10	42.90375	-78.862944
B11	42.903844	-78.862987
B12	42.903716	-78.863163
B13	42.903866	-78.863188
B14	42.903859	-78.863626
B15	42.903665	-78.863839
B16	42.903626	-78.863591
B17	42.903532	-78.863187
B18	42.903373	-78.863217
B19	42.903286	-78.683239
B20	42.903246	-78.863715
B21	42.903399	-78.863621
B22	42.903416	-78.863903
Monitoring Wells		
MW1	42.902894	-78.862806
MW2	42.90375	-78.862869
MW3	42.903367	-78.863464
MW4	42.903839	-78.863789
MW5	42.902933	-78.863822
Test Pits		
T1	42.903583	-78.862739
T2	42.903589	-78.862828
T3	42.903753	-78.862808
T4	42.903872	-78.862864
T5	42.903661	-78.862722
T6	42.903575	-78.862939

TABLE 5
GROUNDWATER ELEVATIONS

Well No.	Date Measured	Top of Well Casing Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (ft)
MW1	1/22/2021	651.23	15.29	635.94
MW2	1/22/2021	644.46	10.35	634.11
MW3	1/22/2021	645.19	9.93	635.26
MW4	1/22/2021	641.43	7.73	633.7
MW5	1/22/2021	645.93	10.52	635.41

RI/AAR FIGURES

N

BE3CORP
BRYDGES ENGINEERING IN ENVIRONMENT & ENERGY
960 Busti Avenue
Suite B150
Buffalo, NY 14213
P: 716-362-6532

Figure 1
Site Location Map

Fomer Pilgrim Village
Family Apartments
Site # C915362
Buffalo, New York 14209

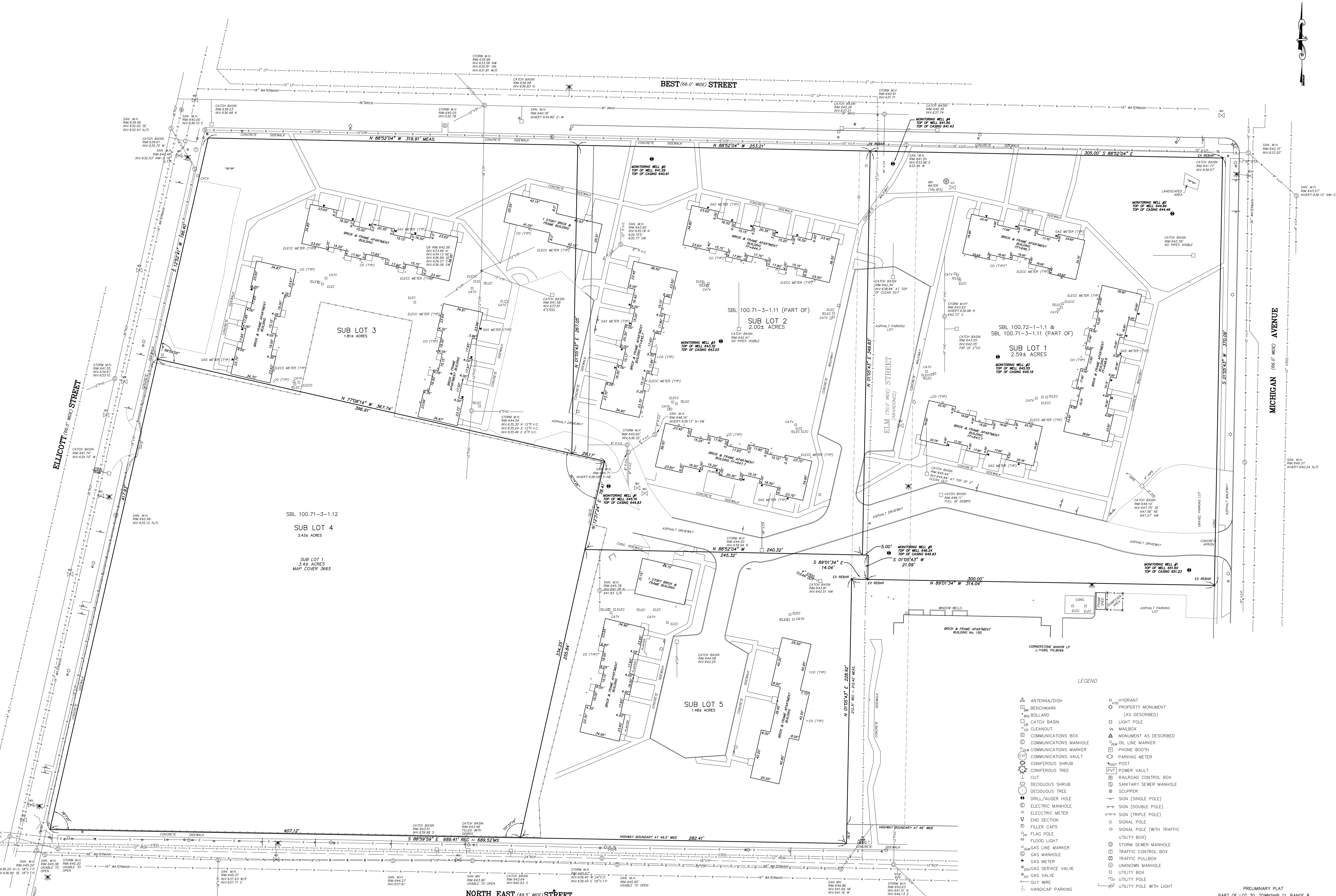
Revisions	
1	3/1/21

April 2021 | SCALE: N/A | SHEET 1 OF 1

NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE.

● SET OR EX. 5/8" REBAR

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF SECTION 7209 PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW.



TOTAL SUBDIVISION LOT AREA = 11.31± ACRES

LEGEND

- ANTENNA/DISH
- BENCHMARK
- BOLLARD
- CATCH BASIN
- CLEANOUT
- COMMUNICATIONS BOX
- COMMUNICATIONS MANHOLE
- COMMUNICATIONS MARKER
- COMMUNICATIONS VAULT
- CONIFEROUS SHRUB
- CONIFEROUS TREE
- CUT
- DECIDUOUS SHRUB
- DECIDUOUS TREE
- DRILL/AUGER HOLE
- ELECTRIC MANHOLE
- ELECTRIC METER
- END SECTION
- FILLER CAPS
- FLAG POLE
- FLOOD LIGHT
- GAS LINE MARKER
- GAS MANHOLE
- GAS METER
- GAS SERVICE VALVE
- GAS VALVE
- GUY WIRE
- HANDICAP PARKING
- HYDRANT
- PROPERTY MONUMENT (AS DESCRIBED)
- LIGHT POLE
- MAILBOX
- MONUMENT AS DESCRIBED
- OIL LINE MARKER
- PHONE BOOTH
- PARKING METER
- POST
- POWER VAULT
- RAILROAD CONTROL BOX
- SANITARY SEWER MANHOLE
- SCUPPER
- SIGN (SINGLE POLE)
- SIGN (DOUBLE POLE)
- SIGN (TRIPLE POLE)
- SIGNAL POLE
- SIGNAL POLE (WITH TRAFFIC UTILITY BOX)
- STORM SEWER MANHOLE
- TRAFFIC CONTROL BOX
- TRAFFIC PULLBOX
- UNKNOWN MANHOLE
- UTILITY BOX
- UTILITY POLE
- UTILITY POLE WITH LIGHT

UTILITIES

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING RECORD DRAWINGS PROVIDED TO THE SURVEYOR. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. ADDITIONAL BURIED UTILITIES/STRUCTURES MAY BE ENCOUNTERED. NO EXCAVATIONS WERE MADE DURING THE PROGRESS OF THIS SURVEY TO SUBSTANTIATE BURIED UTILITIES AND STRUCTURES. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED, ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. BEFORE EXCAVATIONS ARE BEGUN, THE APPROPRIATE AGENCIES SHOULD BE CONTACTED FOR VERIFICATION OF UTILITY TYPE AND FOR FIELD LOCATIONS.

STATE OF NEW YORK — MARK J. ANDREWS — EXCELSIOR — 050455 — LICENSED LAND SURVEYOR

NOTES

1. VERTICAL CONTROL BASED UPON CITY OF BUFFALO DATUM
2. HORIZONTAL CONTROL GPS DERIVED NAD '83 (2011), NY WEST ZONE TRUE NORTH 78°35' MERIDIAN OF WEST LONGITUDE

DATE	REVISION/TYPE
8/31/20	REVISED LOT SIZES

0 30 60 90

SCALE: 1" = 30'

PRELIMINARY PLAT

PART OF LOT 30, TOWNSHIP 11, RANGE 8

HOLLAND LAND SURVEY

CITY OF BUFFALO, ERIE COUNTY, NEW YORK

GPI ENGINEERING, LANDSCAPE ARCHITECTURE & SURVEYING, LLP

ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

4950 GENESEE STREET, SUITE 100

BUFFALO, NEW YORK 14225

(716) 633-4844 FAX 633-4940

Job No. 8260 Date: JUNE 1, 2020

Scale: 1" = 30' TAX No. 100.71-3-1.11 & 1.12

BEST STREET

MICHIGAN AVENUE

Historic Gas Station Location (See Figure 6)

B12S1 (2'-5')	
Lead	270 ppm
Mercury	0.406 ppm
Zinc	146 ppm

B10S1 (0.5'-4')	
Lead	114 ppm
Mercury	0.395 ppm
Zinc	143 ppm

B14S1 (1.5'-6')	
Lead	182 ppm
Zinc	120 ppm
4,4-DDT	0.0291 ppm
Dieldrin	0.0075 ppm
Total PCBs	0.470 ppm

B15S1 (0.2'-0.5')	
Arsenic	19.3 ppm
Lead	125 ppm
Zinc	124 ppm

B11S1 (0.5'-3.5')	
Lead	166 ppm
Zinc	246 ppm
Benzo(a)anthracene	5.68 ppm
Benzo(a)pyrene	3.72 ppm
Benzo(b)fluoranthene	3.03 ppm
Benzo(k)fluoranthene	2.78 ppm
Chrysene	3.48 ppm
Dibenz(a,h)anthracene	0.767 ppm
Indeno(1,2,3-cd)pyrene	2.04 ppm
4,4-DDE	0.00392 ppm
4,4-DDT	0.0079 ppm

B7S1 (0.5'-4')	
Lead	138 ppm
Mercury	0.543 ppm
Zinc	113 ppm

B17S1 (0.2'-0.5')	
Lead	178 ppm
Mercury	0.331 ppm
Zinc	136 ppm

B18S1 (0.2'-2')	
Lead	196 ppm
Mercury	0.251 ppm
Zinc	128 ppm

B22S1 (1'-4')	
Acetone	0.133 ppm

B19S1 (0.2'-0.5')	
Mercury	67.7 ppm

B4S1 (0.3'-1')	
Lead	77 ppm
Mercury	0.220 ppm

LEGEND

- APPROXIMATE SITE BOUNDARY
- SB16 — JUNE 2019 C&S SOIL SAMPLE LOCATIONS
- BH-2 — MARCH 2020 BE3 SOIL BORING LOCATIONS
- GEOPHYSICAL SURVEY AREA
- B-1 — JANUARY 2021 BE3 RI SOIL BORING LOCATIONS, DEPTH OF SOIL SAMPLE, & ANALYTICAL RESULTS EXCEEDING NYSDEC SCOs
- Contaminant — LEVELS GREATER THAN OR EQUAL TO NYSDEC UNRESTRICTED SCOs
- Contaminant — LEVELS GREATER THAN OR EQUAL TO NYSDEC RESTRICTED RESIDENTIAL SCOs
- Contaminant — LEVELS GREATER THAN OR EQUAL TO NYSDEC RESIDENTIAL SCOs
- MW5 — RI MONITORING WELL LOCATIONS

N

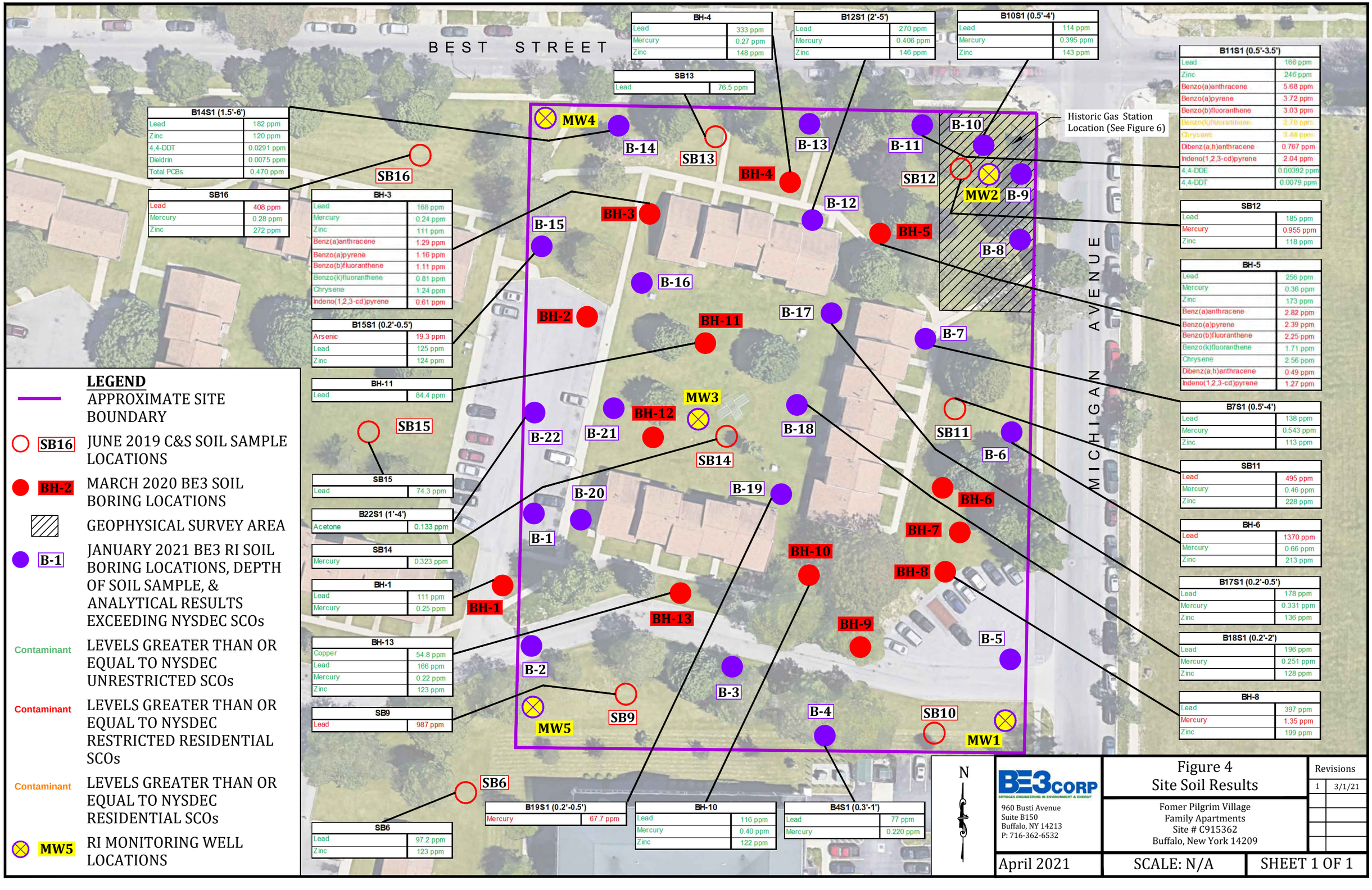
BE3CORP
BRIDGES ENGINEERING IN ENVIRONMENT & ENERGY
960 Busti Avenue
Suite B150
Buffalo, NY 14213
P: 716-362-6532

Figure 3
RI Soil Sample Locations

Fomer Pilgrim Village
Family Apartments
Site # C915362
Buffalo, New York 14209

Revisions	
1	3/1/21

April 2021 | SCALE: N/A | SHEET 1 OF 1



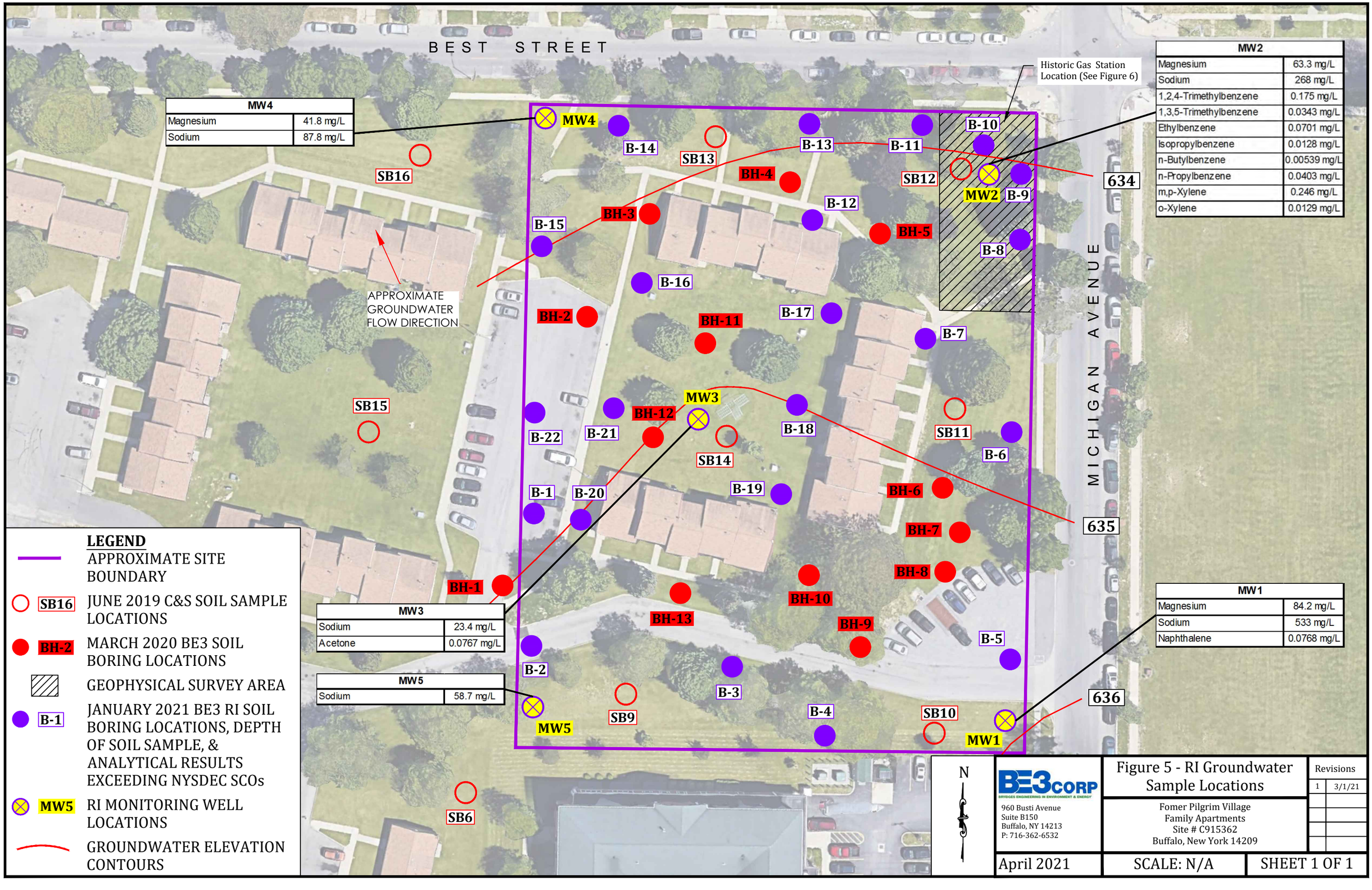
BE3CORP
BROWNFIELDS ENGINEERING IN ENVIRONMENT & ENERGY
960 Busti Avenue
Suite B150
Buffalo, NY 14213
P: 716-362-6532

Figure 4
Site Soil Results

Fomer Pilgrim Village
Family Apartments
Site # C915362
Buffalo, New York 14209

Revisions	
1	3/1/21

April 2021 | SCALE: N/A | SHEET 1 OF 1



MW4	
Magnesium	41.8 mg/L
Sodium	87.8 mg/L

MW2	
Magnesium	63.3 mg/L
Sodium	268 mg/L
1,2,4-Trimethylbenzene	0.175 mg/L
1,3,5-Trimethylbenzene	0.0343 mg/L
Ethylbenzene	0.0701 mg/L
Isopropylbenzene	0.0128 mg/L
n-Butylbenzene	0.00539 mg/L
n-Propylbenzene	0.0403 mg/L
m,p-Xylene	0.246 mg/L
o-Xylene	0.0129 mg/L

MW3	
Sodium	23.4 mg/L
Acetone	0.0767 mg/L

MW5	
Sodium	58.7 mg/L

MW1	
Magnesium	84.2 mg/L
Sodium	533 mg/L
Naphthalene	0.0768 mg/L

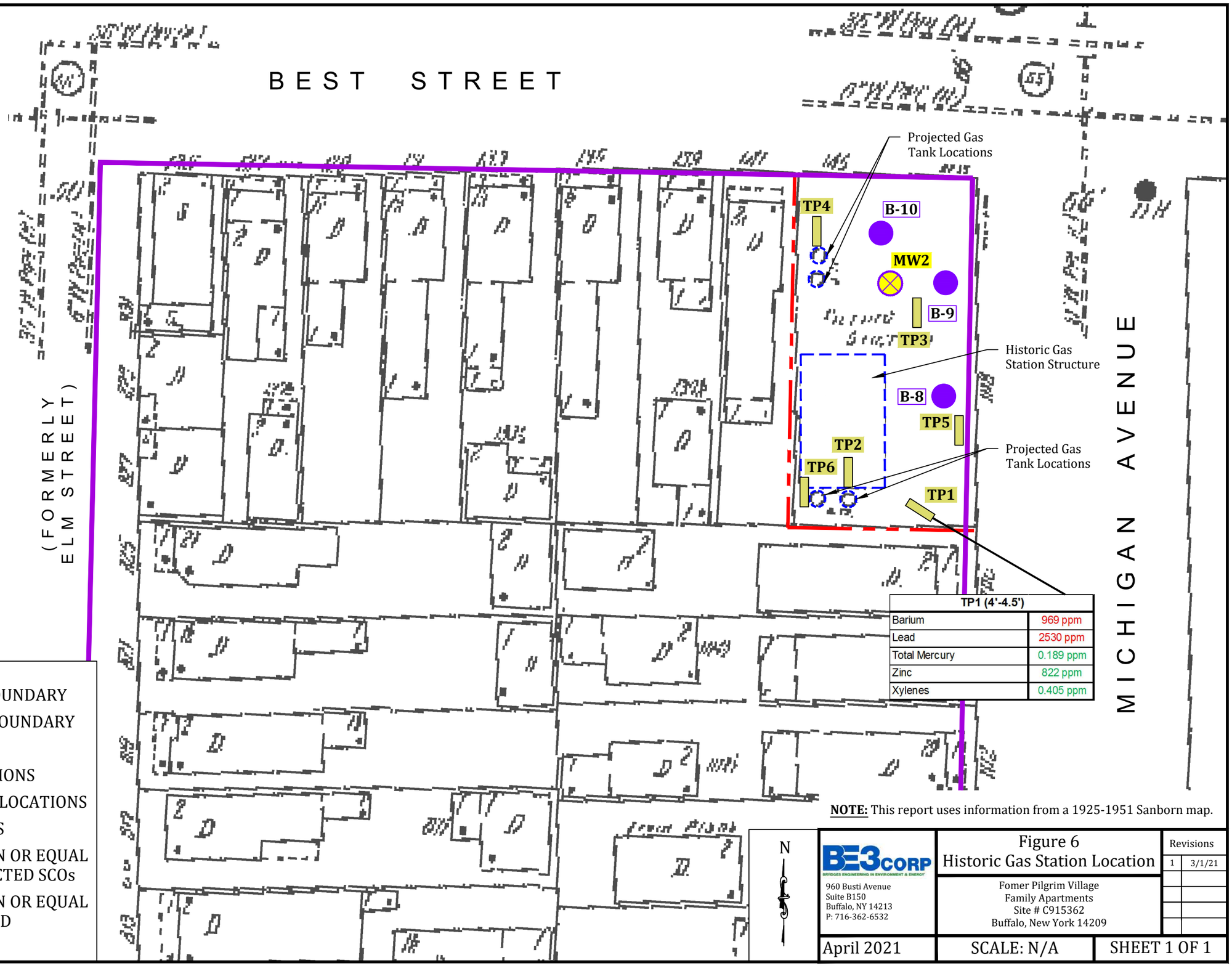
BE3CORP
BRIDGES ENGINEERING IN ENVIRONMENT & ENERGY
960 Busti Avenue
Suite B150
Buffalo, NY 14213
P: 716-362-6532

Figure 5 - RI Groundwater Sample Locations

Fomer Pilgrim Village
Family Apartments
Site # C915362
Buffalo, New York 14209

Revisions	
1	3/1/21

April 2021 | SCALE: N/A | SHEET 1 OF 1



NOTE: This report uses information from a 1925-1951 Sanborn map.

BE3CORP
BRIDGES ENGINEERING IN ENVIRONMENT & ENERGY
960 Busti Avenue
Suite B150
Buffalo, NY 14213
P: 716-362-6532

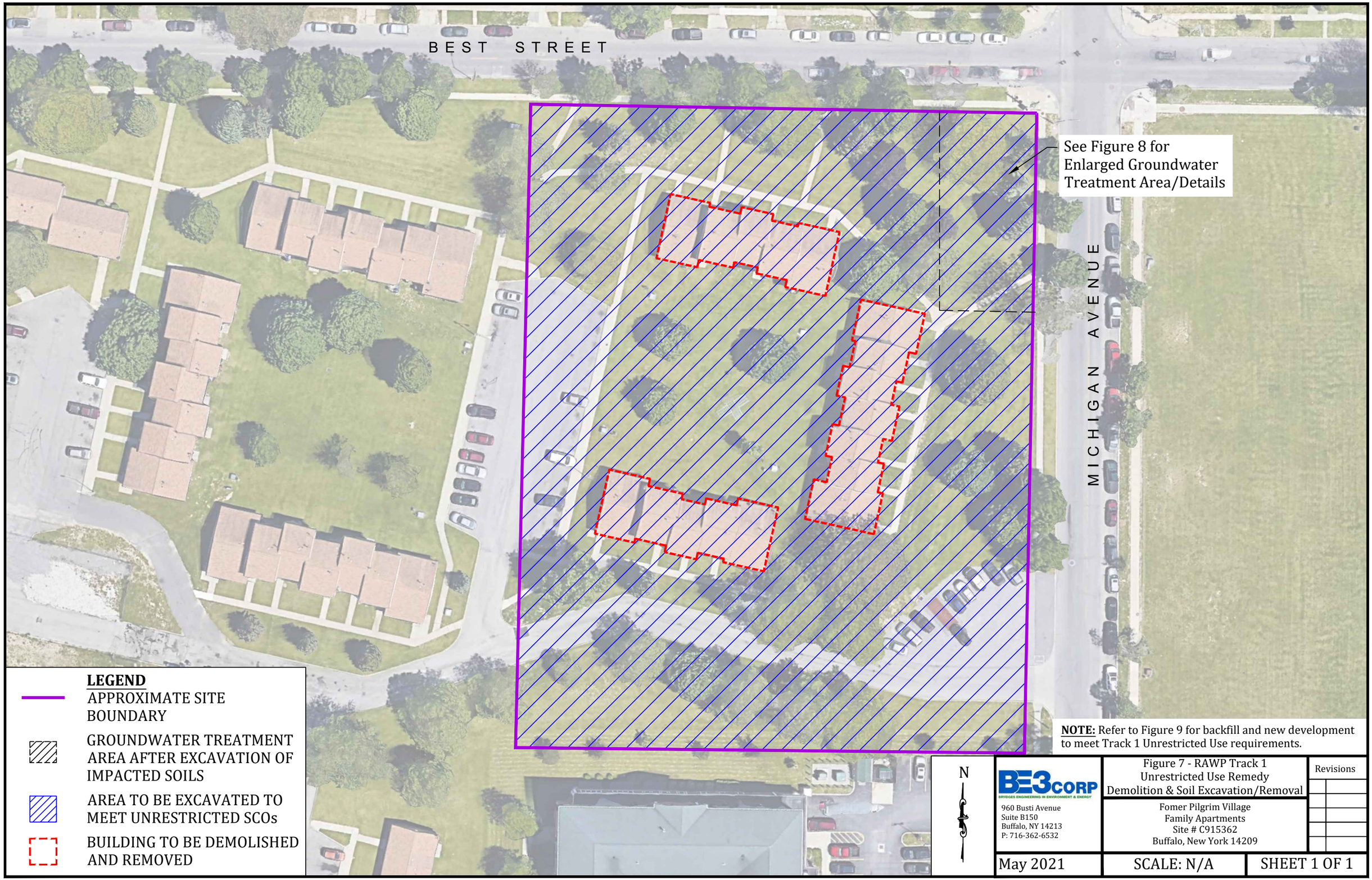
Figure 6
Historic Gas Station Location

Fomer Pilgrim Village
Family Apartments
Site # C915362
Buffalo, New York 14209

Revisions	
1	3/1/21

April 2021 | SCALE: N/A | SHEET 1 OF 1

REMEDY/REDEVELOPMENT FIGURES



BE3CORP
BROWNFIELDS ENGINEERING IN ENVIRONMENT & ENERGY

960 Busti Avenue
Suite B150
Buffalo, NY 14213
P: 716-362-6532

Figure 7 - RAWP Track 1
Unrestricted Use Remedy
Demolition & Soil Excavation/Removal

Fomer Pilgrim Village
Family Apartments
Site # C915362
Buffalo, New York 14209

Revisions

May 2021 | SCALE: N/A | SHEET 1 OF 1

BEST STREET

MICHIGAN AVENUE

MW-R1

MW-R2

MW-R3

MW-R4

MW2

± 100'

± 70'

Former Pilgrim Village
Family Apartments Site

LEGEND

APPROXIMATE SITE BOUNDARY

GROUNDWATER TREATMENT AREA AFTER EXCAVATION OF IMPACTED SOILS

MW2 EXISTING RI MONITORING WELL LOCATION

INJECTION POINTS

MW-R1 POST-TREATMENT MONITORING WELLS

N

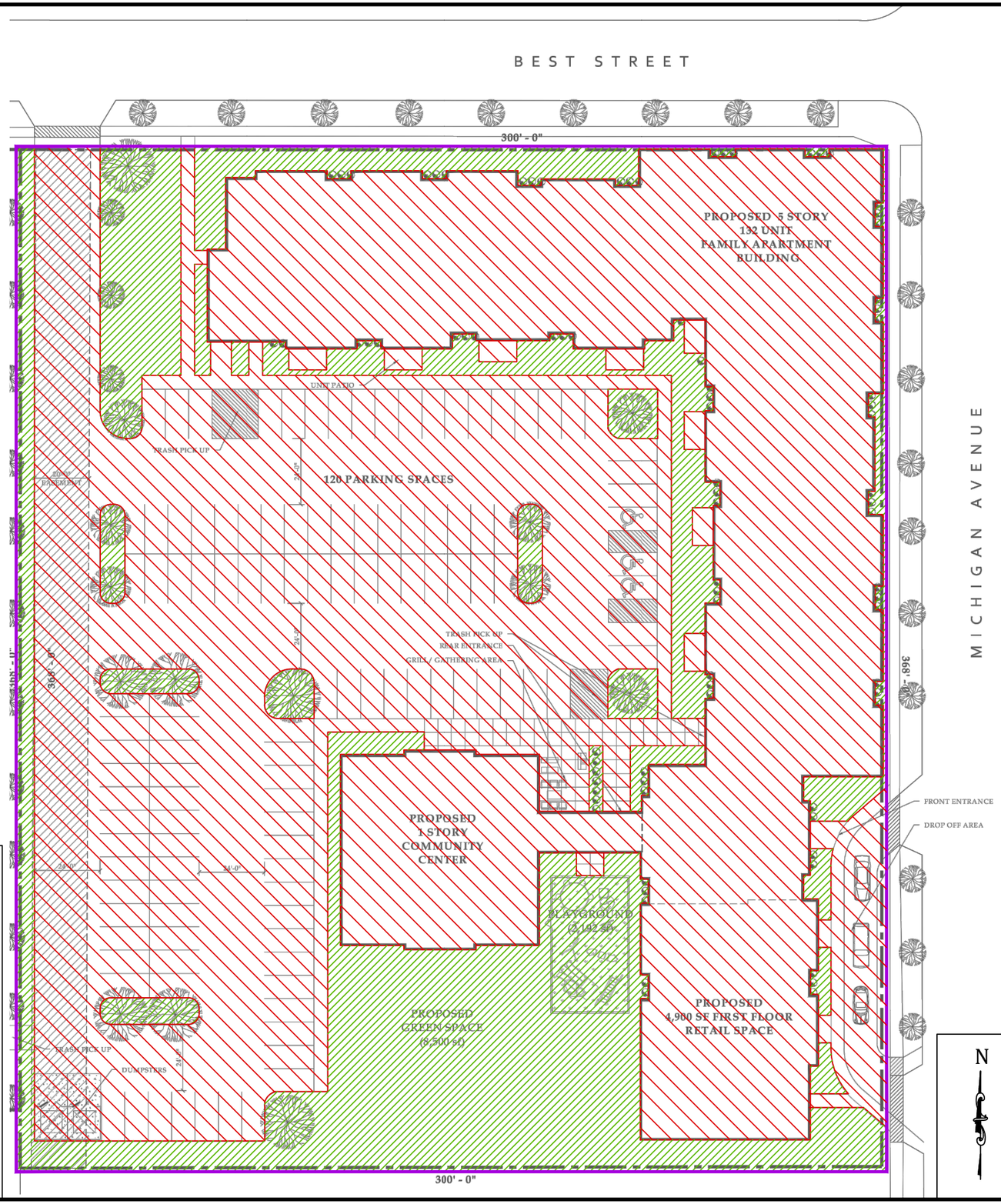
BE3CORP
BRIDGES ENGINEERING IN ENVIRONMENT & ENERGY
960 Busti Avenue
Suite B150
Buffalo, NY 14213
P: 716-362-6532

Figure 8 - RAWP Track 1
Unrestricted Use Remedy
Groundwater Treatment Area

Fomer Pilgrim Village
Family Apartments
Site # C915362
Buffalo, New York 14209

Revisions

May 2021 | SCALE: N/A | SHEET 1 OF 1



LEGEND

APPROXIMATE SITE BOUNDARY

CLEAN SOIL/STONE BACKFILL BENEATH BUILDINGS & HARDSCAPE TO MEET NEW DEVELOPMENT GRADES.

CLEAN SOIL BACKFILL/ TOP SOIL TO MEET NEW DEVELOPMENT GRADES.

N

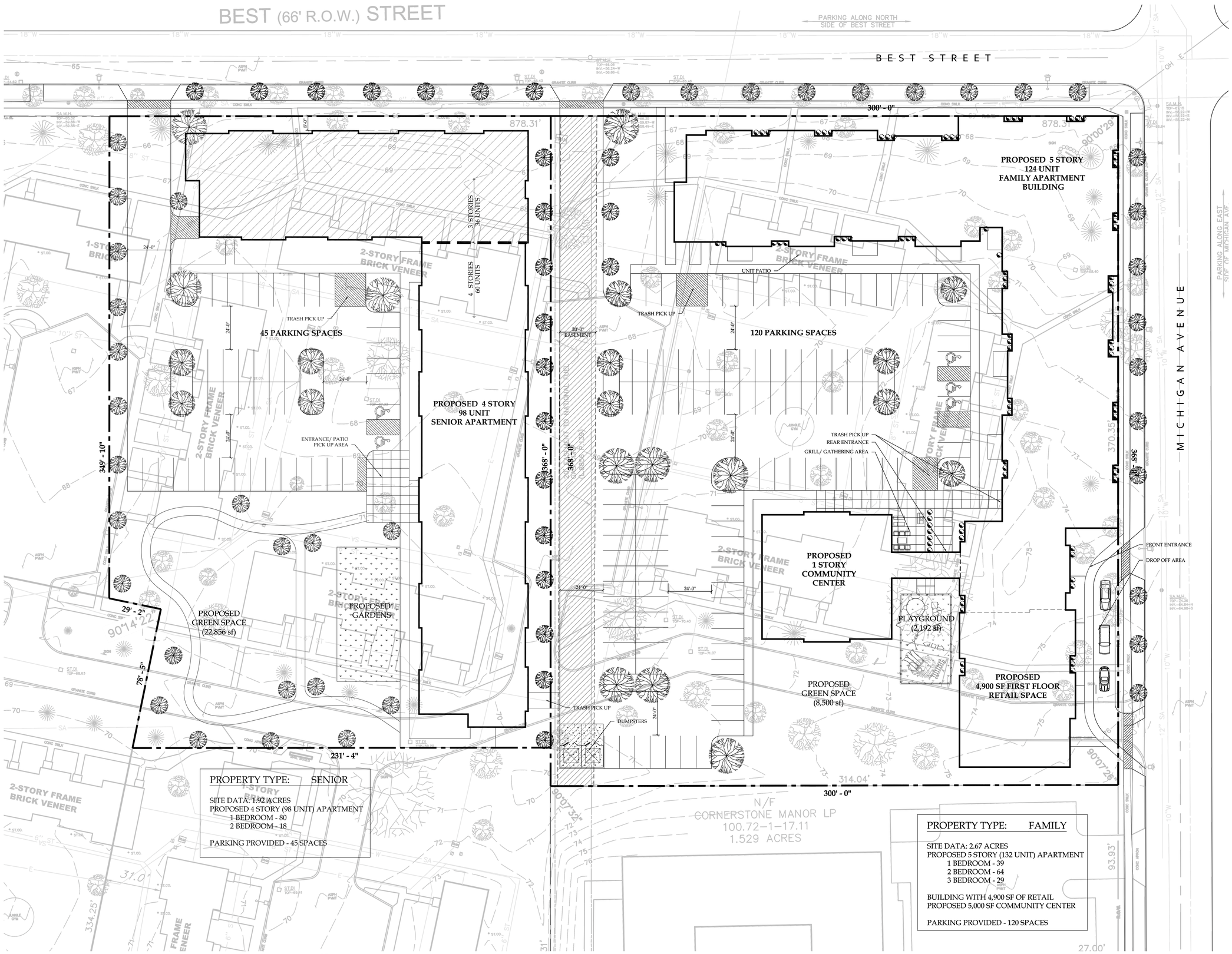
BE3CORP
BRIDGES ENGINEERING IN ENVIRONMENT & ENERGY
960 Busti Avenue
Suite B150
Buffalo, NY 14213
P: 716-362-6532

Figure 9 - RAWP Track 1
Unrestricted Use Remedy
Clean Backfill for New Development

Fomer Pilgrim Village
Family Apartments
Site # C915362
Buffalo, New York 14209

Revisions

May 2021 | SCALE: N/A | SHEET 1 OF 1



PROPERTY TYPE: SENIOR

SITE DATA: 1.92 ACRES
PROPOSED 4 STORY (98 UNIT) APARTMENT
1 BEDROOM - 80
2 BEDROOM - 18

PARKING PROVIDED - 45 SPACES

PROPERTY TYPE: FAMILY

SITE DATA: 2.67 ACRES
PROPOSED 5 STORY (132 UNIT) APARTMENT
1 BEDROOM - 39
2 BEDROOM - 64
3 BEDROOM - 29

BUILDING WITH 4,900 SF OF RETAIL
PROPOSED 5,000 SF COMMUNITY CENTER

PARKING PROVIDED - 120 SPACES

A1 MASTER PLAN
1"=20'-0"

N

SAA|EVI DEVELOPMENT

Pilgrim Village Master Plan

BUFFALO, NY

ISSUE:

SA PROJECT TEAM: PRINCIPAL P. Silvestri
PROJ. ARCH. _____ JOB CAPT. _____
INTERIORS _____ DRAFTER _____

SEAL:

TITLE:

MASTER PLAN

SILVESTRI
ARCHITECTS, PC
1321 MILLERSPORT HWY
AMHERST, NY 14221
PH. 716.691.0900
FAX 716.691.4773

SA JOB #: 20000-00

DATE: 06-23-20

DRAWING #: AS-101

APPENDIX A

HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN
for
SITE INVESTIGATIONS AND REMEDIAL OVERSIGHT

FORMER PILGRIM VILLAGE FAMILY APPARTMENTS
BUFFALO, NEW YORK 14209

NYSDEC SITE #915362

Prepared for:

SAA EVI MC Family, LLC.
150 SE 2nd Avenue, Suite 300
Miami, FL 33131

Prepared by:

BE3CORP
BRYDGES ENGINEERING IN ENVIRONMENT & ENERGY
960 Busti Avenue
Suite B-150
Buffalo, New York 14213

December 2020

Table of Contents

ATTACHMENTS

1.0 INTRODUCTION

The following health and safety procedures apply to BCP project personnel, including subcontractors, performing activities described in the RI Work Plan for the Pilgrim Village Phase 1 Family Site BCP Project. Please note, however, contractors performing remedial work are required to either develop their own plans meeting these requirements at a minimum or adopt this plan.

1.1 PURPOSE

Directed at protecting the health and safety of the field personnel during field activities, the following Health and Safety Plan (HASP) was prepared to provide safe procedures and practices for personnel engaged in conducting the field activities associated with this project. The plan has been developed using the Occupational Safety and Health Administration (OSHA) 1910 and 1926 regulations and NYSDEC Brownfields DER-10 as guidance. The purpose of this HASP is to establish personnel protection standards and mandatory safety practices and procedures for this task specific effort. This plan assigns responsibilities, establishes standard operating procedures, and provides for contingencies that may arise during the field efforts.

1.2 APPLICABILITY

The provisions of the plan are mandatory for all personnel engaged in field activities. All personnel who engage in these activities must be familiar with this plan and comply with its requirements. The plan is based on available information concerning the project area and planned tasks. If more data concerning the project area becomes available that constitute safety concerns, the plan will be modified accordingly. A member of each contractor on the BCP project will be designated as Field Safety Officer and will be responsible for field safety. Any modifications to the plan will be made by the Field Safety Officer after discussion with the Project Manager and Health and Safety Officer. All modifications will be documented and provided to the Project Manager and the Health and Safety Officer for approval. A copy of this plan will be available to all on-site personnel, including subcontractors prior to their initial entry onto the site.

Before field activities begin, all personnel will be required to read the plan. All personnel must agree to comply with the minimum requirements of the plan, be responsible for health and safety, and sign the Statement of Compliance before site work begins.

1.3 FIELD ACTIVITIES

The work addressed by this HASP includes remedial investigation (RI) activities such as assessment of subsurface conditions related to soil and groundwater and oversight activities related to remediation. Field work will be conducted that can include test trenches/soil borings, monitoring well installation, groundwater and soil sampling, building demolition, soil excavation, etc.

1.4 PERSONNEL REQUIREMENTS

Key personnel are as follows:

Health and Safety Officer - Peter J. Gorton, CHCM
Engineer and Project Manager – John Berry, P.E.

Geologist – John Boyd, PG
Technicians – Jesse Zientek, Dalton Stack
QA/QC – Jason Brydges, P.E.

Responsibilities of some of the key personnel are as follows:

Project Manager

- Assuring that personnel are aware of the provisions of the HASP and are proficient in work practices necessary to ensure safety and in emergencies;
- Verifying that the provisions of this plan are implemented;
- Assuring that appropriate personnel protective equipment (PPE), if necessary, is available and properly utilized by all personnel;
- Assuring that personnel are aware of the potential hazards associated with Site operations;
- Supervising the monitoring of safety performance by all personnel and ensuring that required work practices are employed; and,
- Maintaining sign-off forms and safety briefing forms.

Health and Safety Officer:

- Monitoring work practices to determine if potential hazards are present, such as heat/cold stress, safety rules near heavy equipment, etc.;
- Determining changes to work efforts or equipment to ensure the safety of personnel;
- Evaluating on-site conditions and recommend to the Project Manager modifications to work plans needed to maintain personnel safety;
- Determining that appropriate safety equipment is readily available and monitor its proper use;
- Stopping work if unsafe conditions occur or if work is not being performed in compliance with this plan:
- Monitoring personnel performance to ensure that the required safety procedures are followed.
- Documenting incident and reporting to Project Manager within 48 hours of occurrence if established safety rules and practices are violated; and,
- Conducting safety meetings as necessary.

Field Personnel, including geologists and technicians:

- Understanding the procedures outlined in this plan;
- Taking precautions to prevent injury to themselves and co-workers;
- Performing only those tasks believed to be safe;
- Reporting accidents or unsafe conditions to the Health and Safety Officer and Project Manager;
- Notifying the Health and Safety Officer and Project Manager of special medical problems (e.g., allergies, medical restrictions, etc.);
- Thinking about safety first while conducting field work; and,
- Not eating, drinking or smoking in work areas.

All Site personnel has the authority to stop work if conditions are deemed to be unsafe. Visitors will be required to report to the overall Site PM or designee and follow the requirements of this plan and the Contractor's HASP (if different).

2.0 SITE DESCRIPTION AND SAFETY CONCERNS

2.1 SITE BACKGROUND AND DESCRIPTION

The Pilgrim Village Apartment complex is located on the block bounded by Best Street, Michigan Avenue, East North Street and Ellicott Street in Buffalo, New York, (refer to **Figure 1).** The portion that is the subject of this assessment is located at the southwest corner of Best and Michigan Streets. The entire complex has a total area of approximately 7.9 acres and the Phase 1-Site is 2.55-acres. The entire complex is currently occupied by twelve apartment buildings that were constructed sometime prior to 1981. Prior to the apartment complex the property was occupied by dense residential housing with several small shops, from the late 1800s through the mid-1970s. A gasoline filling station was located on the northeast corner parcel at Michigan and Best Streets from at least 1951 through at least the 1960s.

2.2 HAZARD EVALUATION

Specific health and safety concerns to the project tasks include working around low levels of heavy metals, PCBs, SVOCs and VOCs in the soil and groundwater. Physical hazards include those associated with working near open excavations and adjacent to manual/mechanical field equipment. Contractors will have separate detailed health and safety procedures/requirements for excavations and the transportation and disposal of impacted material that will meet or exceed requirements in this plan. A table of potential hazards and OSHA Standards for consideration during investigation and remedial activities is provided in **Attachment 1**.

2.2.1 Chemical Hazards

Chemical hazards detected at the site include metals and organic compounds that were detected in soil samples at elevated concentrations that exceed Part 375 soil cleanup objectives. These compounds could be encountered during the RI and remedial activities and potential routes of exposure include:

- Skin contact;
- Inhalation of vapors or particles;
- Ingestion; and,
- Entry of contaminants through cuts, abrasions or punctures.

The anticipated levels of personnel protection will include Level D PPE that includes the following:

1. Long sleeve shirt and long pants
2. Work boots with steel toe
3. Hard hats when heavy equipment or overhead hazards are present
4. Safety glasses
5. Work gloves and chemical resistant gloves when sampling potentially contaminated materials
6. High visibility vests or outer gear when Site traffic is significant

Modifications may include booties, overalls, hearing protection, or respiratory protection if air monitoring levels indicate sustained PID readings greater than 5 ppm above established background. When these levels are reached, work will be halted pending discussions with field

and office management. If any readings are recorded above background, work will proceed with caution and breathing zone monitoring will be conducted.

2.2.2 Other Physical Hazards

Depending on the time of year, weather conditions or work activity, some of the following physical hazards could result from project activities:

- Noise
- Heat Stress
- Cold Stress
- Slips, trips, and falls
- Exposure to moving machinery during drilling and excavation activities
- Physical eye hazards
- Lacerations and skin punctures
- Back strain from lifting equipment
- Electrical storms and high winds
- Contact with overhead or underground utilities

Slips, Trips, and Falls. Field personnel shall become familiar with the general terrain and potential physical hazards that is associated with the risk of slips, trips, and falls. Special care shall be taken when working near demolition and excavation operations and material stockpiles. Workers will observe all pedestrian and vehicle rules and regulations. Extra caution will be observed while working near roadways and while driving in reverse to ensure safety.

Noise. All personnel shall wear hearing protection devices, such as ear muffs or ear plugs, if work conditions warrant. These conditions would include difficulty hearing while speaking to one another at a normal tone within three feet. If normal speech is interfered with due to work noise, the Health and Safety Officer or designee will mandate the use of hearing protection or other noise-producing equipment or events.

Heat/Cold Stress. Heat stress work modification may be necessary during ambient temperatures of greater than 29° C (85° F) while wearing normal clothing or exceeding 21° C (70° F) while wearing PPE. Because heat stress is one of the most common and potentially serious illnesses at work sites, regular monitoring and preventive measures will be utilized such as additional rest periods, supplemental fluids, restricted consumption of drinks containing caffeine, use of cooling vests, or modification of work practices. Most of the work to be conducted during the oversight and monitoring operations is expected to consist of light manual labor and visual observation. Given the nature of the work and probable temperatures, heat stress hazards are not anticipated. See **Attachment 2** for heat stress management procedures.

If work is to be conducted during winter conditions, cold stress may be a concern to the health and safety of personnel. Wet clothes combined with cold temperatures can lead to hypothermia. If air temperature is less than 40° F (4° C) and a worker perspires, the worker should change to dry clothes. The following summary of the signs and symptoms of cold stress are provided as a guide for field personnel.

1. Incipient frostbite is a mild form of cold stress characterized by sudden blanching or whitening of the skin.
2. Chilblain is an inflammation of the hands and feet caused by exposure to cold moisture. It is characterized by a recurrent localized itching, swelling, and painful inflammation of the fingers, toes, or ears. Such a sequence produces severe spasms,

accompanied by pain.

3. Second-degree frostbite is manifested by skin with a white, waxy appearance and the skin is firm to the touch. Individuals with this condition are generally not aware of its seriousness because the underlying nerves are frozen and unable to transmit signals to warn the body. Immediate first aid and medical treatment are required.
4. Third-degree frostbite will appear as blue blotchy skin. The tissue is cold, pale, and solid. Immediate medical attention is required.
5. Hypothermia develops when body temperature falls below a critical level. In extreme cases, cardiac failure and death may occur. Immediate medical attention is warranted when the following symptoms are observed:
    - Involuntary shivering
    - Irrational behavior
    - Slurred speech
    - Sluggishness

Fire and Explosion. These hazards will be minimal for activities associated with this project. All heavy equipment will be equipped with a fire extinguisher.

Trenching and Excavations. There are a variety of potential health and safety hazards associated with excavations. These include:

- Surface encumbrances, such as structures, fencing, stored materials, etc.;
- Below- and above-ground utilities, such as water and sewer lines, gas lines, telephone lines, and optical cable lines, etc.;
- Overhead power lines and other utilities;
- Vehicle and heavy equipment traffic around the excavations;
- Falling loads from lifting or digging equipment;
- Water accumulation within excavations;
- Hazardous atmospheres, such as oxygen deficiency, flammable gases, and toxic gases;
- Falling into or driving equipment into unprotected or unmarked excavations; and,
- Cave-in of loose rocks and soil at the excavation face.

OSHA requirements for trenching and excavations are contained in 29 CFR, subpart P, 1926:650 thru 1926.652. See **Attachment 3** for details on excavation and trenching safety requirements, which include the following basic minimum excavation requirements:

- Personnel entry into excavations should be minimized whenever possible and no entry will occur in pits greater than 4 feet bgs. Sloping, shoring or equivalent means should be utilized.
- Surface encumbrances such as structures, fencing, piping, stored material etc. that may interfere with safe excavations should be avoided, removed or adequately supported prior to the start of excavations. Support systems should be inspected daily.
- Underground utility locations should be checked and determined, and permits should be obtained prior to initiating excavations. Local utility companies will be contacted at least two days in advance, advised of proposed work, and requested to locate underground installations. When excavations approach the estimated location of utilities, the exact location should be determined by careful probing or hand digging and when it is uncovered, proper supports should be provided.
- A minimum safe distance of 15 feet should be maintained when working around overhead high-voltage lines or the line should be de-energized following appropriate lock-out and tag- out procedures by qualified utility personnel.

- Excavations five feet or more, if entered, will require an adequate means of exit, such as a ladder, ramp, or steps and located to require no more than 25 feet of lateral travel. Under no circumstances should personnel be exited/entered an excavation using heavy equipment.
- Personnel working around heavy equipment, or who may be exposed to public vehicular traffic should wear high visibility clothes, especially at night.
- Heavy equipment or other vehicles operating next to or approaching the edge of an excavation will require that the operator have a clear view of the edge of the excavation, or that warning systems such as barricades, hand or mechanical signals, or stop logs be used. If possible, the surface grade should slope away from the excavation.
- Personnel should be safely located in and around the trench/excavation face and should not work underneath loads handled by lifting or digging equipment.
- Hazardous atmospheres, such as oxygen deficiency (atmospheres containing less than 19.5% oxygen), flammable gases (airborne concentrations greater than 20% of the lower explosive limit), and toxic gases (airborne concentrations above the OSHA Permissible Exposure Limit or other exposure limits) may occur in excavations. Monitoring should be conducted for hazardous atmospheres prior to entry and at regular intervals. Ventilation or respiratory protection may be provided to prevent personnel exposures to oxygen deficient or toxic atmospheres. Periodic retesting (at least each shift) of the excavation will be conducted to verify that the atmosphere is acceptable. A log or field book records should be maintained.
- Personnel should not work in excavations that have accumulated water or where water is accumulating unless adequate precautions have been taken. These precautions can include shield systems, water removal systems, or safety harnesses and lifelines. Groundwater entering the excavation should be properly directed away and down gradient from the excavation.
- Safety harnesses and lifelines should be worn by personnel entering excavations that qualify as confined spaces.
- Excavations near structures should include support systems such as shoring, bracing, or underpinning to maintain the stability of adjoining buildings, walls, sidewalks, or other structures endangered by the excavation operations.
- Loose rock, soil, and spoils should be piled at least two and preferably 5 feet or more from the edge of the excavation. Barriers or other effective retaining devices may be used to prevent spoils or other materials from falling into the excavation.
- Walkways or bridges with standard guardrails that meet OSHA specifications will be provided where employees, the public, or equipment are required to cross over excavations.
- Adequate barrier physical protection should be provided, and excavations should be barricaded or covered when not in use or left unattended. Excavations should be backfilled as soon as possible when completed.
- Safety personnel should conduct inspections prior to the start of work and as needed throughout the work shift and after occurrence that increases the hazard of collapse (i.e., heavy rain, vibration from heavy equipment, freezing and thawing, etc.).
- Personnel working in excavations should be protected from cave-ins by sloping or benching of excavation walls, a shoring system or some other equivalent means in accordance with OSHA regulations. Soil type is important in the determination of the angle of repose for sloping and benching, and the design of shoring systems.

2.2.3 Biological Hazards

Biological hazards can result from encounters with mammals, insects, snakes, spiders, ticks, plants, parasites, and pathogens. Mammals can bite or scratch when cornered or surprised. The bite or scratch can result in local infection with systemic pathogens or parasites. Insect and spider bites can result in severe allergic reactions in sensitive individuals. Exposure to poison ivy, poison oak or poison sumac results in skin rash. Ticks are a vector for several serious diseases. Dead animals, organic wastes, and contaminated soil and water can harbor parasites and pathogens. These hazards are reduced if work is conducted during late fall and winter months. The following are highlighted because they represent more likely concerns for the site-specific tasks and location:

Bees, Ants, Wasps and Hornets. Sensitization by the victim to the venom from repeated stings can result in anaphylactic reactions. If a stinger remains in the skin, it should be removed by teasing or scraping, rather than pulling. An ice cube placed over the sting will reduce pain. An analgesic corticosteroid lotion is often useful. People with known hypersensitivity to such stings should consult with their doctor about carrying a kit containing an antihistamine and aqueous epinephrine in a pre-filled syringe when in endemic areas. Nests and hives for bees, wasps, hornets and yellow jackets often occur in the ground, trees and brush. Before any nests or hives are disturbed, an alternate sampling location should be selected. If the sample location cannot be relocated, site personnel who may have allergic reactions shall not work in these areas.

Ticks. The incidence of Lyme disease is correlated to outdoor workers in areas where the disease is widespread and heightened risk of encountering ticks infected with B. burgdorferi, which varies from state to state, within states, and even within counties. Preventing tick bites is of utmost importance in preventing Lyme disease and other tickborne illnesses. Tick bite prevention strategies include avoidance or clearing of tick-infested habitats and use of personal protective measures (e.g., repellents and protective clothing). Tick checks should be done regularly, and ticks should be removed promptly. If a worker in a high-risk area develops flu-like symptoms (fever, chills, muscle aches, joint pains, neck stiffness, headache) or a bulls-eye rash, they should seek medical attention even if there is no recall of a tick bite. Workers who have experienced a tick bite should remove the tick and seek medical attention if signs and symptoms of tick-borne diseases occur.

Storm Conditions. When lightening is within 10 miles of the work site, all personnel should evacuate to a safe area.

Sun. When working in the sun, personnel should apply appropriate sun screening lotions (30 sun screen or above), and/or wear long sieve clothing and hats.

2.2.4 Activity Hazard Analysis

Table 1 presents a completed activity hazard analysis for the performance of an RI.

Table 1. Activity Hazard Analysis

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS

RI soil/groundwater investigation	Potential exposure to low levels of petroleum products	1. Use of administrative controls (site control and general safety rules), work cloths, dust suppression 2. Use of real-time monitoring and action levels 3. Use Physical Hazards SOPs
EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
Excavation and other heavy equipment, Backhoe or Geoprobe	1. Daily inspection of equipment 2. Continuous safety oversight	1. Safety plan review 2. Routine safety briefings

3.0 MONITORING

The purpose of air monitoring for potential airborne contaminants is to verify that protection levels are suitable. Monitoring will be performed for dust/particulates and volatile organic compounds during excavation activities. Daily background and calibration readings will be recorded prior to the start of field activities. All monitoring equipment used during this investigation will be maintained and calibrated and records of calibration and maintenance will be kept in accordance with 29 CFR 1910.120(b)4(11)E.

3.1 PARTICULATE MONITORING

Real-time air monitoring readings are obtained from upwind and downwind locations in accordance with DER-10 for community air-monitoring plan (refer to **Appendix E** CAMP). Daily field reports will be completed that document activities performed, equipment and manpower onsite, screening and monitoring results, general Site conditions, and weather conditions.

3.2 AIR MONITORING FOR WORKER PROTECTION

Real time air monitoring will be conducted whenever site soils are disturbed during sampling, excavation, grading, etc. A real time personal aerosol monitor (i.e., TSI SidePak AM5 10 Personal Aerosol monitor or equivalent) will be used. This monitor is a laser photometer that measures data as both real-time aerosol mass-concentration and 8-hour time weighted average (TWA). The monitor will be used to measure real-time concentrations in milligrams per meter cubed (mg/m^3). Action levels are based on potential exposure to calcium carbonate and will be as follows:

- 15 mg/m^3 total dust
- 5 mg/m^3 respirable fraction for nuisance dusts

Dust suppression techniques should be employed prior to exceeding the action levels. However, if these levels are exceeded, then work will be halted, and additional dust suppression

techniques employed until safe levels are reached.

3.3 TOTAL VOLATILE ORGANICS MONITORING

Monitoring of VOCs will be conducted using a photo-ionization detector (PID). If a sustained reading of 5 ppm above background occurs, then work will be halted, and personnel will evacuate the work area. Levels will be allowed to stabilize, and another reading will be taken in the breathing zone. If background levels continue to be exceeded, then work will not continue at that location and the project manager will be notified of the situation. Action levels will remain the same.

4.0 SAFE WORKING PRACTICES

The following general safe work practices always apply to a construction site:

- Eating, drinking, chewing gum or tobacco and smoking are prohibited within the work area.
- Contact with potentially contaminated substances should be avoided.
- Puddles, pools, mud, etc. should be avoided if possible.
- Kneeling, leaning, or sitting on equipment or on the ground should be avoided if possible.
- Upon leaving the work area, hands, face and other exposed skin surfaces should be thoroughly washed.
- Unusual site conditions shall be promptly conveyed to the project manager, health and safety officer, or site superintendent for resolution.
- A first-aid kit shall be available at the site.
- Field personnel should use all their senses to alert themselves to potentially dangerous situations (i.e., presence of strong, irritating, or nauseating odors).
- If severe dusty conditions are present, then soils will be dampened to mitigate dust.
- All equipment will be cleaned before leaving the work area.
- Field personnel must attend safety briefings and should be familiar with the physical characteristics of the investigation, including:
    1. Accessibility to personnel, equipment, and vehicles.
    2. Areas of known or suspected contamination.
    3. Site access.
    4. Routes and procedures to be used during emergencies.
- Personnel will perform all investigation activities with a “buddy” who is able to:
    - Provide his or her partner with assistance.
    - Notify management or emergency personnel if needed.
- Excavation activities shall be terminated immediately in event of thunder or electrical storm.
- The use of alcohol or drugs at the site is strictly prohibited.

5.0 PERSONAL SAFETY EQUIPMENT AND SITE CONTROL

5.1 PERSONAL SAFETY EQUIPMENT

As required by OSHA in 29 CFR 1920.132, this plan constitutes a workplace hazard assessment to select personal protective equipment (PPE) to perform the site investigation. The PPE to be donned by on-site personnel during this investigation are those associated with the industry standard of level D. Protective clothing and equipment to initiate the project will include:

- Work clothes, pants and long sleeves
- Work boots with steel toe
- Work gloves as necessary
- Hard hat if work is conducted near equipment
- Safety glasses
- Hearing protection as necessary

Modifications may include chemically resistant gloves, booties, and overalls. If air monitoring indicates levels are encountered that require respiratory protection (sustained readings at or above action levels above a daily established background), then work will be halted, and an adequate resolution of PPE will be made by the health and safety manager, field manager, and project manager.

5.2 SITE CONTROL

Site control will be established near each work zone by the Contractor. The purpose is to control access to the immediate work areas from individuals not associated with the project. All work zones will be fenced off with controlled access and appropriately designated as an exclusion area.

Each excavation or drilling area where heavy equipment is being utilized will be set up as a work zones and include an exclusion area and support zone. Exact configuration of each zone is dependent upon location, weather conditions, wind direction and topography. The Contractor's safety manager will establish the control areas daily at each excavation.

An area of 10 feet (as practical) around each excavation will be designated as the exclusion area. This is the area where potential physical hazards are most likely to be encountered by field personnel. The size of the exclusion area may be altered to accommodate site conditions and the drilling/excavation location. If levels of protection higher than level D are used, this plan will be modified to include decontamination procedure. The Site excavation contractor will be required to have eye/face wash equipment/means available on-site.

A support area will be defined for each field activity where support equipment will be located. Normal work clothes are appropriate within this area. The location of this area depends on factors such as accessibility, wind direction (upwind of the operation.), and resources (i.e., roads, shelter, utilities). The location of this zone will be established daily. Excavation areas will be filled or secured (fencing) to prevent access from the public.

6.0 EMERGENCY INFORMATION

In the event of an emergency, the field personnel or the health and safety manager will employ emergency procedures. A copy of emergency information will be kept in the field and will be reviewed during the initial site briefing. Copies of emergency telephone numbers and directions to the nearest hospital will be prominently posted in the field.

6.1 MEDICAL TREATMENT AND FIRST AID

A first aid kit adequate for anticipated emergencies will be maintained in the field. If any injury should require advanced medical assistance, emergency personnel will be notified, and the victim will be transported to the hospital. The Contractor will establish his own first aid station and details will be provided in his HASP.

In the event of an injury or illness, work will cease until the field safety and oversight inspector has examined the cause of the incident and taken appropriate corrective action. Any injury or illness, regardless of extent, is to be reported to the project manager and health and safety officer.

6.2 EMERGENCY CONTACTS

Emergency telephone numbers will be posted in the field and are listed below:

- Ambulance, Fire, Police 911
- Poison Control Center 800-222-1222
- NYSDEC Spills Hotline 800-457-7362
- Jason M. Brydges, BE3 716-830-8636
- Glenn May, NYSDEC PM 716 851-7220
- Renata E. Ockerby, NYSDOH 518-402-7860
- Sisters Hospital 716-862-1000 See **Attachment 4** for route to facility.

Verbal communications between workers or use of a vehicle horn repeatedly at intervals of three short beeps shall be used to signal all on-site personnel to immediately evacuate the area and report to the vehicle parking area.

6.3 EMERGENCY STANDARD OPERATING PROCEDURES

The following standard operating procedures are to be implemented by on-site personnel in the event of an emergency. The health and safety manager and Contractor's field manager shall manage response actions.

1. Upon notification of injury to personnel, the designated emergency signal shall be sounded. All personnel are to terminate their work activities and assemble in a safe location. The emergency facility listed above shall be notified. If the injury is minor, but requires medical attention, the Contractor's field manager or the health and safety manager shall accompany the victim to the hospital and help in describing the circumstances of the accident to the attending physician.
2. Upon notification of an equipment failure or accident, the Contractor's field manager or the health and safety manager shall determine the effect of the failure or accident on site operations. If the failure or accident affects the safety of personnel or prevents completion of the scheduled operations, all personnel are to leave the area until the situation is evaluated, and appropriate actions taken.
3. Upon notification of a natural disaster, such as tornado, high winds, flood, thunderstorm or earthquake, on-site work activities are to be terminated and all personnel are to evacuate the area.

6.4 EMERGENCY RESPONSE FOLLOW-UP ACTIONS

Following activation of an emergency response, the health and safety officer shall notify the

project manager, and the Contractor's field manager shall submit a written report documenting the incident to the project manager.

6.5 MEDICAL TREATMENT

The Contractor's field manager shall be informed of any site-related injury, exposure or medical condition resulting from work activities. All personnel are entitled to medical evaluation and treatment in the event of a site accident or incident.

6.6 SITE MEDICAL SUPPLIES AND SERVICES

The Contractor's field manager or a trained first aid crew member shall evaluate all injuries at the site and render emergency first-aid treatment, as appropriate. If an injury is minor but requires professional medical evaluation, the field manager shall escort the employee to the appropriate emergency room. For major injuries occurring at the site, emergency services shall be requested. A first-aid kit shall be readily accessible, fully supplied, and maintained at specified locations used for on-site operations.

6.7 PRECAUTIONS

Universal precautions shall be followed on-site that consist of treating all human blood and certain body fluids as being infected with Human Immune Deficiency Virus (HIV), Hepatitis B virus (HBV), or other blood borne pathogens. Clothing and first-aid materials visibly contaminated with blood or other body fluids will be collected and placed into a biohazard bag. Individuals providing first aid or cleanup of blood- or body-fluid contaminated items should wear latex gloves. If providing CPR, a one-way valve CPR device should be used. Biohazard bags, latex gloves, and CPR devices will be included in the site first-aid kits.

Work areas visibly contaminated with blood or body fluids shall be cleaned using a 1:10 dilution of household bleach. If equipment becomes contaminated with blood or body fluids, and can not be sufficiently cleaned, the equipment shall be placed in a plastic bag and sealed. Any personnel servicing the equipment shall be made aware of the contamination, so that proper precautions can be taken.

7.0 RECORDKEEPING

The Contractor's field manager and health and safety officer are responsible for site record keeping. Prior to the start of work, they will review this Plan along with the Contractor's HASP. A Site safety briefing will be completed prior to the initiation of field activities. This shall be recorded in the field log book. An accident report should be completed by the Field Manager if an accident occurs and forwarded to the project manager.

8.0 PERSONNEL TRAINING REQUIREMENTS

8.1 INITIAL SITE BRIEFING

Prior to site entry, the Contractor's health and safety manager shall provide all personnel (including site visitors) with site-specific health and safety training. A record of this training shall

be maintained. This training shall consist of the following:

- Discussion of the elements contained within this plan
- Discussion of responsibilities and duties of key site personnel
- Discussion of physical, biological and chemical hazards present at the site
- Discussion of work assignments and responsibilities
- Discussion of the correct use and limitations of the required PPE
- Discussion of the emergency procedures to be followed at the site
- Safe work practices to minimize risk
- Communication procedures and equipment
- Emergency notification procedures

8.2 DAILY SAFETY BRIEFINGS

The Contractor's health and safety manager will determine if a daily safety briefing is required. The briefing shall discuss the specific tasks scheduled for that day and the following topics:

- Specific work plans
- Physical, chemical or biological hazards anticipated
- Fire or explosion hazards
- PPE required
- Emergency procedures, including emergency escape routes, emergency medical treatment, and medical evacuation from the site
- Weather forecast for the day
- Buddy system
- Communication requirements
- Site control requirements
- Material handling requirements

9.0 COMMUNITY AIR MONITORING PROGRAM (CAMP)

A Community Air Monitoring Program (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the upwind and downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The program 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 and on-site workers not directly involved with work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities.

The complete CAMP is provided in **Appendix E**

ATTACHMENT 1

Table of Potential Hazards and OSHA Standards

Potential Hazards and OSHA Standards for Consideration during IRMs

Site Exposure/Control	Potentially Applicable OSHA Standard*	
	1910 General Industry	1926 Construction
Hazard Assessmen & Employee Training	29 CFR 1910.132(d)	29 CFR 1926.21(b)
Chemical Exposure	29 CFR 1910.1000	29 CFR 1926.55
Noise Exposure	29 CFR 1910.95	29 CFR 1926.52
Sanitation	29 CFR 1910.141	29 CFR 1926.51
Wiring Methods (temporary wiring)	29 CFR 1910.305(a)(2) 29 CFR 1910.333	29 CFR 1926.405(a)(2)
Electrical Hazards		29 CFR 1926.416
Emergency Action Planning	29 CFR 1910.38	29 CFR 1926.35
Excavation	covered by 1926	29 CFR 1926 Subpart P
Confined Space Entry	29 CFR 1910.146	29 CFR 1926.21(b)(6)29 CFR 1926.353(b)
Material Handling	29 CFR Subpart N	29 CFR Subpart N29 CFR 1926.600-60229 CFR 1926.604
Building Demolition	covered by 1926	29 CFR 1926 Subpart T
Site ContaminantAbatement	29 CFR 1910.1000-1029 29 CFR 1910.1043-1052	29 CFR 1926.5529 CFR 1926.6229 CFR 1926.1101-1152
Elevated Work Surfaces	29 CFR 1910 Subpart D 29 CFR 1910 Subpart F	29 CFR 1926 Subpart L29 CFR 1926 Subpart M29 CFR 1926.552
Chemical Storage	29 CFR 1910 Subpart H29 CFR 1910.1200	29 CFR 1926.5929 CFR 1926 Subpar t F
Personal Protective Equipment	29 CFR 1910 Subpart I	29 CFR 1926 Subpart E
Heavy Equipment Operation	29 CFR 1910.9529 CFR 1910 Subpart N	29 CFR 1926.5229 CFR 1926 Subpart O
Tasks-Long Duration	29 CFR 1910.141-142	29 CFR 1926.51

The Federal General Industry and Construction citations are provided above

ATTACHMENT 2

Heat Stress Management Program and Procedures

INTRODUCTION

Panamerican employees engage in a variety of activities with potential exposure to excessive ambient temperatures and humidity, with the overall result being Aheat stress@. This procedure establishes the Panamerican Heat Stress Management Program. It establishes responsibilities and basic requirements for personnel who may be required to work in situations where the ambient temperature exceeds 21° C (70° F) while wearing protective equipment (e.g., hazardous waste site investigations) or when the ambient temperature exceeds 29° (85° F) while wearing normal clothing. Because heart stress is one of the most common and potentially serious illnesses at job sites and particularly hazardous waste sites, regular monitoring and other preventive measures are warranted.

There are no regulations addressing heat stress. However, it should be noted that OSHA does recognize heat stress as a potentially serious health hazard and can site employers under the Ageneral duty clause@ of the Occupational Safety Health Act if heat-related illness is occurring or likely to occur.

PROGRAM ADMINISTRATION AND RESPONSIBILITIES

The Heat Stress Management Program is administered by Panamerican Managers and Health and Safety personnel.

These Individuals:

- Oversee the implementation of the Heat Stress Management Program;
- Periodically audit and evaluate program implementation;
- Evaluate this procedure on an ongoing basis to see that it reflects current practice and regulations;
- Assist field crews in their implementation of this procedure.

Project Managers (PM) and Safety Personnel are responsible for:

- Implementing this Procedure in all field operations:
- Providing guidance to staff regarding heat stress management as described in the Procedure; and
- Providing feedback to management regarding program effectiveness.

Staff Members are responsible for:

- Complying with this Procedure as it applies to their activities; and
- Providing feed back to their supervisor regarding program effectiveness.

HEAT STRESS HAZARDS AND RISK FACTORS

Heat Stress is defined as the total net load on the body with contributions from both exposure to external sources, such as sunshine and hot surfaces, and from internal metabolic heat production. A person=s

exposure to the increased ambient temperatures and humidity produces physiological responses referred to as heat stress which are characterized by an increase in the: a) Acore@ or Adeep body temperature@. b) heart rate, c) blood flow to the skin, and d) water and salt loss due to sweating. Conditions of excessive heat stress may occur either when the physical work is too heavy or the environment is too hot in relation to the work being performed. If work is performed under hot environmental conditions, the work load effort must be reviewed and the heat exposure limit maintained at or below the levels to protect the worker from the risk of acute heat illness.

In general, there are four types of physiological disorders associated with heat stress. They include:

- Heat Rash - a skin reaction occurring as a result of obstructed sweat glands, often associated with impermeable clothing.

- Heat Cramps - painful muscle spasms of extremities and abdomen, resulting from inadequate balance of electrolytes which are lost from sweating.

- Heat Exhaustion - a mild form of heat stroke due to depletion of body fluids and electrolytes. Blood vessels dilate despite decreased volume of blood. Symptoms include weakness, dizziness, nausea, rapid pulse, and a small increase in body temperature.

- Heatstroke - a potentially fatal disorder resulting from failure of the body=s thermoregulatory system. The classical description of heatstroke includes (1) a major disruption of central nervous function (unconsciousness of convulsions), (2) a lack of sweating (3) hot, dry, red or mottled skin, and (4) a core temperature in excess of 41^{o} C (105.8^{o} F). Heatstroke is a serious medical condition which calls for emergency medical action.

Seven factors play significant roles in the development of or predisposition to, heat stress disorders. These factors include:

- Acclimatization - Heat acclimatization leads to increased and quicker sweating, cooler skin due to an increase in evaporative cooling and a lower, more stable core body temperature. Maximal sweating rates in unacclimatized persons are lower, but salt concentrations in their perspiration are higher, requiring a higher rate of salt replacement.

- Age - Older individuals are generally more susceptible to heat stress than younger individuals. However, older healthy workers are able to perform well in hot jobs if permitted to proceed at a self-regulated pace.

- Gender - The average woman has a lower aerobic capacity than a similar-sized man. Nevertheless, when working at similar proportions of their maximum aerobic capacity, women perform similarly or only slightly less well than men.

- Body Fat - The lower level of physical fitness, decreased maximum work capacity and decreased cardiovascular capacity frequently associated with obesity predispose individuals to heat disorders.

- Water and Electrolyte Balance - Sustained, effective work performance in heat requires a

replacement of body water and electrolytes lost through sweating. If this water is not replaced by drinking, continued sweating will draw on water reserves from both tissues and body cells leading to dehydration.

- Use of Alcohol and Medication - Not withstanding the potential hazards from impaired coordination and judgment, the ingestion of alcohol before or during work in the heat should not be permitted because it reduces heat tolerance and increases the risk of heat illness, Many drugs, including diuretics and antihypertensives, can interfere with the body=s thermoregulation.

- Physical Fitness - Physical conditioning enhances heat tolerance by increasing the functional capacity of the cardiovasculatory system, and reduces the time required to develop heat acclimatization by about 50% over those not physically fit.

The factors listed above are to be taken into account by all project personnel when planning or executing a project subject to heat stress conditions. The factors should be taken into consideration for:

- the development of the project schedule;
- the ordering of supplies/equipment;
- the support facilities to be made available at the site;
- the execution of work tasks; and
- the after work hours activities.

The following is a summary of signs and symptoms of heat stress:

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 and moist skin
- Heavy sweating
- Dizziness, fainting and nausea

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 or death occurs. Competent medical help must be obtained. Signs and symptoms are:

- Red, hot and unusually dry skin
- Lack of or reduced perspiration
- Dizziness and confusion

- Strong, rapid pulse and coma.

HEAT AND STRESS PREVENTION

Preventive measures should be taken to prevent personnel from experiencing heat stress illness. Prevention of heat stress is also important because if an individual has experienced a heat illness incident, he has an increased likelihood of future occurrences. Preventive measures include: favorable work scheduling, acclimatization of workers to hot environments, drinking sufficient quantities of fluids, providing cool, sheltered work and rest areas, and utilizing cooling devices as appropriate of feasible. Heat stress monitoring/work rest regimens are discussed below.

Work Schedules and Activity

If possible, work should be scheduled during the coolest part of the day. Early morning and evening work can be considerably more effective than working midday when the additional time for breaks and heat stress monitoring are taken into account.

Employees should also be encourages to maintain a certain level of activity during the work shift. Prolonged standing in hot environments can lead to heat illness because the blood pools in the lower extremities. Workers should periodically walk about to encourage blood circulation from the feet and legs.

Acclimatization of Workers

A properly designed and applied heat acclimatization program will dramatically increase the ability of workers to work at a hot job and will decrease the risk of heat-related illnesses and unsafe acts. Heat acclimatization can usually be induced in 5 to 7 days of exposure to the hot job. For workers who have had previous experience with the job, the acclimatization regimen should be exposure for 50% on day 1, 60% on day 2, 80% on day 3 and 100% on day 4. For workers new to job the schedule should be 20% on day 1 with a 20% increase in each additional day.
Acclimatization can be induced by sustained elevations of the skin and core body temperatures above levels for the same work in cool environments for an hour or more per day. Acclimatization needs periodic reinforcement such as occurs daily during the work week. Persons may show some loss of acclimatization on the first day of the new shift after being idle for two days or over a weekend. After vacations of two weeks or longer he loss of acclimatization is substantial, several days at work will be needed before heat tolerance is fully restored.

Drinking Sufficient Quantities of Fluids

Under hot conditions where sweat production may reach 6 to 8 liters per day, voluntary replacement of the water lost is usually incomplete. The normal thirst mechanism is not sensitive enough to urge us to drink enough water to prevent dehydration. Individuals are seldom aware of the exact amount of seat they produce of how much water is needed to replace that lost in sweat; 1 liter/hour is not an uncommon rate of water loss. Every effort should be made to encourage individuals to drink water, low-sodium noncarbonated beverages or electrolyte replacement fluids (e.g., Gatorade). Lightly salted water (1 gram/liter of water (0.1%) or one level teaspoon per 15 quarts of water), should be provided to unacclimated workers. The salt should be dissolved completely and the water kept cool. Salt tablets as dietary supplements are not generally recommended.

Workers should drink at least 500 ml (one pint) of water before beginning work. The fluid should be maintained at temperatures of 10° to 15° (50 to 59° F). If possible, small quantities of fluids should be consumed at frequent intervals (e.g., 150 to 250 milliliters (ml), or at least a quarter pint, every 20 minutes) rather than the intake of 750 ml (3 cups) or more once per hour. Individuals vary, but water intake should total 4 to 8 liters (quarts) per day. When heat stress is considered a potential problem, a minimum of 1 liter/hour/person of water are to be maintained onsite. Individual paper or plastic cups will be provided in order to prevent the spread of communicable disease.

Alcohol and diuretics such as caffeine (contained in coffee, tea and soft drinks) can increase dehydration. Therefore employees with potential exposure to heat stress should be discouraged from the consumption of these types of fluids during and after working hours.

Cool, sheltered Work and Rest Areas

Exposure to direct sunlight significantly increases the overall thermal loading of the body, thereby increasing an individuals susceptibility to heat stress illnesses. Whenever possible work should be conducted under suspended tarps, in shady areas or in other sheltered areas in order to reduce thermal loading caused by the sun. Cool sheltered areas should be provided also for rest breaks. A rest area should be situated so that part of it is in the contamination reduction area so that workers can take breaks without being required to undertake a full decontamination procedure. Canopies or tarps and open air tents, are types of cool shelters which can provide shaded rest areas.

Cooling Devices

Auxiliary cooling devices can be successfully used to provide body cooling, especially to workers wearing protective garments at hazardous waste sites. Vortex coolers utilize high velocity air which is directed inside the protective clothing. Vortex coolers have been used successfully in some operations. Cooling vests utilizing Ablue ice@ type packs can provide some cooling to the torso, but add weight for the wearer and can inhibit body movements.

Newer, more sophisticated tube and refrigerant systems woven into undergarments are also available. However, some of these systems ,,may not be effective in situations where the work involves considerable motion, since bending and lifting can crimp the tubes, impending the flow of refrigerant.

Heat Stress Monitoring

Several heat stress monitoring systems have been devised to help manage heat stress in hot work environments. Panamerican performs heat stress monitoring when: 1) employees are wearing normal work clothing in ambient temperatures exceeding 29° C, (85° F) and 2) employees wearing chemical protective clothing (including paper coveralls) working in ambient temperatures exceeding 21° C (70° F). The temperature differential is related to the reduced ability of a person to maintain a core temperature of $\pm$ 37° C (98.6° F) when wearing chemical protective clothing.

It should be noted by personnel that there are no Afast and true@ methods of heat stress monitoring; likewise there are no regulations concerning heat stress monitoring. Individual susceptibility to heat stress is highly variable. Some individuals are highly susceptible to any increase in their internal body temperature while other individuals can work very well with internal body temperatures of 39°C (102.2° F) or higher.

The heat stress monitoring systems should be used by Site Safety Officers as guidelines and not necessarily as hard, fast rules. Individuals working in elevated temperatures should be queried on a regular basis regarding their perceived state of heat stress. If the calculated heat stress index value indicates that work can continue but a person states that they believe they are experiencing heat stress, the work effect should be discontinued and a rest break taken.

Likewise, if the calculated heat stress index value indicates that a rest break should be taken but the workers believe they can work longer, they should be permitted to work longer providing that their heart rates do not exceed 110 beats per minute. If the individual's heart rate rates exceed 110 beats per minute a rest break will be taken. In all cases, individual workers should not be permitted or expected to perform excessive work which could result in heat stress. If a SSO has any concerns that an individual may be pushing himself/herself past the Abreaking point@ the calculated work/rest regimen will be followed.

For strenuous field activities that are part of ongoing site work activities in hot weather, the following procedures shall be used to monitor the body=s physiological response to heat, and to monitor the work cycle of each site worker. There are two phases to this monitoring: the initial work/rest cycle is used to estimate how long the first work shifts of the day should be. Heart rate monitoring of each worker will establish the length of the successive work periods. Both phases are to be used are to be used for heat stress monitoring. Failure to use either one could place workers at risk of heat-related disorders.

Phase 1 - Determination of the Initial Work - Rest Regimen

The determination of the initial work - rest regimen can be performed using either of two methods:

-The Modified Dry Bulb Index; or
-The Wet Bulb Globe Thermometer (WBGT) Index

After the initial work - rest regimen has been determined, environmental conditions must be monitored for changes which would require a modification to the work - rest regimen. This, coupled with the heart rate monitoring, determines the work cycles to be followed on a site.

The Modified Dry Bulb Index accounts for the effects caused by solar, load, air temperature, and chemical protective clothing, under a light work load (walking at approximately 3 mph). A mercury thermometer, shielded from direct sunlight, is used to measure ambient temperature. The percentages of (of time) of sunlight and cloud cover are then estimated to determine a sunshine quality factor (e.g., 100% sunshine - no cloud cover = 1.0; 50% sunshine - 50% cloud cover = 0.5; 0% sunshine - 100% cloud cover = 0.0). When these two sets of values have been obtained, they are inserted into the following equation to calculate the adjusted temperature:

$$T\ (^{o}C, \text{adjusted}) = T\ (^{o}C, \text{actual}) + (7.2 \times \text{sunshine quality factor})$$

-OR-

$$T\ (^{o}F, \text{adjusted}) = T\ (^{o}F, \text{actual}) + (13 \times \text{sunshine quality factor})$$

After the adjusted temperature has been calculated, the length of the first work shift can be determined using the following table:

Initial Break and Physiological Monitoring Cycles

ADJUSTED TEMPERATURE	NORMAL WORK CLOTHES	PROTECTIVE CLOTHING
90^0F (32.2^0 C) or above	After each 45 minutes of work	After each 15 minutes of work
87.5^0-90^0 F (30.8^0-32.2^0 C)	After each 60 minutes of work	After each 30 minutes of work
82.5^0-87.5^0 F (28.1^0-30.8^0 C)	After each 90 minutes of work	After each 60 minutes of work
77.5^0-82.5^0 F (25.3^0-28.1^0 C)	After each 120 minutes of work	After each 90 minutes of work
72.5^0-77.5^0 F (22.5^0-25.3^0 C)	After each 150 minutes of work	After each 120 minutes of work

NOTE: The standard rest period is 15 minutes

WET BULB GLOBE THERMOMETER INDEX

The Wet Bulb Globe Thermometer (WBGT) Index was developed by the U.S. Army in the 1950s to prevent heat stress in army recruits. The WBGT Index accounts for the effects caused by humidity, air movement, evaporation, air temperature and work rate. It does not, however, account for the effects of chemical protective clothing, non-acclimatized workers, age, or other factors which may affect the likelihood of heat stress. Because of this, it is necessary to make adjustments to the index and conduct Heart Rate Monitoring.

WBGT measurements are usually obtained through the use of are-contained electronic devices. Such devices are easy to set up and can provide the user with the capabilities to store data and download to print out a hard copy.

Heat produced by the body and the environmental heat together determine the total heat load. Therefore, after the WBGT Index has been obtained, the anticipated work load category of each job shall be determined and the initial-rest regimen established using the table below.

The work load category may be determined by ranking each job into light, medium and heavy categories on the basis of type of operation. Examples of each category are:

Light work:	sitting or standing to control machines, performing light hand work
Moderate work:	walking about with moderate lifting and pushing; and
Heavy work:	pick and shovel work.

PERMISSIBLE HEAT EXPOSURE			
WORK-REST REGIMEN	WORK LOAD		
	LIGHT	MODERATE	HEAVY
	30.0^0 C/86^0 F	26.7^0 C/80.1^0 F	25^0C/77^0F
75% Work-25% Rest Each Hour	30.6^0 C/87.1^0 F	28^0 C/82.4^0 F	25.9^0 C/78.6^0 F
50% Work-50% Rest Each Hour	31.4^0 C/88.5^0 F	29.4^0 C/85.0^0 F	27.9^0 C/82.2^0 F
25%Work-75 % Rest Each Hour	32.2^0 C/90.0^0 F	31.1^0 C/88.0^0 F	30.0^0 C/86.0^0 F

The table reads as follows:

Light, continuous work is possible at any WBGT reading up to 30^0 C (86^0F) but above that limit work breaks

are needed to recover from the heat; light work at temperatures of between 30.0 and 30.6^{0}C (86 to 87^{0}F) can be conducted, but 15 minute breaks must be taken every hour, etc. It is important to note that this table is applicable primarily to healthy, acclimatized personnel; wearing standard work clothing.

NOTE: An additional 6 to 11^{0}C (42.8 to 51.8^{0}F) must be added to the calculated WBGT temperature for personnel wearing chemical protective clothing prior to determining the initial work - rest regimen from this table. Because the WBGT Index does not take into account unacclimatized workers, or individual susceptibilities, the addition to the WBGT value does not eliminate the requirement for Heart Rate Monitoring after work has begun.

Phase 2 - Heart Rate Monitoring

An increase in the heart rate is a significant indication of stress, whether induced by exposure to heat or through physical labor. Although baseline heart rates can vary significantly between individuals and during the day for an individual, a heart rate of 110 beats per minute or greater is an indication of physiological stress. To prevent heat stress illnesses, the heart rate (HR) should be measured by radial (wrist) or carotid (neck) pulse for 30 seconds as early as possible in the rest period. The HR at the beginning of the rest period should not exceed 110 beats/minute. If the HR is higher, the next work period should be shortened by 33 percent while the length of the rest period stays the same. If the pulse rate still exceeds 110 beats/minute at the beginning of the next rest period, the following work period should be further shortened by 33 percent while the length of the rest period stays the same.

ATTACHMENT 3

Trenching and Excavation
Health and Safety Requirements

REGULATORY AUTHORITY

Excavations will be performed in accordance with OSHA 29 CFR, subpart P, 1926:650-1926.652 and USACOE EM 385-1-1 section 25 requirements as they apply to project activities.

GENERAL

- **At all times the need for personnel to enter excavations will be minimized. Inspections or sample removal will be done from above the excavation, whenever possible.**
- **Personnel will only enter excavations after the requirements of this plan have been met.**
- **Personnel protective equipment including hard hat, safety glasses and steel-toe work boots may be required.**

SURFACE ENCUMBRANCES

Surface encumbrances such as structures, fencing, piping, stored material etc. which may interfere with safe excavations will be avoided, removed or adequately supported prior to the start of excavations. Support systems will be inspected daily.

UNDERGROUND UTILITIES

Underground utility locations will be checked and determined and permits as necessary will be in place prior to initiating excavations. Local utility companies will be contacted at least two days in advance, advised of proposed work, and requested to locate underground installations. When excavations approach the estimated location of utilities, the exact location will be determined by careful probing or hand digging and when it is uncovered, proper supports will be provided.

OVERHEAD OBSTACLES

A minimum safe distance of 20 feet will be maintained when working around overhead high-voltage lines or the line will be de-energized following appropriate lock-out and tag-out procedures by qualified utility personnel.

ENTRY/EXIT ROUTES

Excavations five feet or more deep will require an adequate means of exit, such as a ladder, ramp, or steps and located so as to require no more than 25 feet of lateral travel. Under no circumstances will

personnel be raised.

VEHICLE CONTROL/SAFETY

Personnel working around heavy equipment, or who may be exposed to public vehicular traffic will wear a traffic warning vest consisting of at least 400 square inches of red or orange material. At night, at least 400 square inches of florescent or other reflective material will be worn.

For excavation work on or adjacent to highways or streets, signs, signals, and barricades tat conform to the requirements of the current American National Standards Institute (ANSI) D6.1, Manual on Uniform Traffic Control Devices for Streets and Highways will be used to protect work areas. Signs, signals, and barricades will be adequately lighted at night. Flagmen will be provided when signs, signals and barricades do not provide adequate protection. Flagmen will use signals and procedures contained in the current issue of ANSI D6.1. At night, flagmen will be clearly illuminated so as to be easily seen by approaching traffic.

For mobile equipment operating next to or approaching the edge of an excavation, the operator will have a clear view of the edge of the excavation, or a warning system such as barricades, hand or mechanical signals, or stop logs will be used. If possible the surface grade will slope away from the excavation.

Personnel will be safely located in and around the trench and will not be permitted to work underneath loads handled by lifting or digging equipment. Personnel are required to stand away from vehicles being loaded and unloaded. Operators can remain in the cabs of vehicles being loaded or unloaded provided the vehicles are equipped to provide adequate protection to the operator.

HAZARDOUS ATMOSPHERES

Hazardous atmospheres, such as oxygen deficiency (atmospheres containing less than 19.5% oxygen), flammable gases or vapors (airborne concentrations greater than 20% of the lower explosive limit), and toxic gases or vapors (airborne concentrations above the OSHA Permissible Exposure Limit or other exposure limits) may occur in excavations, especially around landfills and hazardous waste sites.

In locations where oxygen deficiency or hazardous gaseous conditions are possible, the air in the excavation will be tested before personnel are permitted to enter an excavation deeper than 4 feet. When flammable gases are present, adequate ventilation will be provided and sources of ignition will be eliminated. Ventilation or respiratory protection will be provided to prevent personnel exposures to oxygen deficient or toxic atmospheres. Periodic retesting (at least each shift) of the excavation will be conducted to verify that the atmosphere is acceptable. A log or field book records will be maintained of all test results.

WATER ACCUMULATION HAZARDS

Personnel will not work in excavations that have accumulated water or where water is accumulating unless adequate precautions have been taken. These precautions can include special support or shield systems, water removal systems such as pumps, or safety harnesses and lifelines. Water removal systems will be operated and monitored by experienced personnel. Diversion ditches or dikes will be used to prevent surface water from entering the excavation and to provide adequate drainage of the area around the excavation. Adequate precautions, as described above, will be taken for excavating

subject to heavy rains.

STABILITY OF ADJACENT STRUCTURES

Support systems such as shoring, bracing, or underpinning will be provided to maintain the stability of adjoining buildings, walls, or other structures endangered by the excavation operations. Excavations below a foundation or retaining wall that could be reasonably expected to pose a hazard to personnel will not be permitted unless:

- **a support system is provided**
- **The excavation is in stable rock; or**
- **A Registered Professional Engineer has determined that the structure will not be effected by the excavation activity or that the excavation work will pose a hazard to employees. The Professional Engineer is required to demonstrate how the above determination was made on the basis of appropriate calculations.**

Sidewalks will not be undermined unless shored to protect from possible collapse.

PROTECTION FROM LOOSE ROCK, MATERIALS OR SPOILS

In excavations and trenches that personnel may be required to enter, loose rock, excavated or other material, and spoils will be effectively stored and retained at least two feet or more from the edge of the excavation.

As an alternative to the clearance prescribed above, barriers or other effective retaining devices may be used in order to prevent spoils or other materials from falling into the excavation.

Walkways, runways, and sidewalks will be kept clear of excavated material from other obstructions.

Scaling operations may be used to remove loose material and will be performed only by experienced crews under the direct supervision of a competent supervisor. The scalers will be provided with scaler=s lifelines, safety belts, boatswain chair, and other safety equipment necessary for their protection.

FALL PROTECTION

Walkways or bridges with standard guardrails that meet OSHA specifications will be provided where employees, the public, or equipment are required to cross over excavations.

Adequate barrier physical protection will be provided at all remotely located excavations. All excavations will be barricaded or covered.

EMERGENCY RESCUE

In the event of a cave-in, the Emergency Rescue Squad will be immediately notified. The caller should provide his name, location, nature of the accident (an excavation collapse), the dimensions of the excavation, and number of people trapped in the excavation. Personnel are not to enter a collapsed trench to attempt rescue. This may cause a further collapse of the trench. Under no circumstance is heavy equipment to be used to attempt rescue of personnel in a collapsed excavation; injury or decapitation could be the result. All heavy equipment and traffic in the area is to be shut down and

stopped to reduce vibration. Pumps should be started if water ensues.

INSPECTION PROGRAM

Safety personnel will conduct daily inspections of the excavation, the adjacent areas, and protective systems. Inspections will be conducted prior to the start of work and as needed throughout the work shift. Inspections will also be made after every rainstorm or other occurrence that increases the hazard of collapse (i.e., vibration from heavy equipment, freezing and thawing, etc.).

The excavation inspection will include a check for the following:

- **Evidence if situations that could result in possible cave-in (i.e. soil crumbling or sloughing, water saturated soils, freezing and thawing, unusual vibrations such as from heavy equipment, heavy rains, surface run off entering trench, etc.);**
- **Indications of failure of protective systems;**
- **Hazardous atmosphere (oxygen deficiency, flammable and toxic gases and vapors);**
- **Condition and support of exposed underground installations;**
- **Adequate means of egress;**
- **Signs, signals, and barricades for work area protection;**
- **Precautionary measures to control water accumulation;**
- **Stability and support of adjacent structures; and**
- **Adequate protection from loose rock and soil.**

PROTECTIVE SYSTEMS

Personnel working in excavations will be protected from cave-ins by sloping and/or benching of excavation walls, a shoring system or some other equivalent means except when:

- **The excavation is made entirely in stable rock; or**
- **Excavations are less than five feet deep and safety personnel have determined that there is no indication of potential cave-in. Depending on site and soil conditions protective measures may be taken for the excavations less than five feet in depth.**

The most important factor influencing the choice of protective systems is the soil type classification. Once the soil type has been classified, selection of the protective system, the determination of the angle of repose for sloping and benching, and the design of shoring systems will be made. Decisions will be based on careful evaluation of pertinent factors such as depth of cut; possible variation in water content of the material while the excavation is open; anticipated changes in materials from exposure to air, sun, water, or freezing; loading imposed structures equipment, overlying material, or stored material; and vibration from equipment, blasting traffic or other sources.

Soil Classification

Appendix A of the OSHA Excavation Standard describes a methjod to classify soils into four types:

1. Stable Rock - Solid mineral matter that can be excavated with vertical sides.

2. Type A - cohesive soils with an unconfined compressive strength of 1.5 ton per square foot (tsf) or greater. Examples include: clay; silty clay; sandy clay; clayey loam; and cemented soils such as caliche and hardpan. No soil is considered to be Type A if it is fissured, subject to vibration, previously disturbed, or part of a sloped, layered system.

3. Type B - cohesive soils with an unconfined compressive strength of greater than 0.5 tsf but less than 1.5 tsf. Examples include: angular gravel similar to crushed rock; silt; silty loam; and sandy loam; Type B soils also include : previously disturbed soils that are not type C; Type A soils that are fissured or subject to vibration; and dry rock that is not stable.

4. Type C - cohesive soils with an unconfined compressive strength of 0.5 tsf or less. Examples include: gravel; sand; loamy sand; submerged soil or soil from which water is seeping; submerged rock that is not stable.

The engineer, geologist, or safety personnel will conduct at least one visual and at least one manual test as described in the OSHA excavation standard in order to classify soils. Visual tests include looking for : particle size and soil cohesiveness (clumping); cracking in the excavation sides which suggests fissured material; underground installations ans previously disturbed soils; layered soil systems that slope toward the excavation; evidence of surface water and water seeping from the sides of the excavation; and sources of vibration that may affect the excavation stability. Manual tests include: plascticity; dry strength; tumb penetration; drying test; and strength tests using a pocket penetrometer or hand-operated shearvane.

<u>Sloping and Benching</u>

One of the following options for sloping and benching systems described in section 1926.652(b) of the OSHA Excavation Standard will be used in excavations of .5 foot or deeper or at the discretion of the safety personnel:

- **The walls of excavation will be sloped at an angle not steeper than 0ne-and one-half horizontal to one vertical. Sloping configurations will follow the slopes shown for Type C soils in Appendix B of the OSHA Excavation Standard.**

- **Maximum allowable slopes and sloping and benching configurations will be determined according to soil type as described in Appendices A and B of the OSHA Excavation Standard.**

- **Use of other written tabulated data and designs, such as tables and charts, to design sloping and benching systems. A copy of the tabulated data must be approved by a registered Professional Engineer. A copy of the tabulated data must be kept at the job site.**

Personnel are not allowed to work on the faces of sloped or benched excavations above other workers unless the workers at the lower levels are protected from falling material or equipment. Similar protection will be provided for personnel working in excavations below other workers.

<u>Support Systems, Shield Systems, and Other Protective Devices</u>

One of the following options described in OSHA (1926.652 (c)) will be followed.

- **Timber shoring, designed according to the conditions and requirements of Appendix C of the OSHA Excavation Standard or aluminum hydraulic shoring designed according to manufacturers tabulated data or Appendix D of the OSHA Excavation Standard. In order to use the information in Appendices C or D, the soil type must first be determined using the classification system in Appendix A. For each soil type the size and spacing of the cross braces, uprights, and walls that comprise the shoring system are then selected based on the depth and width of the trench.**

- **Use of the manufacturer=s written tabulated to design support systems, shielded systems, and other protective devices. Any deviation from this tabulated data must be approved by the manufacturer. A copy of the tabulated data as well as any approvals to deviate from the tabulated data must be kept at the job site.**

- **Use of other written tabulated data to design support systems, shield systems, and other protective devices. The tabulated data must be approved by a Registered Professional Engineer. A copy of the tabulated data must be kept at the job site.**

- **Use of a written support system, shield system, and other protective device design that has been approved by a Registered Professional Engineer. A copy of the written design must be kept at the job site.**

<u>Installation and Removal of Support</u>

Cross braces or trench jacks, uprights, and walls will be secured together to prevent sliding, falling or kickouts.

Additional precautions by way of shoring and bracing will be taken to prevent slides or cave-ins when excavations or trenches are made in locations adjacent to backfilled excavations, or where excavations are subjected to vibrations from railroad or highway traffic, the operation of machinery, or any other source.

If it is necessary to place or operate power shovels, derricks, trucks, materials, or other heavy objects on a level above or near any excavation, the side of the excavation will be sheetpiled, shored, and braced as necessary to resist the extra pressure due to such superimposed loads.

Backfilling and removal of trench supports will progress together from the bottom of the trench. Jacks or braces will be released slowly and , in unstable soil, ropes will be used to pull out the jacks or braces from above after employees have cleared the trench.

<u>Shield Systems</u>

Portable trench boxes or sliding trench shields may be used for protection of personnel in lieu of a shoring system or sloping. Where such trench boxes or shields are used, they will be designed, constructed and maintained in a manner which will provide protection equal to or greater than the sheeting or shoring required for the trench. Shields will be installed so as to restrict lateral or other hazardous movement. Personnel are not allowed inside shields when shields are being moved.

EXCAVATION SAFETY LIST

To be completed prior to each work shift, or prior to personnel entering a new trench for the first time, by the Site Safety Officer/Competent Person:

Project_____Location_____

Job Number_____

Competent Person(CP)*_____Date_____

		Yes	No	N/A
1.	Has the site been cleared for utilities and other underground obstructions?	____	____	____
2.	If on public property, has the regional utility locating service been notified?	____	____	____
3.	Has the excavation equipment been safety checked by the operator?	____	____	____
4.	Are copies of relevant OSHA excavation regulations available on site?	____	____	____
5.	Will the excavation be 5 feet or more in depth?	____	____	____
6.	If 4 is yes, will personnel enter the excavation at any time?	____	____	____
7.	If 4a is yes, have provisions been made for shoring, sloping, or benching the excavation? Describe: _____ _____ _____	____	____	____
8.	Has an inspection of the site and excavation been conducted by the SSO?	____	____	____
9.	Has the Competent Person conducted visual and manual tests to classify the soil?	____	____	____

*** According to Federal OSHA, A Competent Person is a person who is capable of identifying existing and predictable hazards in the surroundings; or working conditions which are unsanitary, hazardous, or dangerous to employees; and who has the authority to take prompt corrective measures to eliminate them.**

10.	**G**	**Visual Test _____(type)**			
	G	**Manual Test_____(type)**			
	G	**Soil Classification_____(type)**			
11.		**Are there any conditions that might expose employees to injury from possible moving ground?**	____	_____	____
12.		**Is excavated material being placed at least 2 feet from the edge of the excavation?**	____	____	____
13.		**Is work in the excavation at all times under the immediate supervision of the SSO or other competent person?**	____	____	____
14.		**Is there a stairway, ladder, or ramp securely fastened in place to provide ingress and egress from the excavation?**	____	____	____
15.		**If the excavation is 4 feet or more in depth, are safe means of access (see 8) provided so as to require no more than 25 feet of lateral travel to reach them?**	____	____	____
16.		**If structural ramps are installed that are used for access/egress: were they designed by a qualified engineer?**	____	____	____
17.		**Do the structural ramps have appropriate means to prevent slipping and are the ramps uniform in thickness?**	____	____	____
18.		**Are walkways or bridges provided across the excavation to safe crossing?**	____	____	____
19.		**If excavations are 71/2 or more feet in depth, do the walkways have guardrails and toeboards?**	____	____	____
20.		**Are undermined structures adequately supported to safely carry all anticipated loads and protect workers?**	____	____	____
21.		**Are there adequate means provided to prevent mobile equipment from inadvertently entering the excavation?**	____	____	____
22.		**Is the excavation well marked and barricaded to prevent personnel from falling IN?**	____	____	____
23.		**Are means available to prevent surface water from entering the excavation and to provide**	____	____	____

	adequate drainage of the area adjacent to the trench?			
24.	**Where it is reasonable to expect hazardous atmospheres, including oxygen deficiency, to exist in the excavation, is appropriate atmosphere testing equipment available.**	____	____	____
25.	**Has the testing equipment been calibrated, and the calibrations recorded, today?**	____	____	____
26.	**Are employees trained in proper use of this equipment?**	____	____	____
27.	**Has a harness and lifeline been provided whenever an employee is required to enter a confined footing excavation?**	____	____	____
28.	**Is appropriate personal protective equipment (hardhat, safety boots, eye protection, etc.) available and in use?**	____	____	____

Notes:_____

_____

_____

_____

_____ _____

CPs Name (Print) **Signature**

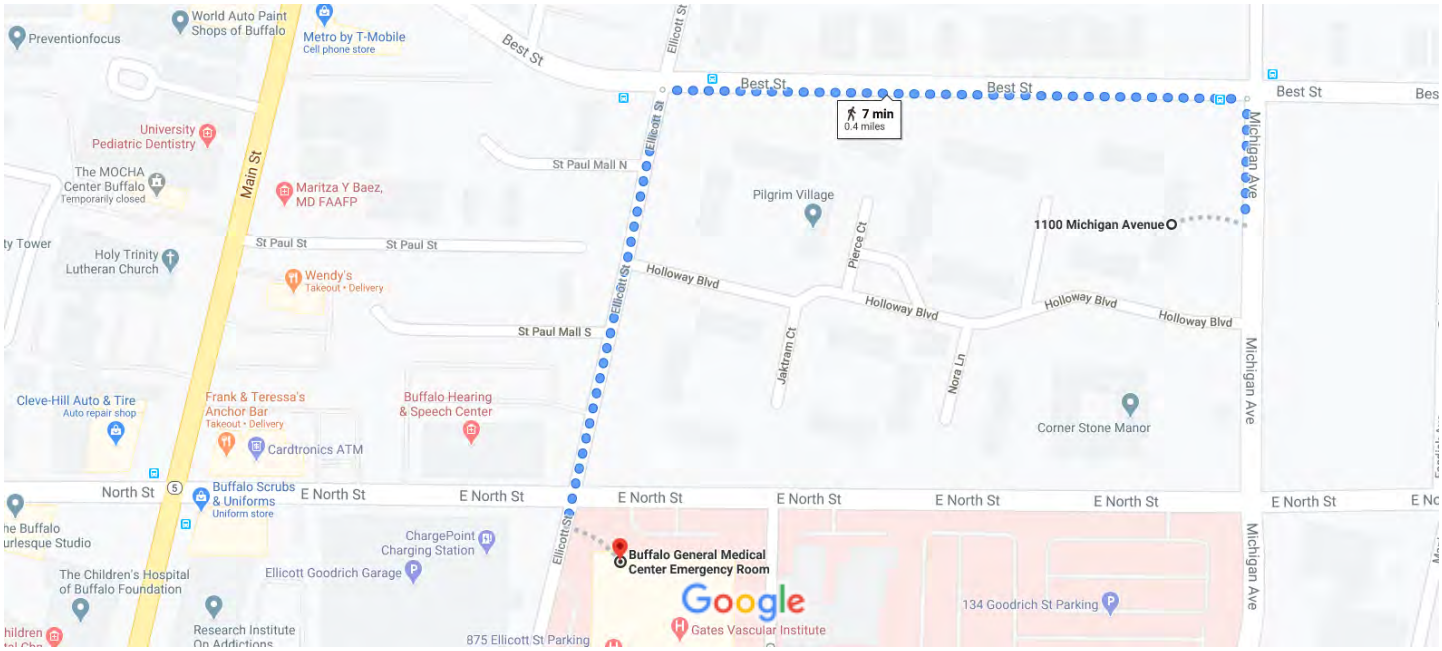
ATTACHMENT 4

Map to Hospital

Google Maps

1100 Michigan Avenue, Buffalo, NY to Buffalo General Medical Center Emergency Room

Walk 0.4 mile, 7 min



Map data ©2020 Google 100 ft

Use caution–walking directions may not always reflect real-world conditions

1100 Michigan Ave

Buffalo, NY 14209

1. Head north on Michigan Ave toward Best St
   May be closed at certain times or days

213 ft

2. Turn left onto Best St

0.2 mi

3. Turn left onto Ellicott St
   Destination will be on the left

0.1 mi

Buffalo General Medical Center Emergency Room

100 High St, Buffalo, NY 14203, Buffalo, NY 14202

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

APPENDIX B

CITIZEN PARTICIPATION PLAN

CITIZEN PARTICIPATION PLAN

FORMER PILGRIM VILLAGE
PHASE 1 - FAMILY
BUFFALO, NEW YORK 14209

NYSDEC SITE #915362

Prepared for:

SAA EVI MC Family, LLC.
150 SE 2nd Avenue, Suite 300
Miami, FL 33131

Prepared by:

960 Busti Avenue
Suite B-150
Buffalo, New York 14213

August 2020

Table of Contents

APPENDICES

A. Project Contacts and Locations of Reports and Information
B. Site Contact List
C. BCP Process Flowchart

* * * * *

Note: The information presented in this Citizen Participation Plan was current as of the date of its approval by the New York State Department of Environmental Conservation. Portions of this Citizen Participation Plan may be revised during the site's investigation and cleanup process.

1.0 What is New York's Brownfield Cleanup Program?

New York's Brownfield Cleanup Program (BCP) works with private developers to encourage the voluntary cleanup of contaminated properties known as "brownfields" so that they can be reused and developed. These uses include recreation, housing, and business.

A *brownfield* is any real property that is difficult to reuse or redevelop because of the presence or potential presence of contamination. A brownfield typically is a former industrial or commercial property where operations may have resulted in environmental contamination. A brownfield can pose environmental, legal, and financial burdens on a community. If a brownfield is not addressed, it can reduce property values in the area and affect economic development of nearby properties.

The BCP is administered by the New York State Department of Environmental Conservation (NYSDEC) which oversees Applicants that conduct brownfield site investigation and cleanup activities. An Applicant is a person who has requested to participate in the BCP and has been accepted by NYSDEC. The BCP contains investigation and cleanup requirements, ensuring that cleanups protect public health and the environment. When NYSDEC certifies that these requirements have been met, the property can be reused or redeveloped for the intended use.

For more information about the BCP, go online at: http://www.dec.ny.gov/chemical/8450.html.

2.0 Citizen Participation Activities

Why NYSDEC?

Involves the Public and Why It Is Important

NYSDEC involves the public to improve the process of investigating and cleaning up contaminated sites, and to enable citizens to participate more fully in decisions that affect their health, environment, and social wellbeing. NYSDEC provides opportunities for citizen involvement and encourages early two-way communication with citizens before decision makers form or adopt final positions.

Involving citizens affected and interest in site investigation and cleanup programs is important for many reasons. These include:

- Promoting the development of timely, effective site investigation and cleanup programs that protect public health and the environment
- Improving public access to, and understanding of, issues and information related to a site and that site's investigation and cleanup process
- Providing citizens with early and continuing opportunities to participate in NYSDEC's site investigation and cleanup process
- Ensuring that NYSDEC makes site investigation and cleanup decisions that benefit from input that reflects the interests and perspectives found within the affected community
- Encouraging dialogue to promote the exchange of information among the affected/interested public, State agencies, and other interested parties that strengthens trust among the parties, increases understanding of site and community issues and concerns, and improves decision making.

This Citizen Participation (CP) Plan provides information about how NYSDEC will inform and involve the public during the investigation and cleanup of the site identified above. The public

information and involvement program will be carried out with assistance, as appropriate, from the Applicant.

Project Contacts

Appendix A identifies NYSDEC project contact(s) to which the public should address questions or request information about the site's investigation and cleanup program. The public's suggestions about this CP Plan and the CP program for the site are always welcome. Interested people are encouraged to share their ideas and suggestions with the project contacts at any time.

Locations of Reports and Information

The locations of the reports and information related to the site's investigation and cleanup program also are identified in **Appendix A**. These locations provide convenient access to important project documents for public review and comment. Some documents may be placed on the NYSDEC web site. If this occurs, NYSDEC will inform the public in fact sheets distributed about the site and by other means, as appropriate.

Site Contact List

Appendix B contains the site contact list. This list has been developed to keep the community informed about, and involved in, the site's investigation and cleanup process. The site contact list will be used periodically to distribute fact sheets that provide updates about the status of the project. These will include notifications of upcoming activities at the site (such as fieldwork), as well as availability of project documents and announcements about public comment periods. The site contact list includes, at a minimum:

- chief executive officer and planning board chairperson of each county, city, town and village in which the site is located;
- residents, owners, and occupants of the site and properties adjacent to the site;
- the public water supplier which services the area in which the site is located;
- any person who has requested to be placed on the site contact list;
- the administrator of any school or day care facility located on or near the site for purposes of posting and/or dissemination of information at the facility;
- Location (s) of reports and information.

The site contact list will be reviewed periodically and updated as appropriate. Individuals and organizations will be added to the site contact list upon request. Such requests should be submitted to the NYSDEC project contact(s) identified in **Appendix A**. Other additions to the site contact list may be made at the discretion of the NYSDEC project manager, in consultation with other NYSDEC staff as appropriate.

CF Activities

The table at the end of this section identifies the CP activities, at a minimum, that have been and will be conducted during the site's investigation and cleanup program. The flowchart in **Appendix C** shows how these CP activities integrate with the site investigation and cleanup process. The public is informed about these CP activities through fact sheets and notices distributed at significant points during the program. Elements of the investigation and cleanup process that match up with the CP activities are explained briefly in Section 5.

- **Notices and fact sheets** help the interested and affected public to understand contamination issues related to a site, and the nature and progress of efforts to investigate and clean up a site.
- **Public forums, comment periods and contact with project managers** provide opportunities for the public to contribute information, opinions and perspectives that have potential to influence decisions about a site's investigation and cleanup. The site developer will be establishing a website in the future that describes the planned development activities at the site.

The public is encouraged to contact project staff at any time during the site's investigation and cleanup process with questions, comments, or requests for information. This CP Plan maybe revised due to changes in major issues of public concern identified in Section 3 or in the nature and scope of investigation and cleanup activities.

Technical Assistance Grant

NYSDEC must determine if the site poses a significant threat to public health or the environment. This determination generally is made using information developed during the investigation of the site, as described in Section 5.

If the site is determined to be a significant threat, a qualifying community group may apply for a Technical Assistance Grant (TAG). The purpose of a TAG is to provide funds to the qualifying group to obtain independent technical assistance. This assistance helps the TAG recipient to interpret and understand existing environmental information about the nature and extent of contamination related to the site and the development/implementation of a remedy.

An eligible community group must certify that its membership represents the interests of the community affected by the site, and that its members' health, economic well-being or enjoyment of the environment may be affected by a release or threatened release of contamination at the site. For more information about TAGs, go online at http://www.dec.ny.gov/regulations/2590.html

Note: The table identifying the citizen participation activities related to the site's investigation and cleanup program follows on the next page:

CITIZEN PARTICIPATION ACTIVITIES	TIMING OF CP ACTIVITIES
Application Process	
• Prepare site contact list • Establish document repositories • Publish notice in Environmental Notice Bulletin (ENB) announcing receipt of application and 30- day public comment period • Publish above ENB content in local newspaper • Mail above ENB content to site contact list • Conduct 30-day public comment period	At time of preparation of application to participate in the BCP. When NYSDEC determines that BCP application is complete. The 30-day public comment period begins on date of publication of notice in ENB. End date of public comment period is as stated in ENB notice. Therefore, ENB notice, newspaper notice, and notice to the site contact list should be provided to the public at the same time.
After Execution of Brownfield Site Cleanup Agreement	
• Prepare Citizen Participation (CP) Plan	Before start of Remedial Investigation
Before NYSDEC Approves RIWP	
• Distribute fact sheet to site contact list about proposed RI activities and announcing 30-day public comment period about draft RI Work Plan • Conduct 30-day public comment period	Before NYSDEC approves RI Work Plan. If RI Work Plan is submitted with application, public comment periods will be combined, and public notice will include fact sheet. Thirty-day public comment period begins/ends as per dates identified in fact sheet.
After Applicant Completes RI	
• Distribute fact sheet to site contact list that describes RI results	Before NYSDEC approves RI Report
Before NYSDEC Approves RAWP	
• Distribute fact sheet to site contact list about proposed RWP and announcing 45-day public comment period • Public meeting by NYSDEC about proposed RWP (if requested by affected community or at discretion of NYSDEC project manager) • Conduct 45-day public comment period	Before NYSDEC approves RWP. Forty-five-day public comment period begins/ends as per dates identified in fact sheet. Public meeting would be held within the 45-day public comment period.
Before Applicant Starts Cleanup Action	
• Distribute fact sheet to site contact list that describes upcoming cleanup action	Before the start of cleanup action.
After Applicant Completes Cleanup Action	
• Distribute fact sheet to site contact list that announces that cleanup action has been completed and that summarizes the Final Engineering Report • Distribute fact sheet to site contact list announcing issuance of Certificate of Completion (COC)	At the time NYSDEC approves Final Engineering Report. These two fact sheets are combined if possible if there is not a delay in issuing the COC.

3.0 Major Issues of Public Concern

This section of the CP Plan identifies major issues of public concern as they relate to the site Additional major issues of public concern may be identified during the site's remedial process.

At this juncture the public has not identified major concerns with the project. In the event major concerns are expressed, future communication addressing those concerns will be issued to stakeholders.

4.0 Site Information

Note: please refer to the BCP Application and RIWP (and corresponding appendices) for more detailed information on the Site. Below is a summary of Site description, future use of Site, historical use of Site, and Site environmental history.

Site Description

The Pilgrim Village Apartment complex is located on the block bounded by Best Street, Michigan Avenue, East North Street and Ellicott Street in Buffalo, New York, (refer to **Figure 1).** The portion that is the subject of this assessment is located at the southwest corner of Best and Michigan Streets. The entire complex has a total area of approximately 7.9 acres and the Phase 1-Site is 2.55-acres. The entire complex is currently occupied by twelve apartment buildings that were constructed sometime prior to 1981. Prior to the apartment complex the property was occupied by dense residential housing with several small shops, from the late 1800s through the mid-1970s. A gasoline filling station was located on the northeast corner parcel at Michigan and Best Streets from at least 1951 through at least the 1960s.

Future Use of the Site

The owner plans, upon completion of remediation, to redevelop the site to create affordable family housing units and approximately 5,000 SF of commercial space. There will be commensurate parking for the residential units and commercial space.

History of Site Use

The entire complex is currently occupied by twelve apartment buildings that were constructed sometime prior to 1981. Prior to the apartment complex the property was occupied by dense residential housing with several small shops, from the late 1800s through the mid-1970s. A gasoline filling station was located on the northeast corner parcel at Michigan and Best Streets from at least 1951 through at least the 1960s.

Site Environmental History

The following is a list of investigation reports completed on the Site:

- *Phase I Environmental Site Assessment – Campus Square; 903 Ellicott Street & 1100 Michigan Avenue, Buffalo, New York" Completed by AEI Consultants for* KeyBank National Association *in June 2016*.
- *Pilgrim Village Limited Site Characterization Report – Pilgrim Village Apartments; Best and*

Michigan Avenues, Buffalo, New York" Completed by C&S Companies for McGuire Development Company in July 2019.

- Phase II Environmental Site Assessment – *Pilgrim Village, 1100 Michigan Avenue, Buffalo, New York*; Completed by BE3Corp for SAAKC in March 2020.

The following are some of the key findings of the above reports.

The Phase 1 ESA listed above covers the entire Pilgrim Village facility (11.41 acres) whereas this RAWP is for only the northeast portion of the entire site. Therefore, the findings listed below are only for the Phase 1 Site cover under this RAWP.

Based on the results of the Phase 1 ESA, the following environmental conditions were identified associated with the Phase 1 Site at that time:

- Recognized Environmental Condition (REC) and Controlled Recognized Environmental Condition (CREC) – No evidence of REC/CREC during the course of the assessment related to the Phase 1 Site.

- Historical Recognized Environmental Condition (HREC) - The Phase 1 Site was occupied by a gasoline filling station located at the northeast property corner from the 1930s through the 1960s. A Phase II ESA was performed at this location and no contamination in excess of regulatory cleanup objectives was found. However, it is unclear if the USTs were removed as no documentation of their removal is available and no discussion of the presence or absence of the USTs was included in the Phase II. If the subject property is redeveloped in the future, ground penetrating radar (GPR) may be appropriate.

- In the event that building renovation or demolition activities are planned, an asbestos survey adhering to the AHERA sampling protocol should be performed prior to demolition or renovation activities that may disturb suspect ACMs.

The findings from Limited Site Characterization investigation conducted in July 2019 and the Phase II ESA conducted in March 2020 were very similar and included the following:

The purpose of this assessment was to identify potential contamination in the near-surface soil at 1100 Michigan Street, Buffalo NY. Previous Phase II ESA (Limited Site Characterization) results indicated elevated levels of metal compounds above SCOs in soils at the property and at adjacent properties.

Field observations and laboratory results indicate that there are urban fill conditions in the near-surface soil resulting in compounds above residential SCOs across the property. The fill depth varied from about one foot to four feet bgs across the property typically over reddish-brown silty clay which is common native soils in this area.

This subsurface assessment together with the previous Phase II ESA represent an assessment of near-subsurface environmental conditions at the property. Additional investigations would be necessary to fine tune remedial approaches, if warranted depending upon the future use of the property.

5.0 Remedial Cleanup Process

Application

The Applicant is applying for acceptance into New York's Brownfield Cleanup Program as a Volunteer. This means that the Applicant is not responsible for the disposal or discharge of the contaminants or whose ownership or operation of the site took place after the discharge or disposal of contaminants. The Volunteer must fully characterize the nature and extent of contamination onsite, and must conduct a qualitative exposure assessment, a process that characterizes the actual or potential exposures of people, fish and wildlife to contaminants on the site and to contamination that has migrated from the site.

The Applicant in its Application proposes that the site will be used for restricted purposes. To achieve this goal, the Applicant will conduct investigation and/or cleanup activities at the site with oversight provided by NYSDEC. The Brownfield Cleanup Agreement to be executed by NYSDEC and the Applicant sets forth the responsibilities of each party in conducting these activities at the site.

Investigation

The Applicant will complete a RI as part of the BCP. NYSDEC will use the information in the investigation report to determine if the site poses a significant threat to public health or the environment. If the site is a significant threat, it must be cleaned up using a remedy selected by NYSDEC from an analysis of alternatives prepared by the Applicant and approved by NYSDEC. If the site does not pose a significant threat, the Applicant may select the remedy from the approved analysis of alternatives.

Remedy Selection

The Applicant will recommend in its application that action needs to be taken to address site contamination. Pending approval of the investigation report by the NYSDEC, the Applicant has proposed a remediation of impacted soil to meet at least restricted residential use.

The RI results will help develop a remedial approach which may include an IRM. When the Applicant submits the proposed Remedial (IRM) Work Plan for approval, NYSDEC will announce the availability of the proposed plan for public review during a 45-day public comment period.

Cleanup Action

NYSDEC will consider public comments and revise the draft Remedial (IRM) Work Plan if necessary, before approving the proposed remedy. The New York State Department of Health (NYSDOH) must concur with the proposed remedy. After approval, the proposed remedy becomes the selected remedy.

The Applicant may then design and perform the cleanup action to address the site contamination. NYSDEC and NYSDOH will oversee the activities. When the Applicant completes cleanup activities, it will prepare a final engineering report that certifies that cleanup requirements have been achieved or will be achieved within a specific time frame. NYSDEC will review the report to be certain that the cleanup is protective of public health and the environment for the intended use of the site.

Certificate of Completion

When NYSDEC is satisfied that cleanup requirements have been achieved or will be achieved for the site, it will approve the final engineering report. NYSDEC then will issue a Certificate of Completion (COC) to the Applicant. The COC states that cleanup goals have been achieved and relieves the Applicant from future liability for site-related contamination, subject to certain conditions. The Applicant would be eligible to redevelop the site after it receives a COC.

Site Management

Site management is the last phase of the site cleanup program. This phase begins when the COC is issued. Site management may be conducted by the Applicant under NYSDEC oversight, if contamination will remain in place. Site management incorporates any institutional and engineering controls required to ensure that the remedy implemented for the site remains protective of public health and the environment. All significant activities are detailed in a Site Management Plan.

An institutional control is a non-physical restriction on use of the site, such as a deed restriction that would prevent or restrict certain uses of the property. An institutional control may be used when the cleanup action leaves some contamination that makes the site suitable for some, but not all uses.

An engineering control is a physical barrier or method to manage contamination. Examples include: caps, covers, barriers, fences, and treatment of water supplies.

Site management also may include the operation and maintenance of a component of the remedy, such as a system that is pumping and treating groundwater. Site management continues until NYSDEC determines that it is no longer needed.

Appendix A

Project Contacts and Locations of Reports and Information

For information about the site's investigation and cleanup program, the public may contact any of the following project staff:

New York State Department of Environmental Conservation (NYSDEC):

Jaspal Walia
New York State Department of Environmental Conservation
Division of Environmental Remediation
270 Michigan Ave
Buffalo, NY 14203-2915
Jaspal.walia@dec.ny.gov
Region 9 Email: region9@dec.ny.gov

Kristen Davidson
Citizen Participation Specialist Division of Public Affairs
270 Michigan Avenue
Buffalo, New York 14203
(716)-851-7220
Kristen.Davidson@dec.ny.gov

New York State Department of Health (NYSDOH):

Christine Vooris
New York State Department of Health
Bureau of Environmental Exposure Investigation
Empire State Plaza
Corning Tower Room 1787
Albany, NY 12237
christine.vooris@health.ny.gov

NYSDOH Email: BEEI@health.ny.gov

Public Repository for Reports and Information:

Buffalo & Eric County Public Library
1 Lafayette Square
Buffalo, NY 14203

Appendix B

Site Contact List

1. Chief executive officer and planning board chairperson for municipalities property is located

Erie County

County Executive: Mark C. Poloncarz
Edward A. Rath County Office Building
95 Franklin Street, 16th floor
Buffalo, NY 14202
Phone: (716) 858-8500

County Environment and Planning Commissioner: Thomas R. Hersey, Jr.
Edward A Rath County Office Building
95 Franklin Street, 10th Floor
Buffalo, New York 14202

City of Buffalo

Mayor – Byron W. Brown
65 Niagara Square Room
201
Buffalo, NY 14202

Director of Planning: Nadine Marrero
65 Niagara Square
Room 901
Buffalo, NY 14202

2. Residents, owners, and occupants of the property and properties adjacent to the property.

Property
McGuire Development Company LLC
1100 Michigan Avenue
Buffalo, NY 14209

Adjacent Properties
Cornerstone Manor LP (apartment)
150 North Street East
Buffalo, NY 14203

City Honors/Fosdick-Masten (residential vacant land)
172 North Street East
Buffalo, NY 14204

J-P Group (residential vacant land)
1140 Michigan Avenue
Buffalo, NY 14203

1238 Group, LLC (residential vacant land)
138 Best Street
Buffalo, NY 14203

1238 Group, LLC (residential vacant land)
136 Best Street
Buffalo, NY 14203

Alicia M. Thomas (two family dwelling)
134 Best Street
Buffalo, NY 14209

Dorian Thompson (two family dwelling)
130 Best Street
Buffalo, NY 14215

James Brooks (two family dwelling)
126 Best Street
Buffalo, NY 14209

AKM316 Properties, LLC (two family dwelling) 122
Best Street
Buffalo, NY 14215

McGuire Development Company, LLC
951 Ellicott Street
Buffalo, NY 14209

3. Local news media from which the community typically obtains information

The Buffalo News
One News Plaza
PO Box 100
Buffalo, NY 14240

WGRZ-TV 2NBC
259 Delaware Ave
Buffalo, NY 14202

WIVB-TV 4
2077 Elmwood Avenue
Buffalo, NY 14207

WKBW-TV 7

Broadcast Plaza Buffalo, NY 14202

4. The public water supplier which services the area in which the property is located.

Buffalo Water Department 120 Delaware Avenue
Buffalo, NY 14202

Erie County Water Department 295 Main Street
Buffalo, NY 14202

5. Any person requested to be placed on the list

None.

6. The administrator of any school or day care facility located on or near the property.

City Honors School 186 East North Street Buffalo,
NY 14204

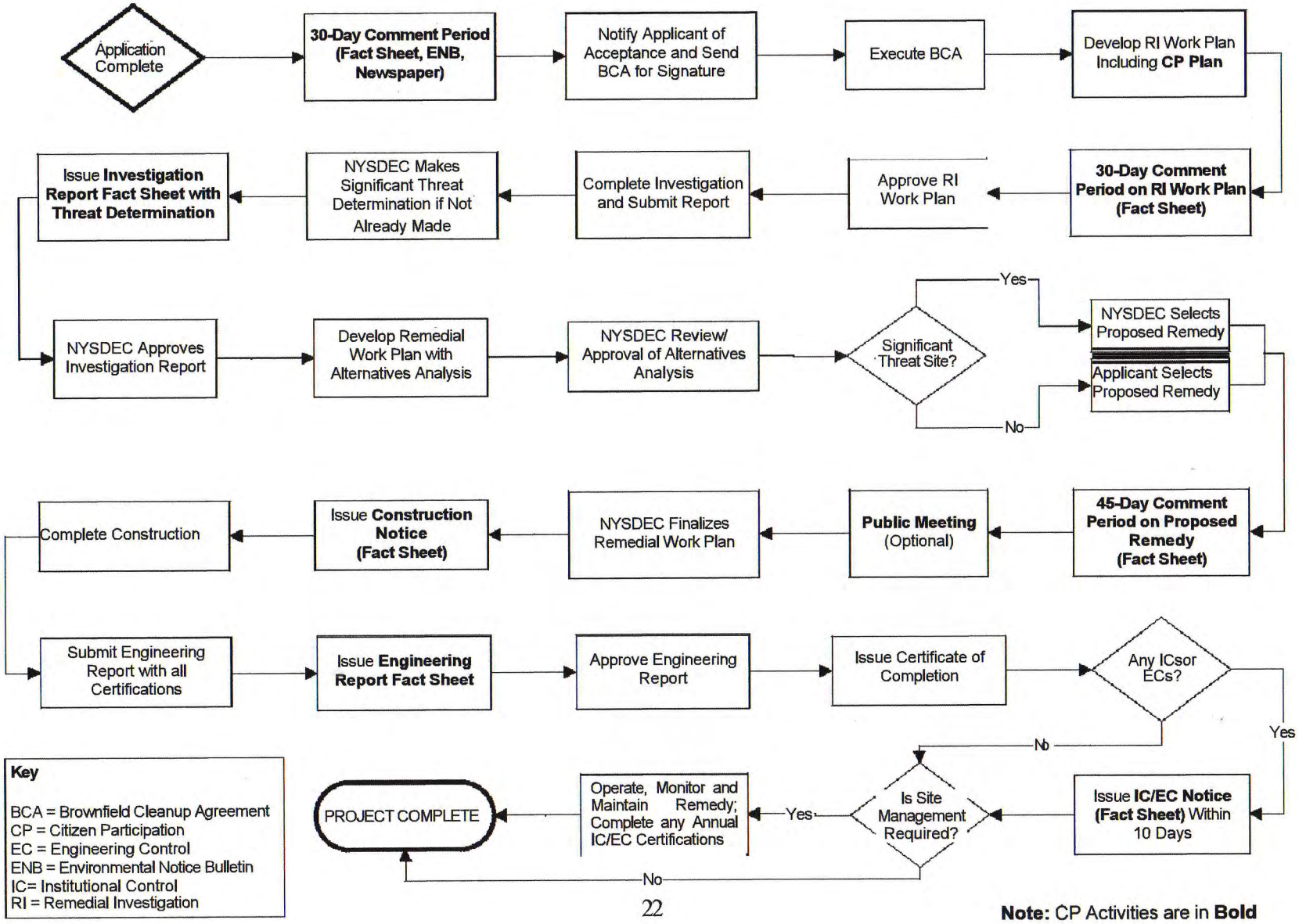
7. The location of a document repository for the project (e.g., local library). In addition, attach a copy of a letter sent to the repository acknowledging that it agrees to act as the document repository for the property.

Buffalo & Eric County
Public Library 1 Lafayette
Square
Buffalo, NY 14203
See confirming letter attached.

Appendix C

BCP Process Flowchart

Appendix D– Brownfield Cleanup Program Process



Note: CP Activities are in **Bold**

APPENDIX C

QUALITY ASSURANCE/QUALITY CONTROL PLAN

QUALITY ASSURANCE/QUALITY CONTROL PLAN

FORMER PILGRIM VILLAGE FAMILY APPARTMENTS
BUFFALO, NEW YORK 14209

NYSDEC SITE #915362

Prepared for:

SAA EVI MC Family, LLC.
150 SE 2nd Avenue, Suite 300
Miami, FL 33131

Prepared by:

BE3CORP
BRYDGES ENGINEERING IN ENVIRONMENT & ENERGY
960 Busti Avenue, Suite B-150
Buffalo, New York 14213

January 2021

Table of Contents

1.0 INTRODUCTION

This Quality Assurance/Quality Control (QA/QC) Plan provides an overview of QA/QC procedures required for the project. It also provides methods for laboratory testing of environmental samples obtained from the Site, which helps to ensure the quality of the data produced. The organizational structure for this project is presented in the Work Plan, which identifies the names of key project personnel. The project manager is responsible for verifying that QA procedures are followed in the field so that quality, representative samples are collected. The Project Manager is in contact with the analytical laboratory to monitor laboratory activities so that holding times and other QA/QC requirements are met. The anticipated quantity of field samples collected, and corresponding analytical parameters/methods will be specified during remediation

TABLE 1
ANALYTICAL SUMMARY TABLE

PARAMETER	EPA METHOD
Part 375 VOCs	8260
Part 375 SVOCs	8270
Part 375 Metals	6010/7470/7471
Part 375 PCBs	8082
Part 375 Pesticides	8081
PFAS Contaminants	537.1
1,4 Dioxane	8270SIM

Holding Times: 8260-14 days and 8270, 8081, and 8082-7 days

A complete analyte list is provided in Table 2 and analytical methods and procedures are provided in Table 3. Both tables are located at the end of this document.

The analytical laboratory proposed for use for the analysis of samples will be a certified NYSDOH ELAP laboratory. The QA Manager of the laboratory will be responsible for performing project-specific audits and for overseeing the quality control data generated. The field geologist/technician coordinates all personnel involved with field sampling, verifies that all sampling is conducted per the FSP, and communicates regularly with the Project Manager. The ultimate responsibility for maintaining quality throughout the project rests with the Project Manager, including field and laboratory QA/QC.

PFAS sampling and analysis will be done in accordance with the NYSDEC document: “Sampling, Analysis, and Assessment of PFAS under NYSDEC’s Part 375 Remedial Programs document, dated October 2020.”

2.0 DATA QUALITY OBJECTIVES

2.1 BACKGROUND

Data quality objectives (DQOs) are qualitative and quantitative statements, which specify the quality of data required supporting the investigation for the site. DQOs focus on the identification of the end use of the data to be collected. The project DQOs are achieved utilizing the definitive data category as outlined in *Guidance for the Data Quality Objectives Process,* EPA QA/G-4 (September 1994). All sample analyses will provide definitive data, which are generated using rigorous analytical methods such as reference methods approved by the United States Environmental Protection Agency (USEPA). The purpose of this investigation is to determine the nature and extent of contamination at the site.

Within the context of the purpose stated above, the project DQOs for data collected during this investigation are:

- To assess the nature and extent of contamination in soil, groundwater, and soil vapor
- To maintain the highest possible scientific/professional standards for each procedure
- To develop sufficient data to assess whether the levels of contaminates identified in the media sampled exceed regulatory guidelines

2.2 QA Objectives for Chemical Data Measurement

Sample analytical methodology for the media sampled and data deliverables are required to adhere to the requirements in NYSDEC Analytical Services Protocol. Laboratories are instructed to complete Sample Preparation and Analysis Summary forms and submit with the data packages. The laboratory is instructed that matrix interferences must be fixed to the extent practicable. To achieve the definitive data category described above, the data quality indicators of precision, accuracy, representativeness, comparability, and completeness are measured during analysis.

2.2.1 Precision

Precision examines the distribution of the reported values about their mean. The distribution of reported values refers to how different the individual reported values are from the average reported value. Precision may be affected by the natural variation of the matrix or contamination within that matrix and by errors made in field or laboratory handling procedures. Precision is evaluated using analyses of a laboratory matrix spike/matrix spike duplicate (for organics) and matrix duplicates (for inorganics), which indicate analytical precision through the reproducibility of the analytical results. Relative Percent Difference (RPD) is used to evaluate precision and it must meet the method requirements.

2.2.2 Accuracy

Accuracy measures the analytical bias in a measurement system. Sources of error are the sampling process, field contamination, preservation, handling, sample matrix, sample preparation, and analysis techniques. These data help to assess the potential concentration contribution from various outside sources. The laboratory objective for accuracy is to equal or exceed the accuracy demonstrated for the applied analytical methods on samples of the same matrix. The percent recovery criterion is used to estimate accuracy based on recovery in the matrix spike/matrix spike duplicate and matrix spike blank samples. The spike and spike duplicate, which will give an indication of matrix effects that may be affecting target compounds is also a good gauge of method efficiency.

2.2.3 Representativeness

Representativeness expresses the degree to which the sample data accurately and precisely represent the characteristics of a population of samples, parameter variations at a sampling point, or environmental conditions. Representativeness is a qualitative parameter, which is most concerned with the proper design of the sampling program or sub-sampling of a given sample. Objectives for representativeness are defined for sampling and analysis tasks and are a function of the investigative objectives. The sampling procedures described in the Field Sampling Plan have been selected with the goal of obtaining representative samples for the media of concern.

2.2.4 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. A DQO for this program is to produce data with the greatest possible degree of comparability. This goal is achieved through using standard techniques to collect and analyze representative samples and reporting analytical results in appropriate units. Complete field documentation will support the assessment of comparability. Comparability is limited by the other parameters (e.g., precision, accuracy, representativeness, completeness, comparability), because only when precision and accuracy are known can data sets be compared with confidence. For data sets to be comparable, it is imperative that contract-required methods and procedures be explicitly followed.

2.2.5 Completeness

Completeness is defined as a measure of the amount of valid data obtainable from a measurement system compared to the amount that was expected to be obtained under normal conditions. It is important that appropriate QA procedures be maintained to verify that valid data are obtained to meet project needs. For the data generated, a goal of 90% is required for completeness (or usability) of the analytical data. If this goal is not met, then project personnel will determine whether the deviations might cause the data to be rejected.

3.0 SAMPLING LOCATIONS, CUSTODY, AND HOLDING TIMES

Sampling locations are discussed in Work Plan. Procedures addressing field and laboratory sample chain-of-custody and holding times details are presented in the Field Sampling Plan. The laboratory must meet the method required detection limits which are referenced within the methods.

4.0 CALIBRATION PROCEDURES AND FREQUENCY

To obtain a high level of precision and accuracy during sample processing procedures, laboratory instruments must be calibrated properly. Several analytical support areas must be considered so the integrity of standards and reagents is upheld prior to instrument calibration. The following sections describe the analytical support areas and laboratory instrument calibration procedures.

4.1 ANALYTICAL SUPPORT AREAS

Prior to generating quality data, several analytical support areas must be considered; these are detailed in the following paragraphs.

Standard/Reagent Preparation - Primary reference standards and secondary standard solutions shall be obtained from National Institute of Standards and Technology (NIST), or other reliable commercial sources to verify the highest purity possible. The preparation and maintenance of standards and reagents will be accomplished according to the methods referenced. All standards and standard solutions are to be formally documented (i.e., in a logbook) and should identify the supplier, lot number, purity/concentration, receipt/preparation date, preparers name, method of preparation, expiration date, and any other pertinent information. All standard solutions shall be validated prior to use. Care shall be exercised in the proper storage and handling of standard solutions (e.g., separating volatile standards from nonvolatile standards). The laboratory shall continually monitor the quality of the standards and reagents through well documented procedures.

Balances - The analytical balances shall be calibrated and maintained in accordance with manufacturer specifications. Calibration is conducted with two Class AS" weights that bracket the expected balance use range. The laboratory shall check the accuracy of the balances daily and they must be properly documented in permanently bound logbooks.

Refrigerators/Freezers - The temperature of the refrigerators and freezers within the laboratory shall be monitored and recorded daily. This will verify that the quality of the standards and reagents is not compromised, and the integrity of the analytical samples is upheld. Appropriate acceptance ranges (2 to 6°C for refrigerators) shall be clearly posted on each unit in service.

Water Supply System - The laboratory must maintain a sufficient water supply for all project needs. The grade of the water must be of the highest quality (analyte-free) to eliminate false-positives from the analytical results. Ultraviolet cartridges or carbon absorption treatments are recommended for organic analyses and ion-exchange treatment is recommended for inorganic tests. Appropriate documentation of the quality of the water supply system(s) will be performed on a regular basis.

4.2 LABORATORY INSTRUMENTS

Calibration of instruments is required to verify that the analytical system is operating properly and at the sensitivity necessary to meet established quantitation limits. Each instrument for organic and inorganic analyses shall be calibrated with standards appropriate to the type of instrument and linear range established within the analytical method(s). Calibration of laboratory instruments will be performed according to specified methods.

In addition to the requirements stated within the analytical methods, the contract laboratory will be required to analyze an additional low-level standard at or near the detection limits. In general, standards will be used that bracket the expected concentration of the samples. This will require the use of different concentration levels, which are used to demonstrate the instrument's linear range of calibration.

Calibration of an instrument must be performed prior to the analysis of any samples and then at periodic intervals (continuing calibration) during the sample analysis to verify that the instrument is still calibrated. If the contract laboratory cannot meet the method required calibration requirements, corrective action shall be taken. All corrective action procedures taken by the contract laboratory are to be documented, summarized within the case narrative, and submitted with the analytical results.

5.0 INTERNAL QUALITY CONTROL CHECKS

Internal QC checks are used to determine if analytical operations at the laboratory are in control, as well as determining the effect sample matrix may have on data being generated. Two types of internal checks are performed and are described as batch QC and matrix-specific QC procedures. The type and frequency of specific QC samples performed by the contract laboratory will be according to the specified analytical method and project specific requirements. Acceptable criteria and target ranges for these QC samples are presented within the referenced analytical methods.

QC results which vary from acceptable ranges shall result in the implementation of appropriate corrective measures, potential application of qualifiers, and/or an assessment of the impact these corrective measures have on the established data quality objectives. Quality control samples including any project-specific QC will be analyzed are discussed below.

5.1 BATCH QC

Method Blanks - A method blank is defined as laboratory-distilled or deionized water that is carried through the entire analytical procedure. The method blank is used to determine the level of laboratory background contamination. Method blanks are analyzed at a frequency of one per analytical batch.

Matrix Spike Blank Samples - A matrix spike blank (MSB) sample is an aliquot of water spiked (fortified) with all the elements being analyzed for calculation of precision and accuracy to verify that the analysis that is being performed is in control. An MSB will be performed for each matrix and organic parameter only.

5.2 MATRIX-SPECIFIC QC

Matrix Spike Samples - An aliquot of a matrix is spiked with known concentrations of specific compounds as stipulated by the methodology. The matrix spike (MS) and matrix spike duplicate (MSD) are subjected to the entire analytical procedure to assess both accuracy and precision of the method for the matrix by measuring the percent recovery and relative percent difference of the two spiked samples. The samples are used to assess matrix interference effects on the method, as well as to evaluate instrument performance. MS/MSDs are analyzed at a frequency of one each per 20 samples per matrix.

Matrix Duplicates - The matrix duplicate (MD) is two representative aliquots of the same sample which are prepared and analyzed identically. Collection of duplicate samples provides for the evaluation of precision both in the field and at the laboratory by comparing the analytical results of two samples taken from the same location. Obtaining duplicate samples from a soil matrix requires homogenization (except for volatile organic compounds) of the sample aliquot prior to filling sample containers, to best achieve representative samples. Every effort will be made to obtain replicate samples; however, due to interferences, lack of homogeneity, and the nature of the soil samples, the analytical results are not always reproducible.

Rinsate (Equipment) Blanks - A rinsate blank is a sample of laboratory demonstrated analyte-free water passed through and over the cleaned sampling equipment. A rinsate blank is used to indicate potential contamination from ambient air and from sample instruments used to collect

and transfer samples. This water must originate from one common source within the laboratory and must be the same water used by the laboratory performing the analysis. The rinsate blank should be collected, transported, and analyzed in the same manner as the samples acquired that day. Rinsate blanks for nonaqueous matrices should be performed at a rate of 10 percent of the total number of samples collected throughout the sampling event. Rinse blanks will not be performed on samples (i.e., groundwater) where dedicated disposable equipment is used.

Trip Blanks - Trip blanks are not required for nonaqueous matrices. Trip blanks are required for aqueous sampling events. They consist of a set of sample bottles filled at the laboratory with laboratory demonstrated analyte free water. These samples then accompany the bottles that are prepared at the lab into the field and back to the laboratory, along with the collected samples for analysis. These bottles are never opened in the field. Trip blanks must return to the lab with the same set of bottles they accompanied to the field. Trip blanks will be analyzed for volatile organic parameters. Trip blanks must be included at a rate of one per volatile sample shipment.

6.0 CALCULATION OF DATA QUALITY INDICATORS

6.1 PRECISION

Precision is evaluated using analyses of a field duplicate or a laboratory MS/MSD that indicate analytical precision through the reproducibility of the analytical results. RPD is used to evaluate precision by the following formula:

$$RPD = \frac{(X_1 - X_2)}{[(X_1 + X_2)/2]} \times 100\%$$

where:

X_1 = Measured value of sample or matrix spike
X_2 = Measured value of duplicate or matrix spike duplicate

Precision will be determined using MS/MSD (for organics) and matrix duplicates (for inorganics) analyses.

6.2 ACCURACY

Accuracy is defined as the degree of difference between the measured or calculated value and the true value. The closer the numerical value of the measurement comes to the true value or actual concentration, the more accurate the measurement is. Analytical accuracy is expressed as the percent recovery of a compound or element that has been added to the environmental sample at known concentrations before analysis. Analytical accuracy may be assessed using known and unknown QC samples and spiked samples. It is presented as percent recovery. Accuracy will be determined from matrix spike, matrix spike duplicate, and matrix spike blank samples, as well as from surrogate compounds added to organic fractions (i.e., volatiles, semivolatiles, PCB), and is calculated as follows:

$$Accuracy\ (\%R) = \frac{(X_s - X_u)}{K} \times 100\%$$

where:

X_s - Measured value of the spike sample
X_u - Measured value of the unspiked sample
K - Known amount of spike in the sample

6.3 COMPLETENESS

Completeness is calculated on a per matrix basis for the project and is calculated as follows:

$$Completeness\ (\%C) = \frac{(X_v - X_n)}{N} \times 100\%$$

where:
X_v - Number of valid measurements
X_n - Number of invalid measurements
N - Number of valid measurements expected to be obtained

7.0 CORRECTIVE ACTIONS

Laboratory corrective actions shall be implemented to resolve problems and restore proper functioning to the analytical system when errors, deficiencies, or out-of-control situations exist at the laboratory. Full documentation of the corrective action procedure needed to resolve the problem shall be filed in the project records, and the information summarized in the case narrative. A discussion of the corrective actions to be taken is presented in the following sections.

7.1 INCOMING SAMPLES

Problems noted during sample receipt shall be documented by the laboratory. The Project Manager shall be contacted immediately for problem resolution. All corrective actions shall be documented thoroughly.

7.2 SAMPLE HOLDING TIMES

If any sample extraction or analyses exceed method holding time requirements, the Project Manager shall be notified immediately for problem resolution. All corrective actions shall be documented thoroughly.

7.3 INSTRUMENT CALIBRATION

Sample analysis shall not be allowed until all initial calibrations meet the appropriate requirements. All laboratory instrumentation must be calibrated in accordance with method requirements. If any initial/continuing calibration standards exceed method QC limits, recalibration must be performed and, if necessary, reanalysis of all samples affected back to the previous acceptable calibration check.

7.4 REPORTING LIMITS

The laboratory must meet the method required detection limits listed in NYSDEC ASP, 10/95 criteria. If difficulties arise in achieving these limits due to a sample matrix, the laboratory must

notify PEI project personnel for problem resolution. To achieve those detection limits, the laboratory must utilize all appropriate cleanup procedures to retain the project required detection limits. When any sample requires a secondary dilution due to high levels of target analytes, the laboratory must document all initial analyses and secondary dilution results. Secondary dilution will be permitted only to bring target analytes within the linear range of calibration. If samples are analyzed at a secondary dilution with no target analytes detected, the Project Manager will be immediately notified so that appropriate corrective actions can be initiated.

7.5 METHOD QC

All QC method-specified QC samples shall meet the method requirements referenced in the analytical methods. Failure of method-required QC will result in the review and possible qualification of all affected data. If the laboratory cannot find any errors, the affected sample(s) shall be reanalyzed or re-extracted/redigested, then reanalyzed within method-required holding times to verify the presence or absence of matrix effects. If matrix effect is confirmed, the corresponding data shall be flagged accordingly using the flagging symbols and criteria. If matrix effect is not confirmed, then the entire batch of samples may have to be reanalyzed or re-extracted/redigested, then reanalyzed at no cost. Project Manager shall be notified as soon as possible to discuss possible corrective actions should unusually difficult sample matrices be encountered.

7.6 CALCULATION ERRORS

All analytical results must be reviewed systematically for accuracy prior to submittal. If upon data review calculation or reporting errors exist, the laboratory will be required to reissue the analytical data report with the corrective actions appropriately documented in the case narrative.

8.0 DATA REDUCTION, VALIDATION, AND USABILITY

8.1 DATA REDUCTION

Laboratory analytical data are first generated in raw form at the instrument. These data may be either in a graphic or printed tabular format. Specific data generation procedures and calculations are found in each of the referenced methods. Analytical results must be reported consistently. Identification of all analytes must be accomplished with an authentic standard of the analyte traceable to NIST or USEPA sources. Individuals experienced with an analysis and knowledgeable of requirements will perform data reduction.

8.2 DATA VALIDATION

Third party Data validation is required and is a systematic procedure of reviewing a body of data against a set of established criteria to provide a specified level of assurance of validity prior to its intended use. All analytical results from soil and groundwater samples will have ASP Category B deliverables and DUSRs. The data validation will be in accordance with DER-10 Section 2.2 with ASP - Category B data deliverables provided by the laboratory and a DUSR provided for validation. Where possible, discrepancies will be resolved by the project manager.

- Technical holding times will be in accordance with NYSDEC ASP, 7/2005 edition.
- Organic calibration and QC criteria will be in accordance with NYSDEC ASP, 7/2005 edition. Data will be qualified if it does not meet NYSDEC ASP, 7/2005 criteria.

9.0 REFERENCES

Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Quality Assurance Manual, Final Copy, Revision I, October 1989.

National Enforcement Investigations Center of USEPA Office of Enforcement. *NEIC Policies and Procedures.* Washington: USEPA.

New York State Department of Environmental Conservation (NYSDEC) 2005. *Analytical Services Protocol*, (ASP) 7/2005 Edition. Albany: NYSDEC.

NYSDEC "DER-10 Technical Guidance for Site Investigation and Remediation (DER-10)," dated May 3, 2010, Appendix 2B

NYSDEC "Sampling, Analysis, and Assessment of PFAS under NYSDEC's Part 375 Remedial Programs document, dated October 2020."

Sampling, Analysis, and Assessment of PFAS under NYSDEC's Part 375 Remedial Programs document, dated October 2020.

TABLE 2
ANALYTE LIST

Part 375 Metals (ICP)
EPA 6010C

Analyte

Arsenic
Barium
Beryllium
Cadmium
Chromium
Copper
Lead
Manganese
Nickel
Selenium
Silver
Zinc
Mercury EPA 7471B
Cyanide, Total EPA 9014

PCBs **EPA 7471B**

PCB-1016
PCB-1221
PCB-1232
PCB-1242
PCB-1248

Chlorinated Pesticides
EPA 8081B/ Herbicides EPA 8151

4,4-DDD
4,4-DDE
4,4-DDT
Aldrin
alpha-BHC
beta-BHC
cis-Chlordane
delta-BHC
Dieldrin
Endosulfan I
Endosulfan II
Endosulfan Sulfate
Endrin
Endrin Aldehyde
Endrin Ketone
gamma-BHC (Lindane)
Heptachlor
Heptachlor Epoxide
Methoxychlor
Toxaphene
trans-Chlordane
2,4,5-TP Acid (Silvex)

Semi-Volatile Organics (Acid/Base Neutrals)
EPA 8270D

1,1-Biphenyl
1,2,4,5-Tetrachlorobenzene
1,2,4-Trichlorobenzene
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
2,2-Oxybis (1-chloropropane)
2,3,4,6-Tetrachlorophenol
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
2,4-Dichlorophenol
2,4-Dimethylphenol
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
2-Chloronaphthalene
2-Chlorophenol
2-Methylnapthalene
2-Methylphenol
2-Nitroaniline
2-Nitrophenol
3&4-Methylphenol
3,3'-Dichlorobenzidine
3-Nitroaniline
4,6-Dinitro-2-methylphenol
4-Bromophenyl phenyl
4-Chloro-3-methylphenol
4-Chloroaniline
4-Chlorophenyl phenyl ether
4-Nitroaniline
4-Nitrophenol
Acenaphthene
Acenaphthylene
Acetophenone
Anthracene
Atrazine
Benzaldehyde
Benzo (a) anthracene
Benzo (a) pyrene
Benzo (b) fluoranthene
Benzo (g,h,i) perylene
Benzo (k) fluoranthene
Bis (2-chloroethoxy) methane
Bis (2-chloroethyl) ether
Bis (2-ethylhexyl) phthalate
Butylbenzylphthalate
Caprolactam
Carbazole
Chrysene
Dibenz (a,h) anthracene
Dibenzofuran
Diethyl phthalate
Dimethyl phthalate
Di-n-butyl phthalate
Di-n-octylphthalate
Fluoranthene
Fluorene
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachloroethane
Indeno (1,2,3-cd) pyrene
Isophorone
Naphthalene
Nitrobenzene
N-Nitroso-di-n-propylamine
N-Nitrosodiphenylamine
Pentachlorophenol
Phenanthrene
Phenol
Pyrene

Volatile Organics
EPA 8260C

1,1,1-Trichloroethane
1,1,2,2-Tetrachloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
1,2,3-Trichlorobenzene
1,2,4-Trichlorobenzene
1,2,4-Trimethylbenzene
1,2-Dibromo-3-Chloropropane
1,2-Dibromoethane
1,2-Dichlorobenzene
1,2-Dichloroethane
1,2-Dichloropropane
1,3,5-Trimethylbenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
1,4-dioxane
2-Butanone
2-Hexanone
4-Methyl-2-pentanone
Acetone
Benzene
Bromochloromethane
Bromodichloromethane

TABLE 2 (Continued)

Volatile Organics
(Continued)

Bromomethane
Carbon disulfide
Carbon Tetrachloride
Chlorobenzene
Chloroethane
Chloroform
Chloromethane
cis-1,2-Dichloroethene
cis-1,3-Dichloropropene
Cyclohexane
Dibromochloromethane
Dichlorodifluoromethane
Ethylbenzene
Freon 113
Isopropylbenzene
m,p-Xylene
Methyl acetate
Methyl tert-butyl Ether
Methylcyclohexane
Methylene chloride
Naphthalene
n-Butylbenzene
n-Propylbenzene
o-Xylene
p-Isopropyltoluene
sec-Butylbenzene
Styrene
tert-Butylbenzene
Tetrachloroethene
Toluene
trans-1,2-Dichloroethene
trans-1,3-Dichloropropene
Trichloroethene
Trichlorofluoromethane
Vinyl chloride

Volatiles-Air - TO-15

Acetone
Benzene
Carbon disulfide
Chloromethane
Dichlorodifluoromethane
Ethanol
Ethylbenzene
Ethyl Acetate
4-Ethyltoluene
Heptane
Hexane
Isopropyl Alcohol
Methylene chloride
Methyl ethyl ketone
Propylene
1,1,1-Trichloroethane
1,2,4-Trimethylbenzene
1,3,5-Trimethylbenzene
2,2,4-Trimethylpentane
Tertiary Butyl Alcohol
Tetrachloroethylene
Toluene
Trichloroethylene
Trichlorofluoromethane
m,p-Xylene
o-Xylene
Xylenes (total)
Acetone
Benzene
Carbon disulfide
Chloromethane
Dichlorodifluoromethane
Ethanol
Ethylbenzene
Ethyl Acetate
4-Ethyltoluene
Heptane
Hexane
Isopropyl Alcohol
Methylene
Methyl ethyl ketone
Propylene
1,1,1-Trichloroethane

PFAS ANALYTE LIST

Group	Chemical Name	Abbreviation	CAS Number
Perfluoroalkyl sulfonates	Perfluorobutanesulfonic acid	PFBS	375-73-5
	Perfluorohexanesulfonic acid	PFHxS	355-46-4
	Perfluoroheptanesulfonic acid	PFHpS	375-92-8
	Perfluorooctanessulfonic acid	PFOS	1763-23-1
	Perfluorodecanesulfonic acid	PFDS	335-77-3
Perfluoroalkyl carboxylates	Perfluorobutanoic acid	PFBA	375-22-4
	Perfluoropentanoic acid	PFPeA	2706-90-3
	Perfluorohexanoic acid	PFHxA	307-24-4
	Perfluoroheptanoic acid	PFHpA	375-85-9
	Perfluorooctanoic acid	PFOA	335-67-1
	Perfluorononanoic acid	PFNA	375-95-1
	Perfluorodecanoic acid	PFDA	335-76-2
	Perfluoroundecanoic acid	PFUA/PFUdA	2058-94-8
	Perfluorododecanoic acid	PFDoA	307-55-1
	Perfluorotridecanoic acid	PFTriA/PFTrDA	72629-94-8
	Perfluorotetradecanoic acid	PFTA/PFTeDA	376-06-7
Fluorinated Telomer Sulfonates	6:2 Fluorotelomer sulfonate	6:2 FTS	27619-97-2
	8:2 Fluorotelomer sulfonate	8:2 FTS	39108-34-4
Perfluorooctane-sulfonamides	Perfluroroctanesulfonamide	FOSA	754-91-6
Perfluorooctane-sulfonamidoacetic acids	N-methyl perfluorooctanesulfonamidoacetic acid	N-MeFOSAA	2355-31-9
	N-ethyl perfluorooctanesulfonamidoacetic acid	N-EtFOSAA	2991-50-6

TABLE 3 - ANALYTICAL METHODS & PROCEDURES SUMMARY

Groundwaters

Analyte(s)	Method	Preservation	Holding Time	Container
Volatile Organics	8260	HCl to pH <2, cool to ≤6°C	14 days	2 - 40 ml septum sealed vials
Semivolatile Organics	8270	cool to ≤6°C	Samples extracted within 7 days and extracts analyzed within 40 days following extraction	1 liter amber with Teflon lined cap
Organochlorine Pesticides	8081	cool to ≤6°C		1 liter amber with Teflon lined cap
Chlorinated Herbicides (silvex)	8151	cool to ≤6°C		1 liter amber with Teflon lined cap
PCBs	8082	cool to ≤6°C	none	1 liter amber with Teflon lined cap
ICP Metals	6010	HNO3 to pH <2	6 months	250 ml. plastic
Mercury	7470	HNO3 to pH <2	28 days	250 ml. plastic
Hexavalent Chromium	7196	cool to ≤6°C	24 hours	125 ml. plastic
Cyanide, Total	9010	NaOH to pH >12, cool to ≤6°C	14 days	250 ml. plastic
PFAS	537M	cool to ≤6°C	Samples extracted within 14 days and extracts analyzed within 28 days following extraction	250 ml. HDPE
1,4-Dioxane	8270 SIM	cool to ≤6°C	Samples extracted within 7 days and extracts analyzed within 40 days following extraction	1 liter amber with Teflon lined cap

Soils

Analyte(s)	Method	Preservation	Holding Time	Container
Volatile Organics	8260	cool to ≤6°C	14 days	4 oz. widemouth glass with Teflon lined cap
Semivolatile Organics	8270	cool to ≤6°C	Samples extracted within 14 days and extracts analyzed within 40 days following extraction	4 oz. widemouth glass with Teflon lined cap
Organochlorine Pesticides	8081	cool to ≤6°C		4 oz. widemouth glass with Teflon lined cap
Chlorinated Herbicides (silvex)	8151	cool to ≤6°C		4 oz. widemouth glass with Teflon lined cap
PCBs	8082	cool to ≤6°C	none	4 oz. widemouth glass with Teflon lined cap
ICP Metals	6010	none	6 months	4 oz. widemouth glass with Teflon lined cap
Mercury	7471	cool to ≤6°C	28 days	4 oz. widemouth glass with Teflon lined cap
Hexavalent Chromium	3060/7196	cool to ≤6°C	30 days to extraction 7 days from extraction to analysis	4 oz. widemouth glass with Teflon lined cap
Cyanide, Total	9012	cool to ≤6°C	14 days	4 oz. widemouth glass with Teflon lined cap
PFAS	537M	cool to ≤6°C	Samples extracted within 14 days and extracts analyzed within 40 days following extraction	250 ml.HDPE
1,4-Dioxane	8270 SIM	cool to ≤6°C	Samples extracted within 7 days and extracts analyzed within 40 days following extraction	4 oz. widemouth glass with Teflon lined cap

APPENDIX D

FIELD SAMPLING PLAN

FIELD SAMPLING PLAN

FORMER PILGRIM VILLAGE FAMILY APARTMENTS
BUFFALO, NEW YORK 14209

NYSDEC SITE #915362

Prepared for:

SAA EVI MC Family, LLC.
150 SE 2nd Avenue, Suite 300
Miami, FL 33131

Prepared by:

BE3CORP
BRYDGES ENGINEERING IN ENVIRONMENT & ENERGY
960 Busti Avenue, Suite B-150
Buffalo, New York 14213

January 2021

Table of Contents

1.0 INTRODUCTION

This Field Sampling Plan (FSP) provides procedures for the field activities designed in the Work Plan where soil, groundwater, and vapor sampling are required at the Site. The field procedures presented in this manual should be followed by all field personnel, as adherence can help to ensure the quality and usability of the data collected. The FSP should be used collectively with and comply with the following documents:

- The HASP.
- The QA/QC Plan.
- The RI Work Plan.

PFAS sampling and analysis should be done in accordance with the NYSDEC document: "Sampling, Analysis, and Assessment of PFAS under NYSDEC's Part 375 Remedial Programs document, dated October 2020." This document is to be used with both soil and groundwater samples.

All field equipment requiring calibration will be calibrated per, and at the frequency, recommended by the equipment manufacturer.

2.0 SOIL SAMPLING

Soil samples are obtained as outlined in the Work Plan, considering the following general protocol:

1. Inspect newly created test pit or boring core stratigraphy once obtained in/from the subsurface.
2. Sample soil, and record depth and any physical characteristics (e.g., contamination, odor, discoloration, debris, etc.) in the logbook.
3. Quickly place the calibrated PID into the exposed soil and record the instrument readings in the logbook.
4. Samples should be collected at locations and frequency per the Work Plan and QA/QC Plan.
5. Decontaminate sampling implements after use and between sample locations. In most cases, dedicated sampling equipment is utilized thereby eliminating equipment decontamination. If dedicated equipment is not used, "dry" decontamination will be applied and "wet" as necessary.
6. Label each sample container with the appropriate sample identification and place sample in a cooler (cooled to 4 degrees C.) for shipment to the laboratory.
7. Initiate chain-of-custody procedures.

2.1 TEST PIT PROCEDURES

Test pit sampling is a standard method of soil sampling to obtain representative samples for identification as well as to serve as a means of obtaining a significant information about the subsurface. The following steps describe the procedures for test pit operations.

2.1.1 Field Preparation

1. Verify underground utilities have been found.
2. Review scope of work, safety procedures and communication signals with site personnel.

3. Pre-clean the sampling equipment prior to use, as necessary.
4. Mark and review trench locations. Specific locations are determined in the field and are selected based on areas of visible or potential surface contamination or debris, pre-determined locations representing specific Site areas, and field obstructions.

2.1.2 Excavation and Sample Collection

1. Position backhoe/equipment into appropriate area considering direction of excavation, obstructions, safety concerns, etc.
2. Commence excavation with the backhoe upwind of the excavation, as possible.
3. Ensure continuous air monitoring has been activated.
4. Screen soil regularly for VOCs as excavation progresses and soil is stockpiled.
5. As directed by field technician for each test trench, topsoil, or cover soil (if any) is excavated and placed on poly/plastic sheeting.
6. Soil/material below the topsoil is excavated to the depth as directed by field technician and placed on poly/plastic sheeting separate from the topsoil/cover soil.
7. Segregate 'clean' material from impacted material, as possible, using visual observations and PID screening.
8. Record geologic log as trenches are excavated visually inspecting subsurface material for discoloration or staining and documenting pit/trench with photos. The following information will be recorded for each test pit log:
   - Depth, length, and width of the excavation.
   - Description of each lithological unit including depth and thickness of distinct soil, fill, or rock layers.
   - Description of any man-made impacts or apparent contamination.
   - Depth to groundwater and bedrock, if encountered.
9. Collect soil samples using dedicated stainless-steel spoons directly from the bucket of the backhoe at ground surface. No personnel shall enter the excavation to collect samples unless provisions in the HASP have been addressed for entering an excavation.
10. Place each soil sample directly into appropriate sample bottles/jars.
11. Clearly label the sample bottles and jars.
12. Place each jar in an ice-filled cooler.
13. Ship samples to laboratory as soon as possible, but no later than 24 hours after collection.
14. Document the types and numbers of samples collected on Chain-of-Custody.
15. Record time and date of sample collection and a description of the sample and any associated air monitoring measurements in the field logbook.
16. After sampling, backfill and compact (e.g., bucket and equipment tracks/wheels) the excavated material from each trench or pit prior to moving to next location.
17. Backfill with indigenous soil in the order in which the material was removed with the topsoil/cover soil placed last to cover the trench, placing impacted material at bottom of pit/trench and covering with 'clean' material.
18. Decontaminate sampling and excavation equipment between sampling locations (i.e., if not dedicated) and at completion over top of excavation area using dry methods initially and steam cleaning, as needed.

2.2 GEOPROBE PROCEDURES

Geoprobe direct push sampling is a standard method of soil sampling to obtain representative samples from the subsurface. Field preparation, sample collection, and data logging activities

for Geoprobe sampling are identical to that of test pitting/trenching listed above. The following procedures detail activities, as directed by the field technician, for the execution of Macro Core drilling operations after rig is in a downwind position and continuous air monitoring and VOC screening activities have commenced:

1. Startup drill rig and raise mast.
2. Use star bit with rig in rotary setting to penetrate pavement (if applicable).
3. Excavate a hole large enough to set a road box before you advance the borehole (if applicable).
4. Unthread the shoe from the bottom of the sample tube and inset a sample liner and rethread the shoe on the bottom of the sample tube.
5. Thread the drive cap on the top of the sample tube.
6. Align the sample tube so it is plumb in both directions to ensure a straight borehole is drilled.
7. Drive the top of the sample tube into ground surface.
8. Unthread the drive cap from the top of the sample tube and thread the pull cap in its place.
9. Pull the sample tube from the ground using caution to not pinch your hand between the drill rods, pull cap, or rig.
10. Unthread the cutting shoe and pull the sample liner from the bottom of the sample tube. Use pliers to reach in the sample tube and grab the liner, if needed.
11. Cut the sample liner lengthwise in two places and present the sample on a table or plastic sheeting (or similar) to ensure all sample material is contained.
12. Insert a new liner and thread on the cutting shoe and repeat steps from #4 to #11 with the addition of a 4-foot long drill rod onto the top of the sample tube to advance a second 4-foot interval.
13. Proceed with this procedure until the desired depth or refusal is reached.
14. Upon completion of probing, decontaminate all equipment in contact with the soil/fill in a decontamination area using Alconox and water.
15. Backfill borings with indigenous soil in the order in which the material was removed with the topsoil/sand/cover soil placed last to cover the hole.

Reference: American Society for Testing Material (ASTM), 1992, ASTM D1586-84, Standard Method for Penetration Test and Split Barrel Sampling of Soils.

3.0 GROUNDWATER SAMPLING

3.1 WELL INSTALLATION PROCEDURES

The following procedure outlines a NYSDEC-approved method of constructing groundwater wells within unconsolidated material to monitor groundwater elevation and acquiring groundwater samples for laboratory testing. The well screen is 4” Schedule 40 pipe with 0.010 slot size. The following is a step-by-step method for the open-hole method of installing a groundwater well once a boring or augured hole has been drilled to a desired depth within the subsurface:

1. Thread a cap on the bottom section of well screen. If more than one section of well screen is required, thread the last section.
2. Lower the screen into the borehole with the riser section ready.
3. Add the riser sections to the screen. Do not drop the screen in the borehole.
4. Add riser sections as required until the bottom screen section touches the bottom of the

borehole.

5. If completing the well with a road box, mark the riser two inches below the lid of the road box and then cut the riser.
6. Place a slip cap over the top of the rise section.
7. Place sand in the space between the borehole and the PVC screen and riser to the required depth. Place the sand in very slowly so it does not bridge in the well bore.
8. Place bentonite and cement above the sand-pack.
9. Grout in the road box with concrete mix.

3.2 WELL DEVELOPMENT PROCEDURES

At least 24 hours after completion of drilling and installation, well development is completed through pumping or bailing until the discharged water is relatively sediment free and the indicator parameters (e.g., pH, temperature, specific conductivity, etc.) have reached steady-state. Development removes sediment and can improve the hydraulic properties of the sand pack. The effectiveness of this process is monitored to minimize the volume of discharged waters to obtain sediment-free samples. As approved by the regulatory agency, well development water can be discharged onto the ground surface downgradient of the well. Otherwise, this water must be containerized and sampled prior to discharge or disposal.

1. Select an appropriate well development method based upon water depth, well productivity, and sediment content of the water. Well development options include: (a) bailing; (b) manual pumping; and (c) submersible pumps. These options utilized with surging of the well screen using an appropriately sized surge block.
2. Decontaminate, as needed, and assemble equipment in the monitoring well based upon the method selected. Care should be taken not to introduce contaminants into the equipment or well during installation.
3. Proceed with development by repeated removal of water from the well until the discharged water is relatively sediment-free (i.e., < 50 NTUs). Volume of water removed pH and conductivity measurements are recorded on the Well Development/Purging Logs.

3.3 WELL PURGING PROCEDURES

To collect representative samples, groundwater wells must be adequately purged prior to sampling. Purging will require removing three to five volumes of standing water in rapidly recharging wells and at least one volume from wells with slow recharge rates. Sampling should commence as soon as adequate recharge has occurred. Although not required, it is recommended that purging and sampling occur at least 24 hours after development.

1. Remove well cover ensuring no foreign material enters the well.
2. Monitor the interior of the riser pipe for organic vapors using a PID. If reading of greater than 5 ppm is recorded, the well will be vented until levels are below 5 ppm before pumping is started.
3. Measure the water level below top of casing using an electronic water level indicator.
4. Determine the volume of water within the well by knowing the total depth of the well.
5. Wash the end of the probe with soap and rinse with deionized water between wells.
6. Utilize dedicated, new polyethylene discharge and intake tubing (preferably ½ inch diameter HDPE and cannot use LDPE for emerging contaminants) for each well.
7. Purge using bailers until the required volume is removed. If the well purges to dryness and recharges within 15 minutes, water can be removed as it recharges. If the well purges to dryness and is greater than 15 minutes, purging is terminated.

8. Purge until at least 1 volume of water is removed, but 3-5 volumes of water is preferred if recharge is sufficiently fast.
9. Calculate well volumes and record measurements for pH, temperature, turbidity, and conductivity during the purging along with physical observations.

3.4 WELL SAMPLING PROCEDURES

1. Perform well sampling within 24 hours of purging if well has recovered sufficiently to sample. If sufficient volume for analytical testing cannot be obtained from a well or if recharge exceeds 24 hours, then DEC should be consulted on analytical priorities and validity of the sample.
2. Collect sample using bailers into appropriate containers.
3. Label sample bottles using a waterproof permanent marker per procedures outlined below.
4. Use verifiably clean sample bottles (containing required preservatives) and place samples on ice in coolers for transport to the analytical laboratory, who will certify bottles are analyte-free.
5. Initiate chain-of-custody.
6. Collect separate sample into a 120 milliliter (mL) plastic container to measure pH, conductivity, turbidity, and temperature in the field.
7. Record well sampling data field notebook and on the Well Development/Purging Log.

4.0 SAMPLE DOCUMENTATION

Each soil and groundwater sample is logged in a bound field notebook by the technician or geologist. Field notes should include, but are not limited to the following:

- descriptions of subsurface material encountered during sampling,
- sample numbers and types of samples recovered, and
- date and time of sampling event.

The technician or geologist also completes a daily drilling or sampling record and chains-of-custody for all samples collected that are being transported to the laboratory. Once sampling program is complete, the geologist or technician transfers field notes/logs onto standard forms (e.g., boring logs, sampling logs, daily reports, etc.) to be included with the formal investigation report.

5.0 SAMPLING CONTAINER SELECTION

The selection of sample containers is based on the media being sampled and the required analysis. Container selection should be completed in advance of mobilizing into the field with close communications with the laboratory.

6.0 SAMPLE LABELING

The following procedure helps to prevent misidentification of samples and to clarify the location and purpose of environmental samples collected during the investigation:

1. Fix a non-removable (when wet) label to each container.

2. Wrap each sample bottle within 2-inch cellophane tape.
3. Write the following information with permanent marker on each label:
    A. Site name
    B. Sample identification
    C. Project number
    D. Date/time
    E. Sampler's initials
    F. Sample preservation
    G. Analysis required

Each sample is assigned a unique identification alpha-numeric code, such as RR-ss1 or WS-TP1 (2-3'), where the abbreviations represent RR – River Road (site), surface sample 1 and Waste Site, test pit 1, obtained at 2-3' bgs. Other common abbreviations include the following:

- BH = Geoprobe Borehole
- SW = Surface Water
- SED = Sediment
- SB = Soil Boring
- MSB = Matrix Spike Blank
- NSS = Near Surface Soil (1' - 2' depth)
- EB = Equipment Rinse Blank
- HW = Hydrant Water (Decon/Drilling Water)
- GW = Groundwater
- TB = Trip Blank
- RB = Rinse Blank
- MS/MSD =Matrix Spike/Matrix Spike Duplicate

7.0 SAMPLE SHIPPING

Proper documentation of sample collection and the methods used to control these documents are referred to as chain-of-custody procedures. Chain-of-custody procedures are essential for (1) presenting analytical results in a legal or regulatory forum (e.g., evidence in litigation or administrative hearings), (2) minimizing loss or misidentification of samples, and (3) ensuring that unauthorized persons do not tamper with collected samples.

The following chain-of-custody guidelines should be utilized during sample collection as outlined in and prepared by the National Enforcement Investigations Center (NEIC) Policies and Procedures of the USEPA Office of Enforcement:

1) Complete chain-of-custody record with all relevant information.
2) Send original chain with the samples in a sealed, waterproof bag taped inside the sample cooler.
3) Place adequate inert cushioning material (e.g., corrugated plastic, polypropylene foam wrap, etc.) in bottom of cooler.
4) Place bottles in cooler so they do not touch (use cushioning material for dividers).
5) Place VOA vials in sealed/waterproof bags in the center of the cooler.
6) Pack cooler with ice in sealed/waterproof plastic bags.
7) Pack cooler with cushioning material.
8) Place any additional paperwork in sealed bag with original chain.
9) Tape cooler drain shut.
10) Wrap cooler with packing tape at two locations to secure lid. Do not cover labels.

11) Place lab address on top of cooler.
12) Ship samples via overnight carrier the same day that they are collected.
13) Label cooler with "This side up" on all sides and "Fragile" on at least two sides.
14) Fix custody seals on front right and left of cooler and cover with packaging tape.

8.0 SOIL VAPOR INTRUSION SAMPLING

Soil vapor intrusion (SVI) investigation consist of sampling contaminant vapors that may exist beneath the building slabs, inside the buildings, and outside the buildings. Sample collection includes the following procedures per New York State Department of Health *Guidance for Evaluating Soil Vapor Intrusion in the State of New York*.

8.1 SUB-SLAB AIR SAMPLING PROCEDURES

8.1.1 Sampling Locations

Select the sub-slab sample collection points by observing the condition of the building floor slab for apparent penetrations such as concrete floor cracks, floor drains, or sump holes. The floor conditions will be noted, and potential locations of subsurface probes will be selected. The locations will ideally be away from the foundation walls, apparent penetrations, and buried pipes.

8.1.2 Sampling Probes

Construct a sampling probe using a ¼-inch Swagelok union connected to a short length of ¼-inch diameter stainless steel tubing. Select a length of stainless-steel tubing so that the bottom of the probe is close to but does not extend below the bottom of the slab (typically a 4-inch probe for a 6-inch thick slab).

Attach a 2 ft. length of Teflon or polyethylene tubing to the other end of the union using a ¼-inch Swagelok nut and ferrules. Plug up the other end of the tubing with a small piece of modeling clay to seal the system and prevent air flow in or out of the sub slab while the probe and tubing sits idle.

8.1.3 Installation of the Sampling Probe

Drill through and about 1 inch below the concrete slab using a portable coring drill and 2-inch diameter core drill bit. Record the thickness of the concrete slab. When installing the probe, first put a few inches of driller's sand at the bottom of the cored hole so that the grout will sit on top of the sand and not go all the way to the bottom of the hole and plug the probe inlet.

Install the probe into the hole, with the tubing already attached. Use the tubing to hold the union at the correct height in the hole (just below the top). Mix hydraulic cement and water is a ziplok bag. Cut a hole in one corner of the bag and use it like a pastry chef's bag to grout the probe in place. Use a small rod to push/tap in the grout. Leave the top 1-inch or so of the hole unfilled, being sure that the threaded top of the union (where the tubing attaches) is above the cement. Allow the probe to sit in place for at least one hour to allow the cement to set. If possible, install the probe one day and allow it to sit overnight.

8.1.4 Helium Tracer Gas Testing

Place a 2-quart (or similar size) bucket over the sample probe after threading the Teflon sample tube through a hole in the top of the bucket. Seal the tube to the bucket with clay. The bucket should also have another hole drilled in the top for the injection of helium, and a hole in the side near the floor for the measurement of helium gas concentrations.

Connect helium (99.999% pure) cylinder tubing to the top port of bucket enclosure and seal with clay or other sealing material. Insert a helium detector probe in the bottom port of the bucket. Release enough helium to displace any ambient air in the bucket until the concentration of helium reaches a minimum of 90%. Maintain this minimum concentration by testing with a helium detector. The Helium cylinder should be open during the purge time to cause a slight positive pressure within the enclosure.

Connect the sample tubing to a GilAir vacuum pump or equivalent using 3/8-inch O.D. silicone tubing. Connect a 1-liter Tedlar bag to the outlet of the pump using silicone tubing and collect a 1-liter sample. Purging flow rates must not exceed 0.2 liters per minute (L/min). Analyze the Tedlar bag for helium using a helium detector and record the results on the Summa Canister Data Sheet. A concentration of helium 10% or greater indicates a poor seal of the sample probe and it must be reinstalled and retested. After purging, remove the bucket enclosure from over the sample probe.

8.1.5 Sample Collection

Assign sample identification to the Summa canister sample identification tag and record on chain of custody (COC), and the Summa Canister Data Sheet. Also record the Summa canister and flow controller (regulator) serial numbers on the COC and Summa Canister Data Sheet. Attach a pre-calibrated/certified 2-hour flow controller, and particulate filter to the Summa canister. Attach the sample tube to the Summa canister using a ¼-inch Swagelok nut with appropriate ferrules, to the end of the flow controller/particulate filter assembly.

Open canister valve to initiate sample collection and record sample start time, date, and initial canister vacuum on the canister identification tag and on the Summa Canister Data Sheet. If the canister does not show sufficient vacuum (generally less than 25“Hg), do not use. Take a digital photograph of canister setup and surrounding area. Include in the photograph a dry erase board or similar display which presents sample ID, location, and date.

After 2 hours, record sample end time and canister pressure on the Summa Canister Data Sheet, and close valve. Disconnect the Teflon tubing and remove flow controller/particulate filter assembly from canister. Seal canister with laboratory supplied brass plug. Ship the samples, with COCs, overnight, to the selected laboratory for standard TO-15 analysis.

8.1.6 Removing the Sample Probe

If the probe is to be reused, remove the ¼-inch tubing, and place a Swagelok cap on the exposed part of the union. The cap should be flush or below the level of the floor. If the probe is not to be reused, remove the probe by drilling around the probe with a hammer drill and a ¼ or 3/8-inch drill bit until loose. Keep the tubing attached to the implant to aid in its removal. Fill the core hole with hydraulic cement.

8.2 INDOOR/OUTDOOR AIR SAMPLING PROCEDURES

Place the indoor air Summa canister/flow controller inlet at breathing height in the approximate center of the space being sampled, or, for the outdoor air sample, elevated on a table or other object in a location upwind of the building being sampled. The breathing height is defined as four to six feet above the floor or ground. As an option, a length of Teflon tubing can be attached to the Summa canister/flow controller inlet and raised to breathing zone height.

Record the canister and flow controller serial numbers on the canister identification tag, COC and the Summa Canister Data Sheet. Assign sample identification to the canister identification tag, and record on the COC and the Summa Canister Data Sheet. Remove brass plug from canister fitting and save.

Attach a pre-calibrated/certified 8-hour flow controller and particulate filter to the Summa canister. For the outside air sample, also connect the laboratory supplied “candy cane” fitting to the flow controller. Open canister valve to initiate sample collection and record start time, date, and gauge vacuum reading on the canister identification tag and on the Summa Canister Data Sheet. Take a photograph of canister setup and surrounding area.

After 8 hours, record the gauge vacuum reading, close the Summa canister valve completely and record the end time on the Summa Canister Data Sheet. There should still be a slight vacuum in the Summa canister. If no vacuum remains in the canister, or the canister does not show a significant net loss in vacuum after sampling, the sample should be re-collected using a new Summa canister and flow controller. Disconnect any tubing and candy cane fittings from the Summa canister and remove the flow controller. Replace the brass plug on the canister. Ship canister, with COCs, overnight, to the selected laboratory

8.3 QUALITY CONTROL

The number of Quality Control samples (duplicates) to be taken during sub-slab sampling may be found in the QA/QC Plan. The duplicate sample rate is usually 10 percent. Field duplicates for sub-slab, indoor air and outdoor air samples will be collected by attaching the T-fitting supplied by the laboratory to two Summa canisters with attached regulators. For sub-slab samples, the inlet of the T-fitting will then be attached to the sub-slab sample tubing using a Swagelok fitting. For indoor and outdoor air samples, any tubing used to raise the sampling height will also be attached to the inlet of the T fitting. For sampling, both Summa canister valves are opened and closed simultaneously.

8.4 SAMPLE LABELING

Each sub-slab sample should have the following information at a minimum placed on the laboratory supplied sample label:

- Site name
- Sample identification – see below
- Date/time
- Sampler's initials
- Analysis required – **TO-15**

The serial number of the canister and regulator used during sampling is also noted on the Summa canister identification tag and on the COC. Each sub-slab, indoor air and outdoor air

sample will be assigned a unique alpha-numeric code. An example of this code and a description of its components are presented below. Field duplicate samples will be assigned a unique identification alphanumeric code that specifies the date of collection, the letters FD (for field duplicate) and an ascending number that records the number of duplicate samples collected that day. For example, the first field duplicate collected on February 22, 2009 would be assigned the sample number in the format YYYYMMDD-FD-1 = 20090222-FD-1.

Subsequent duplicates collected on the same day will be assigned FD-2, FD-3 etc. Field sampling crew will record the duplicate sample information on the Summa Canister Data Sheets and in the field book.

8.5 FIELD DOCUMENTATION

Field notebooks are used during all on-site work. A dedicated field notebook is maintained by the field technician overseeing the site activities. Sub-slab sampling procedures should be photo-documented. The field sampling team will maintain sampling records that include the following data:

- Sample Identification
- Date and time of sample collection
- Identity of samplers
- Sampling methods and devices
- Purge volumes (soil vapor)
- Volume of soil vapor sample extracted
- The Summa canister vacuum before and after samples collected
- Chain of Custody and shipping information

The proper completion of the following forms/logs is considered correct procedure for documentation during the indoor air-sampling program:

1. Field Logbook - weather-proof hand-bound field book
2. Summa Canister Data Sheet
3. Chain of Custody Form

8.6 SAMPLE SHIPPING

Proper documentation of sample collection and the methods used to control these documents are referred to as chain-of-custody procedures. Chain-of-custody procedures are essential for presentation of sample analytical chemistry results as evidence in litigation or at administrative hearings held by regulatory agencies. Chain-of-custody procedures also serve to minimize loss or misidentification of samples and to ensure that unauthorized persons do not tamper with collected samples.

The following chain-of-custody guidelines should be utilized during sample collection as outlined in and prepared by the National Enforcement Investigations Center (NEIC) Policies and Procedures of the USEPA Office of Enforcement:

- Complete the chain-of-custody (COC) record with all relevant information.
- Ship original COC with the samples in a sealed waterproof plastic bag and place inside the box containing a Summa canister.
- Retain a copy of the COC for field records.
- Ship Summa canisters in the same boxes the laboratory used for shipping.
- Place the lab address on top of sample box/cooler.

- Fix numbered custody seals across box lid flaps and cooler lid.
- Cover seals with wide, clear tape.
- Ship samples via overnight carrier within three days of sample collection if possible.

APPENDIX E

DER-10 IMPORTED FILL REQUIREMENTS

site-specific exemption for one or more of the requirements set forth in this section, based upon site-specific conditions, such as:

i. use and redevelopment of the site;

ii. depth of the placement of the backfill material relative to the surface or subsurface structures;

iii. depth of the placement of the backfill material relative to groundwater;

iv. volume of backfill material;

v. potential for odor from the backfill material;

vi. presence of historic fill in the vicinity of the site;

vii. DEC-issued beneficial use determination, pursuant to 6 NYCRR Part 360; or

viii. background levels of contamination in areas surrounding the site.

9. For remedial programs pursuant to the BCP, DEC can only provide a site-specific exemption for backfill consistent with the provisions of paragraph 8 above as follows:

i. for Track 2 and Track 3 cleanups, for soils greater than 15 feet below ground surface; or

ii. for Track 4 cleanups, for soils beneath buildings, pavement and other improvements or for soils beneath the soil cover system or soil cap over exposed surface soils.

10. Sampling fill imported to or exported from a site. The remedial party will sample and analyze the fill being imported to the site in accordance with this subdivision and Table 5.4(e)10. Samples of the fill will be collected based on the soil quantity and type of constituents identified in the table and will be a combination of discrete and composite samples, handled as follows:

i. for VOCs only, grab samples are allowed. These grab samples are one or more discrete samples taken from the fill, with the number as specified in the volatile column of Table 5.4(e)10 for the soil quantity in question, and analyzed for the VOCs identified in Appendix 5; or

ii. for SVOCs, inorganics and PCBs/pesticides:

(1) one or more composite samples are collected from the volume of soil identified in Table 5.4(e)10 for analysis, with each composite from a different location in the fill volume;

(2) each composite is prepared by collecting discrete samples from 3 to 5 random locations from the volume of soil to be tested; and

(3) the discrete samples are mixed, and after mixing, a sample of the mixture is analyzed for the SVOCs, inorganic and PCBs/pesticide constituents identified in Appendix 5.

Table 5.4(e)10 Recommended Number of Soil Samples for Soil Imported To or Exported From a Site			
Contaminant	**VOCs**	**SVOCs, Inorganics & PCBs/Pesticides**	
Soil Quantity (cubic yards)	**Discrete Samples**	**Composite**	**Discrete Samples/Composite**
0-50	1	1	3-5 discrete samples from different locations in the fill being provided will comprise a composite sample for analysis
50-100	2	1	
100-200	3	1	
200-300	4	1	
300-400	4	2	
400-500	5	2	
500-800	6	2	
800-1000	7	2	
➢ 1000	Add an additional 2 VOC and 1 composite for each additional 1000 Cubic yards or consult with DER		

(f) Compliance for soil exported from a site for reuse. For soil that is being exported from a site to locations other than permitted disposal facilities, the handling requirements are set forth in this subdivision and in paragraph 5.4(e)4.

1. Levels of contamination must not exceed the lower of the groundwater and residential use levels as shown in Appendix 5, absent a beneficial use determination issued by DEC. DER will coordinate with the Division of Solid & Hazardous Materials (DSHM), prior to the start of the remedial action, relative to whether the exported soil can be used beneficially in accordance with 6 NYCRR 360-1. The sampling and analysis requirements are set forth in paragraph 5.4(e)10.

2. The number of required samples are specified in Table 5.4(e)10 and paragraph (e)10 above, which may be modified by the DER project manager based on various factors, including the location of the site receiving the soil.

(g) Compliance for the decommissioning of monitoring wells. All monitoring wells not required for site management should be decommissioned in accordance with paragraph (d)6 above prior to DER approval of the FER.

5.5 Underground Storage Tank Closure

(a) The first step for underground storage tank (UST) closure is the identification, removal, treatment, containment and/or stabilization of the contents to prevent contaminant exposure to receptors and to prevent further movement of contaminants through any pathway as set forth herein.

1. A health and safety plan for the site is developed, as described in section 1.9, by a qualified individual in accordance with subparagraph 1.5(a)3.i.

2. Underground tank closures not performed in accordance with this section will require a certification of the closure report by a professional engineer, as described in section 1.5.

Appendix 5
Allowable Constituent Levels for Imported Fill or Soil
Subdivision 5.4(e)

Source: This table is derived from soil cleanup objective (SCO) tables in 6 NYCRR 375. Table 375-6.8(a) is the source for unrestricted use and Table 375-6.8(b) is the source for restricted use.

Note: For constituents not included in this table, refer to the contaminant for supplemental soil cleanup objectives (SSCOs) in the Commissioner Policy on *Soil Cleanup Guidance*. If an SSCO is not provided for a constituent, contact the DER PM to determine a site-specific level.

Constituent	Unrestricted Use	Residential Use	Restricted Residential Use	Commercial or Industrial Use	If Ecological Resources are Present
Metals					
Arsenic	13	16	16	16	13
Barium	350	350	400	400	433
Beryllium	7.2	14	47	47	10
Cadmium	2.5	2.5	4.3	7.5	4
Chromium, Hexavalent[1]	1 [3]	19	19	19	1 [3]
Chromium, Trivalent[1]	30	36	180	1500	41
Copper	50	270	270	270	50
Cyanide	27	27	27	27	NS
Lead	63	400	400	450	63
Manganese	1600	2000	2000	2000	1600
Mercury (total)	0.18	0.73	0.73	0.73	0.18
Nickel	30	130	130	130	30
Selenium	3.9	4	4	4	3.9
Silver	2	8.3	8.3	8.3	2
Zinc	109	2200	2480	2480	109
PCBs/Pesticides					
2,4,5-TP Acid (Silvex)	3.8	3.8	3.8	3.8	NS
4,4'-DDE	0.0033 [3]	1.8	8.9	17	0.0033 [3]
4,4'-DDT	0.0033 [3]	1.7	7.9	47	0.0033 [3]
4,4'-DDD	0.0033 [3]	2.6	13	14	0.0033 [3]
Aldrin	0.005	0.019	0.097	0.19	0.14
Alpha-BHC	0.02	0.02	0.02	0.02	0.04 [4]
Beta-BHC	0.036	0.072	0.09	0.09	0.6
Chlordane (alpha)	0.094	0.91	2.9	2.9	1.3
Delta-BHC	0.04	0.25	0.25	0.25	0.04 [4]
Dibenzofuran	7	14	59	210	NS
Dieldrin	0.005	0.039	0.1	0.1	0.006
Endosulfan I	2.4[2]	4.8	24	102	NS
Endosulfan II	2.4[2]	4.8	24	102	NS
Endosulfan sulfate	2.4[2]	4.8	24	200	NS
Endrin	0.014	0.06	0.06	0.06	0.014
Heptachlor	0.042	0.38	0.38	0.38	0.14
Lindane	0.1	0.1	0.1	0.1	6
Polychlorinated biphenyls	0.1	1	1	1	1

Constituent	Unrestricted Use	Residential Use	Restricted Residential Use	Commercial or Industrial Use	If Ecological Resources are Present
Semi-volatile Organic Compounds					
Acenaphthene	20	98	98	98	20
Acenaphthylene	100	100	100	107	NS
Anthracene	100	100	100	500	NS
Benzo(a)anthracene	1	1	1	1	NS
Benzo(a)pyrene	1	1	1	1	2.6
Benzo(b)fluoranthene	1	1	1	1.7	NS
Benzo(g,h,i)perylene	100	100	100	500	NS
Benzo(k)fluoranthene	0.8	1	1.7	1.7	NS
Chrysene	1	1	1	1	NS
Dibenz(a,h)anthracene	0.33 [3]	0.33 [3]	0.33 [3]	0.56	NS
Fluoranthene	100	100	100	500	NS
Fluorene	30	100	100	386	30
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.5	5.6	NS
m-Cresol(s)	0.33 [3]	0.33 [3]	0.33 [3]	0.33 [3]	NS
Naphthalene	12	12	12	12	NS
o-Cresol(s)	0.33 [3]	0.33 [3]	0.33 [3]	0.33 [3]	NS
p-Cresol(s)	0.33	0.33	0.33	0.33	NS
Pentachlorophenol	0.8 [3]	0.8 [3]	0.8 [3]	0.8 [3]	0.8 [3]
Phenanthrene	100	100	100	500	NS
Phenol	0.33 [3]	0.33 [3]	0.33 [3]	0.33 [3]	30
Pyrene	100	100	100	500	NS
Volatile Organic Compounds					
1,1,1-Trichloroethane	0.68	0.68	0.68	0.68	NS
1,1-Dichloroethane	0.27	0.27	0.27	0.27	NS
1,1-Dichloroethene	0.33	0.33	0.33	0.33	NS
1,2-Dichlorobenzene	1.1	1.1	1.1	1.1	NS
1,2-Dichloroethane	0.02	0.02	0.02	0.02	10
1,2-Dichloroethene(cis)	0.25	0.25	0.25	0.25	NS
1,2-Dichloroethene(trans)	0.19	0.19	0.19	0.19	NS
1,3-Dichlorobenzene	2.4	2.4	2.4	2.4	NS
1,4-Dichlorobenzene	1.8	1.8	1.8	1.8	20
1,4-Dioxane	0.1 [3]	0.1 [3]	0.1 [3]	0.1 [3]	0.1
Acetone	0.05	0.05	0.05	0.05	2.2
Benzene	0.06	0.06	0.06	0.06	70
Butylbenzene	12	12	12	12	NS
Carbon tetrachloride	0.76	0.76	0.76	0.76	NS
Chlorobenzene	1.1	1.1	1.1	1.1	40
Chloroform	0.37	0.37	0.37	0.37	12
Ethylbenzene	1	1	1	1	NS
Hexachlorobenzene	0.33 [3]	0.33 [3]	1.2	3.2	NS
Methyl ethyl ketone	0.12	0.12	0.12	0.12	100
Methyl tert-butyl ether	0.93	0.93	0.93	0.93	NS
Methylene chloride	0.05	0.05	0.05	0.05	12

Volatile Organic Compounds (continued)					
Propylbenzene-n	3.9	3.9	3.9	3.9	NS
Sec-Butylbenzene	11	11	11	11	NS
Tert-Butylbenzene	5.9	5.9	5.9	5.9	NS
Tetrachloroethene	1.3	1.3	1.3	1.3	2
Toluene	0.7	0.7	0.7	0.7	36
Trichloroethene	0.47	0.47	0.47	0.47	2
Trimethylbenzene-1,2,4	3.6	3.6	3.6	3.6	NS
Trimethylbenzene-1,3,5	8.4	8.4	8.4	8.4	NS
Vinyl chloride	0.02	0.02	0.02	0.02	NS
Xylene (mixed)	0.26	1.6	1.6	1.6	0.26

All concentrations are in parts per million (ppm)
NS = Not Specified

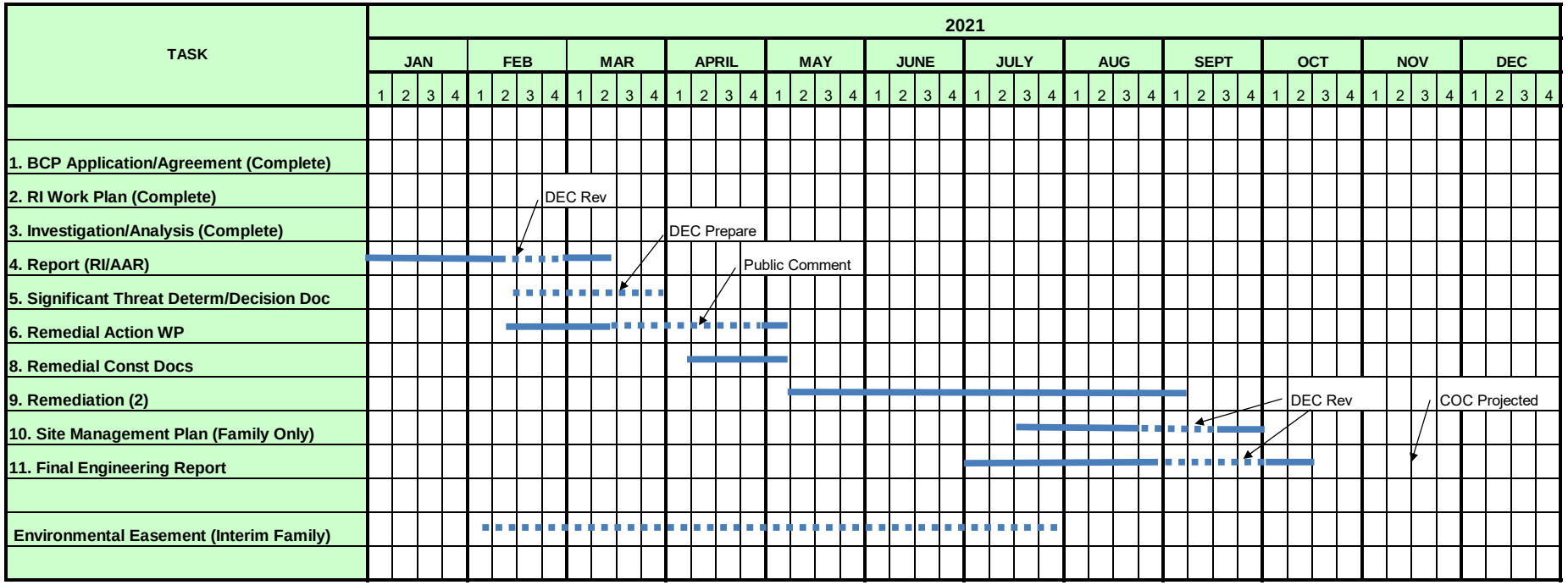
Footnotes:
[1] The SCO for Hexavalent or Trivalent Chromium is considered to be met if the analysis for the total species of this contaminant is below the specific SCO for Hexavalent Chromium.
[2] The SCO is the sum of endosulfan I, endosulfan II and endosulfan sulfate.
[3] For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the Track 1 SCO value.
[4] This SCO is derived from data on mixed isomers of BHC.

APPENDIX F

SCHEDULE

BCP PROJECT SCHEDULE (1) MARCH 2021

FORMER PILGRIM VILLAGE FAMILY & SENIOR APARTMENT SITES



(1) - Assumes a 2021 COC required

(2) - Assumes remediation will be part of the new development

APPENDIX G

COMMUNITY AND ENVIRONMENTAL RESPONSE PLAN

COMMUNITY AND ENVIRONMENTAL RESPONSE PLAN
SITE REMEDIATION

FORMER PILGRIM VILLAGE FAMILY APARTMENTS
TAX MAP ID NO.: 100.72-1-1.1
BUFFALO, NEW YORK 14209
NYSDEC SITE NO.: C915362

Prepared for:

SAA EVI MC Family, LLC
150 2nd Avenue, Suite 300
Miami, Florida 33131

Prepared by:

960 Busti Avenue
Buffalo, New York, 14213

March 2021

TABLE OF CONTENTS

Section **Page**

1.0 INTRODUCTION

This Community and Environmental Response Plan (CERP) has been prepared to summarize the controls, monitoring and/or work practices that will be implemented during the site remediation at the Site (Site) to address the potential for short-term impacts to the surrounding community or environmental resources. The remediation will include the following:

- Remove/cover impacted soils to meet Part 375 Track 1 Unrestricted Use SCOs.
- Place Cover System to meet Part 375 Track 1 Unrestricted Use SCOs.
- Install limited Ground water (GW) treatment in the vicinity of MW2 in the northeast corner of the Site.

The CERP is a concise summary of the controls, monitoring, and work practices and how they combine to provide the necessary protection of the community and ecological resources. Additional details regarding how this will be implemented are contained in various sections of the Work Plan. The purpose of the CERP is to provide members of the community with information on the steps and programs that have been put in place in order to protect their health and minimize the disturbance caused by construction activity. This effort will be performed under the approval and oversight of the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH).

This CERP has been prepared in accordance Section 5.1(f) NYSDEC *Final DER-10 Technical Guidance for Site Investigation and Remediation,* dated May 2010.

1.1 CERP ORGANIZATION

This CERP has been organized in general accordance with the Section 5.1(f) NYSDEC *DER- 10* as follows:

- Section 1 – Introduction, describes the purpose and objectives of the CERP
- Section 2 – Community Air Monitoring Plan (CAMP)
- Section 3 – Public Protection Measures
- Section 4 – Vapor/Odor Management
- Section 5 – Noise Reduction Plan
- Section 6 – Vibration Monitoring
- Section 7 – Site Security Plan
- Section 8 – Storm Water and Erosion Control Plan
- Section 9 – Waste Management
- Section 10 – Traffic Management Plan

2.0 COMMUNITY AIR MONITORING PLAN (CAMP)

A site-specific CAMP has been prepared for the site and shall be in force during the course of the site remediation. The intent of the CAMP 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 work activities) from volatile organic compounds (VOCs) and particulates (i.e., dust) carried in the air as a direct result of remedial work activities on the Site. The CAMP provides air monitoring procedures, contamination concentration limits, and procedures to reduce VOCs and dust generation if the limits are approached. The CAMP is included in Appendix I - CAMP of this work plan.

The CAMP includes the *NYSDEC DER-10* titled *Appendix 1A-New York State Department of Health Generic Community Air Monitoring Plan* and will be followed and adhered to for the site remediation.

A program for suppressing fugitive dust and particulate matter monitoring will also be conducted in accordance *NYSDEC DER-10* titled *Appendix 1B Fugitive Dust and Particulate Monitoring* which is also provided in the CAMP. The fugitive dust suppression and particulate monitoring program will be employed at the site during site remediation and other intrusive activities which warrant its use.

3.0 PUBLIC PROTECTION MEASURES

A number of plans to protect the public from physical hazards at the Site will be implemented. Each of these measures is designed to make the area surrounding the remediation safe for the general public.

3.1 WARNING SIGNS

The contractor will place signs at the entrances to the property indicating that the Site is being remediated and under the oversight of the NYSDEC.

3.2 SITE FENCING

Fencing will be placed around the property that comprises the Site where none exist and entrance gates with locks to deter entrance during non-work hours.

4.0 VAPOR/ODOR MANAGEMENT PLAN

If significant nuisance odors are noted, The Owner, the BE3 site inspector, and the contractor will consult to determine what type of emission control action is appropriate. Actions that may be taken to reduce contaminant or odor levels include the following:

- Covering working areas of exposed impacted soils, trucks loaded with impacted soils, or stockpiles of impacted soils with tarpaulin covers, vapor reducing foam, or other vapor control agents.
- Reduce the production rate or change the sequence of work activities.
- Change the work methods or equipment to alternatives that reduce the potential to create dust or release contaminants into the air.
- Using specialized odor suppressing foams to cover the contaminated soils. The foam is a product which reduces the ability of vapors and dust to enter the air.
- Misting water onto soil in order to prevent dust that may carry odors.

Corrective measures may also include halting work and implementing additional dust suppression techniques which may include:

- Applying water on haul roads
- Wetting equipment and excavation faces
- Spraying water on truck buckets during excavation and dumping
- Restricting heavy equipment traffic use or areas of operation
- Restricting vehicle speeds
- Covering excavated areas and materials after excavation activity ceases or completing site

excavation, grading, and filling in small area sequences to reduce leaving large surface areas exposed

In practice, these actions will typically be used proactively to prevent alert levels from being reached at the Site perimeter.

5.0 NOISE REDUCTION PLAN

The remedial activities conducted on Site will conform to the noise codes/ordinances for the City of Buffalo during the work.

To be in compliance, construction activities on the Site will be prohibited between the hours of 6:00 PM and 7:00 AM Monday through Friday, Saturdays, Sundays, and on all legal holidays. In the event of an emergency that requires work to be conducted during the aforementioned times, the contractor will seek a variance from the Building Department Administrator of the City of Buffalo to permit such activities.

It is not anticipated that the activities at the Site will create excess levels of noise to a degree that would cause concern to nearby residents. If noise issues do become a concern the following steps may be taken to reduce the noise level caused by construction:

- Locating pieces of machinery on the Site to maximize the distance from potential receptors.
- Developing a design for a site perimeter sound barrier.
- Specifying the use of low noise emission construction equipment.

The work that will be completed does not currently require the contractor to perform tasks which are commonly associated with high levels of noise. The periodic use of back up alarms on vehicles will in all likelihood be the noise that is commonly heard from the Site, and the contractor will make every effort to minimize the need for vehicles to use them.

6.0 VIBRATION MONITORING

It is not anticipated that the remedial activities at the Site will generate high levels of vibrations for nearby residents. The remedial work that will be completed does not currently require the contractor to perform tasks that are commonly associated with high levels of vibration such as blasting, or pile driving.

The most common source of vibrations from the Site will be from pavement busting and compaction equipment, which will be used to compact clean soil as it is used to replace impacted soil that has been excavated. Compaction equipment will create vibrations over a very small area and not nearly powerful enough to cause damage to nearby structures.

7.0 SITE SECURITY PLAN

The objectives of the Site security plan are to prevent the vandalism/destruction of construction equipment, prevent access, and minimize health and safety concerns for the surrounding property owners.

7.1 PERIMETER SECURITY

The site will be completely fenced and have locked gates.

7.2 Equipment Security

All vehicles and/or equipment left on the site will be secured at the end of each working day and during non-work days. No vehicles or equipment will be left overnight in an unsecured location. The contractor will ensure that all non-essential equipment is de-energized when left on site and not in use to prevent any malfunctions from occurring while workers are not present.

8.0 STORMWATER AND EROSION CONTROL PLAN

The stormwater and erosion control plan is intended to minimize soil erosion, and control stormwater on the Site.

8.1 Implementation of Erosion Control Measures

Filtrexx erosion control Soxx or silt fences will be installed around the perimeter of the support zones and all areas to be excavated and/ or backfilled.

The contractor shall install and maintain the erosion control measures for the duration of the excavation/backfill work.

8.2 Stormwater Runoff Control

The contractor will be required to utilize appropriate control measures to direct stormwater to flow around an excavation area and to a discharge point. Appropriate controls may include digging a small ditch to direct the water flow, or building barriers out of clean soil to collect the stormwater so it can be pumped to a suitable discharge point

9.0 WASTE MANAGEMENT

The waste management plan identifies the procedures for managing, treatment, and disposal of waste materials generated as a result of the Site remediation. All wastes removed from the Site will be transported by properly permitted and/or licensed waste haulers directly to approved disposal facilities. All trucks will be inspected to ensure the proper placards, decals and permits are displayed. Trucks will utilize the most direct hauling route to the disposal facility.

9.1 Soil Management and Treatment

Impacted soils removed from excavation areas will be loaded into trucks for transport to the approved disposal facility. Trucks will not be allowed to stage on local roadways. The Contractor will schedule trucks in a manner that will minimize the wait time for loading.

Vehicles containing impacted soils will be covered with a solid plastic tarp. If necessary, spray-on odor suppressing materials may be used to reduce potential VOC emissions or odors during transit.

9.2 Construction Dewatering and Treatment

Stormwater encountered during excavation that has been impacted by contaminated soils will be pumped to a temporary storage/Frac tank. The water will be sampled and tested to determine if it can be discharged to the City of Buffalo sewer system or required to be sent to a disposal facility.

10. TRAFFIC MANAGEMENT PLAN

The objectives of the traffic plan at the Site are to describe the objectives for traffic control and address any potential concerns. The traffic control plan outlines traffic management at the site for:

- Trucking materials on and off site
- Contractor access and parking
- Equipment accesses and storage
- Traffic control at the site entrance
- Requirements for truck flagmen at site access gates.

Trucking of materials and equipment to and from the site will be through an established entrance gate. Contractor employees will also enter and leave the site trough this same gate. The contractor's traffic control personnel will direct traffic as needed upon delivery of equipment, trailers, excavation support materials, etc. To maintain access and lines of sight, the contractor will arrange for and coordinate with the appropriate local authorities to ensure that on-street parking nearest to the entrance/exit gate is limited throughout the duration of the work. Trucks will not be allowed to queue on local streets; however, the contractor may negotiate with a third party to obtain off-site parking where vehicles can wait to be loaded. All the roadways utilized by the contractor during the work will be checked daily for spillage and seepage, and cleaned to the satisfaction of Owner's representative, as necessary. All trucking on local roadways will meet the requirements of all local regulatory agencies.

10.1 TRUCK CONTROLS

Upon arrival to the site, each truck will be visually inspected to ensure appropriate permits are in place. Trucks hauling impacted soil will be initially lined with polypropylene plastic tarp along their beds to prevent water from seeping out of the soil onto local streets. When applicable, odorous truckloads of soil will be foamed to control odors (refer to Sections 4 and 9). The trucks will also utilize a heavy tarp which will be extended over the cargo area and overlap the sides and rear of the cargo area to prevent soil being removed from the truck by wind. Trucks, before exiting the site, will pass through an inspection area and be inspected to ensure tires and undercarriages are clean and that tarps are secured. Excessive mud and loose dirt observed on the truck tires will be removed by installing a truck wash station or equivalent at the exit gate. Additional excess mud and soil on truck carriages will be manually removed with brooms and brushes as necessary. The proper cleaning of trucks exiting the site will aid in minimizing/eliminating dust and soil leaving the site.

APPENDIX H

STORMWATER POLLUTION PREVENTION PLAN

SWPPP REPORT

For

Pilgrim Village – Phase 1

Michigan Avenue and Best Street
Buffalo, New York

Prepared for:
Silvestri Architects, P.C.
1321 Millersport Highway, Suite 100
Amherst, NY 14221

Prepared by:
C&S ENGINEERS, INC.
141 Elm Street, Suite 100
Buffalo, NY 14203

January 15, 2021

Table of Contents

Appendices

SWPPP
Pilgrim Village – Phase 1
Michigan Avenue and Best Street
Buffalo, New York

A. GENERAL

1. Existing Site Conditions:

The project consists of the redevelopment of the Pilgrim Village housing development located south of Best Street and west of Michigan Avenue in the City of Buffalo. (See location map, Appendix A). The redevelopment will consist of two phases. This report will focus on Phase 1 only.

The existing conditions on the Phase 1 portion of the site consists of three (3), two-story apartment buildings, a parking lot, an access drive off of Michigan Avenue, multiple sidewalks and lawn areas. Currently, there is 0.77 acres of impervious area associated with Phase 1.

The site's topography is relatively mildly sloped. Stormwater runoff from the apartment buildings, pavement and lawn areas is collected on site within an enclosed drainage system and conveyed to the City of Buffalo's combined sewer system on Best Street.

2. Proposed Site Conditions:

The existing apartment buildings, asphalt pavement and access drive off of Michigan Avenue will be demolished in order to construct the proposed development. Development will consist of the construction of a five-story, 132-unit apartment building with an attached single-story community center. Additional site improvements will include an asphalt paved parking lot to accommodate 120 vehicles including 5 HC accessible spaces, concrete sidewalks, a playground, landscaped areas and utility infrastructure. Proposed utility infrastructure will include a new stormwater drainage system to collect stormwater runoff and convey it to an underground detention system. Impervious area at the site will increase from 0.77 acres to 2.02 acres in the proposed condition. Due to the increase in impervious areas, stormwater detention is required.

To mitigate the increase in stormwater runoff, stormwater runoff from both the buildings and asphalt pavement will be collected and conveyed to an underground detention system with an orifice that restricts the stormwater discharge. Infiltration testing on site yielded favorable results. Accordingly, to maximize green infrastructure, the underground detention systems will use

stormwater chambers with an open stone bedding to encourage groundwater recharge.

B. PROPOSED FACILITIES

1. Storm Sewer

a) Stormwater Conveyance:

Stormwater runoff from the parking lot will be collected in concrete catch basins and conveyed via HDPE pipe to the site's proposed underground detention system. Additionally, the building's roof drains will be conveyed to the underground detention system. The proposed underground detention system will store the entire runoff associated with the water quality storm event and infiltrate that runoff through stone bedding below the detention chambers. Stormwater runoff in excess of the water quality storm event, will be controlled via a 3.5-inch diameter orifice before entering the City's combined sewer system on Best Street.

b) Quantity Control:

Per the New York State Department of Environmental Conservation's (NYSDEC) regulations, construction activities that discharge to a combined sewer do not require coverage under the SPDES General Permit, GP-0-20-001. However, since there will be an increase in impervious area, stormwater detention is required. The Buffalo Sewer Authority's (BSA's) stormwater regulations of limiting the post developed 25-year stormwater runoff rate to the existing 2-year stormwater runoff rate, or the capacity of the downstream sewer, whichever is less, will be adhered to.

Stormwater detention will consist of 296 LF (4 rows of 74 LF each) of ADS Stormtech MC-4500 chambers. A 3.5-inch diameter orifice will limit the stormwater discharge from the site before it is conveyed to the existing 36-inch brick sewer on Best Street, by an 8-inch PVC pipe.

HydroCAD software was used to calculate peak discharges for the 2-year and 25-year storm events in accordance with the BSA's requirements (see Appendix B). The results below represent the pre and post development discharges from the site:

Discharge Rates:

Storm Event	Pre-Development Discharge (cfs)	Post-Development Discharge (cfs)	Total Detention Provided (cf)	Proposed Water Surface Elevation (ft.)
2-yr	1.09	0.36	4,700	640.12
25-yr	4.26	1.08	11,955	644.25

c) Quality Control:

Water quality control in accordance with The New York State Department of Environmental Conservation (NYSDEC) regulations is not required since stormwater runoff from this site discharges into a combined sewer.

Chapter 7.3 of the City of Buffalo's Green Code provides a green infrastructure approach to stormwater management to reduce a site's impact on the aquatic ecosystem through the use of Green Infrastructure Best Management Practices (BMPs) according to the following hierarchy, with the site's ability or inability to achieve this, in italics:

1. Conservation of natural areas – *this project is a redevelopment project. Accordingly, the natural areas have already been removed.*

2. On-site infiltration practices including, but not limited to, bioretention cells/rain gardens, vegetated swales, filter strips, constructed wetlands and porous pavement – *this project will include a combination underground detention system/infiltration basin, which will provide both stormwater detention and infiltration of a portion of the stormwater runoff. The underground detention chambers have an open bottom and are bedded on open stone, which will promote infiltration into the soil.*

3. Capture and reuse of runoff through low-impact practices including, but not limited to, green roofs, blue roofs, and rain barrels or cisterns – *this new building construction does not provide a flat roof for use of a green roof.*

Where on-site green infrastructure BMPs are not feasible for all or a portion of stormwater runoff volume due to factors including, but not limited to, contamination, high groundwater table, shallow bedrock, or poor infiltration rates, or where it can be proven that such practices would cause property or environmental damage, the remaining portion

may be treated by another stormwater management practice acceptable to the Buffalo Sewer Authority.

In cases where on-site BMPs have been determined not to be feasible, the Buffalo Sewer Authority may consider the following alternative stormwater management practices to meet water quantity standards, in order of preference, with the site's ability or inability to achieve this, in italics:

1. Off-site green infrastructure BMPs within the same sub-watershed – *Not applicable to this project.*

2. Retention through subsurface infiltration or underground storage vaults – *this project will use underground detention chambers to promote infiltration through the underlaying stone layer and subsoil.*

3. Detention through underground storage vaults – *this project will use underground storage chambers for stormwater detention, prior to discharge to the existing combined sewer system.*

   It is our opinion that the underground detention chambers with infiltration capacity will provide the green infrastructure best management practices to meet the stormwater requirements of the City of Buffalo's Green Code.

   Stormwater calculations are included in Appendix B.

d) Runoff Reduction

To meet the intent of the City's Green Infrastructure policy, Runoff reduction was provided in accordance with the GP-0-20-001 requirements. To meet the requirement, stormwater runoff from the site will be routed to the underground detention system.

Intertek PSI was hired to perform infiltration testing at the location of the proposed detention chambers. The test results provided both a 1 inch/hour and a 0 inch/hour infiltration rate at the two locations. Conservatively, a 0.50 inch/hour infiltration rate was used for design.

To maximize runoff reduction, the underground detention system has been designed with open chambers and open graded stone. The orifice within the stormwater control structure has been set at the maximum elevation, which will allow infiltration of runoff that exceeds both the RRv Minimum and the volume of runoff generated from a Water Quality storm event. This volume will be captured and will infiltrate through the 9-inches of bedding stone below the

detention chambers, which will then infiltrate into the ground and remove it from the sewer system.

Below is a summary of the runoff reduction volume minimum and runoff reduction volume provided, in accordance with the NYSDEC Stormwater Management Design Manual:

Runoff Reduction Volume Minimum (RRv Min.) = 1,681 cf

Stormwater Runoff Volume in WQ Storm Event = 2,047 cf

Runoff Reduction Volume
Provided (RRv Provided) = 3,258 cf @ elev. 639.50

Respectfully Submitted,

C&S ENGINEERS, INC.

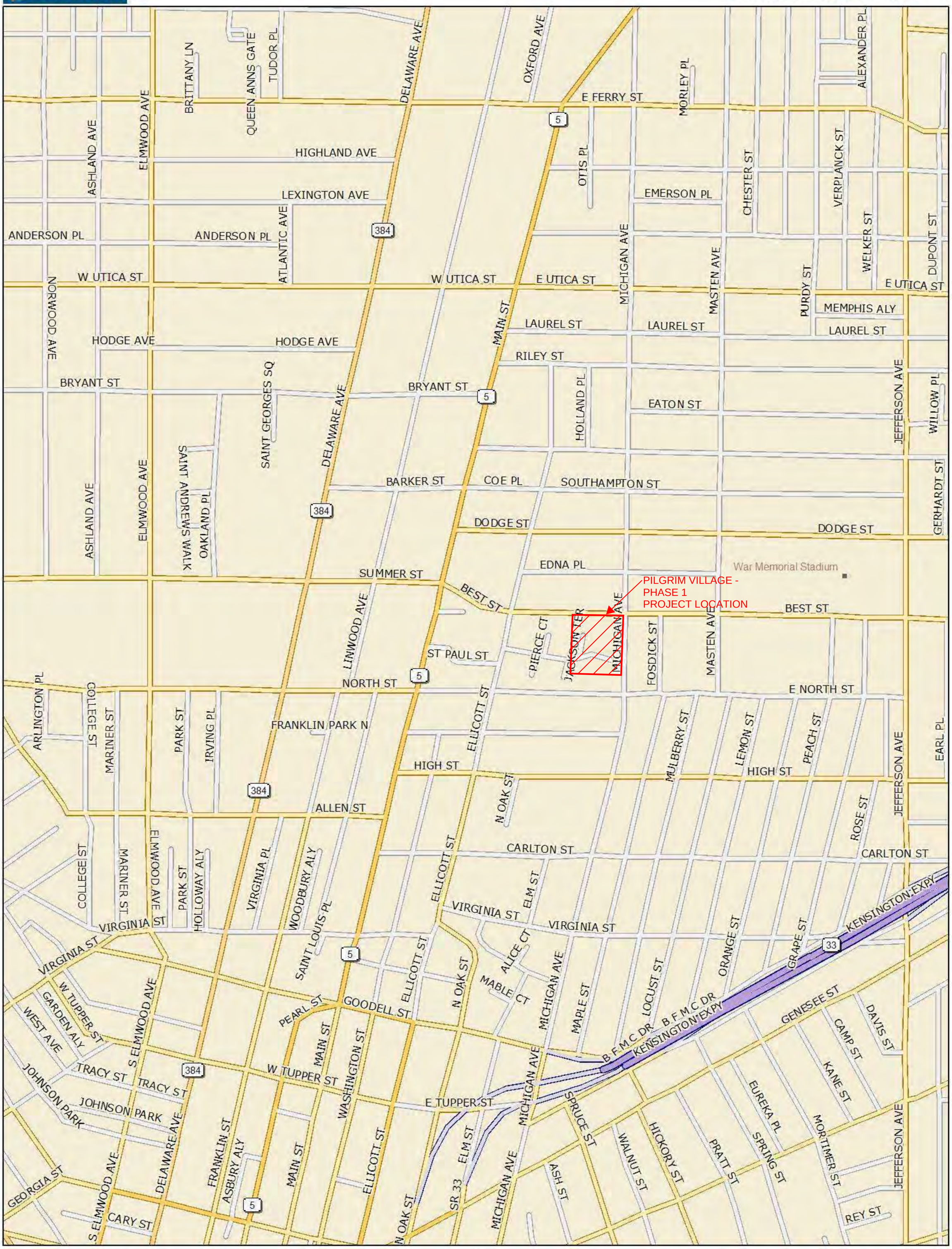
Jason P. Utzig, P.E.
Senior Project Engineer

APPENDIX A

SITE LOCATION MAP

DELORME

DeLorme Street Atlas USA® 2011



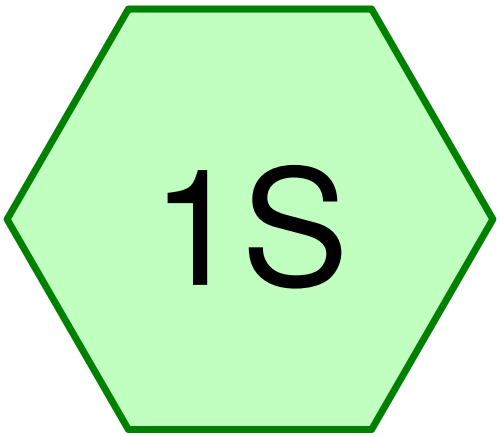
MN (10.7° W)

0 400 800 1200 1600 2000 ft

Data Zoom 14-0

APPENDIX B

STORMWATER CALCULATIONS



Existing

Subcat Reach Pond Link

Routing Diagram for Pilgrim Village Phase 1
Prepared by C&S Engineers, Inc., Printed 1/15/2021

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-YR	Type II 24-hr		Default	24.00	1	2.19	2
2	25-YR	Type II 24-hr		Default	24.00	1	3.80	2
3	WQ Storm	Type II 24-hr		Default	24.00	1	1.00	2

Summary for Subcatchment 1S: Existing

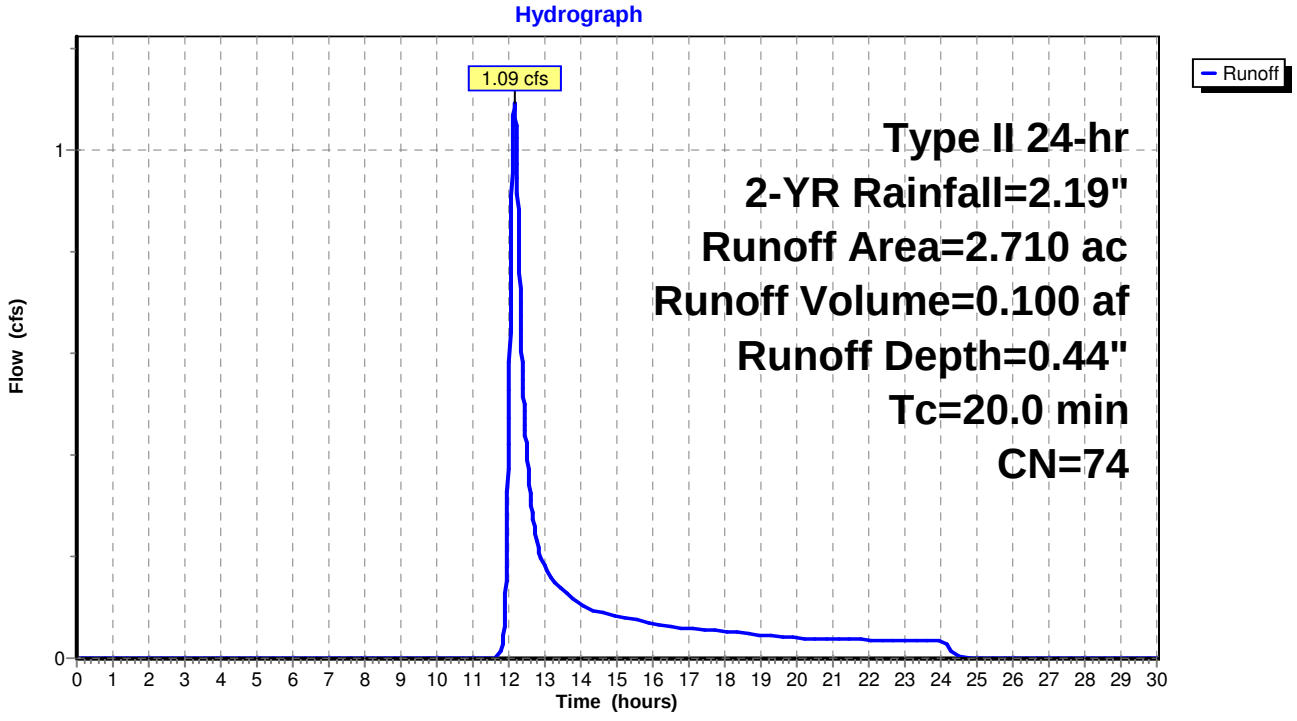
Runoff = 1.09 cfs @ 12.16 hrs, Volume= 0.100 af, Depth= 0.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=2.19"

Area (ac)	CN	Description
0.770	98	Paved parking, HSG D
1.070	49	50-75% Grass cover, Fair, HSG A
0.870	84	50-75% Grass cover, Fair, HSG D
2.710	74	Weighted Average
1.940		71.59% Pervious Area
0.770		28.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0					**Direct Entry,**

Subcatchment 1S: Existing



Summary for Subcatchment 1S: Existing

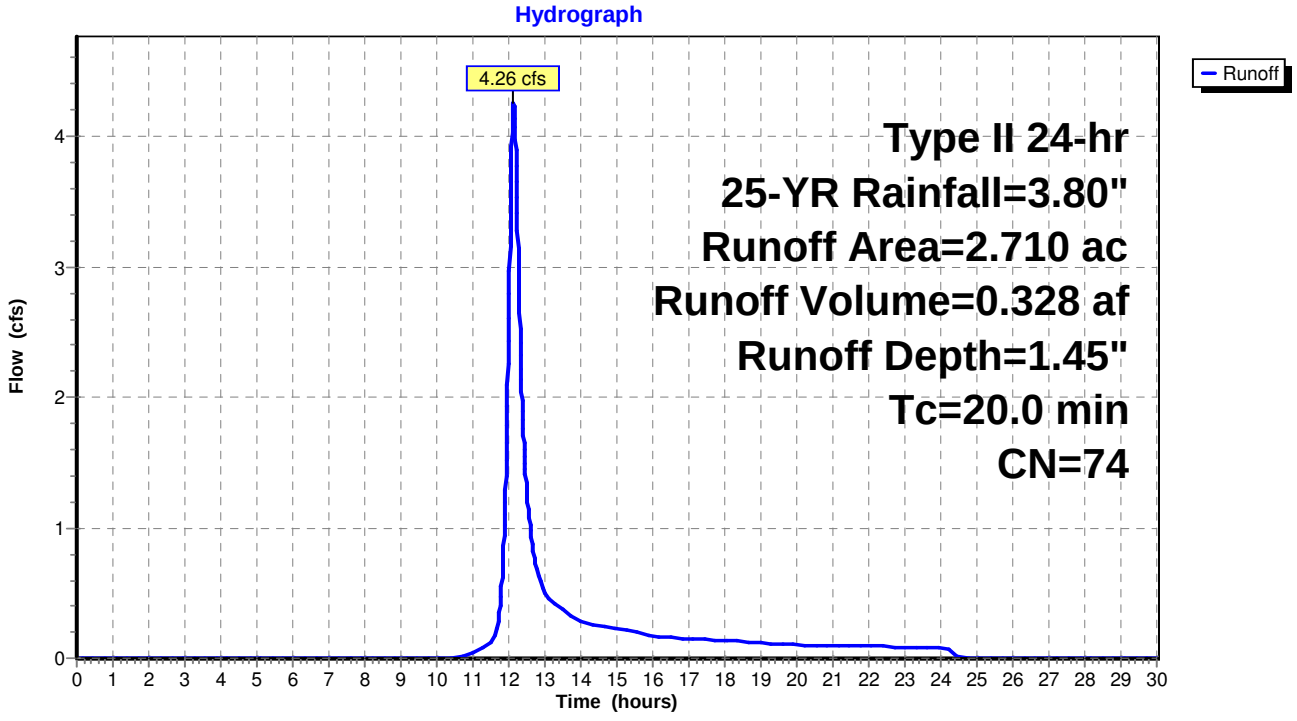
Runoff = 4.26 cfs @ 12.13 hrs, Volume= 0.328 af, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=3.80"

Area (ac)	CN	Description
0.770	98	Paved parking, HSG D
1.070	49	50-75% Grass cover, Fair, HSG A
0.870	84	50-75% Grass cover, Fair, HSG D
2.710	74	Weighted Average
1.940		71.59% Pervious Area
0.770		28.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0					**Direct Entry,**

Subcatchment 1S: Existing



Summary for Subcatchment 1S: Existing

Runoff = 0.01 cfs @ 13.76 hrs, Volume= 0.005 af, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr WQ Storm Rainfall=1.00"

Area (ac)	CN	Description
0.770	98	Paved parking, HSG D
1.070	49	50-75% Grass cover, Fair, HSG A
0.870	84	50-75% Grass cover, Fair, HSG D
2.710	74	Weighted Average
1.940		71.59% Pervious Area
0.770		28.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0					**Direct Entry,**

Subcatchment 1S: Existing

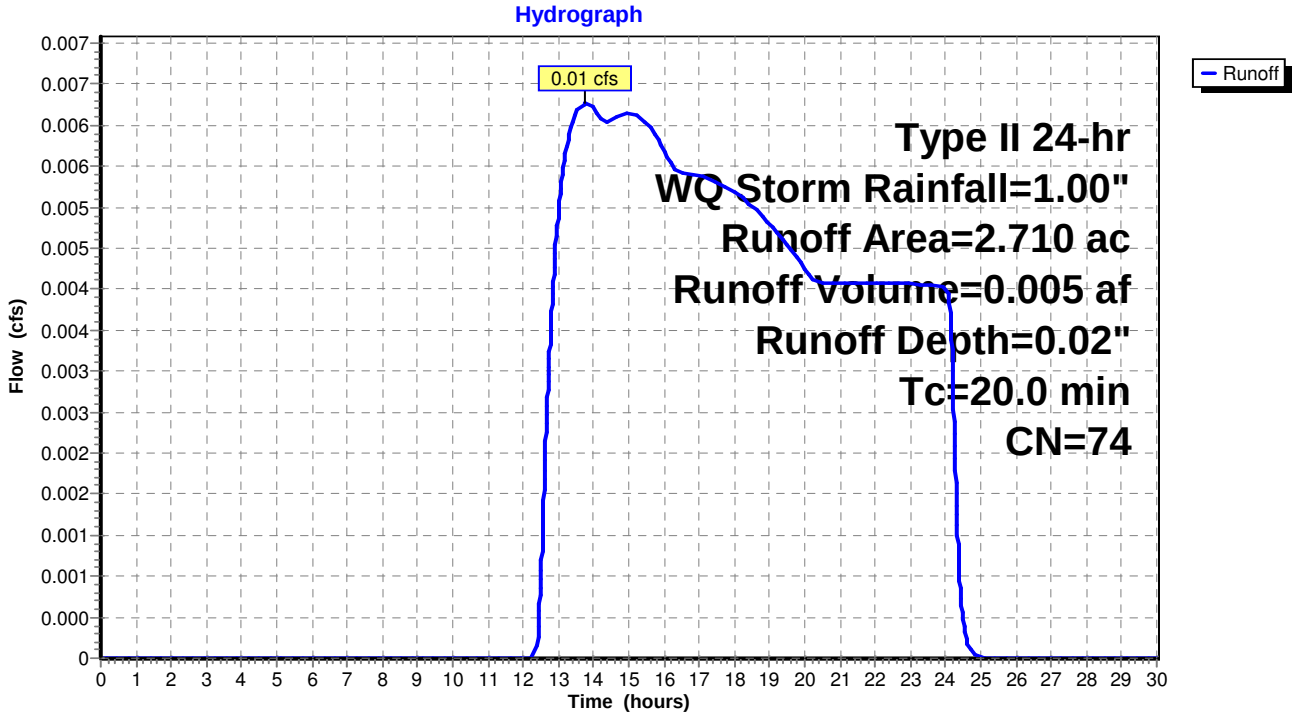
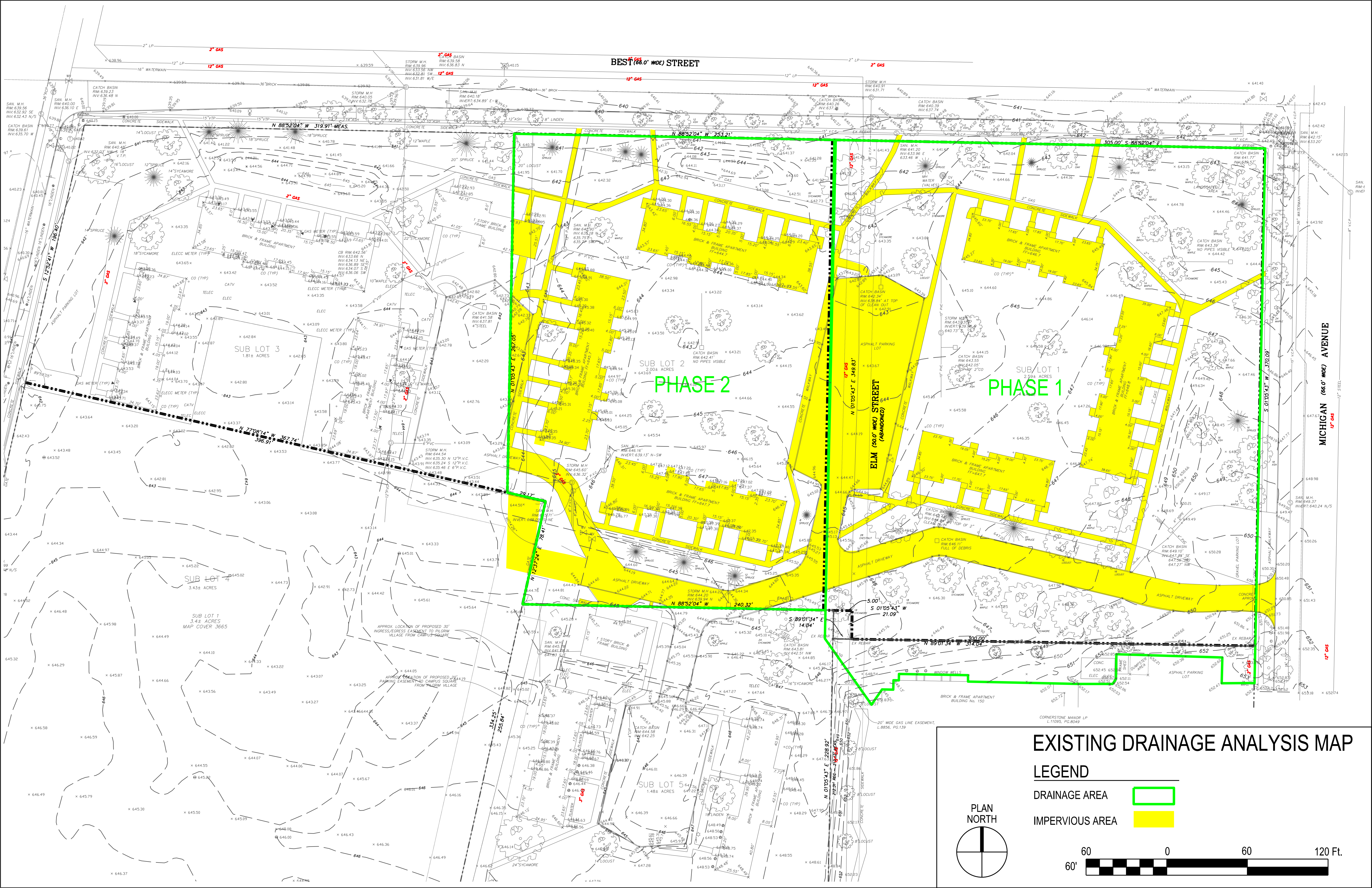
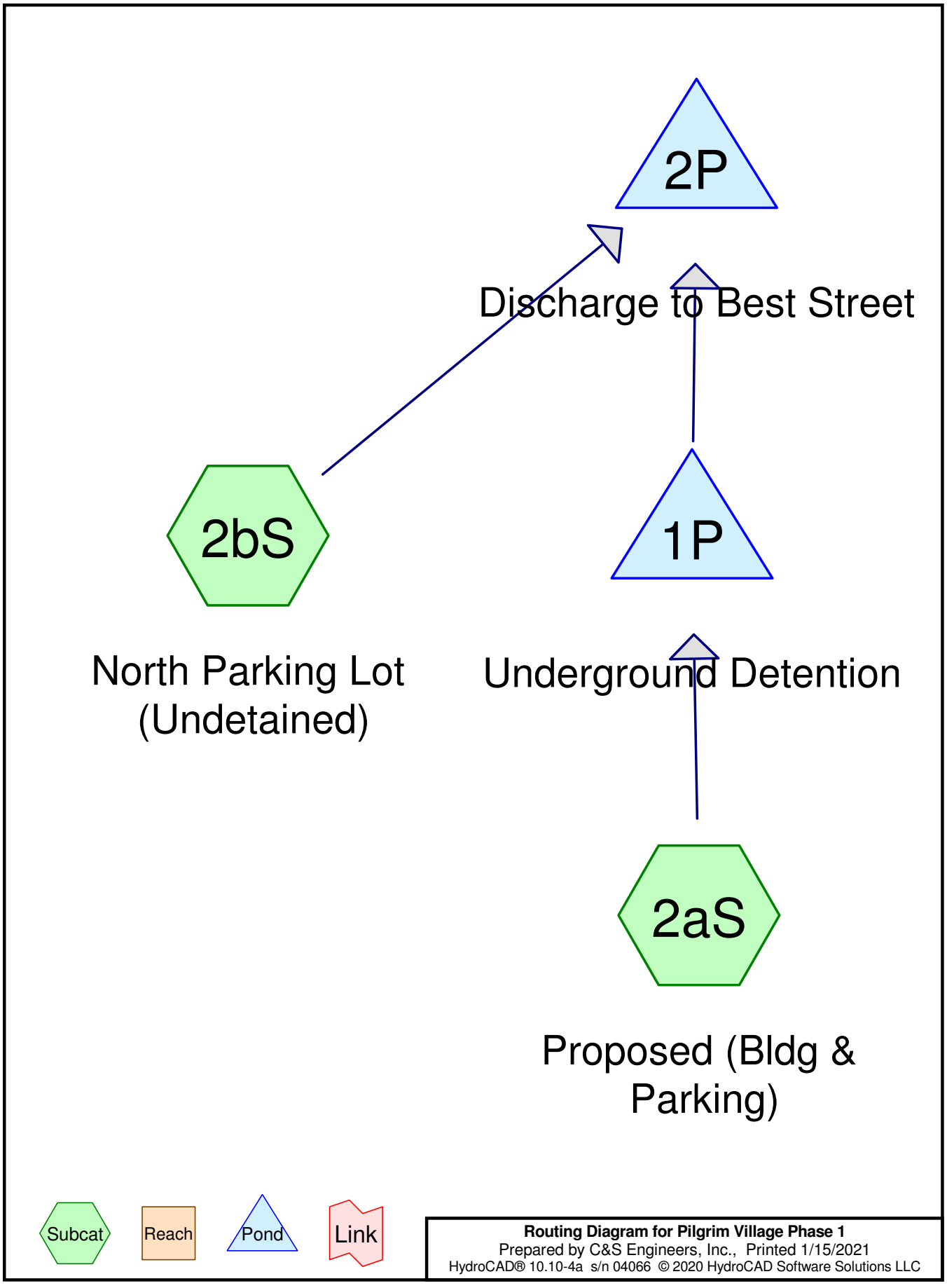


TABLE OF CONTENTS


EXISTING DRAINAGE ANALYSIS MAP
LEGEND
DRAINAGE AREA
IMPERVIOUS AREA
PLAN NORTH
60 0 60 120 Ft.
60'
BEST (66.0' WIDE) STREET
MICHIGAN (66.0' WIDE) AVENUE
ELM (50.0' WIDE) STREET (ABANDONED)
PHASE 1
PHASE 2
SUB LOT 1
2.59± ACRES
SUB LOT 2
2.00± ACRES
SUB LOT 3
1.81± ACRES
SUB LOT 4
3.43± ACRES
SUB LOT 5
1.48± ACRES
SUB LOT 1
3.4± ACRES
MAP COVER 3665
ASPHALT DRIVEWAY
ASPHALT PARKING LOT
BRICK & FRAME APARTMENT BUILDING
1 STORY BRICK & FRAME BUILDING
APPROX. LOCATION OF PROPOSED 30' INGRESS/EGRESS EASEMENT TO PILGRIM VILLAGE FROM CAMPUS SQUARE
APPROX. LOCATION OF PROPOSED 20' PARKING EASEMENT TO CAMPUS SQUARE FROM PILGRIM VILLAGE
BRICK & FRAME APARTMENT BUILDING No. 150
CORNERSTONE MANOR LP L.11095, PG.8049
20' WIDE GAS LINE EASEMENT, L.8856, PG.139



Routing Diagram for Pilgrim Village Phase 1
Prepared by C&S Engineers, Inc., Printed 1/15/2021

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-YR	Type II 24-hr		Default	24.00	1	2.19	2
2	25-YR	Type II 24-hr		Default	24.00	1	3.80	2
3	WQ Storm	Type II 24-hr		Default	24.00	1	1.00	2

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	639.50	636.00	182.0	0.0192	0.013	8.0	0.0	0.0

Summary for Subcatchment 2aS: Proposed (Bldg & Parking)

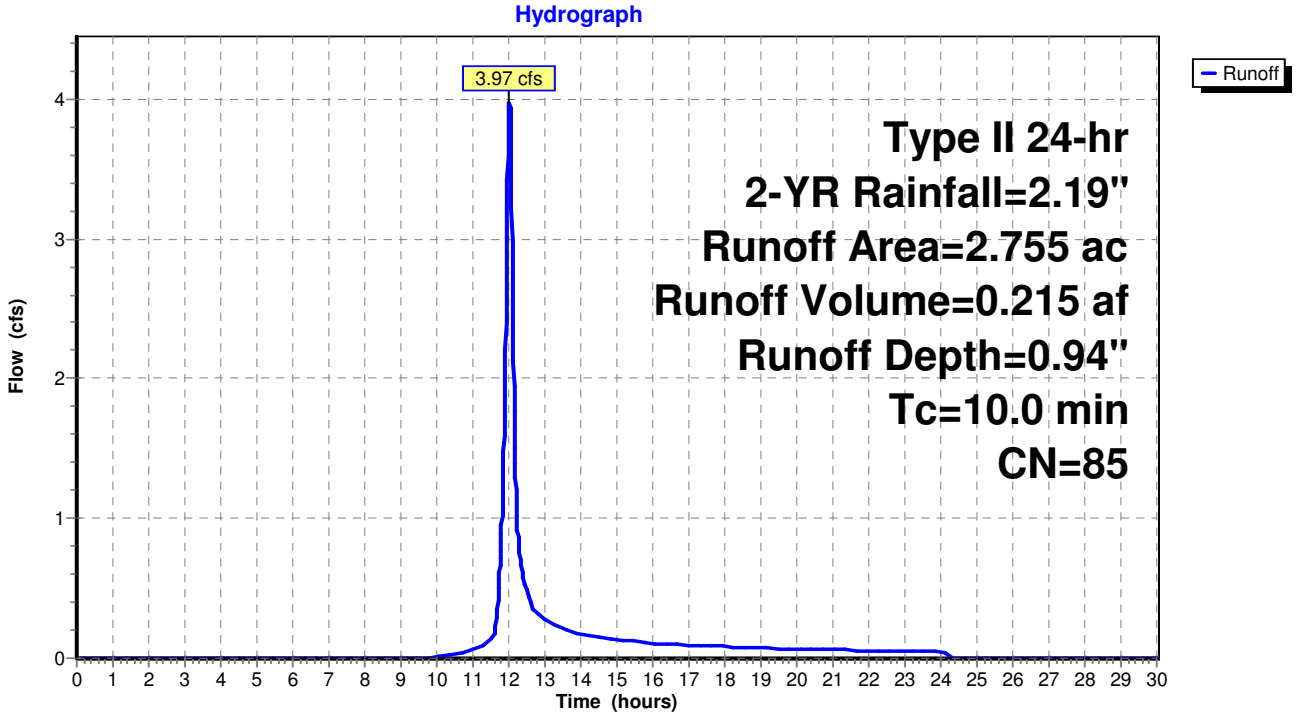
Runoff = 3.97 cfs @ 12.02 hrs, Volume= 0.215 af, Depth= 0.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=2.19"

Area (ac)	CN	Description
1.891	98	Paved parking, HSG D
0.475	39	>75% Grass cover, Good, HSG A
0.389	80	>75% Grass cover, Good, HSG D
2.755	85	Weighted Average
0.864		31.36% Pervious Area
1.891		68.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment 2aS: Proposed (Bldg & Parking)



Summary for Subcatchment 2bS: North Parking Lot (Undetained)

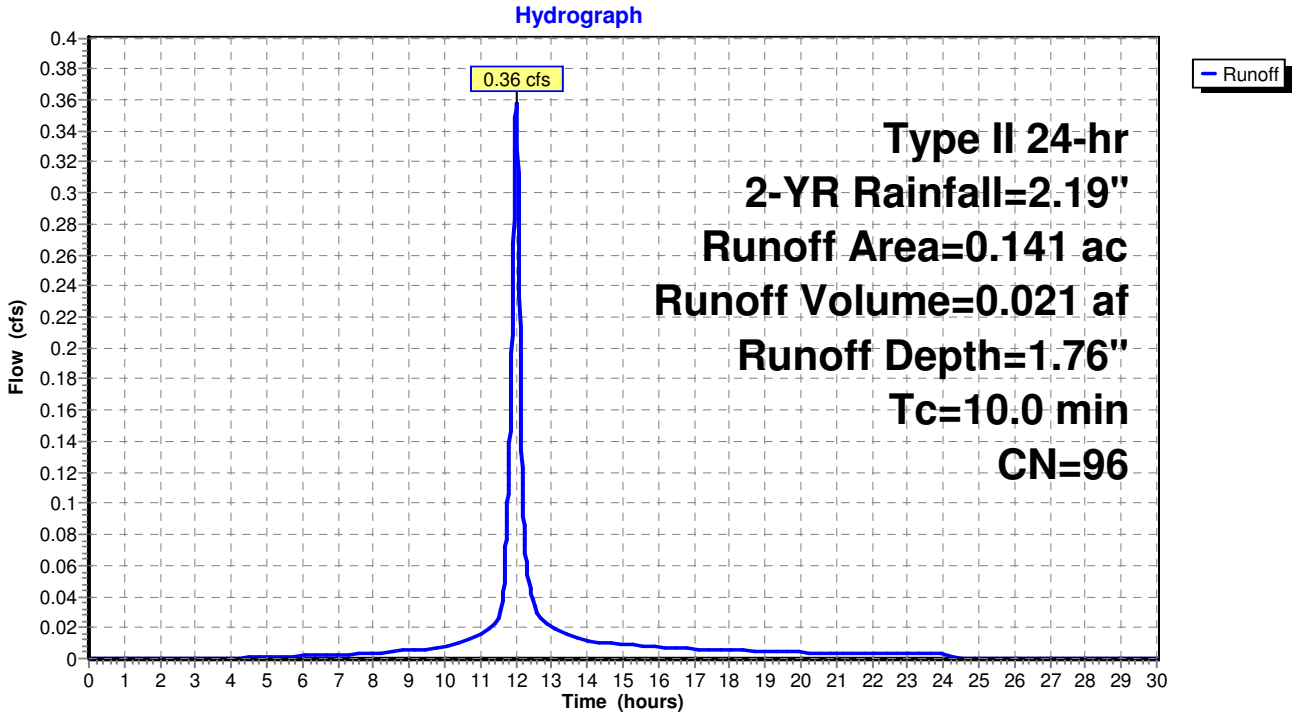
Runoff = 0.36 cfs @ 12.01 hrs, Volume= 0.021 af, Depth= 1.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=2.19"

Area (ac)	CN	Description
0.126	98	Paved parking, HSG D
0.015	80	>75% Grass cover, Good, HSG D
0.141	96	Weighted Average
0.015		10.64% Pervious Area
0.126		89.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment 2bS: North Parking Lot (Undetained)



Summary for Pond 1P: Underground Detention

Inflow Area = 2.755 ac, 68.64% Impervious, Inflow Depth = 0.94" for 2-YR event
Inflow = 3.97 cfs @ 12.02 hrs, Volume= 0.215 af
Outflow = 0.26 cfs @ 13.09 hrs, Volume= 0.156 af, Atten= 93%, Lag= 64.3 min
Discarded = 0.04 cfs @ 13.09 hrs, Volume= 0.065 af
Primary = 0.22 cfs @ 13.09 hrs, Volume= 0.091 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 640.12' @ 13.09 hrs Surf.Area= 2,852 sf Storage= 4,700 cf

Plug-Flow detention time= 312.2 min calculated for 0.156 af (72% of inflow)
Center-of-Mass det. time= 208.9 min (1,053.7 - 844.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	637.75'	4,678 cf	**37.58'W x 75.89'L x 6.75'H Field A** 19,253 cf Overall - 7,557 cf Embedded = 11,695 cf x 40.0% Voids
#2A	638.50'	7,557 cf	**ADS_StormTech MC-4500 b +Cap** x 68 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 68 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
		12,236 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	639.50'	**8.0" Round Culvert** L= 182.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 639.50' / 636.00' S= 0.0192 '/' Cc= 0.900 n= 0.013, Flow Area= 0.35 sf
#2	Device 1	639.50'	**3.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	637.75'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 630.00'

Discarded OutFlow Max=0.04 cfs @ 13.09 hrs HW=640.12' (Free Discharge)
└**3=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=0.22 cfs @ 13.09 hrs HW=640.12' (Free Discharge)
└**1=Culvert** (Passes 0.22 cfs of 0.71 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.22 cfs @ 3.31 fps)

Pond 1P: Underground Detention - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

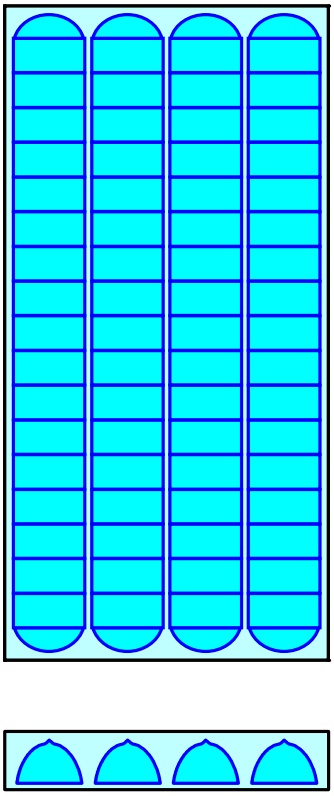
17 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 73.89' Row Length +12.0" End Stone x 2 = 75.89' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

68 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 7,557.3 cf Chamber Storage

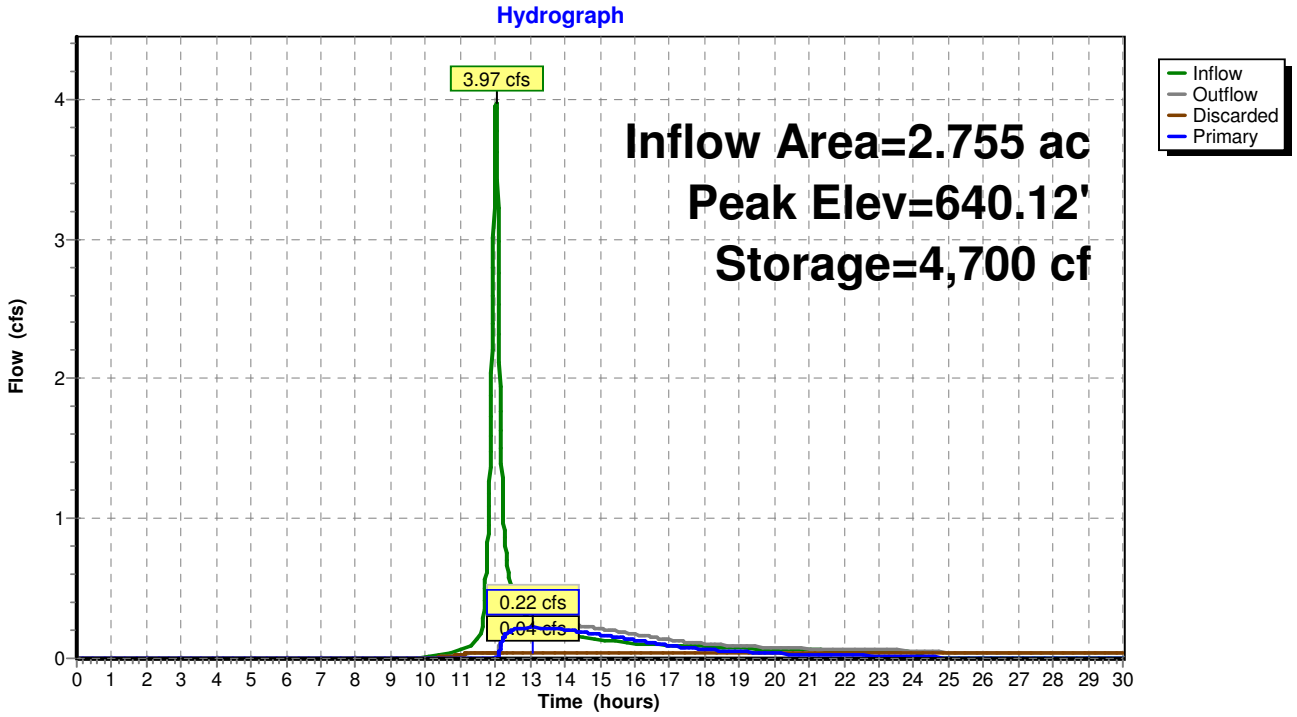
19,252.8 cf Field - 7,557.3 cf Chambers = 11,695.4 cf Stone x 40.0% Voids = 4,678.2 cf Stone Storage

Chamber Storage + Stone Storage = 12,235.5 cf = 0.281 af
Overall Storage Efficiency = 63.6%
Overall System Size = 75.89' x 37.58' x 6.75'

68 Chambers
713.1 cy Field
433.2 cy Stone



Pond 1P: Underground Detention



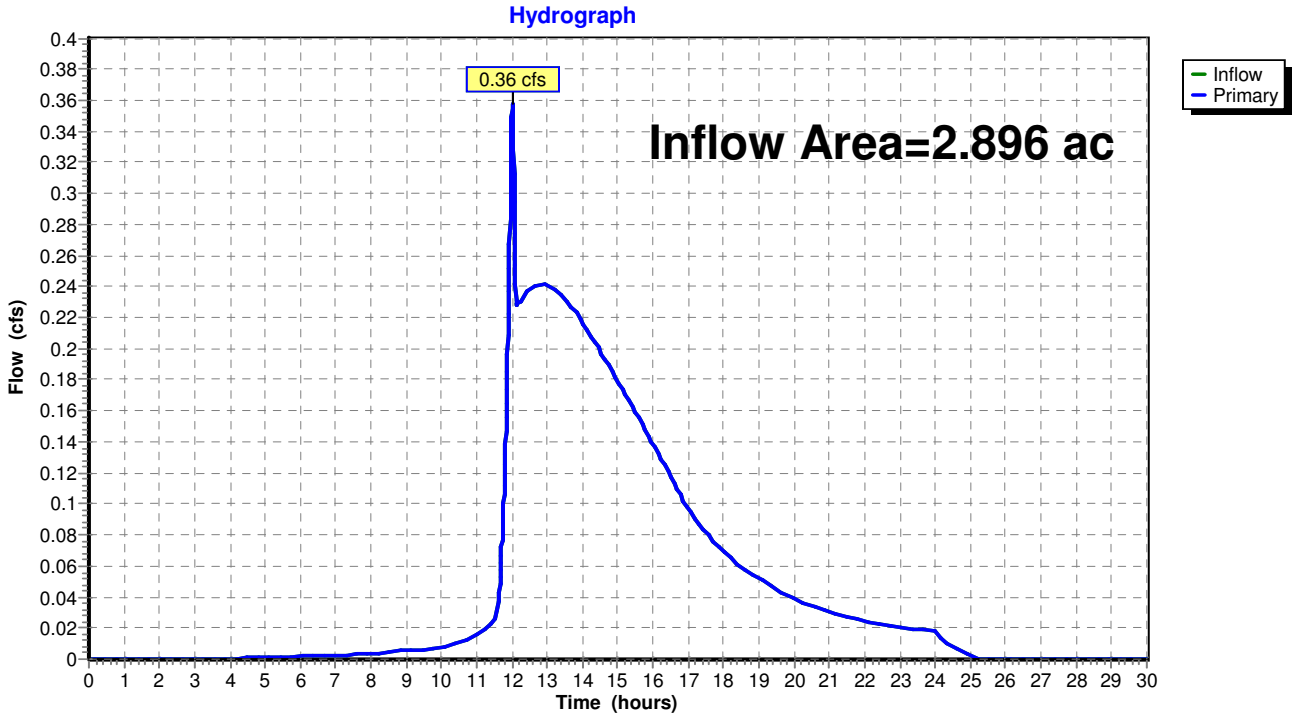
Summary for Pond 2P: Discharge to Best Street

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.896 ac, 69.65% Impervious, Inflow Depth = 0.46" for 2-YR event
Inflow = 0.36 cfs @ 12.01 hrs, Volume= 0.112 af
Primary = 0.36 cfs @ 12.01 hrs, Volume= 0.112 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Pond 2P: Discharge to Best Street



Summary for Subcatchment 2aS: Proposed (Bldg & Parking)

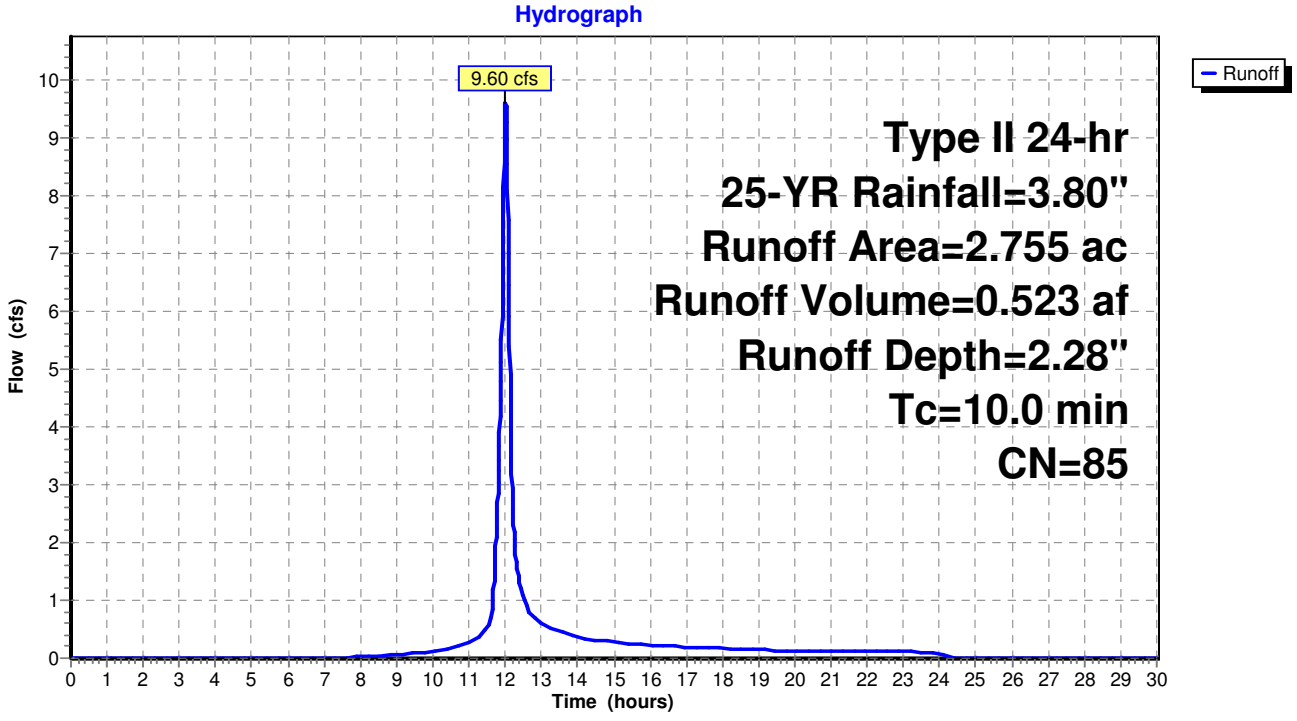
Runoff = 9.60 cfs @ 12.01 hrs, Volume= 0.523 af, Depth= 2.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=3.80"

Area (ac)	CN	Description
1.891	98	Paved parking, HSG D
0.475	39	>75% Grass cover, Good, HSG A
0.389	80	>75% Grass cover, Good, HSG D
2.755	85	Weighted Average
0.864		31.36% Pervious Area
1.891		68.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment 2aS: Proposed (Bldg & Parking)



Summary for Subcatchment 2bS: North Parking Lot (Undetained)

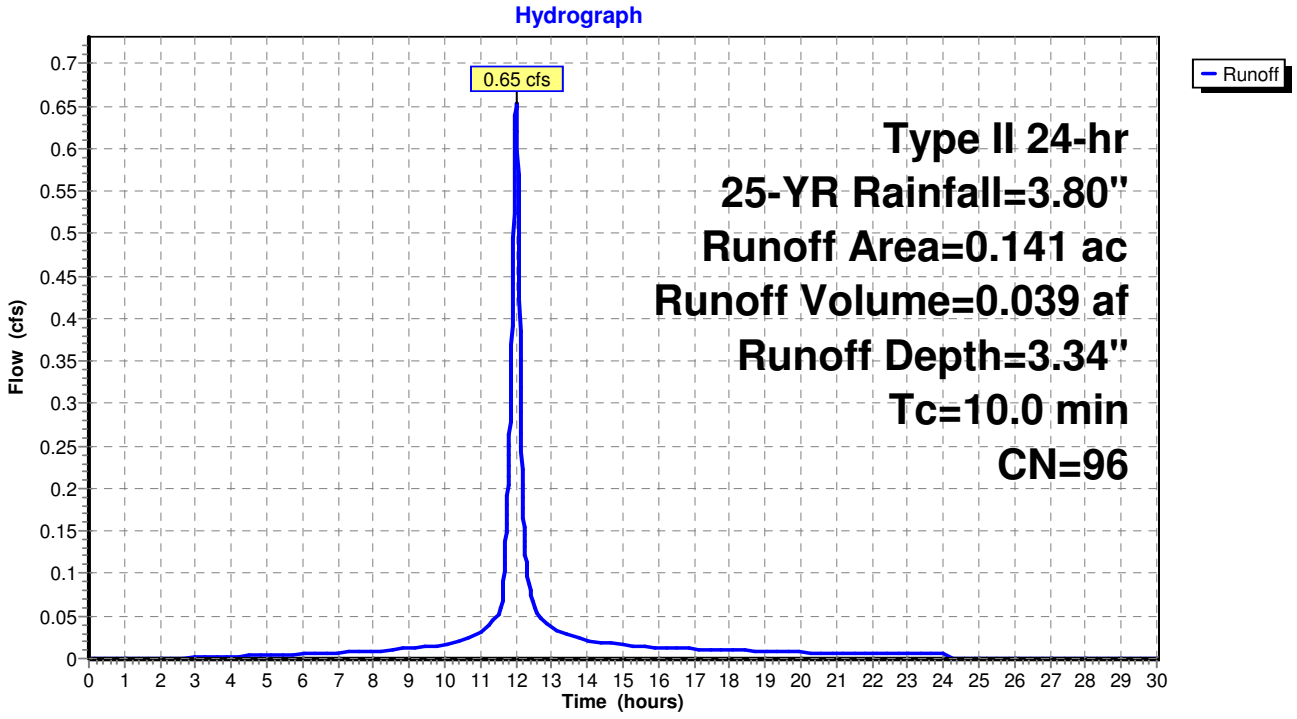
Runoff = 0.65 cfs @ 12.01 hrs, Volume= 0.039 af, Depth= 3.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=3.80"

Area (ac)	CN	Description
0.126	98	Paved parking, HSG D
0.015	80	>75% Grass cover, Good, HSG D
0.141	96	Weighted Average
0.015		10.64% Pervious Area
0.126		89.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment 2bS: North Parking Lot (Undetained)



Summary for Pond 1P: Underground Detention

Inflow Area = 2.755 ac, 68.64% Impervious, Inflow Depth = 2.28" for 25-YR event
Inflow = 9.60 cfs @ 12.01 hrs, Volume= 0.523 af
Outflow = 0.75 cfs @ 12.71 hrs, Volume= 0.461 af, Atten= 92%, Lag= 41.7 min
Discarded = 0.06 cfs @ 12.71 hrs, Volume= 0.079 af
Primary = 0.69 cfs @ 12.71 hrs, Volume= 0.382 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 644.25' @ 12.71 hrs Surf.Area= 2,852 sf Storage= 11,955 cf

Plug-Flow detention time= 246.9 min calculated for 0.461 af (88% of inflow)
Center-of-Mass det. time= 188.3 min (1,007.6 - 819.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	637.75'	4,678 cf	**37.58'W x 75.89'L x 6.75'H Field A** 19,253 cf Overall - 7,557 cf Embedded = 11,695 cf x 40.0% Voids
#2A	638.50'	7,557 cf	**ADS_StormTech MC-4500 b +Cap** x 68 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 68 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
		12,236 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	639.50'	**8.0" Round Culvert** L= 182.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 639.50' / 636.00' S= 0.0192 '/' Cc= 0.900 n= 0.013, Flow Area= 0.35 sf
#2	Device 1	639.50'	**3.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	637.75'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 630.00'

Discarded OutFlow Max=0.06 cfs @ 12.71 hrs HW=644.25' (Free Discharge)
└**3=Exfiltration** (Controls 0.06 cfs)

Primary OutFlow Max=0.69 cfs @ 12.71 hrs HW=644.25' (Free Discharge)
└**1=Culvert** (Passes 0.69 cfs of 2.25 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.69 cfs @ 10.34 fps)

Pond 1P: Underground Detention - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

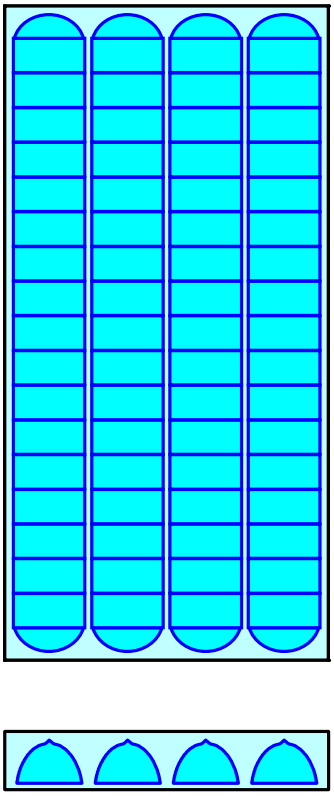
17 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 73.89' Row Length +12.0" End Stone x 2 = 75.89' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

68 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 7,557.3 cf Chamber Storage

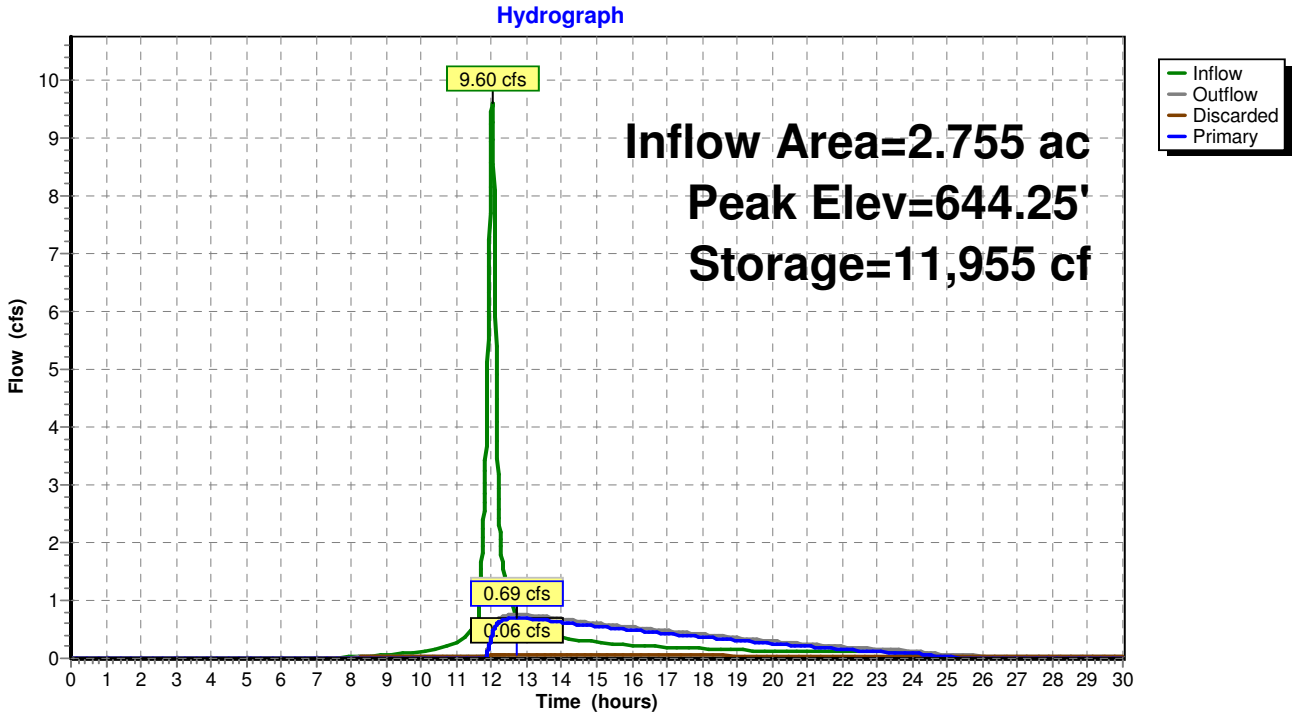
19,252.8 cf Field - 7,557.3 cf Chambers = 11,695.4 cf Stone x 40.0% Voids = 4,678.2 cf Stone Storage

Chamber Storage + Stone Storage = 12,235.5 cf = 0.281 af
Overall Storage Efficiency = 63.6%
Overall System Size = 75.89' x 37.58' x 6.75'

68 Chambers
713.1 cy Field
433.2 cy Stone



Pond 1P: Underground Detention



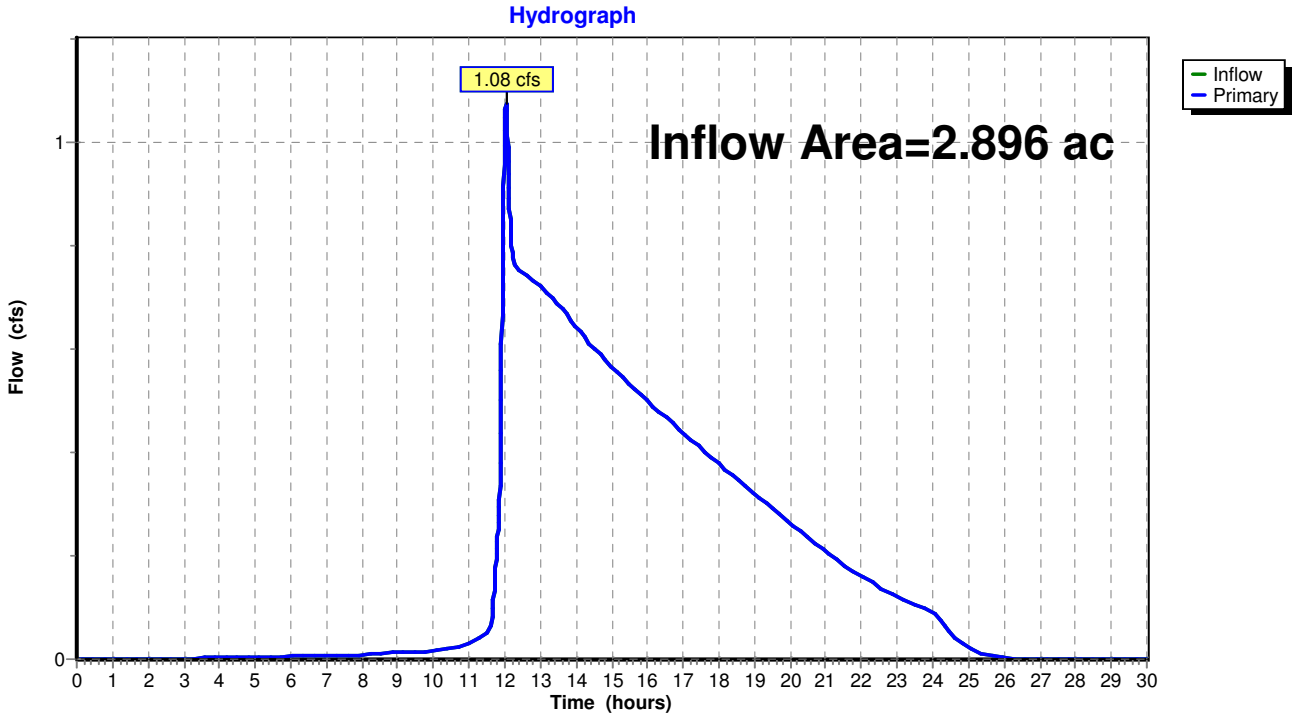
Summary for Pond 2P: Discharge to Best Street

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.896 ac, 69.65% Impervious, Inflow Depth = 1.74" for 25-YR event
Inflow = 1.08 cfs @ 12.04 hrs, Volume= 0.421 af
Primary = 1.08 cfs @ 12.04 hrs, Volume= 0.421 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Pond 2P: Discharge to Best Street



Summary for Subcatchment 2aS: Proposed (Bldg & Parking)

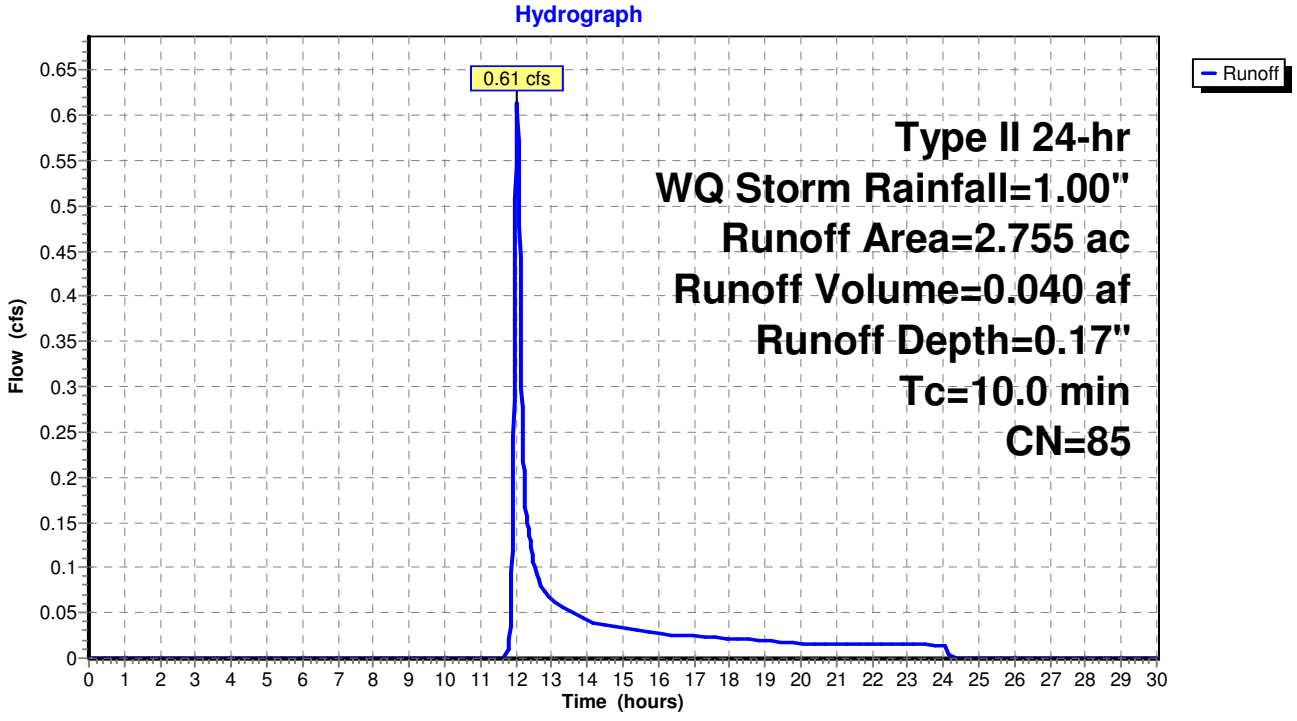
Runoff = 0.61 cfs @ 12.04 hrs, Volume= 0.040 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr WQ Storm Rainfall=1.00"

Area (ac)	CN	Description
1.891	98	Paved parking, HSG D
0.475	39	>75% Grass cover, Good, HSG A
0.389	80	>75% Grass cover, Good, HSG D
2.755	85	Weighted Average
0.864		31.36% Pervious Area
1.891		68.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment 2aS: Proposed (Bldg & Parking)



Summary for Subcatchment 2bS: North Parking Lot (Undetained)

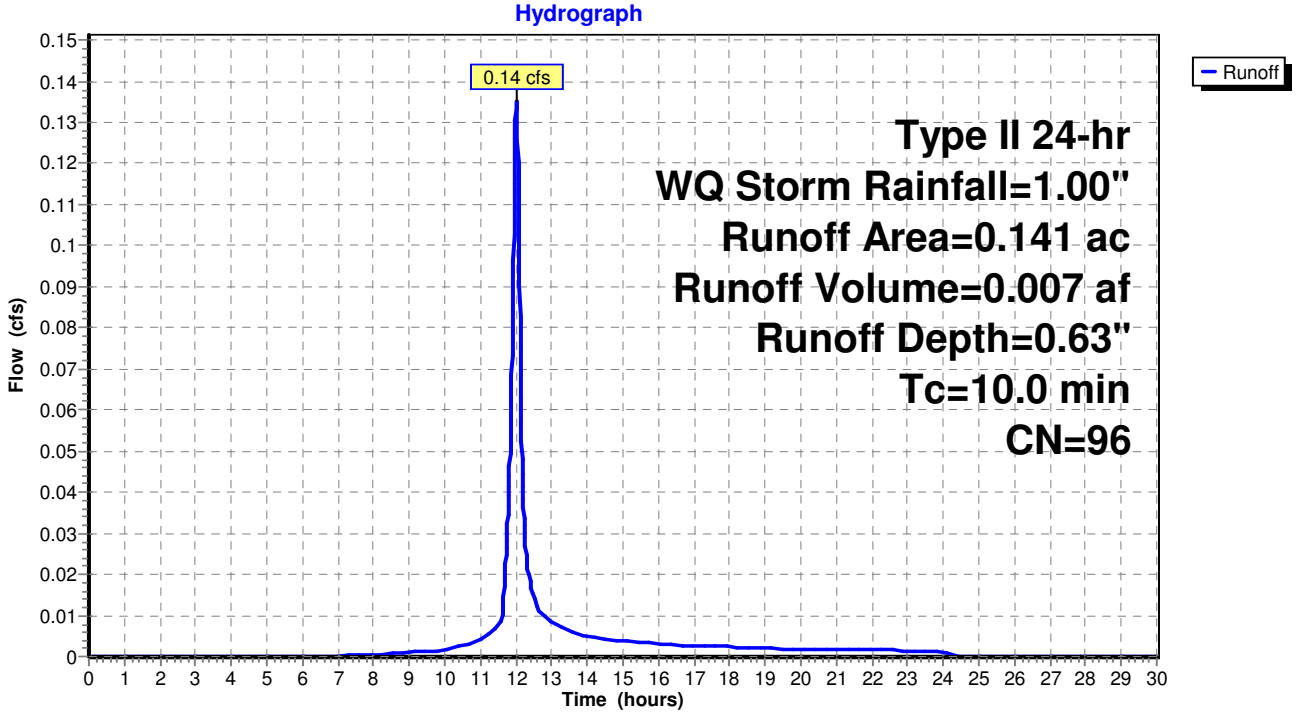
Runoff = 0.14 cfs @ 12.01 hrs, Volume= 0.007 af, Depth= 0.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr WQ Storm Rainfall=1.00"

Area (ac)	CN	Description
0.126	98	Paved parking, HSG D
0.015	80	>75% Grass cover, Good, HSG D
0.141	96	Weighted Average
0.015		10.64% Pervious Area
0.126		89.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment 2bS: North Parking Lot (Undetained)



Summary for Pond 1P: Underground Detention

Inflow Area = 2.755 ac, 68.64% Impervious, Inflow Depth = 0.17" for WQ Storm event
Inflow = 0.61 cfs @ 12.04 hrs, Volume= 0.040 af
Outflow = 0.04 cfs @ 14.68 hrs, Volume= 0.040 af, Atten= 94%, Lag= 158.7 min
Discarded = 0.04 cfs @ 14.68 hrs, Volume= 0.040 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 638.36' @ 14.68 hrs Surf.Area= 2,852 sf Storage= 697 cf

Plug-Flow detention time= 226.0 min calculated for 0.040 af (100% of inflow)
Center-of-Mass det. time= 226.0 min (1,127.8 - 901.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	637.75'	4,678 cf	**37.58'W x 75.89'L x 6.75'H Field A** 19,253 cf Overall - 7,557 cf Embedded = 11,695 cf x 40.0% Voids
#2A	638.50'	7,557 cf	**ADS_StormTech MC-4500 b +Cap** x 68 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 68 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
		12,236 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	639.50'	**8.0" Round Culvert** L= 182.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 639.50' / 636.00' S= 0.0192 '/' Cc= 0.900 n= 0.013, Flow Area= 0.35 sf
#2	Device 1	639.50'	**3.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	637.75'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 630.00'

Discarded OutFlow Max=0.04 cfs @ 14.68 hrs HW=638.36' (Free Discharge)
└**3=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=637.75' (Free Discharge)
└**1=Culvert** (Controls 0.00 cfs)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 1P: Underground Detention - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

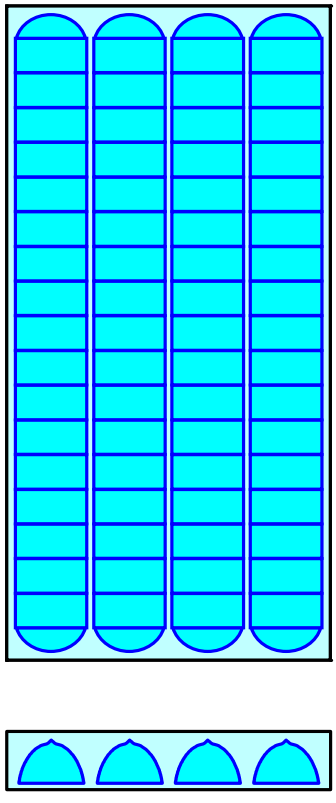
17 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 73.89' Row Length +12.0" End Stone x 2 = 75.89' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

68 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 7,557.3 cf Chamber Storage

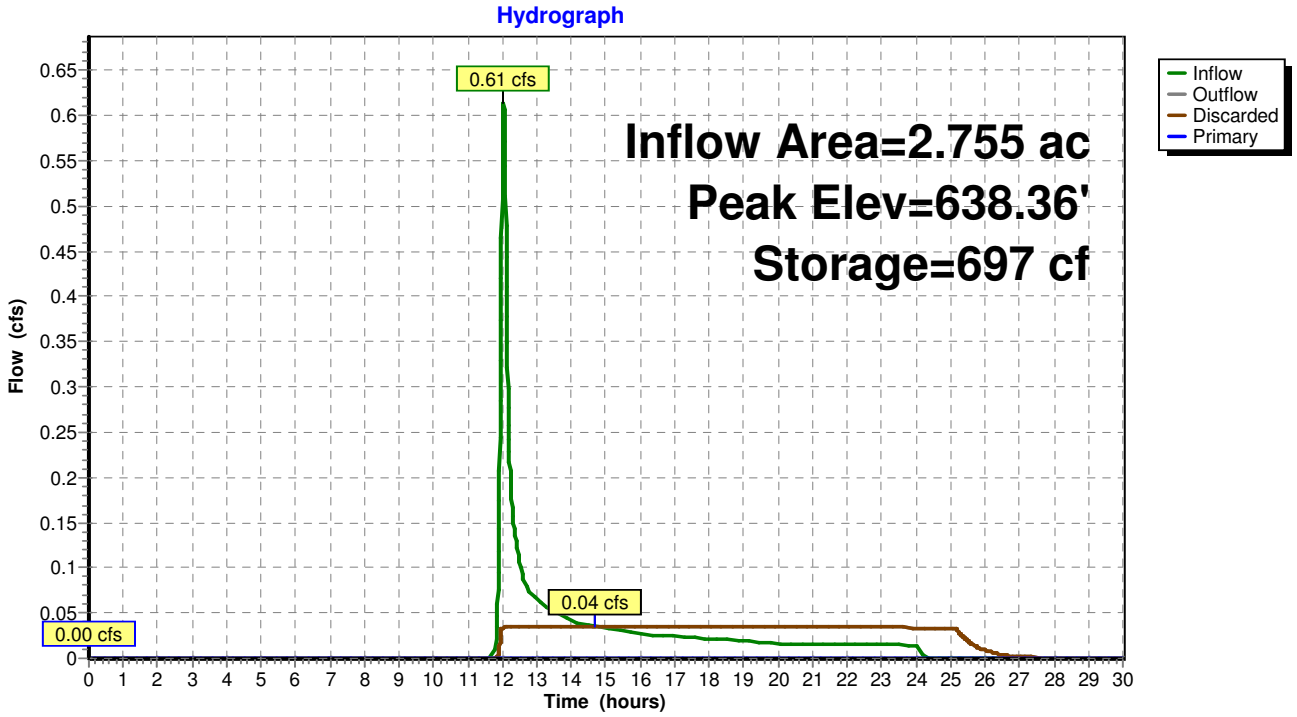
19,252.8 cf Field - 7,557.3 cf Chambers = 11,695.4 cf Stone x 40.0% Voids = 4,678.2 cf Stone Storage

Chamber Storage + Stone Storage = 12,235.5 cf = 0.281 af
Overall Storage Efficiency = 63.6%
Overall System Size = 75.89' x 37.58' x 6.75'

68 Chambers
713.1 cy Field
433.2 cy Stone



Pond 1P: Underground Detention



Summary for Pond 2P: Discharge to Best Street

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.896 ac, 69.65% Impervious, Inflow Depth = 0.03" for WQ Storm event
Inflow = 0.14 cfs @ 12.01 hrs, Volume= 0.007 af
Primary = 0.14 cfs @ 12.01 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Pond 2P: Discharge to Best Street

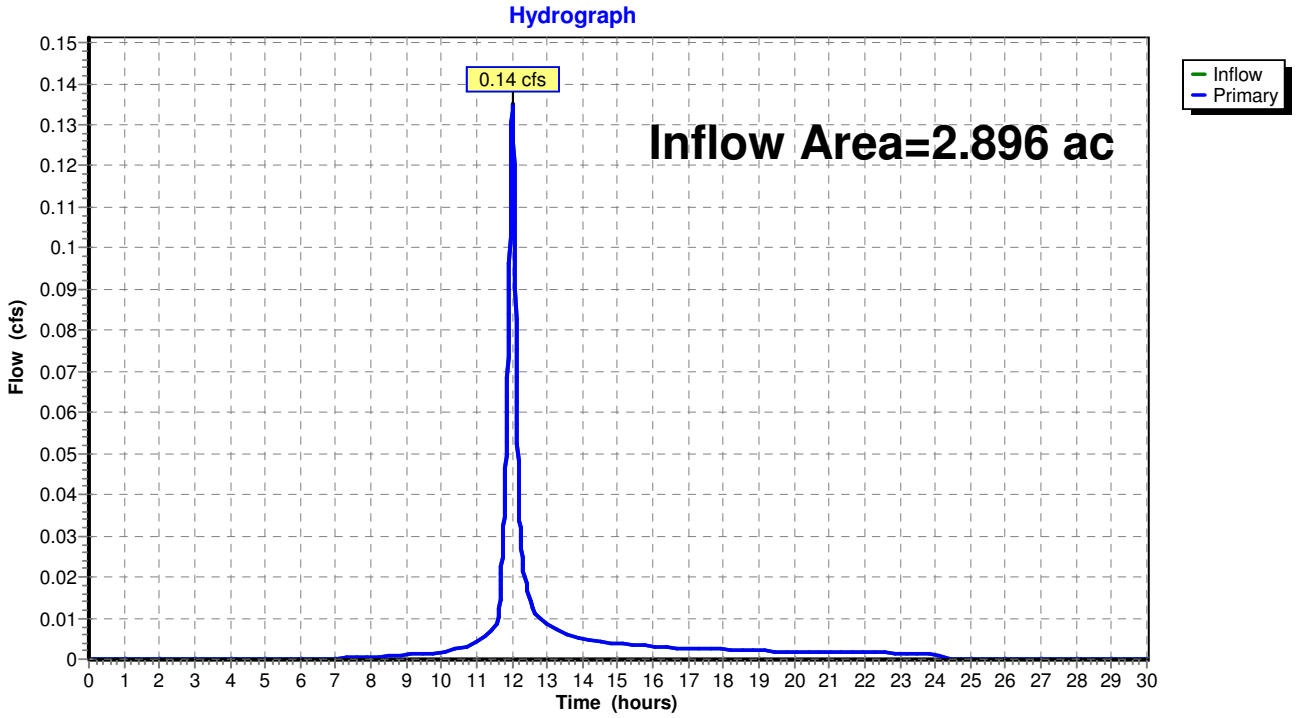


TABLE OF CONTENTS

PROPOSED DRAINAGE ANALYSIS MAP

LEGEND

DRAINAGE AREA

IMPERVIOUS AREA

PLAN NORTH

60 0 60 120 Ft.

60'

BEST (66.0' WIDE) STREET

MICHIGAN (66.0' WIDE) AVENUE

ELM (50.0' WIDE) STREET (PROPOSED)

PHASE 1

PHASE 2

NORTH PARKING LOT (UNDETAINED) 26S

PROPOSED (Bldg + Parking) 2ES

SUB LOT 1 4.50± ACRES

SUB LOT 2 2.00± ACRES

SUB LOT 5 1.48± ACRES

PROPOSED (Bldg + Parking) 2ES

COMMUNITY CENTER F.F.E. 650.65

RETAIL F.F.E. 651.65

LOBBY F.F.E. 650.15

F.F.E. 646.65

F.F.E. 645.65

F.F.E. 648.15

STORMWATER CONTROL STRUCTURE (SEE DETAIL) RIM 644.75± WEIR CREST ELEV 641.81 6" ORIFICE INV 637.70 8" INV 637.70 18" INV 639.00 W.Q. SUMP 634.00

STORMWATER CONTROL STRUCTURE (SEE DETAIL) RIM 644.25± WEIR CREST ELEV 644.25 3.5" ORIFICE INV 639.50 8" INV 639.50 18" INV 639.50 SUMP 636.50

WYE CONNECT TO EXISTING 36" BRICK SEWER 8" INV 636.72

WYE CONNECT TO EXISTING 36" BRICK SEWER 8" INV 636.01

68 LF 8" Ø HDPE @ 0.50%

8" STORM INV 642.00 SEE PLUMBING PLAN FOR CONTINUATION, TYP.

12" STORM INV 640.00 SEE PLUMBING PLAN FOR CONTINUATION, TYP.

10" STORM INV 643.50 SEE PLUMBING PLAN FOR CONTINUATION, TYP.

8" STORM INV 645.50 SEE PLUMBING PLAN FOR CONTINUATION, TYP.

8" STORM INV 643.00 SEE PLUMBING PLAN FOR CONTINUATION, TYP.

75 LF ADS STORMTECH SC-740 CHAMBERS CHAMBER INV 636.00 STONE BEDDING INV 635.25

58 LF 12" Ø HDPE @ 0.50%

286 LF TOTAL ADS STORMTECH SC-740 CHAMBERS CHAMBER INV 636.00 STONE BEDDING INV 637.75

250 LF 8" Ø HDPE @ 0.50%

145 LF 18" Ø HDPE @ 1.00%

50 LF 6" Ø HDPE @ 0.50%

30 LF 6" Ø HDPE @ 0.50%

4" Ø HDPE @ 0.50%

YARD DRAIN RIM 645.40 INV 642.40

TRENCH DRAIN RIM 646.57 INV 644.57

CB RIM 644.80 INV 641.80

CB RIM 645.25 INV 641.80

CB RIM 645.00 INV 639.10

CB RIM 643.00 INV 639.50

CB RIM 647.53 INV 646.03

CB RIM 642.10 INV 644.10

CB RIM 645.75 INV 642.75

YD RIM 644.65 INV 641.65

YD RIM 644.25 INV 641.35

YD RIM 649.30 INV 646.80

YD RIM 649.91 INV 646.85

YD RIM 650.30 INV 647.80

YD RIM 650.75 INV 647.75

YD RIM 650.30 INV 647.85

YD RIM 649.50 INV 646.50

N 88°52'04" W 319.91' MEAS.

N 88°52'04" W 236.71'

321.50' S 88°52'04" E

S 12°52'41" W 186.40'

N 01°08'34" E 380.05'

N 77°08'14" W 367.74'

396.91'

29.17'

N 12°37'24" E 78.41'

N 88°52'04" W 240.32'

S 89°01'34" E 14.04'

N 01°05'43" E 348.83'

S 01°05'43" W 370.09'

S 01°05'43" W 21.09'

N 89°01'34" W 314.04'

N 01°05'43" E 228.92'

212.31' REC ~ 212.42' MEAS.

334.25'

255.84'

5.00'

20.00'

APPROX. LOCATION OF PROPOSED 30' INGRESS/EGRESS EASEMENT TO PILGRIM VILLAGE FROM CAMPUS SQUARE

APPROX. LOCATION OF PROPOSED 20' PARKING EASEMENT TO CAMPUS SQUARE FROM PILGRIM VILLAGE

20' WIDE GAS LINE EASEMENT, L.8856, P.0.139

CORNERSTONE MANOR LP L.11093, P.G.8049

BRICK & FRAME APARTMENT BUILDING No. 150

ASPHALT PARKING LOT

WINDOW WELLS

CONC.

FRAME SHED

DUMPSTER AREA

ELEC ELEC

1 STORY BRICK & FRAME BUILDING

BRICK & FRAME APARTMENT BUILDING

ASPHALT PARKING LOT

BRICK & FRAME APARTMENT BUILDING

GAS METER (TYP)

ELECC METER (TYP)

CO (TYP)

CATV

TELEC

ELEC

CONCRETE SIDEWALK

15"VTP COMB CONCRETE SIDEWALK

16" WATERMAIN

2" LP

12" LP

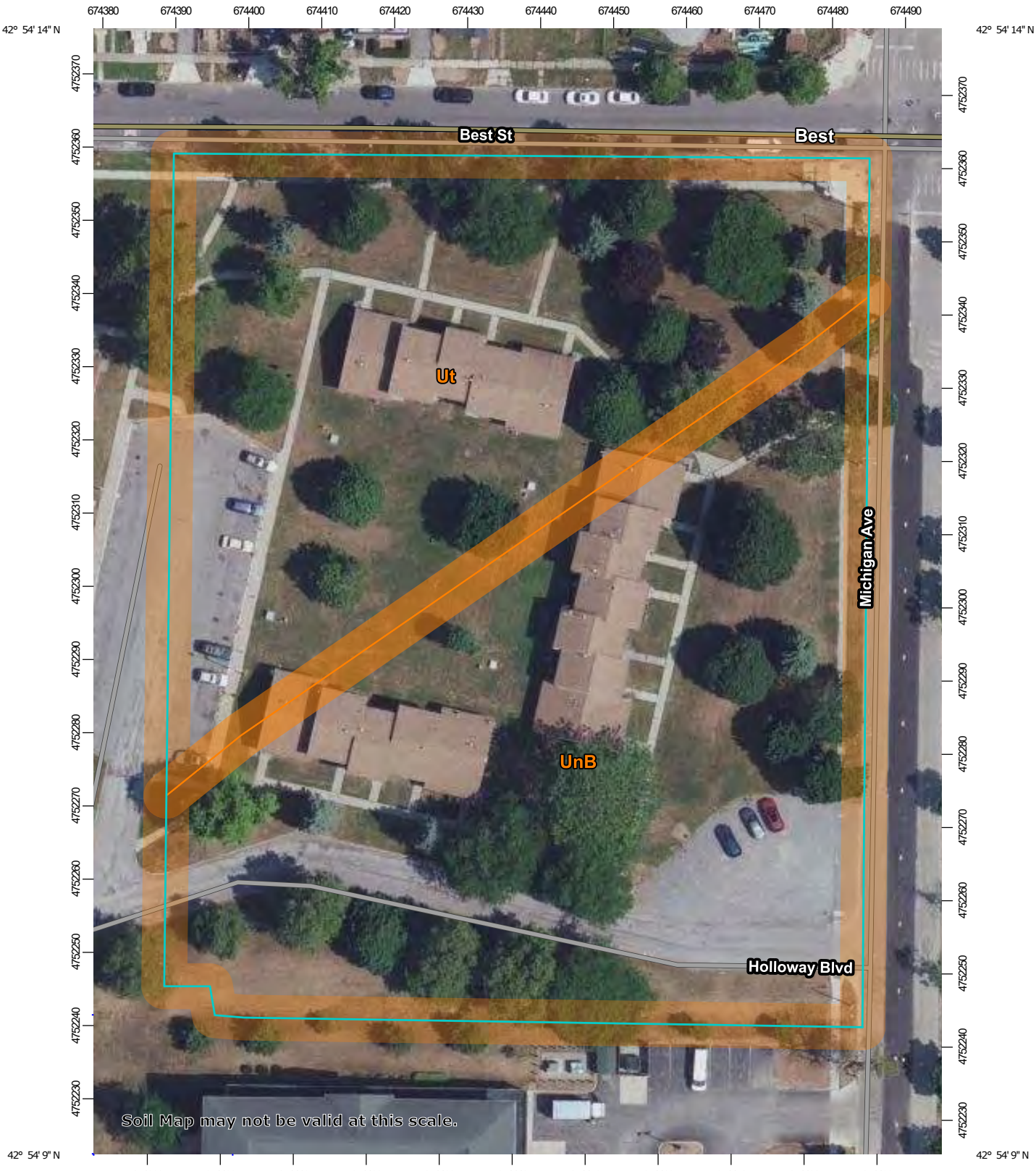
8" VCP

15" VCP

36" WATERMAIN

12" STEEL

Soil Map—Erie County, New York
(Pilgrim Village - Phase 1, Buffalo, NY)



Map Scale: 1:749 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 10 20 40 60

Feet: 0 35 70 140 210

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Erie County, New York
Survey Area Data: Version 20, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 4, 2020—Jul 10, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
UnB	Urban land-Colonie complex, 3 to 6 percent slopes	1.5	55.0%
Ut	Urban land-Odessa complex, 0 to 3 percent slopes	1.3	45.0%
Totals for Area of Interest		**2.8**	**100.0%**

DATE: January 2021
PROJECT NAME: Pilgrim Village - Phase 1

Stormwater Quality Calculations

REQUIRED RUNOFF REDUCTION VOLUME

$P := 1.0$ — *Design Rainfall Number (in)*

$A_{disturbed} := 1.25$ — *Total disturbed area (acres)*

$A_{imp} := 1.25$ — *New impervious area (acres)*

$I := \frac{A_{imp}}{A_{disturbed}} \cdot 100 = 100.000$ — *Percent of new impervious cover (%)*

Minimum Runoff Reduction Volume

The minimum RRv is calculated by applying a reduction factor (S) (based on the HSG on site) to the post development area of impervious coverage.
The site is 55% HSG A (S = .55) and 45% HSG D (S=0.20). Use a weighted average.

$S := 0.39$ — *Reduction Factor*

$I := 100$ — *Imperverious Coverage (%)*

$Rv := 0.05 + 0.009 \cdot I = 0.950$ — *Rv value*

$A_{imp} = 1.250$ — *Area of Impervious Coverage (acres)*

$A_i := S \cdot A_{imp} = 0.488$ — *Impervious cover targeted for Runoff Reduction (acres)*

$P = 1.000$ — *Design Rainfall Number (in)*

$RR_V := \frac{P \cdot Rv \cdot A_i}{12} = 0.039$ — *Required Runoff Reduction Volume (acre-feet)*

$RR_V \cdot 43560 = 1681.144$ — *Required Runoff Reduction Volume (cubic-feet)*

Required Treatment Summary

$RR_V = 0.039$ — *Required Runoff Reduction Volume (acre-feet)*

$RR_V \cdot 43560 = 1681.144$ — *Required Runoff Reduction Volume (cubic-feet)*

Intertek-PSI
3784 Commerce Court
Suite 300
North Tonawanda, NY 14120

Tel +1 716 694 8657
Fax +1 716 694 8638
intertek.com/building

January 21, 2021

Mr. Connor Kenney
Developer
SAA/EVI
150 SE 2nd Avenue, Suite 300
Miami, Florida 33131
Email: ckenney@saaevi.com

RE: **Field Infiltration Testing**
Proposed Pilgrim Village Project – Phase I
Southwest Corner of the Intersection of Best Street & Michigan Avenue
Buffalo, Erie County, New York 14209
PSI Project No.: 08061225 – Infiltration Testing – Phase II

Dear Mr. Kenney:

In response to your authorization, PSI (Professional Service Industries, Inc.) has completed field infiltration tests for the proposed Pilgrim Village Project – Phase I project located at the Southwest Corner of the Intersection of Best Street & Michigan Avenue in Buffalo, Erie County, New York. Written authorization to proceed with this geotechnical engineering evaluation and analysis was provided by Mr. David Nardozzi, RA of Silvestri Architects PC in the form of a copy of PSI Proposal No. 0806-330526 signed by Mr. Connor Kenney, Developer with SAA/EVI on January 5, 2021. Professional Service Industries Engineering, PLLC's services for this project were performed in accordance with PSI Proposal No. 0806-330526, dated December 22, 2020.

Project information was obtained from Mr. David Nardozzi, RA of Silvestri Architects PC. The following drawings were provided to develop the scope of work:

- One (1) Silvestri Architects PC project drawing dated September 1, 2020, un-numbered, and entitled "Map of Adjacent Conditions" containing the locations of the proposed building footprint, proposed parking and drive lanes, locations of existing on-site and surrounding structures, existing property boundaries, the proposed boring locations, and the proposed infiltration test locations.

- One (1) Silvestri Architects PC project drawing dated September 1, 2020, numbered C-101, and entitled "Site Plan" containing the locations of the proposed building footprint, proposed parking and drive lanes, proposed bio-retention areas, locations of existing surrounding structures, and existing property boundaries.

- One (1) Silvestri Architects PC project drawing dated September 1, 2020, numbered C-105, and entitled "Landscape Plan" containing the locations of the proposed building footprint, proposed parking and drive lanes, locations of existing surrounding structures, existing property boundaries, and existing topographic information.

- One (1) Silvestri Architects PC project drawing dated September 1, 2020, numbered C-107, and entitled "SWPPP Plan" containing the locations of the proposed building footprint, proposed parking and drive lanes, proposed bio-retention area, locations of existing surrounding structures, existing property boundaries, and existing topographic information.

Two (2) infiltration tests (designated as I-3 and I-4) were performed within the Pilgrim Village Project – Phase I project site located at the Southwest Corner of the Intersection of Best Street & Michigan Avenue in Buffalo, Erie County, New York. The approximate locations are illustrated on the attached Boring Location / Infiltration Test Location Plan. The location of the infiltration tests and test depths were selected by Mr. David Nardozzi, RA of Silvestri Architects PC and were located in the field by a representative of Professional Services Industries, Inc. by measuring distances from known reference points. Ground surface elevations shown on the boring logs were interpolated from the Silvestri Architects PC project drawing dated September 1, 2020, numbered C-105, and entitled "Landscape Plan" and are assumed accurate to within one-half (1/2) contour interval (1 foot). Professional Service Industries, Inc. recommends that the boring positions be established by a licensed surveyor. The infiltration tests were performed in general accordance with the New York State Storm Water Management Design Manual Appendix D parameters. Please note that following the completion of the field services, the infiltration tests were backfilled with the soil spoils of the excavation. The field infiltration rates noted on this report are the average of the four (4) observations, each over a one (1) hour period, of the measured decrease in hydrostatic head from the top of the four (4) inch diameter PVC casings (i.e. the Datum).

Results and particulars are as follows:

Infiltration Test I-3

Ground Surface Elevation:	644.2 +/-.
Test I-3 Soil Type:	At the surface at infiltration soil boring I-3, approximately five (5) inches of topsoil was encountered. Underlying the topsoil was a brown silty sand (SM) that also contained varying amounts of clay to an approximate depth of two (2) feet below existing grade. Below the silty sand was a brown sandy silt (ML) that also contained varying amounts of clay to an approximate depth of six and one-half (6-1/2) feet below existing site grade. Beneath the sandy silt was a brown sand (SP) that also contained varying amounts of silt to an approximate boring termination depth of twelve (12) feet below existing site grade.
Ground Water Encountered:	Seven and one-half (7-1/2) feet below existing site grade during the drilling operations.
Test Depth I-3:	Six (6) feet below existing site grade.
Infiltration Rate I-3:	One (1) inch per hour.

Infiltration Test I-4

Ground Surface Elevation:	645.1 +/-.
Test I-4 Soil Type:	At the surface at infiltration soil boring I-4, approximately three (3) inches of topsoil was encountered. Underlying the topsoil was a brown undocumented man-placed fill material (FILL) consisting of a silt/clay mixture that also contained varying amounts of gravel, sand, wood, slag, concrete, and ash to an approximate depth of four (4) feet below existing grade Below the undocumented man-placed fill materials was a brown silty sand (SM) to an approximate depth of eight (8) feet below existing grade. Underneath the silty sand was a brown sandy silt (ML) that also contained varying amounts of clay that extended to an approximate boring termination depth of ten (10) feet below existing site grade.
Ground Water Encountered:	No free groundwater encountered.
Test Depth I-4:	Six (6) feet below existing site grade.
Infiltration Rate I-4:	Zero (0) inches per hour.

Professional Service Industries, Inc.'s professional services have been performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. Professional Service Industries, Inc. is not responsible for the conclusions, opinions or recommendations made by others based on these data. No other warranties are implied or expressed.

Should you have any questions or need further information regarding this report, please feel free to contact me.

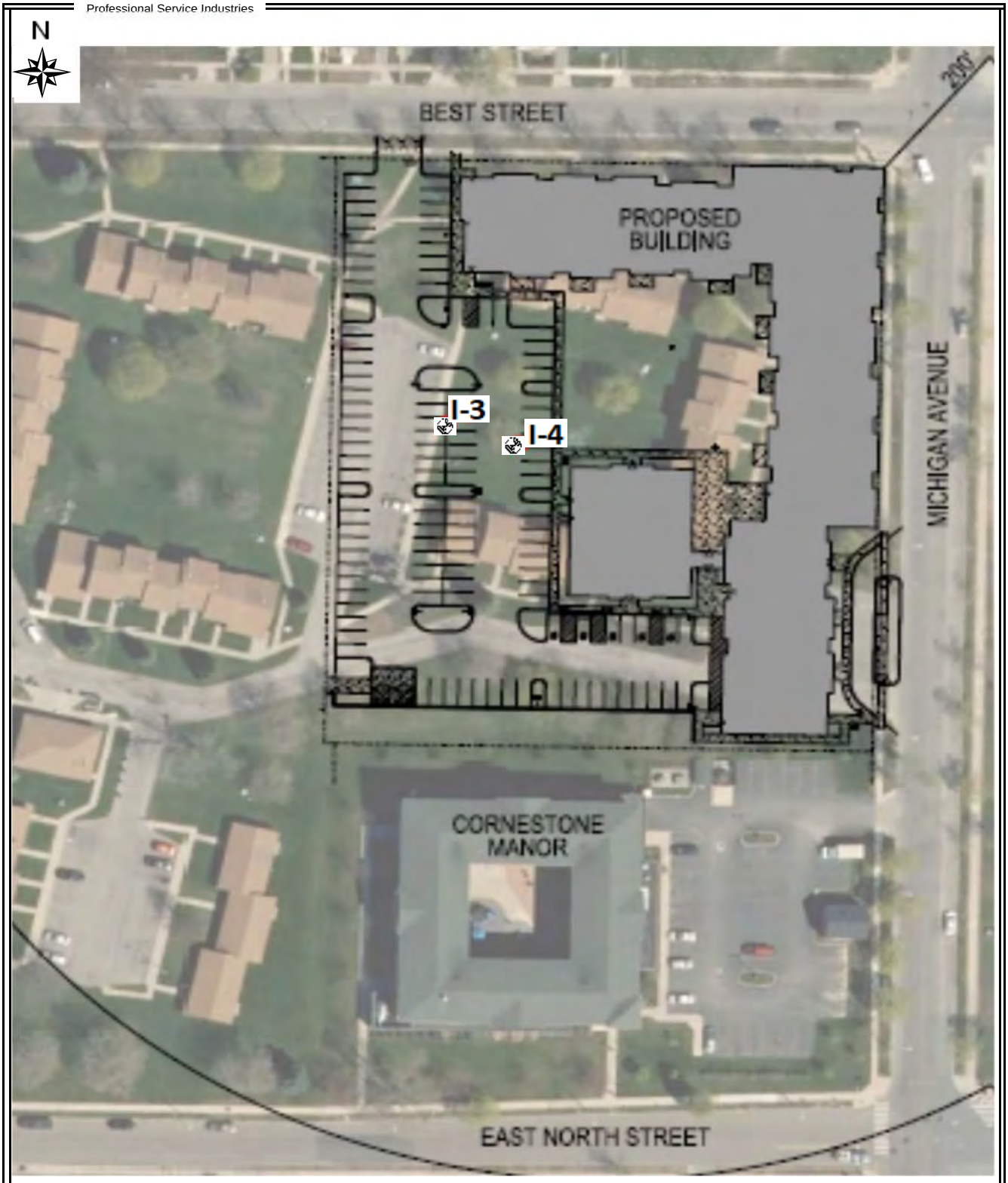
Respectfully submitted,
PSI (PROFESSIONALS SERVICE INDUSTRIES, INC.)

Steven Pump
Branch Manager

David B. Sabol, PE
Vice President

Attachment: Soil Boring / Infiltration Test Location Plan
General Site Location Plan
Boring Log
General Notes
Unified Soil Classification System
Infiltration Field Test Data

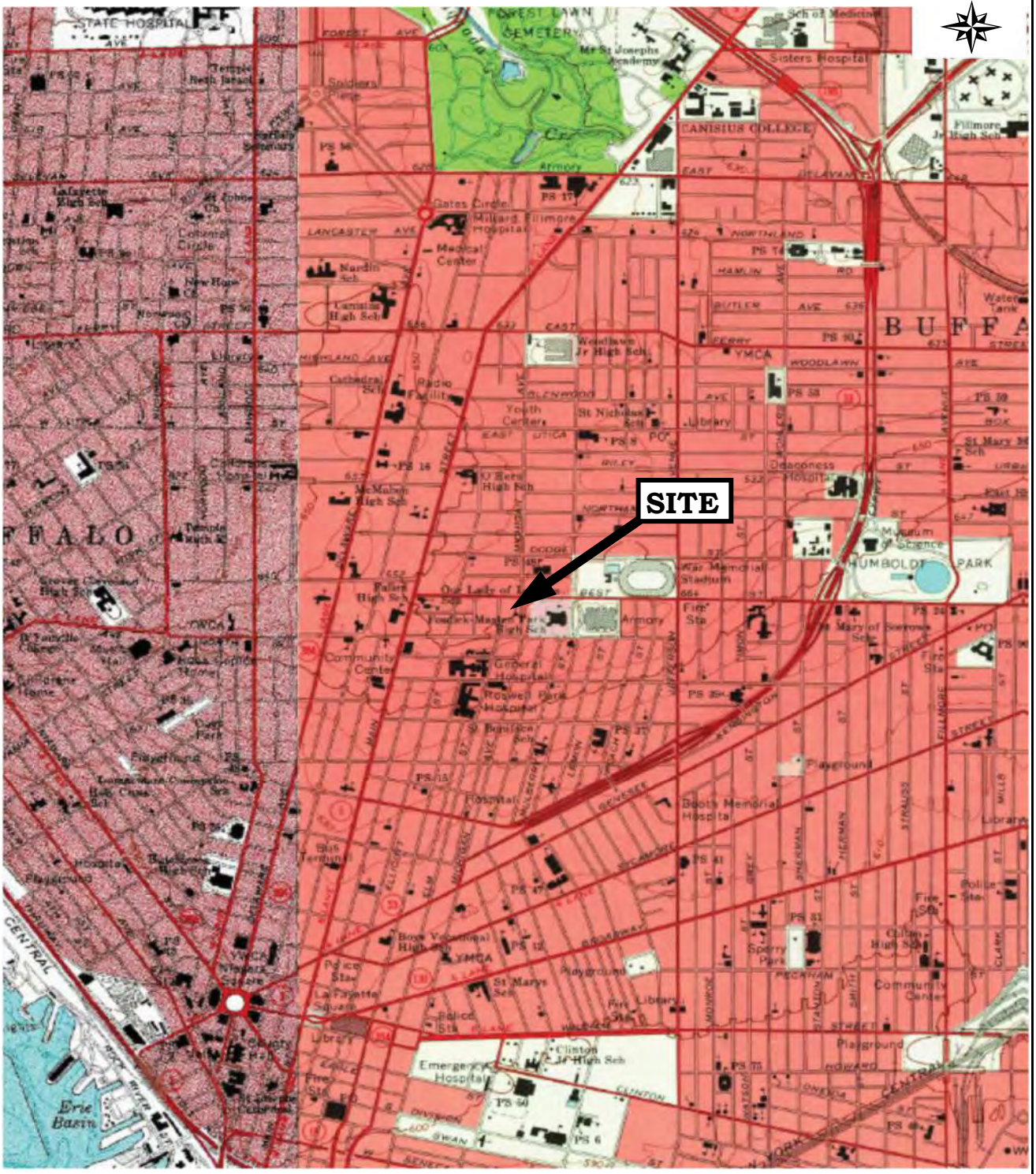
Professional Service Industries



NOT TO SCALE

Project Name: Proposed Pilgrim Village Project - Phase I Infiltration Testing - Phase I Southwest Corner of the Intersection of Best Street & Michigan Avenue Buffalo, Erie County, New York 14209	**Boring Location / Infiltration Test Location Plan**	
	Project No.: 08061225	Date: January 21, 2021

Professional Service Industries



Base map provided by Microsoft Research Maps

Project Name: Proposed Pilgrim Village Project - Phase I Infiltration Testing - Phase II Southwest Corner of the Intersection of Best Street & Michigan Avenue Buffalo, Erie County, New York 14209	**General Site Location Plan**	
	Project No.: 08061225	Date: January 21, 2021

BORING I-3

DATE STARTED:	1/7/21	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	1/7/21	**DRILLER:** Carl Rengert	**LOGGED BY:** Steven Pump
COMPLETION DEPTH	12.0 ft	**DRILL RIG:**	Truck Mounted CME 55
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	644.2 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	DBS

REMARKS: No Hole Cave Noted

Water

While Drilling	7.5	feet
Upon Completion	None	feet
Delay	N/A	

BORING LOCATION:
See Attached Boring Location Plan

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					5" TOPSOIL					
				1	18	SILTY SAND (SM), fine sand, trace clay, brown, loose, moist	SM	2-4-4-6 N=8	18		
				2	24	SANDY SILT (ML), fine sand, trace clay, brown, medium dense, moist to wet	ML	5-5-6-7 N=11	18		
640	5			3	24			6-6-6-8 N=12	16		
				4	24	POORLY GRADED SAND (SP), coarse to fine sand, trace silt, brown, medium dense, moist to saturated ▽	SP	8-12-12-13 N=24	7		
635	10			5	24			8-7-7-8 N=14	13		
				6	24			6-7-9-10 N=16	10		
						Boring Terminated at 12'					

intertek psi

Professional Service Industries, Inc.
3784 Commerce Court, Suite 300
North Tonawanda, NY 14120
Telephone: (716) 694-8657

PROJECT NO.: 08061225
PROJECT: Proposed Pilgrim Village Project
LOCATION: Phase 1
S.W.C. of Best St. & Michigan Ave.
Buffalo, Erie County, New York 14209

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING I-4

DATE STARTED:	1/11/21	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	1/11/21	**DRILLER:** Carl Rengert	**LOGGED BY:** Steven Pump
COMPLETION DEPTH	10.0 ft	**DRILL RIG:**	Truck Mounted CME 55
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	645.1 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	DBS

REMARKS: No Hole Cave Noted

Water

While Drilling	None	feet
Upon Completion	None	feet
Delay	N/A	

BORING LOCATION:
See Attached Boring Location Plan

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					3" TOPSOIL					
				1	18	FILL, clayey silt, little fine sand, trace fine gravel, slag, wood, and ash, brown, loose, moist	FILL	3-3-4-5 N=7	21		
				2	24	FILL, clayey silt, little fine sand and concrete, brown, medium dense, moist	FILL	5-5-6-6 N=11	21		
640	5			3	24	SILTY SAND (SM), fine sand, brown, medium dense, moist to wet	SM	5-6-6-7 N=12	11		
				4	24			6-8-10-10 N=18	18		
				5	24	SANDY SILT (ML), fine sand, trace clay, brown, medium dense, moist	ML	7-9-8-9 N=17	16		
	10					Boring Terminated at 10'					

Professional Service Industries, Inc.
3784 Commerce Court, Suite 300
North Tonawanda, NY 14120
Telephone: (716) 694-8657

PROJECT NO.: 08061225
PROJECT: Proposed Pilgrim Village Project
LOCATION: Phase 1
S.W.C. of Best St. & Michigan Ave.
Buffalo, Erie County, New York 14209

The stratification lines represent approximate boundaries. The transition may be gradual.

FIELD CLASSIFICATION SYSTEM FOR SOIL EXPLORATION

COHESIONLESS SOILS

(Silt, Sand, Gravel and Combinations)

Density

Very Loose	5 blows per foot or less
Loose	6 - 10 blows per foot
Medium Dense	11 - 30 blows per foot
Dense	31 - 50 blows per foot
Very Dense	51 blows per foot or more

Relative Properties

Descriptive Term	Percent
Trace	1 - 10
Little	11 - 20
Some	21 - 35
And	36 - 50

Particle Size Indentification

Boulders		8 inch diameter or more
Cobbles		3 - 8 inch diameter
Gravel	Coarse	1 - 3 inches
	Medium	1/2 - 1 inch
	Fine	1/4 - 1/2 inch
Sand	Coarse	0.6 mm - 1/4 inch (diameter of pencil lead)
	Medium	0.2 mm - 0.6 mm (diameter of broom straw)
	Fine	0.05 mm - 0.2 mm (diameter of human hair)
Silt		0.002 mm - 0.05 mm (cannot see particles)

COHESIVE SOILS

(Clay, Silt and Combinations)

Consistency

Very soft	3 blows per foot or less
Soft	4 - 5 blows per foot
Medim Stiff	6 - 10 blows per foot
Stiff	11 - 15 blows per foot
Very Stiff	16 - 30 blows per foot
Hard	31 blows per foot or more

Plasticity

Degree of Plasticity	Plasticity Index
None to slight	0 - 4
Slight	5 - 7
Medium	8 - 22
High to very high	over 22

CLASSIFICATION ON LOGS ARE MADE BY VISUAL EXAMINATION OF SAMPLES.

Standard Penetration Test — Driving a 2.0" O.D., 1 3/8" I.D., sampler a distance of 1.0 foot into undisturbed soil with a 140 pound hammer free falling a distance of 30 inches. It is customary for ITL to drive the spoon 6.0 inches to seat into undisturbed soil, then perform the test. The quantity of hammer blows for seating the sampler and performing the test are recorded for each 6.0 inches of penetration on the Field Exploration Log (example: 6-10-13). The standard penetration test result can be obtained by adding the last two figures (i.e. 10 + 13 = 23). The reader is referenced to ASTM D1586.

Strata Changes — Boundaries between soil layers are considered approximate based upon observed changes during the drilling operations or noted changes within representative samples.

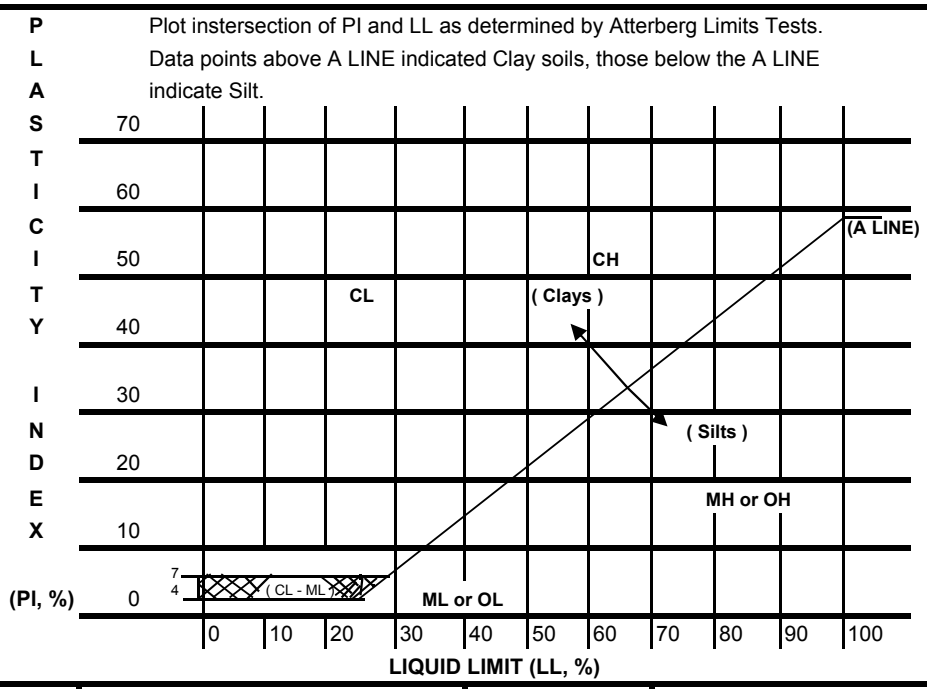
Groundwater — Observations were made to determine either the depth or elevation of water at the times indicated on the Soil Exploration Logs. The water so encountered may be groundwater or perched water. The depth or elevations indicated for water may fluctuate due to seasonal changes or other unknown factors.

United Soil Classification System
ASTM Designation D - 2487

psi Information To Build On
Engineering • Consulting • Testing

Based upon percentage of material passing No. 200 sieve classify as:

Less than 5%	GW, GP, SW, SP
More than 12%	GM, GC, SM, SC
5% to 12%	Borderline, use dual symbols



Coarse Grained Soils (More than half of is larger than No. 200 sieve)	Gravels (More than 50% retained on No.4 sieve)	GW	Well graded gravels, gravel-sand mixtures, little or no fines	$C_u = \frac{D_{60}}{D_{10}} > 4$	$1 < C_c = \frac{[D_{30}]^2}{D_{10} * D_{60}} < 3$
		GP	Poorly graded gravels, gravel-sand mixtures, little or no fines	Does not meet all requirements for GW	
		GM	Silty gravels, gravel-sand-silt mixtures	below A Line, PI < 4	in shaded area 4 < PI < 7 Dual Symbols
		GC	Clayey gravels, gravel-sand-clay mixtures	above A Line, PI > 7	
	Sands (More than 50% passing a No. 4 sieve)	SW	Well graded sands, gravelly sands, little or no fines	$C_u = \frac{D_{60}}{D_{10}} > 6$	$1 < C_c = \frac{[D_{30}]^2}{D_{10} * D_{60}} < 3$
		SP	Poorly graded sands, gravelly sands, little or no fines	Does not meet all requirements for SW	
		SM	Silty sands, sand-silt mixtures	below A Line, PI < 4	in shaded area 4 < PI < 7 Dual Symbols
		SC	Clayey sands, sand-clay mixtures	above A Line, PI > 7	
Fine Grained Soils (More than half of material is smaller than No. 200 sieve)	Silts & Clays (LL less than 50)	ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity		
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays		
		OL	Organic silts and organic silty clays of low plasticity		
	Silts & Clays (LL greater than 50)	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, plastic silts		
		CH	Inorganic clays of high plasticity fat clays		
		OH	Organic clays of medium to high plasticity		
	Highly Organic Soil	Pt	Peat and other highly organic soils		

Project: Pilgrim Village Project
Phase I

Address: Pilgrim Village Project - Phase I
Southwest Corner of the Intersection of Best Street and Michigan Avenue
Buffalo, Erie County, New York 14209

Client: SAA/EVI
150 SE 2nd Avenue, Suite 300
Miami, Florida 33131

Date January 21, 2021

Project No.: 08061225 - Infiltration Testing - Phase II

Table 1: Infiltration Field Test Data

Location	Pre Soak Fill Amount	Water Remaining After 24 Hour Pre-Soak	Refill #1 (Elapsed Time 24 Hours)	Refill #2 (Elapsed Time 60 minutes)	Refill #3 (Elapsed Time 60 minutes)	Refill #4 (Elapsed Time 60 minutes)	Final Reading (Elapsed Time 60 minutes)	Average Infiltration Rate
I - 3	24" of Water on 1/11/2021	2" of water remaining on 1/12/2021	22" of water filled at 9:00	23" of water remaining at 10:00	23" of water remaining at 11:00	23" of water remaining at 12:00	23" of water remaining at 13:00	One (1)
6' Below Grade				Rate: 1.0" per hour	Rate: 1.0" per hour	Rate: 1.0" per hour	Rate: 1.0" per hour	inches per hour
I - 4	24" of Water on 1/11/2021	20" of water remaining on 1/12/2021	4" of water filled at 9:07	24" of water remaining at 10:07	24" of water remaining at 11:07	24" of water remaining at 12:07	24" of water remaining at 13:07	Zero (0)
6' Below Grade				Rate: 0" per hour	Rate: 0" per hour	Rate: 0" per hour	Rate: 0" per hour	inches per hour

Note: Infiltration tests were performed in general accordance with the New York State Storm Water Management Design Manual Appendix D parameters.

APPENDIX I

COMMUNITY AIR MONITORING PLAN (CAMP)

COMMUNITY AIR MONITORING PLAN

FORMER PILGRIM VILLAGE FAMILY APARTMENTS
BUFFALO, NEW YORK 14209

NYSDEC SITE #915362

Prepared for:

SAA EVI MC Family, LLC.
150 SE 2nd Avenue, Suite 300
Miami, FL 33131

Prepared by:

960 Busti Avenue
Suite B-150
Buffalo, New York 14213

October 2020

Table of Contents

Attachments

1.0 COMMUNITY AIR MONITORING PROGRAM (CAMP)

A Community Air Monitoring Program (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the upwind and downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The program 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 and on-site workers not directly involved with work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. A NYSDOH generic CAMP obtained from NYSDEC DER-10 is presented in Attachment 1 that will be followed and adhered to for work activities that could release potential contaminants from an impacted area.

A program for suppressing fugitive dust and particulate matter monitoring will also be conducted in accordance NYSDEC DER-10 titled Appendix 1B Fugitive Dust and Particulate Monitoring, which is also provided in Attachment 1. The fugitive dust suppression and particulate monitoring program will be employed at the site during building demolition, site investigations/remediation and other intrusive activities which warrant its use.

Both the CAMP and the fugitive dust and particulate monitoring program will be administered by the environmental engineer/consultant. Monitoring results of the CAMP will be reported to the New York State Department of Health daily for review.

ATTACHMENT 1

NYSDOH Generic CAMP
and
Fugitive Dust and Particulate Monitoring

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

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

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Appendix 1B
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° C (14 to 122° 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.

Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures

When work areas are within 20 feet of potentially exposed populations or occupied structures, the continuous monitoring locations for VOCs and particulates must reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. The use of engineering controls such as vapor/dust barriers, temporary negative-pressure enclosures, or special ventilation devices should be considered to prevent exposures related to the work activities and to control dust and odors. Consideration should be given to implementing the planned activities when potentially exposed populations are at a minimum, such as during weekends or evening hours in non-residential settings.

- If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed 1 ppm, monitoring should occur within the occupied structure(s). Depending upon the nature of contamination, chemical-specific colorimetric tubes of sufficient sensitivity may be necessary for comparing the exposure point concentrations with appropriate pre-determined response levels (response actions should also be pre-determined). Background readings in the occupied spaces must be taken prior to commencement of the planned work. Any unusual background readings should be discussed with NYSDOH prior to commencement of the work.

- If total particulate concentrations opposite the walls of occupied structures or next to intake vents exceed 150 mcg/m^3, work activities should be suspended until controls are implemented and are successful in reducing the total particulate concentration to 150 mcg/m^3 or less at the monitoring point.

- Depending upon the nature of contamination and remedial activities, other parameters (e.g., explosivity, oxygen, hydrogen sulfide, carbon monoxide) may also need to be monitored. Response levels and actions should be pre-determined, as necessary, for each site.

Special Requirements for Indoor Work With Co-Located Residences or Facilities

Unless a self-contained, negative-pressure enclosure with proper emission controls will encompass the work area, all individuals not directly involved with the planned work must be absent from the room in which the work will occur. Monitoring requirements shall be as stated above under "Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures" except that in this instance "nearby/occupied structures" would be adjacent occupied rooms. Additionally, the location of all exhaust vents in the room and their discharge points, as well as potential vapor pathways (openings, conduits, etc.) relative to adjoining rooms, should be understood and the monitoring locations established accordingly. In these situations, it is strongly recommended that exhaust fans or other engineering controls be used to create negative air pressure within the work area during remedial activities. Additionally, it is strongly recommended that the planned work be implemented during hours (e.g. weekends or evenings) when building occupancy is at a minimum.

APPENDIX J

PRE-DEMOLITION ACM INSPECTION REPORT

Pre-Demolition Asbestos Inspection Report

Project Location:

Pilgrim Village Apartments
Buildings 10, 11, 12, 13, 14, 15, 16, Garage Structure
91 Nora Lane
Buffalo, NY 14209

Project ID: 15-0121JWA

Conditions as of: September 3rd, 2020

Prepared for:

Connor M. Kenney
SAA / EVI
1631 Hertel Avenue
Buffalo, NY 14216

Prepared by:

AMD Environmental Consultants, Inc.
712 Main St. Suite L1
Buffalo, NY 14202
OFFICE (716) 833-0043 | FAX (716) 241-8689
www.amdenvironmental.com

AMD Environmental Consultants, Inc.
712 Main St. Suite L1
Buffalo, NY 14202
Office: 716 833-0043 Fax: 716 241-8689
www.amdenvironmental.com

October 19th, 2020

Connor M. Kenney
SAA/EVI
1631 Hertel Avenue
Buffalo, NY 14216

Re: Pre-Demolition Asbestos Inspection Report
Buildings 10, 11, 12, 13, 14, 15, 16, Garage Structure
91 Nora Lane, Buffalo, NY 14209
AMD Project ID: 15-0121JWA

Mr. Kenney:

I am pleased to present this summary of asbestos survey services at the above referenced address.

AMD Environmental Consultants conducted a visual pre-demolition asbestos update for Buildings 10, 11, 12, 13, 14, 15, 16, & Garage Structure at the above referenced address on September 3rd, 2020. Building materials were identified to be consistent and homogeneous to those that were initially sampled during the 2015 inspection which is included as an appendix to this report. For more detail refer to the summary on page 4.

New York State asbestos regulations (12 NYCRR 56-5) require that asbestos surveys are conducted in order to determine whether or not the building or structure, or portion(s) thereof to be demolished, renovated, remodeled, contains asbestos containing building materials (ACBM), or presumed asbestos containing materials (PACM). These regulations also require that a copy of the pre-renovation survey be forwarded to the local New York State Department of Labor (NYSDOL) Asbestos Control Bureau immediately upon completion of the survey (Buffalo Office: 65 Court Street, Rm. 405, Buffalo, NY 14202). **If requested to AMD in writing, a copy of the survey will be submitted on your behalf to the NYSDOL, otherwise a copy must be submitted by the owner.**

AMD Environmental Consultants, Inc. surveys are intended to determine, to a reasonable extent, the presence, location, quantity, and condition of accessible asbestos containing materials (surfacing, thermal systems insulation, and miscellaneous materials). The information contained herein is representative of conditions found onsite during the date/time this survey was conducted. Environmental conditions, renovation, vandalism, etc. may alter conditions from the date/time that this survey was conducted, potentially creating new hazards.

Please do not hesitate to contact me if I may provide any additional information.

Sincerely,

Anthony DeMiglio
President

AMD Environmental Consultants, Inc.
712 Main St. Suite L1
Buffalo, NY 14202
Office: 716 833-0043 Fax: 716 241-8689
www.amdenvironmental.com

Table of Contents

AMD Environmental Consultants, Inc.
712 Main St. Suite L1
Buffalo, NY 14202
Office: 716 833-0043 Fax: 716 241-8689
www.amdenvironmental.com

1.0 Asbestos Inspection

1.1 Introduction

AMD Environmental Consultants, Inc (AMD) was retained by Connor M. Kenney to inspect the buildings located at 91 Nora Lane in Buffalo, NY for the presence of materials suspected of containing asbestos in areas of planned renovations.

AMD was assigned to:

- Locate suspect asbestos containing materials (ACM),
- Sample these materials to determine asbestos content, and
- Identify the locations and estimated quantities of the confirmed asbestos containing materials.

The information following this introduction details the amount of asbestos present in this facility and the location of the ACBM (asbestos containing building materials). Although the report is a comprehensive analysis of the asbestos inspection work performed, it would be helpful to review all applicable federal, state and local rules, laws and regulations regarding the handling and treatment of ACBM.

The following is a list of suggested reading and information sources relating to asbestos:

- New York State Department of Labor Industrial Code Rule 56
- National Emission Standard for Hazardous Air Pollutants (NESHAPS)
- Occupational Safety and Health Administration
- (OSHA 1926.1101, 1910.134, 1910.1020, 1910.1200, 1910.145, 1910.95, 1926.58)
- Environmental Protection Agency rule CFR763.46 Asbestos Hazard Emergency Response Act

AMD Environmental Consultants, Inc.
712 Main St. Suite L1
Buffalo, NY 14202
Office: 716 833-0043 Fax: 716 241-8689
www.amdenvironmental.com

1.2 Executive Summary

The scope of services included the identification of suspect asbestos containing building materials in areas of planned renovations; sampling and analysis of the suspect materials; and identifying the locations, estimated quantities, and condition of the confirmed asbestos containing materials.

Sampling and analysis of the suspect materials under Polarized Light Microscopy (PLM) ,and where necessary, under Transmission Electron Microscopy (TEM), revealed the following materials as asbestos containing building materials (ACBM):

ASBESTOS CONTAINING MATERIALS SUMMARY

HAN	Material Description	SID (Space Identification Number)	Estimated Quantity SF*	Friability/ Condition
300	All Flooring Materials (Linoleum and Floor Tiles) -See Note 1	Buildings 10, 11, 12, 13, 14, 15, 16	30,100 sq. ft. (4,300 sq. ft./ Building)	NF/D
300A	All Flooring Mastic -See Note 1	Buildings 10, 11, 12, 13, 14, 15, 16	Included in HAN 300	NF/D

*Quantities are approximate, and are only associated with areas of planned renovation. Additional asbestos containing materials may be located outside areas of planned renovation that were not surveyed, assessed or quantified during this inspection.

INSPECTION NOTES:

Note 1: Material was previously sampled and found to contain asbestos. See appendix C for AMD Environmental's 2015 Pre Demolition Asbestos Inspection Report.

KEY TERMS AND DEFINITIONS:

HAN= Homogenous Area Number; number assigned to categorize materials of like composition, texture and appearance

SID=Space Identification Number: Sample Locations

Friability/Condition:

F= Friable: a material that when dry, can be crumbled, pulverized, or reduced to powder by hand pressure, or is capable of being released into the air by hand pressure.

NF= Non Friable: a material that when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure, or is incapable of being released into the air by hand pressure.

I= Intact: Asbestos material that has not crumbled, been pulverized, or otherwise been damaged or disturbed, and the material's matrix has not noticeably deteriorated.

D= Damaged: Asbestos material that has deteriorated or sustained physical injury demonstrated by separation of the ACM into layers, separation of the ACM from the substrate, flaking, blistering, crumbling, water damage, scrapes, gouges, or other signs of physical injury.

SD=Significantly Damaged: Damaged asbestos where the damage is extensive and severe.

ACM=Asbestos Containing Material: material analyzed and confirmed by laboratory to contain above 1% of asbestos

PACM= Presumed Asbestos Containing Material: this material was assumed to contain asbestos to either save the client on lab fees or because the material was adhered to another asbestos containing material (or adjacent to other materials needing abatement) and must be managed as such.

AMD Environmental Consultants, Inc.
712 Main St. Suite L1
Buffalo, NY 14202
Office: 716 833-0043 Fax: 716 241-8689
www.amdenvironmental.com

1.3 Purpose

The purpose of the asbestos inspection was to identify and quantify the types of asbestos containing building materials (ACBM) in areas of planned renovations. Samples of the suspect materials were collected for analysis by an independent laboratory, and the condition of each material noted in relation to its potential to be disturbed. The potential for fiber release was also considered.

The report is generated for the exclusive use of Connor M. Kenney and its representatives or agents, and is not designed to serve as a specification for abatement. Before requesting bids for abatement of materials identified in this report, the owner is strongly encouraged to contract with a consultant to provide this valuable service. A specification assures that all contractors are bidding on the same methodology and following the specific requirements for the work to be performed.

HOMOGENOUS MATERIALS & SAMPLE RESULTS

HAN	Suspect Asbestos Containing Material Description	SID (Space Identification Number)	Sample No.	ACM (Y/N)	Estimated Quantity SF*	Friability/ Condition
See Appendix C for Homogeneous Materials List						

*Quantities are approximate, and are only associated with areas of planned renovation. Additional asbestos containing materials may be located outside areas of planned renovation that were not surveyed, assessed or quantified during this inspection.

The above listed table provides a list of the materials that were sampled and tested for asbestos by Polarized Light Microscopy (PLM) and or Transmission Electron Microscopy (TEM), as applicable. Any sample determined to be a non-friable organically bound material (NOB), and which was found to be negative by Polarized Light Microscopy (PLM) analysis, was then analyzed by Transmission Electron Microscopy (TEM) analysis at American Science Team New York Inc. (AmeriSci) in New York, New York. AmeriSci is an ELAP Certified laboratory (ID: 11480) and conducts analysis according to EPA Method 198.1, 198.4 and 198.6. See Section 2.0 for the laboratory's analytical results.

AMD Environmental Consultants, Inc.
712 Main St. Suite L1
Buffalo, NY 14202
Office: 716 833-0043 Fax: 716 241-8689
www.amdenvironmental.com

1.4 Methodology

All work performed by AMD Environmental Consultants, Inc. was conducted in accordance with applicable regulations, including New York State Department of Labor standards 12NYCRR Part 56, National Emission Standards for Hazardous Air Pollutants (NESHAPS), and Occupational Safety and Health Administration regulations 29CFR1910.1101 and 29CFR1910.134. All AMD personnel assigned to conduct inspections have completed the Environmental Protection Agency (EPA) required training and New York State Department of Labor Division of Safety and Health certification program.

Each suspect asbestos containing building material (ACBM) was assigned a homogenous area number (HAN). Homogeneous areas consist of materials of like composition, texture and appearance.

Based on the homogeneous areas, samples of suspect materials were collected. Techniques used for sample collection were designed to minimize damage to suspected areas, reduce any potential for fiber release, and ensure the safety of the inspector and building occupants. Samples were collected by AMD personnel using the following procedures:

1. The surface to be sampled was sprayed with amended water (detergent and water) as necessary

2. A plastic sample bag was held to the surface sampled

3. The sample was collected using tools appropriate to the friability of the material sampled

4. Sample bags were labeled with a unique sample identification number

5. Samples were recorded on a Chain of Custody form, and submitted under strict chain-of-custody procedures to American Science Team New York Inc. (AmeriSci) in New York, New York. AmeriSci is an ELAP and NYSDOH approved, certified laboratory for PLM and TEM analysis (ELAP ID: 11480).

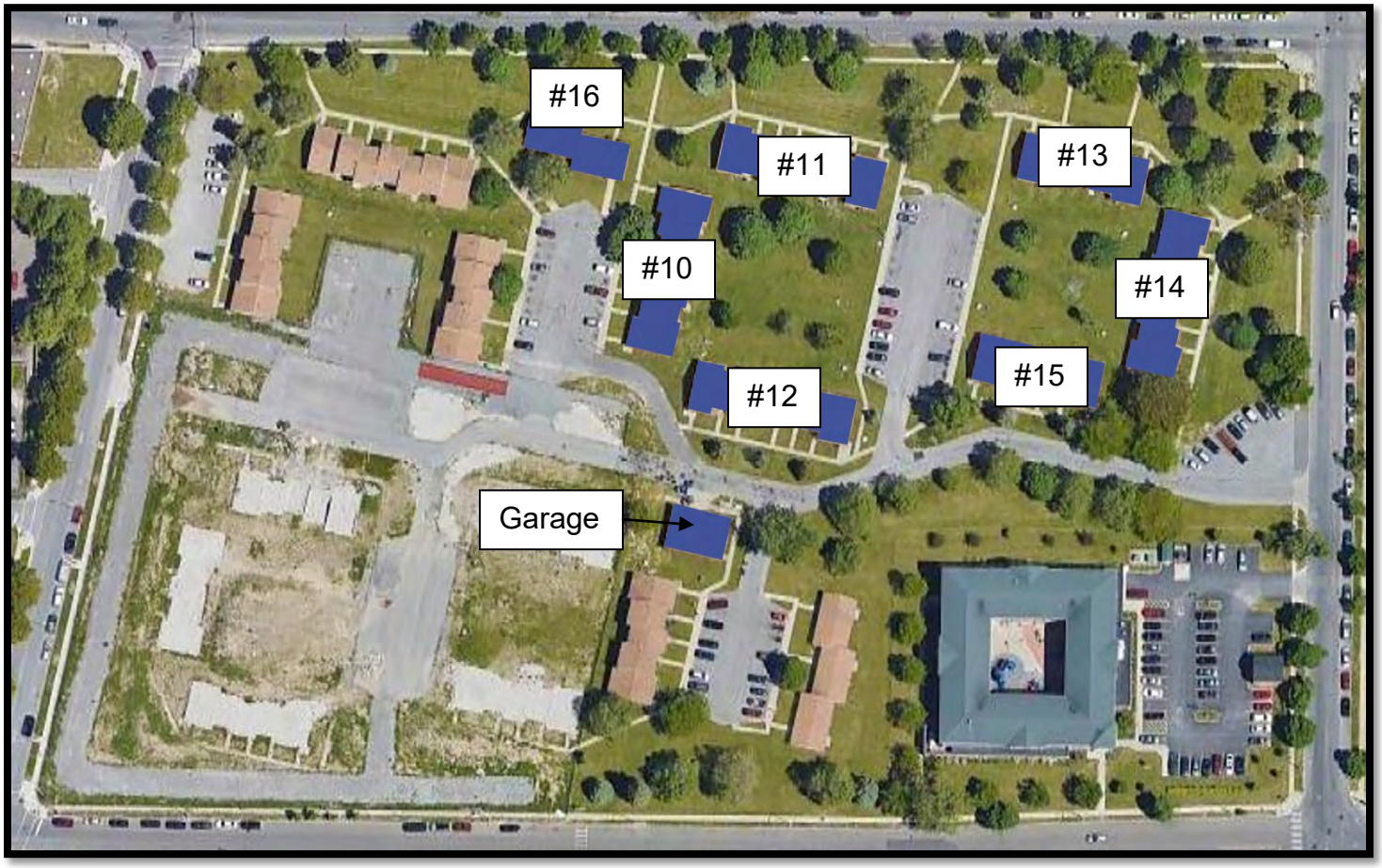
Samples were first analyzed using PLM, Polarized Light Microscopy in accordance with US Environmental Protection Agency Interim Method, 40CFRPt763, Supt F, App A(7-1-87). For the sample results not considered definitive, additional analysis was performed under Transmission Electron Microscopy (TEM) in accordance with NYSDOH ELAP Item 198.4, for Non-friable Organically Bound Bulk Material (NOB). The results of these analyses confirmed whether or not a suspect materials actually contained asbestos. All materials sampled are summarized in Section 1.3 of this report; the presumed asbestos containing materials and materials containing asbestos above 1.0% are listed in Section 1.2.

AMD Environmental Consultants, Inc.
712 Main St. Suite L1
Buffalo, NY 14202
Office: 716-833-0043 Fax: 716-241-8689
www.amdenvironmental.com

2.0 Site Map

AMD Environmental Consultants, Inc.
712 Main St. Suite L1
Buffalo, NY 14202
Office: 716 833-0043 Fax: 716 241-8689
www.amdenvironmental.com

Pilgrim Village Apartments Demolition Buildings #10 - #16



AMD Environmental Consultants, Inc.
712 Main St. Suite L1
Buffalo, NY 14202
Office: 716-833-0043 Fax: 716-241-8689
www.amdenvironmental.com

Appendix A: Firm Certification and Personnel License(s)

AMD Environmental Consultants, Inc.
712 Main St. Suite L1
Buffalo, NY 14202
Office: 716-833-0043 Fax: 716-241-8689
www.amdenvironmental.com

New York State – Department of Labor
Division of Safety and Health
License and Certificate Unit
State Campus, Building 12
Albany, NY 12240

ASBESTOS HANDLING LICENSE

AMD Environmental Consultants, Inc.
Suite L1
712 Main Street

Buffalo, NY 14202

FILE NUMBER: 10-56177
LICENSE NUMBER: 56177
LICENSE CLASS: RESTRICTED
DATE OF ISSUE: 10/25/2019
EXPIRATION DATE: 11/30/2020

Duly Authorized Representative – Anthony DeMiglio:

This license has been issued in accordance with applicable provisions of Article 30 of the Labor Law of New York State and of the New York State Codes, Rules and Regulations (12 NYCRR Part 56). It is subject to suspension or revocation for a (1) serious violation of state, federal or local laws with regard to the conduct of an asbestos project, or (2) demonstrated lack of responsibility in the conduct of any job involving asbestos or asbestos material.

This license is valid only for the contractor named above and this license or a photocopy must be prominently displayed at the asbestos project worksite. This license verifies that all persons employed by the licensee on an asbestos project in New York State have been issued an Asbestos Certificate, appropriate for the type of work they perform, by the New York State Department of Labor.

Eileen M. Franko, Director
For the Commissioner of Labor

SH 432 (8/12)

AMD Environmental Consultants, Inc.
712 Main St. Suite L1
Buffalo, NY 14202
Office: 716-833-0043 Fax: 716-241-8689
www.amdenvironmental.com

Appendix B: Laboratory Certification

AMD Environmental Consultants, Inc.
712 Main St. Suite L1
Buffalo, NY 14202
Office: 716-833-0043 Fax: 716-241-8689
www.amdenvironmental.com

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2021
Issued April 01, 2020

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

DR. THOMAS R. MCKEE
AMERISCI RICHMOND
13635 GENITO RD
MIDLOTHIAN, VA 23112

NY Lab Id No: 10984

is hereby APPROVED as an Environmental Laboratory for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved subcategories and/or analytes are listed below:

Miscellaneous

Asbestos in Friable Material	Item 198.1 of Manual
	EPA 600/M4/82/020
Asbestos in Non-Friable Material-PLM	Item 198.6 of Manual (NOB by PLM)
Asbestos in Non-Friable Material-TEM	Item 198.4 of Manual
Asbestos-Vermiculite-Containing Material	Item 198.8 of Manual

NEW YORK STATE Department of Health

Serial No.: 61267

Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.

Page 1 of 1

AMD Environmental Consultants, Inc.
712 Main St. Suite L1
Buffalo, NY 14202
Office: 716 833-0043 Fax: 716 241-8689
www.amdenvironmental.com

Appendix C:
2015 AMD Environmental Pre Demolition Asbestos Inspection

Pre-Demolition Asbestos Sampling Report

Pilgrim Village Apartments
Buildings 1, 2, 3, 4, 6
38 Holloway Blvd.
Buffalo, NY 14209
AMD Project: 15-0121JWA

Conditions as of : January 21, 2015

Prepared for:

David Sanford
R&P Oak Hill Development, LLC.
3556 Lakeshore Rd.
Buffalo, NY 14219

Prepared by:

AMD Environmental Consultants
4248 Ridge Lea Road
Amherst, NY 14226

January 28, 2015

David Sanford
R&P Oak Hill Development, LLC.
3556 Lakeshore Rd.
Buffalo, NY 14219

Re: Pre-Demolition Asbestos Sampling Report
Pilgrim Village Apartments / Buildings 1, 2, 3, 4, 6
38 Holloway Blvd.
Buffalo, NY 14209

Mr. Sanford:

I am pleased to present this summary of asbestos survey services at the above referenced address.

Gerald Dunlap and Jonathan Wolf conducted representative pre-demolition asbestos sampling at the above referenced buildings on January 21, 2015 for areas to be affected by planned demolitions. Asbestos containing materials (ACM) were identified above 1% in materials that were sampled. For more detail refer to the summary on page 5.

New York State asbestos regulations (12 NYCRR 56-5) require that asbestos surveys are conducted in order to determine whether or not the building or structure, or portion(s) thereof to be demolished, renovated, remodeled, contains ACM, PACM or asbestos materials. These regulations also require that a copy of the pre-renovation survey be forwarded to the local New York State Department of Labor (NYSDOL) Asbestos Control Bureau immediately upon completion of the survey (NYSDOL contact info. at end of report). **If requested in writing, a copy of the survey will be submitted on your behalf to the NYSDOL, otherwise a copy must be submitted by the owner.**

AMD Environmental Consultants, Inc. surveys are intended to determine, to a reasonable extent, the presence, location, quantity, and condition of accessible asbestos containing materials (surfacing, thermal systems insulation, and miscellaneous materials). The information contained herein is representative of conditions found onsite during the date/time this survey was conducted. Environmental conditions, renovation, vandalism, etc. may alter conditions from the date/time that this survey was conducted, potentially creating new hazards.

Please do not hesitate to contact me if I may provide any additional information.

Sincerely,

Anthony DeMiglio
President

Table of Contents

Pre-Demolition Asbestos Sampling Report

Part 1: Asbestos Containing Materials Summary

Asbestos Containing Materials Summary

Pilgrim Village Apts. Buildings 1,2,3,4,6

AMDEC project: 15-0121JWA

Sample #	Material Description	Location	Estimated Amount	Condition
2,4,20,33,43 **Note 1**	All Flooring Materials (Linoleum and Tiles)	Buildings 1,2,3,4,6 Living Rooms, Hallways, Bed Rooms, Kitchens and Bathrooms and wherever present	21,500 Sq. Ft. (4,300 Sq.Ft./Bldg)	D
3,3A.19,19A	All Flooring Mastic (Black Mastic)	Buildings 1,2,3,4,6 Living Rooms, Hallways, Bed Rooms, Kitchens and Bathrooms and wherever present	21,500 Sq. Ft. (4,300 Sq.Ft./Bldg)	D

Quantities are estimated and subject to bidders verification.

Inspection Notes: Representative pre-demolition asbestos sampling at the above referenced buildings was conducting by sampling suspect materials in one unit per building. Occupancy by tenants prevented inspections of every unit; therefore representative sampling was conducted as per owner's request. Asbestos containing materials (ACM) were identified for all flooring and flooring mastic for buildings 1,2,3,4 and 6.

Note 1: All Floor Tiles (12"x12") must be treated as an asbestos containing material (ACM) because the materials were found to be adhered to another asbestos containing material (Floor Mastic).

Terms / Definitions Key

HAN Type:	**Homogeneous area**
I:	**Intact Condition**
D:	**Damaged Condition**
SD:	**Significantly Damaged Condition**
F:	**Friable**
NF:	**Non-Friable**
PLM:	**Analyzed by Polarized Light Microscopy**
TEM:	**Analyzed by Transmission Electron Microscopy**
NAD:	**No asbestos detected**
NA:	**Not applicable**
PS:	**Positive Stop**
Trace:	**Less than 1% asbestos (Non ACM)**
ACM:	**Asbestos Containing Material**
PACM:	**Presumed Asbestos Containing Material**

Part 2: Homogeneous Materials List

Homogenous Materials List

Pilgrim Village Apts. Buildings 1,2,3,4,6

AMDEC project: 15-0121JWA

Homogenous Area Number	Suspect Asbestos Containing Material	Confirmed ACM (Y/N)	Friability (F/NF)	Sample Number(s)
001-Bldgs. 1,2,3,4,6	Roofing Shingle Top Layer	No	NF	9,14A,26,35A,46
002-Bldgs. 1,2,3,4,6	Roofing Shingle Bottom Layer	No	NF	10,15,27,36,47
003-Bldgs. 1,2,3,4,6	Roofing Felt	No	NF	11,16,28,37,48
004-Bldgs. 1,2,3,4,6	Roofing Tar	No	NF	12,17,29,38,49
005-Bldgs. 1,2,3,4,6	Window / Door Caulk	No	NF	8,13,25,34A,50A
101-Bldgs. 1,2,3,4,6	**Linoleum Flooring (Beige Pattern)**	**YES**	**NF**	**2,4,4A 20,33,43,21,21A, 41,41A**
102-Bldgs.1,2,3,4,6	12”x12” Floor Tile (Tan/Beige Pattern)	No	NF	1,1A,18,18A,30, 30A,39,39A
103-Bldgs. 1,2,3,4,6	**Flooring Mastic (Black)**	**YES**	**NF**	**3,3A,19,19A,40, 40A**
104-Bldgs. 1,2,3,4,6	Cove Base Mastic	No	NF	5,5A,22,22A,42, 42A
105-Bldgs. 1,2,3,4,6	Joint Compound	No	F	6,6A,6B,23,23A, 23B,31,31A,31B,44 44A,44B
106-Bldgs. 1,2,3,4,6	Drywall	No	F	7,7A,7B,24,24A, 24B,32,32A,32B,45 45A,45B

The above listed table provides a list of the materials that were sampled and tested for asbestos by Polarized Light Microscopy (PLM) and or Transmission Electron Microscopy (TEM) as applicable. Any sample determined to be a non-friable organically bound material (NOB) and which was found to be negative by Polarized Light Microscopy (PLM) analysis, is then analyzed by Transmission Electron Microscopy (TEM) analysis at AmeriSci Laboratories in NYC. AmeriSci is an ELAP Certified laboratory (ID# 11480) and conducts analysis according to EPA Method 198.4.

Part 3: Laboratory Analytical Results

AmeriSci Job #: **115011685**

Client Name: AMD Environmental Consultants, Inc.

Table I
Summary of Bulk Asbestos Analysis Results

150121JW.A; 38 Holloway Blvd; Bulk Samples

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
01	9	1	0.316	22.8	37.5	39.7	NAD	NAD
Location: Roofing Top Layer								
02	14A	1	0.231	25.6	44.8	29.6	NAD	NAD
Location: Roofing Top Layer								
03	26	1	0.159	21.5	37.7	40.9	NAD	NAD
Location: Roofing Top Layer								
04	35A	1	0.320	20.7	30.5	48.8	NAD	NAD
Location: Roofing Top Layer								
05	46	1	0.267	24.1	44.1	31.8	NAD	NAD
Location: Roofing Top Layer								
06	10	2	0.245	54.3	13.0	32.7	NAD	NAD
Location: Roofing Bottom Layer								
07	15	2	0.275	39.0	13.0	47.9	NAD	NAD
Location: Roofing Bottom Layer								
08	27	2	0.244	36.5	16.6	46.9	NAD	NAD
Location: Roofing Bottom Layer								
09	36	2	0.206	58.0	11.0	30.9	NAD	NAD
Location: Roofing Bottom Layer								
10	47	2	0.250	31.9	22.3	45.8	NAD	NAD
Location: Roofing Bottom Layer								
11	11	3	0.126	97.4	1.7	1.0	NAD	NAD
Location: Roofing Felt								
12	16	3	0.093	97.9	1.8	0.2	NAD	NAD
Location: Roofing Felt								
13	28	3	0.293	64.2	12.2	23.6	NAD	NAD
Location: Roofing Felt								
14	37	3	0.097	96.8	2.0	1.2	NAD	NAD
Location: Roofing Felt								
15	48	3	0.105	97.2	1.4	1.4	NAD	NAD
Location: Roofing Felt								
16	12	4	0.279	46.2	26.6	27.2	NAD	NAD
Location: Roofing Tar								

See Reporting notes on last page

AmeriSci Job #: **115011685**

Client Name: AMD Environmental Consultants, Inc.

Table I
Summary of Bulk Asbestos Analysis Results
150121JW.A; 38 Holloway Blvd; Bulk Samples

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
17	17	4	0.213	86.4	3.9	9.7	NAD	NAD
Location: Roofing Tar								
18	29	4	0.119	85.7	3.3	11.0	NAD	NAD
Location: Roofing Tar								
19	38	4	0.133	73.9	5.3	20.8	NAD	NAD
Location: Roofing Tar								
20	49	4	0.285	76.6	8.7	14.8	NAD	NAD
Location: Roofing Tar								
21	8	5	0.177	49.0	36.9	14.1	NAD	NAD
Location: Caulk Window/Door								
22	13	5	0.258	55.8	37.2	7.0	NAD	NAD
Location: Caulk Window/Door								
23	25	5	0.082	55.5	38.8	5.7	NAD	NAD
Location: Caulk Window/Door								
24	34A	5	0.092	56.7	37.9	5.4	NAD	NAD
Location: Caulk Window/Door								
25	50A	5	0.181	47.1	34.2	18.7	NAD	NAD
Location: Caulk Window/Door								
26	2	6	0.091	46.4	23.9	5.9	Chrysotile 23.8	NA
Location: Flooring Bath RM								
27	20	6	0.126	49.2	21.2	29.6	NA/PS	NA
Location: Flooring Bath RM								
28	33	6	0.117	48.9	23.2	28.0	NA/PS	NA
Location: Flooring Bath RM								
29	43	6	0.128	48.5	19.2	32.3	NA/PS	NA
Location: Flooring Bath RM								
30	1	7	0.146	16.6	81.3	2.0	NAD	Chrysotile Trace
Location: Flooring L/R & Hallway								
31	1A	7	0.208	16.3	81.8	1.8	NAD	Chrysotile Trace
Location: Drywall								
32	3	8	0.056	81.6	6.0	2.5	Chrysotile 9.9	NA
Location: Mastic L/R & Hallway								

See Reporting notes on last page

AmeriSci Job #: **115011685**

Client Name: AMD Environmental Consultants, Inc.

Table I
Summary of Bulk Asbestos Analysis Results

150121JW.A; 38 Holloway Blvd; Bulk Samples

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
33	3A	8	0.065	71.7	11.4	16.9	NA/PS	NA
Location:	Mastic L/R & Hallway							
34	4	9	0.077	33.5	42.0	4.9	Chrysotile 19.6	NA
Location:	Flooring Kitchen							
35	4A	9	0.156	35.2	36.4	28.4	NA/PS	NA
Location:	Flooring Kitchen							
36	5	10	0.208	46.8	4.4	48.9	NAD	NAD
Location:	Base Cove Mastic							
37	5A	10	0.343	46.8	3.4	49.7	NAD	NAD
Location:	Base Cove Mastic							
38	6	11	----	----	----	----	NAD	NA
Location:	Joint Compound							
39	6A	11	----	----	----	----	NAD	NA
Location:	Joint Compound							
40	6B	11	----	----	----	----	NAD	NA
Location:	Joint Compound							
41	7	12	----	----	----	----	NAD	NA
Location:	Drywall							
42	7A	12	----	----	----	----	NAD	NA
Location:	Drywall							
43	7B	12	----	----	----	----	NAD	NA
Location:	Drywall							
44	18	13	0.324	16.7	81.8	1.5	NAD	NAD
Location:	Flooring 4R & Hallway							
45	18A	13	0.247	16.5	82.3	1.1	NAD	NAD
Location:	Flooring 4R & Hallway							
46	19	14	0.056	72.9	16.0	2.2	Chrysotile 8.9	NA
Location:	Mastic 4R & Hallway							
47	19A	14	----	----	----	----	NA/PS	NA
Location:	Mastic 4R & Hallway							
48	21	15	0.472	18.2	78.3	3.5	NAD	NAD
Location:	Flooring Kitchen							

See Reporting notes on last page

AmeriSci Job #: **115011685**

Client Name: AMD Environmental Consultants, Inc.

Table I
Summary of Bulk Asbestos Analysis Results

150121JW.A; 38 Holloway Blvd; Bulk Samples

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
49	21A	15	0.200	20.2	77.1	2.7	NAD	NAD
Location:	Flooring Kitchen							
50	22	16	0.384	51.9	3.0	45.1	NAD	NAD
Location:	Base Cove Mastic							
51	22A	16	0.395	51.9	2.3	45.8	NAD	NAD
Location:	Base Cove Mastic							
52	23	17	----	----	----	----	NAD	NA
Location:	Joint Compound							
53	23A	17	----	----	----	----	NAD	NA
Location:	Joint Compound							
54	23B	17	----	----	----	----	NAD	NA
Location:	Joint Compound							
55	24	18	----	----	----	----	NAD	NA
Location:	Drywall							
56	24A	18	----	----	----	----	NAD	NA
Location:	Drywall							
57	24A	18	----	----	----	----	NAD	NA
Location:	Drywall							
58	30	19	0.250	16.6	82.0	1.4	NAD	NAD
Location:	Flooring Throut							
59	30A	19	0.227	16.6	82.2	1.1	NAD	NAD
Location:	Flooring Throut							
60	31	20	----	----	----	----	NAD	NA
Location:	Joint Compound							
61	31A	20	----	----	----	----	NAD	NA
Location:	Joint Compound							
62	31B	20	----	----	----	----	NAD	NA
Location:	Joint Compound							
63	32	21	----	----	----	----	NAD	NA
Location:	Drywall							
64	32A	21	----	----	----	----	NAD	NA
Location:	Drywall							

See Reporting notes on last page

AmeriSci Job #: **115011685**

Client Name: AMD Environmental Consultants, Inc.

Table I
Summary of Bulk Asbestos Analysis Results

150121JW.A; 38 Holloway Blvd; Bulk Samples

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
65	32B	21	---	---	---	---	NAD	NA
Location: Drywall								
66	39	22	0.211	17.3	80.8	1.8	NAD	Chrysotile Trace
Location: Flooring L/R & Hallway								
67	39A	22	0.202	17.5	80.2	2.3	NAD	NAD
Location: Flooring L/R & Hallway								
68	40	23	0.114	50.6	16.6	32.7	NAD	NAD
Location: Mastic L/R & Hallway								
69	40A	23	0.105	49.0	15.4	35.7	NAD	NAD
Location: Mastic L/R & Hallway								
70	41	24	0.201	25.0	74.8	0.2	NAD	NAD
Location: Flooring Kitchen								
71	41A	24	0.323	39.2	60.1	0.7	NAD	NAD
Location: Flooring Kitchen								
72	42	25	0.152	53.2	19.4	27.5	NAD	NAD
Location: Base Cove Mastic								
73	42A	25	0.158	67.9	5.6	26.4	NAD	NAD
Location: Base Cove Mastic								
74	44	26	---	---	---	---	NAD	NA
Location: Joint Compound								
75	44A	26	---	---	---	---	NAD	NA
Location: Joint Compound								
76	44B	26	---	---	---	---	NAD	NA
Location: Joint Compound								
77	45	27	---	---	---	---	NAD	NA
Location: Drywall								
78	45A	27	---	---	---	---	NAD	NA
Location: Drywall								
79	45B	27	---	---	---	---	NAD	NA
Location: Drywall								

See Reporting notes on last page

AmeriSci Job #: **115011685**

Client Name: AMD Environmental Consultants, Inc.

Table I
Summary of Bulk Asbestos Analysis Results

150121JW.A; 38 Holloway Blvd; Bulk Samples

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM

Reviewed by: _____ Date Reviewed: _____ Analyzed By: Jean L. Mayo _____ Date Analyzed: 1/28/2015

Semi-Quantitative Analysis: NAD = no asbestos detected; NA = not analyzed; NA/PS = not analyzed due to positive stop; Trace = <1%;
PLM analysis by EPA 600/M4-82-020 per 40 CFR 763 (NVLAP Lab Code 101904-0) or NY ELAP 198.1 for New York friable samples which includes quantitation of any vermiculite observed (198.6 for NOB samples) (NY ELAP Lab # 10984);
TEM analysis by EPA 600/R-93/116 (not covered by NVLAP Bulk accreditation); or NY ELAP 198.4 for New York NOB samples (NY ELAP Lab # 10984);

** Warning Notes: Consider PLM fiber diameter limitation, only TEM will resolve fibers <0.25 micrometers in diameter. TEM bulk analysis is representative of the fine grained matrix material and may not be representative of non-uniformly dispersed debris, soils or other heterogeneous materials for which a combination PLM/TEM evaluation is recommended; Quantitation for beginning weights of <0.1 grams should be considered as qualitative only.

AmeriSci Richmond
13635 GENITO ROAD
MIDLOTHIAN, VIRGINIA 23112
TEL: (804) 763-1200 • FAX: (804) 763-1800

PLM Bulk Asbestos Report

AMD Environmental Consultants, Inc.
Attn: Anthony DeMiglio
4248 Ridge Lea Rd
Suite 16
Amherst, NY 14226

Date Received 01/23/15 **AmeriSci Job #** 115011685
Date Examined 01/26/15 **P.O. #**
ELAP # 10984 **Page** 1 **of** 16
RE: 150121JW.A; 38 Holloway Blvd; Bulk Samples

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
9	115011685-01	*No*	NAD
1	**Location:** Roofing Top Layer		(by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 39.7 %			
Comment: Heat Sensitive (organic): 22.8%; Acid Soluble (inorganic): 37.5%; Inert (Non-asbestos): 39.7%			
14A	115011685-02	*No*	NAD
1	**Location:** Roofing Top Layer		(by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Black/Brown, Heterogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 29.6 %			
Comment: Heat Sensitive (organic): 25.6%; Acid Soluble (inorganic): 44.8%; Inert (Non-asbestos): 29.6%			
26	115011685-03	*No*	NAD
1	**Location:** Roofing Top Layer		(by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Black/Brown, Heterogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 40.9 %			
Comment: Heat Sensitive (organic): 21.5%; Acid Soluble (inorganic): 37.7%; Inert (Non-asbestos): 40.9%			
35A	115011685-04	*No*	NAD
1	**Location:** Roofing Top Layer		(by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 48.8 %			
Comment: Heat Sensitive (organic): 20.7%; Acid Soluble (inorganic): 30.5%; Inert (Non-asbestos): 48.8%			

See Reporting notes on last page

PLM Bulk Asbestos Report

150121JW.A; 38 Holloway Blvd; Bulk Samples

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
46 1	115011685-05 **Location:** Roofing Top Layer	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 31.8 % **Comment:** Heat Sensitive (organic): 24.1%; Acid Soluble (inorganic): 44.1%; Inert (Non-asbestos): 31.8%			
10 2	115011685-06 **Location:** Roofing Bottom Layer	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 32.7 % **Comment:** Heat Sensitive (organic): 54.3%; Acid Soluble (inorganic): 13.0%; Inert (Non-asbestos): 32.7%			
15 2	115011685-07 **Location:** Roofing Bottom Layer	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Black/Brown, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 47.9 % **Comment:** Heat Sensitive (organic): 39.0%; Acid Soluble (inorganic): 13.0%; Inert (Non-asbestos): 47.9%			
27 2	115011685-08 **Location:** Roofing Bottom Layer	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Black/Brown, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 46.9 % **Comment:** Heat Sensitive (organic): 36.5%; Acid Soluble (inorganic): 16.6%; Inert (Non-asbestos): 46.9%			
36 2	115011685-09 **Location:** Roofing Bottom Layer	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 30.9 % **Comment:** Heat Sensitive (organic): 58.0%; Acid Soluble (inorganic): 11.0%; Inert (Non-asbestos): 30.9%			

See Reporting notes on last page

PLM Bulk Asbestos Report

150121JW.A; 38 Holloway Blvd; Bulk Samples

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
47 2	115011685-10 **Location:** Roofing Bottom Layer	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Black/Tan, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 45.8 % **Comment:** Heat Sensitive (organic): 31.9%; Acid Soluble (inorganic): 22.3%; Inert (Non-asbestos): 45.8%			
11 3	115011685-11 **Location:** Roofing Felt	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 1 % **Comment:** Heat Sensitive (organic): 97.4%; Acid Soluble (inorganic): 1.7%; Inert (Non-asbestos): 1.0%			
16 3	115011685-12 **Location:** Roofing Felt	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 0.2 % **Comment:** Heat Sensitive (organic): 97.9%; Acid Soluble (inorganic): 1.8%; Inert (Non-asbestos): 0.2%			
28 3	115011685-13 **Location:** Roofing Felt	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Black/Tan, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 23.6 % **Comment:** Heat Sensitive (organic): 64.2%; Acid Soluble (inorganic): 12.2%; Inert (Non-asbestos): 23.6%			
37 3	115011685-14 **Location:** Roofing Felt	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 1.2 % **Comment:** Heat Sensitive (organic): 96.8%; Acid Soluble (inorganic): 2.0%; Inert (Non-asbestos): 1.2%			

See Reporting notes on last page

PLM Bulk Asbestos Report

150121JW.A; 38 Holloway Blvd; Bulk Samples

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
48 3 **Location:** Roofing Felt	115011685-15	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 1.4 % **Comment:** Heat Sensitive (organic): 97.2%; Acid Soluble (inorganic): 1.4%; Inert (Non-asbestos): 1.4%			
12 4 **Location:** Roofing Tar	115011685-16	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 27.2 % **Comment:** Heat Sensitive (organic): 46.2%; Acid Soluble (inorganic): 26.6%; Inert (Non-asbestos): 27.2%			
17 4 **Location:** Roofing Tar	115011685-17	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 9.7 % **Comment:** Heat Sensitive (organic): 86.4%; Acid Soluble (inorganic): 3.9%; Inert (Non-asbestos): 9.7%			
29 4 **Location:** Roofing Tar	115011685-18	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 11 % **Comment:** Heat Sensitive (organic): 85.7%; Acid Soluble (inorganic): 3.3%; Inert (Non-asbestos): 11.0%			
38 4 **Location:** Roofing Tar	115011685-19	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 20.8 % **Comment:** Heat Sensitive (organic): 73.9%; Acid Soluble (inorganic): 5.3%; Inert (Non-asbestos): 20.8%			

See Reporting notes on last page

PLM Bulk Asbestos Report

150121JW.A; 38 Holloway Blvd; Bulk Samples

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
49 4	115011685-20 **Location:** Roofing Tar	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 14.8 % **Comment:** Heat Sensitive (organic): 76.6%; Acid Soluble (inorganic): 8.7%; Inert (Non-asbestos): 14.8%			
8 5	115011685-21 **Location:** Caulk Window/Door	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 14.1 % **Comment:** Heat Sensitive (organic): 49.0%; Acid Soluble (inorganic): 36.9%; Inert (Non-asbestos): 14.1%			
13 5	115011685-22 **Location:** Caulk Window/Door	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 7 % **Comment:** Heat Sensitive (organic): 55.8%; Acid Soluble (inorganic): 37.2%; Inert (Non-asbestos): 7.0%			
25 5	115011685-23 **Location:** Caulk Window/Door	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 5.7 % **Comment:** Heat Sensitive (organic): 55.5%; Acid Soluble (inorganic): 38.8%; Inert (Non-asbestos): 5.7%			
34A 5	115011685-24 **Location:** Caulk Window/Door	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 5.4 % **Comment:** Heat Sensitive (organic): 56.7%; Acid Soluble (inorganic): 37.9%; Inert (Non-asbestos): 5.4%			

See Reporting notes on last page

PLM Bulk Asbestos Report

150121JW.A; 38 Holloway Blvd; Bulk Samples

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
50A 5	115011685-25 **Location:** Caulk Window/Door	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 18.7 % **Comment:** Heat Sensitive (organic): 47.1%; Acid Soluble (inorganic): 34.2%; Inert (Non-asbestos): 18.7%			
2 6	115011685-26 **Location:** Flooring Bath RM	***Yes***	23.8 % (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Beige, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** Chrysotile 23.8 % **Other Material:** Non-fibrous 5.9 % **Comment:** Heat Sensitive (organic): 46.4%; Acid Soluble (inorganic): 23.9%; Inert (Non-asbestos): 5.9%			
20 6	115011685-27 **Location:** Flooring Bath RM		NA/PS
Analyst Description: Bulk Material **Asbestos Types:** **Other Material:** **Comment:** Heat Sensitive (organic): 49.2%; Acid Soluble (inorganic): 21.2%; Inert (Non-asbestos): 29.6%			
33 6	115011685-28 **Location:** Flooring Bath RM		NA/PS
Analyst Description: Bulk Material **Asbestos Types:** **Other Material:** **Comment:** Heat Sensitive (organic): 48.9%; Acid Soluble (inorganic): 23.2%; Inert (Non-asbestos): 28.0%			
43 6	115011685-29 **Location:** Flooring Bath RM		NA/PS
Analyst Description: Bulk Material **Asbestos Types:** **Other Material:** **Comment:** Heat Sensitive (organic): 48.5%; Acid Soluble (inorganic): 19.2%; Inert (Non-asbestos): 32.3%			

See Reporting notes on last page

PLM Bulk Asbestos Report

150121JW.A; 38 Holloway Blvd; Bulk Samples

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
1 7	115011685-30 **Location:** Flooring L/R & Hallway	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
	Analyst Description: Brown, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 2.1 % **Comment:** Heat Sensitive (organic): 16.6%; Acid Soluble (inorganic): 81.3%; Inert (Non-asbestos): 2.1%		
1A 7	115011685-31 **Location:** Drywall	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
	Analyst Description: Brown, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 1.9 % **Comment:** Heat Sensitive (organic): 16.3%; Acid Soluble (inorganic): 81.8%; Inert (Non-asbestos): 1.9%		
3 8	115011685-32 **Location:** Mastic L/R & Hallway	***Yes***	9.9 % (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
	Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** Chrysotile 9.9 % **Other Material:** Non-fibrous 2.5 % **Comment:** Heat Sensitive (organic): 81.6%; Acid Soluble (inorganic): 6.0%; Inert (Non-asbestos): 2.5%		
3A 8	115011685-33 **Location:** Mastic L/R & Hallway		NA/PS
	Analyst Description: Bulk Material **Asbestos Types:** **Other Material:** **Comment:** Heat Sensitive (organic): 71.7%; Acid Soluble (inorganic): 11.4%; Inert (Non-asbestos): 16.9%		
4 9	115011685-34 **Location:** Flooring Kitchen	***Yes***	19.6 % (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
	Analyst Description: Beige, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** Chrysotile 19.6 % **Other Material:** Non-fibrous 4.9 % **Comment:** Heat Sensitive (organic): 33.5%; Acid Soluble (inorganic): 42.0%; Inert (Non-asbestos): 4.9%		

See Reporting notes on last page

PLM Bulk Asbestos Report

150121JW.A; 38 Holloway Blvd; Bulk Samples

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
4A 9	115011685-35 **Location:** Flooring Kitchen		NA/PS
Analyst Description: Bulk Material **Asbestos Types:** **Other Material:** **Comment:** Heat Sensitive (organic): 35.2%; Acid Soluble (inorganic): 36.4%; Inert (Non-asbestos): 28.4%			
5 10	115011685-36 **Location:** Base Cove Mastic	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Brown, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 48.9 % **Comment:** Heat Sensitive (organic): 46.8%; Acid Soluble (inorganic): 4.4%; Inert (Non-asbestos): 48.9%			
5A 10	115011685-37 **Location:** Base Cove Mastic	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Brown, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 49.7 % **Comment:** Heat Sensitive (organic): 46.8%; Acid Soluble (inorganic): 3.4%; Inert (Non-asbestos): 49.7%			
6 11	115011685-38 **Location:** Joint Compound	***No***	NAD (by NYS ELAP 198.1) by William M. Dunstan on 01/26/15
Analyst Description: White, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
6A 11	115011685-39 **Location:** Joint Compound	***No***	NAD (by NYS ELAP 198.1) by William M. Dunstan on 01/26/15
Analyst Description: White, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			

See Reporting notes on last page

PLM Bulk Asbestos Report

150121JW.A; 38 Holloway Blvd; Bulk Samples

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
6B 11	115011685-40 **Location:** Joint Compound	***No***	NAD (by NYS ELAP 198.1) by William M. Dunstan on 01/26/15
Analyst Description: White, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
7 12	115011685-41 **Location:** Drywall	***No***	NAD (by NYS ELAP 198.1) by William M. Dunstan on 01/26/15
Analyst Description: White/Tan, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 5 %, Non-fibrous 95 %			
7A 12	115011685-42 **Location:** Drywall	***No***	NAD (by NYS ELAP 198.1) by William M. Dunstan on 01/26/15
Analyst Description: White/Tan, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 5 %, Non-fibrous 95 %			
7B 12	115011685-43 **Location:** Drywall	***No***	NAD (by NYS ELAP 198.1) by William M. Dunstan on 01/26/15
Analyst Description: White/Tan, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 5 %, Non-fibrous 95 %			
18 13	115011685-44 **Location:** Flooring 4R & Hallway	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Beige, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 1.5 % **Comment:** Heat Sensitive (organic): 16.7%; Acid Soluble (inorganic): 81.8%; Inert (Non-asbestos): 1.5%			

See Reporting notes on last page

PLM Bulk Asbestos Report

150121JW.A; 38 Holloway Blvd; Bulk Samples

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
18A 13	115011685-45 **Location:** Flooring 4R & Hallway	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Beige, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 1.1 % **Comment:** Heat Sensitive (organic): 16.5%; Acid Soluble (inorganic): 82.3%; Inert (Non-asbestos): 1.1%			
19 14	115011685-46 **Location:** Mastic 4R & Hallway	***Yes***	8.9 % (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** Chrysotile 8.9 % **Other Material:** Non-fibrous 2.2 % **Comment:** Heat Sensitive (organic): 72.9%; Acid Soluble (inorganic): 16.0%; Inert (Non-asbestos): 2.2%			
19A 14	115011685-47 **Location:** Mastic 4R & Hallway		NA/PS
Analyst Description: Bulk Material **Asbestos Types:** **Other Material:**			
21 15	115011685-48 **Location:** Flooring Kitchen	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Beige, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 3.5 % **Comment:** Heat Sensitive (organic): 18.2%; Acid Soluble (inorganic): 78.3%; Inert (Non-asbestos): 3.5%			
21A 15	115011685-49 **Location:** Flooring Kitchen	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Beige, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 2.7 % **Comment:** Heat Sensitive (organic): 20.2%; Acid Soluble (inorganic): 77.1%; Inert (Non-asbestos): 2.7%			

See Reporting notes on last page

PLM Bulk Asbestos Report

150121JW.A; 38 Holloway Blvd; Bulk Samples

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
22 16	115011685-50 **Location:** Base Cove Mastic	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Brown, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 45.1 % **Comment:** Heat Sensitive (organic): 51.9%; Acid Soluble (inorganic): 3.0%; Inert (Non-asbestos): 45.1%			
22A 16	115011685-51 **Location:** Base Cove Mastic	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Brown, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 45.8 % **Comment:** Heat Sensitive (organic): 51.9%; Acid Soluble (inorganic): 2.3%; Inert (Non-asbestos): 45.8%			
23 17	115011685-52 **Location:** Joint Compound	***No***	NAD (by NYS ELAP 198.1) by William M. Dunstan on 01/26/15
Analyst Description: White, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
23A 17	115011685-53 **Location:** Joint Compound	***No***	NAD (by NYS ELAP 198.1) by William M. Dunstan on 01/26/15
Analyst Description: White, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
23B 17	115011685-54 **Location:** Joint Compound	***No***	NAD (by NYS ELAP 198.1) by William M. Dunstan on 01/26/15
Analyst Description: White, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			

See Reporting notes on last page

PLM Bulk Asbestos Report

150121JW.A; 38 Holloway Blvd; Bulk Samples

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
24 18 **Location:** Drywall	115011685-55	***No***	NAD (by NYS ELAP 198.1) by William M. Dunstan on 01/26/15
Analyst Description: White/Tan, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 5 %, Non-fibrous 95 %			
24A 18 **Location:** Drywall	115011685-56	***No***	NAD (by NYS ELAP 198.1) by William M. Dunstan on 01/26/15
Analyst Description: White/Tan, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 5 %, Non-fibrous 95 %			
24A 18 **Location:** Drywall	115011685-57	***No***	NAD (by NYS ELAP 198.1) by William M. Dunstan on 01/26/15
Analyst Description: White/Tan, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 5 %, Non-fibrous 95 %			
30 19 **Location:** Flooring Throut	115011685-58	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Beige, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 1.4 % **Comment:** Heat Sensitive (organic): 16.6%; Acid Soluble (inorganic): 82.0%; Inert (Non-asbestos): 1.4%			
30A 19 **Location:** Flooring Throut	115011685-59	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Beige, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 1.1 % **Comment:** Heat Sensitive (organic): 16.6%; Acid Soluble (inorganic): 82.2%; Inert (Non-asbestos): 1.1%			

See Reporting notes on last page

PLM Bulk Asbestos Report

150121JW.A; 38 Holloway Blvd; Bulk Samples

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
31 20	115011685-60 **Location:** Joint Compound	***No***	NAD (by NYS ELAP 198.1) by William M. Dunstan on 01/27/15
Analyst Description: White, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
31A 20	115011685-61 **Location:** Joint Compound	***No***	NAD (by NYS ELAP 198.1) by William M. Dunstan on 01/27/15
Analyst Description: White, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
31B 20	115011685-62 **Location:** Joint Compound	***No***	NAD (by NYS ELAP 198.1) by William M. Dunstan on 01/27/15
Analyst Description: White, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
32 21	115011685-63 **Location:** Drywall	***No***	NAD (by NYS ELAP 198.1) by William M. Dunstan on 01/27/15
Analyst Description: White/Tan, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 5 %, Non-fibrous 95 %			
32A 21	115011685-64 **Location:** Drywall	***No***	NAD (by NYS ELAP 198.1) by William M. Dunstan on 01/27/15
Analyst Description: White/Tan, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 5 %, Non-fibrous 95 %			
32B 21	115011685-65 **Location:** Drywall	***No***	NAD (by NYS ELAP 198.1) by William M. Dunstan on 01/27/15
Analyst Description: White, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			

See Reporting notes on last page

PLM Bulk Asbestos Report

150121JW.A; 38 Holloway Blvd; Bulk Samples

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
39	115011685-66	***No***	NAD
22	**Location:** Flooring L/R & Hallway		(by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Brown, Heterogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 1.9 %			
Comment: Heat Sensitive (organic): 17.3%; Acid Soluble (inorganic): 80.8%; Inert (Non-asbestos): 1.9%			
39A	115011685-67	***No***	NAD
22	**Location:** Flooring L/R & Hallway		(by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Brown, Heterogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 2.3 %			
Comment: Heat Sensitive (organic): 17.5%; Acid Soluble (inorganic): 80.2%; Inert (Non-asbestos): 2.3%			
40	115011685-68	***No***	NAD
23	**Location:** Mastic L/R & Hallway		(by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 32.7 %			
Comment: Heat Sensitive (organic): 50.6%; Acid Soluble (inorganic): 16.6%; Inert (Non-asbestos): 32.7%			
40A	115011685-69	***No***	NAD
23	**Location:** Mastic L/R & Hallway		(by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 35.7 %			
Comment: Heat Sensitive (organic): 49.0%; Acid Soluble (inorganic): 15.4%; Inert (Non-asbestos): 35.7%			
41	115011685-70	***No***	NAD
24	**Location:** Flooring Kitchen		(by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Tan, Heterogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Non-fibrous 0.2 %			
Comment: Heat Sensitive (organic): 25.0%; Acid Soluble (inorganic): 74.8%; Inert (Non-asbestos): 0.2%			

See Reporting notes on last page

PLM Bulk Asbestos Report

150121JW.A; 38 Holloway Blvd; Bulk Samples

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
41A 24	115011685-71 **Location:** Flooring Kitchen	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Tan, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 0.7 % **Comment:** Heat Sensitive (organic): 39.2%; Acid Soluble (inorganic): 60.1%; Inert (Non-asbestos): 0.7%			
42 25	115011685-72 **Location:** Base Cove Mastic	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Tan, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 27.5 % **Comment:** Heat Sensitive (organic): 53.2%; Acid Soluble (inorganic): 19.4%; Inert (Non-asbestos): 27.5%			
42A 25	115011685-73 **Location:** Base Cove Mastic	***No***	NAD (by NYS ELAP 198.6) by William M. Dunstan on 01/26/15
Analyst Description: Tan, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 26.4 % **Comment:** Heat Sensitive (organic): 67.9%; Acid Soluble (inorganic): 5.6%; Inert (Non-asbestos): 26.4%			
44 26	115011685-74 **Location:** Joint Compound	***No***	NAD (by NYS ELAP 198.1) by William M. Dunstan on 01/27/15
Analyst Description: White, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
44A 26	115011685-75 **Location:** Joint Compound	***No***	NAD (by NYS ELAP 198.1) by William M. Dunstan on 01/27/15
Analyst Description: White, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			

See Reporting notes on last page

PLM Bulk Asbestos Report

150121JW.A; 38 Holloway Blvd; Bulk Samples

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
44B 26	115011685-76 **Location:** Joint Compound	***No***	NAD (by NYS ELAP 198.1) by William M. Dunstan on 01/27/15
Analyst Description: White, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
45 27	115011685-77 **Location:** Drywall	***No***	NAD (by NYS ELAP 198.1) by William M. Dunstan on 01/27/15
Analyst Description: White/Tan, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 5 %, Non-fibrous 95 %			
45A 27	115011685-78 **Location:** Drywall	***No***	NAD (by NYS ELAP 198.1) by William M. Dunstan on 01/27/15
Analyst Description: White/Tan, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 5 %, Non-fibrous 95 %			
45B 27	115011685-79 **Location:** Drywall	***No***	NAD (by NYS ELAP 198.1) by William M. Dunstan on 01/27/15
Analyst Description: White/Tan, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 5 %, Non-fibrous 95 %			

Reporting Notes:

Analyzed by: William M. Dunstan Wm M Dunstan Date 1/27/15

*NAD = no asbestos detected, Detection Limit <1%, Reporting Limits: CVES = 1%, 400 Pt Ct = 0.25%, 1000 Pt Ct = 0.1%; "Present" or NVA = "No Visible Asbestos" are observations made during a qualitative analysis; NA = not analyzed; NA/PS = not analyzed / positive stop; PLM Bulk Asbestos Analysis by EPA 600//M4-82-020 per 40 CFR 763 (NVLAP Lab Code 101904-0) and ELAP PLM Analysis Protocol 198.1 for New York friable samples which includes quantitation of any vermiculite observed (198.6 for NOB samples) or EPA 400 pt ct by EPA 600/M4-82-020 (NYSDOH ELAP Lab # 10984); CA ELAP Lab # 2508; Note: PLM is not consistently reliable in detecting asbestos in floor coverings and similar NOB materials. NAD or Trace results by PLM are inconclusive, TEM is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos-containing in New York State (also see EPA Advisory for floor tile, FR 59, 146, 38970, 8/1/94). NIST Accreditation requirements mandate that this report must not be reproduced except in full without the approval of the laboratory. This PLM report relates ONLY to the items tested.

Reviewed By:_____

Part 4: Sample Chain of Custody

AMERISCI

www.amerisci.com

CHAIN OF CUSTODY RECORD

115011685

AMERISCI NEW YORK
117 East 30th Street
New York, NY 10016
Toll Free (800) 705-5227
Phone (212) 679-8600
Fax (212) 679-9392

COMPANY: AMD Environmental	ADDRESS: 4248 Ridge Lea Road, Amherst, NY 14226	P.O.#:

PROJECT INFORMATION	ANALYSIS TYPE	TURNAROUND TIME (X) 6-8 HR	12 HR	24 HR	48 HR	72 HR	5 DAY	OTHER	AIR FILTER INFORMATION:	
JOB NAME: 38 HOLLOWAY BLVD.	TEM/AHERA								MCE	
JOB NUMBER: 15012JW.A	TEM/LEVEL II								PC	
JOB MANAGER: Anthony DeMiglio	TEM/BULK								25 mm	
JOB DESCRIPTION: BULK SAMPLES	TEM/DUST	[redacted]							37 mm	
	TEM/WATER	[redacted]							0.45 um	
	PCM	RUSH							0.80 um	
	PLM	RUSH					X		TEM:	
	OTHER:								OTHER:	

RESULTS TO: AMD Environmental	RETURN SAMPLES YES ____ NO X
EMAIL TO: JWolf@AMDEnv.com & SDunlap@AMDEnv.com	PHONE: 716-201-2772
INVOICE TO: AMD Environmental	FAX:
COMMENTS: NYS ELAP Positive Stop	SITE FAX:
	PAGER/CELL:

SAMPLE ID	SAMPLE LOCATION	START TIME	STOP TIME	TOTAL TIME	X LITERS /MIN.	= TOTAL VOLUME	DATE COLLECTED
9,14,26,35A 46	ROOFING TOP LAYER						1.21.15
10,15,27,36, 47	ROOFING BOTTOM LAYER						
11,16,28,37 48	ROOFING FELT						
12,17,29,38 49	ROOFING TAR						
8,13,25,34,50A	CAULK WINDOW/DOOR						
2,20,33,43	FLOORING BATH RM.						
1,1A	FLOORING L/R & HALLWAY						
3,3A	MASTIC —11—						
4,4A	FLOORING KITCHEN						
5,5A	BASE COVE MASTIC						
6,6A,6B	JOINT COMPOUND						
7,7A,7B	DRYWALL						
18,18A	FLOORING L/R & HALLWAY						
19,19A	MASTIC —11—						
21,21A	FLOORING KITCHEN						
22,22A	BASE COVE MASTIC						
23,23A,23B	JOINT COMPOUND						
24,24A,24B	DRYWALL						

SAMPLED BY: S. Dunlap	DATE/TIME: 1.21.15	RECEIVED BY	DATE/TIME
RELINQUISHED BY	DATE/TIME	RECEIVED IN LAB BY	DATE/TIME

RECEIVED
JAN 23 2015
By

AMERI SCI

www.ameriso.com

CHAIN OF CUSTODY RECORD

115011685

AMER SC NEW YORK
117 East 30th Street
New York, NY 10016
Toll Free (800) 705-5227
Phone (212) 679-8600
Fax (212) 679-9392

COMPANY: AMD Environmental	ADDRESS: 4248 Ridge Lea Road, Amherst, NY 14226	P.O.#:

PROJECT INFORMATION	ANALYSIS TYPE	TURNAROUND TIME (X) 6-8 HR	12 HR	24 HR	48 HR	72 HR	5 DAY	OTHER	AIR FILTER INFORMATION:	
JOB NAME: 38 HOLLOWAY BLVD	TEM/AHERA								MCE	
	TEM/LEVEL II								PC	
JOB NUMBER: 15012JW.A	TEM/BULK								25 mm	
	TEM/DUST								37 mm	
JOB MANAGER: Anthony DeMiglio	TEM/WATER								0.45 um	
	PCM	RUSH							0.80 um	
JOB DESCRIPTION: BULK SAMPLES	PLM	RUSH					X		TEM:	
	OTHER								OTHER:	

RESULTS TO: AMD Environmental	RETURN SAMPLES YES ____ NO X
EMAIL TO: JWolf@AMDEnv.com & SDunlap@AMDEnv.com	PHONE: 716-201-2772
INVOICE TO: AMD Environmental	FAX:
COMMENTS: NYS ELAP Positive Stop	SITE FAX:
	PAGER/CELL:

SAMPLE ID	SAMPLE LOCATION	START TIME	STOP TIME	TOTAL TIME	X LITERS /MIN.	= TOTAL VOLUME	DATE COLLECTED
30,30A	FLOORING THROUGHOUT						1.21.15
31,31A,31B	JOINT COMPOUND						
32,32A,32B	DRYWALL						
39,39A	FLOORING L/R & HALLWAY						
40,40A	MASTIC " "						
41,41A	FLOORING KITCHEN						
42,42A	BASE COVE MASTIC						
44,44A,44B	JOINT COMPOUND						
45,45A,45B	DRYWALL						

SAMPLED BY: S Dunlap	DATE/TIME: 1.21.15	RECEIVED BY:	DATE/TIME:
RELINQUISHED BY	DATE/TIME:	RECEIVED IN LAB BY:	DATE/TIME:

RECEIVED
JAN 23 2015
By

Part 5: Firm Qualifications

New York State – Department of Labor
Division of Safety and Health
License and Certificate Unit
State Campus, Building 12
Albany, NY 12240

ASBESTOS HANDLING LICENSE

AMD Environmental Consultants, Inc.
Suite 16
4248 Ridge Lea Rd.

Amherst, NY 14226

FILE NUMBER: 10-56177
LICENSE NUMBER: 56177
LICENSE CLASS: RESTRICTED
DATE OF ISSUE: 10/30/2014
EXPIRATION DATE: 11/30/2015

Duly Authorized Representative – Anthony DeMiglio:

This license has been issued in accordance with applicable provisions of Article 30 of the Labor Law of New York State and of the New York State Codes, Rules and Regulations (12 NYCRR Part 56). It is subject to suspension or revocation for a (1) serious violation of state, federal or local laws with regard to the conduct of an asbestos project, or (2) demonstrated lack of responsibility in the conduct of any job involving asbestos or asbestos material.

This license is valid only for the contractor named above and this license or a photocopy must be prominently displayed at the asbestos project worksite. This license verifies that all persons employed by the licensee on an asbestos project in New York State have been issued an Asbestos Certificate, appropriate for the type of work they perform, by the New York State Department of Labor.

Eileen M. Franko, Director
For the Commissioner of Labor

SH 432 (8/12)

Part 6: Lab Qualifications

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2015
Issued April 01, 2014

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

DR. THOMAS MCKEE
AMERISCI RICHMOND
13635 GENITO RD
MIDLOTHIAN, VA 23112

NY Lab Id No: 10984

is hereby APPROVED as an Environmental Laboratory for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved subcategories and/or analytes are listed below:

Miscellaneous

Asbestos in Friable Material	Item 198.1 of Manual
	EPA 600/M4/82/020
Asbestos in Non-Friable Material-PLM	Item 198.6 of Manual (NOB by PLM)
Asbestos in Non-Friable Material-TEM	Item 198.4 of Manual

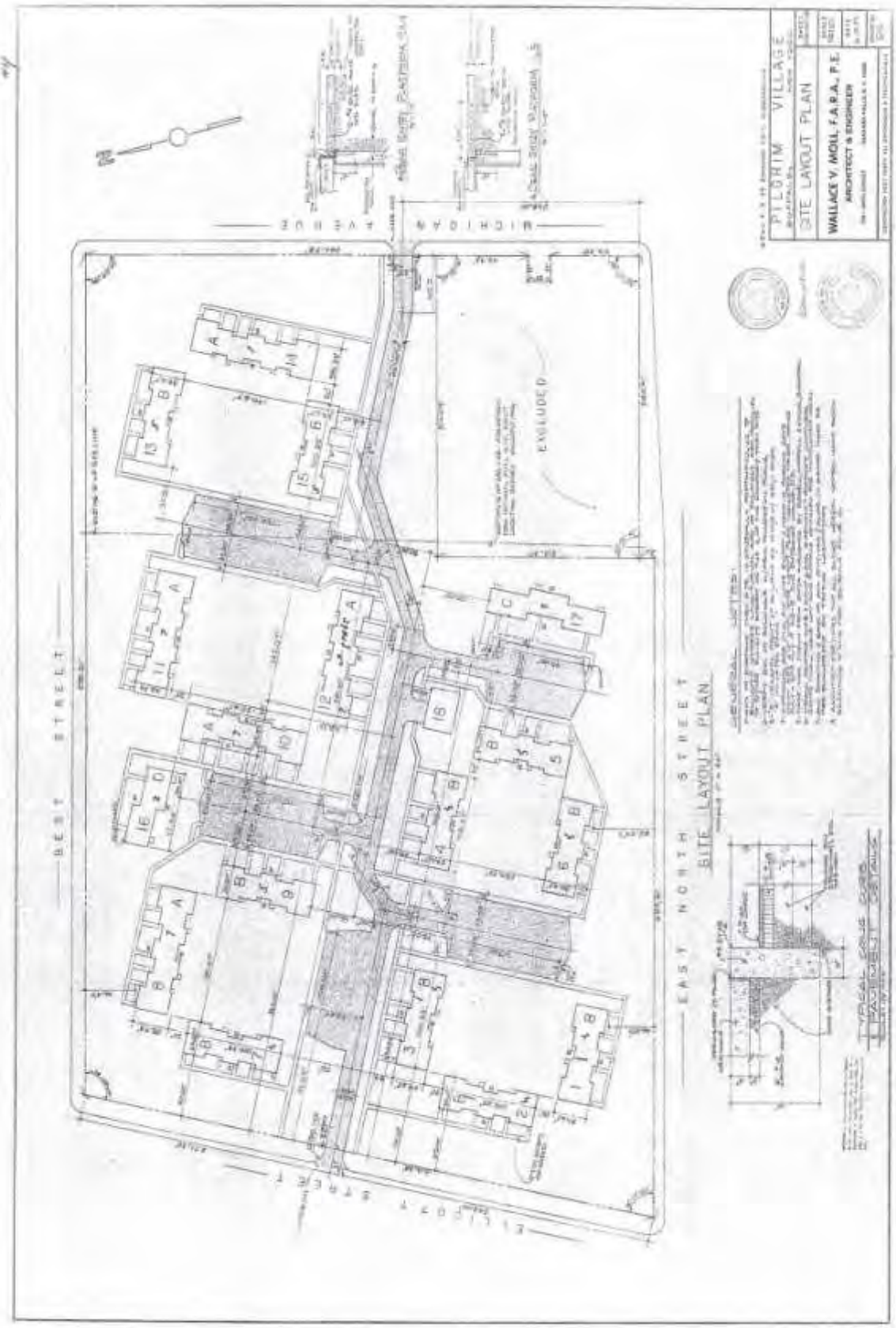
Serial No.: 50469

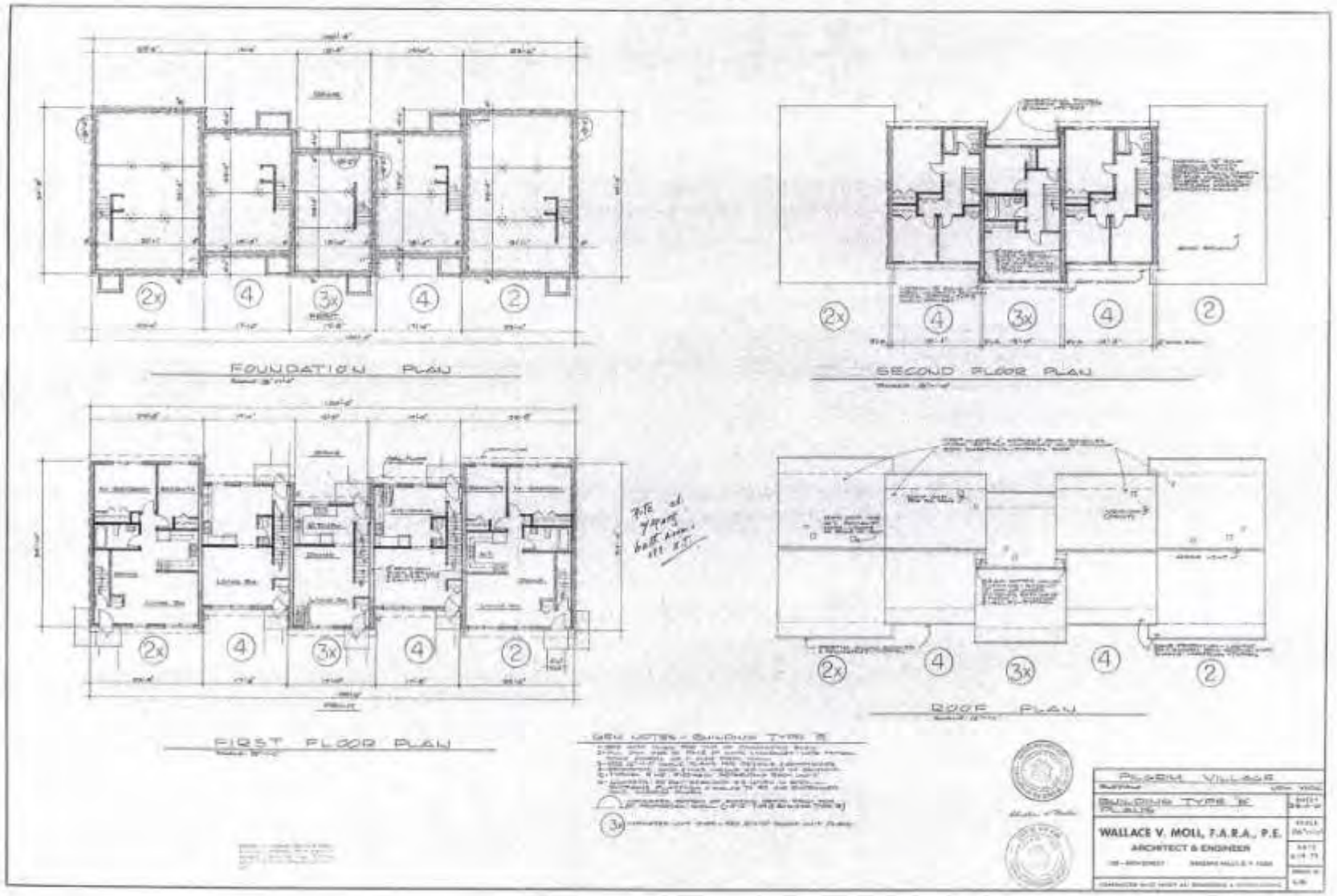
Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.

Page 1 of 1

Appendix A: Site Map

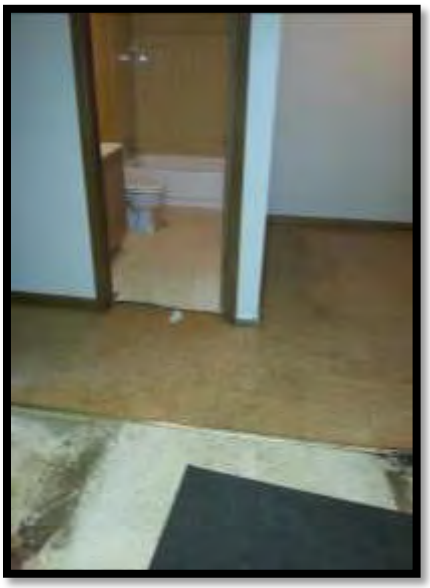
Site Map Overview

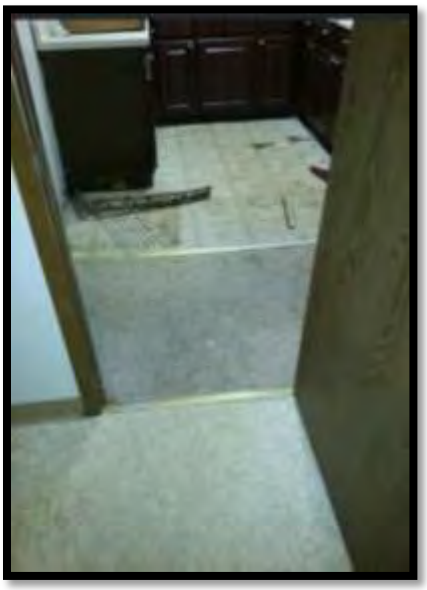

PILGRIM VILLAGE
SITE LAYOUT PLAN
WALLACE V. MOLL, F.A.P.A., P.E.
ARCHITECT & ENGINEER
EXCLUDED
BEST STREET
EAST NORTH STREET
SITE LAYOUT PLAN


FOUNDATION PLAN
SECOND FLOOR PLAN
FIRST FLOOR PLAN
ROOF PLAN
WALLACE V. MOLL, F.A.R.A., P.E.
ARCHITECT & ENGINEER


FRONT ELEVATION
R SIDE ELEVATION
L SIDE ELEVATION
REAR ELEVATION
PILGRIM VILLAGE
BUILDING TYPE "B"
WALLACE V. MOLL, F.A.I.A., P.E.
ARCHITECT & ENGINEER

Appendix B: Site Pictures





Representative Linoleum, Floor Tiles and Mastic under flooring found in Buildings 1,2,3,4,6.

APPENDIX K

GROUNDWATER TREATMENT

BE3CORP
BRYDGES ENGINEERING IN ENVIRONMENT & ENERGY
960 Busti Avenue, Suite B-150
Buffalo, NY 14213
716.249.6880 be3corp.com

GROUNDWATER TREATMENT

Based on available data and reports, the site is contaminated with benzene, toluene, ethylbenzene, and xylene (BTEX) compounds, as well as a limited mixture of polycyclic aromatic hydrocarbons (PAH). Contamination is in both groundwater and adsorbed to solids within the subsurface. Contaminant mass has previously been excavated and will be excavated in the upcoming remediation activity, but residual mass must be addressed that may persist in the solid phase and that which dissolved into the aqueous phase.

The selected technology is persulfate oxidation. Based on review of data chemical oxidation is a reasonable strategy; there are not likely to be significant matrix oxidant demand issues because of the nature of the hydrogeology. Also, strategies such as bioremediation would not likely address the residual contamination in the adsorbed or aqueous phase in a manner fast enough to meet cleanup goals. The selected vendor for persulfate is Peroxychem, using its KLOSUR brand products or similar sodium persulfate and potassium persulfate products. The Peroxychem "SP" version is sodium persulfate, with a solubility in the range of 500g/L assuming 20°C water. The "KP" version is potassium persulfate, with a solubility in the range of 50g/L assuming 20°C water. Peroxychem markets the "KP" version as long-term slower release.

The accompanying calculations provides the exact 1:1 stoichiometry mass of either KLOSUR "SP" or "KP" to add, based on highest groundwater and solid-phase contaminant concentrations.

The persulfate reduction half reaction is:

$2e^- + S_2O_8^{2-} \rightarrow 2SO_4^{2-}$

Recommendations for Persulfate Amendment: Type and Concentrations

In all cases persulfate was calculated using $S_2O_8^{2-}$ in the oxidation/reduction reactions, and the calculation table accounted for the difference in molecular mass between the sodium and potassium salt versions. Details are provided in the list below:

- Matrix oxidant demand is negligible given the sandy-silt material (persulfate required per solids).
- All calculations are based on a treatment zone of: 100 foot x 50 foot x 9 foot
- The total volume to be treated will be: 1.27×10^6 L (45,000 ft^3)
- Taking into account a porosity of 0.3 and a bulk density of 1.1 kg/L the following aqueous and solids volumes remain to be treated following excavation:
  - The total mass of solids to be treated is: 981,079kg
  - The total aqueous volume to be treated is: 382,277L

The following compounds and reactions were used to calculate persulfate stoichiometry; the highest concentrations for each phase (aqueous and solid) were used to establish conservative one to one stoichiometries:

Groundwater:
m,p-xylene oxidation (it was the high groundwater concentration at 0.246 mg/L)

$C_8H_{10} + 16H_2O \rightarrow 8CO_2 + 42H^+ + 42e^-$

21:1 stoichiometry (persulfate:xylene)

Solids:
Benzo-a-pyrene oxidation (it was the high solids concentration at 3.72 mg/kg)

$C_{20}H_{12} + 40H_2O \rightarrow 20CO_2 + 92H^+ + 92e^-$

46:1 stoichiometry (persulfate:benzo-a-pyrene)

Based on those calculations:

- The suggestion is to purchase 160kg (352 pounds) of KLOSUR KP or similar persulfate products, which will address matrix oxidant demand as well as all aqueous phase and solid phase contamination within the treatment zone, based on calculations in the accompanying table.
- This combined mass will deliver a 1X stoichiometry, which is enough to meet remedial goals based on theoretical complete oxidation of all groundwater and solid-phase contamination.
- We recommend a chelated iron activator because it is soluble in water and will allow better penetration into soil matrix. The chelated iron activator is most suitable to mixing and pumping systems that will be used.
- Should stakeholders select an additional factor of safety, we suggest adding a maximum of 3X total stoichiometry to limit residual sulfide

Recommendations for Persulfate Amendment: Delivery and Distribution
These suggestions are a framework for delivering the calculated masses of persulfate:

- Ten (10) distinct direct push injection points distributed evenly throughout the treatment volume
- KLOSUR SP has a solubility of 0.047 kg/L
- For 160 kg of total persulfate it requires that 3,404L of water be evenly distrusted amongst the injection points
- This would be 340.4L per direct push point, which can be introduced under gravity feed over time, or pumped in under moderate pressure (3-5PSI)
- Persulfate can be dissolved at each direct push point in polycarbonate totes (typically 1,000L volume), and injections will take between 1 and 2 hours to complete

Additional Considerations: Sulfate Chemistry Following Amendment

Persulfate amendment leaves behind a residual of sulfate, at a stoichiometry of 2 mols sulfate for every mol persulfate. As such, sulfate – which is a microbial electron acceptor – can become the overwhelming respiratory process following persulfate amendment (assuming persulfate oxidation does not completely "sterilize" the location, but microbes typically rebound within weeks to months of injection). This is not typically a problem, and in fact sulfate reduction can oxidize both BTEX and PAH compounds, leading to long term attenuation. However,

sulfate reduction generates sulfide, which only becomes an issue if it migrates in water and damages metallic or concrete infrastructure, or migrates into spaces and becomes volatile hydrogen sulfide (at lower pH values). Given the mass of persulfate to be amended, there will not be enough ferrous iron to precipitate all potential sulfide (if sulfate reduction does become a dominant process).