HANSON VAN VLEET, LLC

HYDROGEOLOGIC & ENVIRONMENTAL CONSULTANTS

902 ROUTE 146 CLIFTON PARK, NY 12065

REMEDIAL INVESTIGATION WORK PLAN

Tim Bayly Property
800 Broadway
City of Rensselaer
Rensselaer County, New York
Site No.: C442043

Submitted To:

Mr. James Quinn, P.E.
Regional Hazardous Waste Engineer
Project Manager
New York State Department of Environmental Conservation
Division of Environmental Remediation
1130 North Westcott Road
Schenectady, New York 12306

September 4, 2014

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HANSON

VAN VLEET, LLC

GEOLOGIC & ENVIRONMENTAL CONSULTANTS

April 30, 2015

New York State Department of Environmental Conservation
Division of Environmental Remediation
1130 North Westcott Road
Schenectady, New York 12306

Attn: Mr. James Quinn, P.E., Regional Hazardous Waste Engineer, Project Manager

RE: Remedial Investigation Work Plan
Tim Bayly Property
800 Broadway
City of Rensselaer
Rensselaer County, New York
Site No.: C442043

Dear Mr. Quinn:

Hanson Van Vleet, LLC (HVV) is pleased to submit this Remedial Investigation Work Plan (RIWP) on behalf of Mr. Tim Bayly for the Tim Bayly Property (the "site"), located at 800 Broadway, City of Rensselaer, Rensselaer County, New York.

This RIWP was developed in general accordance with the New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation (DER) *DER-10, Technical Guidance for Site Investigation and Remediation* (May 2010) and *6 NYCRR Part 375 Environmental Remediation Programs, Subparts 375-1, 375-3 and 375-6,* in accprdance with the New York State Brownfield Cleanup Program (BCP) as defiend by ECL, Article 27, Title 14.

Certified by,
Hanson Van Vleet, LLC

Kirby Van Vleet, PG
Vice President/Senior Hydrogeologist/"Qualified Environmental Professional"

KV/kv

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1.0 INTRODUCTION

This remedial investigation work plan (RIWP), prepared by Hanson Van Vleet, LLC, Inc. (HVV) identifies activities and tasks to be implemented to investigate the Tim Bayly Property at 800 Broadway in the City of Rensselaer, Rensselaer County, New York (See Figure 1) under the New York State Brownfield Cleanup Program.

This RIWP includes a summary of the site history, summary of prior environmental site assessments and/or investigations, a description of the geologic and hydrogeologic setting, a summary of subsurface features and sensitive receptors, proposed Alternatives Analysis and a plan of action to further delineate the area(s) of concern identified previously by others.

1.1 Site Description

The site is located at 800 Broadway in the City of Rensselaer, Rensselaer County, New York. The site is located at the northeastern corner of the intersection of Broadway and Partition Street. Rensselaer County tax maps identify the site as Section 52, Block 3, Lot 18. The 3,548 square foot site is almost entirely occupied by the existing structure. An aerial photograph of the site and immediate surrounding area is included as Figure 2. A sketch of the site is included as Figure 3 and a survey of the site and adjacent properties is included in Appendix A. The Brownfield property is defined by the surveyed property boundary lines.

Tim Bayly Development, LLC has owned the property since 2013. The site, historically a Roxy Dry Cleaning establishment from at least 1956 to 1978, has been vacant since approximately 1978 according to city directories. The site is located in an urban area of mixed commercial and residential use. The zoning is "Downtown Mixed Use (MU-1). The site has been approved by the City of Rensselaer for redevelopment as a retail wine and liquor store. The existing structure will be rehabilitated for future use.

1.2 Site History

According to a Phase 1 Environmental Site Assessment report prepared by Arcadis, dated September 26, 2012, the use of site from at least 1956 to 1978 was as a dry cleaner. Sanborn maps indicate the area was developed at least back to 1909, with commercial and/or residential structures occupying the site and surrounding area. No specific uses were noted, with the exception of the time period the site was identified as "Roxy Un Cleaners" (Roxy). Information reviewed indicates the site has been vacant since approximately 1978 when Roxy vacated the site.

1.3 Purpose

The Draft RIWP has been developed to achieve the following BCP objectives:

- To better define the nature and extent of contamination on the Site.
- To identify if residual contaminant source area(s) are present on the Site.
- Characterize the site to determine if remedial action is needed to protect human health and the environment.
- Develop a remedial plan for the protection of human health and the environment.
- To produce data of sufficient quantity and quality to support the remediation of the Site, if warranted.
- Develop a plan that allows for reuse of the property, while accounting for protection of human health and the environment.

Specifically, this RIWP provides a summary of environmental conditions including the following
information:

- Relevant information from existing environmental reports and previously conducted Site investigations.
- Technical overview and findings from previous reports.
- Planned investigation activities as outlined in this RIWP (including soil, soil vapor, and groundwater investigations, as determined necessary)
- Site base mapping, supporting figures presenting sampling results/data, groundwater contour mapping and locations of planned investigational activities.
- Quality Assurance Project Plan (QAPP)
- Site specific Health & Safety Plan (HASP)
- Community Air Monitoring Plan (CAMP)
- Citizen Participation Plan (CPP)

References used in assessment of this Site and for development of this work plan are identified in the References section at the end of this document.

1.4 Summary of Previous Investigations and Assessments

In accordance with the DER-10, this RIWP incorporates a summary of the previous Environmental Site Assessments and Site Investigations, which provide the basis for identifying the area(s) of concern (AOCs) and the principal constituents of concern (COCs) on the Site. Two areas of concern were identified during the prior investigations. AOC-1 is the area of monitoring well MW-05, where chlorinated VOCs were found in the groundwater exceeding NYSDEC Class GA Standards. AOC-2 is the basement foot print of the structure, where sub-slab and interior air concentrations of tetrachloroethene (PCE) indicate that mitigation is required. The AOC locations are shown on Figure 4.

1.4.1 Phase 1 Environmental Site Assessment

A Phase 1 Environmental Site Assessment (ESA) was performed by ARCADIS on two vacant properties at 824 Broadway and (North of) 1 Partition Street for the City of Rensselaer. The ESA, dated September 26, 2012, was performed under a USEPA Brownfields Hazardous Substances Assessment Grant. The ESA included the subject property at 800 Broadway. The ESA identified recognized environmental concerns/conditions (RECs) associated with the subject property. The RECs identified with respect to the Tim Bayly Property are summarized below:

- The use of 800 Broadway as a Roxy Cleaners from at least 1958 to 1978 was considered a REC.

1.4.2 Phase II Environmental Site Assessment

The Phase II was performed by ARCADIS and the results presented in a report dated August 2, 2013. The Phase II was performed to address the RECs identified in the Phase 1 ESA, including

off-site areas, which entailed the subject property at 800 Broadway.

The scope of work included: surface soil sampling, subsurface soil sampling, sump groundwater sampling, groundwater sampling (installation of five monitoring wells), indoor air sampling, outdoor air sampling, sub-slab air sampling and soil vapor sampling. The Phase II investigation narrative, figures, soil boring logs and analytical results tables are included in Appendix B.

1.4.2.1 Soil Investigation

Two surface soil samples were collected from exposed soil within the basement of 800 Broadway. Portions of the concrete slab floor had been previously removed by others to expose the soil within the basement. The surface soil samples were analyzed for TCL VOCs. No VOCs were detected in the two surface soil samples collected from the basement of 800 Broadway exceeding 6 NYCRR Part 375 Unrestricted use Standards.

Five soil borings were advanced in the area to depths of 15 to 20-feet below grade, using Geoprobe direct push methods. Four of the soil borings were located adjacent to the 800 Broadway property (SB-1, SB-3, SB-4 and SB-5). Soils were continuously logged in the field, and screened with a photoionization detector (PID) for the presence of volatile organic compounds. Soil Boring logs indicate the site specific unconsolidated deposits consist of fill from the surface to approximately 4.5 to 9 feet in depth, underlain by interbedded silt and/or clay. Soil classifications, PID responses, and additional subsurface information were recorded on soil boring logs (See Appendix B).

No staining, odors or VOCs were identified in the field. One soil sample was collected from each soil boring for analysis TCL VOCs. No VOCs were detected in the subsurface soil samples collected from soil borings SB-1, SB-3, SB-4 and SB-5 exceeding 6 NYCRR Part 375 Unrestricted use Standards.

1.4.2.2 Groundwater Investigation

The five soil borings (SB-01 through SB-05) were completed as monitoring wells (MW-01 through MW-05). Groundwater samples were collected from each monitoring well and analyzed for TCL VOCs by USEPA method 8260C. A groundwater sample could not be collected from MW-03 located in the ROW west of 800 Broadway because the well was dry. The groundwater sample from MW-05 was also analyzed for TCL SVOCs by USEPA method 8270D due to an up gradient petroleum spill that was closed, but did not meet standards.

The analytical results identified Cis-1,2-dichloroethene (25.3 micrograms per liter [µg/l]), tetrachloroethene (PCE) (54.9 µg/l), trichloroethene (TCE) (36.8 µg/l) and vinyl chloride (2.2 µg/l) in the groundwater sample from monitoring well MW-05 at concentrations that exceeded the NYSDEC Class GA Standards of 5 µg/l for cis-1,2-dichlorethene, PCE and TCE, and 2 µg/l for vinyl chloride. VOCs were not detected at concentrations exceeding NYSDEC Class GA Standards in groundwater sampled from MW-01, MW-02, and MW-04 or in a groundwater sump sample collected from 810 Broadway.

1.4.2.3 Air Sampling

Soil vapor, sub-slab vapor, indoor air, and ambient air samples were collected on and off-site at the locations to evaluate potential exposures resulting from chlorinated VOCs in soil and groundwater in the vicinity of the site.

Soil Vapor Sampling

Five soil vapor points were installed at depths ranging from 5.5 feet bgs to nine feet bgs. Soil vapor points SV-1, and SV-3 through SV-5 were installed adjacent to the structure at 800 Broadway. Soil vapor samples were collected over a one-hour collection period and analyzed for VOCs by USEPA method TO-15.

The analytical results identified Carbon tetrachloride (0.66 μg/m3) and PCE (12 μg/m3) in the soil vapor sample from soil vapor point SV-01. Soil vapor points SV-03 through SV-05 contained 1,1,1-trichloroethane at concentrations ranging from 0.21 μg/m3 (SV-04) to 2.1 μg/m3 (SV-05). Carbon tetrachloride was detected at SV-03 (0.16 μg/m3). Cis-1,2-dichloroethene was detected at SV-04 (1.5 μg/m3) and SV-05 (11 μg/m3). PCE was detected at each City ROW soil vapor location, ranging from 41 μg/m3 at SV-03 to 1,900 μg/m3 at SV-05. TCE was detected at SV-04 (48 μg/m3) and SV-05 (120 μg/m3).

Sub-Slab. Indoor and Ambient Vapor Sampling

Sub-slab soil vapor samples were collected from just below the basement slabs at the buildings at 810 Broadway and 800 Broadway. Two outdoor ambient air samples and three indoor air samples were collected to establish background values for local ambient air quality. Indoor air and ambient air samples were collected concurrently with the collection of soil vapor samples. The ambient air samples (AA-01 and AA-02) were collected on the eastern portion of the site, furthest from adjacent roads.

Two indoor air samples were collected on separate dates inside 800 Broadway (IA-02). Analytical results identified carbon tetrachloride (0.54 $\mu g/m^3$ and 0.36 $\mu g/m^3$, on April 22 and May 29, 2013, respectively), and PCE (0.64 $\mu g/m^3$ and 1 $\mu g/m^3$, on April 22 and May 29, respectively). One sub-slab sample was collected at 800 Broadway on May 29, 2013. The sub-slab vapor sample (SV-01) contained PCE at a concentration of 5,100 $\mu g/m^3$. The corresponding indoor air concentration of PCE was 1 $\mu g/m^3$. The NYSDOH guidelines clasify the contaminant levels as “mitigation required”. TCE was also detected (30 $\mu g/m^3$) in the sub-slab vapor sample collected from 800 Broadway). Carbon tetrachloride (0.46 μg/m3), cis-1,2 dichloroethene (0.65 μg/l) and PCE (0.26 μg/m3) were detected in ambient air sample AA-02 collected at the same time.

The NYSDOH has developed decision matrices for the following VOCs: carbon tetrachloride, 1,1- dichloroethene, cis-1,2-dichloroethene, tetrachloroethene (PCE), 1,1,1-trichloroethane, trichloroethene (TCE) and vinyl chloride. Of these compounds, cis-1,2-dichloroethene, TCE and vinyl chloride are degradation products of PCE, which was historically used in dry cleaning processes.

1.4.2.4 Summary of Soil, Groundwater and Air Sampling at 800 Broadway

Soil Results

No staining, odors or VOCs were identified during continual inspection of soil samples in the field. No VOCs were detected in the subsurface soil samples collected from soil borings SB-1, SB-3, SB-4 and SB-5 exceeding 6 NYCRR Part 375 Unrestricted use Standards.

Groundwater Results

The analytical results identified Cis-1,2-dichloroethene (25.3 micrograms per liter [µg/l]), tetrachloroethene (PCE) (54.9 µg/l), trichloroethene (TCE) (36.8 µg/l) and vinyl chloride (2.2 µg/l) in the groundwater sample from monitoring well MW-05 at concentrations that exceeded the NYSDEC Class GA Standards of 5 µg/l for cis-1,2-dichlorethene, PCE and TCE, and 2 µg/l for vinyl chloride. VOCs were not detected at concentrations exceeding NYSDEC Class GA Standards in groundwater sampled from MW-01, MW-02, and MW-04 or in a groundwater sump sample collected from 810 Broadway. No SVOCs were detected in the groundwater sample collected from MW-05 at concentrations exceeding NYSDEC Class GA Standards.

Soil Vapor Sampling

The analytical results identified Carbon tetrachloride (0.66 µg/m3) and PCE (12 µg/m3) in the soil vapor sample from soil vapor point SV-01, located at the northeast exterior corner of 800 Broadway. Soil vapor points SV-03 through SV-05, located in the sidewalk adjacent to 800 Broadway, contained: 1,1,1-trichloroethane at concentrations ranging from 0.21 µg/m3 (SV-04) to 2.1 µg/m3 (SV-05), carbon tetrachloride at SV-03 (0.16 µg/m3), cis-1,2-dichloroethene at SV-04 (1.5 µg/m3) and SV-05 (11 µg/m3). PCE was detected at soil vapor points SV-03 through SV-05, ranging from 41 µg/m3 at SV-03 to 1,900 µg/m3 at SV-05. TCE was detected at SV-04 (48 µg/m3) and SV-05 (120 µg/m3).

Sub-Sla, Indoor and Ambient Vapor Sampling

The sub-slab sample collected at 800 Broadway on May 29, 2013 contained PCE at a concentration of 5,100 µg/m^3. The corresponding indoor air concentration of PCE was 1 µg/m^3. Under the NYSDOH guidelines, mitigation is required. TCE was also detected (30 µg/m^3) in the sub-slab vapor sample collected from 800 Broadway.

1.4.2.5 Summary of Analytical Results

Compounds exceeding the NYSDEC Class GA Groundwater Standards including: carbon tetrachloride, 1,1- dichloroethene, cis-1,2-dichloroethene, tetrachloroethene (PCE), 1,1,1-trichloroethane, trichloroethene (TCE) and vinyl chloride, were identified in the groundwater sample collected from MW-05, adjacent to the southeast exterior corner of 800 Broadway. Sub-slab and interior air samples collected from 800 Broadway contained PCE at a concentration of 5,100 µg/m^3 and 1 µg/m^3, respectively. Under the NYSDOH guidelines, concentrations of this magnitude require mitigation. These compounds are historically associated with dry cleaning processes and/or degradation products of those compounds historically used in dry cleaning processes.

1.5 Physical Setting

1.5.1 Geology/Hydrogeology

The site is approximately 3,548 square feet in size and is almost entirely occupied by the existing structure. The site slopes generally to the west toward the Hudson River. The Hudson River is the nearest surface water body, located approximately 0.75 miles to the west. The site is at an approximate elevation of 40 to 50 feet above mean sea level (amsl).

Surficial geology on the site is mapped as alluvium or recent deposits (Cadwell et al.,1986). These deposits generally are confined to floodplains within a valley, consisting of oxidized, non-calcareous, fine sand to gravel and may be overlain by silt. Based on the United States Department of Agriculture (USDA) Soil Conservation Service and the National Cooperative Soil Service (NCSS) soil survey for Rensselaer County, New York, the soils within the general vicinity of the site consist of moderately well drained silt loam. Soil Boring logs indicate the site specific unconsolidated deposits consist of fill from the surface to approximately 4.5 to 9 feet in depth, underlain by interbedded silt and/or clay.

Bedrock was not encountered during drilling conducted during the Phase II ESA. Based on this information, the depth to bedrock at the site is greater than 21 feet below ground surface (bgs). Based upon regional mapping, the site is underlain by Ordovician Canajoharie Shale (Fisher et al., 1970).

Based on water level measurements taken during the Phase II investigation, shallow groundwater flow at the site is to the northwest. Groundwater sampling data identified very slow recharge to the monitoring wells, indicating the silt and clay subsurface soils have relatively low permeability.

1.5.2 Subsurface Features

The site is connected to municipal sewer and water. The present cast iron sewer line exits the southeast side of the structure. A clay tile pipe may have been encountered in the general area where the sewer exits the structure at a depth of approximately 11 feet bgs, during the installation of boring MW-05. The original boring was abandoned and relocated 5-feet to the east. No other subsurface features are known on or adjacent to the 800 Broadway property.

1.5.3 Sensitive Receptors

The site is located in an urban environment. No ecological sensitive receptors, such as wetlands, surface water bodies, etc. have been identified adjacent to or in close proximity to the site. Based on the urban location, no Part II Fish and Wildlife or Ecological Impact Analysis will be necessary.

The area is serviced by municipal water. There are no known drinking water wells in the area. There are residential properties in the area, but none are located down gradient of the property. The immediate down gradient area contains Broadway, followed by a railroad yard.

2.0 REMEDIAL INVESTIGATION SCOPE OF WORK

2.1 Introduction

The work described in this RIWP will be conducted in accordance with 6 NYCRR Part 375 Brownfield Cleanup Regulations, and in general conformance with the NYSDEC DER-10 (Technical Guidance for Investigation and Remediation). The RI work will also comply with the quality assurance project plan (QAPP) appended to this RIWP. The investigation process will involve sampling of soil and groundwater, designing and performance testing of a sub-slab depressurization system and tracing waste lines to confirm that they are connected to the sanitary sewer. Exploration and testing locations may be modified during the field program based on observations made in the field. The analytical soil and groundwater data obtained during the RI will be compared to the 6 NYCRR Part 375-6.8 SCOs and NYSDEC Class GA Groundwater Standards. All work will be performed under the direction of Mr. Travis Mitchell, P.E. and principal of Environmental Design Partnership, LLP, a New York State registered limited liability partnership, performing professional services in New York State.

2.2 Purpose and Objectives

Prior investigations evaluated primarily impacts from chlorinated VOCs related to the past use of the site as a dry cleaners. The prior investigation identified two specific AOCs. AOC-1 is where chlorinated VOC contamination to groundwater was identified exceeding the NYSDEC Class GA Standards. AOC-2 is the area of the basement of the structure, where sub-slab and interior air PCE levels required mitigation. HVV has also inspected the structure and have identified a concrete slab/structure extending from the basement to the first floor that appears to be the base of the former location of the dry cleaning equipment. While contamination has been identified the site has not been fully characterized. The purpose of this RIWP is to further define the nature and extent of the known chlorinated VOC contamination on the Site; to attempt to determine the source area for the known chlorinated VOC contamination, to determine if any other contaminants exist on the Site that may require remedial action, perform sub-slab communication test(s) to design a sub-slab depressurizations system as a remedial alternative and to provide data of sufficient quantity and quality to support a Remedial Action Alternatives Analysis.

This RIWP was developed to meet the following specific objectives:

- Collect sub-surface soil samples for analysis for TCL VOCs, TCL SVOCs, TAL Metals, PCBs and Pesticides to a depth of at least 15-feet from seven to nine locations within and outside the structure on the site.
- Collect surface soils from 0 to 2-inches for analysis for TCL SVOCs, TAL Metals, PCBs and Pesticides and from 0 to 6-inches for analysis for TCL VOCs.
- Define the nature and extent of the known groundwater contamination at the Site, by the installation of up to seven additional monitoring wells within and outside the structure on the site.
- Trace waste lines to determine if they connect to the sanitary sewer, if feasible.

- Supplement the existing analytical data and determine if any other contamination exists on the site.
- Perform a soil gas survey within the basement of the structure.
- Perform a desk top design of a sub-slab depressurization system, as remedial option, based on utilizing a gravel sub-base for new basement slab.
- Sample interior building materials in the area of the former dry cleaning equipment utilizing PID and laboratory samples.
- Evaluate all data and determine if other remedial alternatives are warranted, in addition to those already planned (sub-slab depressurization system).
- Evaluate all data to perform an on-site and off-site exposure assessment.
- Identify potential health risks and determine appropriate levels of protection for implementation of the remedial alternatives.

2.3 Scope of Work

2.3.1 Sub-Surface Soil Boring Investigation

2.3.1.1 Soil Boring Installation

Three soil borings will be installed outside the structure on the City ROW and eastern portion of the property as shown on Figure 5. Dependent on the subsurface geology identified during the installation of the exterior borings (i.e. depth to competent clay), four to six soil borings will be installed within the basement of the structure; adjacent to the concrete slab that appears to be the location of the former dry cleaning equipment, adjacent to the apparent sewage line exiting the south side of the structure and in the eastern portion of the basement, if feasible. The exterior borings will be installed first, allowing for evaluation and changes to the scope for the installation of interior soil borings. If the exterior borings encounter clay at a shallow depth, modifications to the number, depth and location of the interior borings may be made. The NYSDEC will be consulted after completion of the exterior borings and prior to making any changes to interior soil boring locations and/or depths.

Each exterior boring will be advanced using hollow stem augers methods. Air or drilling fluids will not be used. The drilling equipment used for the exterior borings may be mounted on a Truck or an all-terrain vehicle. The interior soil boring will be advanced using slide hammer, electric hammer drill or similar manual methods. All borings will be installed to a depth of at least 15-feet below grade, if feasible.

Split spoon soil samples will be collected throughout the entire depth of each boring. The soil samples will be visually examined to assess subsurface conditions and physical properties of the strata. These properties include: color, moisture content, and visual evidence of discoloration, staining and/or sheens. Additionally, all soil samples will be field screened for evidence of volatile organic vapors using conventional headspace methods using a photoionization detector equipped with an 11.7 eV lamp. Samples will be collected from discrete zones representing each distinct soil type to fully characterize the vertical strata. If evidence of contamination is identified, a discrete sample will be collected from the soil layer exhibiting elevated levels in the PID, staining, sheen and/or odors for laboratory analysis. Soil samples from two distinct

geologic strata will not be comingled into one sample. If no evidence of contamination is evident (no VOCs identified for the full vertical extent), 1-foot soil samples will be collected from each 4-foot zone (0-4, 4-8, 8-12-foot), and/or the groundwater interface, to define the vertical extent of contamination. If the volume of soil retrieved in the split spoon sampler is not sufficient for the suite of analysis required, companion borings will be made in close proximity to the original sample location to obtain sufficient sample volume from selected depth intervals. All field observations will be documented on soil boring logs that will be included with the Remedial Investigation Report. If over excavation of the basement will be performed during remodeling of the facility, waste characterization samples of the soil will also be performed.

Consistent with DER-10, investigation derived wastes will be disposed within the borehole of origin unless free product, NAPL or gross contamination is present. If those conditions are evident or the borehole will be completed as a groundwater monitoring well, then excess spoils will be containerized in 55-gallon drums for future characterization and disposal.

2.3.1.2 Soil Sample Laboratory Analysis

All soil samples collected for analysis will be placed in pre-cleaned laboratory provided containers and delivered to a NYS certified laboratory under chain of custody. Soil samples collected from each of the soil borings, along with a blind duplicate sample will be submitted for analysis in accordance with Analytical Services Protocol (ASP). The soil samples will be analyzed for the full TCL VOCs, TCL SVOCs, TAL Metals, PCBs and Pesticides analysis. Sample reports will include ASP Category B deliverables to allow for third party data usability review. All data will be submitted in EQuIS Electronic Data Deliverables (EDD) data package.

A soil sample will be collected from the boring in the area of existing monitoring well MW-05 for analysis of soil oxidant demand (SOD). The SOD analysis will be used to determine if injection of hydrogen releasing compound (HRC) is viable in the apparent source area.

2.3.2 Groundwater Investigation

2.3.2.1 Installation of Groundwater Monitoring Wells

Four groundwater monitoring wells were previously installed adjacent to the site on City of Rensselaer ROW or owned property. One of the previously installed wells has historically been dry (MW-03) and one had insufficient recharge to collect samples for complete analysis (MW-04).

Three new monitoring wells will be installed within soil borings at locations shown on Figure 5, to replace and/or supplement the existing monitoring well network. The three monitoring wells will be installed on City of Rensselaer ROW adjacent to the site. One, MW-06, will be installed to the north of existing monitoring well MW-03, which was dry during the prior investigation. Proposed monitoring well MW-07 will be installed through the concrete slab at the east side of the structure, which is the suspected location of the waste dumpster during prior dry cleaning operations at the site. Proposed monitoring well MW-08 will be installed down gradient and west of existing monitoring well MW-05, which had significant groundwater contamination during the prior investigation. The exterior groundwater monitoring wells will be installed using

hollow stem auger drilling methods. The wells will be installed to a sufficient depth to intersect the groundwater table.

Each exterior monitoring well will be constructed of two-inch flush-joint PVC riser pipe with 10 feet of slotted pipe (screen) set at an appropriate depth for the hydrologic conditions at the site. Coarse, clean sand will be packed to approximately two feet above the top of the screen to improve the interconnection with the adjacent aquifer. A one-foot bentonite seal will be installed above the sand pack. The remainder of the annular space will be sealed with a bentonite cement grout to further assure that water from the surface will not infiltrate through the disturbed soil adjacent to the riser pipe. A lockable cap will be installed on the monitoring well. A flush mounted steel protective curb box will be installed over the exposed riser pipe to prevent vandalism and unauthorized access.

Three to four interior monitoring wells will be installed within soil borings in the basement of the structure, if possible and if determined to offer additional information. The interior monitoring wells will be installed within smaller diameter hand installed borings. Interior monitoring wells will be one- inch flush-joint PVC riser pipe with 10 feet of slotted pipe (screen) set at an appropriate depth for the hydrologic conditions at the site. The depth, number and location of the interior monitoring wells may be changed based on the results of the exterior drilling program. NYSDEC will be consulted prior to making any changes in the depth, number and location of interior monitoring wells.

At least 24-hours following the installation of the monitoring wells, each well will be developed to remove sediment and increase interconnection with the adjacent aquifer. Development of the wells will be performed by bailing methods. Due to the known slow recharge previously observed, bailers will be the preferred development method. Dedicated low flow sampling equipment (bladder pumps) may also be utilized. Groundwater field parameters will be monitored during well development, including: pH, specific conductivity, temperature, TDS, ORP, DO and turbidity. All development water will be placed in 55-gallon drums for future characterization and disposal.

2.3.2.2 Groundwater Sample Collection

After allowing the monitoring wells to settle for at least two weeks after installation, the monitoring wells will be purged and groundwater samples will be collected. Prior to sample collection each well will be purged of three to five well volumes. Groundwater field parameters will be monitored during well purging, including: color, pH, specific conductivity, temperature, TDS, ORP, DO, turbidity, odors, sheen, etc. If prior well development indicates insufficient recharge for adequate sample collection, Hydrasleeve™ no purge samplers may be utilized.

Groundwater samples will be collected from each of the new monitoring wells and the four previously installed monitoring wells (MW-01, MW-03, MW-04, MW-05), if feasible. As stated above, existing monitoring well MW-03 was previously dry and existing monitoring well MW-04 did not have sufficient recharge for additional sample collection beyond the VOCs. Sampling of the wells will be performed by bailing or low flow sampling methods (i.e. bladder pumps). All samples will be collected with pre-cleaned dedicated Teflon bailers with VOC type adapters

or dedicated low flow sampling equipment (bladder pumps). Three-four monitoring wells will be sampled for the full suite of parameters, including: TCL VOCs, TCL SVOC, TAL metals, PCBs and Pesticides. NYSDEC will be conferred with prior to selecting the wells to be sampled for the full suite of parameters. All others will be sampled for TCL VOCs only. Due to the known slow recharge previously observed, TCL VOC samples will be collected first, followed by TAL metals, PCBs and Pesticides. TCL SVOC samples, which require the most groundwater, will be collected last. Due to the potential for high turbidity in the purged groundwater, non-filtered and field filtered samples for metals analysis will be collected during the initial sampling round if the turbidity exceeds 50 NTU. Groundwater samples will be placed in laboratory provided sampling vials and/or containers. Note a blind duplicate sample will be also collected for laboratory analysis from one of the monitoring wells.

2.3.2.3 Groundwater Sample Analysis

All groundwater samples collected for analysis will be placed in pre-cleaned laboratory provided vials and/or containers and delivered to a NYS certified laboratory under chain of custody. Groundwater samples collected from up to eight monitoring wells, along with a blind duplicate sample will be submitted for analysis in accordance with Analytical Services Protocol (ASP). All groundwater samples will be analyzed for TCL VOCs. Three to four selected locations will have the groundwater samples analyzed for TCL VOCs, TCL SVOCs, TAL Metals, PCBs and Pesticides. The groundwater sample collected from existing monitoring well MW-05 will also be analyzed for SOD, pH, ORP, DO, Nitrate, Total Manganese, Dissolved Manganese, Total Iron, Dissolved Iron, Sulfate, BOD, and COD, to determine the feasibility of injecting HRC in the apparent source area. Sample reports will include ASP Category B deliverables to allow for third party data usability review. All data will be submitted in EQuIS Electronic Data Deliverables (EDD) data package.

2.3.2.4 Investigation Derived Waste Management

All soils and water generated during the investigation will be placed in 55-gallon drums and stored in a protected area on the property until characterized. All soil and water generated during the investigation is considered hazardous waste until proven otherwise and approved by NYSDEC. Disposal of all waste as hazardous waste may be more cost effective than the expense of waste characterizations. The decision on waste disposal will be made based on the quantity and costs for characterization. Transport and disposal will be performed by a contracted waste broker.

2.3.2.5 Decontamination

All equipment coming into contact with the sub-surface soils during the soil boring and monitoring well installation will be decontaminated between samples. Augers, rods, and any other equipment will also be decontaminated between borings. Decontamination will consist of an Alconox wash, followed by a potable fresh water rinse. A decontamination pad will be constructed and all wash water recovered and placed on 55-gallon drums for appropriate disposal, if determined necessary after characterization.

2.3.3 Hydraulic Conductivity Testing

Falling head (slug) tests will be performed on two to three monitoring wells (existing MW-05 and proposed MW-07 and MW-08) to determine the hydraulic conductivity. Based on the data from the prior soil borings, the subsurface is mostly silt and/or clay, which is assumed to have a relatively low hydraulic conductivity. The slug tests will be performed using an InSitu Mini Troll (or equivalent) pressure transducer, set in the well at an appropriate depth connected to a computer monitoring system. A solid slug of known volume or a know volume of potable water will be rapidly introduced to the well. "Falling head" water levels will be recorded as the water level within the well returns to static conditions. At least two tests will be performed on each monitoring well. Hydraulic conductivity of the formation will then be determined using the Aqtesolv® suite of computer programs.

2.3.4 Soil Gas Survey

2.3.4.1 Introduction

A soil gas survey will be performed in the basement of the structure to screen for a potential source area. It should be noted that the soil gas survey is a qualitative field survey to be performed as a preliminary screening for the potential contaminant source location(s). The soil gas survey will be performed prior to the installation of any interior soil borings.

The survey will be initiated in the eastern half of the basement, in the area of the concrete slab, suspected of being the base of the former dry cleaning equipment and adjacent to the suspected waste line. Initially fifteen (15) survey points, based on a 10-foot grid spacing, in the eastern half of the basement will be installed, sampled and analyzed (See figure 5). Four additional points, based on a 20-foot grid spacing may be installed in the western area of the basement, based on the results if the initial evaluation and consultation with NYSDEC. A level of 20 parts per billion (ppb), slightly above the instrument method detection limit, will be used as the initial baseline, from which to make a qualitative evaluation of soil vapors. A comparison of the results from the initial 15 sampling points will then be made in an attempt to locate the source area(s). The baseline may be revised after consulting with NYSDEC depending on the concentrations of target VOCs identified. If an area is identified with target VOCs exceeding 100 times the baseline, that area will likely be the source. Additional sampling points may be installed, sampled and analyzed if the source area can not be determined, or if the data is not definitive. Additional sampling points will be installed only after consultation with NYSDEC. The instrument will be calibrated to target chlorinated VOCs associated with dry cleaning and the associated break down products.

2.3.4.2 Methodology

2.3.4.2.1 Soil Gas Sampling

Sampling locations are prepared by using a "slam bar" to drive a 5/8-inch solid steel rod to a maximum depth of four feet, removing it and inserting a 1/2- inch diameter hollow aluminum tube into the hole to maintain the opening in the shallow-vadose zone. Care is taken to ensure that the tube is not plugged or inserted into any high moisture-laden material or groundwater.

Following placement of the aluminum tube, bentonite will be packed and hydrated into the annular space around the tube at the top of the probe hole to prevent potential infiltration of surface air during sampling. Where the concrete floor is present, a hammer drill will be utilized to penetrate the concrete, prior to proceeding with the "slam bar".

Soil gas samples are collected with a 125-millimeter gas-sampling bulb. The sampling bulb consists of a wide glass tube with Teflon stopcock valves at each end and a septa in the center of the glass wall to allow for sample withdrawal. The top of the aluminum tube in the probe hole is connected with dedicated 1/2-inch polyethylene tubing to one of the valves of the gas-sampling bulb. The other bulb valve is connected with tubing to a portable vacuum pump (SKC model 224-43XR). The vacuum pump withdraws soil gas up through the subsurface probe and glass bulb at a flow rate of 3 liters per minute until approximately 6 liters is purged from each probe hole. Soil gas is contained in the glass bulb by closing the valve nearest the pump first, then stopping the pump. The other valve is left open to the soil gas source for approximately 10 seconds to allow the system to come to equilibrium pressure. Following this, the second valve is closed and the sample removed for analysis.

The dedicated polyethylene tubing is discarded and replaced for each new sampling location. All samples are analyzed within two hours of collection. A needle is inserted through the septa of the sampling bulb and a sample is withdrawn using a 500-microliter (UL) syringe for injection into the gas chromatograph (GC).

2.3.4.2.2 Analytical Methodology

A Photo Vac 1OS70 gas chromatograph (GC) will be set up on-site and equipped with a photoionization detector (PID) with an on-board computer, which is programmed to analyze samples for the target volatile organic compounds. The Photo Vac GC analyzes gaseous samples and is capable of generating quantitative data specific to each compound. After injection into the instrument, the gaseous sample passes through a chromatographic column prior to the PID. The various VOCs pass through this column at different rates and thus reach the detector at different times after the injection. A strip-chart record of detector response versus time is obtained during each analysis and peaks on this strip-chart record manifest the presence of VOCs in the sample.

The portable GC measures two parameters for each peak observed during an analysis. First, the length of time is measured between the initial injection of the sample and the detection of the peak. This time is known as the retention time. Each VOC has a characteristic retention time relative to those of other compounds. For example, the retention time of toluene is greater than that for TCE. Retention times allow the identification of VOCs in the sample. Second, the portable GC integrates the VOCs in the detector response to measure the area under the peak. The area is measured in millivolt seconds (mv-s) and is proportional to the concentration of the compound in the sample.

Prior to the start of field activities, the instrument is calibrated to recognize retention times and convert peak areas into concentrations for the target VOCs. A standard is prepared by injecting a measured volume of headspace over a pure compound (i.e., TCE) into one liter glass bulb that is thoroughly flushed with organic free (ultra zero grade) air. The concentration of the standard

is calculated by using the ambient temperature, the vapor pressure of the compound at that temperature, the noble gas law and other related equations.

Various VOC compounds can be pre-programmed into the portable GC library by sequentially analyzing each standard. Cis-1,2-dichloroethene, tetrachloroethene (PCE), trichloroethene (TCE), vinyl chloride and carbon tetrachloride will be programmed into the GC library as target VOCs. A syringe is used to withdraw 250 micro liters (UL) of the headspace gas and inject the vapor into the instrument for analysis. A peak is detected for the standard and recognized, but not identified or quantitated by the instrument; the peak is simply recognized as having a certain retention time and peak area. The analyst enters both the identity and concentration of the standard and repeats this process for each of the remaining target VOCs. At the end of the initial calibration, the portable GC can identify and quantitate the peaks associated with the target VOC.

Other peaks, which are recognized during the analysis, remain unidentified and a retention time and peak area are reported rather than a compound and concentration. The retention time and detector response is influenced by other conditions such as the internal temperature of the instrument and the rate of gas flow through the column. Although regulated, some variations in these conditions occur and act to shift the retention times and response factors of the target VOCs. Thus continuing calibrations are routinely performed.

The continuing calibration is performed by injecting a standard, into the portable GC for analysis. Using a keyboard command, the analyst instructs the instrument to recalibrate the library. After the peak is detected, the analyst enters both the identity and concentration. The retention times and response factors for all target VOCs in the library are then linearly adjusted relative to that calibration standard.

At a minimum, a continuing calibration is performed during fieldwork. However, since field conditions tend to change, i.e., temperature as the day progresses, the instrument may be recalibrated throughout the day. The analyst will monitor the retention time for the shifts (caused by the temperature fluctuations) in excess of approximately 5%. Retention time shifts of this magnitude or greater would result in the inability of the instrument to identify and quantitate peaks which were detected.

The PID is coupled to a 10.6 electron-volt ultraviolet lamp, which is capable of ionizing all of the VOC target analytes during the survey. However, the detector's sensitivity for these compounds may vary. Sample analyses are conducted by injecting with a syringe, 250 UL (micro liter) aliquots of sample vapors into the GC; comparisons of sample instrument responses will be made to that of calibration standards previously into the GC memory. Documenting the analysis, the GC prepares a strip-chart record detailing the concentration of recognized compounds and the raw instrument response of "unknown" compounds detected in the sample. In the event that sample results are above the linear range of the instrument calibration, a smaller aliquot is injected and the sample results are corrected for the "dilution factor."

2.3.4.2.3 Quality Assurance/Quality Control

A "dry run" may be performed after any sample that shows very significant peaks or periodically throughout the day to monitor any residual column contamination. A dry run is performed by starting the GC like a normal injection but without the insertion of the syringe. Frequent calibrations of the instrument can also confirm potential carryover contamination on the 500 UL syringe used to inject most of the soil gas samples throughout the day. A blank sample of ultra zero grade air in the 125 ml glass sampling bulb can also be run to show any potential cross contamination from the syringe or sampling bulb or both.

Decontamination of the 5/8-inch steel rod is performed following the preparation of each sample location. The rod is rinsed with clean tap water and washed with Liquinox™ detergent, and final rinsed with distilled water. Each aluminum tube will be cleaned prior to mobilization and is dedicated to only one soil sampling location; therefore, field decontamination is not required.

The polyethylene tubing which connects the aluminum probe to the glass-sampling bulb is dedicated and therefore discarded following each sample collection. In order to minimize potential carryover or cross contamination, repeated flushing with purified air through the glass sampling bulb and syringes is conducted between samples.

Method Detection Limits (MDL's) for BTEX (Benzene, Toluene, Ethylbenzene and Xylenes) and most chlorinated compounds are in the range of 10-15 ppb. Background concentrations on the syringe and the GC column are minimal and are factored into any reported values of results.

2.3.5 Surface Soil Sampling

Surface soil samples will be collected at the northeast corner of the property, adjacent to the basement door (future loading access) to evaluate for potential dermal exposure. There is a limited area of the site, which is not occupied by the building or paved surfaces. Two soil samples will be collected in the area for analysis for TCL VOCs, TCL SVOCs, TAL Metals, PCBs and Pesticides. The samples will be collected with clean stainless steel sampling equipment. Surface soils samples collected from 0 to 2-inches will be analyzed for TCL SVOCs, TAL Metals, PCBs and Pesticides. Surface soil samples from 0 to 6-inches will be analyzed for TCL VOCs. The samples will be placed in laboratory provided containers and delivered to a New York State ELAP certified laboratory under formal chain of custody procedures. Sample reports will include ASP Category B deliverables to allow for third party data usability review. All data will be submitted in EQuIS Electronic Data Deliverables (EDD) data package.

2.3.6 Site Survey

Upon completion of the drilling program, each borehole and completed well will be surveyed to establish horizontal locations. Monitoring wells will be surveyed and tied to the prior survey to determine the measuring point elevation, which will be used to determine groundwater flow direction and gradient.

2.3.7 Tracing Waste Lines

Site inspection indicates the waste lines exit the structure near the southeast corner, along

Partition Street. Existing waste lines in the basement appear to collect waste from multiple locations, including adjacent to the concrete slab, assumed to be the base for the dry cleaning equipment. The existing waste line appears to exit the structure on the south side. During the original installation of MW-05, a pipe appeared to have been encountered and MW-05 relocated. This may be the line connecting the structure to the municipal sewer. Attempts will be made to trace the waste line and inspect the line by TV methods to confirm that it connects to the municipal sewer and/or determine if there are any breaks in the line that could impact the subsurface. In the event the TV survey is not feasible, attempts will be made to snake the line to confirm that it is still open to the sewer.

2.3.8 Evaluation of Interior Building Materials

Interior building materials in the assumed area of the former dry cleaning equipment consist primarily of a plywood sub-floor overlying wood joists. The interior building materials may be contaminated. It is anticipated that the plywood sub-floor will be removed and replaced. Samples of the interior building materials will be collected, crushed and placed in a sealed container for head space analysis utilizing a PID for preliminary evaluation. While not considered part of the Brownfield project, waste characterization will be performed prior to disposal.

2.3.9 Design Sub-slab Depressurization System (SSDS)

A desk top design of a sub-slab depressurization system will be performed, as a mitigative option, based on utilizing a gravel sub-base for new basement slab. It is understood that performance based testing of the SSDS will be performed once the system and new basement floor have been installed along with interior air monitoring after 30 days of operation.

2.3.10 Data Usability Summary Report

All analytical data will be submitted to a third party DER pre-approved data validation specialist, as described in the Quality Assurance Project Plan (See Section 3.0).

2.4 Report Preparation

Upon completion of the tasks described above and receipt of the validated analytical results, a Remedial Investigation Report and a Remedial Work Plan (RWP) will be prepared that will be consistent with the general requirements set forth in DER-10. The report will include a summary of all field work, data collected, summary data tables, soil boring logs, monitoring well construction logs, results of the sub-slab communication performance test, analytical results, photographs, figures and maps. The report will provide information to address the following:

- To better define the nature and extent of contamination on the Site.
- To identify if residual contaminant source area(s) are present on the Site.
- Characterize the site to determine if remedial action is needed to protect human health and the environment.
- Develop a remedial plan for the protection of human health and the environment.
- To produce data of sufficient quantity and quality to support the remediation of the Site, if warranted.

- Develop a plan that allows for reuse of the property, while accounting for protection of human health and the environment.

3.0 QUALITY ASSURANCE PROJECT PLAN

3.1 Introduction

A Quality Assurance Project Plan (QAPP) has been prepared to describe; methods of sample collection, handling and preservation; and protocols to be used for sample analysis and evaluation. Environmental media to be sampled includes soil and groundwater. The QAPP is included in Appendix C.

3.2 Data Usability Summary Report

The data package will be sent to a NYSDEC pre-qualified independent third party data validation specialist for evaluation of the accuracy and precision of the analytical results in accordance with DER-10, Appendix 2B. The Data usability Summary Report (DUSR) will provide a determination of whether the data meets the project specific criteria for data quality and data use.

4.0 HEALTH AND SAFETY PLAN (HASP)

4.1 Introduction

Field tasks will be performed using industry standard health and safety procedures. A site specific Health and Safety Plan (HASP) has been developed for use by the field personnel during all field activities. The plan details the known and potential hazards at the site and the appropriate monitoring and emergency procedures. The HASP is included as Appendix D.

4.2 Community Air Monitoring

The Community Air Monitoring Plan will be implemented during all intrusive work at the site. Where intrusive operations are planned, community air monitoring will be performed to protect workers and the downwind community. Breathing zone and perimeter air monitoring will be performed during all intrusive work at the site. The breathing zone and perimeter air monitoring will be continually monitored using PID instrumentation capable of measuring total volatile organic compounds in air at concentrations as low as 1 part per million (PPM). The air in the work and perimeter zones also will be visually monitored for dust generation. If sustained VOC measurements above 5 ppm or visible dust generation are observed, down gradient monitoring will be implemented and the intrusive work will be temporarily halted for evaluation. More rigorous monitoring of VOCs and dust using recordable meters will be implemented in accordance with the NYSDOH Generic Community Air Monitoring Plan (CAMP) if sustained VOC measurements above 5 ppm and/or visible dust generation are observed. A copy of the CAMP is provided with the Health and Safety Plan in Appendix D.

5.0 PROJECT ORGANIZATION

The proposed responsibilities of the key personnel are summarized below:

Travis Mitchell, PE, **Environmental Design Partnership (EDP)** will be the Engineering Manager for the work. Mr. Mitchell is a professional engineer, licensed in the State of New York. Mr. Mitchell has over 20 year's expertise in various aspects of engineering. In this capacity Mr. Mitchell will be responsible for the successful completion of each task, adherence to the work plan, schedule and budget and final review of all submittals.

Mr. Travis Mitchell, P.E.
Environmental Design Partnership, LLP
900 Route 146
Clifton Park, NY 12065
(518) 371-7621

Kirby Van Vleet, Hydrogeologist, Hanson Van Vleet, LLC (HVV) will be the project manager responsible for development of the work plan, direct oversight, coordination and supervision of field personnel, coordination of subcontractors, direction of the field program including maintaining quality assurance policies that pertain to all aspects of sampling, well drilling and development. Mr. Van Vleet will also be the laboratory and data coordinator for the project. Mr. Van Vleet is a licensed professional geologist in the States of Pennsylvania and Wyoming (there is currently no licensing of professional geologists in New York State). Mr. Van Vleet has over 27 year's expertise as a geologist, dealing with hydrogeologic and environmental issues.

Mr. Kirby Van Vleet, PG
Hanson Van Vleet, LLC
902 Route 146
Clifton Park, NY 12065
(518) 371-7940

James Gironda, Geologist, HVV will be the field geologist responsible for implementing the field effort and the on site health and safety officer. Responsibilities will include sample collection, well development and directing of all subcontractors, and ensuring the successful completion of all field activities. Mr. Gironda has over ten years experience in hydrogeologic and environmental geologic field investigations.

Mr. James Gironda
Hanson Van Vleet, LLC
902 Route 146
Clifton Park, NY 12065
(518) 371-7940

Aztech Technologies, Inc., (subcontractor) will design the sub-slab depressurization system incorporating solar technologies from their sister company, Aztech Energies. Aztech

Technologies, Inc. will perform performance based testing of the SSDS once the system and new basement floor have been installed along with interior air monitoring after 30 days of operation.

Aztech Technologies, Inc.
5 McCrea Hill Road
Ballston Spa, NY 12020
(518) 885-5383

Aquifer Drilling and Testing, Inc. (ADT) (subcontractor) will provide all soil boring and monitoring well installation services. ADT has years of expertise performing soil boring services, installing monitoring wells and working on contaminated sites.

Joe Miranda
Aquifer Drilling and Testing, Inc.
430 Hudson River Road
Waterford, NY 12188
(518) 326-1441

Phoenix Environmental Laboratories, Inc., will provide laboratory services in support of the project. Phoenix is certified by NELAC, and is New York State ELAP certified (#11301) to provide ASP Category B deliverables. Phoenix is experienced and qualified to provide all data in EQuiS format.

587 East Middle Turnpike
PO Box 370
Manchester, CT 06040
(860) 645-1102

Data Validation Services will review all analytical data and provide the Data Usability Summary Report. Ms. Judy V Harry is approved by the NYSDEC to provide data validation services.

120 Cobble Creek Road
P.O. Box 208
North Creek, NY 12853
(518) 251-4429

Specialized Environmental Monitoring (SEM) will perform the soil gas survey within the basement of the facility. SEM has years of expertise performing soil gas survey's on contaminated and hazardous sites.

4256 State Route 50
Saratoga Springs, NY 12866
(518) 587-5510

6.0 PROJECT SCHEDULE

The project schedule has been designed in a specific order of events, allowing for modification of the scope of work (soil boring locations and number of interior soil borings) as the project progresses. The order of events is summarized below:

1) Video of sewer line in basement of 800 Broadway.
2) Interior soil gas survey.
3) Installation of exterior monitoring wells.
4) Installation of interior monitoring wells.
5) Collection of groundwater samples.

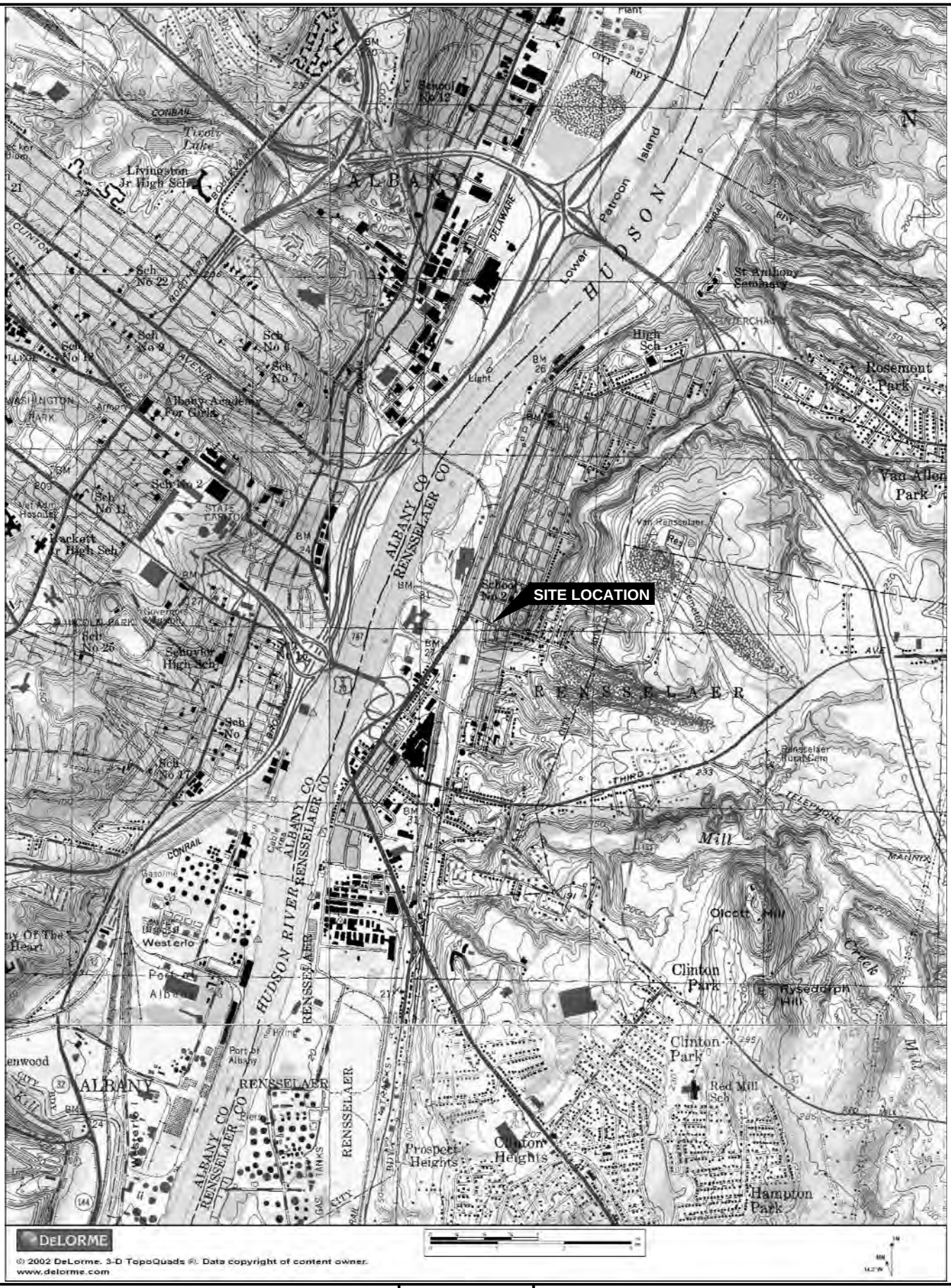
A proposed general schedule of planned remedial investigation activities is shown of Figure 6.

7.0 REFERENCES

ARCADIS, September 26, 2012, Phase 1 Environmental Site Assessment, 824 Broadway and (North of) 1 Partition Street, Rensselaer, New York.

ARCADIS, August 2, 2013, Phase II Environmental Site Assessment, 824 Broadway and (North of) 1 Partition Street, Rensselaer, New York.

FIGURES



SITE LOCATION MAP
800 BROADWAY
RENNSELAER, NEW YORK

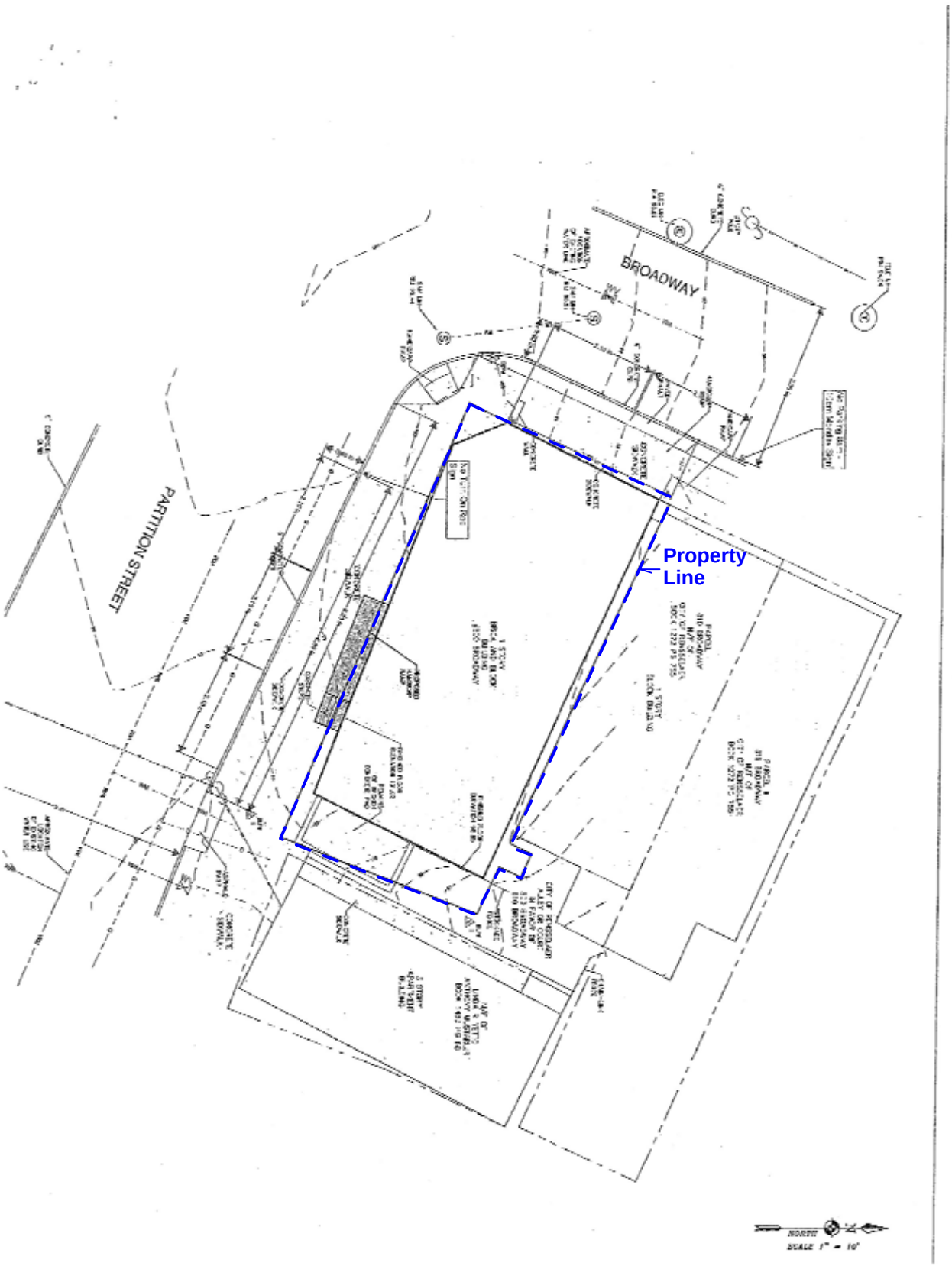
FIG-1

HANSON VANVLEET, LLC
WATER SUPPLY & ENVIRONMENTAL CONSULTANTS
902 ROUTE 146 CLIFTON PARK, NEW YORK 12065 (518) 371-7940 FAX (518) 371-5885

AERIAL PHOTOGRAPH OF SUBJECT AREA
800 BROADWAY
RENNSELAER, NEW YORK

FIG-2

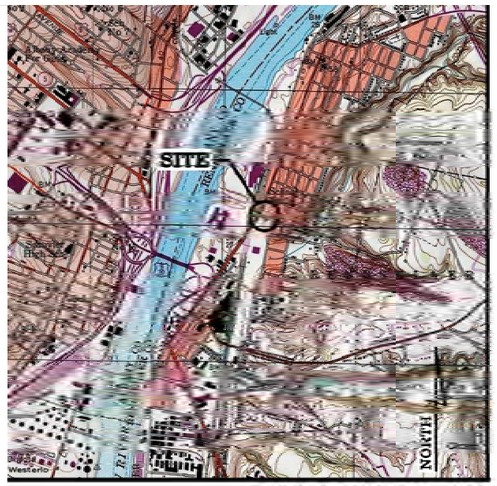
HANSON VANVLEET, LLC
WATER SUPPLY & ENVIRONMENTAL CONSULTANTS
902 ROUTE 146 CLIFTON PARK, NEW YORK 12065 (518) 371-7940 FAX (518) 371-5885



SITE SURVEY MAP
800 BROADWAY
RENNSELAER, NEW YORK

FIG-3

HANSON VANVLEET, LLC
WATER SUPPLY & ENVIRONMENTAL CONSULTANTS
902 ROUTE 146 CLIFTON PARK, NEW YORK 12065 (518) 371-7940 FAX (518) 371-5885



SITE LOCATION MAP
SCALE: 1" = 2,000'

MAP REFERENCES:

1) INFORMATION COURTESY OF RENSSELAER COUNTY REAL PROPERTY TAX MAP
CITY OF RENSSELAER
SECTION: 115.52
BLOCK: 3
LOT No.: 18

MAP ENTITLED: "RENSSELAER SMALL LOTS"
FILED: RENSSELAER COUNTY CLERK'S OFFICE
UNDATED: OCTOBER 21, 1814
RECORDED: JUNE 14, 1832
PREPARED BY: EVERT VAN ALLEN
DRAWER 35, MAP No. 13

MAP ENTITLED: "MAP OF PROPERTY OF EAST ALBANY IN GREENBUSH"
FILED: RENSSELAER COUNTY CLERK'S OFFICE
RECORDED: JUNE 23, 1857
DRAWER 35, MAP No. 21

DEED REFERENCE:

1) **RECORD TITLE** WARRANTY DEED
GRANTOR: TRACY SIEDHOFF
GRANTEE: TM BAYLY DEVELOPMENT LLC
DATED: APRIL 29, 2013
RECORDED: JUNE 12, 2013
BOOK 5811 OF DEEDS AT PAGE 21

NOTES:

1) BOUNDARY SURVEY AS PREPARED FOR TM BAYLY DEVELOPMENT, LLC
2) NO FIELD MONUMENTATION SET.
3) ALL UNDERGROUND UTILITIES, IF ANY, NOT FIELD LOCATED.
4) THIS SURVEY WAS PERFORMED WAS PREPARED WITHOUT THE BENEFIT OF AN UP TO DATE ABSTRACT OF TITLE AND IS MADE SUBJECT TO WHATEVER STATE OF FACTS SUCH A DOCUMENTS MIGHT REVEAL.
5) THIS SURVEY WAS PREPARED WITH APPROXIMATELY 15 (MORE OR SHOW A INCL COVLI

LEGEND:

CONC. DENOTES CONCRETE
DIM. DENOTES DIAMETER
C.O.C. DENOTES FACE OF CURB
F.O.C.C. DENOTES FACE OF CONCRETE CURB
I.P.F. DENOTES IRON PIPE FOUND
M.W. DENOTES MONITORING WELL
N/F DENOTES NOW OR FORMERLY
PM DENOTES MADERA MOHAWK UTILITY POLE
O.H.U.L. DENOTES OVERHEAD UTILITY LINES
D.L.S.L. DENOTES OVERHEAD UTILITY SIGNAL LIGHTS
(69) DENOTES LOT NUMBER AS PER MAP REFERENCE No. 2
(7) DENOTES LOT NUMBER AS PER MAP REFERENCE No. 1

GRAPHIC SCALE

TRUE NORTH AT THE 74°30' MERIDIAN OF WEST LONGITUDE

LANDS N/F OF
THE CITY OF RENSSELAER, NEW YORK
BOOK 1685 OF DEEDS AT PAGE 311 (PARCEL A-III)
EASEMENT GRANTED TO 810 BROADWAY, LLC OVER THE PARCEL

LANDS N/F OF
STEPHANIE NOONAN
BOOK 5467 OF DEEDS AT PAGE 250
BRICK & WOOD FRAME BUILDING

LANDS N/F OF
810 BROADWAY, LLC
BOOK 5441 OF DEEDS AT PAGE 300
MASONRY BUILDING
BRICK BUILDING

S17°32'00"W 36.24'
S65°20'40"E 10.00'
S24°39'20"W 4.68'
S65°20'40"E 4.90'
N24°39'20"E 4.68'
S65°20'40"E 71.80'
N23°40'40"E 43.50'
N70°06'10"W 90.55'

Dry Cleaning Equipment Slab

AREA =
3,548± SQ.FT.

AOC-1

Existing Monitoring Well MW-05

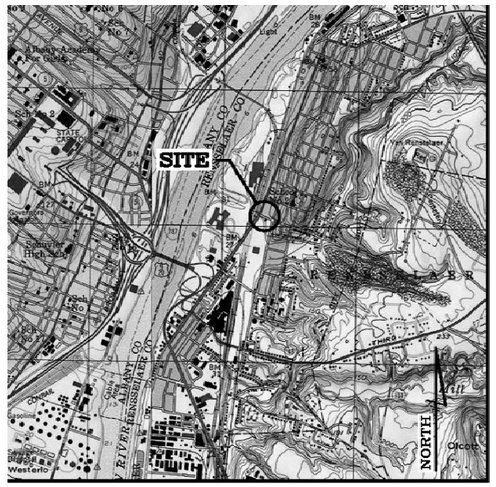
AOC-2

PARTITION STREET
(80' WIDE RIGHT OF WAY – AS PER MAP REFERENCE No. 2)

BROADWAY
(60' WIDE RIGHT OF WAY – AS PER MAP REFERENCE

Figure 4
BCP C442043
Areas of Concern (AOCs)

HANSON VANVLEET, LLC
WATER SUPPLY & ENVIRONMENTAL CONSULTANTS
902 ROUTE 146 CLIFTON PARK, NEW YORK 12065 (518) 371-7940 FAX (518) 371-5885



SITE LOCATION MAP
SCALE: 1" = 2,000'

MAP REFERENCES:

1) RENSSELAER COUNTY REAL PROPERTY TAX MAP
CITY OF RENSSELAER
SECTION: 143.52
BLOCK: 3
LOT No.: 18

MAP ENTITLED: "RENSSELAER STREET LOTS"
FILED: RENSSELAER COUNTY CLERK'S OFFICE
DATE: OCTOBER 27, 1814
RECORDED: JUNE 14, 1832
PREPARED BY: EVERT Van ALLEN
DRAWER 38, MAP No. 23

MAP ENTITLED: "MAP OF PROPERTY OF EAST ALBANY IN GREENBUSH"
FILED: RENSSELAER COUNTY CLERK'S OFFICE
RECORDED: JUNE 22, 1857
DRAWER 25, MAP No. 21

DEED REFERENCE:

1) **RECORD TITLE** WARRANTY DEED
GRANTOR: TRACY SIEDHOFF
GRANTEE: TIM BAYLY DEVELOPMENT LLC
DATED: APRIL 29, 2013
RECORDED: JUNE 12, 2013
BOOK 6811 OF DEEDS AT PAGE 217

NOTES:

1) BOUNDARY SURVEY AS PREPARED FOR TIM BAYLY DEVELOPMENT LLC.
2) NO FIELD MONUMENTATION SET.
3) ALL UNDERGROUND UTILITIES, IF ANY, NOT FIELD LOCATED.
4) THIS SURVEY WAS PREPARED WAS PREPARED WITHOUT THE BENEFIT OF AN UP-TO-DATE ABSTRACT OF TITLE AND IS MADE SUBJECT TO WHATEVER STATE OF FACTS SUCH A DOCUMENTS WOULD REVEAL.
5) THIS SURVEY WAS PREPARED WITH APPROXIMATELY 15 INCHES OF SNOW & ICE COVER.

LEGEND:

CONC. DENOTES CONCRETE
DIA. DENOTES DIAMETER
F.O.C. DENOTES FACE OF CURB
F.O.G.C. DENOTES FACE OF GRANITE CURB
I.P.F. DENOTES IRON PIPE FOUND
M.W. DENOTES MONITORING WELL
N/F DENOTES NOW OR FORMERLY
NG DENOTES NIAGARA MOHAWK UTILITY POLE
O.H.U.L. DENOTES OVERHEAD UTILITY LINES
O.T.S.L. DENOTES OVERHEAD TRAFFIC SIGNAL LIGHTS
(69) DENOTES LOT NUMBER AS PER MAP REFERENCE No. 2
[2] DENOTES LOT NUMBER AS PER MAP REFERENCE No. 3

MW-03 Existing Monitoring Well

MW-06 Proposed Soil Boring/Monitoring Well

Surface Soil Sampling Locations

Approximate Soil Vapor Sampling Locations

GRAPHIC SCALE
10 0 10 20 40

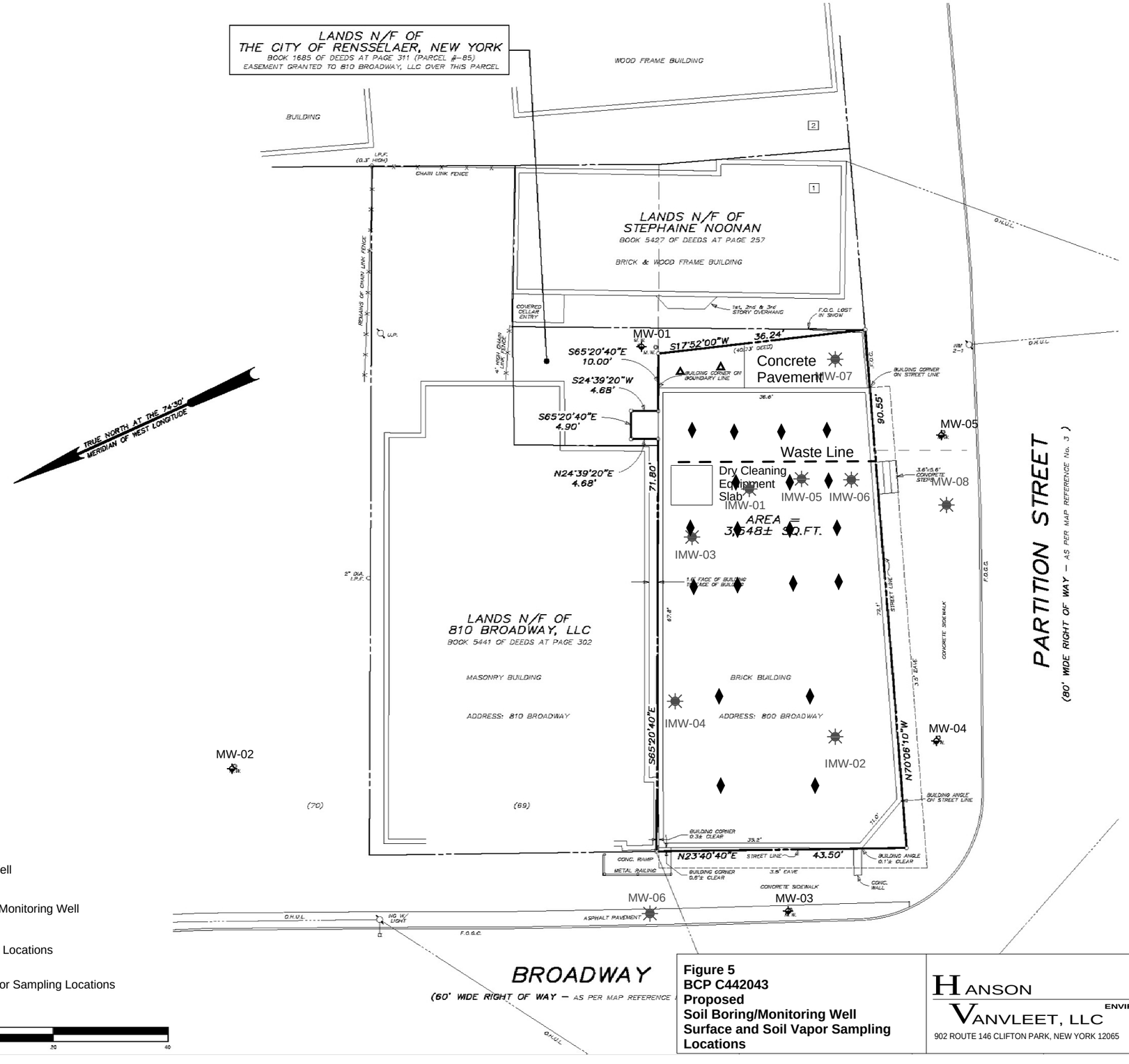


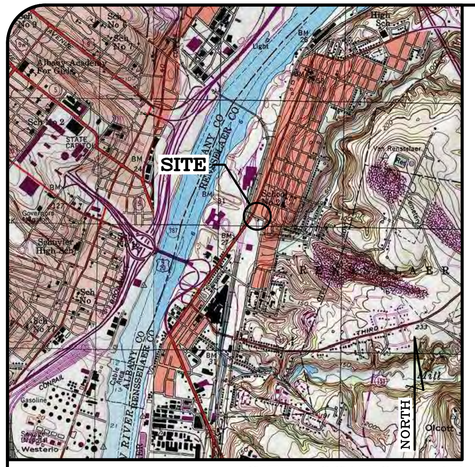
Figure 5
BCP C442043
Proposed
Soil Boring/Monitoring Well
Surface and Soil Vapor Sampling Locations

HANSON VANVLEET, LLC
WATER SUPPLY & ENVIRONMENTAL CONSULTANTS
902 ROUTE 146 CLIFTON PARK, NEW YORK 12065 (518) 371-7940 FAX (518) 371-5885

Figure 6
Schedule of Proposed Remedial Investigation Activities
Tim Bayly Property
800 Broadway
Rensselaer, New York
BCP Remedial Investigation
Site No.: C442043

	July 2015		Aug 2014	Sept 2014	October 2014				November 2014				Dec 2014	Jan 2015	Feb 2015	Mar 2015	Apr 2015	May 2015					June 2015				July 2015				August 2015					September 2015				October 2015				November 2015				December 2015				Jan 2016
Week Beginning	21	28		5	06	13	20	27	03	10	17	24					30	3	10	17	24	31	7	14	21	28	5	12	19	26	2	9	16	23	31	6	13	20	27	4	11	18	25	1	8	22	29	6	13	20	27	3
Remedial Investigation Tasks																																																			
Submittal of Citizen Participation Plan (CPP)																																																			
Submittal of Draft RI Work Plan (RIWP)																																																			
NYSDEC Review of Draft RI Work Plan																																																			
30 Day Public Comment Period																																																			
Finalize and NYSDEC Approval of RIWP/CPP																																																			
Solicit/Schedule Subcontractors																																																			
Mobilization for Field Work																																																			
Remedial Investigation Field Work																																																			
Laboratory Data Analysis																																																			
Third Party Data Usability Summary Report																																																			
Preparation of RI and RAWP																																																			
Submittal of RI and RAWP																																																			
45 Day Comment Period on RI and RAWP																																																			
NYSDEC Review and Approval of RI & RAWP																																																			

APPENDIX A
TIM BAYLY PROPERTY
SITE SURVEY



SITE LOCATION MAP

SCALE: 1" = 2,000'

MAP REFERENCES:

1) RENSSELAER COUNTY REAL PROPERTY TAX MAP
CITY OF RENSSELAER
SECTION: 143.52
BLOCK: 3
LOT No.: 18

MAP ENTITLED: "RENSSELAER STREET LOTS"
FILED: RENSSELAER COUNTY CLERK'S OFFICE
DATE: OCTOBER 27, 1814
RECORDED: JUNE 14, 1832
PREPARED BY: EVERT Van ALLEN
DRAWER 38, MAP No. 23

MAP ENTITLED: "MAP OF PROPERTY OF EAST ALBANY IN GREENBUSH"
FILED: RENSSELAER COUNTY CLERK'S OFFICE
RECORDED: JUNE 22, 1857
DRAWER 25, MAP No. 21

DEED REFERENCE:

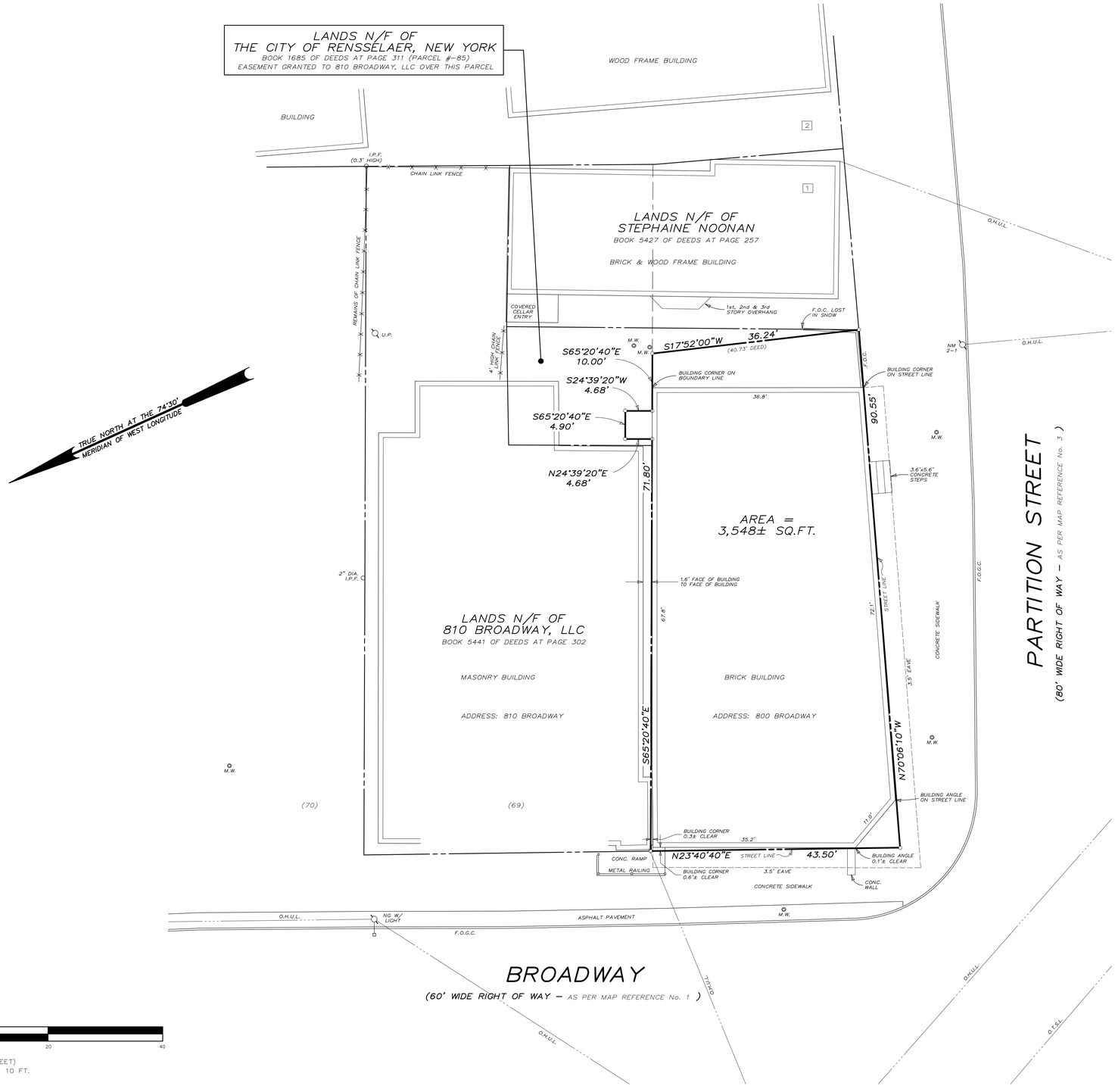
1) **RECORD TITLE** WARRANTY DEED
GRANTOR: TRACY SIEDHOFF
GRANTEE: TIM BAYLY DEVELOPMENT LLC
DATED: APRIL 29, 2013
RECORDED: JUNE 12, 2013
BOOK 6811 OF DEEDS AT PAGE 217

NOTES:

1) BOUNDARY SURVEY AS PREPARED FOR TIM BAYLY DEVELOPMENT LLC.
2) NO FIELD MONUMENTATION SET.
3) ALL UNDERGROUND UTILITIES, IF ANY, NOT FIELD LOCATED.
4) THIS SURVEY WAS PREPARED WAS PREPARED WITHOUT THE BENEFIT OF AN UP-TO-DATE ABSTRACT OF TITLE AND IS MADE SUBJECT TO WHATEVER STATE OF FACTS SUCH A DOCUMENTS WOULD REVEAL.
5) THIS SURVEY WAS PREPARED WITH APPROXIMATELY 15 INCHES OF SNOW & ICE COVER.

LEGEND:

CONC. DENOTES CONCRETE
DIA. DENOTES DIAMETER
F.O.C. DENOTES FACE OF CURB
F.O.G.C. DENOTES FACE OF GRANITE CURB
I.P.F. DENOTES IRON PIPE FOUND
M.W. DENOTES MONITORING WELL
N/F DENOTES NOW OR FORMERLY
NG DENOTES NIAGARA MOHAWK UTILITY POLE
O.H.U.L. DENOTES OVERHEAD UTILITY LINES
O.T.S.L. DENOTES OVERHEAD TRAFFIC SIGNAL LIGHTS
(69) DENOTES LOT NUMBER AS PER MAP REFERENCE No. 2
[2] DENOTES LOT NUMBER AS PER MAP REFERENCE No. 3



PARTITION SURVEY OF
LANDS OF
TIM BAYLY DEVELOPMENT LLC
LOCATED AT 800 BROADWAY
CITY OF RENSSELAER
RENSSELAER COUNTY, NEW YORK
FEBRUARY 21, 2014
(80' WIDE RIGHT OF WAY - AS PER MAP REFERENCE No. 3)

GRAPHIC SCALE
10 0 10 20 40
(IN FEET)
1 INCH = 10 FT.

CDGD 13 JOB 37

ENVIRONMENTAL DESIGN PARTNERSHIP, LLP
900 ROUTE 146 CLIFTON PARK, N.Y. 12065 (518) 371-7621
ENGINEERING LANDSCAPE ARCHITECTURE LAND SURVEYING

TIMOTHY J. McALONEN
P.L.S. 50,471
tmcalonen@edpllp.com

SHEET TITLE

REVISIONS DATE BY

SCALE: 1" = 10'

SHEET No.

APPENDIX B
ARCADIS PHASE II ESA

ARCADIS
Infrastructure · Water · Environment · Buildings

Imagine the result

City of Rensselaer

Phase II Environmental Site Assessment Report

824 Broadway and (North of) 1 Partition Street

USEPA BROWNFIELDS HAZARDOUS SUBSTANCES ASSESSMENT GRANT ASSISTANCE ID
No. BF-97249507-0

August 2, 2013

ARCADIS

Bruce R. Nelson, C.P.G.
Vice President

Christine Thomas
Geologist

Phase II Environmental Site Assessment Report

824 Broadway and (North of) 1 Partition Street

Prepared for:
City of Rensselaer

Prepared by:
ARCADIS of New York, Inc
855 Route 146
Suite 210
Clifton Park
New York 12065
Tel 518 250 7300
Fax 518 250 7301

Our Ref.:
05608003.0000

Date:
August 2, 2013

Tables

Figures

Appendices

Executive Summary

To evaluate three recognized environmental conditions identified in the Phase I Environmental Site Assessment, a Phase II Environmental Site Assessment was conducted at the 824 Broadway and (North of) 1 Partition Street site in Rensselaer, New York under a United States Environmental Protection Agency Brownfields Hazardous Substances Assessment Grant. The site consists of two parcels totaling approximately 0.09 acres. The site is currently vacant. Historically, a neighboring property was used as a dry cleaner.

The Phase II ESA includes soil, groundwater, soil vapor and ambient air sampling. Samples were collected on-site and off-site to evaluate potential contamination of the site. Results of the Phase II are summarized below.

- *824 Broadway – Volatile Organic Compounds (*VOCs) were not detected in soil or groundwater at concentrations exceeding standards. VOCs were detected in soil vapor and ambient air. No further action is recommended. If structures were constructed on the site, soil vapor intrusion monitoring or preventative controls may be required.

- *(North of) 1 Partition Street* – No impacted groundwater was identified on (North of) 1 Partition Street. No soil samples were collected from (North of) 1 Partition Street, but field screening with a PID did not detect impacted soil. Carbon tetrachloride and tetrachloroethene, two compounds commonly associated with dry cleaning solvents, were detected in soil vapor. No further action is recommended. If structures were constructed on the site, soil vapor intrusion monitoring or preventative controls may be required.

- *800 Broadway* – Tetrachloroethene was not detected at concentrations greater than 6 NYCRR Part 375 Soil Standards in surface soil samples collected inside the building at 800 Broadway. The sub-slab soil vapor and indoor air samples collected from 800 Broadway contained tetrachloroethene at concentrations that requires mitigation under the NYSDOH soil vapor/ indoor air matrices.

- *810 Broadway* – No VOCs were detected in the groundwater sump sample collected from 810 Broadway. The sub-slab soil vapor and indoor air sample collected at 810 Broadway contained concentrations of tetrachloroethene at concentrations that require monitoring under the NYSDOH soil vapor/indoor air matrices.

- *City Right of Way* – The groundwater sample collected at monitoring well MW-05 contained contaminants associated with chemicals historically used at dry cleaning facilities at concentrations greater than NYSDEC Class GA Standards. VOCs measured at monitoring well MW-4 did not exceed NYSDEC Class GA Standards. A groundwater sample could not be collected from

monitoring well MW-3 because the well was dry. VOCs associated with historic dry cleaning chemicals were measured in soil vapor samples collected within the City right of way. Soil samples collected from within the City right of way did not contain VOCs at concentrations that exceeded 6 NYCRR Part 375 Standards.

1. Introduction

The City of Rensselaer, New York (City) received a grant (ID: BF-97249507-0) under the United States Environmental Protection Agency's (USEPA) Brownfields Assessment Program to support economic development in the City through the identification, assessment, and redevelopment of Brownfield properties. This report summarizes the results of the Phase II Environmental Site Assessment (ESA) conducted at 824 Broadway and (North of) 1 Partition Street (site) with the objective of assessing recognized environmental conditions identified in the Phase I ESA conducted at the site in September 2012.

2. Site Description and Background

2.1 Site Location and Description

The site consists of two parcels in the central part of the City, approximately 1,300 feet east of the Hudson River, and is owned by the City. The addresses associated with the site as described in the 2012 City tax parcels are 824 Broadway and (North of) 1 Partition Street. The site totals approximately 0.09 acres, and is zoned as vacant land in a residential area. Neither of the site properties is developed. The property at (North of) 1 Partition Street consists of mostly grassy land that has a gentle downward slope to the north. The property at 824 Broadway consists of generally flat land with a slight downward slope to the west. The western portion of 824 Broadway is primarily covered with gravel and the eastern portion is primarily covered with vegetation.

Identified below are descriptions of land and land uses immediately adjacent to the 824 Broadway parcel. The 824 Broadway parcel is bordered to the west by Broadway, beyond which are railroad tracks and the Hudson River. To the east the property is bordered by the private garage to 1 Partition Street. To the north the property is bordered by a building occupied by American Legion Post, and to the south the property is bordered by 810 Broadway, which was the former City of Rensselaer Library and is currently vacant.

The land and land use immediately adjacent to the (North of) 1 Partition Street parcel includes the building at 800 Broadway, which appears to be vacant, to the west. To the east, (North of) 1 Partition Street is bordered by a multi-family dwelling. To the south the property is bordered by the former Roxy Dry Cleaners building, and to the north the property is bordered by vacant land associated with 810 Broadway (**Figure 1**).

The Phase I ESA conducted at the site (ARCADIS, 2012) identified evidence of recognized environmental conditions associated with the site as defined by the American Society for Testing and Materials (ASTM) Standard E 1527-05 guideline for Phase I ESAs. Recognized environmental conditions (RECs) identified in the Phase I ESA include:

- The historical use of 800 Broadway as Roxy Cleaners from at least 1958 to 1978;
- The historical use of 908 Broadway as John Joseph's Dry Cleaning; and
- A petroleum release at the Stewart's at 12 Partition Street that was not closed to meet standards.

2.2 Geology/Hydrology

Surficial geology on the site is mapped as alluvium or recent deposits (Cadwell et al., 1986). These deposits generally are confined to floodplains within a valley, consisting of oxidized, non-calcareous, fine sand to gravel and may be overlain by silt. Based on the United States Department of Agriculture (USDA) Soil Conservation Service and the National Cooperative Soil Service (NCSS) soil survey for Rensselaer County, New York, the soils within the general vicinity of the site consist of moderately well drained silt loam.

Bedrock was not encountered during drilling conducted during the Phase II ESA. Based on this information, the depth to bedrock at the site is greater than 21 feet below ground surface (bgs). Unconsolidated materials observed during the Phase II ESA generally included sand, silty sand, and clay. Based upon regional mapping, the site is underlain by Ordovician Canajoharie Shale (Fisher et al., 1970). Soil boring logs are presented in **Appendix A**. Based on water level measurements during the Phase II investigation (**Table 1**), shallow groundwater flow at the site is to the north to northwest (**Figure 2**).

3. Site Investigation

The scope of work for the Phase II ESA was designed to assess environmental media at the site that may have been affected or potentially will be affected in the future by the past site uses or past uses of adjacent properties. The investigation was conducted in accordance with the USEPA-approved Quality Assurance Project Plan (QAPP)

(ARCADIS, 2013). The scope of work included: surface soil sampling; subsurface soil sampling; sump groundwater sampling; the installation, development and sampling of monitoring wells; indoor air sampling; outdoor air sampling; sub-slab air sampling; and soil vapor sampling. Photographs of site activities are provided in **Appendix B**. A New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) and New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocol (ASP)-approved analytical laboratory analyzed samples collected during the investigation. ASP Category B data packages were produced for each sample. A Data Usability Summary Report (DUSR) was prepared by a third party data validator for the analytical data to ensure that the quality of the data was sufficient to characterize site conditions. The DUSR is provided in **Appendix E**. Laboratory analytical reporting forms are provided in **Appendix F**.

4. Sampling and Laboratory Results

From April 11 through April 16, 2013 ARCADIS of New York, Inc. (ARCADIS) was on-site with Aquifer Drilling and Testing (ADT) to install groundwater monitoring wells and collect subsurface soil samples. Wells were developed on April 18, April 19, and May 29, 2013. On April 15, April 23, and June 12, 2013, ARACDIS was on-site to collect groundwater samples. ARCADIS collected soil vapor and ambient air samples on April 22 and May 29, 2013. Samples were collected at four properties (800 Broadway, 810 Broadway, 824 Broadway and (North of) 1 Partition Street) and in the City right of way (ROW). Monitoring well and soil vapor point locations were selected on each side of 800 Broadway, which was Roxy Dry Cleaners. Since there are currently no buildings on the site, sub-slab vapor samples and indoor air samples were collected from 810 Broadway and 800 Broadway. The sampling results on the City right of way, 800 Broadway and 810 Broadway will have implications for the end use of the site. Off-site samples were collected to investigate if contaminants could potentially affect the site in the future.

Sample collection and handling activities were conducted in general accordance with the QAPP. Soil and groundwater samples were sent under chain of custody to Chemtech Environmental Laboratory (Chemtech) of Mountainside, New Jersey. Soil results are shown in **Table 2**. Groundwater results are shown in **Tables 3** and **4**. Air samples were sent under chain of custody to ALS Environmental Laboratories of Simi Valley, California. Air sample results are shown in **Table 5**.

4.1 Surface Soil Sampling

As shown on **Figure 3**, two surface soil samples (BRO-SS-01 and BRO-SS-02) were collected from beneath the floor, in areas where the concrete floor had previous been removed, in the building at 800 Broadway to evaluate potential contaminants associated with the former use of the property as a dry cleaners. Surface soil samples were collected from the southwest and northeast corners of the concrete foundation that formerly held dry cleaning equipment. Surface soil was analyzed for TCL VOCs by USEPA Method 8260C.

4.2 Surface Soil Results

No VOCs were detected at concentrations greater than 6 NYCRR Part 375 Unrestricted Use (Unrestricted Use) or 6 NYCRR Part 375 Commercial Use (Commercial Use) Standards, as shown in **Table 2**.

4.3 Subsurface Soil Sampling

Soil borings were advanced at (North of) 1 Partition Street (MW-01), 824 Broadway (MW-02), and in the City ROW (MW-03 through MW-05) to evaluate if potential contaminants associated with the historical use of 800 Broadway as Roxy Dry Cleaners has impacted the site or could impact the site in the future. Soil boring MW-02 also was advanced to investigate potential effects associated with the historical use of 908 Broadway as a dry cleaner. Soil samples from MW-04 and MW-05 were also analyzed to evaluate the petroleum release that was closed without meeting standards at the Stewart's shop approximately 250 southeast of the site. Soil samples from MW-01 (BRO-SB-01) and MW-03 through MW-05 (BRO-SB-03 through BRO-SB-05) were analyzed for TCL VOCs by USEPA method 8260C.

4.4 Subsurface Soil Results

No VOCs were detected at soil borings advanced at (North of) 1 Partition Street, 824 Broadway, or on the City ROW at concentrations greater than Unrestricted Use or Commercial Use Standards, as shown in **Table 2**.

4.5 Groundwater Sampling

The five soil borings (MW-01 through MW-05) were completed as monitoring wells (**Figure 3**). Groundwater samples from each monitoring well (BRO-MW-01 and BRO-

GW-02 through BRO-GW-05) were analyzed for TCL VOCs by USEPA method 8260C. A groundwater sample could not be collected from MW-03 because the well was dry. The groundwater sample from MW-05 (BRO-GW-05) was also analyzed for TCL SVOCs by USEPA method 8270D. Groundwater sampled from monitoring well MW-04 could not be analyzed for SVOCs due limited water volume in the well. A groundwater sample (BRO-GW-01) from the sump in the sub-basement of 810 Broadway was collected and analyzed for TCL VOCs by USEPA method 8260C.

4.6 Groundwater Results

Cis-1,2-dichloroethene (25.3 micrograms per liter [µg/l]), tetrachloroethene (PCE) (54.9 µg/l), trichloroethene (TCE) (36.8 µg/l) and vinyl chloride (2.2 µg/l) were detected in groundwater sampled from monitoring well MW-05 (BRO-GW-05) at concentrations that exceeded the NYSDEC Class GA Standards of 5 µg/l for cis-1,2-dichlorethene, PCE and TCE, and 2 µg/l for vinyl chloride. VOCs were not detected at concentrations exceeding NYSDEC Class GA Standards in groundwater sampled from MW-01, MW-02, and MW-04 or in the groundwater sump sample.

4.7 Air Sampling

Soil vapor, sub-slab vapor, indoor air, and ambient air samples were collected on-site and off-site at the locations shown in **Figure 3** to evaluate potential exposures resulting from chlorinated VOCs in soil and groundwater in the vicinity of the site. Soil vapor samples were collected over a one-hour collection period and analyzed for VOCs by USEPA method TO-15. Sub-slab soil vapor samples were collected from just below the building slab of the buildings at 810 Broadway (BRO-SV-06) and 800 Broadway (SV-01 800 Broadway). Soil vapor samples were collected from five locations (BRO-SV-01 through BRO-SV-05). Soil vapor points were installed at depths ranging from 5.5 feet bgs to nine feet bgs. Two outdoor ambient air samples and three indoor air samples were collected to establish background values for local ambient air quality. Indoor air and ambient air samples were collected concurrently with the collection of soil vapor samples. The ambient air samples (BRO-AA-01 and BRO-AA-02) were collected on the eastern portion of the site, furthest from adjacent roads.

4.8 Air Results

Indoor air and ambient air sampling results are provided in **Table 5**. Compounds regulated by the NYSDOH include carbon tetrachloride, 1,1- dichloroethene, cis-1,2-dichloroethene, tetrachloroethene (PCE), 1,1,1-trichloroethane, trichloroethene (TCE)

and vinyl chloride. Of these compounds, cis-1,2-dichloroethene, TCE and vinyl chloride are degradation products of PCE, which was historically used in dry cleaning processes. These compounds are discussed where appropriate below.

4.8.1 824 Broadway

Carbon tetrachloride (0.48 µg/m^3) was detected in ambient air sample BRO-AA-01. 1,1,1-trichloroethane (0.21 µg/m^3), PCE (11 µg/m^3) and TCE (1.3 µg/m^3) were detected in the soil vapor sample from 824 Broadway (BRO-SV-02).

4.8.2 (North of) 1 Partition Street

Carbon tetrachloride (0.66 µg/m^3) and PCE (12 µg/m^3) were detected in the soil vapor sample BRO-SV-01.

4.8.3 810 Broadway

Carbon tetrachloride (0.50 µg/m^3) and PCE (1.4 µg/m^3) were detected in the indoor air sample collected at 810 Broadway (BRO-IA-01).

The sub-slab air sample collected inside 810 Broadway (BRO-SV-06) contained PCE (160 µg/m^3) at concentrations that exceed the New York State Department of Health (NYSDOH) mitigation guidance values. The PCE concentrations at BRO-SV-06 and BRO-IA-01 require monitoring under the NYSDOH soil vapor/indoor air matrices. Carbon tetrachloride (0.46 µg/l) and TCE (2.1 µg/l) were also detected at BRO-SV-06.

4.8.4 800 Broadway

Two indoor air samples were collected on separate dates inside 800 Broadway (BRO-IA-02). Carbon tetrachloride (0.54 µg/m^3 and 0.36 µg/m^3, on April 22 and May 29, 2013, respectively), and PCE (0.64 µg/m^3 and 1 µg/m^3, on April 22 and May 29, respectively) were detected.

One soil vapor sample (BRO-SV-01 800 Broadway) contained PCE at a concentration of 5,100 µg/m^3. The corresponding indoor air concentration was 1 µg/m^3. Under the NYSDOH guidelines, mitigation is required. TCE was also detected (30 µg/m^3) at BRO-SV-01 (800 Broadway). Carbon tetrachloride (0.46 µg/m^3), cis-1,2 dichloroethene (0.65 µg/l) and PCE (0.26 µg/m^3) were detected in ambient air sample BRO-AA-02.

4.8.5 City ROW

Soil vapor points BRO-SV-03 through BRO-SV-05 contained 1,1,1-trichloroethane at concentrations ranging from 0.21 µg/m^3 (BRO-SV-04) to 2.1 µg/m^3 (BRO-SV-05). Carbon tetrachloride was detected at BRO-SV-03 (0.16 µg/m^3). Cis-1,2-dichloroethene was detected at BRO-SV-04 (1.5 µg/m^3) and BRO-SV-05 (11 µg/m^3). PCE was detected at each City ROW soil vapor location, ranging from 41 µg/m^3 at BRO-SV-03 to 1,900 µg/m^3 at BRO-SV-05. TCE was detected at BRO-SV-04 (48 µg/m^3) and BRO-SV-05 (120 µg/m^3).

5. Data Validation

In accordance with the QAPP, data validation was performed for samples collected during the investigation. The DUSR is included in **Appendix E** and summarized below. Sample processing was generally conducted in compliance with the analytical protocol requirements and quality criteria. All data were classified as usable with some minor qualification.

5.1 Blind Field Duplicates

Blind field duplicate evaluations were performed on the BRO-SB-03 sample for soil, the BRO-MW-01 sample for groundwater, and the BRO-SV-02 sample for soil vapor. Blind field duplicate correlations for soil, groundwater, and air samples were within guidelines, with the following exceptions:

- Acetone and ethyl acetate at BRO-SV-2

These results were qualified as estimated in the parent sample and its associated duplicate.

5.2 VOCs

5.2.1 Soil

The calibration standard responses were acceptable with the exception of the following, which were qualified as estimated:

- 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, and 1,2-dibromo-3-chloropropane in BRO-SS-01, BRO-SS-02 and BRO-IDW;

- Methylene chloride and 1,2-dibromo-3-chloropropane in BRO-SB-4-5-7, BRO-SB-5-8-9, BRO-SB-DUP and BRO-SB-FB; and
- Cyclohexane in the samples collected on June 12, 2013.

Due to low recoveries in the associated laboratory control samples (LCSs), the following results were qualified as estimated:

- Methylene chloride in BRO-SS-01, BRO-SS-02 and BRO-IDW; and
- 1,2,3-trichlorobenzene in BRO-SB-4-5-7, BRO-SB-5-8-9, BRO-SB-DUP and BRO-SB-FB.

Tentatively identified compounds (TICs) that are identified with a CAS number should have been flagged as "N" by the laboratory to indicate a tentative identification.

5.2.2 Groundwater

The calibration standard responses were acceptable with the exception cyclohexane in the samples collected on June 12, 2013, which were qualified as estimated.

5.2.3 Air

The following detected results are qualified as tentative in identification and are qualified as estimated in value due to interferences in the mass spectra:

- 1,4-dichlorobenzene in BRO-SV-06
- Propene in BRO-IA-02
- Trichlorofluoromethane in BRO-SV-3
- 1,3-dichlorobenzene, 1,3-butadiene, chloroethane, trichlorofluoromethane, and 1,1,2-trichloroethane in BRO-SV-1

The following detected results were edited to non-detection due to poor mass spectral quality:

- Styrene, n-butyl acetate, 4-methyl-2-pentanone in BRO-SV-1
- 2-propanol, styrene, n-butyl acetate and n-hexane in BRO-SV-3

Methylene chloride detections in samples collected on May 29, 2013 are considered external contamination due to the presence of methylene chloride in the associated method blank. Those detections have been edited to reflect non-detection.

5.3 SVOCs

The result for pentachlorophenol in BRO-GW-5 was edited to non-detection due to non-subtractive mass spectral interferences. Calibration standards responses were acceptable with the exception of the response for 2,4-dinitrophenol, which was qualified as estimated in BRO-GW-05. The TIC that was flagged by the laboratory as "AB" is not to be considered a sample component because it is an extraction artifact.

6. Disposal of Investigation Derived Waste

Investigation derived wastes were handled in accordance with the NYSDEC Final TAGM for the Disposal of Drill Cuttings. Soil cuttings were containerized in U.N.-approved, 55-gallon steel drums. Containerized materials were labeled and staged at 824 Broadway. ARCADIS maintained a log of the container and its content, which was evaluated upon receipt of results of the analytical data obtained during field investigations for final removal and disposal. Based on analytical results (**Tables 3 and 6**), soil and groundwater were classified as non-hazardous waste and were removed from the site and disposed of on July 9, 2013. The waste disposal manifest is provided in **Appendix D**.

7. Conclusions

The Phase II ESA was conducted to evaluate recognized environmental conditions at the site, including two neighboring dry cleaners and a petroleum release that was not closed to meet standards. The Phase II ESA included soil, groundwater, ambient air, and soil vapor sampling on the site and around 800 Broadway, which was formerly a dry cleaners.

No impacted soil or groundwater was identified at 824 Broadway or (North of) 1 Partition Street. Off-site, at 800 Broadway, 810 Broadway and in the City right of way, contaminants associated with dry cleaners were detected in groundwater and soil vapor. VOCs and SVOCs were detected in groundwater sampled from monitoring well MW-05 at concentrations exceeding 6 NYCRR Part 703 Class GA Standards. Carbon tetrachloride and PCE were detected in ambient air at 824 Broadway, in the soil vapor sample from (North of) 1 Partition Street, and in indoor air from 810 Broadway. At 800 Broadway and 810 Broadway, PCE concentrations in sub-slab and indoor air samples required monitoring (810 Broadway) or mitigation (800 Broadway) under NYSDOH guidelines. VOCs associated with dry cleaning were found in each of the City right of way soil vapor samples. Based on the results of this Phase II ESA, no further action is

required for 824 Broadway or (North of) 1 Partition Street. If structures are built on the site, soil vapor intrusion monitoring may be required.

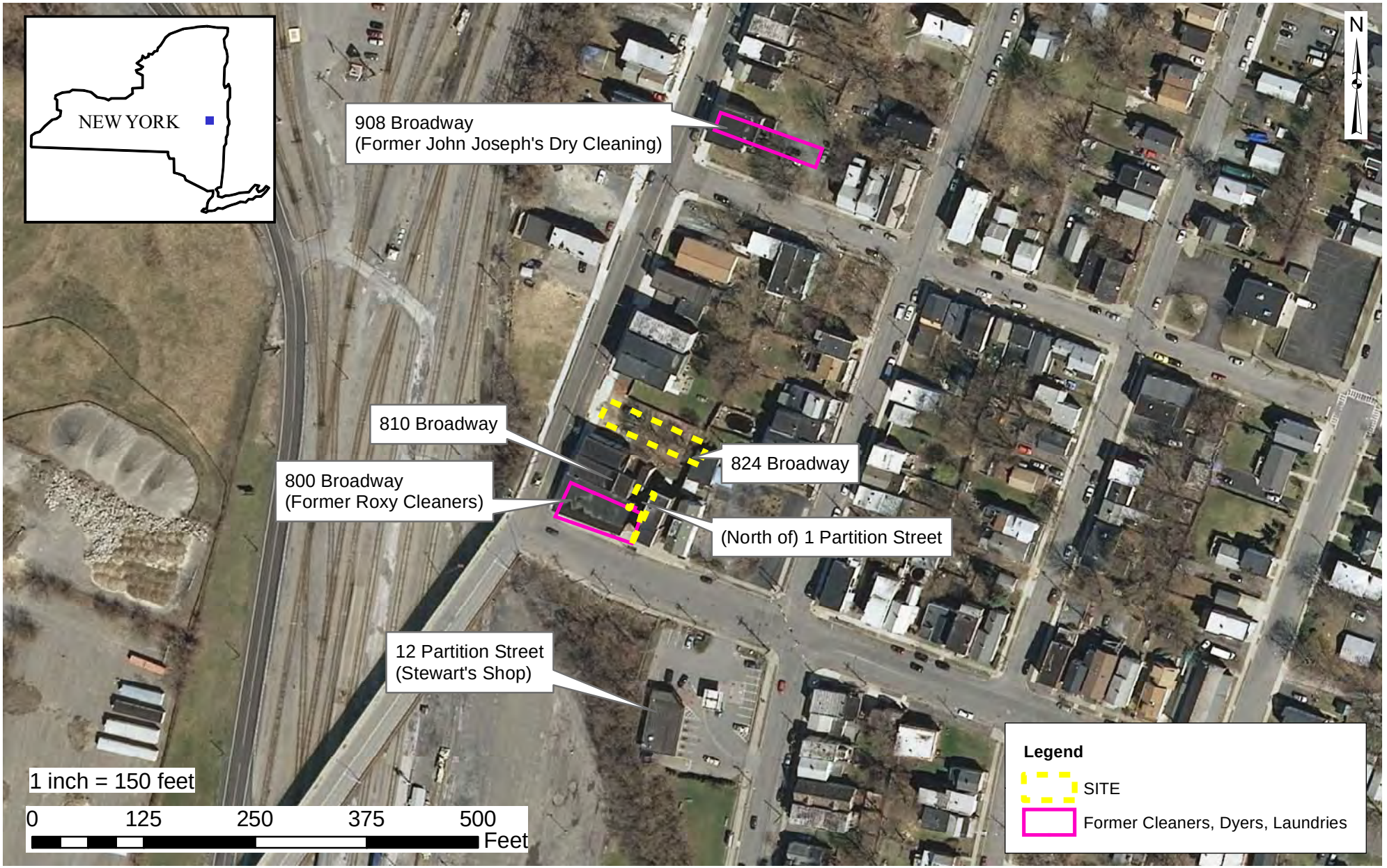
8. References

ARCADIS of New York, Inc., 2013, Quality Assurance Project Plan, 824 Broadway and (North of) 1 Partition Street, Rensselaer, New York, March 2013.

Cadwell, D.H. et. al., 1986, Ed. By Cadwell, D.H. and R.J. Dineen, 1987. Surficial Geologic Map of New York, Hudson-Mohawk Sheet, New York State Museum and Science Service Map and Chart Series No.40.

Fisher, D.W., Isachsen, Y. W., Rickard, L.V., 1970, Geologic Map of New York, Hudson-Mohawk Sheet, New York State Museum and Science Service Map and Chart Series No. 15.

ARCADIS of New York, Inc., 2012, Phase I Environmental Site Assessment, 824 Broadway and (North of) 1 Partition Street, Rensselaer, New York, September 2012.



SOURCE: NYSDOP High Resolution Imagery 2011, NYS GIS Clearing house: http://gis.ny.gov/gateway/mg/

ARCADIS
Infrastructure · Water · Environment · Buildings

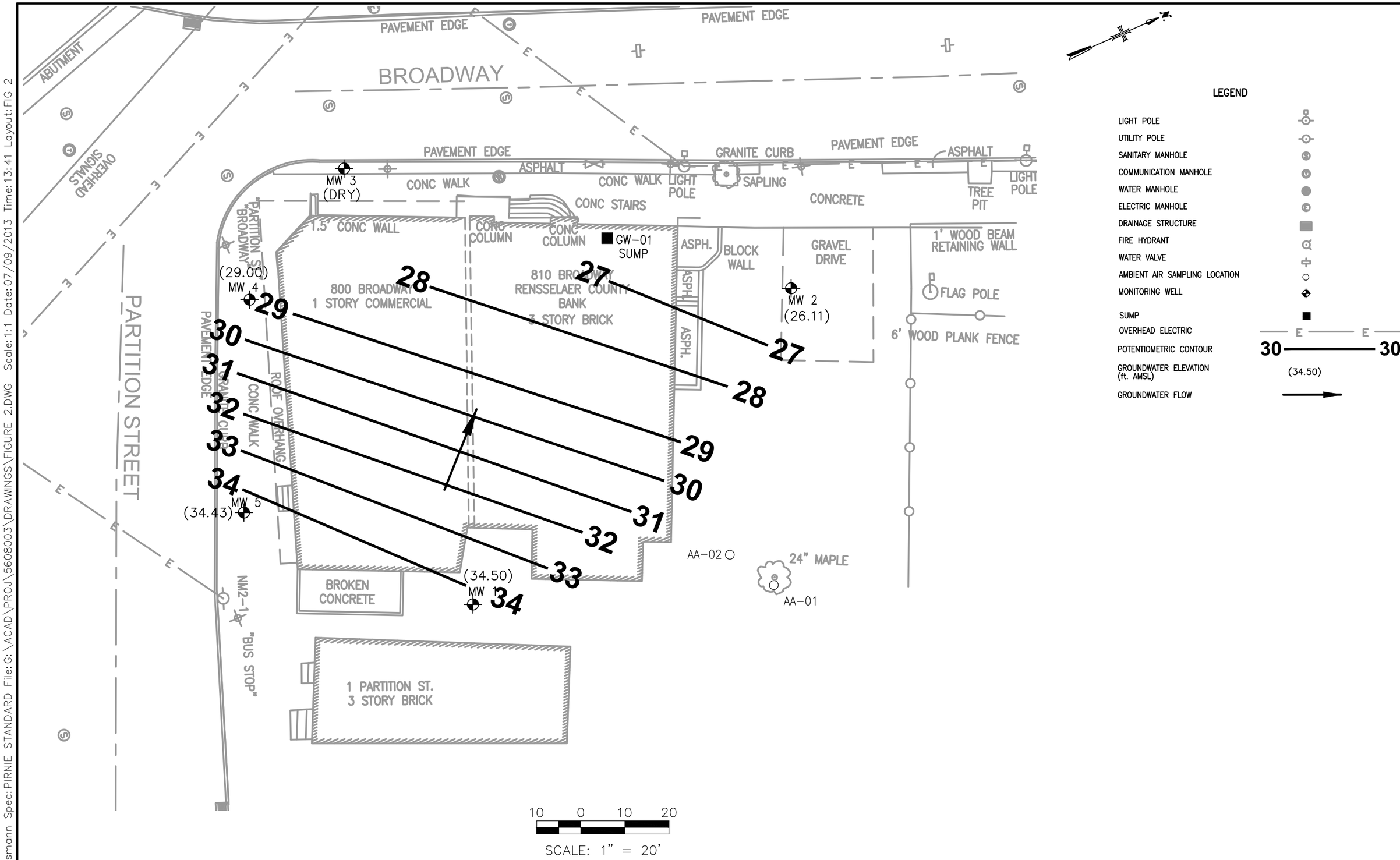
PHASE II ENVIRONMENTAL SITE ASSESSMENT
CITY OF RENSSELAER, NEW YORK
USEPA BROWNFIELD
HAZARDOUS SUBSTANCES ASSESSMENT GRANT
ASSISTANCE ID No. BF-97249507-0

824 BROADWAY AND
(NORTH OF) 1 PARTITION STREET
SITE OVERVIEW

ARCADIS OF NEW YORK, INC.

JULY 2013

FIGURE 1



LEGEND

- LIGHT POLE
- UTILITY POLE
- SANITARY MANHOLE
- COMMUNICATION MANHOLE
- WATER MANHOLE
- ELECTRIC MANHOLE
- DRAINAGE STRUCTURE
- FIRE HYDRANT
- WATER VALVE
- AMBIENT AIR SAMPLING LOCATION
- MONITORING WELL
- SUMP
- OVERHEAD ELECTRIC
- POTENTIOMETRIC CONTOUR
- GROUNDWATER ELEVATION (ft. AMSL)
- GROUNDWATER FLOW

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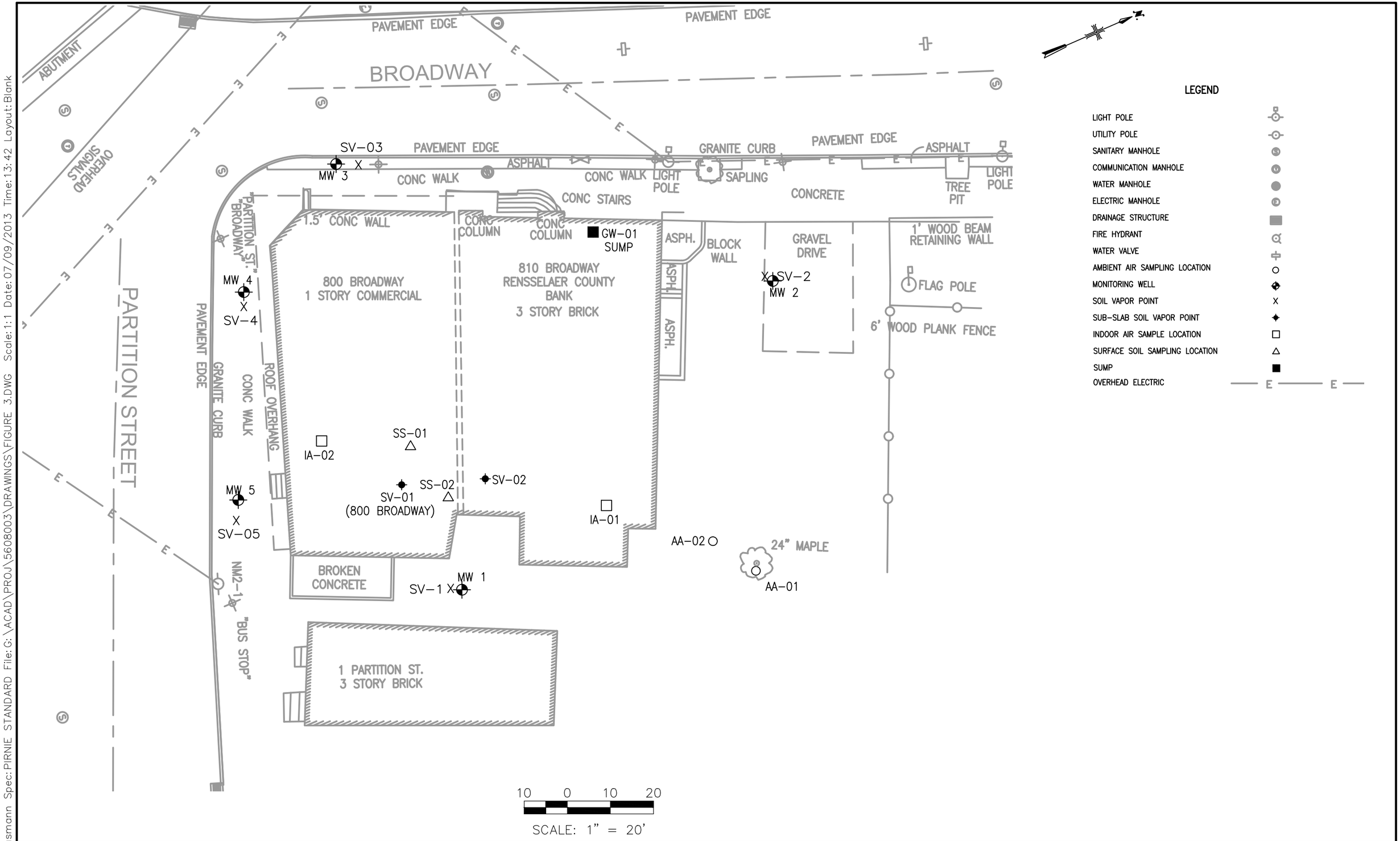
PHASE II ENVIRONMENTAL SITE ASSESSMENT

USEPA BROWNFIELD HAZARDOUS ASSESSMENT GRANT

SHALLOW MONITORING WELL GROUNDWATER ELEVATIONS
MAY 16, 2013
SCALE: AS SHOWN

JULY 2013

FIGURE 2



XREFS: G:\ACAD\PROJ\5608003\XREF\SURVEY BASE 6-2013.dwg IMAGES: None
User: Hausmann Spec: PIRNIE STANDARD File: G:\ACAD\PROJ\5608003\DRAWINGS\FIGURE 3.DWG Scale: 1:1 Date: 07/09/2013 Time: 13:42 Layout: Blank

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PHASE II ENVIRONMENTAL SITE ASSESSMENT

USEPA BROWNFIELD HAZARDOUS ASSESSMENT GRANT

824 BROADWAY AND (NORTH OF) 1 PARTITION STREET

SCALE: AS SHOWN

JULY 2013

FIGURE 3

Table 1
Groundwater Elevation Data
Phase II ESA
824 Broadway and (North of) 1 Partition Street
Rensselaer, New York

Monitoring Well	Well Type (Overburden, Interface, Bedrock)	Stick Up (SU)/Flush Mount (FM)	Easting (X)	Northing (Y)	Elevation at Top of PVC (ft. AMSL)	Ground Elevation (ft. AMSL)	Well Dia. (in.)	Screen Length (ft.)	Depth to Water Level Below TOC (ft.) 4/15/2013	Depth to Water Level Below TOC (ft.) 04/16/13	Depth to Water Level Below TOC (ft.) 04/23/13	Depth to Water Level Below TOC (ft.) 5/16/2013	Depth to Water Level Below TOC (ft.) 6/20/2013	Groundwater Elevation 4/15/2013 (ft. AMSL)	Groundwater Elevation 04/16/2013 (ft. AMSL)	Groundwater Elevation 04/23/2013 (ft. AMSL)	Groundwater Elevation 5/16/2013 (ft. AMSL)	Groundwater Elevation 6/20/2013 (ft. AMSL)	PID (ppm) 4/23/2013
MW-1	Overburden	FM	696783.1	1389979.0	41.81	41.93	2	10	dry	dry	12.41	7.31	7.93	dry	dry	29.40	34.50	33.88	0.2
MW-2	Overburden	FM	696746.3	1390073.8	37.73	38.17	2	10	15.75	15.38	14.23	11.62	11.27	21.98	22.35	23.50	26.11	26.46	0.5
MW-3	Overburden	FM	696680.9	1389991.8	46.29	46.66	2	10	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	1.3
MW-4	Overburden	FM	696699.5	1389960.3	47.17	47.63	2	10	dry	dry	18.14	18.17	18.23	dry	dry	29.03	29.00	28.94	1.0
MW-5	Overburden	FM	696743.2	1389939.8	45.54	45.99	2	10	11.50	11.05	11.03	11.11	11.03	34.04	34.49	34.51	34.43	34.51	0.5

Notes:
AMSL - Above Mean Sea Level
TOC - Top of Casing

Table 2
Summary of Soil Results - VOCs
Phase II ESA
824 Broadway and
(North of) 1 Partition Street
Rensselaer, New York

Sample Location				824 Broadway	City ROW		
Sample ID	6 NYCRR Part 375	6 NYCRR Part 375	6 NYCRR Part 375	BRO-SB-1	BRO-SB-3	BRO-SB-DUP (SB-3)	BRO-SB-4
Sample Depth (ft bgs)	Unrestricted Use	Restricted Residential Use	Commercial Use	4-5	5-6	5-6	5-7
Sampling Date	Soil Cleanup	Soil Cleanup	Soil Cleanup	4/15/2013	4/15/2013	4/15/2013	4/11/2013
Matrix	Objective	Objective	Objective	SOIL	SOIL	SOIL	SOIL
Units	mg/kg	mg/kg	mg/Kg	mg/kg	mg/kg	mg/kg	mg/kg
VOCs							
1,1,1-Trichloroethane	0.68	100	500	0.0056 U	0.0052 U	0.006 U	0.0048 U
1,1,2,2-Tetrachloroethane				0.0056 U	0.0052 U	0.006 U	0.0048 U
1,1,2-Trichloroethane				0.0056 U	0.0052 U	0.006 U	0.0048 U
1,1,2-Trichlorotrifluoroethane				0.0056 U	0.0052 U	0.006 U	0.0048 U
1,1-Dichloroethane	0.27	26	240	0.0056 U	0.0052 U	0.006 U	0.0048 U
1,1-Dichloroethene	0.33	100	500	0.0056 U	0.0052 U	0.006 U	0.0048 U
1,2,3-Trichlorobenzene				0.0056 U	0.0052 UJ	0.006 UJ	0.0048 UJ
1,2,4-Trichlorobenzene				0.0056 U	0.0052 U	0.006 U	0.0048 UQ
1,2-Dibromo-3-Chloropropane				0.0056 U	0.0052 UJ	0.0006 UJ	0.0048 UJQ
1,2-Dibromoethane				0.0056 U	0.0052 U	0.006 U	0.0048 U
1,2-Dichlorobenzene	1.1	100	500	0.0056 U	0.0052 U	0.006 U	0.0048 U
1,2-Dichloroethane	0.02	3.1	30	0.0056 U	0.0052 U	0.006 U	0.0048 U
1,2-Dichloropropane				0.0056 U	0.0052 U	0.006 U	0.0048 U
1,3-Dichlorobenzene	2.4	49	280	0.0056 U	0.0052 U	0.006 U	0.0048 U
1,4-Dichlorobenzene	1.8	13	130	0.0056 U	0.0052 U	0.006 U	0.0048 U
1,4-Dioxane				0.22 U	0.22 U	0.24 U	0.1938 U
2-Butanone (MEK)	0.12	100	500	0.028 U	0.0264 U	0.0298 U	0.0242 UQ
2-Hexanone				0.028 U	0.0264 UQ	0.0298 UQ	0.0242 U
4-Methyl-2-pentanone (MIBK)				0.028 U	0.0264 U	0.0298 U	0.0242 U
Acetone	0.05	100	500	0.028 U	0.0264 UQ	0.0298 UQ	0.0242 U
Benzene	0.06	4.8	44	0.0056 U	0.0052 U	0.006 U	**0.0087**
Bromochloromethane				0.0056 U	0.0052 U	0.006 U	0.0048 U
Bromodichloromethane				0.0056 U	0.0052 U	0.006 U	0.0048 U
Bromoform				0.0056 U	0.0052 U	0.006 U	0.0048 U
Bromomethane				0.0056 U	0.0052 U	0.006 U	0.0048 U
Carbon disulfide				0.0056 U	0.0052 U	0.006 U	0.0048 U
Carbon tetrachloride	0.76	2.4	22	0.0056 U	0.0052 U	0.006 U	0.0048 U
Chlorobenzene	1.1	100	500	0.0056 U	0.0052 U	0.006 U	0.0048 U
Chloroethane				0.0056 U	0.0052 U	0.006 U	0.0048 U
Chloroform	0.37	49	350	0.0056 U	0.0052 U	0.006 U	0.0048 U
Chloromethane				0.0056 U	0.0052 U	0.006 U	0.0048 U
cis-1,2-Dichloroethene	0.25	100	500	0.0056 U	0.0052 U	0.006 U	0.0048 U
cis-1,3-Dichloropropene				0.0056 U	0.0052 U	0.006 U	0.0048 U
Cyclohexane				0.0056 U	0.0052 U	0.006 U	0.0048 U
Dibromochloromethane				0.0056 U	0.0052 U	0.006 U	0.0048 U
Dichlorodifluoromethane				0.0056 U	0.0052 U	0.006 U	0.0048 U
Ethylbenzene	1	41	390	0.0056 U	0.0052 U	0.006 U	0.0048 U
Isopropylbenzene	2*			0.0056 U	0.0052 U	0.006 U	0.0048 U
m/p-Xylenes	0.26**	100**	500**	0.0112 U	0.0106 U	0.012 U	0.0096 U
Methyl acetate				0.0056 U	0.0052 U	0.006 U	0.0048 U
Methyl tert-butyl ether	0.93	62	500	0.0056 U	0.0052 U	0.006 U	0.0048 U
Methylcyclohexane				0.0056 U	0.0052 U	0.006 U	0.0048 U
Methylene Chloride	0.05	51	500	0.0056 UQ	0.0052 UJ	0.006 UJ	**0.002 J**
o-Xylene	0.26**	100**	500**	0.0056 U	0.0052 U	0.006 U	0.0048 U
Styrene				0.0056 U	0.0052 U	0.006 U	0.0048 U
trans-1,3-Dichloropropene				0.0056 U	0.0052 U	0.006 U	0.0048 U
Tetrachloroethene	1.3	19	150	0.0056 U	0.0052 U	0.006 U	**0.0024 J**
Toluene	0.7	100	500	0.0056 U	0.0052 U	0.006 U	0.0048 U
trans-1,2-Dichloroethene	0.19	100	500	0.0056 U	0.0052 U	0.006 U	0.0048 U
Trichloroethene	0.47	21	200	0.0056 U	0.0052 U	0.006 U	0.0048 U
Trichlorofluoromethane				0.0056 U	0.0052 U	0.006 U	0.0048 U
Vinyl chloride	0.02	0.9	13	0.0056 U	0.0052 U	0.006 U	0.0048 U
Total TICS							**0.3483**

Notes:
U - Compound not detected, reporting limit provided.
Q-Indicates that the LCS did not meet the control limits requirements
J - Estimated
* - CP-51 Standard

Table 2
Summary of Soil Results - VOCs
Phase II ESA
824 Broadway and
(North of) 1 Partition Street
Rensselaer, New York

Sample Location				City ROW		800 Broadway					
Sample ID	6 NYCRR Part 375	6 NYCRR Part 375	6 NYCRR Part 375	BRO-SB-5		BRO-SS-01		BRO-SS-02		BRO-IDW	
Sample Depth (ft bgs)	Unrestricted Use	Restricted Residential Use	Commercial Use	7-9		0.2-0.6		0.2-0.6		E1856-14	
Sampling Date	Soil Cleanup	Soil Cleanup	Soil Cleanup	4/12/2013		4/18/2013		4/18/2013		4/18/2013	
Matrix	Objective	Objective	Objective	SOIL		SOIL		SOIL		SOIL	
Units	mg/kg	mg/kg	mg/Kg	mg/kg		mg/kg		mg/kg		mg/kg	
VOCs											
1,1,1-Trichloroethane	0.68	100	500	0.005	U	0.0054	U	0.0058	U	0.0064	U
1,1,2,2-Tetrachloroethane				0.005	U	0.0054	U	0.0058	U	0.0064	U
1,1,2-Trichloroethane				0.005	U	0.0054	U	0.0058	U	0.0064	U
1,1,2-Trichlorotrifluoroethane				0.005	U	0.0054	U	0.0058	U	0.0064	U
1,1-Dichloroethane	0.27	26	240	0.005	U	0.0054	U	0.0058	U	0.0064	U
1,1-Dichloroethene	0.33	100	500	0.005	U	0.0054	U	0.0058	U	0.0064	U
1,2,3-Trichlorobenzene				0.005	UJ	0.0054	UJ	0.0058	UJ	0.0064	UJ
1,2,4-Trichlorobenzene				0.005	UJQ	0.0054	UJ	0.0058	UJ	0.0064	UJ
1,2-Dibromo-3-Chloropropane				0.005	UQ	0.0054	U	0.0058	U	0.0064	U
1,2-Dibromoethane				0.005	U	0.0054	U	0.0058	U	0.0064	U
1,2-Dichlorobenzene	1.1	100	500	0.005	U	0.0054	U	0.0058	U	0.0064	U
1,2-Dichloroethane	0.02	3.1	30	0.005	U	0.0054	U	0.0058	U	0.0064	U
1,2-Dichloropropane				0.005	U	0.0054	U	0.0058	U	0.0064	U
1,3-Dichlorobenzene	2.4	49	280	0.005	U	0.0054	U	0.0058	U	0.0064	U
1,4-Dichlorobenzene	1.8	13	130	0.005	U	0.0054	U	0.0058	U	0.0064	U
1,4-Dioxane				0.1984	U	0.22	U	0.24	U	0.26	U
2-Butanone (MEK)	0.12	100	500	0.0248	UQ	0.0272	U	0.029	U	0.0322	U
2-Hexanone				0.0248	U	0.0272	U	0.029	U	0.0322	U
4-Methyl-2-pentanone (MIBK)				0.0248	U	0.0272	U	0.029	U	0.0322	U
Acetone	0.05	100	500	0.0248	U	0.0272	U	0.029	U	0.0322	U
Benzene	0.06	4.8	44	0.005	U	0.0054	U	0.0058	U	0.0064	U
Bromochloromethane				0.005	U	0.0054	U	0.0058	U	0.0064	U
Bromodichloromethane				0.005	U	0.0054	U	0.0058	U	0.0064	U
Bromoform				0.005	U	0.0054	U	0.0058	U	0.0064	U
Bromomethane				0.005	U	0.0054	U	0.0058	U	0.0064	U
Carbon disulfide				0.005	U	0.0054	U	0.0058	U	0.0064	U
Carbon tetrachloride	0.76	2.4	22	0.005	U	0.0054	U	0.0058	U	0.0064	U
Chlorobenzene	1.1	100	500	0.005	U	0.0054	U	0.0058	U	0.0064	U
Chloroethane				0.005	U	0.0054	U	0.0058	U	0.0064	U
Chloroform	0.37	49	350	0.005	U	0.0054	U	0.0058	U	0.0064	U
Chloromethane				0.005	U	0.0054	U	0.0058	U	0.0064	U
cis-1,2-Dichloroethene	0.25	100	500	0.005	U	0.0054	U	0.0058	U	**0.0039**	**J**
cis-1,3-Dichloropropene				0.005	U	0.0054	U	0.0058	U	0.0064	U
Cyclohexane				0.005	U	0.0054	U	0.0058	U	0.0064	U
Dibromochloromethane				0.005	U	0.0054	U	0.0058	U	0.0064	U
Dichlorodifluoromethane				0.005	U	0.0054	U	0.0058	U	0.0064	U
Ethylbenzene	1	41	390	0.005	U	0.0054	U	0.0058	U	0.0064	U
Isopropylbenzene	2*			0.005	U	0.0054	U	0.0058	U	0.0064	U
m/p-Xylenes	0.26**	100**	500**	0.01	U	0.0108	U	0.0116	U	0.013	U
Methyl acetate				0.005	U	0.0054	U	0.0058	U	0.0064	U
Methyl tert-butyl ether	0.93	62	500	0.005	U	0.0054	U	0.0058	U	0.0064	U
Methylcyclohexane				0.005	U	0.0054	U	0.0058	U	0.0064	U
Methylene Chloride	0.05	51	500	**0.0026**	**J**	0.0054	UJQ	0.0058	UJQ	0.0064	UJQ
o-Xylene	0.26**	100**	500**	0.005	U	0.0054	U	0.0058	U	0.0064	U
Styrene				0.005	U	0.0054	U	0.0058	U	0.0064	U
trans-1,3-Dichloropropene				0.005	U	0.0054	U	0.0058	U	0.0064	U
Tetrachloroethene	1.3	19	150	**0.0092**		**0.0071**		0.0058	U	**0.0106**	
Toluene	0.7	100	500	0.005	U	0.0054	U	0.0058	U	0.0064	U
trans-1,2-Dichloroethene	0.19	100	500	0.005	U	0.0054	U	0.0058	U	0.0064	U
Trichloroethene	0.47	21	200	0.005	U	0.0054	U	0.0058	U	**0.0083**	
Trichlorofluoromethane				0.005	U	0.0054	U	0.0058	U	0.0064	U
Vinyl chloride	0.02	0.9	13	0.005	U	0.0054	U	0.0058	U	0.0064	U
Total TICS				**0.0173**							

Notes:
U - Compound not detected, reporting limit provided.
Q-Indicates that the LCS did not meet the control limits requirements
J - Estimated
* - CP-51 Standard

Table 3
Summary of Groundwater Results - VOCs
Phase II ESA
824 Broadway and
(North of) 1 Partition Street
Rensselaer, New York

Sample Location		810 Broadway	824 Broadway	(N of) 1 Partition St		City ROW	
Sample ID Sampling Date Matrix Units	6 NYCRR Part 703 Class GA Standard or Guidance Value ug/L	BRO-GW-01 4/17/2013 Water ug/L	BRO-GW-2 4/23/2013 Water ug/L	BRO-MW-01 6/12/2013 Water ug/L	BRO-MW-DUP (BRO-MW-01) 6/12/2013 Water ug/L	BRO-GW-MW-4 5/29/2013 Water ug/L	BRO-GW-5 4/23/2013 Water ug/L
VOCs							
1,1,1-Trichloroethane	5	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	5	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichlorotrifluoroethane	5	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	5	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	5	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-Chloropropane	0.04	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane	5	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	3	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	0.6	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	3	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	3	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dioxane		200 U	200 U	200 U	200 U	200 U	200 U
2-Butanone (MEK)	50	5 U	5 U	5 U	5 U	5 U	5 U
2-Hexanone	50*	5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone (MIBK)		5 U	5 U	5 U	5 U	5 U	5 U
Acetone	50*	5 U	**6.3**	5 U	5 U	**5.9**	5 U
Benzene	1	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	5	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	50*	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	50*	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	5	1 U	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	60	1 U	**1.6**	**0.66 J**	**0.65 J**	**0.48 J**	1 U
Carbon tetrachloride	5	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	5	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	5	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	7	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	5	1 U	1 U	1 U	1 U	**0.54 J**	1 U
cis-1,2-Dichloroethene	5	1 U	1 U	1 U	1 U	**1.7**	**25.3**
cis-1,3-Dichloropropene	0.4**	1 U	1 U	1 U	1 U	1 U	1 U
Cyclohexane		1 U	1 U	1 UJ	1 UJ	1 U	1 U
Dibromochloromethane	50	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	5	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	1 U	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene	5	1 U	1 U	1 U	1 U	1 U	1 U
m&p Xylenes	5	2 U	2 U	2 U	2 U	2 U	2 U
Methyl acetate		1 U	1 U	1 U	1 U	1 U	1 U
Methyl tert-butyl ether	10	1 U	**2.2**	1 U	1 U	1 U	1 U
Methylcyclohexane		1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	5	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	5	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	5	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	0.4**	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	5	1 U	1 U	1 U	1 U	1 U	**54.9**
Toluene	5	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	5	1 U	1 U	1 U	1 U	1 U	**1.9**
Trichloroethene	5	1 U	1 U	1 U	1 U	1 U	**36.8**
Trichlorofluoromethane	5	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	2	1 U	1 U	1 U	1 U	1 U	**2.2**
Total Estimated Conc. (TICs)			**7.8**				

Notes:

U - Compound not detected, reporting limit provided.

Table 3
Summary of Groundwater Results - VOCs
Phase II ESA
824 Broadway and
(North of) 1 Partition Street
Rensselaer, New York

Sample Location		QA/QC					
Sample ID **Sampling Date** **Matrix** **Units**	**6 NYCRR Part 703 Class GA Standard or Guidance Value ug/L**	**BRO-GW-FB 6/12/2013 Water ug/L**	**BRO-SB-FB 4/15/2013 Water ug/L**	**TRIPBLANK 4/15/2013 Water ug/L**	**TRIPBLANK 4/23/2013 Water ug/L**	**TRIPBLANK 5/29/2013 Water ug/L**	**TRIPBLANK 6/12/2013 Water ug/L**
VOCs							
1,1,1-Trichloroethane	5	1 U	5 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	5	1 U	5 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1	1 U	5 U	1 U	1 U	1 U	1 U
1,1,2-Trichlorotrifluoroethane	5	1 U	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	5	1 U	5 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	5	1 U	5 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5	1 U	5 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	5	1 U	5 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-Chloropropane	0.04	1 U	5 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane	5	1 U	5 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	3	1 U	5 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	0.6	1 U	5 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1	1 U	5 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	3	1 U	5 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	3	1 U	5 U	1 U	1 U	1 U	1 U
1,4-Dioxane		200 U	200 U	200 U	200 U	200 U	200 U
2-Butanone (MEK)	50	5 U	25 U	5 U	5 U	5 U	5 U
2-Hexanone	50*	5 U	25 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone (MIBK)		5 U	25 U	5 U	5 U	5 U	5 U
Acetone	50*	5 U	25 U	5 U	5 U	5 U	5 U
Benzene	1	1 U	5 U	1 U	1 U	1 U	1 U
Bromochloromethane	5	1 U	5 U	1 U	1 U	1 U	1 U
Bromodichloromethane	50*	1 U	5 U	1 U	1 U	1 U	1 U
Bromoform	50*	1 U	5 U	1 U	1 U	1 U	1 U
Bromomethane	5	1 U	5 U	1 U	1 U	1 U	1 U
Carbon disulfide	60	1 U	5 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	1 U	5 U	1 U	1 U	1 U	1 U
Chlorobenzene	5	1 U	5 U	1 U	1 U	1 U	1 U
Chloroethane	5	1 U	5 U	1 U	1 U	1 U	1 U
Chloroform	7	1 U	5 U	1 U	1 U	1 U	1 U
Chloromethane	5	1 U	5 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	5	1 U	5 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	0.4**	1 U	5 U	1 U	1 U	1 U	1 U
Cyclohexane		1 UJ	5 U	1 U	1 U	1 U	0.5 UJ
Dibromochloromethane	50	1 U	5 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	5	1 U	5 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	1 U	5 U	1 U	1 U	1 U	1 U
Isopropylbenzene	5	1 U	5 U	1 U	1 U	1 U	1 U
m&p Xylenes	5	2 U	10 U	2 U	2 U	2 U	2 U
Methyl acetate		1 U	5 U	1 U	1 U	1 U	1 U
Methyl tert-butyl ether	10	1 U	5 U	1 U	1 U	1 U	1 U
Methylcyclohexane		1 U	5 U	1 U	1 U	1 U	1 U
Methylene Chloride	5	1 U	5 U	1 U	1 U	1 U	1 U
o-Xylene	5	1 U	5 U	1 U	1 U	1 U	1 U
Styrene	5	1 U	5 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	0.4**	1 U	5 U	1 U	1 U	1 U	1 U
Tetrachloroethene	5	1 U	5 U	1 U	1 U	1 U	1 U
Toluene	5	1 U	5 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	5	1 U	5 U	1 U	1 U	1 U	1 U
Trichloroethene	5	1 U	5 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	5	1 U	5 U	1 U	1 U	1 U	1 U
Vinyl chloride	2	1 U	5 U	1 U	1 U	1 U	1 U
Total Estimated Conc. (TICs)					**8.3**		

Notes:

U - Compound not detected, reporting limit provided

Table 4
Summary of Groundwater Results - SVOCs
Phase II ESA
824 Broadway and
(North of) 1 Partition Street
Rensselaer, New York

Sample location		City ROW	
Sample ID	6 NYCRR Part 703	BRO-GW-5	
Sampling Date	Class GA Standard	4/23/2013	
Matrix	or Guidance Value	Water	
Units	ug/L	ug/L	
SVOCs			
1,1-Biphenyl	5	11.2	U
1,2,4,5-Tetrachlorobenzene	5	11.2	U
2,2-oxybis(1-Chloropropane)		11.2	U
2,3,4,6-Tetrachlorophenol	1**	11.2	U
2,4,5-Trichlorophenol	1**	11.2	U
2,4,6-Trichlorophenol	1**	11.2	U
2,4-Dichlorophenol	1**	11.2	U
2,4-Dimethylphenol	50	11.2	U
2,4-Dinitrophenol	10*	11.2	UJ
2,4-Dinitrotoluene	5	11.2	U
2,6-Dinitrotoluene	5	11.2	U
2-Chloronaphthalene	10*	11.2	U
2-Chlorophenol	1**	11.2	U
2-Methylnaphthalene		11.2	U
2-Methylphenol	1**	11.2	U
2-Nitroaniline	5	11.2	U
2-Nitrophenol	1**	11.2	U
3,3'-Dichlorobenzidine	5	11.2	U
3+4 Methylphenol	1**	11.2	U
3-Nitroaniline	5	11.2	U
4,6-Dinitro-2-methylphenol	1**	11.2	U
4-Bromophenyl phenyl ether		11.2	U
4-Chloro-3-methylphenol	1**	11.2	U
4-Chloroaniline	5	11.2	U
4-Chlorophenyl-phenylether		11.2	U
4-Nitroaniline	5	11.2	U
4-Nitrophenol	1**	11.2	U
Acenaphthene	20*	11.2	U
Acenaphthylene		11.2	U
Acetophenone	20*	11.2	U
Anthracene	50*	11.2	U
Atrazine	7.5	11.2	U
Benzaldehyde		11.2	U
Benzo(a)anthracene	0.002*	11.2	U
Benzo(a)pyrene	ND	11.2	U
Benzo(b)fluoranthene	0.002*	11.2	U
Benzo(ghi)perylene		11.2	U
Benzo(k)fluoranthene	0.002*	11.2	U
Bis(2-chloroethoxy)methane	5	11.2	U
Bis(2-chloroethyl)ether	1	11.2	U
Bis(2-Ethylhexyl)phthalate	5	11.2	U
Butyl benzyl phthalate	50*	11.2	U
Caprolactam		11.2	U
Carbazole		11.2	U
Chrysene	0.002*	11.2	U
Dibenzo(a,h)anthracene		11.2	U
Dibenzofuran		11.2	U
Diethyl phthalate	50*	11.2	U
Dimethyl phthalate	50*	11.2	U
Di-n-butylphthalate	50	11.2	U
Di-n-octylphthalate	50*	11.2	U
Fluoranthene	50*	11.2	U
Fluorene	50*	11.2	U
Hexachlorobenzene	0.04	11.2	U
Hexachlorobutadiene	0.5	11.2	U
Hexachlorocyclopentadiene	5	11.2	UQ
Hexachloroethane	5	11.2	U
Indeno(1,2,3-cd)Pyrene	0.002*	11.2	U
Isophorone	50*	11.2	U
Naphthalene	10*	11.2	U
Nitrobenzene	0.4	11.2	U
n-Nitrosodi-n-propylamine		11.2	U
n-Nitrosodiphenylamine	50*	11.2	U
Pentachlorophenol	1	20	U
Phenanthrene	50	11.2	U
Phenol	1	11.2	U
Pyrene	50	11.2	U
Total Estimated Conc. (TICs)		132.4	

Notes:
* Guidance Value
**Sum of these compounds can not exceed 1 ug/L.
J - Estimated
U - Compound not detected, reporting limit provided.
Q-Indicates that the LCS did not meet the control limits requirements

Table 5
Summary of Air Results
Phase II ESA
824 Broadway and (North of) 1 Partition Street
Rensselaer, New York

Location		(N of) 1 Partition St	824 Broadway			City ROW		
Sample ID		BRO-SV-1	BRO-SV-02	BRO-SV-DUP (BRO-SV-2)	BRO-AA-1	BRO-SV-3	BRO-SV-4	BRO-SV-5
Sample Date		4/22/2013	4/22/2013	4/22/2013	4/22/2013	4/22/2013	4/22/2013	4/22/2013
Matrix		Result	Result	Result	Result	Result	Result	Result
Unit		µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
CAS No.	Compound							
71-55-6	1,1,1-Trichloroethane	0.13 U	**0.21**	**0.23**	0.15 U	**0.21**	**0.87**	**2.1**
79-34-5	1,1,2,2-Tetrachloroethane	0.13 U	0.15 U	0.14 U	0.15 U	0.14 U	0.7 U	2 U
79-00-5	1,1,2-Trichloroethane	**0.14** NJ	0.15 U	0.14 U	0.15 U	0.14 U	0.7 U	2 U
75-34-3	1,1-Dichloroethane	0.13 U	0.15 U	0.14 U	0.15 U	0.14 U	0.7 U	2 U
75-35-4	1,1-Dichloroethene	0.13 U	0.15 U	0.14 U	0.15 U	0.14 U	0.7 U	2 U
120-82-1	1,2,4-Trichlorobenzene	0.64 U	0.76 U	0.7 U	0.76 U	0.69 U	3.5 U	10 U
95-63-6	1,2,4-Trimethylbenzene	**2.5**	**0.92**	**0.9**	0.76 U	**12**	3.5 U	10 U
96-12-8	1,2-Dibromo-3-chloropropane	0.64 U	0.76 U	0.7 U	0.76 U	0.69 U	3.5 U	10 U
106-93-4	1,2-Dibromoethane	0.13 U	0.15 U	0.14 U	0.15 U	0.14 U	0.7 U	2 U
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	0.64 U	0.76 U	0.7 U	0.76 U	0.69 U	3.5 U	10 U
95-50-1	1,2-Dichlorobenzene	0.13 U	0.15 U	0.14 U	0.15 U	0.14 U	0.7 U	2 U
107-06-2	1,2-Dichloroethane	0.13 U	0.15 U	0.14 U	0.15 U	0.14 U	0.7 U	2 U
78-87-5	1,2-Dichloropropane	0.13 U	0.15 U	0.14 U	0.15 U	0.14 U	0.7 U	2 U
108-67-8	1,3,5-Trimethylbenzene	**0.75**	**0.24**	**0.24**	0.76 U	**4.5**	3.5 U	10 U
106-99-0	1,3-Butadiene	**0.54** NJ	0.3 U	0.28 U	0.3 U	0.27 U	1.4 U	4 U
541-73-1	1,3-Dichlorobenzene	**0.12** NJ	0.15 U	0.14 U	0.15 U	0.14 U	0.7 U	2 U
106-46-7	1,4-Dichlorobenzene	0.13 U	0.15 U	0.14 U	0.15 U	0.14 U	0.7 U	2 U
123-91-1	1,4-Dioxane	0.64 U	0.76 U	0.7 U	0.76 U	0.69 U	3.5 U	10 U
78-93-3	2-Butanone (MEK)	**3**	**0.82**	**1.5**	**0.7**	**2.5**	35 U	100 U
591-78-6	2-Hexanone	0.64 U	0.76 U	**0.43**	0.76 U	**3.5**	3.5 U	10 U
67-63-0	2-Propanol (Isopropyl Alcohol)	**3.3**	7.6 U	7 U	7.6 U	0.83 U	35 U	100 U
107-05-1	3-Chloro-1-propene (Allyl Chloride)	0.13 U	0.15 U	0.14 U	0.15 U	0.14 U	0.7 U	2 U
622-96-8	4-Ethyltoluene	**0.9**	0.76 U	0.7 U	0.76 U	**2.2**	3.5 U	10 U
108-10-1	4-Methyl-2-pentanone	0.54 U	0.76 U	0.7 U	0.76 U	**2.7**	3.5 U	10 U
67-64-1	Acetone	**23**	**4.8 J**	**16 J**	**5.1**	**16**	35 U	100 U
75-05-8	Acetonitrile	0.64 U	0.76 U	0.7 U	0.76 U	0.69 U	3.5 U	10 U
107-02-8	Acrolein	2.6 U	3 U	**0.76**	3 U	2.7 U	14 U	40 U
107-13-1	Acrylonitrile	0.64 U	0.76 U	0.7 U	0.76 U	0.69 U	3.5 U	10 U
80-56-8	alpha-Pinene	**6.8**	**0.23**	**0.27**	0.76 U	**25**	**1**	10 U
71-43-2	Benzene	**2.6**	0.15 U	**0.13**	**0.42**	**2.7**	**24**	**1.9**
100-44-7	Benzyl Chloride	0.64 U	0.76 U	0.7 U	0.76 U	0.69 U	3.5 U	10 U
75-27-4	Bromodichloromethane	0.13 U	0.15 U	0.14 U	0.15 U	0.14 U	0.7 U	2 U
75-25-2	Bromoform	0.64 U	0.76 U	0.7 U	0.76 U	0.69 U	3.5 U	10 U
74-83-9	Bromomethane	0.13 U	0.15 U	0.14 U	0.15 U	0.14 U	0.7 U	2 U
75-15-0	Carbon Disulfide	**12**	**1.3**	**0.6**	7.6 U	**13**	**11**	**6.1**
56-23-5	Carbon Tetrachloride	**0.66**	0.15 U	0.14 U	**0.48**	**0.16**	0.7 U	2 U
108-90-7	Chlorobenzene	0.13 U	0.15 U	0.14 U	0.15 U	0.14 U	0.7 U	2 U
75-00-3	Chloroethane	**0.27** NJ	0.15 U	0.14 U	0.15 U	0.14 U	0.7 U	2 U
67-66-3	Chloroform	**0.43**	**28**	**28**	0.15 U	**0.78**	**6.6**	**78**
74-87-3	Chloromethane	0.26 U	0.3 U	0.28 U	**0.45**	0.27 U	1.4 U	4 U
156-59-2	cis-1,2-Dichloroethene	0.13 U	0.15 U	0.14 U	0.15 U	0.14 U	**1.5**	**11**
10061-01-5	cis-1,3-Dichloropropene	0.64 U	0.76 U	0.7 U	0.76 U	0.69 U	3.5 U	10 U
98-82-8	Cumene	**0.34**	0.76 U	0.7 U	0.76 U	**0.97**	3.5 U	10 U
110-82-7	Cyclohexane	**2.5**	1.5 U	1.4 U	1.5 U	**0.4**	7 U	20 U
124-48-1	Dibromochloromethane	0.13 U	0.15 U	0.14 U	0.15 U	0.14 U	0.7 U	2 U
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.5**	**12**	**12**	**2.5**	**2.6**	**2.5**	10 U
5989-27-5	d-Limonene	**4**	**0.5**	**0.59**	0.76 U	**3.6**	3.5 U	10 U
64-17-5	Ethanol	**20**	7.6 U	**1.5**	**3**	**3.7**	35 U	100 U
141-78-6	Ethyl Acetate	**17**	**0.72 J**	**2.5 J**	1.5 U	**2.4**	7 U	20 U
100-41-4	Ethylbenzene	**2.5**	**0.32**	**0.28**	0.76 U	**8.4**	3.5 U	10 U
87-68-3	Hexachlorobutadiene	0.64 U	0.76 U	0.7 U	0.76 U	0.69 U	3.5 U	10 U
179601-23-1	m,p-Xylenes	**6.7**	**1.2**	**1**	0.76 U	**33**	3.5 U	10 U
80-62-6	Methyl Methacrylate	1.3 U	1.5 U	1.4 U	1.5 U	1.4 U	7 U	20 U
1634-04-4	Methyl tert-Butyl Ether	0.13 U	0.15 U	0.14 U	0.15 U	0.14 U	0.7 U	2 U
75-09-2	Methylene Chloride	**2.3**	**0.37**	**0.43**	**0.44**	**1.7**	**1.5**	**3.9**
91-20-3	Naphthalene	**0.29**	0.76 U	0.7 U	0.76 U	**0.89**	3.5 U	10 U
123-86-4	n-Butyl Acetate	1.6 U	0.76 U	0.7 U	0.76 U	0.44 U	3.5 U	10 U
142-82-5	n-Heptane	**17**	0.76 U	0.7 U	0.76 U	**1.1**	3.5 U	10 U
110-54-3	n-Hexane	**34**	0.76 U	0.7 U	0.76 U	1.2 U	3.5 U	10 U
111-84-2	n-Nonane	**1.6**	0.76 U	0.7 U	0.76 U	**19**	3.5 U	10 U
111-65-9	n-Octane	**6.2**	0.76 U	0.7 U	0.76 U	**3.5**	3.5 U	10 U
103-65-1	n-Propylbenzene	**0.66**	0.76 U	0.7 U	0.76 U	**2.2**	3.5 U	10 U
95-47-6	o-Xylene	**2.6**	**0.51**	**0.46**	0.76 U	**15**	3.5 U	10 U
115-07-1	Propene	**11**	0.76 U	**0.42**	**0.26**	**2.2**	**1.1**	**3.9**
100-42-5	Styrene	0.21 U	0.76 U	0.7 U	0.76 U	0.22 U	3.5 U	10 U
127-18-4	Tetrachloroethene	**12**	**11**	**11**	0.15 U	**41**	**730**	**1,900**
109-99-9	Tetrahydrofuran (THF)	**0.71**	0.76 U	0.7 U	0.76 U	0.69 U	3.5 U	10 U
108-88-3	Toluene	**13**	**0.93**	**0.87**	**0.57**	**8.2**	**1.5**	10 U
156-60-5	trans-1,2-Dichloroethene	0.13 U	0.15 U	0.14 U	0.15 U	0.14 U	0.7 U	2 U
10061-02-6	trans-1,3-Dichloropropene	0.64 U	0.76 U	0.7 U	0.76 U	0.69 U	3.5 U	10 U
79-01-6	Trichloroethene	0.13 U	**1.3**	**1.3**	0.15 U	0.14 U	**48**	**120**
75-69-4	Trichlorofluoromethane	**1.3 NJ**	**11**	**11**	**1.3**	**1.4 NJ**	**1.2**	2 U
76-13-1	Trichlorotrifluoroethane	**0.61**	**0.57**	**0.63**	**0.61**	**0.65**	**0.56**	2 U
108-05-4	Vinyl Acetate	6.4 U	7.6 U	**1.1**	7.6 U	6.9 U	35 U	100 U
75-01-4	Vinyl Chloride	0.13 U	0.15 U	0.14 U	0.15 U	0.14 U	0.7 U	2 U

Notes:
Detected results in bold.
U - Compound not detected, reporting limit provided.

Table 5
Summary of Air Results
Phase II ESA
824 Broadway and (North of) 1 Partition Street
Rensselaer, New York

Location		810 Broadway		800 Broadway			
Sample ID		BRO-SV-06	BRO-IA-01	BRO-SV-01	BRO-IA-02	BRO-IA-02	BRO-AA-02
Sample Date		4/22/2013	4/22/2013	5/29/2013	4/22/2013	5/29/2013	5/29/2013
Matrix		Result	Result	Result	Result	Result	Result
Unit		µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
CAS No.	Compound						
71-55-6	1,1,1-Trichloroethane	0.13 U	0.15 U	5.4 U	0.15 U	0.15 U	0.14 U
79-34-5	1,1,2,2-Tetrachloroethane	0.13 U	0.15 U	5.4 U	0.15 U	0.15 U	0.14 U
79-00-5	1,1,2-Trichloroethane	0.13 U	0.15 U	5.4 U	0.15 U	0.15 U	0.14 U
75-34-3	1,1-Dichloroethane	0.13 U	0.15 U	5.4 U	0.15 U	0.15 U	0.14 U
75-35-4	1,1-Dichloroethene	0.13 U	0.15 U	27 U	0.15 U	0.15 U	0.14 U
120-82-1	1,2,4-Trichlorobenzene	0.67 U	0.77 U	27 U	0.74 U	0.77 U	0.69 U
95-63-6	1,2,4-Trimethylbenzene	**5.1**	**0.38**	27 U	**0.26**	0.77 U	0.69 U
96-12-8	1,2-Dibromo-3-chloropropane	0.67 U	0.77 U	5.4 U	0.74 U	0.77 U	0.69 U
106-93-4	1,2-Dibromoethane	0.13 U	0.15 U	27 U	0.15 U	0.15 U	0.14 U
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	0.67 U	0.77 U	5.4 U	0.74 U	0.77 U	0.69 U
95-50-1	1,2-Dichlorobenzene	0.13 U	0.15 U	5.4 U	0.15 U	0.15 U	**0.21**
107-06-2	1,2-Dichloroethane	0.13 U	0.15 U	5.4 U	0.15 U	0.15 U	0.14 U
78-87-5	1,2-Dichloropropane	0.13 U	0.15 U	27 U	0.15 U	0.15 U	0.14 U
108-67-8	1,3,5-Trimethylbenzene	**1.9**	0.77 U	11 U	0.74 U	0.77 U	0.69 U
106-99-0	1,3-Butadiene	0.27 U	0.31 U	5.4 U	0.29 U	0.31 U	0.27 U
541-73-1	1,3-Dichlorobenzene	0.13 U	0.15 U	5.4 U	0.15 U	0.15 U	0.14 U
106-46-7	1,4-Dichlorobenzene	**0.19 NJ**	0.15 U	27 U	0.15 U	0.15 U	0.14 U
123-91-1	1,4-Dioxane	0.67 U	0.77 U	270 U	0.74 U	0.77 U	0.69 U
78-93-3	2-Butanone (MEK)	**350**	**4.2**	27 U	**0.94**	**1.5 J**	**1.2 J**
591-78-6	2-Hexanone	**4**	0.77 U	270 U	0.74 U	0.77 U	**0.28 J**
67-63-0	2-Propanol (Isopropyl Alcohol)	**18**	**8.9**	5.4 U	**0.76**	7.7 U	6.9 U
107-05-1	3-Chloro-1-propene (Allyl Chloride)	0.13 U	0.15 U	27 U	0.15 U	0.15 U	0.14 U
622-96-8	4-Ethyltoluene	**1.6**	0.77 U	27 U	0.74 U	0.77 U	0.69 U
108-10-1	4-Methyl-2-pentanone	**11**	0.77 U	270 U	0.74 U	0.77 U	0.69 U
67-64-1	Acetone	**220**	**85**	27 U	**12**	**7.1 J**	**7**
75-05-8	Acetonitrile	**13**	**0.85**	110 U	0.74 U	0.77 U	0.69 U
107-02-8	Acrolein	2.7 U	**1**	27 U	**0.59**	**0.34 J**	**0.35 J**
107-13-1	Acrylonitrile	**0.41**	0.77 U	27 U	0.74 U	0.77 U	0.69 U
80-56-8	alpha-Pinene	**5.2**	**8.9**	5.4 U	0.74 U	0.77 U	0.69 U
71-43-2	Benzene	**2.2**	**0.4**	27 U	**0.44**	**0.38**	**0.39**
100-44-7	Benzyl Chloride	0.67 U	0.77 U	5.4 U	0.74 U	0.77 U	0.69 U
75-27-4	Bromodichloromethane	0.13 U	0.15 U	27 U	0.15 U	0.15 U	0.14 U
75-25-2	Bromoform	0.67 U	0.77 U	5.4 U	0.74 U	0.77 U	0.69 U
74-83-9	Bromomethane	0.13 U	0.15 U	270 U	0.15 U	0.15 U	0.14 U
75-15-0	Carbon Disulfide	**7.1**	7.7 U	5.4 U	7.4 U	7.7 U	**1.2 J**
56-23-5	Carbon Tetrachloride	**0.46**	**0.5**	5.4 U	**0.54**	**0.36**	**0.46**
108-90-7	Chlorobenzene	0.13 U	0.15 U	5.4 U	0.15 U	0.15 U	0.14 U
75-00-3	Chloroethane	0.13 U	0.15 U	5.4 U	0.15 U	0.15 U	0.14 U
67-66-3	Chloroform	**0.71**	**0.16**	11 U	**0.19**	**0.26**	0.14 U
74-87-3	Chloromethane	0.27 U	**0.34**	5.4 U	**0.4**	**0.62**	**0.65**
156-59-2	cis-1,2-Dichloroethene	0.13 U	0.15 U	27 U	0.15 U	0.15 U	0.14 U
10061-01-5	cis-1,3-Dichloropropene	0.67 U	0.77 U	27 U	0.74 U	0.77 U	0.69 U
98-82-8	Cumene	**0.42**	0.77 U	54 U	0.74 U	0.77 U	0.69 U
110-82-7	Cyclohexane	1.3 U	1.5 U	5.4 U	1.5 U	1.5 U	1.4 U
124-48-1	Dibromochloromethane	0.13 U	0.15 U	27 U	0.15 U	0.15 U	0.14 U
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.4**	**2.5**	27 U	**2.5**	**1.9**	**2**
5989-27-5	d-Limonene	**3.6**	**1.1**	270 U	0.74 U	0.77 U	0.69 U
64-17-5	Ethanol	**19**	**24**	54 U	**4.1**	**1.6 J**	**3.7 J**
141-78-6	Ethyl Acetate	**0.76**	1.5 U	27 U	1.5 U	**7.2**	**6.9**
100-41-4	Ethylbenzene	**3.7**	**0.31**	27 U	0.74 U	0.77 U	0.69 U
87-68-3	Hexachlorobutadiene	0.67 U	0.77 U	27 U	0.74 U	0.77 U	0.69 U
179601-23-1	m,p-Xylenes	**12**	**1.1**	54 U	**0.5**	0.77 U	0.69 U
80-62-6	Methyl Methacrylate	1.3 U	1.5 U	5.4 U	1.5 U	1.5 U	1.4 U
1634-04-4	Methyl tert-Butyl Ether	0.13 U	0.15 U	**11 JB**	0.15 U	0.15 U	0.14 U
75-09-2	Methylene Chloride	**1**	**0.53**	27 U	**0.44**	**0.78 B**	**0.74 B**
91-20-3	Naphthalene	**0.29**	**0.64**	27 U	0.74 U	0.77 U	0.69 U
123-86-4	n-Butyl Acetate	**0.74**	0.77 U	27 U	0.74 U	0.77 U	0.69 U
142-82-5	n-Heptane	**0.6**	**0.26**	27 U	0.74 U	0.77 U	**0.2 J**
110-54-3	n-Hexane	**0.89**	**0.53**	27 U	**0.78**	**0.9**	**0.43 J**
111-84-2	n-Nonane	**1.1**	**0.23**	5.4 U	0.74 U	0.77 U	0.69 U
111-65-9	n-Octane	**0.87**	**0.26**	27 U	0.74 U	0.77 U	0.69 U
103-65-1	n-Propylbenzene	**1**	0.77 U	27 U	0.74 U	0.77 U	0.69 U
95-47-6	o-Xylene	**4.2**	**0.41**	27 U	0.74 U	0.77 U	0.69 U
115-07-1	Propene	**0.83**	**0.93**	27 U	**0.24 NJ**	**0.23 J**	**0.32 J**
100-42-5	Styrene	**0.45**	**0.24**	27 U	0.74 U	0.77 U	0.69 U
127-18-4	Tetrachloroethene	**160**	**1.4**	**5,100 D**	**0.64**	**1**	**0.26**
109-99-9	Tetrahydrofuran (THF)	**120**	**2.4**	27 U	0.74 U	0.77 U	0.69 U
108-88-3	Toluene	**15**	**3.3**	27 U	**1.2**	**1.1**	**1.6**
156-60-5	trans-1,2-Dichloroethene	0.13 U	0.15 U	5.4 U	0.15 U	0.15 U	0.14 U
10061-02-6	trans-1,3-Dichloropropene	0.67 U	0.77 U	27 U	0.74 U	0.77 U	0.69 U
79-01-6	Trichloroethene	**2.1**	0.15 U	**30**	0.15 U	0.15 U	0.14 U
75-69-4	Trichlorofluoromethane	**1.2**	**1.3**	5.4 U	**1.2**	**1.2**	**1.2**
76-13-1	Trichlorotrifluoroethane	**0.55**	**0.58**	5.4 U	**0.56**	**0.55**	**0.53**
108-05-4	Vinyl Acetate	6.7 U	7.7 U	270 U	7.4 U	**1.1 J**	**1.6 J**
75-01-4	Vinyl Chloride	0.13 U	0.15 U	5.4 U	0.15 U	0.15 U	0.14 U

Notes:
Detected results in bold.
U - Compound not detected, reporting limit provided.

Table 6
Summary of Soil Results - TCLP
Phase II ESA
824 Broadway and
(North of) 1 Partition Street
Rensselaer, New York

Location Sampling Date Units	40 CFR, Ch 1. Regulatory Level mg/l	BRO-IDW-2 4/23/2013 mg/l	
TCLP Metals			
Arsenic, TCLP	5	0.2	U
Barium, TCLP	100	2.25	
Cadmium, TCLP	1	0.06	U
Chromium, TCLP	5	0.1	U
Lead, TCLP	5	0.0915	J
Mercury, TCLP	0.2	0.002	U
Selenium, TCLP	1	0.2	U
Silver, TCLP	5	0.1	U
TCLP VOCs			
1,1-Dichloroethene	0.7	0.025	U
1,2-Dichloroethane	0.5	0.025	U
2-Butanone	200	0.125	U
Benzene	0.5	0.025	U
Carbon Tetrachloride	0.5	0.025	U
Chlorobenzene	100	0.025	U
Chloroform	6	0.025	U
Tetrachloroethene	0.7	0.025	U
Trichloroethene	0.5	0.025	U
Vinyl Chloride	0.2	0.025	U
TCLP SVOCs			
1,4-Dichlorobenzene	7.5	0.1	U
2,4,5-Trichlorophenol	400	0.1	U
2,4,6-Trichlorophenol	2	0.1	U
2,4-Dinitrotoluene	0.13	0.1	U
2-Methylphenol	200	0.1	U
3+4-Methylphenols	200	0.1	U
Hexachlorobenzene	0.13	0.1	U
Hexachlorobutadiene	0.5	0.1	U
Hexachloroethane	3	0.1	U
Nitrobenzene	2	0.1	U
Pentachlorophenol	100	0.1	U
Pyridine	5	0.1	U

U = Compound was analyzed for, but not detected

J = Concentration is an estimated value

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Appendix **A**

Boring Logs and Monitoring Well Construction Logs

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TEST BORING LOG

BORING No.MW-01

PROJECT	**824 Broadway**	LOCATION **Rensselaer, New York**	SHEET **1** OF **1**
CLIENT	**City of Rensselaer**		PROJECT No. **05608003.0000**
DRILLING CONTRACTOR	**ADT**		MEAS. PT. ELEV.
PURPOSE			GROUND ELEV.
WELL MATERIAL			DATUM
DRILLING METHOD(S)		SAMPLE / CORE / CASING	DATE STARTED **4/15/13**
DRILL RIG TYPE	**Geoprobe** TYPE		DATE FINISHED **4/15/13**
GROUND WATER DEPTH	**5.0'** DIA. **"**		DRILLER **Ritchie C.**
MEASURING POINT	WEIGHT **#**		PIRNIE STAFF **D. Giroux**
DATE OF MEASUREMENT	FALL **"**		

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
					Topsoil			
2	1		0		FILL, brown silty SAND with brick, gravel and ash, wet at 5'	1.0		Hand clear to 5'
4							3.0	BRO-SB-1-4-5 (4-5 feet) and MS/MSD
6	5		0		Brown CLAY	5.0	5.0 ▼	
8								
10	5		0		Brown CLAY with silt, SILT lens at 10.5-11	10.0		
12								
14							15.0	
						15.0		

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TEST BORING LOG

BORING No.MW-02

PROJECT	**824 Broadway**	LOCATION **Rensselaer, New York**	SHEET **1** OF **1**
CLIENT	**City of Rensselaer**		PROJECT No. **05608003.0000**
DRILLING CONTRACTOR	**ADT**		MEAS. PT. ELEV.
PURPOSE			GROUND ELEV.
WELL MATERIAL			DATUM
DRILLING METHOD(S)		SAMPLE / CORE / CASING	DATE STARTED **4/11/13**
DRILL RIG TYPE	**HSA**	TYPE	DATE FINISHED **4/11/13**
GROUND WATER DEPTH	**10.0'**	DIA. **"**	DRILLER **Ritchie C.**
MEASURING POINT		WEIGHT **#**	PIRNIE STAFF **D. Giroux**
DATE OF MEASUREMENT		FALL **"**	

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
0	1.2	3 3 3 3	0		FILL, Brown Silty SAND with fine to medium gravel and bricks, moist			
2	0.5	2 2 4 1	0		FILL, Light brown fine to medium SAND with gravel and brick pieces	2.0		Hand clear to 5'
4	0.3	1 1 1 2	0		FILL, Light brown fine to medium SAND with gravel, brick pieces and wood	4.0		
6	0.2	6 3 2 2	0				6.0	
8	0	WOH 1 1 1	0		No recovery, wet at ~10'	8.0	8.0	No Samples Collected, little to no water in the hole
10	0	1 1 1 1	0		No recovery, possible wood and coal in shoe	10.0		
12	2	2 4 4 6	0		Light brown Silty CLAY, wet, stiff	12.0		
14	1	5 5 5 7	0					
16	2	7 6 7 8	0					
18						18.0	18.0	

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TEST BORING LOG

BORING No.MW-03

PROJECT **824 Broadway**	LOCATION **Rensselaer, New York**	SHEET **1** OF **1**	
CLIENT **City of Rensselaer**		PROJECT No. **05608003.0000**	
DRILLING CONTRACTOR **ADT**		MEAS. PT. ELEV.	
PURPOSE		GROUND ELEV.	
WELL MATERIAL		DATUM	
DRILLING METHOD(S)	SAMPLE / CORE / CASING	DATE STARTED **4/15/13**	
DRILL RIG TYPE **HSA**	TYPE	DATE FINISHED **4/15/13**	
GROUND WATER DEPTH **8.0'**	DIA. **"**	DRILLER **Ritchie C.**	
MEASURING POINT	WEIGHT **#**	PIRNIE STAFF **D. Giroux**	
DATE OF MEASUREMENT	FALL **"**		

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
					Asphalt			
					FILL, gravel	0.5		Hand clear to 5 ft
					Brown Silty CLAY to Clayey SILT, moist	4.5		5.0
	0.4	1 1 2 2			Brown Silty CLAY, moist	5.0		BRO-SB-3-5-6 and duplicate (BRO-SB-DUP)
	0.5	3 4 3 3			Gray Silty CLAY to Clayey SILT, wet	8.0		7.0 ▼
	1.5	1 2 3 4			Gray Clayey SILT	9.0		
					Clayey SILT with fine sand	10.0		
	1.5	4 4 4 5			Gray Clayey SILT to Silty Clay, with sand from 11-12, moist	11.0		
	1.0	1 1 2 3			Gray Silty CLAY	13.0		
	1.5	1 2 3 3						17.0
	1.5	4 4 7 8			Gray/brown CLAY	17.0		
						19.0		

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TEST BORING LOG

BORING No.MW-04

PROJECT **824 Broadway**	LOCATION **Rensselaer, New York**	SHEET **1** OF **2**	
CLIENT **City of Rensselaer**		PROJECT No. **05608003.0000**	
DRILLING CONTRACTOR **ADT**		MEAS. PT. ELEV.	
PURPOSE		GROUND ELEV.	
WELL MATERIAL		DATUM	
DRILLING METHOD(S)	SAMPLE / CORE / CASING	DATE STARTED **4/11/13**	
DRILL RIG TYPE **HSA**	TYPE	DATE FINISHED **4/11/13**	
GROUND WATER DEPTH **9.0'**	DIA. **"**	DRILLER **Ritchie C.**	
MEASURING POINT	WEIGHT **#**	PIRNIE STAFF **D. Giroux**	
DATE OF MEASUREMENT	FALL **"**		

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. / DEPTH	WELL Constr.	REMARKS
					Concrete			
					Brown Silty SAND with fine to coarse gravel, trace cobbles	0.5		Hand clear to 5'
2								
4								
		1			FILL, brown and black gravelly SAND with black material, moist to wet, loose	5.0		BRO-SB-4-5-7
6	1	1						
		2						
		2					7.0	
		2			FILL, brown gravelly SAND with silt, some clay, moist, loose	7.0		
8	0.4	1						
		2						
		3					9.0 ▼	
		3			Brown Silty CLAY, wet, stiff	9.0		
10	0.2	3						
		4						
		3						
		2						
12	1	3						
		4						
		5			Gray Clayey SILT	12.5		
		1						
14	1.5	1			Gray CLAY	13.5		
		3						
		3						
		1			Gray CLAY with silt	15.0		
16		2						
		2			Brown CLAY	16.0		
		3						
		4			Gray/brown mottled CLAY, fine to coarse gravel at 17.7', wet, loose	17.0		
18		5						
		5						
		12					19.0	
		2			Gray sand lens, dry	19.0		
		3			Gray Clayey SILT			

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TEST BORING LOG

BORING No.MW-04

PROJECT **824 Broadway**	LOCATION **Rensselaer, New York**	SHEET **2** OF **2**
CLIENT **City of Rensselaer**		PROJECT No. **05608003.0000**

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. / DEPTH	WELL Constr.	REMARKS
		4 7			Gray CLAY	19.1 20.0 21.0		

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TEST BORING LOG

BORING No.MW-05

PROJECT **824 Broadway**	LOCATION **Rensselaer, New York**	SHEET **1** OF **1**	
CLIENT **City of Rensselaer**		PROJECT No. **05608003.0000**	
DRILLING CONTRACTOR **ADT**		MEAS. PT. ELEV.	
PURPOSE		GROUND ELEV.	
WELL MATERIAL		DATUM	
DRILLING METHOD(S)	SAMPLE / CORE / CASING	DATE STARTED **4/12/13**	
DRILL RIG TYPE **HSA**	TYPE	DATE FINISHED **4/12/13**	
GROUND WATER DEPTH **10.0'**	DIA. **"**	DRILLER **Ritchie C.**	
MEASURING POINT	WEIGHT **#**	PIRNIE STAFF **D. Giroux**	
DATE OF MEASUREMENT	FALL **"**		

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
2								Hand clear to 5'
4								
6	0.8	3 2 1 1	0		FILL, Silty SAND with gravel, moist			6.0
8	1	1 1 1 1	40		Brown fine to medium SAND, trace fine gravel, moist	7.0		8.0 BRO-SB-5-8-9
10	0.5	1 1 3 1			Brown CLAY GRAVEL, wet	9.0 10.0		▼
12	0.5	1 1 1/1 ft			GRAVEL Brown Silty CLAY to Clayey SILT	11.0 11.2		
14	0.5	3 3 3 2			Brown Silty CLAY to Clayey SILT, rock in shoe	13.0		
16	2	1 3 5 2			Gray CLAY			
18		7 9 9 10			Brownish gray CLAY	17.0		18.0
						19.0		

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TEST BORING LOG

BORING No.MW-05a

PROJECT **824 Broadway**	LOCATION **Rensselaer, New York**	SHEET **1** OF **1**	
CLIENT **City of Rensselaer**		PROJECT No. **05608003.0000**	
DRILLING CONTRACTOR **ADT**		MEAS. PT. ELEV.	
PURPOSE		GROUND ELEV.	
WELL MATERIAL		DATUM	
DRILLING METHOD(S)	SAMPLE / CORE / CASING	DATE STARTED **4/12/13**	
DRILL RIG TYPE **HSA**	TYPE	DATE FINISHED **4/12/13**	
GROUND WATER DEPTH **11.0'**	DIA. **"**	DRILLER **Ritchie**	
MEASURING POINT	WEIGHT **#**	PIRNIE STAFF **D. Giroux**	
DATE OF MEASUREMENT	FALL **"**		

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. / DEPTH	WELL Constr.	REMARKS
2			0					Hand clear to 5 ft.
4								
6	1	WOH WOH 1 1	0		Brown fine to medium SAND, some fine gravel, moist, loose			
8	1	2 1 1 2	0					
10	0.5		0		Brown gravelly SAND, some silt, possibley FILL	10.0		May have located a clay pipe, abandon location and move 5 ft east. Sand to above pipe depth, bentonite to surface
12	0.5	2 1 1 1	0		Clay pipe, gravel Brown CLAY	11.0 12.0		
						13.0		

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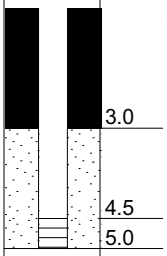
TEST BORING LOG

BORING No.SV-01

PROJECT	**824 Broadway**	LOCATION	**Rensselaer, New York**	SHEET	**1** OF **1**
CLIENT	**City of Rensselaer**			PROJECT No.	**05608003.0000**
DRILLING CONTRACTOR	**ADT**			MEAS. PT. ELEV.	
PURPOSE				GROUND ELEV.	
WELL MATERIAL				DATUM	
DRILLING METHOD(S)		SAMPLE	CORE / CASING	DATE STARTED	**4/15/13**
DRILL RIG TYPE	**Geoprobe**	TYPE		DATE FINISHED	**4/15/13**
GROUND WATER DEPTH	'	DIA.	"	DRILLER	**Marty**
MEASURING POINT		WEIGHT	#	PIRNIE STAFF	**D. Giroux**
DATE OF MEASUREMENT		FALL	"		

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. / DEPTH	WELL Constr.	REMARKS
2					See log for MW-01			flush mount
						3.0		Bentonite seal 0.5'
4						4.5		
						5.0		
						5.5		

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TEST BORING LOG

BORING No.SV-02

PROJECT	**824 Broadway**	LOCATION **Rensselaer, New York**	SHEET **1** OF **1**
CLIENT	**City of Rensselaer**		PROJECT No. **05608003.0000**
DRILLING CONTRACTOR	**ADT**		MEAS. PT. ELEV.
PURPOSE			GROUND ELEV.
WELL MATERIAL			DATUM
DRILLING METHOD(S)		SAMPLE / CORE / CASING	DATE STARTED **4/15/13**
DRILL RIG TYPE	**Geoprobe** TYPE		DATE FINISHED **4/15/13**
GROUND WATER DEPTH	' DIA. **"**		DRILLER **Marty**
MEASURING POINT	WEIGHT **#**		PIRNIE STAFF **D. Giroux**
DATE OF MEASUREMENT	FALL **"**		

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. / DEPTH	WELL Constr.	REMARKS
					See log for MW-02			
2								
4								
6						6.5		Bentonite seal 0.5'
						7.5		
8						8.5		
						8.5		

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TEST BORING LOG

BORING No.SV-03

PROJECT	**824 Broadway**	LOCATION **Rensselaer, New York**	SHEET **1** OF **1**
CLIENT	**City of Rensselaer**		PROJECT No. **05608003.0000**
DRILLING CONTRACTOR	**ADT**		MEAS. PT. ELEV.
PURPOSE			GROUND ELEV.
WELL MATERIAL			DATUM
DRILLING METHOD(S)		SAMPLE / CORE / CASING	DATE STARTED **4/16/13**
DRILL RIG TYPE	**Geoprobe** TYPE		DATE FINISHED **4/16/13**
GROUND WATER DEPTH	' DIA. **"**		DRILLER **Marty**
MEASURING POINT	WEIGHT **#**		PIRNIE STAFF **D. Giroux**
DATE OF MEASUREMENT	FALL **"**		

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. / DEPTH	WELL Constr.	REMARKS
2					See log for MW-03			
4								Bentonite seal from 4-5', bentonite chips to surface
6						5.0 6.5 7.0 7.5		
						7.5		

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TEST BORING LOG

BORING No.SV-04

PROJECT	**824 Broadway**	LOCATION **Rensselaer, New York**	SHEET **1** OF **1**
CLIENT	**City of Rensselaer**		PROJECT No. **05608003.0000**
DRILLING CONTRACTOR	**ADT**		MEAS. PT. ELEV.
PURPOSE			GROUND ELEV.
WELL MATERIAL			DATUM
DRILLING METHOD(S)		SAMPLE / CORE / CASING	DATE STARTED **4/16/13**
DRILL RIG TYPE	**Geoprobe** TYPE		DATE FINISHED **4/16/13**
GROUND WATER DEPTH	' DIA. "		DRILLER **Marty**
MEASURING POINT	WEIGHT #		PIRNIE STAFF **D. Giroux**
DATE OF MEASUREMENT	FALL "		

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
					See log for MW-04			
2								
4								
6								Bentonite seal from 6-7', bentonite chips to surface
8						7.0 8.5 9.0		
						9.0		

ARCADIS
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TEST BORING LOG

BORING No.SV-05

PROJECT	**824 Broadway**	LOCATION **Rensselaer, New York**	SHEET **1** OF **1**
CLIENT	**City of Rensselaer**		PROJECT No. **05608003.0000**
DRILLING CONTRACTOR	**ADT**		MEAS. PT. ELEV.
PURPOSE			GROUND ELEV.
WELL MATERIAL			DATUM
DRILLING METHOD(S)		SAMPLE / CORE / CASING	DATE STARTED **4/16/13**
DRILL RIG TYPE	**Geoprobe** TYPE		DATE FINISHED **4/16/13**
GROUND WATER DEPTH	' DIA. "		DRILLER **Marty**
MEASURING POINT	WEIGHT #		PIRNIE STAFF **D. Giroux**
DATE OF MEASUREMENT	FALL "		

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. / DEPTH	WELL Constr.	REMARKS
2					See log for MW-05			
4								
6								Bentonite seal from 6-7', bentonite chips to surface
8						7.0 8.5 9.0 9.5		
						9.5		

APPENDIX C
QUALITY ASSURANCE PROJECT PLAN

TABLE OF CONTENTS

1.0 QUALITY ASSURANCE PROJECT PLAN

1.1 Introduction

This Quality Assurance Project Plan (QAPP) includes identification of sampling locations and media; methods of collection, handling and preservation; and protocols to be used for sample analysis. Environmental media to be sampled includes soil and groundwater.

1.2 Data Quality Objectives

Data Quality Objectives (DQOs) are statements which describe the desired quality of data necessary to meet the objectives of the sampling program. The DQOs for the Tim Bayly Property were developed as part of this Sample and Analysis Plan. The general steps followed in preparation of the DQOs were as follows:

- *Identification of the media to be sampled* - Identifies the media being investigated (e.g., ground water, surface soil).
- *Identification of the data uses* - Identifies the intended use of the data according to the following:
    - Site Characterization - Data are used to determine the composition, nature, and extent of contamination.
    - Risk Assessment - Data are used to evaluate the actual or potential risks posed by contaminants determined to be present on-site. Particular attention is given to sampling at locations where human exposure is possible.
    - Health and Safety Plan (HSP) - Data are used to establish the level of protection needed for on-site workers during site characterization activities.
    - Monitoring - Data are used during the monitoring of a remedial action to access the effectiveness of such action.
    - Evaluation of Alternatives - Data are used to evaluate various proposed remedial technologies and assist in proper design of alternatives.
- *Identification of the data types* - Identifies what types of analyses are to be performed.
- *Sample Collected* - Describes the sample types to be collected
    - Environmental - Refers to a specific media sampled such as water, soil, air, or biological.
    - Source - Refers to sampling an actual contamination source.
    - Grab - A discrete sample representative of a specific location.
    - Composite - A sample that represents a mixture of a number of grab samples that represents the average properties over the extent of areas sampled.
    - Biased - Sampling that focuses on a specific area of expected contamination or uncontaminated area (background).
- *Identification of the data quality needs* - Identifies the analytical options available to support data collection activities and are identified as follows:

- Level I: *Field Screening* - portable type instruments which provide real-time data.
- Level II: *Field Analysis* - portable analytical instruments in an on-site lab or transported to the site.
- Level III: *Standard Analytical Protocols* - standard analytical protocols or without the New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocol (ASP) (2005) deliverables/reportables documentation.
- Level IV: *NYSDEC ASP Reportables/Deliverables* - rigorous QA/QC protocols and reportables/deliverables documentation; NYSDEC ASP (2005) Category B deliverables
- Level V: *Non-Standard* - methods which have been modified to meet specific site study or remediation needs or by use of some other specialized analytical methods that cannot be obtained through standard or typical avenues of analytical support.

- *Identification of Data Quality Factors* - Describes factors which influence the quality or quantity of data to be collected. Primary contaminants and associated levels of concern are identified concerning Applicable or Relevant and Appropriate Requirements (ARARs) or potential risks. Required detection limits are also given or referenced.
- *Identification of QA/QC Samples* - Specifies additional samples to be collected to support QA/QC procedures. Additional samples to be collected could include:
  - *Matrix Spike/Matrix Spike Duplicates* - Matrix spike and matrix spike duplicate samples are collected as a duplicate sample to which the analytical laboratory will add known amounts of target analytes. These QA/QC samples are intended to assess the extraction procedure used by the laboratory.
  - *Field Blanks* - Field (equipment) blanks are samples which are obtained by running analyte-free water through the sample collection equipment in a way that is identical to the sample collection procedures. Field blanks may be used during QA/QC procedures to evaluate if sampling equipment has contributed contaminants to the samples.
  - *Trip Blanks* - Trip blanks are samples which are prepared prior to the sampling event in the same type of sample container and are kept with the collected samples throughout the sampling event unit analysis. Trip blank vials are not opened in the field and are analyzed for volatile organics only.

1.3 Record Keeping and Sample Management

Daily Field Records - A dedicated bound field book will be maintained for the duration of the project. All daily activities will be recorded in the log book and transfer to the daily *project inspection form*. The competed forms will be submitted to the project manager on a daily basis for short term activities and on a weekly basis for longer duration activities.

Soil Boring Logs - A soil boring log will be prepared for each soil boring. The log will include a detailed description of each sample with respect to soil type, color, grain size, moisture content, staining, odors, PID reading, blow counts, etc.

Monitoring Well Construction Logs - A monitoring well construction log will be prepared for each monitoring well. The size, depth, well screen setting, sand pack type and setting depths, bentonite seal settings, etc. will be included on the log. Once the site survey has been completed the appropriate vertical elevations will be included on the well construction logs.

Well Purging Logs – Well purging logs will be maintained each time a monitoring well is purged and sampled. The log will include all observations and field data recorded during well purging operations. Well purging logs will include at a minimum; initial and final observations with respect to pH, color, turbidity, temperature, specific conductance, TDS, odors and any sheen, NAPL or other miscellaneous observations. The log will also include the starting and completion time, volume of water purged, and notes on the recharge to the monitoring well.

Sample Labels - A sample label will be completed for each sample obtained and will be affixed to the sample container. Information on the label includes, at a minimum, client name, project, sample location (boring designation), sample description (depth), sample number, date, time, grab sample or composite sample, sampler's name and any special notes.

Chain-of-Custody Sheet - All pertinent field information will be entered onto the chain-of-custody sheets including client name, sample ID, sample description, location of sample, sampling method, number of containers, container type, analysis required, and preservation. The Chain-of-Custody section of the form will document the sample's pathway of sample shipment which will include names of persons delivering/receiving, dates, and times. Copies of the completed forms will be retained by the project manager and the analytical laboratory. The original Chain-of-Custody sheets will be submitted in the Remedial Investigation report along with the laboratory results.

Sample Designation - Each sample will have a unique sample code that will include, where appropriate, the sample media, and the sample location. The following codes will be used in the sample designation: Groundwater Monitoring well: MW-1, MW-2, etc. Subsurface Soil Boring: SB-1, SB-2, etc. Field Blank: FB-1, FB-2, etc. Trip Blanks: TB-1, TB-2, etc. Each soil sample will also include the depth of sample collection. Any blind duplicate samples will be given a designation, appropriate for the media, with a number and depth recorded in the daily field records.

1.4 Sampling Procedures

1.4.1 Sub-Surface Soil Sampling

Six exterior and one interior soil borings will be located as shown on Figure 4. Sub-surface soil samples will be collected using either Macro Core® direct push methods and/or split spoon sampling methods in accordance with ASTM D-1586. Macro Core liners will be dedicated to each sample and will not be reused. All other equipment contacting the sub-surface soils will be decontaminated between samples to avoid any cross contamination. All personnel handling the sampling equipment and soil samples will utilize latex, nitrile or similar gloves, which will be changed between handling each sample. Macro Core liners or split spoon samplers will be opened and after the initial inspection and screening soil will be placed directly in sealed sampling containers, prior to head space analysis with a PID. Upon completion of each boring, the sample chosen for laboratory analysis (highest VOC levels, staining, odor, or from the groundwater interface if no distinguishing characteristics) will be immediately placed in

laboratory provided sampling containers. It is assumed that seven soil samples will be collected for analysis, along with one blind duplicate chosen by the field team.

The containers will be labeled with respect to client, project, soil boring designation, sample depth, and analytical method. Sample containers will be placed in a cooler with ice and delivered under formal chain of custody procedures within the holding time parameters for the analytical methods chosen. All personnel responsible for the collection of samples will be familiar with standard sampling procedures and protocol.

All equipment coming into contact with the sub-surface soils during the soil boring and/or monitoring well installation and all soil sampling procedures will be decontaminated between samples. Augers, rods, and any other equipment will also be decontaminated between borings. Decontamination will consist of an Alconox wash, followed by a potable fresh water rinse. A decontamination pad will be constructed and all wash water recovered and placed in 55-gallon drums for appropriate disposal, if determined necessary after characterization.

1.4.2 Groundwater Sampling

Following the installation of the monitoring wells, each well will be developed to remove sediment and increase interconnection with the adjacent aquifer. Development of the wells will be performed by bailing or low flow peristaltic pumping methods. Development will be performed using pre-cleaned dedicated Teflon bailers and new line or pre-cleaned dedicated plastic flex tubing and a peristaltic pump. Due to the known slow recharge previously observed, it is assumed at this time that bailers will be the preferred development method. Groundwater field parameters will be monitored during well development, including: pH, specific conductivity, temperature, TDS, odors, sheen and turbidity, etc. All purged water will be placed in 55-gallon drums for future characterization and disposal.

Groundwater samples will be collected from each of the four new monitoring wells and the four previously installed monitoring wells (MW-01, MW-03, MW-04, MW-05), if feasible. As stated previously, existing monitoring well MW-03 was previously dry and existing monitoring well MW-04 did not have sufficient recharge for collection of samples beyond the TAL VOCs. Sampling of the wells will be performed by bailing or low flow peristaltic pumping methods. All samples will be collected with pre-cleaned dedicated Teflon bailers and new line or pre-cleaned dedicated plastic flex tubing and a peristaltic pump. In the event that more than 24-hours has elapsed between well development and sampling, three to five well volumes of water will be removed (purged) from the monitoring well and containerized as described above. If purging is required, groundwater field parameters will be monitored during well purging, including: color, pH, specific conductivity, temperature, TDS, turbidity, odors, sheen, etc. Groundwater samples will then be placed in laboratory provided sampling vials and/or containers. If the turbidity exceeds 50 NTU and can not be reduced though further purging, field or laboratory filtering of samples for TAL Metals analysis will be performed. Note a blind duplicate sample will be also collected for laboratory analysis from one of the monitoring wells.

All groundwater samples will be immediately placed in laboratory provided sampling containers, with appropriate laboratory prepared preservatives, if required. It is assumed that seven soil samples will be collected for analysis, along with one blind duplicate chosen by the field team.

The containers will be labeled with respect to client, project, monitoring well designation, time, sample collector and analysis requested. Sample containers will be placed in a cooler with ice and delivered under formal chain of custody procedures within the holding time parameters for the analytical methods chosen. All personnel responsible for the collection of samples will be familiar with standard sampling procedures and protocol.

1.5 Field Measurement Techniques and Instrument Calibration

Water Level Measurement - Water elevations will be taken on all wells prior to purging and sampling. All measurements will be taken within a 24-hour period to obtain consistent elevations and recorded on well data sheets. The procedure for measuring water levels in the monitoring wells is:

- Unlock and remove well cap;
- Test the atmosphere of the well with a calibrated PID instrument. If the gases from the well have caused the air in the breathing zone to read greater than 5 ppm, stop work and refer to the Health and Safety Plan
- Measure water level to nearest 0.01 foot with a water level indicator (electronic).
- Water level meters will be decontaminated before moving to next well. The tape and cable will be decontaminated by washing in a bucket of distilled water-biodegradable phosphate free-detergent solution, followed by a rinse with distilled water.

Specific Conductance Measurement - A specific conductance meter will be field calibrated daily, using a 1M KCl reference solution, to 1413 μmhos/cm at 25 degrees centigrade. Sample aliquots for specific conductance and temperature will be obtained directly from the sampling point in 100 ml disposable beakers.
Photoionization Detector (PID) - The PID will be calibrated daily (and more often as required by the manufacturer's data) prior to use in the field, using calibration test gases.

1.6 Laboratory Analysis

1.6.1 Laboratory Certification

The laboratory will be certified by the NYSDEC to perform Contract Laboratory Program (CLP) analysis on all media to be sampled during this investigation. The laboratory will perform all sample analysis in accordance with the most recent NYSDEC Analytical Services Protocol (ASP).

1.6.2 Data Submittal

Sample reports will include ASP Category B deliverables. All data will be submitted in EQuIS Electronic Data Deliverables (EDD) data package. All procedures for chain of custody, laboratory instrumentation calibration, laboratory analysis, reporting of data, internal quality control and corrective actions shall be followed in accordance with SW-846 and as per the accepted laboratory Quality Assurance Plan. Where appropriate trip blanks, field blanks, field duplicates and matrix spike, and matrix spike duplicates will be performed at a rate of 5% and will be used to assess the quality of the data. The laboratory's in-house QA/QC limits will be used whenever they are more stringent than those suggested by the EPA protocols.

1.6.3 Analytical Methods

Sampling and analysis of soil and groundwater will be performed for the Target Compound List (TCL) parameters including volatiles and semivolatiles, Target Analyte List (TAL) Metals, PCBs, pesticides, and herbicides. The specific analyses will be conducted according to the following methodologies:

TCL Volatiles USEPA 8260

TCL Semivolatiles USEPA 8270

Metals CLP-M-Series/USEPA 6010B (TAL List)

PCBs/Pesticides USEPA 8081/8082

Herbicides USEPA 8151

Trip blanks will accompany each shipment of aqueous samples for volatile organic compounds (VOC) analysis. Trip blanks are not necessary for soil samples. If several samples are collected for VOC analysis on any one day, all VOC samples will be packed in the same cooler with the trip blank. All trip blanks will be analyzed according to NYSDEC ASP protocol for volatile organics. Duplicate samples will be obtained from surface water or groundwater (aqueous) and soil samples (solids).

1.6.4 Data Usability Summary Report

The data package will be sent to a NYSDEC pre-qualified independent third party data validation specialist for evaluation of the accuracy and precision of the analytical results in accordance with DER-10, Appendix 2B. The Data usability Summary Report (DUSR) will provide a determination of whether the data meets the project specific criteria for data quality and data use.

APPENDIX D
HEALTH & SAFETY PLAN

HANSON
VAN VLEET, LLC

HYDROGEOLOGIC & ENVIRONMENTAL CONSULTANTS

902 ROUTE 146 CLIFTON PARK, NY 12065

APPENDIX D
HEALTH & SAFETY PLAN

for

Tim Bayly Property
800 Broadway
City of Rensselaer
Rensselaer County, New York
BCP Site No.: C442043

Submitted To:

Mr. James Quinn, P.E.
Regional Hazardous Waste Engineer
Project Manager
New York State Department of Environmental Conservation
Division of Environmental Remediation
1130 North Westcott Road
Schenectady, New York 12306

September 3, 2014

Emergency Contact Notification Table

AGENCY	CONTACT	PHONE NO.
Police/Sheriff	Emergency	911
Fire	Emergency	911
First Aid/EMS	Emergency	911
Ambulance	Emergency	911
Hospital/Emergency Care	Albany Medical Center 43 New Scotland Avenue Albany, NY	(518) 262-3125
Poison Control Center		800-222-1222
Chemical Emergency	CHEMTREC	800-424-9300
Oil Spills and Hazardous Material Spills	NYSDEC Hot Line	800-457-7362
Project Manager	Travis Mitchell, PE, Environmental Design Partnership	Office Phone (518) 371-7621, Cell Phone: (518) 376-4489
Technical Manager/ Emergency Coordinator	Kirby Van Vleet, Hanson Van Vleet, LLC	Office Phone (518) 371-7940, Cell Phone: (518) 577-5291
NYSDEC Project Manager	James Quinn, PE NYSDEC Division of Environmental Remediation 1130 North Westcott Rd Schenectady, NY I 2306	(518) 357-2273
Developer	Tim Bayly Development, LLC 360 West 34th Street, Apt. 11C New York, NY 10001	917-697-8647
Written Directions from the Site to Albany Medical Center (2.9 Miles, 10 Minutes) (See Bing® map and directions, next page)	From Site: Head southwest on Broadway – go 0.6 miles; Turn right onto US 20 West/US 9 North/Dunn Memorial Bridge toward I-787, continue past I-787 – go 0.7 miles; Take NY 32/South Pearl St./US 20 West ramp – go 0.3 miles; Turn left onto NY 32/South Pearl St./US 20 West – go 0.1 mile; Take 3rd right onto Madison Avenue – go 1.1 mile; Turn left onto New Scotland Avenue – go 0.3 miles, Albany Medical Center will be on right.	

bing Maps

Directions from Site to Albany Medical Center

A **800 Broadway, Rensselaer, NY 12144**

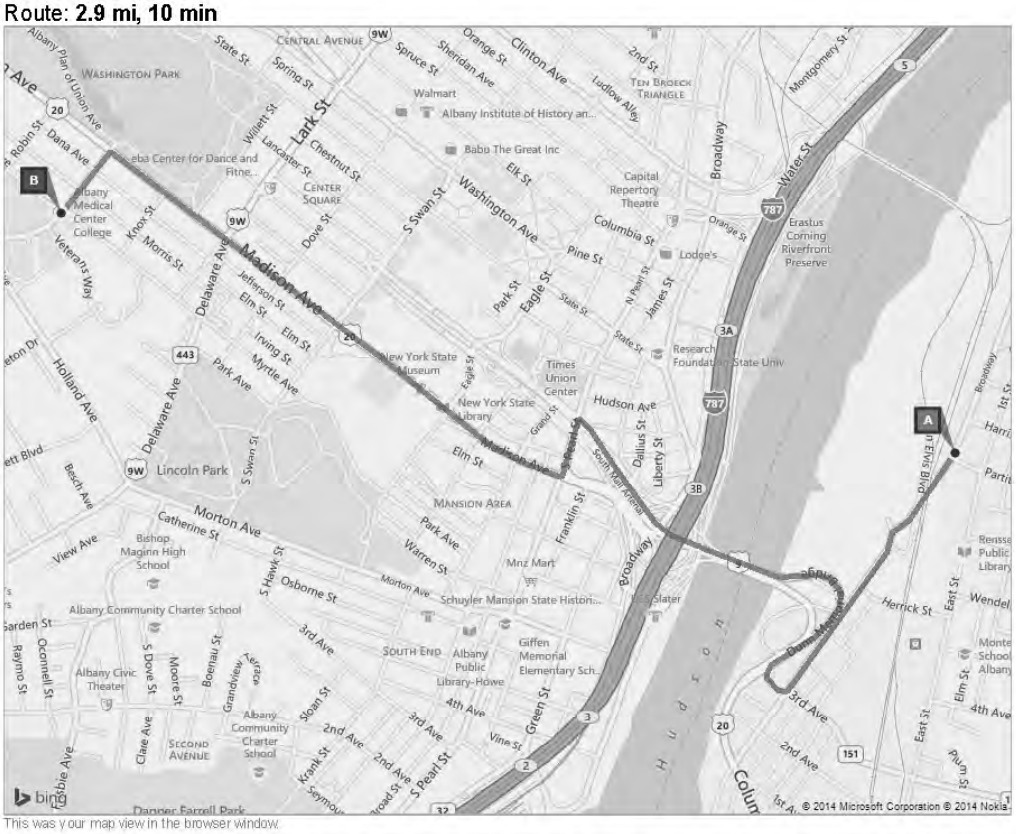
B **43 New Scotland Ave, Albany, NY 12208**

On the go? Use **m.bing.com** to find maps directions, businesses, and more

Route: **2.9 mi, 10 min**

A	**800 Broadway, Rensselaer, NY 12144**	**A–B: 2.9 mi** 10 min
	1. Depart **Broadway** toward Partition St	0.6 mi
9	2. Take ramp **right** for **US-9 N / US-20 W**	0.5 mi
	3. Keep **straight** onto **US-20 W / Dunn Memorial Bridge**	0.2 mi
	4. Take ramp **right** and follow signs for **US-20 West / RT-32**	0.3 mi
	5. Turn **left** onto **US-20 / RT-32 / S Pearl St**	0.1 mi
	6. Turn **right** to stay on **US-20 / Madison Ave**	1.1 mi
	7. Turn **left** onto **New Scotland Ave**	0.2 mi
B	8. Arrive at **43 New Scotland Ave, Albany, NY 12208** *The last intersection is Myrtle Ave* *If you reach Veterans Way, you've gone too far*	

Route: **2.9 mi, 10 min**



This was your map view in the browser window.

A: **800 Broadway, Rensselaer, NY 12144**

B: **43 New Scotland Ave, Albany, NY 12208**

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FIGURES

APPENDICES

1.0 GENERAL INFORMATION

The Health and Safety Plan (HASP) described in this document will address health and safety considerations for all those activities that personnel performing work in association with implementing the remedial investigation at the Tim Bayly Property Brownfield Site located at 800 Broadway, in the City of Rensselaer, Rensselaer County, New York. The site is within a mixed commercial and residential urban area. Figures 1 and 2 show the location of the site. This HASP will be implemented by the Health and Safety Officer (HSO) during site work.

Compliance with this HASP is required of all personnel (employee's and subcontractors) who enter the work areas associated with this site. The content of the HASP may change or undergo revision based upon additional information made available to health, safety, and training officer (HSO), monitoring results or changes in the technical scope of work. Any changes proposed must be reviewed by the HSO.

This HASP was written specifically for employees and sub-contractors of Hanson Van Vleet, LLC, and is not intended for use by others.

Responsibilities

Engineering Manager:
Travis Mitchell, PE; Office Phone (518) 371-7621, Cell Phone: (518) 376-4489

Project Manager:
Kirby Van Vleet; Office Phone (518) 371-7940, Cell Phone: (518) 577-5291

Site Health and Safety Officer:
James Gironda; Office Phone (518) 371-7940, Cell Phone: (518) 606-8676

Emergency Coordinator:
Kirby Van Vleet; Office Phone (518) 371-7940, Cell Phone: (518) 577-5291

Health & Safety Manager:
Laurie Williams; Office Phone (518) 371-7940, Cell Phone: (518) 396-8108

2.0 HEALTH AND SAFETY PERSONNEL DESIGNATIONS

The following information briefly describes the health and safety designations and general responsibilities which may be employed for this Project.

2.1 Engineering Manager (EM)

The EM is responsible for the overall project including all submittals, reporting, conclusions, and remedial design.

2.2 Project Manager (PM)

The PM is responsible for the overall project including the implementation of the HASP.

Specifically, this includes allocating adequate manpower, coordinating subcontractors, equipment, and time resources to conduct site activities safely.

2.3 Health and Safety Officer (HSO)

The HSO is the person on-site responsible for assuring those personnel under direction comply with the requirements of the HASP and that personnel protective equipment needed for site work is available.

2.4 Emergency Coordinator

The Emergency Coordinator is responsible for implementation of the Emergency Response Procedures as presented in Section 13 of this HASP.

2.5 Health and Safety Manager

The Health and Safety Manager has overall responsibilities for implementing Health and Safety Programs for all HVV employees.

3.0 PERTINENT SITE INFORMATION

3.1 Site Location and General History

The site is located at 800 Broadway in the City of Rensselaer, Rensselaer County, New York. The site is located at the northeastern corner of the intersection of Broadway and Partition Street. Rensselaer County tax maps identify the site as Section 52, Block 3, Lot 18. The 3,548 square foot site is almost entirely occupied by the existing structure. Figure 1 shows the site on a USGS base map. An aerial photograph of the site and immediate surrounding area is included as Figure 2.

Tim Bayly Development, LLC has owned the property since 2013. According to a Phase 1 Environmental Site Assessment report prepared by Arcadis, dated September 26, 2012, the use of site from at least 1956 to 1978 was as a dry cleaner. Sanborn maps indicate the area was developed at least back to 1909, with commercial and/or residential structures occupying the site and surrounding area. No specific uses were noted, with the exception of the time period the site was identified as “Roxy Un Cleaners” (Roxy). Information reviewed indicates the site has been vacant since approximately 1978 when Roxy vacated the site.

Two areas of concern (AOCs) were identified during the prior investigations. AOC-1 is the area of monitoring well MW-05, where chlorinated VOCs were found in the groundwater exceeding NYSDEC Class GA Standards. AOC-2 is the basement foot print of the structure, where sub-slab and interior air concentrations of tetrachloroethene (PCE) indicate that mitigation is required.

With respect to historical operations and the results of recent investigations, chlorinated VOC vapors and chlorinated VOC contamination of groundwater appear to be the hazardous substances of concern. Specific compounds identified in both the air and groundwater at the site included: tetrachloroethene, trichloroethene, carbon tetrachloride, cis-1,2 dichloroethene and vinyl chloride. No other potentially hazardous substances have been identified to date.

4.0 HAZARD ASSESSMENT AND HAZARD COMMUNICATION

The most likely routes of exposure during Site Investigation tasks include skin adsorption and inhalation due to exposure to contaminated materials. During warm weather, contact with vectors
such as bees or wasps is also a concern. It is difficult to draw a correlation between the concentrations of contaminants found in one media and the potential for exposure to these contaminants to site workers. However, their presence may indicate that some potential for exposure to these compounds exist, and the requirements for protective measures and monitoring of exposure is based on this potential. Pertinent information, including Material Safety Data Sheets (MSDS), regarding chemicals identified at the site, are provided in Appendix D-1.

5.0 TRAINING

5.1 Basic Training Required

Completion of the 40-hour Health and Safety Training for Hazardous Waste Operations, annual 8-hour refresher and three days on the job training under the supervision of a qualified person is required for HVV employees who will perform work in areas where the potential for a toxic exposure exists.

5.2 Advanced Training

Advanced training, as necessary, will be provided to any personnel who will be expected to perform site work utilizing Level A protection or other specialized operation to be undertaken at the site.

5.3 Site-Specific Training

Training will be provided that specifically addresses the activities, procedures, monitoring, and equipment for the site operations prior to going on site. Training will include familiarization with site and facility layout, known and potential hazards, and emergency services at the site, and details of all provisions contained within this HASP. This training will also allow field workers to clarify anything they do not understand and to reinforce their responsibilities regarding safety and operations for their particular activity.

5.4 Safety Briefings

All project personnel will be given briefings by the HSO on a daily or as needed basis to further assist site personnel in conducting their activities safely. Pertinent information will be provided when new operations are to be conducted. Changes in work practices must be implemented due to new information made available, or if site or environmental conditions change. Briefings will also be given to facilitate conformance with prescribed safety practices. When conformance with these practices is not occurring or if deficiencies are identified during safety audits, the project manager will be notified.

5.5 First Aid and CPR

HVV employees performing field investigation efforts are trained in basic first aid and CPR by the American Red Cross as part of annual 8 hour refresher courses required under 29 CFR Part 1910.120.

6.0 ZONES

6.1 Site Zones

Three types of site activity zones are identified for the Brownfield investigation activities, including the Exclusion Zone, Contamination Reduction Zone, and the Support Zone. Prior to commencement of field work a further definition of where these zones will be set up will be established.

6.1.1 Exclusion Zone

The Exclusion Zone is the area where contamination is known to be or likely to be present or where activity is being conducted which has the potential to cause harm. The Exclusion Zone will be any area in the general vicinity of active site work or intrusive activities. It is anticipated that the location of the Exclusion Zone will change as various investigation activities change. No one may enter the Exclusion Zone without the necessary protective equipment and without permission from the HSO.

6.1.2 Contamination Reduction Zone

This is the transition area between the Exclusion Zone and the Support Zone. It is the area where the decontamination of equipment and personnel takes place. Its purpose is to keep the Support Zone free of contamination. This zone may change locations as various investigation activities change.

6.1.3 Support Zone

The Support Zone is considered the uncontaminated area. This area may include a trailer, command post, or pre-work area and personnel vehicles, which will provide for communications and emergency response. Appropriate safety and support equipment will be located in this zone.

7.0 PERSONAL PROTECTIVE EQUIPMENT

7.1 General

The level of protection to be worn by field personnel will be defined and controlled by the HSO. Depending upon the type and levels of contamination present or anticipated at the site, varying degrees of protective equipment will be needed. If the possible hazards are unknown, a reasonable level of protection will be taken until sampling and monitoring results can ascertain potential risks.

The levels of protection listed below are based on USEPA Guidelines. A list of the appropriate clothing for each level is included:

Level A protection must be worn when a reasonable determination has been made that the highest
available level of respiratory, skin, eye, and mucous membrane protection is needed. It should be noted that while Level A provides maximum available protection, it does not protect against all possible hazards. Consideration of the heat stress that can arise from wearing Level A protection should also enter into the decision making process. Level A protection includes:

- Open circuit, pressure-demand self-contained breathing apparatus (SCBA)

- Totally encapsulated chemical resistant suit
- Gloves, inner (surgical type)
- Gloves, outer, chemical protective
- Boots, chemical protective

Level B protection must be used when the highest level of respiratory protection is needed, but hazardous material exposure to the few unprotected areas of the body (e.g., the back of the neck) is unlikely. Level B protection includes:

- Open circuit, pressure-demand SCBA or pressure airline with escape air bottle
- Chemical protective clothing: Overalls and long sleeved jacket; disposal chemical resistant coveralls; one or two piece chemical splash suit with hood
- Gloves, inner (surgical type)
- Gloves, outer, chemical protective
- Boots, chemical protective

Level C must be used when the required level of respiratory protection is known, or reasonably assumed to be, not greater than the level of protection afforded by air purifying respirators; and hazardous materials exposure to the few unprotected areas of the body (e.g., the back of the neck) is unlikely. Level C protection includes:

- Full or half face air-purifying respirator
- Chemical protective clothing: Overalls and long-sleeve jacket; disposable chemical resistant coveralls; coveralls; one or two piece chemical splash suit
- Gloves, inner (surgical type)
- Gloves, outer, chemical protective
- Boots, chemical protective

Level D is the basic work uniform. It cannot be worn on any site where respiratory or skin hazards exist. Level D protection includes:

- Safety boots/shoes
- Safety glasses
- Hard hat with optional face shield

Note that the use of SCBA and airline equipment is contingent upon the user receiving special training in the proper use and maintenance of such equipment.

7.2 Personal Protective Equipment – Site Specific

Level D with some modification will be required when working in the work zone on this site. In addition to the basic work uniform specified by Level D protection, Nitrile gloves will be required when contact with soil or ground water is likely. Hearing protection, consistent with the Hearing Conservation Plan included in the General HVV Health & Safety Policy (See Appendix D-2) will be worn when power equipment is used to perform subsurface investigation work. An upgrade to a higher level (Level C) of protection may occur if determined necessary by the HSO.

8.0 MONITORING PROCEDURES

8.1 Monitoring During Site Operations

All site environmental monitoring should be accompanied by periodic meteorological monitoring of appropriate climatic conditions.

8.2 Drilling Operations (Monitoring Well Installation and Subsurface Borings)

Monitoring will be performed by the HSO or drilling observer during the conduct of work. A photoionization detector (PID) equipped with a 10.0 eV lamp will be utilized to monitor for the presence of volatile organic vapors within the breathing zone, the borehole, and subsurface samples upon their retrieval. Drill cuttings and excavation spoils will also be monitored by use of the PID. If subsurface conditions warrant, a combustible gas indicator (CGI) with oxygen alarm may also be used to monitor the borehole for the presence of combustible gases. Similar monitoring of fluids produced during well development will also be conducted.

8.3 Action Levels

If readings on the PID exceed 10 ppm for more than fifteen minutes consecutively, then personal protective equipment should be upgraded to Level C. The air purifying respirator used with Level C protective equipment must be equipped with organic vapor cartridges. If readings on the explosive gas meter are within a range of 10%-25% of the LEL then continuous monitoring will be implemented. Readings above 25% of the LEL indicate the potential for an explosive condition. Sources of ignition should be removed and the site should be evacuated.

8.4 Personal Monitoring Procedures

Personal monitoring shall be performed as a contingency measure in the event that VOC concentrations are consistently above the 10 ppm action level as detected by the PID. If the concentration of VOCs is above this action level, then amendments to the HASP must be made before work can continue at the site.

8.5 Medical Surveillance Procedures for Evidence of Personal Exposure

All HVV personnel, who will be performing field work at the Site must be medically qualified. Additional medical testing may be required by the HSO in consultation with the company physician and corporate Health & Safety Manager if an overt exposure or accident occurs, or if other site conditions warrant further medical surveillance.

9.0 COMMUNICATIONS

A cell phone will be located on site to be utilized by HVV personnel conducting investigation. Cell phones will be the primary means of communicating with emergency support services/facilities. If cell phone service is not available or fails, then land line communication may be necessary. Prior to commencing field activities, the location of back-up land lines will be identified and communicated to HVV employees on the site.

10.0 SAFETY CONSIDERATIONS FOR SITE OPERATIONS

10.1 General

Standard safe work practices that will be followed include:

- Do not climb over/under drums, or other obstacles.
- Do not enter the work zone alone.
- Practice contamination avoidance, on and off-site.
- Plan activities ahead of time, use caution when conducting concurrently running activities.
- No eating, drinking, chewing or smoking is permitted in work zones.
- Due to the unknown nature of waste placement at the site, extreme caution should be practiced during drilling and/or excavation activities.
- Apply immediate first aid to any and all cuts, scratches, abrasions, etc.
- Be alert to your own physical condition. Watch your buddy, fellow employees and subcontractors for signs of fatigue, exposure, etc.
- A work/rest regimen will be initiated when ambient temperatures and protective clothing create a potential heat stress situation.
- No work will be conducted without adequate light or without appropriate supervision.
- Task safety briefings will be held prior to onset of task work.
- Ignition of flammable liquids within or through improvised heating devices (barrels, etc.) or space heaters is forbidden.
- Entry into areas or spaces where toxic or explosive concentrations of gases or dust may exist without proper equipment is prohibited.
- Any injury or unusual health effect must be reported to the site health and safety officer immediately.
- Prevent splashing or spilling of potentially contaminated materials, especially when placing materials in drums during waste management.
- Use of contact lenses is prohibited while on site.
- Beards and other facial hair that would impair the effectiveness of respiratory protection are prohibited if respiratory protection is necessary.
- Field crew members should be familiar with the physical characteristics of investigations, including:
  - Wind direction in relation to potential sources
  - Accessibility to co-workers, equipment, and vehicles
  - Communication
  - Hot zones (areas of known or suspected contamination)
  - Site access
  - Nearest water sources
- The number of personnel and equipment in potentially contaminated areas should be minimized consistent with site operations.

10.2 Field Operations

The HSO or designee will be present on-site during all intrusive work, e.g., drilling operations, excavations, sampling, etc., and will provide monitoring to oversee that appropriate levels of

protection and safety procedures are utilized by HVV personnel. The use of salamanders or other equipment with an open flame is prohibited and the use of protective clothing, especially hard hats and boots, will be required during drilling or other heavy equipment operations.

11.0 DECONTAMINATION PROCEDURES

Decontamination involves physically removing contaminants and/or converting them chemically into innocuous substances. Only general guidance can be given on methods and techniques for decontamination. Decontamination procedures are designed to:

- Remove contaminant(s).
- Avoid spreading the contamination from the work zone.
- Avoid exposing unprotected personnel outside of the work zone to contaminants.

Contamination avoidance is the first and best method for preventing spread of contamination from a hazardous site. Each person involved in site operations must practice the basic methods of contamination avoidance listed below. Additional precautions may be required in the HASP.

- Know the limitations of all protective equipment being used.
- Do not enter a contaminated area unless it is necessary to carry out a specific objective.
- When in a contaminated area, avoid touching anything unnecessarily.
- Walk around pools of liquids, discolored areas, or any area that shows evidence of possible contamination.
- Walk upwind of contamination, if possible.
- Do not sit or lean against anything in a contaminated area. If you must kneel (e.g., to take samples), use a plastic ground sheet.
- If at all possible, do not set sampling equipment directly on contaminated areas. Place equipment on a protective cover such as a ground cloth.
- Use the proper tools necessary to safely conduct the work.

Specific methods that may reduce the chance of contamination are:

- Use of remote sampling techniques.
- Opening containers by non-manual means.
- Bagging monitoring instruments.
- Use of drum grapplers.
- Watering down dusty areas.

Equipment which will need to be decontaminated includes tools, monitoring equipment, and personal protective equipment. Items to be decontaminated will be brushed off, rinsed, and dropped into a plastic container supplied for that purpose. They will then be washed with a detergent solution and rinsed with clean water. Monitoring instruments will be wrapped in plastic bags prior to entering the field in order to reduce the potential for contamination. Instrumentation that is contaminated during field operations will be carefully wiped down. Heavy equipment, if utilized for operations where it may be contaminated, will have prescribed decontamination procedures to prevent hazardous materials from potentially leaving the site. The on-site contractor will be responsible for decontaminating all construction equipment prior to demobilization.

12.0 DISPOSAL PROCEDURES

All discarded materials, waste materials, or other objects shall be handled in such a way as to reduce or eliminate the potential for spreading contamination, creating a sanitary hazard, or causing litter to be left on-site. All potentially contaminated materials, e.g., clothing, gloves, etc., will be bagged or drummed as necessary and segregated for proper disposal. All contaminated waste materials shall be disposed of as required by the provisions included in the work plan and consistent with regulatory provisions. All non-contaminated materials shall be collected and bagged for appropriate disposal. Investigation derived waste will be managed consistent with the work plan for this site and DER-10 Technical Guidance for Site Investigation and Remediation.

13.0 EMERGENCY RESPONSE PROCEDURES

As a result of the hazards at the site, and the conditions under which operations are conducted, there is the possibility of emergency situations. This section has established procedures for the implementation of an emergency plan.

13.1 Emergency Coordinator

Emergency Coordinator:

Kirby Van Vleet; Office Phone (518) 371-7940, Cell Phone: (518) 577-5291

The Emergency Coordinator or his on-site designee will implement the emergency response procedures whenever conditions at the site warrant such action. The Emergency Coordinator or his on-site designee will be responsible for assuring the evacuation, emergency treatment, emergency transport of HVV and subcontractor personnel as necessary, and notification of emergency response units (refer to phone listing in the beginning of this HASP) and the appropriate management staff.

13.2 Evacuation

In the event of an emergency situation, such as fire, explosion, significant release of toxic gases, etc., all HVV and subcontractor personnel will evacuate and assemble in a designated assembly area. The Emergency Coordinator or his on-site designee will have authority to contact outside services as required. Under no circumstances will incoming personnel or visitors be allowed to proceed into the area once the emergency signal has been given. The Emergency Coordinator or his on-site designee must see that access for emergency equipment is provided and that all ignition sources have been shut down once the alarm has been sounded. Once the safety of all personnel is established, the Fire Department and other emergency response groups will be notified by telephone of the emergency.

13.3 Potential or Actual Fire or Explosion

Immediately evacuate the site and notify local fire and police departments, and other appropriate emergency response groups, if LEL values are above 25% in the work zone or if an actual fire or explosion has taken place.

13.4 Environmental Incident (spread or release of contamination)

Control or stop the spread of contamination if possible. Notify the Emergency Coordinator and

the Project Manager. Other appropriate response groups will be notified as appropriate.

13.5 Personnel Injury

Emergency first aid shall be applied on-site as necessary. Then, decontaminate (en route if necessary) and transport the individual to nearest medical facility if needed. The ambulance/rescue squad shall be contacted for transport as necessary in an emergency. The directions and map to the hospital are shown in the front of this HASP.

13.6 Personnel Exposure

- *Skin Contact*: Use copious amounts of soap and water. Wash/rinse affected area thoroughly, and then provide appropriate medical attention. Eyes should be thoroughly rinsed with water for at least 15 minutes.
- *Inhalation*: Move to fresh air and/or, if necessary, decontaminate and transport to emergency medical facility.
- *Ingestion*: Decontaminate and transport to emergency medical facility.
- *Puncture Wound/Laceration*: Decontaminate, if possible, and transport to emergency medical facility.

13.7 Adverse Weather Conditions

In the event of adverse weather conditions, the HSO will determine if work can continue without sacrificing the health and safety of HVV field workers.

13.8 Incident Investigation and Reporting

In the event of an incident, procedures discussed in the HVV Safety Policy is presented in Appendix D-2 of this HASP, shall be followed.

13.9 Other

A more detailed description of general HVV safety policies is included in Appendix D-2

14.0 COMMUNITY RELATIONS

14.1 Community Relations

Community relations may be a sensitive matter. All HVV employees should be aware of issues associated with this specific site. Conversations with community members not involved in activities at the site should be limited. Conversations between site workers off the site, in restaurants, etc., should not include discussions of the potential hazards on the site nor should negative statements be made regarding the site. The Owner and the New York State Department of Environmental Conservation are the designated spokespersons for the Tim Bayly Property Brownfield Project.

14.2 Community Health and Safety Plan

14.2.1 Site Access

In general, the majority of active and/or intrusive efforts to be completed as part of the Site Investigation will occur during the completion of soil borings, installation of monitoring wells and borings completed for purposes of subsurface assessment relative to the nature and extent of

contamination. Community residences are located adjacent to the site. During completion of the Site Investigation activities, site access will be limited to only those personnel (field sampling technicians, geologists, engineers, and subcontractors) who are scheduled to be involved with site specific investigation.

14.2.2 Community Health and Safety Monitoring

As part of the Site Investigation, three general types of efforts are scheduled, including, non-intrusive reconnaissance tasks, sampling or monitoring tasks (monitoring point sampling), and intrusive tasks (subsurface borings, monitoring well installation). During completion of general reconnaissance and sampling or monitoring tasks, potential for health and safety risks to off-site landowners or the local community are not anticipated. During completion of intrusive efforts at or adjacent to the site, health and safety monitoring efforts will be concentrated on the area or areas in which intrusive efforts are being completed. Since the air pathway is the most available and likely avenue for the release of potential contaminants to the atmosphere at or near the site, in addition to limiting public or community access to the areas in which intrusive efforts are completed, health and safety measures will primarily consist of monitoring the air pathway for worker exposure.

14.2.3 Community Air Monitoring Plan

During completion of site investigation activities, efforts will be taken to complete field work in a manner which will minimize the creation of airborne dust or particulates. Under dry conditions, work areas may be wetted to control dust. During periods of extreme wind, intrusive field work may be halted until such time as the potential for creating airborne dust or particulate matter as a result of investigation activities is limited. Periodic monitoring following the guidelines of the NYSDOH's Generic Community Air Monitoring Plan (see Appendix D-3) will be implemented during all nonintrusive site investigation activities, including surface soil and sediment sampling, and collection of groundwater samples from groundwater monitoring wells.

During completion of site investigation, a community air monitoring plan meeting the requirements of the NYSDOH's Generic Community Air Monitoring Plan (see Appendix D-3) will be implemented for the duration of intrusive activities. These additional air monitoring activities will include establishment of background conditions, continuous monitoring for volatile organic compounds and/or particulates at the downwind work area (exclusion zone) perimeter, recording of monitoring data, and institution and documentation of Response Levels and appropriate actions in accordance with NYSDOH guidance.

15.0 AUTHORIZATIONS

HVV personnel and subcontractors authorized to enter the Site while operations are being conducted must be approved by the HSO. Authorization will involve completion of appropriate training courses, medical examination requirements, and review and sign-off of this HASP. No HVV personnel should enter the work zone alone. Each HVV employee should check in with the HSO or Project Manager prior to entering the work zones.

APPENDIX D-1
MATERIAL SAFETY DATA SHEETS

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATHESON TRI-GAS, INC.
150 Allen Road Suite 302
Basking Ridge, New Jersey 07920
Information: 1-800-416-2505

Emergency Contact:
CHEMTREC 1-800-424-9300
Calls Originating Outside the US:
703-527-3887 (Collect Calls Accepted)

SUBSTANCE: TETRACHLOROETHYLENE

TRADE NAMES/SYNONYMS:
MTG MSDS 238; PERCHLOROETHYLENE; 1,1,2,2-TETRACHLOROETHYLENE; ETHYLENE TETRACHLORIDE; PERC; TETRACHLORETHYLENE; PERCHLORETHYLENE; TETRACHLOROETHENE; PCE; RCRA U210; UN 1897; C2Cl4; MAT22900; RTECS KX3850000

CHEMICAL FAMILY: halogenated, aliphatic

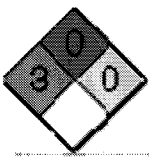
CREATION DATE: Jan 24 1989
REVISION DATE: Dec 11 2008

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: TETRACHLOROETHYLENE
CAS NUMBER: 127-18-4
PERCENTAGE: 100.0

3. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=0 REACTIVITY=0



EMERGENCY OVERVIEW:
COLOR: colorless
PHYSICAL FORM: volatile liquid
ODOR: faint odor, sweet odor
MAJOR HEALTH HAZARDS: respiratory tract irritation, skin irritation, eye irritation, central nervous system depression, cancer hazard (in humans)

POTENTIAL HEALTH EFFECTS:
INHALATION:
SHORT TERM EXPOSURE: irritation, nausea, vomiting, chest pain, difficulty breathing, irregular

heartbeat, headache, drowsiness, dizziness, disorientation, mood swings, loss of coordination, blurred vision, lung congestion, kidney damage, liver damage
LONG TERM EXPOSURE: irritation, nausea, stomach pain, loss of appetite, headache, drowsiness, dizziness, disorientation, sleep disturbances, pain in extremities, loss of coordination, blurred vision, hormonal disorders, internal bleeding, heart damage, liver damage, birth defects, brain damage, tumors, cancer
SKIN CONTACT:
SHORT TERM EXPOSURE: irritation (possibly severe)
LONG TERM EXPOSURE: irritation
EYE CONTACT:
SHORT TERM EXPOSURE: irritation
LONG TERM EXPOSURE: irritation
INGESTION:
SHORT TERM EXPOSURE: same as effects reported in short term inhalation
LONG TERM EXPOSURE: same as effects reported in long term inhalation

4. FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

SKIN CONTACT: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

EYE CONTACT: Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

INGESTION: If vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately.

NOTE TO PHYSICIAN: For inhalation, consider oxygen. For ingestion, consider gastric lavage. Consider oxygen.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Negligible fire hazard.

EXTINGUISHING MEDIA: carbon dioxide, regular dry chemical

Large fires: Use regular foam or flood with fine water spray.

FIRE FIGHTING: Cool containers with water spray until well after the fire is out. Stay away from the ends

of tanks. For tank, rail car or tank truck, evacuation radius: 800 meters (1/2 mile).

FLASH POINT: No data available.

6. ACCIDENTAL RELEASE MEASURES

SOIL RELEASE:
Dig holding area such as lagoon, pond or pit for containment. Dike for later disposal. Absorb with sand or other non-combustible material.

WATER RELEASE:
Absorb with activated carbon. Remove trapped material with suction hoses. Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). Keep out of water supplies and sewers.

OCCUPATIONAL RELEASE:
Avoid heat, flames, sparks and other sources of ignition. Stop leak if possible without personal risk. Small liquid spills: Absorb with sand or other non-combustible material. Large spills: Dike for later disposal. Remove sources of ignition. Keep unnecessary people away, isolate hazard area and deny entry. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

7. HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards. Store in a cool, dry place. Store in a well-ventilated area. Avoid heat, flames, sparks and other sources of ignition. Keep separated from incompatible substances.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:
TETRACHLOROETHYLENE:
TETRACHLOROETHYLENE (PERCHLOROETHYLENE):
100 ppm OSHA TWA
200 ppm OSHA ceiling
300 ppm OSHA peak (5 minutes in any 3 hours)
25 ppm (170 mg/m3) OSHA TWA (vacated by 58 FR 35338, June 30, 1993)
25 ppm ACGIH TWA
100 ppm ACGIH STEL
NIOSH TWA (lowest feasible concentration)

VENTILATION: Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: Wear appropriate chemical resistant gloves.

RESPIRATOR: The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.

At any detectable concentration -

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

Escape -

Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted organic vapor canister.

Any appropriate escape-type, self-contained breathing apparatus.

For Unknown Concentrations or Immediately Dangerous to Life or Health -

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: liquid
APPEARANCE: clear
COLOR: colorless
PHYSICAL FORM: volatile liquid
ODOR: faint odor, sweet odor
MOLECULAR WEIGHT: 165.83
MOLECULAR FORMULA: Cl2-C-C-Cl2
BOILING POINT: 250 F (121 C)
FREEZING POINT: -2 F (-19 C)
VAPOR PRESSURE: 14 mmHg @ 20 C
VAPOR DENSITY (air=1): 5.83
SPECIFIC GRAVITY (water=1): 1.6227
WATER SOLUBILITY: 0.015%
PH: Not available
VOLATILITY: Not available
ODOR THRESHOLD: 50 ppm
EVAPORATION RATE: 2.8 (butyl acetate=1)

COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available
SOLVENT SOLUBILITY:
Soluble: alcohol, ether, benzene, chloroform, oils

10. STABILITY AND REACTIVITY

REACTIVITY: Stable at normal temperatures and pressure.

CONDITIONS TO AVOID: Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat.

INCOMPATIBILITIES: acids, metals, bases, oxidizing materials, combustible materials

HAZARDOUS DECOMPOSITION:
Thermal decomposition products: phosgene, halogenated compounds, oxides of carbon

POLYMERIZATION: Will not polymerize.

11. TOXICOLOGICAL INFORMATION

TETRACHLOROETHYLENE:
IRRITATION DATA: 810 mg/24 hour(s) skin-rabbit severe; 500 mg/24 hour(s) skin-rabbit mild; 162 mg eyes-rabbit mild; 500 mg/24 hour(s) eyes-rabbit mild
TOXICITY DATA: 4100 ppm/6 hour(s) inhalation-rat LC50; >10000 mg/kg skin-rabbit LD50 (Dow); 2629 mg/kg oral-rat LD50
CARCINOGEN STATUS: NTP: Anticipated Human Carcinogen; IARC: Human Limited Evidence, Animal Sufficient Evidence, Group 2A; ACGIH: A3 -Confirmed Animal Carcinogen; EC: Category 2
LOCAL EFFECTS:
Irritant: inhalation, skin, eye
ACUTE TOXICITY LEVEL:
Moderately Toxic: ingestion
Slightly Toxic: inhalation
TARGET ORGANS: central nervous system
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: eye disorders, heart or cardiovascular disorders, kidney disorders, liver disorders, nervous system disorders, skin disorders and allergies
TUMORIGENIC DATA: Available.
MUTAGENIC DATA: Available.
REPRODUCTIVE EFFECTS DATA: Available.
ADDITIONAL DATA: May be excreted in breast milk. Alcohol may enhance the toxic effects. Stimulants such as epinephrine may induce ventricular fibrillation.

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:
FISH TOXICITY: 8430 ug/L 96 hour(s) LC50 (Mortality) Flagfish (Jordanella floridae)

INVERTEBRATE TOXICITY: 7500 ug/L 48 hour(s) EC50 (Immobilization) Water flea (Daphnia magna)

ALGAL TOXICITY: 509000 ug/L 96 hour(s) EC50 (Photosynthesis) Diatom (Skeletonema costatum)

FATE AND TRANSPORT:
BIOCONCENTRATION: 49 ug/L 1-21 hour(s) BCF (Residue) Bluegill (Lepomis macrochirus) 3.43 ug/L

13. DISPOSAL CONSIDERATIONS

Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): U210. Hazardous Waste Number(s): D039. Dispose of in accordance with U.S. EPA 40 CFR 262 for concentrations at or above the Regulatory level. Regulatory level- 0.7 mg/L. Dispose in accordance with all applicable regulations.

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:
PROPER SHIPPING NAME: Tetrachloroethylene
ID NUMBER: UN1897
HAZARD CLASS OR DIVISION: 6.1
PACKING GROUP: III
LABELING REQUIREMENTS: 6.1
MARINE POLLUTANT: TETRACHLOROETHYLENE

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:
SHIPPING NAME: Tetrachloroethylene
UN NUMBER: UN1897
CLASS: 6.1
PACKING GROUP/CATEGORY: III

15. REGULATORY INFORMATION

U.S. REGULATIONS:
CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):
TETRACHLOROETHYLENE (PERCHLOROETHYLENE): 100 LBS RQ

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart B): Not regulated.

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart

C): Not regulated.

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370 Subparts B and C):
ACUTE: Yes
CHRONIC: Yes
FIRE: No
REACTIVE: No
SUDDEN RELEASE: No

SARA TITLE III SECTION 313 (40 CFR 372.65):
TETRACHLOROETHYLENE (PERCHLOROETHYLENE)

OSHA PROCESS SAFETY (29 CFR 1910.119): Not regulated.

STATE REGULATIONS:
California Proposition 65:
Known to the state of California to cause the following:
TETRACHLOROETHYLENE (PERCHLOROETHYLENE)
Cancer (Apr 01, 1988)

CANADIAN REGULATIONS:
WHMIS CLASSIFICATION: D2

NATIONAL INVENTORY STATUS:
U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CANADA INVENTORY (DSL/NDSL): Not determined.

16. OTHER INFORMATION

MATHESON TRI-GAS, INC. MAKES NO EXPRESS OR IMPLIED WARRANTIES, GUARANTEES OR REPRESENTATIONS REGARDING THE PRODUCT OR THE INFORMATION HEREIN, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR USE. MATHESON TRI-GAS, INC. SHALL NOT BE LIABLE FOR ANY PERSONAL INJURY, PROPERTY OR OTHER DAMAGES OF ANY NATURE, WHETHER COMPENSATORY, CONSEQUENTIAL, EXEMPLARY, OR OTHERWISE, RESULTING FROM ANY PUBLICATION, USE OR RELIANCE UPON THE INFORMATION HEREIN.

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATHESON TRI-GAS, INC.
150 Allen Road Suite 302
Basking Ridge, New Jersey 07920
Information: 1-800-416-2505

Emergency Contact:
CHEMTREC 1-800-424-9300
Calls Originating Outside the US:
703-527-3887 (Collect Calls Accepted)

SUBSTANCE: TRICHLOROETHYLENE

TRADE NAMES/SYNONYMS:
MTG MSDS 199; ACETYLENE TRICHLORIDE; ETHYLENE TRICHLORIDE; 1-CHLORO-2,2-DICHLOROETHYLENE; 1,1-DICHLORO-2-CHLOROETHYLENE; TCE; ETHINYL TRICHLORIDE; TRICHLOROETHENE; 1,1,2-TRICHLOROETHYLENE; 1,1,2-TRICHLOROETHENE; UN 1710; RCRA U228; C2HCl3; MAT23850; RTECS KX4550000

CHEMICAL FAMILY: halogenated, alkenes

CREATION DATE: Jan 24 1989
REVISION DATE: Dec 11 2008

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: TRICHLOROETHYLENE
CAS NUMBER: 79-01-6
PERCENTAGE: >99

COMPONENT: INHIBITORS
CAS NUMBER: Not assigned.
PERCENTAGE: <0.1

COMPONENT: AMINES
CAS NUMBER: Not assigned.
PERCENTAGE: <0.1

3. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=2 FIRE=1 REACTIVITY=0

EMERGENCY OVERVIEW:

COLOR: colorless
PHYSICAL FORM: liquid
ODOR: sweet odor
MAJOR HEALTH HAZARDS: respiratory tract irritation, skin irritation, eye irritation, central nervous system depression, allergic reactions, cancer hazard (in humans)
PHYSICAL HAZARDS: May polymerize. Containers may rupture or explode. May decompose on contact with air, light, moisture, heat or storage and use above room temperature. Releases toxic, corrosive, flammable or explosive gases.

POTENTIAL HEALTH EFFECTS:
INHALATION:
SHORT TERM EXPOSURE: irritation, changes in blood pressure, nausea, vomiting, stomach pain, difficulty breathing, irregular heartbeat, headache, drowsiness, dizziness, disorientation, mood swings, tremors, loss of coordination, visual disturbances, bluish skin color, lung congestion, kidney damage, liver damage, unconsciousness, coma
LONG TERM EXPOSURE: same as effects reported in short term exposure, loss of appetite, weight loss, blood disorders, brain damage, cancer
SKIN CONTACT:
SHORT TERM EXPOSURE: irritation, allergic reactions
LONG TERM EXPOSURE: irritation, allergic reactions, nausea, loss of appetite, weight loss, difficulty breathing, headache, drowsiness, dizziness, joint pain, loss of coordination, visual disturbances, paralysis
EYE CONTACT:
SHORT TERM EXPOSURE: irritation (possibly severe), blurred vision
LONG TERM EXPOSURE: irritation (possibly severe), eye damage
INGESTION:
SHORT TERM EXPOSURE: same as effects reported in short term inhalation
LONG TERM EXPOSURE: same as effects reported in long term inhalation

4. FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

SKIN CONTACT: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

EYE CONTACT: Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

INGESTION: If vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately.

NOTE TO PHYSICIAN: For ingestion, consider gastric lavage. Consider oxygen.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Slight fire hazard.

EXTINGUISHING MEDIA: carbon dioxide, regular dry chemical

Large fires: Use regular foam or flood with fine water spray.

FIRE FIGHTING: Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For tank, rail car or tank truck, evacuation radius: 800 meters (1/2 mile).

FLASH POINT: No data available.
LOWER FLAMMABLE LIMIT: 7.8% @ 100 C
UPPER FLAMMABLE LIMIT: 52% @ 100 C
AUTOIGNITION: 770 F (410 C)

6. ACCIDENTAL RELEASE MEASURES

AIR RELEASE:
Reduce vapors with water spray. Collect runoff for disposal as potential hazardous waste.

SOIL RELEASE:
Dig holding area such as lagoon, pond or pit for containment. Dike for later disposal. Absorb with sand or other non-combustible material.

WATER RELEASE:
Absorb with activated carbon. Remove trapped material with suction hoses. Collect spilled material using mechanical equipment. Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). Keep out of water supplies and sewers.

OCCUPATIONAL RELEASE:
Avoid heat, flames, sparks and other sources of ignition. Stop leak if possible without personal risk. Small liquid spills: Absorb with sand or other non-combustible material. Large spills: Dike for later disposal. Remove sources of ignition. Keep unnecessary people away, isolate hazard area and deny entry. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

7. HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards. Store in a cool, dry place. Store in a well-ventilated area. Avoid heat, flames, sparks and other sources of ignition. Keep separated from incompatible substances.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:
TRICHLOROETHYLENE:
100 ppm OSHA TWA
200 ppm OSHA ceiling
300 ppm OSHA peak (5 minutes in any 2 hours)
50 ppm (269 mg/m3) OSHA TWA (vacated by 58 FR 35338, June 30, 1993)
200 ppm (1070 mg/m3) OSHA STEL (vacated by 58 FR 35338, June 30, 1993)
10 ppm ACGIH TWA
25 ppm ACGIH STEL
25 ppm NIOSH TWA 10 hour(s)
2 ppm NIOSH ceiling 60 minute(s) (used as halogenated anesthetic gas)

VENTILATION: Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: Wear appropriate chemical resistant gloves.

RESPIRATOR: The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.
At any detectable concentration -
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.
Escape -
Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted organic vapor canister.
Any appropriate escape-type, self-contained breathing apparatus.
For Unknown Concentrations or Immediately Dangerous to Life or Health -
Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: liquid
COLOR: colorless
ODOR: sweet odor
MOLECULAR WEIGHT: 131.39
MOLECULAR FORMULA: Cl-C-H-C-Cl2
BOILING POINT: 189 F (87 C)
FREEZING POINT: -99 F (-73 C)
VAPOR PRESSURE: 58 mmHg @ 20 C
VAPOR DENSITY (air=1): 4.53
SPECIFIC GRAVITY (water=1): 1.4642
WATER SOLUBILITY: 0.1%
PH: Not available
VOLATILITY: Not available
ODOR THRESHOLD: 21 ppm
EVAPORATION RATE: 0.69 (carbon tetrachloride=1)
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available
SOLVENT SOLUBILITY:
Soluble: alcohol, ether, acetone, chloroform, benzene, vegetable oils

10. STABILITY AND REACTIVITY

REACTIVITY: May decompose on contact with air, light, moisture, heat or storage and use above room temperature. Releases toxic, corrosive, flammable or explosive gases.

CONDITIONS TO AVOID: Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat.

INCOMPATIBILITIES: bases, metals, combustible materials, oxidizing materials

HAZARDOUS DECOMPOSITION:
Thermal decomposition products: phosgene, halogenated compounds, oxides of carbon

POLYMERIZATION: May polymerize. Avoid contact with heat or light and monitor inhibitor content.

11. TOXICOLOGICAL INFORMATION

TRICHLOROETHYLENE:
IRRITATION DATA: 2 mg/24 hour(s) skin-rabbit severe; 20 mg/24 hour(s) eyes-rabbit moderate
TOXICITY DATA: 140700 mg/m3/1 hour(s) inhalation-rat LC50; >20 gm/kg skin-rabbit LD50; 4920 mg/kg oral-rat LD50
CARCINOGEN STATUS: NTP: Anticipated Human Carcinogen; IARC: Human Limited Evidence,

Animal Sufficient Evidence, Group 2A; ACGIH: A2 -Suspected Human Carcinogen
LOCAL EFFECTS:
Irritant: inhalation, skin, eye
ACUTE TOXICITY LEVEL:
Moderately Toxic: ingestion
Slightly Toxic: inhalation
Relatively Non-toxic: dermal absorption
TARGET ORGANS: immune system (sensitizer), central nervous system
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: heart problems
TUMORIGENIC DATA: Available.
MUTAGENIC DATA: Available.
REPRODUCTIVE EFFECTS DATA: Available.
ADDITIONAL DATA: May cross the placenta. Stimulants such as epinephrine may induce ventricular fibrillation.

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:
FISH TOXICITY: 3100 ug/L 96 hour(s) LC50 (Mortality) Flagfish (Jordanella floridae)

INVERTEBRATE TOXICITY: 1700 ug/L 7 hour(s) EC50 (Regeneration) Flatworm (Dugesia japonica)

OTHER TOXICITY: 45000 ug/L 48 week(s) LC50 (Mortality) Clawed toad (Xenopus laevis)

FATE AND TRANSPORT:
BIOCONCENTRATION: 17 ug/L 1-14 hour(s) BCF (Residue) Bluegill (Lepomis macrochirus) 8.23 ug/L

13. DISPOSAL CONSIDERATIONS

Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): U228. Hazardous Waste Number(s): D040. Dispose of in accordance with U.S. EPA 40 CFR 262 for concentrations at or above the Regulatory level. Regulatory level- 0.5 mg/L. Dispose in accordance with all applicable regulations.

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:
PROPER SHIPPING NAME: Trichloroethylene
ID NUMBER: UN1710
HAZARD CLASS OR DIVISION: 6.1
PACKING GROUP: III
LABELING REQUIREMENTS: 6.1

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:
SHIPPING NAME: Trichloroethylene
UN NUMBER: UN1710
CLASS: 6.1
PACKING GROUP/CATEGORY: III

15. REGULATORY INFORMATION

U.S. REGULATIONS:
CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):
TRICHLOROETHYLENE: 100 LBS RQ

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart B): Not regulated.

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart C): Not regulated.

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370 Subparts B and C):
ACUTE: Yes
CHRONIC: Yes
FIRE: No
REACTIVE: No
SUDDEN RELEASE: No

SARA TITLE III SECTION 313 (40 CFR 372.65):
TRICHLOROETHYLENE

OSHA PROCESS SAFETY (29 CFR 1910.119): Not regulated.

STATE REGULATIONS:
California Proposition 65:
Known to the state of California to cause the following:
TRICHLOROETHYLENE
Cancer (Apr 01, 1988)

CANADIAN REGULATIONS:
WHMIS CLASSIFICATION: D2

NATIONAL INVENTORY STATUS:
U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CANADA INVENTORY (DSL/NDSL): Not determined.

16. OTHER INFORMATION

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MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATHESON TRI-GAS, INC.
150 Allen Road Suite 302
Basking Ridge, New Jersey 07920
Information: 1-800-416-2505

Emergency Contact:
CHEMTREC 1-800-424-9300
Calls Originating Outside the US:
703-527-3887 (Collect Calls Accepted)

SUBSTANCE: CIS-1,2-DICHLOROETHYLENE

TRADE NAMES/SYNONYMS:
CIS-ACETYLENE DICHLORIDE; 1,2-DICHLOROETHYLENE; C2H2CL2; MAT05125; RTECS KV9420000

CHEMICAL FAMILY: halogenated, aliphatic

CREATION DATE: Jan 24 1989
REVISION DATE: Dec 11 2008

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: CIS-1,2-DICHLOROETHYLENE
CAS NUMBER: 156-59-2
PERCENTAGE: 100.0

3. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=2 FIRE=3 REACTIVITY=2

EMERGENCY OVERVIEW:
COLOR: colorless
PHYSICAL FORM: liquid
ODOR: pleasant odor
MAJOR HEALTH HAZARDS: respiratory tract irritation, skin irritation, eye irritation, central nervous system depression
PHYSICAL HAZARDS: Flammable liquid and vapor. Vapor may cause flash fire. May react on contact with air, heat, light or water.

POTENTIAL HEALTH EFFECTS:
INHALATION:

SHORT TERM EXPOSURE: irritation, nausea, vomiting, drowsiness, symptoms of drunkenness
LONG TERM EXPOSURE: no information on significant adverse effects
SKIN CONTACT:
SHORT TERM EXPOSURE: irritation
LONG TERM EXPOSURE: same as effects reported in short term exposure
EYE CONTACT:
SHORT TERM EXPOSURE: irritation
LONG TERM EXPOSURE: same as effects reported in short term exposure
INGESTION:
SHORT TERM EXPOSURE: symptoms of drunkenness
LONG TERM EXPOSURE: no information on significant adverse effects

4. FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

SKIN CONTACT: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

EYE CONTACT: Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

INGESTION: If vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately.

NOTE TO PHYSICIAN: For ingestion, consider gastric lavage. Consider oxygen.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Severe fire hazard. Moderate explosion hazard. Vapor/air mixtures are explosive above flash point. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back.

EXTINGUISHING MEDIA: regular dry chemical, carbon dioxide, water, regular foam

Large fires: Use regular foam or flood with fine water spray.

FIRE FIGHTING: Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Withdraw immediately in case of rising sound from venting safety device or any

discoloration of tanks due to fire. For tank, rail car or tank truck: Evacuation radius: 800 meters (1/2 mile). Do not attempt to extinguish fire unless flow of material can be stopped first. Flood with fine water spray. Do not scatter spilled material with high-pressure water streams. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Water may be ineffective.

FLASH POINT: 39 F (4 C) (CC)
LOWER FLAMMABLE LIMIT: 9.7%
UPPER FLAMMABLE LIMIT: 12.8%
FLAMMABILITY CLASS (OSHA): IB

6. ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL RELEASE:
Avoid heat, flames, sparks and other sources of ignition. Stop leak if possible without personal risk. Reduce vapors with water spray. Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal. Remove sources of ignition. Keep unnecessary people away, isolate hazard area and deny entry.

7. HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.106. Grounding and bonding required. Keep separated from incompatible substances.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:
CIS-1,2-DICHLOROETHYLENE:
1,2-DICHLOROETHYLENE (ALL ISOMERS):
200 ppm (790 mg/m3) OSHA TWA
200 ppm ACGIH TWA
200 ppm (790 mg/m3) NIOSH recommended TWA 10 hour(s)

VENTILATION: Provide local exhaust ventilation system. Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: Wear appropriate chemical resistant gloves.

RESPIRATOR: The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.
2000 ppm
Any supplied-air respirator operated in a continuous-flow mode.
Any powered, air-purifying respirator with organic vapor cartridge(s).
Any air-purifying respirator with a full facepiece and an organic vapor canister.
Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted organic vapor canister.
Any self-contained breathing apparatus with a full facepiece.
Any supplied-air respirator with a full facepiece.
Emergency or planned entry into unknown concentrations or IDLH conditions -
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.
Escape -
Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted organic vapor canister.
Any appropriate escape-type, self-contained breathing apparatus.
For Unknown Concentrations or Immediately Dangerous to Life or Health -
Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: liquid
COLOR: colorless
ODOR: pleasant odor
MOLECULAR WEIGHT: 96.94
MOLECULAR FORMULA: C2-H2-CL2
BOILING POINT: 140 F (60 C)
FREEZING POINT: -114 F (-81 C)
VAPOR PRESSURE: 400 mmHg @ 41 C
VAPOR DENSITY (air=1): 3.34
SPECIFIC GRAVITY (water=1): 1.2837
WATER SOLUBILITY: insoluble
PH: Not available
VOLATILITY: Not available
ODOR THRESHOLD: Not available
EVAPORATION RATE: Not available

COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available
SOLVENT SOLUBILITY:
Soluble: acetone, benzene, ether, alcohol

10. STABILITY AND REACTIVITY

REACTIVITY: May decompose on contact with air, light, moisture, heat or storage and use above room temperature. Releases toxic, corrosive, flammable or explosive gases.

CONDITIONS TO AVOID: Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat. Keep out of water supplies and sewers.

INCOMPATIBILITIES: bases, metals, combustible materials, oxidizing materials, acids

HAZARDOUS DECOMPOSITION:
Thermal decomposition products: phosgene, halogenated compounds, oxides of carbon

POLYMERIZATION: May polymerize. Avoid contact with incompatible materials.

11. TOXICOLOGICAL INFORMATION

CIS-1,2-DICHLOROETHYLENE:
TOXICITY DATA: 13700 ppm inhalation-rat LC50
LOCAL EFFECTS:
Irritant: inhalation, skin, eye
ACUTE TOXICITY LEVEL:
Slightly Toxic: inhalation
TARGET ORGANS: central nervous system
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: respiratory disorders
MUTAGENIC DATA: Available.

12. ECOLOGICAL INFORMATION

Not available

13. DISPOSAL CONSIDERATIONS

Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001. Dispose in accordance with all applicable regulations.

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:
PROPER SHIPPING NAME: 1,2-Dichloroethylene
ID NUMBER: UN1150
HAZARD CLASS OR DIVISION: 3
PACKING GROUP: II
LABELING REQUIREMENTS: 3

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:
SHIPPING NAME: 1,2-Dichloroethylene
UN NUMBER: UN1150
CLASS: 3
PACKING GROUP/CATEGORY: II

15. REGULATORY INFORMATION

U.S. REGULATIONS:
CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4): Not regulated.

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart B): Not regulated.

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart C): Not regulated.

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370 Subparts B and C):
ACUTE: Yes
CHRONIC: No
FIRE: Yes
REACTIVE: Yes
SUDDEN RELEASE: No

SARA TITLE III SECTION 313 (40 CFR 372.65):
1,2-DICHLOROETHYLENE (ALL ISOMERS)

OSHA PROCESS SAFETY (29 CFR 1910.119): Not regulated.

STATE REGULATIONS:
California Proposition 65: Not regulated.

CANADIAN REGULATIONS:
WHMIS CLASSIFICATION: BD2

NATIONAL INVENTORY STATUS:
U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CANADA INVENTORY (DSL/NDSL): Not determined.

16. OTHER INFORMATION

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MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATHESON TRI-GAS, INC.
150 Allen Road Suite 302
Basking Ridge, New Jersey 07920
Information: 1-800-416-2505

Emergency Contact:
CHEMTREC 1-800-424-9300
Calls Originating Outside the US:
703-527-3887 (Collect Calls Accepted)

SUBSTANCE: VINYL CHLORIDE

TRADE NAMES/SYNONYMS:
MTG MSDS 97; 1-CHLOROETHYLENE; 1-CHLOROETHENE; CHLOROETHYLENE; CHLOROETHENE; CHLORETHENE; CHLORETHYLENE; ETHYLENE MONOCHLORIDE; MONOCHLOROETHYLENE; MONOCHLORO ETHENE; MONOCHLOROETHENE; VINYL CHLORIDE MONOMER; VINYL CHLORIDE, INHIBITED; VINYL C MONOMER; RCRA U043; UN 1086; C2H3Cl; MAT24940; RTECS KU9625000

CHEMICAL FAMILY: halogenated, aliphatic

CREATION DATE: Jan 24 1989
REVISION DATE: Dec 11 2008

2. COMPOSITION, INFORMATION ON INGREDIENTS

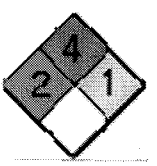
COMPONENT: VINYL CHLORIDE
CAS NUMBER: 75-01-4
PERCENTAGE: >99.9

COMPONENT: PHENOL
CAS NUMBER: 108-95-2
PERCENTAGE: <0.1

COMPONENT: INHIBITORS
CAS NUMBER: Not assigned.
PERCENTAGE: <0.1

3. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=2 FIRE=4 REACTIVITY=1



EMERGENCY OVERVIEW:
COLOR: colorless
PHYSICAL FORM: gas
ODOR: faint odor, sweet odor
MAJOR HEALTH HAZARDS: harmful if swallowed, skin irritation, eye irritation, central nervous system depression, cancer hazard (in humans)
PHYSICAL HAZARDS: Flammable gas. May cause flash fire. May polymerize. Containers may rupture or explode.

POTENTIAL HEALTH EFFECTS:
INHALATION:
SHORT TERM EXPOSURE: irritation, nausea, difficulty breathing, irregular heartbeat, headache, drowsiness, dizziness, disorientation, joint pain, loss of coordination, hearing loss, lung congestion
LONG TERM EXPOSURE: impotence, bluish skin color, blood disorders, liver damage, cancer
SKIN CONTACT:
SHORT TERM EXPOSURE: irritation, blisters
LONG TERM EXPOSURE: irritation, blisters
EYE CONTACT:
SHORT TERM EXPOSURE: irritation, eye damage
LONG TERM EXPOSURE: irritation, eye damage
INGESTION:
SHORT TERM EXPOSURE: frostbite
LONG TERM EXPOSURE: cancer

4. FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

SKIN CONTACT: If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.

EYE CONTACT: Wash eyes immediately with large amounts of water, occasionally lifting upper and lower lids, until no evidence of chemical remains. Get medical attention immediately.

INGESTION: If a large amount is swallowed, get medical attention.

NOTE TO PHYSICIAN: For inhalation, consider oxygen.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Severe fire hazard. Severe explosion hazard. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back. Vapor/air mixtures are explosive. Electrostatic discharges may be generated by flow or agitation resulting in ignition or explosion.

EXTINGUISHING MEDIA: carbon dioxide, regular dry chemical

Large fires: Use regular foam or flood with fine water spray.

FIRE FIGHTING: Move container from fire area if it can be done without risk. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck: Stop leak if possible without personal risk. Let burn unless leak can be stopped immediately. For smaller tanks or cylinders, extinguish and isolate from other flammables. Evacuation radius: 800 meters (1/2 mile). Do not attempt to extinguish fire unless flow of material can be stopped first. Flood with fine water spray. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Evacuate if fire gets out of control or containers are directly exposed to fire. Evacuation radius: 500 meters (1/3 mile). Consider downwind evacuation if material is leaking.

FLASH POINT: -108 F (-78 C) (CC)
LOWER FLAMMABLE LIMIT: 3.6%
UPPER FLAMMABLE LIMIT: 33%
AUTOIGNITION: 882 F (472 C)

6. ACCIDENTAL RELEASE MEASURES

WATER RELEASE:
Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). Keep out of water supplies and sewers.

OCCUPATIONAL RELEASE:
Avoid heat, flames, sparks and other sources of ignition. Stop leak if possible without personal risk. Reduce vapors with water spray. Keep unnecessary people away, isolate hazard area and deny entry. Remove sources of ignition. Ventilate closed spaces before entering. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

7. HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards. Protect from physical damage. Store outside or in a detached building. Inside storage: Store in a cool, dry place. Store in a

well-ventilated area. Avoid heat, flames, sparks and other sources of ignition. Grounding and bonding required. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. See original container for storage recommendations. Keep separated from incompatible substances.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:
VINYL CHLORIDE:
1.0 ppm OSHA TWA
5 ppm OSHA STEL 15 minute(s)
0.5 ppm OSHA action level 8 hour(s)
1 ppm ACGIH TWA
NIOSH TWA (lowest feasible concentration)

VENTILATION: Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: For the gas: Wear appropriate chemical resistant gloves. For the liquid: Wear insulated gloves. OSHA REGULATED SUBSTANCES: U.S. OSHA 29 CFR 1910.1017.

RESPIRATOR: The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.
OSHA Standard:
Respirator selection should comply with 29 CFR 1910.134, 29 CFR 1910.1017, and the final rule published in the Federal Register on August 24, 2006.
NIOSH Recommendations:
At any detectable concentration -
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.
Escape -
Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted canister providing protection against the compound of concern.
Any appropriate escape-type, self-contained breathing apparatus.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: gas
COLOR: colorless
ODOR: faint odor, sweet odor
MOLECULAR WEIGHT: 62.50
MOLECULAR FORMULA: C-H2-C-H-Cl
BOILING POINT: 9 F (-13 C)
FREEZING POINT: -245 F (-154 C)
VAPOR PRESSURE: 2515.6 mmHg @ 21.1 C
VAPOR DENSITY (air=1): 2.2
SPECIFIC GRAVITY (water=1): 0.9106
WATER SOLUBILITY: 0.25%
PH: Not applicable
VOLATILITY: Not applicable
ODOR THRESHOLD: 260 ppm
EVAPORATION RATE: Not applicable
VISCOSITY: 0.01072 cP @ 20 C
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not applicable
SOLVENT SOLUBILITY:
Soluble: alcohol, ether, carbon tetrachloride, benzene

10. STABILITY AND REACTIVITY

REACTIVITY: May polymerize. Avoid contact with light or storage and use above room temperature.

CONDITIONS TO AVOID: Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat.

INCOMPATIBILITIES: metal carbide, metals, oxidizing materials, peroxides

HAZARDOUS DECOMPOSITION:
Thermal decomposition products: halogenated compounds, oxides of carbon, phosgene

POLYMERIZATION: May polymerize. Avoid contact with heat, light, air, water or incompatible materials. Closed containers may rupture violently.

11. TOXICOLOGICAL INFORMATION

VINYL CHLORIDE:
TOXICITY DATA: 18 pph/15 minute(s) inhalation-rat LC50; 500 mg/kg oral-rat LD50
CARCINOGEN STATUS: OSHA: Carcinogen; NTP: Known Human Carcinogen; IARC: Human Sufficient Evidence, Animal Sufficient Evidence, Group 1; ACGIH: A1 -Confirmed Human Carcinogen;

EC: Category 1
LOCAL EFFECTS:
Irritant: skin, eye
ACUTE TOXICITY LEVEL:
Toxic: ingestion
Relatively Non-toxic: inhalation
TARGET ORGANS: central nervous system
TUMORIGENIC DATA: Available.
MUTAGENIC DATA: Available.
REPRODUCTIVE EFFECTS DATA: Available.
ADDITIONAL DATA: Stimulants such as epinephrine may induce ventricular fibrillation. May cause birth defects.

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:
FISH TOXICITY: 388000 ug/L 10 month(s) LETH (Mortality) Northern pike (Esox lucius)

INVERTEBRATE TOXICITY: 41.74 ug/L 72 day(s) (Residue) Mosquito (Culex pipiens quinquefasciata)

ALGAL TOXICITY: 41.74 ug/L 72 day(s) (Residue) Green algae (Oedogonium cardiacum)

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations. Hazardous Waste Number(s): D043. Dispose of in accordance with U.S. EPA 40 CFR 262 for concentrations at or above the Regulatory level. Regulatory level- 0.2 mg/L. U043.

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:
PROPER SHIPPING NAME: Vinyl chloride, stabilized
ID NUMBER: UN1086
HAZARD CLASS OR DIVISION: 2.1
LABELING REQUIREMENTS: 2.1
QUANTITY LIMITATIONS:
PASSENGER AIRCRAFT OR RAILCAR: Forbidden
CARGO AIRCRAFT ONLY: 150 kg

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:
SHIPPING NAME: Vinyl chloride, stabilized
UN NUMBER: UN1086
CLASS: 2.1

15. REGULATORY INFORMATION

U.S. REGULATIONS:
CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):
Vinyl chloride: 1 LBS RQ
PHENOL: 1000 LBS RQ

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart B): Not regulated.

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart C): Not regulated.

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370 Subparts B and C):
ACUTE: Yes
CHRONIC: Yes
FIRE: Yes
REACTIVE: Yes
SUDDEN RELEASE: Yes

SARA TITLE III SECTION 313 (40 CFR 372.65):
Vinyl chloride

OSHA PROCESS SAFETY (29 CFR 1910.119): Not regulated.

STATE REGULATIONS:
California Proposition 65:
Known to the state of California to cause the following:
Vinyl chloride
Cancer (Feb 27, 1987)

CANADIAN REGULATIONS:
WHMIS CLASSIFICATION: ABD2

NATIONAL INVENTORY STATUS:
U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CANADA INVENTORY (DSL/NDSL): Not determined.

16. OTHER INFORMATION

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATHESON TRI-GAS, INC.
150 Allen Road Suite 302
Basking Ridge, New Jersey 07920
Information: 1-800-416-2505

Emergency Contact:
CHEMTREC 1-800-424-9300
Calls Originating Outside the US:
703-527-3887 (Collect Calls Accepted)

SUBSTANCE: CARBON TETRACHLORIDE

TRADE NAMES/SYNONYMS:
CARBON CHLORIDE (CCl4); PERCHLOROMETHANE; TETRACHLOROMETHANE; BENZINOFORM; RCRA U211; R 10 (REFRIGERANT); UN 1846; CCl4; MAT04310; RTECS FG4900000

CHEMICAL FAMILY: halogenated, aliphatic

CREATION DATE: Jan 24 1989
REVISION DATE: Dec 11 2008

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: CARBON TETRACHLORIDE
CAS NUMBER: 56-23-5
PERCENTAGE: 100

3. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=1 REACTIVITY=0

EMERGENCY OVERVIEW:
COLOR: colorless
PHYSICAL FORM: liquid
ODOR: distinct odor
MAJOR HEALTH HAZARDS: central nervous system depression, suspect cancer hazard (in animals)

POTENTIAL HEALTH EFFECTS:
INHALATION:
SHORT TERM EXPOSURE: irritation, digestive disorders, headache, drowsiness, dizziness, loss of coordination, lung congestion, effects on the brain, convulsions, coma

LONG TERM EXPOSURE: irritation, digestive disorders, headache, drowsiness, dizziness, loss of coordination, visual disturbances, lung congestion, kidney damage, liver damage, reproductive effects, effects on the brain, convulsions, coma, cancer

SKIN CONTACT:

SHORT TERM EXPOSURE: irritation, rash, absorption may occur, digestive disorders, headache, drowsiness, dizziness, loss of coordination, lung congestion, effects on the brain, convulsions, coma

LONG TERM EXPOSURE: visual disturbances, kidney damage, liver damage, reproductive effects, cancer

EYE CONTACT:

SHORT TERM EXPOSURE: irritation

LONG TERM EXPOSURE: no information is available

INGESTION:

SHORT TERM EXPOSURE: irritation, digestive disorders, headache, drowsiness, dizziness, loss of coordination, lung congestion, effects on the brain, convulsions, coma

LONG TERM EXPOSURE: kidney damage, liver damage, cancer

4. FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

SKIN CONTACT: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

EYE CONTACT: Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

INGESTION: If swallowed, drink plenty of water, do NOT induce vomiting. Get immediate medical attention. Induce vomiting only at the instructions of a physician. Do not give anything by mouth to unconscious or convulsive person.

NOTE TO PHYSICIAN: For ingestion, consider gastric lavage.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Slight fire hazard.

EXTINGUISHING MEDIA: regular dry chemical, regular foam, water

Large fires: Use regular foam or flood with fine water spray.

FIRE FIGHTING: Move container from fire area if it can be done without risk. Fight large fires from a protected location or safe distance. Stay away from the ends of tanks. Dike for later disposal. Do not scatter

spilled material with high-pressure water streams. Do not attempt to extinguish fire unless flow of material can be stopped first. Use extinguishing agents appropriate for surrounding fire. Flood with fine water spray. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Consider downwind evacuation if material is leaking.

FLASH POINT: not flammable

6. ACCIDENTAL RELEASE MEASURES

AIR RELEASE:
Reduce vapors with water spray. Stay upwind and keep out of low areas.

SOIL RELEASE:
Trap spilled material at bottom in deep water pockets, excavated holding areas or within sand bag barriers. Dike for later disposal. Absorb with sand or other non-combustible material. Collect with absorbent into suitable container.

WATER RELEASE:
Trap spilled material at bottom in deep water pockets, excavated holding areas or within sand bag barriers. Remove trapped material with suction hoses. Absorb with activated carbon. Collect spilled material using mechanical equipment. Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). Keep out of water supplies and sewers.

OCCUPATIONAL RELEASE:
Do not touch spilled material. Stop leak if possible without personal risk. Reduce vapors with water spray. Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Small dry spills: Move containers away from spill to a safe area. Large spills: Dike for later disposal. Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

7. HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards. Protect from physical damage. Store in a cool, dry place. Store in a well-ventilated area. Avoid heat, flames, sparks and other sources of ignition. Keep separated from incompatible substances.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:
CARBON TETRACHLORIDE:
10 ppm OSHA TWA
25 ppm OSHA ceiling
200 ppm OSHA peak (5 minutes in any 4 hours)
2 ppm (12.6 mg/m3) OSHA TWA (vacated by 58 FR 35338, June 30, 1993)
5 ppm ACGIH TWA (cutaneous absorption danger)
10 ppm ACGIH STEL (cutaneous absorption danger)
2 ppm (12.6 mg/m3) NIOSH recommended STEL 60 minute(s)

VENTILATION: Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: Wear appropriate chemical resistant gloves.

RESPIRATOR: The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.
At any detectable concentration -
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.
Escape -
Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted organic vapor canister.
Any appropriate escape-type, self-contained breathing apparatus.
For Unknown Concentrations or Immediately Dangerous to Life or Health -
Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: liquid
APPEARANCE: clear
COLOR: colorless
ODOR: distinct odor
MOLECULAR WEIGHT: 153.82

MOLECULAR FORMULA: C-Cl4
BOILING POINT: 171 F (77 C)
FREEZING POINT: -9 F (-23 C)
VAPOR PRESSURE: 91.3 mmHg @ 20 C
VAPOR DENSITY (air=1): 5.32
SPECIFIC GRAVITY (water=1): 1.5940
WATER SOLUBILITY: 0.08% @ 20 C
PH: Not available
VOLATILITY: 100%
ODOR THRESHOLD: 50 ppm
EVAPORATION RATE: 12.8 (butyl acetate=1)
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available
SOLVENT SOLUBILITY:
Soluble: alcohol, benzene, chloroform, ether, carbon disulfide, petroleum ether, naphtha, acetone, fixed & volatile oils

10. STABILITY AND REACTIVITY

REACTIVITY: Stable at normal temperatures and pressure.

CONDITIONS TO AVOID: Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat.

INCOMPATIBILITIES: combustible materials, metal salts, peroxides, halogens, oxidizing materials, metals, bases, amines

HAZARDOUS DECOMPOSITION:
Thermal decomposition products: phosgene, halogenated compounds, oxides of carbon

POLYMERIZATION: Will not polymerize.

11. TOXICOLOGICAL INFORMATION

CARBON TETRACHLORIDE:
IRRITATION DATA: 4 mg skin-rabbit mild; 500 mg/24 hour(s) skin-rabbit mild; 2200 ug/30 second(s) eyes-rabbit mild; 500 mg/24 hour(s) eyes-rabbit mild
TOXICITY DATA: 8000 ppm/4 hour(s) inhalation-rat LC50; >20 gm/kg skin-rabbit LD50; 2350 mg/kg oral-rat LD50
CARCINOGEN STATUS: NTP: Anticipated Human Carcinogen; IARC: Animal Sufficient Evidence, Human Inadequate Evidence, Group 2B; ACGIH: A2 -Suspected Human Carcinogen; EC: Category 3
ACUTE TOXICITY LEVEL:
Moderately Toxic: ingestion
Slightly Toxic: inhalation, dermal absorption
TARGET ORGANS: central nervous system, liver, kidneys

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: history of alcoholism, alcoholism
TUMORIGENIC DATA: Available.
MUTAGENIC DATA: Available.
REPRODUCTIVE EFFECTS DATA: Available.
ADDITIONAL DATA: May cross the placenta. May be excreted in breast milk. Alcohol may enhance the toxic effects. Stimulants such as epinephrine may induce ventricular fibrillation.

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:
FISH TOXICITY: 43100 ug/L 96 hour(s) LC50 (Mortality) Fathead minnow (Pimephales promelas)

INVERTEBRATE TOXICITY: 1500 ug/L 7 hour(s) EC50 (Regeneration) Flatworm (Dugesia japonica)

ALGAL TOXICITY: >136000 ug/L NR hour(s) EC10 (Population Growth) Green algae (Haematococcus pluvialis)

OTHER TOXICITY: 900 ug/L 8 hour(s) EC50 (Teratogenesis) Leopard frog (Rana pipiens)

FATE AND TRANSPORT:
BIOCONCENTRATION: 30 ug/L 1-21 hour(s) BCF (Residue) Bluegill (Lepomis macrochirus) 52.3 ug/L

ENVIRONMENTAL SUMMARY: Moderately toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): U211. Hazardous Waste Number(s): D019. Dispose of in accordance with U.S. EPA 40 CFR 262 for concentrations at or above the Regulatory level. Regulatory level- 0.5 mg/L.

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:
PROPER SHIPPING NAME: Carbon tetrachloride
ID NUMBER: UN1846
HAZARD CLASS OR DIVISION: 6.1
PACKING GROUP: II
LABELING REQUIREMENTS: 6.1
MARINE POLLUTANT: CARBON TETRACHLORIDE

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:
SHIPPING NAME: Carbon tetrachloride
UN NUMBER: UN1846

CLASS: 6.1
PACKING GROUP/CATEGORY: II

15. REGULATORY INFORMATION

U.S. REGULATIONS:
CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):
Carbon tetrachloride: 10 LBS RQ

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart B): Not regulated.

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart C): Not regulated.

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370 Subparts B and C):
ACUTE: Yes
CHRONIC: Yes
FIRE: No
REACTIVE: No
SUDDEN RELEASE: No

SARA TITLE III SECTION 313 (40 CFR 372.65):
Carbon tetrachloride

OSHA PROCESS SAFETY (29 CFR 1910.119): Not regulated.

STATE REGULATIONS:
California Proposition 65:
Known to the state of California to cause the following:
Carbon tetrachloride
Cancer (Oct 01, 1987)

CANADIAN REGULATIONS:
WHMIS CLASSIFICATION: Not determined.

NATIONAL INVENTORY STATUS:
U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CANADA INVENTORY (DSL/NDSL): Not determined.

16. OTHER INFORMATION

MATHESON TRI-GAS, INC. MAKES NO EXPRESS OR IMPLIED WARRANTIES, GUARANTEES OR REPRESENTATIONS REGARDING THE PRODUCT OR THE INFORMATION HEREIN, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR USE. MATHESON TRI-GAS, INC. SHALL NOT BE LIABLE FOR ANY PERSONAL INJURY, PROPERTY OR OTHER DAMAGES OF ANY NATURE, WHETHER COMPENSATORY, CONSEQUENTIAL, EXEMPLARY, OR OTHERWISE, RESULTING FROM ANY PUBLICATION, USE OR RELIANCE UPON THE INFORMATION HEREIN.

APPENDIX D-2
HANSON VAN VLEET, LLC
SAFETY POLICY

HANSON
VAN VLEET, LLC

HYDROGEOLOGIC & ENVIRONMENTAL CONSULTANTS

902 ROUTE 146 CLIFTON PARK, NY 12065

SAFETY POLICY

September 15, 2008

Updated/Revised: May 5, 2014

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APPENDICES

1. OBJECTIVE

The Safety Policy of Hanson Van Vleet, LLC is designed to comply with the Sandards of the Occupational Safety and Health Administration, and to endeavor to maintain a safe and injury/illness free workplace. A copy of the OSHA Safety and Health Standards 1926 and 1910 are available for all employees use and reference. These Standards shall be available in the home office at all times and will be sent to the jobsite on request.

Compliance with the following Safety Policy and all items contained therein is mandatory for all employees of the company. The authorization and responsibility for enforcement has been given primarily to Mr. Van Vleet, Chief safety officer. Site safety officers share in this responsibility as well.

2. POLICY

It is company policy that accident prevention be a prime concern of all employees. This includes the safety and well being of our employees, subcontractors, and customers, as well as the prevention of wasteful, inefficient operations, and damage to property and equipment. This safety policy represents the primary areas that currently impact the company. As operations change and develop additional policies will be developed and implemented. The Hanson Van Vleet LLC Safety Policy receives management review and outside consultant review at least annually and where applicable specific programs will be developed for individual jobs.

3. APPLICABILITY

This Safety Policy applies to all employees Hanson Van Vleet, LLC, regardless of position within the company. The Safety Rules contained herein apply to all subcontractors and anyone who is on a company project site.

Every employee is expected to comply with the Safety Policy, as well as OSHA Health and Safety Standards. An "Employee Acknowledgement" form is included in Appendix A.

4. IMPLEMENTATION

This Safety Policy supports five fundamental means of maximum employee involvement:

A. Management commitment to safety.

B. Weekly tool box safety meetings at all jobsites.

C. Effective job safety training for all categories of employees.

D. Job hazard analysis provided to all employees.

E. Audio and/or visual safety presentations given at jobsites by site safety officer.

The site safety officers and the chief safety officer will meet at least once a month to evaluate all areas of safety and make recommendations to the company president.

5. ADMINISTRATION

The Safety Policy will be carried out according to guidelines established and published in this and other related procedures. Specific instructions and assistance will be provided by safety

officers as requested. Each supervisor will be responsible for meeting all of the requirements of the Safety Policy, and for maintaining an effective accident prevention effort within his or her area of responsibility. Each supervisor must also ensure that all accidents are thoroughly investigated and reported to a site safety officer on the same day of the occurrence.

6. REPORTING OF INJURIES

All employees will be held accountable for filling out a "Notice of Injury Form" (appendix A.) immediately after an injury occurs, even if medical treatment is not required. (Notice must be made at or near the time of the injury and on the same day of the injury.) Employees must report the injury to their supervisor/leadman/foreman/superintendent/project manager, etc. A casual mentioning of the injury will not be sufficient. Employees must let their supervisor know:

A. How they think they hurt themselves.

B. What they were doing at the time.

C. Who they were working with at the time.

D. When and where it happened.

E. Other pertinent information that will aid in the investigation of the incident.

Failure to report an injury immediately (meaning at or near the time of the injury and on the same day of the injury) is a violation of the Safety Policy, and they may result in immediate termination, in accordance with company policy.

7. NOTIFICATIONS

A. In Case of Serious Injury or Death

After the injured has been taken to the hospital, the leadman/foreman/supervisor shall notify the main office and the chief safety officer as soon as possible. Statements from witnesses shall be taken. Statements are to be signed by witnesses and should include the time and date. Photographs of the area where the incident occurred and any other relevant items are to be taken site safety officers will assist in the investigation. The completed accident report form will be sent to the main office.

B. In Case of Inspection by OSHA Inspector

The leadman/foreman/supervisor must notify the chief safety officer that an OSHA Inspector is on the jobsite. It is the responsibility of all employees to make the inspector's visit on the jobsite as pleasant and timely as possible.

8. BASIC SAFETY RULES

Hanson Van Vleet, LLC will provide their employees with a safe work environment in accordance with applicable OSHA safety regulations. The mechanism to provide a safe work environment is the implementation of the health and safety policy. A "Job Safety Check List" and "Safety Equipment Check List" are included in appendix A. Safety rules are outlined in the

following sections:

8.1 Compliance

Compliance with applicable federal, state, county, city, client, and company safety rules and regulations is a condition of employment.

8.2 Injuries

All injuries, regardless of how minor, must be reported to your supervisor and the Safety Office immediately. An employee who fails to fill out a "Notice of Injury Form" and send it to the Safety Office can be issued a safety violation notice and may be subject to termination, in accordance with company policy. In the event of an accident involving personal injury or damage to property, all persons involved in any way will be required to submit to drug testing.

8.3 Hard hats

Hard hats will be worn by all employees on the project site at all times. The bill of the hard hat will be worn in front at all times. Alterations or modifications of the hat or liner are prohibited. Crane operators, when in an enclosed cab, have the option of not wearing a hard hat due to the possible obstruction of view.

8.4 Safety glasses

Safety glasses will be worn as the minimum-required eye protection at all times. Additional eye and face protection such as mono-goggles and face shields are required for such operations as grinding, jack hammering, utilizing compressed air or handling chemicals, acids and caustics. Burning goggles for cutting, burning or brazing and welding hoods for welding, etc., are required.

8.5 Fall Protection Requirements

Full body harnesses and lanyards shall be worn and secured any time there is a fall hazard of more than six (6) feet.

Lifelines shall be erected to provide fall protection where work is required in areas where permanent protection is not in place. Horizontal lifelines shall be a minimum of 2-inch diameter wire rope. Vertical lifelines shall be 3/4 inch manila rope or equivalent and shall be used in conjunction with an approved rope grab.

Structural steel erectors are required to "hook up" with full body harness and lanyard.

Employees using lanyards to access the work or position themselves on a wall or column, etc., must use an additional safety lanyard for fall protection.

Manlifts must be used properly. As soon as an employee enters an articulating boom lift and before the lift is started, the employee must put on the harness and attach the lanyard to the lift. Employees are not required to wear harnesses on scissor lifts.

8.6 Clothing

Clothing must provide adequate protection to the body. Shirts must have at least a tee sleeve. Shirts with sleeves and long pants will be worn at all times. No shorts are to be worn on projects. All employees, except welders and burners, must tuck shirt tails inside trousers. Burners and welders will not be permitted to wear polyester or nylon clothing. Sturdy work boots with rigid, slip resistant soles are required. No clogs, tennis shoes, or loafers are permitted. Steel-toed tennis shoes with the ANSI label are the only alternative to the leather work boot.

8.7 Safety meetings

All personnel will be required to attend safety meetings as stipulated by project requirements in order to meet OSHA Safety Standards. A "Safety Meeting Report Form" is included in Appendix A.

8.8 Firearms, alcoholic beverages or illegal drugs

Firearms, alcoholic beverages or illegal drugs are not allowed on company property or in company vehicles at any time. When drugs are prescribed by a physician, the site safety officer must be informed. The use or possession of illegal drugs or alcoholic beverages on the jobsite will result in immediate termination.

8.9 Housekeeping

Housekeeping shall be an integral part of every job. Supervisors\foremen\leadmen and employees are responsible for keeping their work areas clean and hazard-free. Clean up is required when a job is finished at the end of the day.

8.10 Burning and cutting

Burning and cutting equipment shall be checked daily before being used. Flash back arresters shall be installed at the regulators on both oxygen and LP bottles. All gas shall be shut off and hoses disconnected from bottles and manifolds at the end of the work day. Caps shall be replaced on bottles when gauges are removed. When gauges are removed and caps replaced, the oxygen and LP bottles shall be separated into storage areas no less than 20 feet apart with a "No Fire or Smoking" sign posted and a fire extinguisher readily available. Makeshift field repairs will not be allowed.

8.11 Drinking water containers

Drinking water containers are to be used for drinking water and ice only. Tampering with or placing items such as drinks in the water cooler will result immediate termination. The "common drinking cup" is not allowed. Only disposable cups will be used.

8.12 Tools

All tools whether company or personal, must be in good working condition. Defective tools will not be used. Examples of defective tools include chisels with

mushroomed heads, hammers with loose or split handles, guards missing on saws or grinders, etc.

8.13 Electrical tools / cords

All extension cords, drop cords, and electrical tools shall be checked, properly grounded with ground fault interrupters (GFI=s), and color-coded by a designated competent person each month. This shall be part of the assured grounding program. Cords and equipment that do not meet requirements shall be immediately tagged and removed from service until repairs have been made.

8.14 Horseplay

"All Horseplay" on the jobsite is strictly prohibited. Running on the jobsite is allowed only in emergencies.

8.15 Speed limit

The jobsite speed limit is 10 MPH. No employee is permitted to ride in the bed of a truck standing up or sit on the outside edges of a truck. Employees must be sitting down inside the truck or truck bed when the vehicle is in motion. Riding as a passenger on equipment is prohibited unless the equipment has the safe capacity for transporting personnel.

8.16 Hot work

Adequate precautions must be taken to protect employees and equipment from hot work such as welding or burning. Fire extinguishing equipment shall be no further than 50 feet away from all hot work. Used fire extinguishers must be returned to the site safety officer to be recharged immediately. Use of welding blinds is required in high traffic areas.

8.17 Scaffolding and work platforms

All scaffolding and work platforms must be built and maintained in accordance with OSHA specifications. All ladders must be in safe condition without broken rungs or split side rails. Damaged ladders shall be removed from service. Ladders shall be secured at the top and bottom and extend three (3) feet past the working surface. Metal ladders around electrical work are prohibited. A step ladder shall never be used as an extension ladder. A step ladder must only be used when fully opened with braces locked.

8.18 Crowfoot connections

Crowfoot connections on air hoses shall be wired to prevent accidental disconnection. Compressed air shall not be used to dust off hands, face, or clothing.

8.19 Report all unsafe conditions

Report all unsafe conditions and near accidents to the site safety officer so corrective action can be taken.

8.20 Floor openings or excavations

All floor openings or excavations shall be barricaded on all sides to ensure employees are aware of the hazards. Floor holes shall be covered, with the covers secured and clearly marked.

8.21 Warnings

Warning signs, barricades, and tags will be used to fullest extent and shall be obeyed.

8.22 Scaffold Tag System

Green tags are to be placed on 100 percent complete scaffolds with all braces, locks and hand, mid, and toe rails in place before use.

Yellow tags indicate incomplete scaffolds. If scaffold is missing a hand, mid, or toe board, it must have a yellow tag and employees on it must be tied off at all times.

Red tags indicate scaffolds that are in the process of either being erected or disassembled. These scaffolds are not to be used at any time.

Scaffold tags should be placed in a highly visible location on the scaffolds for all employees to see.

8.23 Heat Related Injuries

8.23.1 Heat Cramps

Symptoms:

- Painful cramping of the larger muscle groups: legs, arms, abdomen due to excessive loss of salt through heavy sweating plus several hours of sustained exertion
- acclimatization decreases risk

Treatment

- shaded area
- massage arms/legs to increase circulation
- 0.1% salt solution orally (1/2 tsp salt in 1-qt. Water), sports drink, or salted food (MRE) plus fluid

8.23.2 Heat Exhaustion

Symptoms:

- heavy sweating, headache, light-headed, nausea/vomiting, tingling sensations
- Temperature 99-104 F

Cause:

- dehydration plus excessive salt depletion

Treatment:

- shaded environment; loosen clothing
- If suspect early heat stroke, treat as such
- oral fluids if individual can drink
  - cold water, 0.1% salt solution, or 6% carbohydrate beverage
  - 1-2 liters over 2-4 hours
- EVAC

8.23.3 Heat Stroke

Symptoms:

- elevated temperature plus central nervous system disturbance
- absence of sweating is a late finding
- Can begin as heat exhaustion and progress
- End-organ damage:
  - brain damage, kidney failure, liver failure, blood clotting abnormalities
  - related to duration of elevated temperature

Treatment:

- Unconscious patient may vomit and aspirate
- Lower the body temperature as fast as possible!
  - All clothes off
  - Cool water with fanning...increase evaporation
  - Ice packs under groin or axilla
  - EVAC...open doors/windows in helicopter/vehicle or turn on air conditioner
  - Keep cooling to temp 101-102 F.

8.23.4 Prevention and Mitigation

In order to minimize the risk of Heat Related Injuries while working on the jobsite the following protocol should be followed:

Pervious clothing: when the ambient air temperature has exceeded 100°F for more than one hour the Project Manager will begin to monitor employees for signs of heat stress. Monitoring may take the form of measuring oral temperatures. The air temperature will be measured after every shift at a minimum or as determined by the Safety Officer.

Impervious clothing: when the ambient air temperature has exceeded 70°F, the Project Manager will begin to monitor employees for signs of heat stress. Monitoring may take the form of measuring oral temperatures.

Oral temperature at the start of a rest cycle should not exceed 99.5°F. If the temperature is greater than 99.5°F at the end of rest period then the next work cycle should be shortened by 25%. No worker should be allowed to wear protective clothing if the oral temperature is above 101.6°F. Frequency of heat stress monitoring is to be done at the following intervals:

Greater than 90°F	every 15 minutes of work;
85-90°F	every 30 minutes;
80-90°F	every 60 minutes;
75-80°F	every 90 minutes;
70-75°F	every 120 minutes.

A fluid/electrolyte replacement will be used as necessary to minimize fluid loss. This liquid supplement will be stored in a cooler at the edge of the decontamination zone in plastic squeeze bottles. The plastic bottles will be marked with individual's names. Disposable cups with lids and straws may be used in place of the squeeze bottles. Prior to drinking within the decontamination zone the project personnel shall follow the following decontamination procedures:

- Personnel shall wash and rinse their outer gloves and remove them.
- Personnel shall remove their hard hats and respirators (if applicable) and place on a table.
- Personnel shall remove their inner gloves and place them on a table.
- Personnel shall wash and rinse their face and hands.
- Personnel shall carefully remove their personal bottle or cup from the cooler to ensure that their outer clothes do not touch any bottles, cups, etc.
- The used bottle or cups will not be returned to the cooler, but will be placed in a receptacle or container to be cleaned or disposed of.
- Personnel shall replace their PPE applicable to the present conditions at the site. This may include: respirators, hard hats, gloves, and tape gloves prior to re-entering the hazardous zone.

8.24 Cold Weather Related Injuries

8.24.1 Chilblain

Symptoms:

- Skin exposed to cool temperatures (50 degrees F or lower).
- Acutely red, swollen, hot, tender, and/or itching skin.
- Open sores or bleeding lesions from continued exposure.

Treatment:

- Apply local warming (put bare hands over the affected area on the face, put affected hands inside the uniform under the armpits, etc.).
- Do not rub or massage the affected area.
- Apply a field dressing to lesions (sores).
- Have the casualty examined by medical personnel when the opportunity presents itself.

8.24.2 Immersion Syndrome

- Hand or foot in water for an extended time.

Symptoms:

- Affected hand or foot may have blisters, swelling, redness, and bleeding.
- First phase: Hand or foot is cold and without pain.
- Second phase: Affected limb feels burning hot and has shooting pains.
- Third phase: Pale skin, bluish coloring around the nailbeds and lips, weak pulse.

Treatment:

- Dry the affected part immediately.
- Remove wet clothing and replace with dry, warm clothing.
- Rewarm the affected area gradually in warm air.
  - Do not rub or massage the affected hand or foot.
- Elevate the affected part to reduce swelling.
- Protect the casualty from additional injury.
- Evacuate casualty to a medical treatment facility as soon as practical.

8.24.3 Frostbite

- Flesh has been exposed to freezing temperatures (below 32 degrees F).

Symptoms:

- Usually occurs on the feet, toes, nose, ears, chin, cheeks, forehead, fingers, hands, and wrists.
- Superficial Frostbite
  - A reddish (in light-skinned individuals) or grayish (in dark-skinned individuals) area on exposed skin.
  - A sudden blanching (whitening) of the affected area.
  - A tingling sensation, followed by numbness.
- Deep Frostbite

- Total lack of feeling in the affected (frozen) tissue.
- Pale, yellowish, waxy-looking skin.
- Solid flesh (feels wooden to the touch).
- Red-violet discoloration, blisters, and sloughing of affected skin may occur (usually 1 to 5 days after the initial injury).

Treatment:

- Move the casualty to a sheltered area.
- Loosen constricting clothing.
- Remove jewelry on the affected limb, if applicable. (A ring on a swollen finger could interfere with blood circulation.)
- Gradually warm the casualty.
  - Use the same warming procedures as with chilblain.
  - If the feet are frostbitten, remove the casualty's boots and socks and put his feet against the exposed abdomen of another soldier. Cover both soldiers to keep them warm.
  - Do not expose the frostbitten area to extreme heat which could result in burns.
  - Do not rub, massage, or soak the frostbitten area.
- Give the casualty something warm to drink.
  - Do not give alcoholic beverages or tobacco products to the casualty. Alcohol and tobacco can promote heat loss.
- Protect the frostbitten area from cold and additional injury.
- Evacuate the casualty to a medical treatment facility as soon as possible. If the casualty's frozen feet must be exposed to freezing temperature during evacuation, do not thaw his feet prior to evacuation.

8.24.4 Hypothermia

Generalized hypothermia occurs when the whole body (rather than just a body part) is cooled to an unusually low temperature. It is a medical emergency which can result in death if not treated promptly. Generalized hypothermia is often called simply "hypothermia."

Moderate Hypothermia

Symptoms:

- Apathetic, lethargic behavior.
- Pale, cold skin.

- Acetone (sweet, fruity) breath odor.
- Shivering, which soon stops.

Treatment:

- Move the casualty out of the wind to a sheltered warm environment.
- Replace wet clothing with dry clothing or sleeping bags.
- Cover the casualty with blankets or other insulating material.
  - ♦ Give the casualty warm, nutritious fluids to drink.
  - ♦ Do not give alcoholic beverages or tobacco products to the casualty.
- Wrap the casualty from head to toe and evacuate to a medical treatment facility in a recumbent (lying down) position.

Severe Hypothermia

Symptoms:

- Skin ice cold.
- Lack of shivering.
- Slow, shallow respirations.
- Faint, irregular pulse or lack of detectable pulse.
- Glassy eyes.
- Mental confusion.
- Unconsciousness.

Treatment:

- Move the casualty out of the wind to a sheltered warm environment.
- Remove/cut away wet clothing and replace with dry clothing.
- Ensure that the casualty's airway remains open and the casualty continues to breathe.
- Apply an additional heat source since the casualty's body cannot generate sufficient body heat to warm itself.
- Evacuate the casualty to a medical treatment facility as soon as possible.
  - ♦ Evacuate the casualty even if you cannot detect respiration or a heartbeat.
  - ♦ Be gentle when moving the casualty.

8.24.5 Prevention and Mitigation

Cold injury (frostbite and hypothermia) and impaired ability to work are dangers at low

temperatures and when the wind-chill factor is low. To guard against them: wear appropriate clothing; have warm shelter readily available; carefully schedule work and rest periods; and monitor workers' physical conditions. Health and safety precautions while working in cold weather environments will be evaluated prior to entering the project. Special work place recommendations will be referenced from the ACGIH TLV Guide.

8.25 Railway Safety Program

Hanson VanVleet, LLC will adhere to the safety protocols and guidelines of the track owner / operator. Employees will observe the following procedures when working within 50' (or the distance designated by the track owner, whichever is larger) of any occupied track:

- PPE Requirements (specified by track owner or default to below PPE)
    - Hard hat
    - Safety glasses that shield the side of eyes
    - Steel toed shoes
    - Hearing protection
    - Safety vests – lime or orange
- All boreholes, test pits or excavation less than 15 feet from the centerline of main tracks, will be filled or covered prior to passing trains. No open pits or holes will be left over night. All pits and trenches will be shored according to OSHA requirements
- No dirt or debris will be allowed to foul the ballast section of the tracks, or further, any part of the tracks
- Job Briefings will be conducted each morning and throughout the day when conditions or job scope changes
- All work within 4 feet from the outside rail on each side of the track will be done only with a qualified flagman or watchman as delegated by the track owner or representative
- All work beyond 4 feet from the outside rails and within 25 feet, must be done under the supervision of a qualified inspector, approved by the track owner or representative
- All work will be stopped while trains are passing within the work zone, and on command of the flagman or watchman
- All employees will remain off the tracks. Any work done on the tracks will not be done unless supervised and protected by track owner or representative.
- All track crossings will be performed in designated areas or under the control of qualified flagman or watchman

- In the event the work area is subject to a blue flag condition, all work within at least 50 feet of the track will cease until permission to resume is granted by the flagman or representative

8.26 Work Over Water

Prior to work, each employee will inform their supervisor of their swimming ability and they will not be placed in situations they feel is beyond their ability to swim if the need arises.

When working on or near water each employee shall be aware of his or her surroundings and weather conditions (check local weather reports before beginning water work). Adequate escape routes will be planned where necessary. Employees will always have a partner when working near water.

All employees working in boats, on docks, or generally within 10 feet of water deeper than 3 feet, shall wear U.S. Coast Guard-approved life jackets or buoyant work vests. Prior to and after each use, the buoyant work vests or life preservers shall be inspected for defects that would alter their strength or buoyancy. Ring buoys with at least 90 feet of line shall be provided and readily available for emergency rescue operations. Distance between ring buoys shall not exceed 200 feet. At least one lifesaving skiff shall be immediately available at locations where employees are working over or adjacent to water.

All other site safety practices shall apply when working over or near water.

8.27 Decontamination Procedures

Personnel and equipment leaving the Exclusion Zone shall be thoroughly decontaminated. Decontamination areas will be set up at each zone change as necessary according to the hazards present at the specific site. Individual site safety plans will address the level of decontamination required The Site Safety Officer is responsible for monitoring adherence with the site specific decontamination plan.

A standard decontamination protocol consists of the following decontamination stations:

- Alconox Wash
- Deionized Water Rinse

As well as the following decontamination equipment:

- Decon Pad
- Dry Brushes
- Buckets
- Trash Cans/Bags
- Wet Brushes
- Hose / Spray

8.28 Drilling

During drilling operations, two persons designated as "driller and helper must be present on the rig at all times. If drilling is conducted in a traffic area, the immediate area around the rig shall

be cordoned off with temporary barricades or flagging to keep traffic away from the work area. Only authorized personnel are to be allowed within the area of drilling. If any unauthorized personnel enter the work area, the operation should be shut down and cleared. A "Drilling Job Safety Checklist" is included in Appendix A.

8.29 Respiratory Program

All OSHA Safety Standards will be followed for job processes requiring respiratory protection. (See Appendix B: RESPIRATORY PROTECTION PROGRAM.)

8.30 Excavation Program

All OSHA Safety Standards will be followed during excavation. (See Appendix C: EXCAVATION PROGRAM.)

8.31 Confined Space Program

All OSHA Safety Standards concerning confined space entry will be followed. (See Appendix D: CONFINED SPACE PROGRAM.)

8.32 Lockout/Tagout (LOTO) Program

All OSHA Safety Standards concerning lockout/tagout of energized equipment will be followed. (See Appendix E: LOCKOUT/TAGOUT PROGRAM.)

8.33 Fall Protection Program

All OSHA Safety Standards will be followed for job processes requiring fall protection. (See Appendix F: FALL PROTECTION PROGRAM.)

8.34 Hazard Communication Program

All OSHA Safety Standards concerning confined space entry will be followed. (See Appendix G: HAZARD COMMUNICATION PROGRAM.)

8.35 Hearing Conservation Program

All OSHA Safety Standards will be followed for job processes requiring hearing protection. (See Appendix H: FALL PROTECTION PROGRAM.)

8.36 Drug and Alcohol workplace Policy

It is the purpose of Hanson Van Vleet, LLC to help provide a safe and drug-free work environment for our clients and our employees. With this goal in mind the following policy will be followed. (See Appendix I: DRUG AND ALCOHOL WORKPLACE POLICY.)

9. ENFORCEMENT OF SAFETY POLICY

Safety violation notice(s) shall be issued to any employee, subcontractor, or anyone on the jobsite violating the safety rules or regulations by the safety officer.

A. Any violation of safety rules can result in suspension or immediate termination.

B. Any employee receiving three (3) written general violations within a six (6) month period may be terminated.

C. Issuance of a safety violation notice for failure to use fall protection or for failure to report a job injury (at the time of the injury) may result in immediate termination, in accordance with company policy.

It is understood Hanson Van Vleet, LLC is not restricting itself to the above rules and regulations. Additional rules and regulations as dictated by the job will be issued and posted as needed.

APPENDICES

APPENDIX A:	**FORMS**
APPENDIX B:	**RESPIRATORY PROGRAM**
APPENDIX C:	**EXCAVATION PROGRAM**
APPENDIX D:	**CONFINED SPACE PROGRAM**
APPENDIX E:	**LOCKOUT/TAGOUT (LOTO) PROGRAM**
APPENDIX F:	**FALL PROTECTION PROGRAM**
APPENDIX G:	**HAZARD COMMUNICATION (HAZCON) PROGRAM**
APPENDIX H:	**HEARING CONSERVATION PROGRAM**
APPENDIX I:	**DRUG AND ALCOHOL WORKPLACE POLICY**
APPENDIX J:	**ERGONOMICS PROGRAM**
APPENDIX K:	**EMERGENCY ACTION PROGRAM**
APPENDIX L:	**FIRE PREVENTION PROGRAM**
APPENDIX M:	**PERSONAL PROTECTIVE EQUIPMENT PROGRAM**
APPENDIX N:	**FIRST AID GUIDE**
APPENDIX O:	**GAS MONITOR PROCEDURES**

APPENDIX A

FORMS

EMPLOYEE ACKNOWLEDGMENT

I state that I have attended the safety orientation, and have read and received a copy of the ***Hanson Van Vleet, LLC*** SAFETY POLICY.

I further state that I understand these rules and acknowledge that compliance with the safety rules and regulations is a condition of employment. If I violate the safety rules or fail to report an injury to my supervisor immediately, I understand that I am subject to termination, in accordance with company policy.

_____

EMPLOYEE SIGNATURE

_____

DATE

_____

CHIEF SAFETY OFFICER SIGNATURE

_____

DATE

cc: Supervisor

NOTICE OF INJURY FORM

Form Completion: Date: _____ Time: _____

Injury Occurrence: Date:_____Time:_____

Site location: _____

Site Safety officer: _____

Names of crew working with: _____

_____

Names of person observing injury: _____

_____

Task being performed:_____

How injury occurred:

Other pertinent information that will aid in the investigation of the incident:

Weather:

All employees will be held accountable for filling out a "Notice of Injury Form" immediately after an injury occurs, even if medical treatment is not required. (Notice must be made at or near the time of the injury and on the same day of the injury.) A casual mentioning of the injury will not be sufficient. Employees must let their supervisor know:Failure to report an injury immediately (meaning at or near the time of the injury and on the same day of the injury) is a violation of the Safety Policy, and they may result in immediate termination.

JOB SAFETY CHECKLIST

The following Job Safety Checklist has been condensed and edited from the Occupational Safety and Health Act, Part 1926, Construction Safety and Health Regulations.

A. Safety Rules

_____ Hard hats and safety glasses worn.

_____ Shirts with sleeves worn.

_____ Work shoes worn.

_____ Subcontractors' personnel hold safety meetings as indicated by project requirements in accordance with OSHA Safety Standards.

_____ Work areas safe and clean.

_____ Safety mono-goggles/face shields worn when circumstances warrant.

_____ Electrical cords and equipment properly grounded with GFI's in place and checked by a competent person.

_____ No use of alcoholic beverages or controlled substances.

_____ Subcontractors provide fall protection for their employees in accordance with OSHA Safety Standards.

_____ All scaffolds built to specifications as established by OSHA.

_____ Excavation/trenches sloped or shored as established by OSHA.

_____ Drug testing of employees involved in accident(s) resulting in personal injury or property damage.

B. Recordkeeping

_____ OSHA poster "Safety and Health Protection on the Job" posted.

_____ OSHA " 200 Log or Occupational Injuries and Illnesses" posted during the month of February only.

_____ Hard hat sign posted in a conspicuous manner.

_____ Weekly safety meeting sign-in logs maintained in a folder with a copy forwarded to the main office weekly.

C. Housekeeping and Sanitation

_____ General neatness.

_____ Regular disposal of trash.

_____ Passageways, driveways, and walkways clear.

_____ Adequate lighting.

_____ Oil and grease removed.

_____ Waste containers provided and used.

_____ Adequate supply of drinking water.

_____ Sanitary facilities adequate and clean.

_____ Adequate ventilation.

_____

D. First Aid

_____ First aid stations with supplies and equipment. The expiration dates of supplies checked monthly. Expired supplies discarded.

_____ Trained first aid personnel.

_____ Injuries promptly and properly reported.

E. Personal Protective Equipment

_____ Hard hats.

_____ Hearing protection.

_____ Eye and face protection.

_____ Respiratory protection.

_____ Fall protection.

F. Fire Protection

_____ Fire extinguishers charged and identified.

_____ ANo Smoking@ signs posted.

_____ Flammable and combustible material storage area.

_____ Fuel containers labeled.

G. Hand and Power Tools

_____ Tools inspected.

_____ Power tools properly guarded.

_____ Safety guards in place.

H. Welding & Cutting

_____ Compressed gas cylinders secured in vertical position.

_____ Hoses inspected.

_____ Cylinders, caps, valves, couplings, regulators, and hoses free of oil and grease.

_____ Caps on cylinders in storage in place.

_____ Flash back arresters in place.

_____ Welding screens in place.

_____ Fuel and oxygen cylinders separated in storage.

I. Electrical

_____ All portable tools and cords properly grounded [Ground Fault Interrupters (GFI=s) properly installed].

_____ Daily visual inspection of caps, ends and cords for deformed or missing pins, insulation damage and internal damage.

_____ Tests of cords, tools and equipment for continuity and correct attachment of the equipment grounding connector (GFI) to the proper terminal made every month and:

1. Prior to first use.
2. Prior to return to service after repairs.
3. Prior to return to service after incident that may have caused damage to cord or equipment.

_____ Cords and equipment not meeting requirements immediately tagged and removed from service until repairs have been made.

J. Ladders

_____ Inspected at regular intervals.

_____ No broken or missing rungs or steps.

_____ No broken or split side rail.

_____ Extend at least 36 inches above landing and be secured.

_____ Side rails of 2 x 4 up to 16 feet, or 3 x 6 over 16 feet.

K. Scaffolding

_____ Inspected at regular intervals.

_____ Footings are a sound ridge and capable of carrying maximum intended load.

_____ Tied into building vertically and horizontally at 14 foot intervals.

_____ Properly cross-braced.

_____ Proper guardrails and toe boards.

_____ Scaffold planks capable of supporting at least four (4) times the maximum intended load.

_____ No unstable objects such as concrete blocks, boxes, etc., used as scaffold foundations.

_____ Use of OSHA Scaffold Tagging Program.

L. Guardrails, Handrails and Covers

_____ Guardrails, handrails and covers installed wherever there is danger of employees or materials falling through floors, roots or wall openings and shall be guarded on all exposed sides.

_____ Posts at least 2 x 4 stock and spaced no more than eight (8) feet apart.

_____ Top rail 42 inches above the floor and of 1 x 4 stock.

_____ Intermediate rail 21 inches above the floor and of 1 x 4 stock.

_____ Guardrail assemblies around floor openings equipped with toe boards. Toe boards at least four (4) inches above the floor level with no more than 1/4 inch clearance above the floor level, when there are employees below or when conditions dictate.

_____ Hole covers permanently attached to the floor or structure and identified with a hole cover sign stenciled with the word "Danger". Hole covers for holes two (2) inches or greater in diameter made of at least 3/4 inch plywood or heavier.

M. Material Hoists

_____ Inspected at regular intervals.

_____ Operating rules posted at operators station.

_____ "No Rider" signs prominently posted at all stations.

_____ All entrances properly protected.

_____ All entrance bars and gates painted with diagonal contrasting stripes.

_____ Experienced operators.

_____ Current crane certification inspection sticker and papers on the rig.

N. Motor Vehicles

_____ Lights, brakes, tires, horn, etc., inspected at regular intervals.

_____ No overloaded vehicles.

_____ Trash trucks have covers.

_____ No riding on the edge of pickup truck beds.

_____ No riding on concrete trucks, loaders, backhoes, etc.

_____ Functioning back-up alarms on loaders, tractors, backhoes, etc.

_____ Fire extinguishers installed and readily available.

_____ Seat belts worn at all times.

O. Material Storage and Handling

_____ Material at least two (2) feet from edge of excavation site.

_____ Proper temperature and moisture levels for safe storage of materials to prevent deterioration or volatile hazards within the storage area.

_____ Inventory maintained and inspected frequently.

_____ Proper protective gear worn when handling chemicals.

P. Concrete, Concrete Forms and Shoring

_____ Full body harnesses as positioning devices for employees tying rebar greater than six (6) feet above adjacent working surface

_____ Automatic shut-off switches on trowel machines.

_____ No riding on concrete buckets or flying forms.

_____ All forms properly shored.

_____ Single post shores braced horizontally.

Q. Use of Cranes and Derricks

_____ Prohibition of the use of cranes or derricks to hoist employees on a personal platform except in the situation where no safe alternative is possible.

SAFETY EQUIPMENT CHECKLIST

The following is a list of Safety Equipment that should be on the job, if required, or available from the site safety officer at all times. Equipment should be checked at intervals in accordance with the applicable OSHA Safety Standards by the Superintendent to ensure that all required equipment is present and in good condition.

_____ Safety goggles, shields, and glasses.

_____ Hearing protection.

_____ Respirators.

_____ Hard hats.

_____ Fire extinguishers (properly charged).

_____ First aid kit (check list inside kit).

_____ Stretcher or stroke litter (tool room).

_____ Welding masks and goggles.

_____ Storage racks for compressed gases.

_____ Guards on all power tools.

_____ Trash barrels.

_____ OSHA forms posted.

_____ Company "Safety Policy" packet posted.

_____ Company "Hazardous Communication Program" packet posted.

_____ Emergency vehicle (vehicle designated to carry injured to hospital).

SAFETY MEETING REPORT

A safety meeting report is signed to indicate attendance. The form has room for employees to sign after attending their weekly safety meeting. This form shall be filled out for each jobsite safety meeting that is held. After completion of the form, make a copy to maintain at each jobsite and return the signed original copy to the main office.

Safety Meeting Date:_____

TOPIC: Injuries_____, Maintenance_____, Hot Work_____, Fall Protection_____, Drugs____, Housekeeping____, Vehicles _____, LOTO_____, Respiratory Pro._____, Confined Space._____, Excavation_____, Hazcom _____,Hearing Cons._____, PPE_____, Weather_____, Decon._____, Drilling_____,Other_____

Safety Meeting Conducted By:_____

Employee Name (printed)	Employee Signature	Job Title

DRILLING JOB SAFETY CHECKLIST

JOB TASK	POSSIBLE HAZARDS	√	PREVENTATIVE/CORRECTIVE ACTION
All Drilling/ Boring Activities	Slips, Trips, Falls		Keep work area free of excess material and debris
			Remove all trip hazards by keeping materials/objects organized and out of walkways
			Keep work surfaces dry when possible
			Wear appropriate PPE including non-slip rubber boots if working on wet or slick surfaces
			Install rough work surface covers where possible, use grip tape to eliminate slips
			Stay aware of hazards and do not run
	Heat/Cold Stress		Take breaks if feeling faint or overexerted
			Consume adequate food/beverages (water, sports drinks)
			If possible, adjust work schedule to avoid temperature extremes
	Biological Hazards: Insects, Snakes, Wildlife, Vegetation		Inspect work areas on arrival to identify hazard(s)
			Use insect repellant if necessary
			Open enclosures slowly
			Survey site for presence of biological hazards and maintain safe distance
			Wear appropriate PPE including leather gloves, long sleeves and pants as warranted by site conditions
	Traffic (including pedestrian)		Notify attendant or site owner/manager of work activities and location
			Use cones, signs, flags or other traffic control devices as outlined in the Traffic Control Plan
			Set up exclusion zone surrounding work area using cones, signs, flags or other traffic control devices
			Wear appropriate PPE including high visibility clothing such as reflective vest

JOB TASK	POSSIBLE HAZARDS	√	PREVENTATIVE/CORRECTIVE ACTION
			Inspect area behind vehicle prior to backing and always use spotter
	Fire/Explosion		Post No Smoking signs around work area
			Establish designated smoking area away from work area
			Ensure type ABC, 20-lb, fully charged fire extinguisher on-site and within inspection period
Drilling/Boring (Continued)	Fire/Explosion (Continued)		As site conditions/activities warrant, establish Hot Work Permit including air monitoring using direct-reading, real-time instruments such as LEL/O_2 meter
			Stop work if hazardous conditions (explosive atmosphere) are identified
Ambient Air Monitoring	Vapors		Approach area where vapors are suspected from upwind direction and stay upwind/crosswind of from potential sources of vapors (use flagging or similar device to indicate wind direction)
	Ineffective Air Monitoring		Ensure personnel have been trained on instrument use
			Calibrate instrument prior to use
Concrete Coring	Ignition Sources		Ensure electrical equipment properly grounded
			Apply water as necessary to address surface sparking potential
	High Noise Levels		Hearing protection required when working around operating equipment if levels are suspected to be >85 dBA (if have to yell to person at a dist of 3 ft to be heard, likely exceeding 85 dBA)
	Airborne Particulates and Debris		Use water or engineering design as necessary to control dust in area
			Wear appropriate PPE including face shield or safety glasses with side shields, dust mask, leather gloves and long sleeves
	Sharp Rough Materials		Wear appropriate PPE including leather gloves, long sleeves and pants, and steel-toed boots
	Impact to Subsurface Lines		Ensure all underground features have been identified in area per Subsurface Clearance Protocol (SCP) prior to start of activities
Drill Rig Setup	Rig Roll Over		Do not move rig with mast raised

JOB TASK	POSSIBLE HAZARDS	√	PREVENTATIVE/CORRECTIVE ACTION
			Cross all hills and obstructions head on
			Set riggers prior to raising mast
			If soil appears to be unstable, the soil should be assessed by a qualified professional engineer to ensure safe conditions with implementation of design control measures prior to start of work
	Contact with Electric Lines and Other Overhead Obstacles		Position rig to avoid overhead utility lines by distance defined by voltage and local regulations
			Use a spotter when raising mast to confirm clearance of overhead lines and other obstacles
	Rig Movement		Heavy equipment should be equipped with back-up alarm or use horn when backing – use spotter when available
			Stay clear of operating equipment and rig when moving
	Heavy Equipment Lifting/Carrying		Use at least 2 people to lift and carry heavy sections, use mechanical lift devices whenever possible, bend and lift with legs and arms, not back
Drill Rig Setup (Continued)	Sharp or Elevated Equipment		Wear appropriate PPE including steel-toed safety boots, leather gloves and hard hat
			Establish communication system between workers involved in moving/attaching sections
Ground Disturbance: Auger/Boring Advancement	Faulty or Inappropriate Equipment		Qualified driller must inspect drill rig prior to use, if faulty or inappropriate, do not proceed until repaired or replaced
			Inspect all hand tools prior to use, if faulty or inappropriate, do not proceed until repaired or replaced
	Moving Equipment		Clear area of obstructions and communicate with all workers involved that drilling is beginning
			Do not exceed manufacturer's recommended speed, force, torque, or other specifications, and penetrate the ground slowly with hands on the controls for at least the first foot of soil to minimize chance of auger kick-out
			Stay clear of rotating auger

JOB TASK	POSSIBLE HAZARDS	√	PREVENTATIVE/CORRECTIVE ACTION
			Use long-handled shovel to clear away cuttings when auger has stopped
			Do not wear loose clothing
			Wear appropriate PPE including leather gloves and steel-toed boots
	Suspended Loads		Do not walk under suspended loads, stay clear of swing area
			When possible, remove overhead hazards promptly
			Wear appropriate PPE including hard hat and steel-toed boots
	High Noise Levels		Use hearing protection when within 20 feet of active drill rig
	Vapors and Airborne Particulates		Monitor air concentrations using direct-reading, real-time instruments such as OVM and Draeger tubes
			Stop work if hazardous conditions (explosive atmosphere, O_2 deficient atmosphere) identified until precautions are taken
			Wear appropriate PPE including face shield or safety glasses with sideshields, dust masks or respirators, long sleeves and pants
			Stay upwind (use flagging or similar device to indicate wind direction)
	Impact to Subsurface Lines/Tanks		Only drill in areas where underground features have been identified and cleared per SCP if hole has to be moved, clear new location first
			Wear appropriate PPE including insulating gloves or stand on an insulating mat when in contact with drill rig
			Ensure first aid responders are trained to deal with electric shock and flash burns
Ground Intrusion: Split Spoon	Faulty Equipment		Inspect rope/cable/rod for wear, fraying, oils and moisture prior to use, do not use if faulty until repaired or replaced
			Inspect cathead for rust and rope grooves prior to use, do not use if faulty until repaired or replaced
	Moving Equipment		Do not wrap rope around any part of the hand or body

JOB TASK	POSSIBLE HAZARDS	√	PREVENTATIVE/CORRECTIVE ACTION
			Maintain distance of at least 18-inches from in-running points on running/reciprocating equipment
Ground Intrusion: Split Spoon (Continued)	Moving Equipment (Continued)		Eliminate excess rope
			Do not wear loose clothing
			Wear appropriate PPE including leather gloves
Soil Sampling	Contaminated Materials		Wear appropriate PPE including Nitrile gloves
	Sharp Sampling Tools		Use correct tools for opening sleeves
			When opening sleeve, cut away from body
			Place soil core on sturdy surface prior to cutting, use jig when possible
	Vapors		Wear appropriate PPE including respirator if conditions warrant
	Sample Cross Contamination		Decontaminate or dispose of sampling equipment between sampling locations
			Double-check sample labels to ensure accuracy and adhesion to containers
Solid/Liquid Waste Management/Disposal	Vapors and Airborne Particulates		Monitor air concentrations using direct-reading, real-time instruments such as OVM and Draeger tubes
			Stop work if hazardous conditions (explosive atmosphere, O_2 deficient atmosphere) identified until precautions are taken
			Wear appropriate PPE including safety glasses with side shields, dust masks and respirators
			Stay upwind (use flagging or similar device to indicate wind direction)
	Contaminated Materials and Container Pinch Points		Wear appropriate PPE including Nitrile and leather gloves
			Position hands/fingers to avoid pinching/smashing/crushing when closing drum rings

JOB TASK	POSSIBLE HAZARDS	√	PREVENTATIVE/CORRECTIVE ACTION
	Heavy Materials and Containers Lifting/Moving		Do not lift or move heavy containers without assistance
			Use proper bending/lifting techniques by lifting with arms and legs and not with back
			If possible, use powered lift truck, drum cart, or other mechanical means
			Take breaks if feeling faint or overexerted
			Spot drums in storage area prior to filling
			Wear appropriate PPE including leather gloves and steel-toed boots

APPENDIX B

RESPIRATORY PROGRAM

Hanson Van Vleet, LLC.
Respiratory Protection Program
1910.134

Table of Contents

I. OBJECTIVE

The **Hanson Van Vleet, LLC** Respiratory Protection Program is designed to protect employees by establishing accepted practices for respirator use, providing guidelines for training and respirator selection, and explaining proper storage, use and care of respirators. This program also serves to help the company and its employees comply with Occupational Safety and Health Administration (OSHA) respiratory protection requirements as found in 29 CFR 1910.134.

II. ASSIGNMENT OF RESPONSIBILITY

A. Employer

Hanson Van Vleet, LLC is responsible for providing respirators to employees when they are necessary for health protection. **Hanson Van Vleet, LLC** will provide respirators that are applicable and suitable for the intended purpose at no charge to affected employees. Any expense associated with training, medical evaluations and respiratory protection equipment will be borne by the company.

B. Program Administrator

The Program Administrator **Hanson Van Vleet, LLC** is the chief safety officer. The Program Administrator is responsible for administering the respiratory protection program. Duties of the program administrator include:

1. Identifying work areas, process, or tasks that require workers to wear respirators.
2. Evaluating hazards.
3. Selecting respiratory protection options.
4. Monitoring respirator use to ensure that respirators are used in accordance with their specifications.
5. Arranging for and/or conducting training.
6. Ensuring proper storage and maintenance of respiratory protection equipment.
7. Conducting qualitative fit testing with Bitrex.
8. Administering the medical surveillance program.
9. Maintaining records required by the program.
10. Evaluating the program.
11. Updating written program, as needed.

C. Safety officer

Safety officers are responsible for ensuring that the respiratory protection program is implemented in their particular sites. In addition to being knowledgeable about

the program requirements for their own protection, safety officers must also ensure that the program is understood and followed by the employees under their charge. Duties of the safety officer include:

1. Ensuring that employees under their supervision (including new hires) receive appropriate training, fit testing, and annual medical evaluation.
2. Ensuring the availability of appropriate respirators and accessories.
3. Being aware of tasks requiring the use of respiratory protection.
4. Enforcing the proper use of respiratory protection when necessary.
5. Ensuring that respirators are properly cleaned, maintained, and stored according to this program.
6. Ensuring that respirators fit well and do not cause discomfort.
7. Continually monitoring work areas and operations to identify respiratory hazards.
8. Coordinating with the Program Administrator on how to address respiratory hazards or other concerns regarding this program.

D. Employees

Each employee is responsible for wearing his or her respirator when and where required and in the manner in which they are trained. Employees must also:

1. Care for and maintain their respirators as instructed, guard them against damage, and store them in a clean, sanitary location.
2. Inform their supervisor if their respirator no longer fits well, and request a new one that fits properly.
3. Inform their supervisor or the Program Administrator of any respiratory hazards that they feel are not adequately addressed in the workplace and of any other concerns that they have regarding this program.
4. Use the respiratory protection in accordance with the manufacturer's instructions and the training received.

III. APPLICABILITY

This program applies to all employees who are required to wear respirators during normal work operations, as well as during some non-routine or emergency operations, such as a spill of a hazardous substance. A record is kept of all job sites requiring respirator use and the level of protection required. (See attachment A and B)

In addition, any employee who voluntarily wears a respirator when one is not required is subject to the medical evaluation, cleaning, maintenance, and storage elements of this program, and will be provided with necessary training. Employees who voluntarily wear filtering face pieces (dust masks) are not subject to the medical evaluation, cleaning, storage, and maintenance provisions of this program.

All employees and processes that fall under the provisions of this program are listed in Attachment D.

IV. PROGRAM

A. Hazard Assessment and Respirator Selection

The Program Administrator will select respirators to be used on site, based on the hazards to which workers are exposed and in accordance with the OSHA Respiratory Protection Standard. The Program Administrator will conduct a hazard evaluation for each operation, process, or work area where airborne contaminants may be present in routine operations or during an emergency. A log of identified hazards will be maintained by the Program Administrator (See Hazards Identified, Attachment C). The hazard evaluations shall include:

1. Identification and development of a list of hazardous substances used in the workplace by department or work process.
2. Review of work processes to determine where potential exposures to hazardous substances may occur. This review shall be conducted by surveying the workplace, reviewing the process records, and talking with employees and supervisors.
3. Exposure monitoring to quantify potential hazardous exposures.

The proper type of respirator for the specific hazard involved will be selected in accordance with the manufacturer=s instructions. A list of employees and appropriate respiratory protection will be maintained by the Program Administrator (see Attachment D).

B. Updating the Hazard Assessment

The Program Administrator must revise and update the hazard assessment as needed (i.e., any time work process changes may potentially affect exposure). If an employee feels that respiratory protection is needed during a particular activity, he/she is to contact his/her supervisor or the Program Administrator. The Program Administrator will evaluate the potential hazard, and arrange for outside assistance as necessary. The Program Administrator will then communicate the results of that assessment to the employees. If it is determined that respiratory protection is necessary, all other elements of the respiratory protection program will be in effect for those tasks, and the respiratory program will be updated accordingly.

C. Training

The Program Administrator will provide training to respirator users and their supervisors on the contents of the **Hanson Van Vleet, LLC.** Respiratory

Protection Program and their responsibilities under it as well as on the OSHA Respiratory Protection Standard. All affected employees and their supervisors will be trained prior to using a respirator in the workplace. Supervisors will also be trained prior to supervising employees that must wear respirators.

The training course will cover the following topics:

1. the **Hanson Van Vleet, LLC.** Respiratory Protection Program;
2. the OSHA Respiratory Protection Standard (29 CFR 1910.134);
3. respiratory hazards encountered at **Hanson Van Vleet, LLC.** and their health affects;
4. proper selection and use of respirators;
5. limitations of respirators;
6. respirator donning and user seal (fit) checks;
7. fit testing;
8. emergency use procedures;
9. maintenance and storage; and
10. medical signs and symptoms limiting the effective use of respirators.

Employees will be retrained annually or as needed (e.g., if they change departments or work processes and need to use a different respirator). Employees must demonstrate their understanding of the topics covered in the training through hands-on exercises and a written test. Respirator training will be documented by the Program Administrator and the documentation will include the type, model, and size of respirator for which each employee has been trained and fit tested.

D. NIOSH Certification

All respirators must be certified by the National Institute for Occupational Safety and Health (NIOSH) and shall be used in accordance with the terms of that certification. Also, all filters, cartridges, and canisters must be labeled with the appropriate NIOSH approval label. The label must not be removed or defaced while the respirator is in use.

E. Voluntary Respirator Use

The Program Administrator shall authorize voluntary use of respiratory protective equipment as requested by all other workers on a case-by-case basis, depending on specific workplace conditions and the results of medical evaluations.

The Program Administrator will provide all employees who voluntarily choose to wear the above respirators with a copy of Appendix D of the OSHA Respiratory Protection Standard. (Appendix D details the requirements for voluntary use of respirators by employees.) Employees who choose to wear a half face piece APR must comply with the procedures for Medical Evaluation, Respirator Use, Cleaning, Maintenance, and Storage portions of this program.

F. Medical Evaluation

Employees who are either required to wear respirators, or who choose to wear a half face piece APR voluntarily, must pass a medical exam provided by **Hanson Van Vleet, LLC.** before being permitted to wear a respirator on the job. Employees are not permitted to wear respirators until a physician has determined that they are medically able to do so. Any employee refusing the medical evaluation will not be allowed to work in an area requiring respirator use.

A licensed physician will provide the medical evaluations. Medical evaluation procedures are as follows:

1. The medical evaluation will be conducted using the questionnaire provided in Appendix C of the OSHA Respiratory Protection Standard. The Program Administrator will provide a copy of this questionnaire to all employees requiring medical evaluations.
2. To the extent feasible, the company will provide assistance to employees who are unable to read the questionnaire. When this is not possible, the employee will be sent directly to the physician for medical evaluation.
3. All affected employees will be given a copy of the medical questionnaire to complete, along with a stamped and addressed envelope for mailing the questionnaire to the company physician. Employees will be permitted to complete the questionnaire on company time.
4. Follow-up medical exams will be granted to employees as required by the Standard, and/or as deemed necessary by the evaluating physician.
5. All employees will be granted the opportunity to speak with the physician about their medical evaluation, if they so request.
6. The Program Administrator shall provide the evaluating physician with a copy of this Program, a copy of the OSHA Respiratory Protection Standard, the list of hazardous substances by work area, and the following information about each employee requiring evaluation:

    a. his or her work area or job title;
    b. proposed respirator type and weight;
    c. length of time required to wear respirator;
    d. expected physical work load (light, moderate or heavy);
    e. potential temperature and humidity extremes; and
    f. any additional protective clothing required.
7. Positive pressure air purifying respirators will be provided to employees as required by medical necessity.

8. After an employee has received clearance to wear his or her respirator, additional medical evaluations will be provided under the following circumstances:

    a. The employee reports signs and/or symptoms related to their ability to use the respirator, such as shortness of breath, dizziness, chest pains, or wheezing.
    b. The evaluating physician or supervisor informs the Program Administrator that the employee needs to be reevaluated.
    c. Information found during the implementation of this program, including observations made during the fit testing and program evaluation, indicates a need for reevaluation.
    d. A change occurs in workplace conditions that may result in an increased physiological burden on the employee.

A list of **Hanson Van Vleet, LLC.** employees currently included in medical surveillance is provided in Attachment D of this program.

All examinations and questionnaires are to remain confidential between the employee and the physician. The Program Administrator will only retain the physician=s written recommendations regarding each employee=s ability to wear a respirator.

G. Fit Testing

Employees who are required to or who voluntarily wear half-face piece APRs will be fit tested:

1. prior to being allowed to wear any respirator with a tight-fitting face piece;
2. annually; or
3. when there are changes in the employee's physical condition that could affect respiratory fit (e.g., obvious change in body weight, facial scarring, etc.).

Employees will be fit tested with the make, model, and size of respirator that they will actually wear. Employees will be provided with several models and sizes of respirators so that they may find an optimal fit. Fit testing of powered air purifying respirators will be conducted in the negative pressure mode.

The Program Administrator will conduct fit tests in accordance with the OSHA Respiratory Protection Standard.

H. General Respirator Use Procedures

1. Employees will use their respirators under conditions specified in this program, and in accordance with the training they receive on the

use of each particular model. In addition, the respirator shall not be used in a manner for which it is not certified by NIOSH or by its manufacturer.

2. All employees shall conduct user seal checks each time they wear their respirators. Employees shall use either the positive or negative pressure check (depending on which test works best for them) as specified in the OSHA Respiratory Protection Standard.

    a. Positive Pressure Test: This test is performed by closing off the exhalation valve with your hand. Breathe air into the mask. The face fit is satisfactory if some pressure can be built up inside the mask without any air leaking out between the mask and the face of the wearer.

    b. Negative Pressure Test: This test is performed by closing of the inlet openings of the cartridge with the palm of you hand. Some masks may require that the filter holder be removed to seal off the intake valve. Inhale gently so that a vacuum occurs within the face piece. Hold your breath for ten (10) seconds. If the vacuum remains, and no inward leakage is detected, the respirator is fit properly.

3. All employees shall be permitted to leave the work area to maintain their respirator for the following reasons:

    a. to clean their respirator if it is impeding their ability to work;
    b. to change filters or cartridges;
    c. to replace parts; or
    d. to inspect respirator if it stops functioning as intended.

    Employees should notify their supervisor before leaving the area.

4. Employees are not permitted to wear tight-fitting respirators if they have any condition, such as facial scars, facial hair, or missing dentures, which would prevent a proper seal. Employees are not permitted to wear headphones, jewelry, or other items that may interfere with the seal between the face and the face piece.

5. Before and after each use of a respirator, an employee or immediate supervisor must make an inspection of tightness or connections and the condition of the face piece, headbands, valves, filter holders, and filters. Questionable items must be addressed immediately by the supervisor and/or Program Administrator.

I. Air Quality

For supplied-air respirators, only Grade D breathing air shall be used in the cylinders. The Program Administrator will coordinate deliveries of compressed air with the company's vendor and will require the vendor to certify that the air in the cylinders meets the specifications of Grade D breathing air.

The Program Administrator will maintain a minimum air supply of one fully charged replacement cylinder for each SAR unit. In addition, cylinders may be recharged as necessary from the breathing air cascade system located near the respirator storage area.

J. Change Schedules

Respirator cartridges shall be replaced as determined by the Program Administrator, supervisor(s), and manufacturers= recommendations.

K. Cleaning

Respirators are to be regularly cleaned and disinfected at the designated respirator cleaning station. Respirators issued for the exclusive use of an employee shall be cleaned as often as necessary. Atmosphere-supplying and emergency use respirators are to be cleaned and disinfected after each use.

The following procedure is to be used when cleaning and disinfecting reusable respirators:

1. Disassemble respirator, removing any filters, canisters, or cartridges.
2. Wash the face piece and all associated parts (except cartridges and elastic headbands) in an approved cleaner-disinfectant solution in warm water (about 120 degrees Fahrenheit). Do not use organic solvents. Use a hand brush to remove dirt.
3. Rinse completely in clean, warm water.
4. Disinfect all facial contact areas by spraying the respirator with an approved disinfectant.
5. Air dry in a clean area.
6. Reassemble the respirator and replace any defective parts. Insert new filters or cartridges and make sure the seal is tight.
7. Place respirator in a clean, dry plastic bag or other airtight container.

The Program Administrator will ensure an adequate supply of appropriate cleaning and disinfection materials at the cleaning station. If supplies are low, employees should notify their supervisor, who will inform the Program Administrator.

L. Maintenance

Respirators are to be properly maintained at all times in order to ensure that they function properly and protect employees adequately. Maintenance involves a thorough visual inspection for cleanliness and defects. Worn or deteriorated parts will be replaced prior to use. No components will be replaced or repairs made beyond those recommended by the manufacturer. Repairs to regulators or alarms of atmosphere-supplying respirators will be conducted by the manufacturer.

1. All respirators shall be inspected routinely before and after each use.

2. Respirators kept for emergency use shall be inspected after each use, and at least monthly by the Program Administrator to assure that they are in satisfactory working order

3. The Respirator Inspection Checklist (Attachment E) will be used when inspecting respirators.

4. A record shall be kept of inspection dates and findings for respirators maintained for emergency use.

5. Employees are permitted to leave their work area to perform limited maintenance on their respirator in a designated area that is free of respiratory hazards. Situations when this is permitted include:

    a. washing face and respirator face piece to prevent any eye or skin irritation;
    b. replacing the filter, cartridge or canister;
    c. detection of vapor or gas breakthrough or leakage in the face piece; or
    d. detection of any other damage to the respirator or its components.

M. Storage

After inspection, cleaning, and necessary repairs, respirators shall be stored appropriately to protect against dust, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals.

1. Respirators must be stored in a clean, dry area, and in accordance with the manufacturer's recommendations. Each employee will clean and inspect their own air-purifying respirator in accordance with the provisions of this program, and will store their respirator in a plastic bag in the designated area. Each employee will have his/her name on the bag and that bag will only be used to store that employee's respirator.
2. Respirators shall be packed or stored so that the face piece and exhalation valve will rest in a near normal position.

3. Respirators shall not be placed in places such as lockers or toolboxes unless they are in carrying cartons.

4. Respirators maintained at stations and work areas for emergency use shall be stored in compartments built specifically for that purpose, be quickly accessible at all times, and be clearly marked.

5. The Program Administrator will store the **Hanson Van Vleet, LLC.** supply of respirators and respirator components in their original manufacturer's packaging in the designated equipment storage area.

N. Respirator Malfunctions and Defects

1. For any malfunction of an ASR (atmosphere-supplying respirator), such as breakthrough, face piece leakage, or improperly working valve, the respirator wearer should inform his/her supervisor that the respirator no longer functions as intended, and go to the designated safe area to maintain the respirator. The supervisor must ensure that the employee either receives the needed parts to repair the respirator or is provided with a new respirator.

   All workers wearing atmosphere-supplying respirators will work with a buddy. The Program Administrator shall develop and inform employees of the procedures to be used when a buddy is required to assist a coworker who experiences an ASR malfunction.

2. Respirators that are defective or have defective parts shall be taken out of service immediately. If, during an inspection, an employee discovers a defect in a respirator, he/she is to bring the defect to the attention of his/her supervisor. Supervisors will give all defective respirators to the Program Administrator. The Program Administrator will decide whether to:

   a. temporarily take the respirator out of service until it can be repaired;
   b. perform a simple fix on the spot, such as replacing a head strap; or
   c. dispose of the respirator due to an irreparable problem or defect.

   When a respirator is taken out of service for an extended period of time, the respirator will be tagged out of service, and the employee will be given a replacement of a similar make, model, and size. All tagged out respirators will be kept in the designated equipment area.

O. Emergency Procedures

In emergency situations where an atmosphere exists in which the wearer of the respirator could be overcome by a toxic or oxygen-deficient atmosphere, the following procedure should be followed. The locations of project sites where the potential for dangerous atmosphere exists are listed in Attachment F of this procedure.

1. When the alarm sounds, employees in the affected area must immediately don their emergency escape respirator, shut down their process equipment, and exit the work area.

2. Employees who must remain in a dangerous atmosphere must take the following precautions:

    a. Employees must never enter a dangerous atmosphere without first obtaining the proper protective equipment and permission to enter from the Program Administrator or supervisor.
    b. Employees must never enter a dangerous atmosphere without at least one additional person present. The additional person must remain in the safe atmosphere.
    c. Communications (voice, visual or signal line) must be maintained between both individuals or all present.

P. Program Evaluation

The Program Administrator will conduct periodic evaluations of the workplace to ensure that the provisions of this program are being implemented. The evaluations will include regular consultations with employees who use respirators and their supervisors, site inspections, air monitoring and a review of records. Items to be considered will include:

1. comfort;
2. ability to breathe without objectionable effort;
3. adequate visibility under all conditions
4. provisions for wearing prescription glasses;
5. ability to perform all tasks without undue interference; and
6. confidence in the face piece fit.

Identified problems will be noted in an inspection log and addressed by the Program Administrator. These findings will be reported to the **Hanson Van Vleet, LLC.** management, and the report will list plans to correct deficiencies in the respirator program and target dates for the implementation of those corrections.

Q. Documentation and Recordkeeping

1. A written copy of this program and the OSHA Respiratory Protection Standard shall be kept in the Program Administrator's office and made available to all employees who wish to review it.

2. Copies of training and fit test records shall be maintained by the Program Administrator. These records will be updated as new employees are trained, as existing employees receive refresher training, and as new fit tests are conducted

3. For employees covered under the Respiratory Protection Program, the Program Administrator shall maintain copies of the physician's written recommendation regarding each employee's ability to wear a respirator. The completed medical questionnaires and evaluating physician's documented findings will remain confidential in the employee's medical records at the location of the evaluating physician's practice.

ATTACHMENT A

Hazard Assessment Log of Identified sites

Hazard Assessment				
Site	**Contaminants**	**Exposure Level (8 hr TWA*)**	**PEL****	**Level of protection**

* Summarized from Industrial Hygiene report provided by the safety officer.

** These values were obtained from a survey on average exposures as published in the American Journal of Industrial Hygiene.

ATTACHMENT B

Record of Respirator Use

Required and Voluntary Respirator Use at the **Hanson Van Vleet, LLC.**					
Site name and area/task	**Employee**	**Lvl D** Optional Filtering face piece (dust mask)	**Lvl C** Full-facepiece Air-Purifying canister-equipped respirator	**Lvl B** pressure demand, full-facepiece SCBA or pressure demand SAR with escape SCBA	**Lvl A** pressure demand, full-facepiece SCBA or pressure demand SAR with escape SCBA

ATTACHMENT C

Identified Respiratory Hazard

Site name:_____ **Site location:** _____

Identified Hazard	
Health Hazard (values)	**Certified respiratory protection required***

specify level of protection and cartridge type:

(Include documentation of the sampling data that hazard evaluation is based on.

ATTACHMENT D

Record of Respirator Issuance

Hanson Van Vleet, LLC. Personnel in Respiratory Protection Program				
Respiratory protection is required for and has been issued to the following personnel:				
Name	**Job Description**	**Type of Respirator**	**Number**	**Date Issued**

ATTACHMENT E

Respirator Inspection Checklist

Type of Respirator:	**Location:**
Respirator Issued to:	**Type of Hazard:**
Face piece	_____ Cracks, tears, or holes _____ Face mask distortion _____ Cracked or loose lenses/face shield
Head straps	_____ Breaks or tears _____ Broken buckles
Valves:	_____ Residue or dirt _____ Cracks or tears in valve material
Filters/Cartridges:	_____ Approval designation _____ Gaskets _____ Cracks or dents in housing _____ Proper cartridge for hazard
Air Supply Systems	_____ Breathing air quality/grade _____ Condition of supply hoses _____ Hose connections _____ Settings on regulators and valves
Rubber/Elastomer Parts	_____ Pliability _____ Deterioration

Inspected by:	**Date:**
Action Taken:	

ATTACHMENT F

Emergency Potential/ Immediately Dangerous to Life and Health (IDLH) Assessment Log

Site name: _____ **Site location:** _____

The following work areas have been identified as having foreseeable emergencies:

Area	Monitoring required /Action level	Procedure	PPE upgrade	Location of Emergency Respirator(s)

_____ _____

Program Administrator Date

APPENDIX C

EXCAVATION PROGRAM

Hanson Van Vleet, LLC.
Excavation Safety Program
1926, Subpart P

Table of Contents

I. OBJECTIVE

This Excavation Safety Program has been developed to protect employees from safety hazards that may be encountered during work in trenches and excavations. This program is intended to assure that:

A. Employees who perform work in excavations are aware of their responsibilities and know how to perform the work safely.

B. **Hanson Van Vleet, LLC** has appointed one or more individuals within the company to assure compliance with the requirements of this program.

C. The responsibilities of safety officers and workers are clearly detailed.

D. All persons involved in excavation and trenching work have received appropriate training in the safe work practices that must be followed when performing this type of work.

II. ASSIGNMENT OF RESPONSIBILITY

A. Employer

In administering the Excavation Safety Program, Hanson Van Vleet, LLC will:

1. Monitor the overall effectiveness of the program.
2. Provide atmospheric testing and equipment selection as needed.
3. Provide personal protective equipment as needed.
4. Provide protective systems as needed.
5. Provide training to affected employees and supervisors.
6. Provide technical assistance as needed.
7. Preview and update the program on at least an annual basis, or as needed.

B. Program Manager

The safety officer acts as the competent person for Hanson Van Vleet, LLC in reference to this program, and must assure that:

1. The procedures described in this program are followed.

2. Employees entering excavations or trenches are properly trained and equipped to perform their duties safely.

3. All required inspections, tests, and recordkeeping functions have been performed.

C. Employees

All employees, including contractor personnel, who work in or around excavations must comply with the requirements of this program. Employees are responsible for reporting hazardous practices or situations to Hanson Van Vleet, LLC management, as well as reporting incidents that cause injury to themselves or other employees to the safety officer.

III. TRAINING

A. Training Schedule

1. All personnel involved in trenching or excavation work shall be trained in the requirements of this program by the safety officer with assistance from the appropriate supervisors.

2. Training shall be performed before employees are assigned duties in excavations.

3. Retraining will be performed when work site inspections indicate that an employee does not have the necessary knowledge or skills to safely work in or around excavations, or when changes to this program are made.

4. Training records (see attachment A) will be maintained by the chief safety officer, and shall include:

a. date of the training program;
b. name(s) of the instructor(s) who conducted the training;
c. a copy of the written material presented; and
d. name(s) of the employee(s) who received the training.

B. Training Components

The training provided to all personnel who perform work in excavations shall include:

1. The work practices that must be followed during excavating or working in excavations.

2. The use of personal protective equipment that will typically be required during work in excavations, including but not limited to safety shoes, hardhats, and fall protection devices.

3. Procedures to be followed if a hazardous atmosphere exists or could reasonably be expected to develop during work in an excavation.

4. The OSHA Excavation Standard, 29 CFR 1926, Subpart P.

5. Emergency and non-entry rescue methods, and the procedure for calling rescue services.

6. Hanson Van Vleet, LLC. policy on reporting incidents that cause injury to employees.

C. Training and Duties of Program Manager

The Program Manager and/or safety officer shall receive the training detailed in this program as well as training on the requirements detailed in the OSHA Excavation Standard. The Program Manager/safety officer shall:

1. Coordinate, actively participate in, and document the training of all employees affected by this program.

2. Ensure on a daily basis, or more often as detailed in this program, that worksite conditions are safe for employees to work in excavations.

3. Determine the means of protection that will be used for each excavation project.

4. Ensure, if required, that the design of a protective system has been completed and approved by a registered professional engineer before work begins in an excavation.

5. Make available a copy of this program and the OSHA Excavation Standard to any employee who requests it.

IV. EXCAVATION REQUIREMENTS

Safety inspections are required when the trench will be or is occupied by employees. Inspections are conducted prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard-increasing occurrence. A daily Excavation Inspection Check List is included in Attachment B.

A. Utilities and Pre-Work Site Inspection

Prior to excavation, the site shall be thoroughly inspected by the to safety officer determine if special safety measures must be taken.

B. Surface Encumbrances

All equipment, materials, supplies, permanent installations (i.e., buildings or roadways), trees, brush, boulders, and other objects at the surface that could present a hazard to employees working in the excavation shall be removed or supported as necessary to protect employees.

C. Underground Installations

1. The location of sewer, telephone, fuel, electric, water, or any other underground installations or wires that may be encountered during excavation work shall be determined and marked prior to opening an excavation. Arrangements shall be made as necessary by the project manager or safety officer with the appropriate utility entity for the protection, removal, shutdown, or relocation of underground installations.

2. If it is not possible to establish the exact location of these installations, the work may proceed with caution if detection equipment or other safe and acceptable means are used to locate the utility.

3. Excavation shall be done in a manner that does not endanger the underground installations or the employees engaged in the work. Utilities left in place shall be protected by barricades, shoring, suspension, or other means as necessary to protect employees.

D. Protection of the Public

Barricades, walkways, lighting, and posting shall be provided as necessary for the protection of the public prior to the start of excavation operations.

1. Guardrails, fences, or barricades shall be provided on excavations adjacent to walkways, driveways, and other pedestrian or vehicle thoroughfares. Warning lights or other illumination shall be maintained as necessary for the safety of the public and employees from sunset to sunrise.

2. Wells, holes, pits, shafts, and all similar hazardous excavations shall be effectively barricaded or covered and posted as necessary to prevent unauthorized access. All temporary excavations of this type shall be backfilled as soon as possible.

3. Walkways or bridges protected by standard guardrails shall be provided where employees and the general public are permitted to cross over excavations. Where workers in the excavation may pass under these walkways or bridges, a standard guardrail and toeboard shall be used to prevent the hazard of falling objects. Information on the requirements for guardrails and toeboards may be obtained by contacting the project manager or safety officer.

E. Protection of Employees

Stairs, ladders, or ramps shall be provided at excavation sites where employees are required to enter trench excavations over four (4) feet deep. The maximum distance of lateral travel (along the length of the trench) necessary to reach the means of egress shall not exceed 25 feet.

1. Structural Ramps

a. Structural ramps used solely by employees as a means of access or egress from excavations shall be designed by a competent person Structural ramps used for access or egress of equipment shall be designed by a person qualified in structural design, and shall be constructed in accordance with the design.

b. Ramps and runways constructed of two or more structural members shall have the structural members connected together to prevent movement or displacement.

c. Structural members used for ramps and runways shall be of uniform thickness.

d. Cleats or other appropriate means used to connect runway structural members shall be attached to the bottom of the runway or shall be attached in a manner to prevent tripping.

e. Structural ramps used in place of steps shall be provided with cleats or other surface treatments on the top surface to prevent slipping.

2. Ladders

a. When portable ladders are used, the ladder side rails shall extend a minimum of three (3) feet above the upper surface of the excavation.

b. Ladders shall have nonconductive side rails if work will be performed near exposed energized equipment or systems.

c. Two or more ladders, or a double-cleated ladder, will be provided where 25 or more employees will be conducting work in an excavation where ladders serve as the primary means of egress, or where ladders serve two-way traffic.

d. Ladders will be inspected prior to use for signs of damage or defects. Damaged ladders will be removed from service and marked with "Do Not Use" until repaired.

e. Ladders shall be used only on stable and level surfaces unless secured. Ladders placed in any location where they can be displaced by workplace activities or traffic shall be secured, or barricades shall be used to keep these activities away from the ladders.

f. Non self-supporting ladders shall be positioned so that the foot of the ladder is one-quarter of the working length away from the support.

g. Employees are not permitted to carry any object or load while on a ladder that could cause them to lose their balance and fall.

F. Exposure to Vehicular Traffic

Employees exposed to vehicular traffic shall be provided with, and shall wear warning vests or other suitable garments marked with or made of reflectorized or high-visibility material. Warning vests worn by flagmen shall be red or orange, and shall be reflectorized material if worn during night work. Emergency lighting, such as spotlights or portable lights, shall be provided as needed to perform work safely.

G. Exposure to Falling Loads

No employee is permitted underneath loads being handled by lifting or digging equipment. Employees are be required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials. Operators may remain in the cabs of vehicles being loaded or unloaded when the vehicles provide adequate protection for the operator during loading and unloading operations.

H. Warning System for Mobile Equipment

A warning system shall be used when mobile equipment is operated adjacent to the edge of an excavation if the operator does not have a clear and direct view of the edge of the excavation. The warning system shall consist of barricades, hand or mechanical signals, or stop logs. If possible, the grade should be away from the excavation.

I. Hazardous Atmospheres

The project manager or safety officer will test the atmosphere in excavations over four (4) feet deep if a hazardous atmosphere exists or could reasonably be expected to exist. A hazardous atmosphere could be expected, for example, in excavations in landfill areas, areas where hazardous substances are stored nearby, or near or containing gas pipelines.

1. Adequate precautions shall be taken to prevent employee exposure to atmospheres containing less than 19.5 percent oxygen and other hazardous atmospheres. These precautions include providing proper respiratory protection or forced ventilation of the workspace.

2. Forced ventilation or other effective means shall be used to prevent employee exposure to an atmosphere containing a flammable gas in excess of ten (10) percent of the lower flammability limit of the gas.

3. When controls are used that are intended to reduce the level of atmospheric contaminants to acceptable levels, continuous air monitoring will be performed by the safety officer. The device used for atmospheric monitoring shall be equipped with an audible and visual alarm.

4. Atmospheric testing will be performed using a properly calibrated direct reading gas monitor. Direct reading gas detector tubes or other acceptable means may also be used to test potentially toxic atmospheres.

5. Each atmospheric testing instrument shall be calibrated by the project manager or safety officer on a schedule and in the manner recommended by the manufacturer. In addition:

a. Any atmospheric testing instrument that has not been used within 30 days shall be recalibrated prior to use.
b. Each atmospheric testing instrument shall be calibrated at least every six (6) months.

6. Each atmospheric testing instrument will be field checked immediately prior to use to ensure that it is operating properly.

J. Personal Protective Equipment

1. All employees working in trenches or excavations shall wear approved hardhats and steel-toed shoes or boots.

2. Employees exposed to flying fragments, dust or other materials produced by drilling, sawing, sanding, grinding, and similar operations shall wear approved safety glasses with side shields.

3. Employees performing welding, cutting, or brazing operations, or are exposed to the hazards produced by these tasks, shall wear approved spectacles or a welding faceshield or helmet, as determined by project manager or safety officer.

4. Employees entering bell-bottom pier holes or other similar deep and confined footing excavations shall wear a harness with a lifeline securely attached to it. The lifeline shall be separate from any line used to handle materials and shall be individually attended at all times while the employee wearing the lifeline is in the excavation.

5. Employees shall wear, as determined by project manager or safety officer, approved gloves or other suitable hand protection.

6. Employees using or working in the immediate vicinity of hammer drills, masonry saws, jackhammers, or similar high-noise producing equipment shall wear suitable hearing protection, as determined by project manager or safety officer.

7. Each employee working at the edge of an excavation six (6) feet or more deep shall be protected from falling. Fall protection shall include guardrail systems, fences, barricades, covers, or a tie-back system meeting OSHA requirements, as determined by project manager or safety officer.

8. Emergency rescue equipment, such as breathing apparatus, a safety harness and line, and a basket stretcher, shall be readily available where hazardous atmospheric conditions exist or may develop during work in an excavation. This equipment shall be attended when in use. Only personnel who have received approved training and have appropriate equipment shall attempt retrieval that would require entry into a hazardous atmosphere. If entry into a known hazardous atmosphere must be performed, then project manager or safety officer shall be given advance notice so that the hazards can be evaluated and rescue personnel placed on standby if necessary.

K. Walkways and Guardrails

Walkways shall be provided where employees or equipment are permitted to cross over excavations. Guardrails shall be provided where walkways, accessible only to on-site project personnel, are six (6) feet or more above lower levels.

L. Protection from Water Accumulation Hazards

1. Employees are not permitted to work in excavations that contain or are accumulating water unless precautions have been taken to protect them from the hazards posed by water accumulation. Precautions may include special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of safety harnesses and lifelines.

2. If water is controlled or prevented from accumulating by the use of water removal equipment, the water removal equipment and operation shall be monitored by a person trained in the use of that equipment.

3. If excavation work interrupts the natural drainage of surface water (such as streams), diversion ditches, dikes, or other suitable means shall be used to prevent surface water from entering the excavation. Precautions shall also be taken to provide adequate drainage of the area adjacent to the excavation. Excavations subject to runoff from heavy rains shall be reinspected by project manager or safety officer after each rain incident to determine if additional precautions, such as special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of safety harnesses and lifelines, should be used.

4. Project manager or safety officer shall inform affected workers of the precautions or procedures that are to be followed if water accumulates or is accumulating in an excavation.

M. Stability of Adjacent Structures

Project manager or safety officer will determine if the excavation work could affect the stability of adjoining buildings, walls, sidewalks, or other structures.

1. Support systems (such as shoring, bracing, or underpinning) shall be used to assure the stability of structures and the protection of employees where excavation operations could affect the stability of adjoining buildings, walls, or other structures.

2. Excavation below the level of the base or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard to employees shall not be permitted, except when:

a. a support system, such as underpinning, is provided to ensure the safety of employees and the stability of the structure;
b. the excavation is in stable rock;
c. a registered professional engineer has approved the determination that the structure is sufficiently removed from the excavation so as to be unaffected by the excavation activity; or
d. a registered professional engineer has approved the determination that such excavation work will not pose a hazard to employees.

3. Sidewalks, pavements, and appurtenant structures shall not be undermined unless a support system or other method of protection is provided to protect employees from the possible collapse of such structures.

4. Where review or approval of a support system by a registered professional engineer is required ,project manager or safety officer shall secure this review and approval in writing before the work begins.

N. Protection from Falling Objects and Loose Rocks or Soil

1. Adequate protection shall be provided to protect employees from loose rock or soil that could pose a hazard by falling or rolling from an excavation face. Such protection shall consist of:

a. scaling to remove loose material;
b. installation of protective barricades, such as wire mesh or timber, at appropriate intervals on the face of the slope to stop and contain falling material; or
c. benching sufficient to contain falling material.

2. Excavation personnel shall not be permitted to work above one another where the danger of falling rock or earth exists.

3. Employees shall be protected from excavated materials, equipment, or other materials that could pose a hazard by falling or rolling into excavations.

4. Protection shall be provided by keeping such materials or equipment at least two (2) feet from the edge of excavations, by use of restraining devices that are sufficient to prevent materials or equipment from falling or rolling into excavations, or by a combination of both if necessary.

5. Materials and equipment may, as determined by project manager or safety officer, need to be stored further than two (2) feet from the edge of the excavation if a hazardous loading condition is created on the face of the excavation.

6. Materials piled, grouped, or stacked near the edge of an excavation must be stable and self-supporting.

O. Inspection by Program Manager

1. The Program Manager, project manager or safety officer, shall conduct daily inspections of excavations, adjacent areas, and protective systems for evidence of a situation that could result in possible cave-ins, failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection shall be conducted by project manager or safety officer prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard-increasing occurrence. These inspections are only required when the trench will be or is occupied by employees. (see attachment B)

2. Where the project manager or safety officer finds evidence of a situation that could result in a possible cave-in, failure of protective systems, hazardous atmosphere, or other hazardous conditions, exposed employees shall be removed from the hazardous area until precautions have been taken to assure their safety.

3. project manager or safety officer shall maintain a written log of all inspections conducted. This log shall include the date, work site location, results of the inspection, and a summary of any action taken to correct existing hazards.

V. PROTECTIVE SYSTEM REQUIREMENTS

A. Protection of Employees

1. Employees in an excavation shall be protected from cave-ins by using either an adequate sloping and benching system or an adequate support or protective system. The only exceptions are:

a. excavations made entirely in stable rock; or
b. excavations less than five (5) feet in depth where examination of the ground by project manager or safety officer provides no indication of a potential cave-in.

2. Protective systems shall be capable of resisting all loads that could reasonably be expected to be applied to the system.

B. Design of Sloping and Benching Systems

The slope and configuration of sloping and benching systems shall be selected and constructed by project manager or safety officer in accordance with the following options:

1. Allowable configurations and slopes

    a. Excavations shall be sloped at an angle no steeper than one and one-half (1 ½) horizontal to one (1) vertical (34 degrees measured from the horizontal), unless one of the options listed below is used.
    b. Slopes shall be properly excavated depending on soil type as shown in 29 CFR 1926, Subpart P, Appendix B.

2. Determination of slopes and configurations using 29 CFR 1926, Subpart P, Appendices A and B

The maximum allowable slopes and allowable configurations for sloping and benching systems shall meet the requirements set forth in these appendices.

3. Designs using other tabulated data

The design of sloping or benching systems may be selected from, and shall be constructed in accordance with, other tabulated data, such as tables and charts. The tabulated data used must be in written form and include the following:

    a. Identification of the factors that affect the selection of a sloping or benching system.

    b. Identification of the limits of the use of the data, including the maximum height and angle of the slopes determined to be safe.

    c. Other information needed by the user to make correct selection of a protective system.

    d. At least one copy of the tabulated data that identifies the registered professional engineer who approved the data shall be maintained at the jobsite during construction of the protective system. After that time, the data may be stored off the jobsite, and shall be maintained by project manager or safety officer.

4. Design by a registered professional engineer

    a. Sloping or benching systems designed in a manner other than those described in the preceding three options shall be approved by a registered professional engineer.

b. Designs shall be in written form and shall include at least the following information:

i. the maximum height and angle of the slopes that were determined to be safe for a particular project; and

ii. the identity of the registered professional engineers who approved the design.

c. At least one copy of the design shall be maintained at the jobsite while the slope is being constructed. After that time, the design may be stored off the jobsite, and shall be maintained by project manager or safety officer.

C. Design of Support, Shield, and Other Protective Systems

The design of support systems, shield systems, and other protective systems shall be selected and constructed by project manager or safety officer in accordance with the following requirements:

1. Designs using 29 CFR 1926, Subpart P, Appendices A, C and D

a. Timber shoring in trenches shall be designed in accordance with the requirements of the OSHA guidelines.

b. Aluminum hydraulic shoring shall be designed in accordance with the manufacturer's tabulated data or the requirements of the OSHA guidelines.

2. Designs using manufacturer's tabulated data

a. Support systems, shield systems, and other protective systems designed from manufacturer's tabulated data shall be constructed and used in accordance with all specifications, recommendations, and limitations issued or made by the manufacturer.

b. Deviation from the specifications, recommendations, and limitations issued or made by the manufacturer shall be allowed only after the manufacturer issues specific written approval.

c. Manufacturer's specifications, recommendations, and limitations, as well as the manufacturer's written approval to deviate from the specifications, recommendations, and limitations, shall be kept in written form at the jobsite during construction of the protective system(s). After that time, the information may be stored off the jobsite, and shall be maintained by project manager or safety officer.

3. Designs using other tabulated data

Designs of support systems, shield systems, and other protective systems shall be selected from and constructed in accordance with tabulated data, such as tables and charts.

a. The tabulated data shall be in written form and shall include all of the following:

i. identification of the factors that affect the selection of a protective system drawn from such data;
ii. identification of the limits of the use of such data; and
iii. information needed by the user to make a correct selection of a protective system from the data.

b. At least one written copy of the tabulated data, which identifies the registered professional engineer who approved the data, shall be maintained at the jobsite during construction of the protective system. After that time, the data may be stored off the jobsite, and shall be maintained by project manager or safety officer.

4. Design by a registered professional engineer

Support systems, shield systems, and other protective systems designed in a manner other than the preceding three options shall be approved by a registered professional engineer.

a. Designs shall be in written form and shall include:

i. a plan indicating the sizes, types, and configurations of the materials to be used in the protective system; and
ii. the identity of the registered professional engineer who approved the design.

b. At least one copy of the design shall be maintained at the jobsite during construction of the protective system. After that time, the design may be stored off the jobsite, and shall be maintained by project manager or safety officer.

D. Materials and Equipment

1. Materials and equipment used for protective systems shall be free from damage or defects that might affect their proper function.

2. Manufactured materials and equipment used for protective systems shall be used and maintained in accordance with the recommendations of the manufacturer, and in a manner that will prevent employee exposure to hazards.

3. When materials or equipment used for protective systems are damaged. Project manager or safety officer shall ensure that these systems are examined by a competent person to evaluate suitability for continued use. If the competent person cannot assure that the material or equipment is able to support the intended loads or is otherwise suitable for safe use, then such material or equipment shall be removed from service. The material or equipment shall then be evaluated and approved by a registered professional engineer before being returned to service.

E. Installation and Removal of Supports

1. General

a. Members of support systems shall be securely connected together to prevent sliding, falling, kickouts, or other potential hazards.

b. Support systems shall be installed and removed in a manner that protects employees from cave-ins, structural collapses, or from being struck by members of the support systems.

c. Individual members of the support systems shall not be subjected to loads exceeding those that they were designed to support.

d. Before temporary removal of individual support members begins, additional precautions shall be taken as directed by project manager or safety officer to ensure the safety of employees (i.e., the installation of other structural members to carry the loads imposed on the support system).

e. Removal of support systems shall begin at, and progress from, the bottom of the excavation. Members shall be released slowly. If there is any indication of possible failure of the remaining members of the structure or possible cave-in of the sides of the excavation, the work shall be halted until it can be examined by project manager or safety officer.

f. Backfilling shall progress in conjunction with the removal of support systems from excavations.

2. Additional Requirements

a. Excavation of material to a level no greater than two (2) feet below the bottom of the members of a support system is allowed, but only if the system is designed to resist the forces calculated for the full depth of the trench. There shall be no indications of a possible loss of soil from behind or below the bottom of the support system while the trench is open.

b. Installation of a support system shall be closely coordinated with the excavation of trenches.

F. Sloping and Benching Systems

Employees are not be permitted to work above other employees in the faces of sloped or benched systems, except when employees at lower levels are protected from the hazards of falling, rolling, or sliding material or equipment.

G. Shield Systems

1. General

a. Shield systems shall not be subjected to loads that are greater than those they are designed to withstand.

b. Shields shall be installed in a manner that will restrict lateral or other hazardous movement of the shield and could occur during cave-in or unexpected soil movement.

c. Employees shall be protected from the hazard of cave-ins when entering or exiting the areas protected by shields.

d. Employees are not permitted in trenches when shields are being installed, removed, or moved vertically.

2. Additional Requirements

a. Excavation of material to a level no greater than two (2) feet below the bottom of the shield system is allowed, but only if the system is designed to resist the forces calculated for the full depth of the trench.

b. There shall be no indications of a possible loss of soil from behind or below the bottom of the shield system while the trench is open.

VI. ACCIDENT INVESTIGATIONS

All incidents that result in injury to workers, as well as near misses, regardless of their nature, shall be reported and investigated. Investigations shall be conducted by project manager or safety officer as soon after an incident as possible to identify the cause and means of prevention to eliminate the risk of reoccurrence.

In the event of such an incident, the Excavation Safety Program shall be reevaluated by project manager or safety officer to determine if additional practices, procedures, or training are necessary to prevent similar future incidents.

VII. CHANGES TO PROGRAM

Any changes to the Excavation Safety Program shall be approved by chief safety officer, and shall be reviewed by a qualified person as the job progresses to determine additional practices, procedures, or training needs necessary to prevent injuries. Affected employees shall be notified of procedure changes, and trained if necessary. A copy of this program shall be maintained at the jobsite by project manager or safety officer.

VIII. GLOSSARY

Accepted engineering practices: the standards of practice required by a registered professional engineer.

Aluminum hydraulic shoring: a manufactured shoring system consisting of aluminum hydraulic cylinders (crossbraces) used with vertical rails (uprights) or horizontal rails (wales). This system is designed to support the sidewalls of an excavation and prevent cave-ins.

Bell-bottom pier hole: a type of shaft or footing excavation, the bottom of which is made larger than the cross section above to form a bell shape.

Benching system: a method of protecting employees from cave-ins by excavating the sides of an excavation to form one or more horizontal steps, usually with vertical or near-vertical surfaces between levels.

Cave-in: the movement of soil or rock into an excavation, or the loss of soil from under a trench shield or support system, in amounts large enough to trap, bury, or injure and immobilize a person.

Competent person: a person who has been trained to identify hazards in the workplace, or working conditions that are unsafe for employees, and who has the authority to have these hazards corrected.

Cross braces: the horizontal members of a shoring system installed from side to side of the excavation. The cross braces bear against either uprights or wales.

Excavation: any man-made cut, cavity, trench, or depression in an earth surface formed by earth removal.

Faces or sides: the vertical or inclined earth surfaces formed as a result of excavation work.

Failure: the movement or damage of a structural member or connection that makes it unable to support loads.

Hazardous atmosphere: an atmosphere that is explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic, or otherwise harmful, that may cause death, illness, or injury.

Kickout: the accidental movement or failure of a cross brace.

Program Manager: the individual within the company who oversees excavation work and is responsible for assuring compliance with this program.

Protective system: a method of protecting employees from cave-ins, from material that could fall or roll from an excavation face into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.

Ramp: an inclined walking or working surface that is used to gain access to one point from another. A ramp may be constructed from earth or from structural materials such as steel or wood.

Sheeting: the members of a shoring system that retain the earth in position and in turn are supported by other members of the shoring system.

Shield system: a structure used in an excavation to withstand cave-ins and which will protect employees working within the shield system. Shields can be permanent structures or portable units moved along as work progresses. Shields used in trenches are usually referred to as **trench boxes** or **trench shields**.

Shoring system: a structure that is built or put in place to support the sides of an excavation to prevent cave-ins.

Sides: see **faces**.

Sloping system: sloping the sides of an excavation away from the excavation to protect employees from cave-ins. The required slope will vary with soil type, weather, and surface or near surface loads that may affect the soil in the area of the trench (such as adjacent buildings, vehicles near the edge of the trench, etc.).

Stable rock: natural solid mineral material that can be excavated with vertical sides that will remain intact while exposed.

Structural ramp: a ramp build of steel or wood, usually used for vehicle access. Ramps made of soil or rock are not considered structural rams.

Support system: a structure used as underpinning, bracing or shoring, which provides support to an adjacent structure, underground installation, or the sides of an excavation.

Tabulated data: tables and charts approved by a registered professional engineer and used to design and construct a protective system.

Trench: a narrow excavation (in relation to its height) made below the surface of the ground.

Trench box or trench shield: see **shield**.

Uprights: the vertical members of a trench shoring system placed in contact with the earth and usually positioned so the individual members do not contact each other. Uprights placed so that individual members are closely spaced, in contact with or interconnected to each other, are often called **sheeting**.

Wales: horizontal members of a shoring system placed in the direction of the excavation face whose sides bear against the vertical members of the shoring system or earth (the uprights or sheeting).

Attachment A

TRAINING LOG

PRESENTATION OF
EXCAVATION SAFETY PROGRAM

DATE	INSTRUCTOR	EMPLOYEE	OTHER MATERAL PRESENTED

Attachment B

Daily Excavation Inspection Check List*

Date_____ **Inspector**_____ **site**_____

_____ Excavation depth

_____pre-work hazard evaluation
_____Surface encumbrances
_____Underground installation or utilities
_____Vehicular traffic
_____General public protection-barricades, signs, lights
_____Adjacent areas
_____Soil/rock quality
_____Slope/benching
_____ Protective systems for evidence of a situation that could result in possible cave-ins**
_____Failure of protective system
_____Hazardous atmospheres
_____Other hazardous conditions
_____PPE
_____Water Hazards
_____Falling loads
_____Falling soil/rocks
_____Walkways and guards

*These inspections are only required when the trench will be or is occupied by employees. Inspections are conducted prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard-increasing occurrence.

**Where the project manager or safety officer finds evidence of a situation that could result in a possible cave-in, failure of protective systems, hazardous atmosphere, or other hazardous conditions, exposed employees shall be removed from the hazardous area until precautions have been taken to assure their safety.

APPENDIX D

CONIFINED SPACE PROGRAM

CONFINED SPACE ENTRY PROGRAM[1]

A confined space is an area which:

1. potentially contains a hazardous atmosphere or engulfment hazard;
2. has limited means of entry or exit;
3. is not designed for human occupancy.

Common confined spaces are tanks and pits.

When you encounter a confined space, DO NOT ENTER IT, *not even to assist someone in trouble*. If you encounter someone in trouble inside a confined space, immediately call the trained emergency response team.

Confined spaces must be evaluated and may require special testing or permits to allow for entry. Heed all safety signs in the area.

Assume that every confined space is dangerous. This includes above ground as well as below ground areas. Before entering a confined space, the confined space entry procedure shall be followed and the proper permit filled out and posted.

CONFINED SPACE ENTRY PERMIT

A confined space entry permit is a check list which is used to evaluate specific confined space hazards.

HOT-WORK

Hot-work areas are those areas where possible fires may be started by flame or electrical (welding, grinding, burning, sparks) work being performed in a hazardous area. A previous inspection by the facility should be performed to establish designated areas. As per specific facility requirements, hot work permits may be required prior to performing hot work. Such areas should be prominently marked and before hot-work is done within any such area, permit tags must be secured in order to help ensure that the area will be as free as possible from fire hazards and that proper precautions will have been taken.

AIR MONITORING

Air monitoring will be conducted to evaluate atmospheric hazards. Depending on site requirements air monitoring may be conducted by Hanson Van Vleet ,LLC. employees, subcontractor, or facility health and safety personnel.

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[1] 29 CFR 1910.146

ATTENDANT'S DUTIES

The individual acting as the attendant will be responsible for monitoring the entrance in the confined space, immediate conditions associated with the confined space, and potential surrounding conditions. The attendant is not to enter a confined space unless relieved by another trained attendant. Primary function of the attendant is to summon rescue services if they are needed and provide a comprehensive safety watch for the entrance.

ENTRANTS

The entrants must be aware of any hazards associated with the confined space he/she is working in. The entrant must be aware of the signs, symptoms, and over exposure of chemical hazards.

ENTRY SUPERVISOR

The entry supervisor is responsible for reviewing the confined space permit and ensuring the conditions of the permit are safely met prior to entry in the confined space.

TRAINING

Hanson Van Vleet ,LLC. employees will be trained on the technical elements of 29 CFR 1910.146 by a qualified individual.

All subcontractors will be required to provide training documentation and written program.

APPENDIX E

LOCKOUT/TAGOUT (LOTO) PROGRAM

Hanson Van Vleet, LLC
The Control of Hazardous Energy (Lockout/Tagout) Program
1910.147

Table of Contents

I. OBJECTIVE

The objective of this procedure is to establish a means of positive control to prevent the accidental starting or activating of machinery or systems while they are being repaired, cleaned, and/or serviced. This program serves to:

A. Establish a safe and positive means of shutting down machinery, equipment, and systems.
B. Prohibit unauthorized personnel or remote control systems from starting machinery or equipment while it is being serviced.
C. Provide a secondary control system (tagout) when it is impossible to positively lockout the machinery or equipment.
D. Establish responsibility for implementing and controlling lockout/tagout procedures.
E. Ensure that only approved locks, standardized tags and fastening devices provided by the company will be utilized in the lockout/tagout procedures.

II. ASSIGNMENT OF RESPONSIBILITY

A. Site safety officer will be responsible for implementing the lockout/tagout program.
B. Chief Safety officer is responsible for enforcing the program and insuring compliance with the procedures.
C. Chief safety officer is responsible for monitoring the compliance of this procedure and will conduct the annual inspection and certification of the authorized employees.
D. All authorized employees (see attachment A) are responsible for following established lockout/tagout procedures. An authorized employee is defined as a person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under 1910.147, The Control of Hazardous Energy (lockout/tagout).
E. Affected employees and subcontractors are responsible for insuring they do not attempt to restart or re-energize machines or equipment that are locked out or tagged out. An affected employee is defined as a person whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

III. PROCEDURES

The ensuing items are to be followed to ensure both compliance with the OSHA Control of Hazardous Energy Standard and the safety of our employees.

A. Preparation for Lockout or Tagout

Employees who are required to utilize the lockout/tagout procedure must be knowledgeable of the different energy sources and the proper sequence of shutting off or disconnecting energy means. The four types of energy sources are:

1. electrical (most common form);
2. hydraulic or pneumatic;
3. fluids and gases; and
4. mechanical (including gravity).

More than one energy source may be utilized on some equipment and the proper procedure must be followed in order to identify energy sources and lockout/tagout accordingly. See Attachment Dfor specific procedure format.

B. Electrical

1. Shut off power at machine and disconnect.
2. Disconnecting means must be locked or tagged.
3. Press start button to see that correct systems are locked out.
4. All controls must be returned to their safest position.
5. Points to remember:
   a. If a machine or piece of equipment contains capacitors, they must be drained of stored energy.
   b. Possible disconnecting means include the power cord, power panels (look for primary and secondary voltage), breakers, the operator's station, motor circuit, relays, limit switches, and electrical interlocks.
   c. Some equipment may have a motor isolating shut-off and a control isolating shut-off.
   d. If the electrical energy is disconnected by simply unplugging the power cord, the cord must be kept under the control of the authorized employee or the plug end of the cord must be locked out or tagged out.

C. Hydraulic/Pneumatic

1. Shut off all energy sources (pumps and compressors). If the pumps and compressors supply energy to more than one piece of equipment, lockout or tagout the valve supplying energy to the piece of equipment being serviced.
2. Stored pressure from hydraulic/pneumatic lines shall be drained/bled when release of stored energy could cause injury to employees.
3. Make sure controls are returned to their safest position (off, stop, standby, inch, jog, etc.).

D. Fluids and Gases

1. Identify the type of fluid or gas and the necessary personal protective equipment.
2. Close valves to prevent flow, and lockout/tagout.
3. Determine the isolating device, then close and lockout/tagout.

4. Drain and bleed lines to zero energy state.
5. Some systems may have electrically controlled valves. If so, they must be shut off and locked/tagged out.
6. Check for zero energy state at the equipment.

E. Mechanical Energy

Mechanical energy includes gravity activation, energy stored in springs, etc.

1. Block out or use die ram safety chain.
2. Lockout or tagout safety device.
3. Shut off, lockout or tagout electrical system.
4. Check for zero energy state.
5. Return controls to safest position.

F. Release from Lockout/Tagout

1. Inspection: Make certain the work is completed and inventory the tools and equipment that were used.
2. Clean-up: Remove all towels, rags, work-aids, etc.
3. Replace guards: Replace all guards possible. Sometimes a particular guard may have to be left off until the start sequence is over due to possible adjustments. However, all other guards should be put back into place.
4. Check controls: All controls should be in their safest position.
5. The work area shall be checked to ensure that all employees have been safely positioned or removed and notified that the lockout/tagout devices are being removed.
6. Remove locks/tags. Remove only your lock or tag.

G. Service or Maintenance Involving More than One Person

When servicing and/or maintenance is performed by more than one person, each authorized employee shall place his own lock or tag on the energy isolating source. This shall be done by utilizing a multiple lock scissors clamp if the equipment is capable of being locked out. If the equipment cannot be locked out, then each authorized employee must place his tag on the equipment.

H. Removal of an Authorized Employee's Lockout/Tagout by the Company

Each location must develop written emergency procedures that comply with 1910.147(e)(3) to be utilized at that location. Emergency procedures for removing lockout/tagout should include the following:

1. Verification by employer that the authorized employee who applied the device is not in the facility.

2. Make reasonable efforts to advise the employee that his/her device has been removed. (This can be done when he/she returns to the facility).
3. Ensure that the authorized employee has this knowledge before he/she resumes work at the facility.

I. Shift or Personnel Changes

Each facility must develop written procedures based on specific needs and capabilities. Each procedure must specify how the continuity of lockout or tagout protection will be ensured at all times. See 1910.147(f)(4).

J. Procedures for Outside Personnel/Contractors

Outside personnel/contractors shall be advised that the company has and enforces the use of lockout/tagout procedures. They will be informed of the use of locks and tags and notified about the prohibition of attempts to restart or re-energize machines or equipment that are locked out or tagged out.

The company will obtain information from the outside personnel/contractor about their lockout/tagout procedures and advise affected employees of this information.

The outside personnel/contractor will be required to sign a certification form (see Attachment E). If outside personnel/contractor has previously signed a certification that is on file, additional signed certification is not necessary.

K. Training and Communication

Each authorized employee who will be utilizing the lockout/tagout procedure will be trained in the recognition of applicable hazardous energy sources, type and magnitude of energy available in the work place, and the methods and means necessary for energy isolation and control.

Each affected employee (all employees other than authorized employees utilizing the lockout/tagout procedure) shall be instructed in the purpose and use of the lockout/tagout procedure, and the prohibition of attempts to restart or re-energize machines or equipment that are locked out or tagged out.

Training will be certified using Attachment B (Authorized Personnel) or Attachment C (Affected Personnel). The certifications will be retained in the employee personnel files.

L. Periodic Inspection

A periodic inspection (at least annually) will be conducted of each authorized employee under the lockout/tagout procedure. This inspection shall be performed by the chief safety officer. If the chief safety officer is also using the energy control procedure being inspected, then the inspection shall be performed by another party.

The inspection will include a review between the inspector and each authorized employee of that employee's responsibilities under the energy control (lockout/tagout) procedure. The inspection will also consist of a physical inspection of the authorized employee while performing work under the procedures.

The chief safety officer shall certify in writing that the inspection has been performed. The written certification (Attachment F shall be retained in the individual's personnel file.

ATTACHMENT A

List of Authorized Personnel
for
Lockout/Tagout Procedures

List of Authorized Personnel
for
Lockout/Tagout Procedures

NAME	TITLE	DATE ISSUED	DATE REMOVED

ATTACHMENT B

Certification of Training
(Authorized Personnel)

I certify that I received training as an authorized employer under **Hanson Van Vleet , LLC.** Lockout/Tagout program. I further certify that I understand the procedures and will abide by those procedures.

_____ _____

AUTHORIZED EMPLOYEE SIGNATURE DATE

ATTACHMENT C

Certification of Training
(Affected Personnel)

I certify that I received training as an Affected Employee under **Hanson Van Vleet, LLC** Lockout/Tagout Program. I further certify and understand that I am prohibited from attempting to restart or re-energize machines or equipment that are locked out or tagged out.

_____ _____

AUTHORIZED EMPLOYEE SIGNATURE DATE

ATTACHMENT D

Equipment Specific Procedure
For
Hanson Van Vleet, LLC

Machine Identification _____ **DATE:**

General Description: _____

_____

Manufacturer: _____

_____

Model Number: _____

Serial Number:* _____

_____

** If more than one piece of same equipment, list all serial numbers.*

Location of equipment: _____

_____

Operator Controls

The types of controls available to the operator need to be determined. This should help identify energy sources and lockout capacity for the equipment.

List types of operator controls: _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

ATTACHMENT E

Outside Personnel/Contractor Certification

I certify that _____ and

(outside personnel/contractor) have informed each other of our respective lockout/tagout procedures.

_____ _____

AUTHORIZED EMPLOYEE SIGNATURE DATE

_____ _____

INSPECTOR SIGNATURE DATE

ATTACHMENT F

Lockout/Tagout Inspection Certification

I certify that _____ was inspected on this date utilizing lockout/tagout procedures. The inspection was performed while working on _____ .

_____ _____

AUTHORIZED EMPLOYEE SIGNATURE DATE

_____ _____

INSPECTOR SIGNATURE DATE

Energy Sources

The energy sources, such as electrical, steam, hydraulic, pneumatic, natural gas, stored energy, etc.) present on this equipment are:

ENERGY SOURCE	LOCATION	Lockable Yes	Lockable No	Type lock or block needed

Shutdown Procedures

List the steps in order necessary to shut down and de-energize the equipment. Be specific. For stored energy, be specific about how the energy will be dissipated or restrained.

Procedure: _____

_____

Lock Type & Location: _____

_____

How Will De-energized State Be Verified? _____

_____

_____

_____

_____

NOTIFY ALL AFFECTED EMPLOYEES WHEN THIS PROCEDURE IS IN APPLICATION.

Start Up Procedures
List the steps in order necessary to reactivate (energize) the equipment. Be specific.

Procedure: _____

Energy Source Activated: _____

NOTIFY ALL AFFECTED EMPLOYEES WHEN THIS PROCEDURE IS IN APPLICATION

Procedures For Operations and Service/Maintenance

List those operations where the procedures above do not apply [See 29 CFR 1910.147 (a)(2)]. Alternate measures which provide effective protection must be developed for these operations. Job Safety Analysis is one method of determining appropriate measures.

Operation Name: _____

Affected and Authorized Employees

List each person affected by this procedure and those authorized to use this procedure.

AFFECTED EMPLOYEES	
Name	**Job Title**

AUTHORIZED EMPLOYEES	
Name	**Job Title**

Approved by Date

Approved by Date

APPENDIX F

FALL PROTECTION PROGRAM

Hanson Van Vleet, LLC.
Fall Protection Program
29 CFR 1926, Subpart M

Table of Contents

I. OBJECTIVE

The objective of the **Hanson Van Vleet, LLC** Fall Protection Program is to identify and evaluate fall hazards to which employees will be exposed, and to provide specific training as required by the Occupational Safety and Health Administration (OSHA) Fall Protection Standard, 29 CFR 1926, Subpart M.

II. POLICY

It is the policy for **Hanson Van Vleet, LLC** to protect its employees from occupational injuries by implementing and enforcing safe work practices and appointing a competent person(s) to manage the Fall Protection Program. The **Hanson Van Vleet, LLC** Fall Protection Program shall comply with the OSHA requirements. A copy of the OSHA Fall Protection Standard shall be made available to all employees, and may be obtained from the chief safety officer

ASSIGNMENT OF RESPONSIBILITY

A. Employer

It is the responsibility of **Hanson Van Vleet, LLC** to provide fall protection to affected employees, and to ensure that all employees understand and adhere to the procedures of this plan and follow the instructions of the safety officer.

B. Program Manager

It is the responsibility of the safety officer as the Fall Protection Program Manager to implement this program by:

1. performing routine safety checks of work operations;

2. enforcing **Hanson Van Vleet, LLC** safety policy and procedures;

3. correcting any unsafe practices or conditions immediately;

4. training employees and supervisors in recognizing fall hazards and the use of fall protection systems;

5. maintaining records of employee training, equipment issue, and fall protection systems used at **Hanson Van Vleet, LLC** jobsites; and

6. investigating and documenting all incidents that result in employee injury.

C. Employees

It is the responsibility of all employees to:

1. understand and adhere to the procedures outlined in this Fall Protection Program;

2. follow the instructions of the safety officer;

3. bring to management's attention any unsafe or hazardous conditions or practices that may cause injury to either themselves or any other employees; and

4. report any incident that causes injury to an employee, regardless of the nature of the injury.

III. TRAINING

A. All employees who may be exposed to fall hazards are required to receive training on how to recognize such hazards, and how to minimize their exposure to them. Employees shall receive training as soon after employment as possible, and before they are required to work in areas where fall hazards exist.

B. A record of employees who have received training and training dates shall be maintained by the chief safety officer. Training of employees by the safety officer shall include:

1. Nature of the fall hazards employees may be exposed to.

2. Correct procedures for erecting, maintaining, disassembling, and inspecting fall protection systems.

3. Use and operation of controlled access zones, guardrails, personal fall arrest systems, safety nets, warning lines, and safety monitoring systems.

4. Role of each employee in the Safety Monitoring System (if one is used).

5. Limitations of the use of mechanical equipment during roofing work on low-slope roofs (if applicable).

6. Correct procedures for equipment and materials handling, and storage and erection of overhead protection.

7. Role of each employee in alternative Fall Protection Plans (if used).

8. Requirements of the OSHA Fall Protection Standard, 29 CFR 1926, Subpart M.

9. **Hanson Van Vleet, LLC** requirements for reporting incidents that cause injury to an employee.

C. Additional training shall be provided on an annual basis, or as needed when changes are made to this Fall Protection Program, an alternative Fall Protection Plan, or the OSHA Fall Protection Standard.

IV. CONTROLLED ACCESS ZONES

A. Only authorized employees permitted to enter controlled access zones and areas from which guardrails have been removed. All other workers are prohibited from entering controlled access zones.

B. Controlled access zones shall be defined by control lines consisting of ropes, wires, tapes, or equivalent material, with supporting stanchions, and shall be:

1. Flagged with a high-visibility material at six (6) foot intervals.

2. Rigged and supported so that the line is between 30 and 50 inches (including sag) from the walking/working surface.

3. Strong enough to sustain stress of at least 200 pounds.

4. Extended along the entire length of an unprotected or leading edge.

5. Parallel to the unprotected or leading edge.

6. Connected on each side to a guardrail system or wall.

7. Erected between six (6) feet and 25 feet from an unprotected edge, except in the following cases:

a. when working with precast concrete members: between six (6) feet and 60 feet from the leading edge, or half the length of the member being erected, whichever is less; or

b. when performing overhand bricking or related work: between ten (10) feet and 15 feet from the working edge.

V. EXCAVATIONS

Fall protection will be provided to employees working at the edge of an excavation that is six (6) feet or deeper. Employees in these areas are required to use the fall protection systems as designated in this program.

A. Excavations that are six (6) feet or deeper shall be protected by guardrail systems, fences, barricades, or covers.

B. Walkways that allow employees to cross over an excavation that is six (6) feet or deeper shall be equipped with guardrails.

VI. FALL PROTECTION SYSTEMS

A. Covers

1. All covers shall be secured to prevent accidental displacement.

2. Covers shall be color-coded or bear the markings "HOLE" or "COVER".

3. Covers located in roadways shall be able to support twice the axle load of the largest vehicle that might cross them.

4. Covers shall be able to support twice the weight of employees, equipment, and materials that might cross them.

B. Guardrail Systems

Guardrail systems shall be erected at unprotected edges, ramps, runways, or holes where it is determined by the safety officer that erecting such systems will not cause an increased hazard to employees. The following specifications will be followed in the erection of guardrail systems. Toprails shall be:

1. at least ¼ inch in diameter (steel or plastic banding is unacceptable);

2. flagged every six (6) feet or less with a high visibility material if wire rope is used;

3. inspected by the safety officer as frequently as necessary to ensure strength and stability;

4. forty-two (42) inches (plus or minus three (3) inches) above the walking/working level; and

Midrails, screens, mesh, intermediate vertical members, and solid panels shall be erected in accordance with the OSHA Fall Protection Standard.

Gates or removable guardrail sections shall be placed across openings of hoisting areas or holes when they are not in use to prevent access.

C. Personal Fall Arrest Systems

1. Personal fall arrest systems shall be issued to and used by employees as determined by the safety officer and may consist of anchorage, connectors, body harness, deceleration device, lifeline, or suitable combinations. Personal fall arrest systems shall:

a. limit the maximum arresting force to 1800 pounds;

b. be rigged so an employee cannot free fall more than six (6) feet or contact any lower level;

c. bring an employee to a complete stop and limit the maximum deceleration distance traveled to three and a half (3 ½) feet;

d. be strong enough to withstand twice the potential impact energy of an employee free falling six (6) feet (or the free fall distance permitted by the system, whichever is less);

e. be inspected prior to each use for damage and deterioration; and

f. be removed from service if any damaged components are detected.

2. All components of a fall arrest system shall meet the specifications of the OSHA Fall Protection Standard, and shall be used in accordance with the manufacturer's instructions.

a. The use of non-locking snaphooks is prohibited.

b. Dee-rings and locking snaphooks shall:

i. have a minimum tensile strength of 5000 pounds; and
ii. be proof-tested to a minimum tensile load of 3600 pounds without cracking, breaking, or suffering permanent deformation.

c. Lifelines shall be:

i. designed, installed, and used under the supervision of the safety officer;
ii. protected against cuts and abrasions; and
iii. equipped with horizontal lifeline connection devices capable of locking in both directions on the lifeline when used on suspended scaffolds or similar work platforms that have horizontal lifelines that may become vertical lifelines.

d. Self-retracting lifelines and lanyards must have ropes and straps (webbing) made of synthetic fibers, and shall:

i. sustain a minimum tensile load of 3600 pounds if they automatically limit free fall distance to two (2) feet; or
ii. sustain a minimum tensile load of 5000 pounds (includes ripstitch, tearing, and deforming lanyards).

e. Anchorages must support at least 5000 pounds per person attached and shall be:

i. designed, installed, and used under the supervision of the safety officer;
ii. capable of supporting twice the weight expected to be imposed on it; and
iii. independent of any anchorage used to support or suspend platforms.

D. Positioning Device Systems

Body belt or body harness systems shall be set up so that an employee can free fall no farther than two (2) feet, and shall be secured to an anchorage capable of supporting twice the potential impact load or 3000 pounds, whichever is greater. Requirements for snaphooks, dee-rings, and other connectors are the same as detailed in this Program under *Personal Fall Arrest Systems*.

E. Safety Monitoring Systems

In situations when no other fall protection has been implemented, the safety officers shall monitor the safety of employees in these work areas. The safety officer shall be:

1. competent in the recognition of fall hazards;
2. capable of warning workers of fall hazard dangers;
3. operating on the same walking/working surfaces as the employees and able to see them;
4. close enough to work operations to communicate orally with employees; and
5. free of other job duties that might distract them from the monitoring function.

No employees other than those engaged in the work being performed under the Safety Monitoring System shall be allowed in the area. All employees under a Safety Monitoring System are required to promptly comply with the fall hazard warnings of the safety officer Safety Net Systems

6. Safety net systems must be installed no more than 30 feet below the walking/working surface with sufficient clearance to prevent contact with the surface below, and shall be installed with sufficient vertical and horizontal distances as described in the OSHA Fall Protection Standard.

7. All nets shall be inspected at least once a week for wear, damage, or deterioration by safety officer. Defective nets shall be removed from use and replaced with acceptable nets.

8. All nets shall be in compliance with mesh, mesh crossing, border rope, and connection specifications as described in the OSHA Fall Protection Standard.

9. When nets are used on bridges, the potential fall area from the walking/working surface shall remain unobstructed.

10. Objects that have fallen into safety nets shall be removed as soon as possible and at least before the next working shift.

F. Warning Line Systems

Warning line systems consisting of supporting stanchions and ropes, wires, or chains shall be erected around all sides of roof work areas.

1. Lines shall be flagged at no more than six (6) foot intervals with high-visibility materials.

2. The lowest point of the line (including sag) shall be between 34 and 39 inches from the walking/working surface.

3. Stanchions of warning line systems shall be capable of resisting at least 16 pounds of force.

4. Ropes, wires, or chains must have a minimum tensile strength of 500 pounds.

5. Warning line systems shall be erected at least six (6) feet from the edge, except in areas where mechanical equipment is in use. When mechanical equipment is in use, warning line systems shall be erected at least six (6) feet from the parallel edge, and at least ten (10) feet from the perpendicular edge.

VII. TASKS AND WORK AREAS REQUIRING FALL PROTECTION

Unless otherwise specified, safety officers shall evaluate the worksite(s) and determine the specific type(s) of fall protection to be used in the following situations.

A. Scaffolding/Mast

Fall protection will be provided when an employee is climbing or moving at a height of over 6 feet or more above the ground or permanent platform..

B. Hoist Areas

Guardrail systems or personal fall arrest systems will be used in hoist areas when an employee may fall six (6) feet or more. If guardrail systems must be removed for hoisting, employees are required to use personal fall arrest systems.

C. Holes

Covers or guardrail systems shall be erected around holes (including skylights) that are six (6) feet or more above lower levels. If covers or guardrail systems must be removed, employees are required to use personal fall arrest systems.

D. Leading Edges

Guardrail systems, safety net systems, or personal fall arrest systems shall be used when employees are constructing a leading edge that is six (6) feet or more above lower levels. An alternative Fall Protection Plan shall be used if the safety officer determines that the implementation of conventional fall protection systems is infeasible or creates a greater hazard to employees. All alternative Fall Protection Plans for work on leading edges shall:

1. be written specific to the particular jobsite needs;

2. include explanation of how conventional fall protection is infeasible or creates a greater hazard to employees;

3. explain what alternative fall protection will be used for each task;

4. be maintained in writing at the jobsite by safety officer; and

5. meet the requirements of 29 CFR 1926.502(k).

E. Building Construction

Guardrail systems, safety net systems, or personal fall arrest systems shall be provided to employees working six (6) feet or more above the lower level on residential construction projects. However, certain tasks may be performed without the use of conventional fall protection if safety officer has determined that such fall protection is infeasible or creates greater hazards to employees. The safety officer shall follow the guidelines of 29 CFR 1926, Subpart M, and Appendix E in the development of alternative Fall Protection Plans for residential construction projects.

F. Roofing

1. Low-Slope Roofs

Fall protection shall be provided to employees engaged in roofing activities on low-slope roofs with unprotected sides and edges six (6) feet or more above lower levels. The type(s) of fall protection needed shall be determined by safety officer, and may consist of guardrail systems, safety net systems, personal fall arrest systems, or a combination of a warning line system and safety net system, warning line system and personal fall arrest system, or warning line system and safety monitoring system. On roofs 50 feet or less in width, the use of a safety monitoring system without a warning line system is permitted.

2. Steep Roofs

Guardrail systems with toeboards, safety net systems, or personal fall arrest systems will be provided to employees working on a steep roof with unprotected sides and edges six (6) feet or more above lower levels, as determined by the safety offers.

G. Wall Openings

Guardrail systems, safety net systems, or a personal fall arrest system will be provided to employees working on, at, above, or near wall openings when the outside bottom edge of the wall opening is six (6) feet or more above lower levels and the inside bottom edge of the wall opening is less than 39 inches above the walking/working surface. The type of fall protection to be used will be determined by the safety officer.

H. Ramps, Runways, and Other Walkways

Employees using ramps, runways, and other walkways six (6) feet or more above the lower level shall be protected by guardrail systems.

VIII. PROTECTION FROM FALLING OBJECTS

When guardrail systems are in use, the openings shall be small enough to prevent potential passage of falling objects. The following procedures must be followed by all employees to prevent hazards associated with falling objects.

A. No materials (except masonry and mortar) shall be stored within four (4) feet of working edges.

B. Excess debris shall be removed regularly to keep work areas clear.

C. During roofing work, materials and equipment shall be stored no less than six (6) feet from the roof edge unless guardrails are erected at the edge.

D. Stacked materials must be stable and self-supporting.

E. Canopies shall be strong enough to prevent penetration by falling objects.

F. Toeboards erected along the edges of overhead walking/working surfaces shall be:

1. capable of withstanding a force of at least 50 pounds; and

2. solid with a minimum of three and a half (3 ½) inches tall and no more than one quarter (1/4) inch clearance above the walking/working surface.

G. Equipment shall not be piled higher than the toeboard unless sufficient paneling or screening has been erected above the toeboard.

IX. ACCIDENT INVESTIGATIONS

All incidents that result in injury to workers, as well as near misses, regardless of their nature, shall be reported and investigated. Investigations shall be conducted by the safety officers soon after an incident as possible to identify the cause and means of prevention to eliminate the risk of reoccurrence.

In the event of such an incident, the Fall Protection Program (and alternative Fall Protection Plans, if in place) shall be reevaluated by the safety officer to determine if additional practices, procedures, or training are necessary to prevent similar future incidents.

X. CHANGES TO THE PLAN

Any changes to the Fall Protection Program (and alternative Fall Protection Plans, if in place) shall be approved by the safety officer and shall be reviewed by a qualified person as the job progresses to determine additional practices, procedures, or training needs necessary to prevent fall injuries. Affected employees shall be notified of all procedure changes, and trained if necessary. A copy of this plan, and any additional alternative Fall Protection Plans, shall be maintained at the jobsite by the safety officer.

XII. GLOSSARY

Anchorage: a secure point of attachment for lifelines, lanyards, or deceleration devices.

Body belt: a strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline, or deceleration device.

Body harness: straps that may be secured about the person in a manner that distributes the fall-arrest forces over at least the thighs, pelvis, waist, chest, and shoulders with a means for attaching the harness to other components of a personal fall arrest system.

Connector: A device that is used to couple (connect) parts of a personal fall arrest system or positioning device system together.

Controlled access zone: a work area designated and clearly marked in which certain types of work (such as overhand bricklaying) may take place without the use of conventional fall protection systems (guardrail, personal arrest, or safety net) to protect the employees working in the zone.

Deceleration device: any mechanism, such as a rope, grab, ripstitch lanyard, specially-woven lanyard, tearing lanyard, deforming lanyard, or automatic self-retracting lifeline/lanyard, which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limits the energy imposed on an employee during fall arrest.

Deceleration distance: the additional vertical distance a falling person travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which a deceleration device begins to operate.

Guardrail system: a barrier erected to prevent employees from falling to lower levels.

Hole: a void or gap two (2) inches (5.1 centimeters) or more in the least dimension in a floor, roof, or other walking/working surface.

Lanyard: a flexible line of rope, wire rope, or strap that generally has a connector at each end for connecting the body belt or body harness to a deceleration device, lifeline, or anchorage.

Leading edge: the edge of a floor, roof, or formwork for a floor or other walking/working surface (such as a deck) which changes location as additional floor, roof, decking, or formwork sections are placed, formed, or constructed.

Lifeline: a component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline), that serves as a means for connecting other components of a personal fall arrest system to an anchorage.

Low slope roof: a roof having a slope less than or equal to 4 in 12 (vertical to horizontal).

Opening: a gap or void 30 inches (76 centimeters) or more high and 18 inches (46 centimeters) or more wide, in a wall or partition through which employees can fall to a lower level.

Personal fall arrest system: a system including but not limited to an anchorage, connectors, and a body harness used to arrest an employee in a fall from a working level.

Positioning device system: a body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning backwards.

Rope grab: a deceleration device that travels on a lifeline and automatically, by friction, engages the lifeline and locks to arrest a fall.

Safety monitoring system: a safety system in which a competent person is responsible for recognizing and warning employees of fall hazards.

Self-retracting lifeline/lanyard: a deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under minimal tension during normal employee movement and which, after onset of a fall, automatically locks the drum and arrests the fall.

Snaphook: a connector consisting of a hook-shaped member with a normally closed keeper, or a similar arrangement, which may be opened to permit the hook to receive an object and, when released automatically, closes to retain the object.

Steep roof: a roof having a slope greater than 4 in 12 (vertical to horizontal).

Toeboard: a low protective barrier that prevents material and equipment from falling to lower levels and which protects personnel from falling.

Unprotected sides and edges: any side or edge (except at entrances to points of access) of a walking/working surface (e.g., floor, roof, ramp, or runway) where there is no wall or guardrail system at least 39 inches (1 meter) high.

Walking/working surface: any surface, whether horizontal or vertical, on which an employee walks or works, including but not limited to floors, roofs, ramps, bridges, runways, formwork, and concrete reinforcing steel. Does not include ladders, vehicles, or trailers on which employees must be located to perform their work duties.

Warning line system: a barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge and which designates an area in which roofing work may take place without the use of guardrail, body belt, or safety net systems to protect employees in the area.

APPENDIX G

HAZARD COMUNICATION (HAZCON) PROGRAM

Hanson Van Vleet, LLC.
Hazard Communication Program
1910.1200

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I. OBJECTIVE

The objective of this program is to set forth policies and procedures concerning Hazard Communications which will enhance the safety and well being of Hanson Van Vleet, LLC employees. Furthermore, execution of this program is designed to provide for compliance with the Occupational Safety and Health Administration's (OSHA) Hazard Communication Standard.

II. ASSIGNMENT OF RESPONSIBILITY

Safety officer will assume duties as Hazard Communication Officer. This position carries the responsibility of insuring this program is adhered to and that proper reporting is executed.

III. PROGRAM

The ensuing items are to be followed to insure both compliance with the OSHA Hazard Communication Standard and the safety of our employees.

A. Hazardous Chemical List

A list of hazardous materials and chemicals which are used in the course of the company's normal business activities must be maintained and continually updated. (See Attachment A) This list is to include all substances which require a Material Safety Data Sheet (MSDS).

One copy of this list is to be kept in the front of each MSDS book and one copy is to be kept on file with the Hazard Communication Officer. For each chemical used in the workplace, an MSDS sheet must be available on that jobsite.

B. Material Safety Data Sheets (MSDS)

All Material Safety Data Sheets must be kept in an organized fashion and must be placed in an identified and accessible location for all employees to view at will. A duplicate set of MSDS information must be maintained by the Hazard Communication Officer.

MSDS books and the Hazardous Chemical List must be maintained and kept up to date. As obsolete MSDS's are replaced by updated copies, they must be retained in a separate file of obsolete MSDS's. Do not throw them away.

If a hazardous chemical or substance is received without a proper MSDS, the receiving person must immediately notify the Hazard Communication Officer. The manufacturer or distributor of the product must be contacted immediately and asked to fax the MSDS and mail a copy as a follow up. If, for some reason, the manufacturer or distributor is unable to produce a MSDS upon request, the Hazard Communication Officer should be

notified immediately. Hazardous materials or substances received without an MSDS are to be returned to the sender.

C. Labeling

Each container of a hazardous chemical that is used in or around the work area must be properly labeled with the identity of the hazardous material, the appropriate hazard warnings, and the name and address of the manufacturer. Appropriate labels must be on all containers, regardless of size. Containers must be approved and recommended for storage and/or dispensing of the particular hazardous chemicals contained in them.

Worn and torn labels must be replaced. It is the responsibility of employees to report inappropriate labels to their supervisor. It is the responsibility of the Hazard Communication Officer to insure that appropriate labels are in place and that replacement labels are available.

Containers for materials that will be used within a particular work shift do not require labels.

D. Training

Employee training for this Hazard Communication Program consists of the following:

1. Each affected employee working for, or associated with, Hanson Van Vleet, LLC is required to review the training material with the Hazard Communication Officer and sign the acknowledgment form which will be placed in the employee's file. (See Attachment B) This training is to be done during the new employee orientation process before the new employee actually assumes status as an active employee. In addition to this training, affected employees must be shown the locations of Material Safety Data Sheets, fire extinguishers, first aid kits, and usage and storage of hazardous materials.

2. Fire extinguisher training may be provided to designated employees. An acknowledgment form must be signed by the employee and filed for documentation purposes.

3. First Aid and CPR training will be provided as required in 29 CFR 1910.151. An acknowledgment form must be signed by the employee and filed for documentation purposes.

4. If the management Hanson Van Vleet, LLC engages the services of contract labor personnel, and exposure to hazardous materials is possible, the contract laborers must be made aware of the locations of the Hazardous Chemical List and the MSDS information book.

E. Storage

All storage areas for hazardous substances are to be secured, properly ventilated, and identified by signs.

F. Non-Routine Tasks

Before any non-routine task is performed, employees shall be advised and/or they must contact chief safety officer for special precautions to follow and the safety officer shall inform any other personnel who could be exposed. (No non-routine tasks are known to exist at the time of preparation of this program.)

If a non-routine task is necessary, safety officer will provide the following information about the activity as it relates to the specific chemicals expected to be encountered:

1. specific chemical name(s) and hazard(s);
2. personal protective equipment required and safety measures to be taken;
3. measures that have been taken to lessen the hazards including ventilation, respirators, presence of other employees(s); and
4. emergency procedures.

G. Other Personnel Exposures (Contractors)

Safety officer will provide other personnel or outside contractors with the following information as follows:

1. hazardous chemicals to which they may be exposed to while in the workplace;
2. measures to minimize the possibility of exposure;
3. location of the MSDS and labeling requirements for all hazardous chemicals; and
4. procedures to follow if they are exposed.

Safety officer will contact each contractor before work is started to gather and disseminate any information concerning chemical hazards the contractor is bringing into the workplace, and visa versa.

H. Program Compliance

Any direct or intentional violation or non-compliance with this program may result in the termination of the person or persons involved, in accordance with company policy.

F. Communications

On-Site
Whenever possible, communications between site personnel should be face-to-face. When verbal communications is not possible, radio or cell phone communications shall

be established. In case of radio communications failure, or when respiratory protection is in use, the following hand signals will be used:

COMMUNICATION	HAND SIGNALS
Ok; I am all right; I understand	Thumbs Up
No; Negative	Thumbs Down
Need Assistance	Both hands on top of head
Danger – Need to leave area, no questions	Grip partners wrist with both hands
Having difficulty breathing	Hands to throat
Direction to leave area by if different	Outstretched Arm
	VISUAL IMPAIRED SIGNAL
Evacuate area by nearest exit	One long blast
Localized problem, need assistance	Two short blasts
All clear, OK	Two long blasts

Off-Site
If applicable, telephone communication to the command post should be established as soon as practical.

G. Safe Work Practices

1. A "buddy system" in which another worker is close enough to render immediate aid will be in effect. Clients and/or contractors may serve as a "designated buddy."

2. Where the eyes or body may be exposed to corrosive materials, suitable facilities for quick drenching or flushing shall be available for immediate use.

3. Do not kneel on the ground when chemical protective clothing is being used.

4. If drilling equipment is involved, have a current utility survey, and know where the 'kill switch' is.

5. Contact with samples, excavated materials, or other contaminated materials must be minimized.

6. All electrical equipment used in outside locations, wet areas or near water must be plugged into ground fault circuit interrupter (GFCI) protected outlets.

7. In the event of treacherous weather-related working conditions (i.e., thunderstorm, limited visibility, extreme cold or heat) field tasks will be suspended until conditions improve or appropriate protection from the elements is provided.

8. Smoking, eating, chewing gum or tobacco, or drinking are forbidden except in clean or designated areas.

9. Use of contact lenses near chemicals or during use of respiratory protection is prohibited at all times.

10. Good housekeeping practices are to be maintained.

ATTACHMENT A

INDEX/INVENTORY
Of Hazardous Materials/Chemicals

INDEX NUMBER	PRODUCT and USE	TRAINED	DATE INTRODUCED	DATE DISCONTINUED

ATTACHMENT B

Acknowledgement of Receipt of Hazard Communication Training

My signature below acknowledges that I have received training concerning Hazard Communications. I understand that this training fulfills the employee training requirement of OSHA's Hazard Communication Standard.

The jobsite and classroom training included the following:

1. Understanding the purpose and scope of the OSHA Hazard Communication Standard.
2. Explanation of the existence of federal, state, and local right-to-know laws.
3. Definition of the classification "hazardous chemical".
4. Explanation of situations and elements that must be present for a material to be considered a health hazard.
5. Explanation and interpretation of labels, what is required on all containers, and the Hazard Materials Identification System (HMIS).
6. Understanding and interpretation of Material Safety Data Sheets (MSDS), which must be obtained for each hazardous chemical.
7. My responsibilities as an employee of **Hanson Van Vleet, LLC.**
8. Policies and procedures to follow in case of exposure.

_____

EMPLOYEE NAME (Please print)

_____

EMPLOYEE SIGNATURE DATE

_____

COMPANY REPRESENTATIVE DATE

APPENDIX H

HEARING CONSERVATION PROGRAM

Hanson Van Vleet, LLC.
Hearing Conservation Program
1910.95

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I. OBJECTIVE

The objective of the Hanson Van Vleet, LLC Hearing Conservation Program is to minimize occupational hearing loss by providing hearing protection, training, and annual hearing tests to all persons working in areas or with equipment that have noise levels equal to or exceeding an eight-hour time-weighted average (TWA) sound limit of 85 dBA (decibels measured on the A scale of a sound level meter). A copy of this program will be maintained by all affected departments. A copy of OSHA's Hearing Conservation Standard, 29 CFR 1910.95, can be obtained from the chief safety officer. A copy of the standard will also be posted in areas with affected employees.

II. ASSIGNMENT OF RESPONSIBILITY

A. Management

1. Use engineering and administrative controls to limit employee exposure.
2. Provide adequate hearing protection for employees.
3. Post signs and warnings in all high noise areas.
4. Conduct noise surveys annually or when new equipment is needed.
5. Conduct annual hearing test for all employees.
6. Conduct hearing conservation training for all new employees.
7. Conduct annual hearing conservation training for all employees.

B. Employees

1. Use company-issue approved hearing protection in designated high noise areas.
2. Request new hearing protection when needed.
3. Exercise proper care of issued hearing protection.

III. PROCEDURES

A. Noise Monitoring

1. Monitoring for noise exposure levels will be conducted by site safety officer. It is the responsibility of the individual departments to notify chief safety officer when there is a possible need for monitoring. Monitoring will be performed with the use of sound level meters and personal dosimeters at the discretion of safety officer.

2. Monitoring will also be conducted whenever there is a change in equipment, process or controls that affect the noise levels. This includes the addition or removal of machinery, alteration in building structure, or substitution of new equipment in place of that previously used. The

responsible supervisor must inform chief safety officer when these types of changes are instituted.

B. Employee Training

1. Affected employees will be required to attend training concerning the proper usage and wearing of hearing protection. The training will be conducted by safety officers, or a designated representative, within a month of hire and annually thereafter.

2. Training shall consist of the following components:

a. how noise affects hearing and hearing loss;
b. review of the OSHA hearing protection standard;
c. explanation of audiometric testing;
d. rules and procedures;
e. locations within company property where hearing protection is required; and
f. how to use and care for hearing protectors.

3. Training records will be maintained chief safety officer (see Attachment A).

C. Hearing Protection

Management, supervisors, and employees shall properly wear the prescribed hearing protection while working or traveling through any area that is designated as a high noise area.

1. Hearing protection will be provided at no cost to employees who perform tasks designated as having a high noise exposure and replaced as necessary. It is the supervisor's responsibility to require employees to wear hearing protection when noise levels reach or exceed 85 dBA. Those employees will have the opportunity to choose from at least two different types of hearing protection.

2. Personal stereo headsets, or "Walkmen," are not approved for hearing protection and are not permitted in any operating area of company property.

3. Signage is required in areas that necessitate hearing protection. It is the responsibility of the safety officer to provide signage to the appropriate areas.

4. Preformed earplugs and earmuffs should be washed periodically and stored in a clean area. Foam inserts should be discarded after each use.

Hands should be washed before handling preformed earplugs and foam inserts to prevent contaminants from being placed in the ear.

5. Chief safety officer will keep a log of the areas or job tasks designated as requiring hearing protection, as well as the personnel affected by this Hearing Conservation Program (see Attachment B).

D. Audiograms/Hearing Tests

1. Employees subject to the Hearing Conservation Program who have time-weighted average (TWA) noise exposures of 85 dBA or greater for an eight (8) hour work shift will be required to have both a baseline and annual audiogram. The audiograms will be provided by the Hanson Van Vleet, LLC and conducted qualified technician with no cost to the employee.

2. The baseline audiogram will be given to an employee within one (1) month of employment with Hanson Van Vleet, LLC and/or before any exposure to high noise levels. Annual audiograms will be performed within one year from the date of the previous audiogram. It is the responsibility of the individual employee and chief safety officer to schedule the annual audiogram.

3. If an annual audiogram shows that an employee has suffered a standard threshold shift, the employee will be retested within thirty (30) days of the annual audiogram. If the retest confirms the occurrence of a standard threshold shift, the employee will be notified in writing within twenty-one (21) days of the confirmation. Employees who do experience a standard threshold shift will be refitted with hearing protection and provided more training on the effects of noise.

Attachment A

Hanson Van Vleet, LLC.
Hearing Conservation Training Log

Training Conducted by:_____

Employee Name (printed)	Employee Signature	Job Title	Date

Attachment B

Record of Hearing Protection Needs

Hanson Van Vleet, LLC Personnel in Hearing Conservation Program			
Hearing protection is required for and has been issued to the following personnel:			
Employee Name	**Job Description/ Equipment Being Used**	**Type of Hearing Protection Issued**	**Date Issued**

APPENDIX I

DRUG AND ALCOHOL WORKPLACE POLICY

DRUG AND ALCOHOL WORKPLACE POLICY

It is the purpose of Hanson Van Vleet, LLC (the Company) to help provide a safe and drug-free work environment for our clients and our employees. With this goal in mind, we are establishing the following policy for existing and future employees of Hanson Van Vleet, LLC.

The Company explicitly prohibits:

- The use, possession, solicitation for, or sale of narcotics or other illegal drugs, alcohol, or prescription medication without a prescription on Company or customer premises or while performing an assignment.
- Being impaired or under the influence of legal or illegal drugs or alcohol away from the Company or customer premises, if such impairment or influence adversely affects the employee's work performance, the safety of the employee or of others, or puts at risk the Company's reputation.
- Possession, use, solicitation for, or sale of legal or illegal drugs or alcohol away from the Company or customer premises, if such activity or involvement adversely affects the employee's work performance, the safety of the employee or of others, or puts at risk the Company's reputation.
- The presence of any detectable amount of prohibited substances in the employee's system while at work, while on the premises of the company or its customers, or while on company business. "Prohibited substances" include illegal drugs, alcohol, or prescription drugs not taken in accordance with a prescription given to the employee.

The Company will conduct drug testing under any of the following circumstances:

- RANDOM TESTING: Employees may be selected at random for drug testing at any interval determined by the Company.
- FOR CAUSE TESTING: The Company may ask an employee to submit to a drug test at any time it feels that the employee may be under the influence of drugs or alcohol, including, but not limited to, the following circumstances: evidence of drugs or alcohol on or about the employee's person or in the employee's vicinity, unusual conduct on the employee's part that suggests impairment or influence of drugs or alcohol, negative performance patterns, or excessive and unexplained absenteeism or tardiness.
- POST-ACCIDENT TESTING: Any employee involved in an on-the-job accident or injury under circumstances that suggest possible use or influence of drugs or alcohol in the accident or injury event may be asked to submit to a drug and/or alcohol test. "Involved in an on-the-job accident or injury" means not only the one who was injured, but also any employee who potentially contributed to the accident or injury event in any way.

If an employee is tested for drugs or alcohol outside of the employment context and the results indicate a violation of this policy, the employee may be subject to appropriate disciplinary action, up to and possibly including discharge from employment. In such a case, the employee will be given an opportunity to explain the circumstances prior to any final employment action becoming effective. The employee may also be required to the satisfactory participation in a drug abuse assistance or rehabilitation program.

DRUG AND/OR ALCOHOL TESTING CONSENT FORM

EMPLOYEE AGREEMENT AND CONSENT TO DRUG AND/OR ALCOHOL TESTING

I hereby agree, upon a request made under the drug/alcohol testing policy of Hanson Van Vleet, LLC (the company), to submit to a drug or alcohol test and to furnish a sample of my urine, breath, and/or blood for analysis. I understand and agree that if I at any time refuse to submit to a drug or alcohol test under company policy, or if I otherwise fail to cooperate with the testing procedures, I will be subject to immediate termination. I further authorize and give full permission to have the Company and/or its company physician send the specimen or specimens so collected to a laboratory for a screening test for the presence of any prohibited substances under the policy, and for the laboratory or other testing facility to release any and all documentation relating to such test to the Company and/or to any governmental entity involved in a legal proceeding or investigation connected with the test. Finally, I authorize the Company to disclose any documentation relating to such test to any governmental entity involved in a legal proceeding or investigation connected with the test.

I will hold harmless the Company, its company physician, and any testing laboratory the Company might use, meaning that I will not sue or hold responsible such parties for any alleged harm to me that might result from such testing, including loss of employment or any other kind of adverse job action that might arise as a result of the drug or alcohol test, even if a Company or laboratory representative makes an error in the administration or analysis of the test or the reporting of the results. I will further hold harmless the Company, its company physician, and any testing laboratory the Company might use for any alleged harm to me that might result from the release or use of information or documentation relating to the drug or alcohol test, as long as the release or use of the information is within the scope of this policy and the procedures as explained in the paragraph above.

This policy and authorization have been explained to me in a language I understand, and I have been told that if I have any questions about the test or the policy, they will be answered.

I UNDERSTAND THAT HANSON VAN VLEET, LLC WILL REQUIRE A DRUG SCREEN TEST UNDER THIS POLICY WHENEVER I AM INVOLVED IN AN ON-THE-JOB ACCIDENT OR INJURY UNDER CIRCUMSTANCES THAT SUGGEST POSSIBLE INVOLVEMENT OR INFLUENCE OF DRUGS OR ALCOHOL IN THE ACCIDENT OR INJURY EVENT.

_____ _____

Signature of Employee Date

_____

Employee's Name - Printed

_____ _____

Hanson Van Vleet, LLC Representative Date

APPENDIX J

ERGONOMICS PROGRAM

ERGONOMICS PROGRAM

1. INTRODUCTION

Ergonomics is the study of people and their interaction with the elements of their job or task including equipment, tools, facilities, processes, and environment. It is a multidisciplinary field of study integrating industrial psychology, engineering, medicine, and design.

In a more practical sense, ergonomics is the science of human comfort. When aspects of the work or workplace exceed the body's capabilities, the result is often a musculoskeletal disorder (MSD). To help avoid MSDs, work demands should not exceed the physical capabilities of the worker. MSDs are also known by several other names including:

- CTDs (cumulative trauma disorders)
- RSIs (repetitive stress or repetitive strain injuries)
- RMIs (repetitive motion injuries)
- Overuse syndrome

The most common, recognizable name for MSDs is cumulative trauma disorders or CTDs. Whatever the name used, these injuries belong to a family or group of wear and tear illnesses that can affect muscles, nerves, tendons, ligaments, joints, cartilage, blood vessels or spinal discs of the body. MSDs do not include slips, trips and falls, cuts, motor vehicle accidents or other similar accidents; although a close look at the reasons for acute injuries often reveals design problems that can be corrected.

2. POLICY

It is the policy of HVV LLC to provide all employees with a safe and healthy workplace. A proactive ergonomics program is integrated into our company's written safety and health program. The Occupational Safety and Health Act of 1970 (OSH Act) clearly states that the general duty of all employers is to provide their employees with a workplace free from recognized serious hazards. This includes the prevention and control of ergonomic hazards

Records documenting the identification, prevention, and control of employee exposure to ergonomic risk factors may be maintained.

This program is a collaborative effort that includes managers, supervisors, and labor. The Chief Safety Officer (Ergonomics Program Coordinator) is responsible for the program's implementation, management, and recordkeeping requirements.

3. ERGONOMICS PROGRAM

The purpose of an ergonomics program is to apply ergonomic principles to the workplace in an effort to reduce the number and severity of MSDs, thus decreasing workers' compensation claims and, where possible, increase productivity, quality, and efficiency. An ergonomically sound work environment maximizes employee comfort while minimizing the risk of undue physical stress.

A proactive approach focuses on making changes when risks have already been identified, as well as incorporating ergonomics into the design phase of a new facility or process, into purchasing new equipment or tools, and into the contemplation of scheduling changes. HVV LLC has such a program which includes the following components:

A. Management Leadership. The management HVV LLC is committed to the ergonomics process. Management supports the efforts for the identification and control of ergonomic risk factors. Management will support an effective MSD reporting system and will respond promptly to reports. Management will regularly communicate with employees about the program.

B. Employee Participation. An essential element to the success of the ergonomics program, employees will be solicited for their input and assistance with identifying ergonomic risk factors, worksite evaluations, development and implementation of controls, and training. Employee participation in the program will occur only during company time.

C. Identification of Problem Jobs. Collecting data that identifies injury and illness trends is called surveillance. Surveillance can be either *passive* or *active*. Conducting a records review is an example of passive surveillance, which looks at existing data such as OSHA Logs, workers' compensation claims, trips to the medical facility, and absentee records. Active surveillance uses observations, interviews, surveys, questionnaires, checklists, and formal worksite evaluation tools to identify specific high-risk activities. HVV LLC will be using both passive and active surveillance to identify problem jobs.

D. Worksite Evaluations.

(1) Triggers for a worksite evaluation:

(a) When an employee reports an MSD sign or symptom.
(b) Jobs, processes, or work activities where work-related ergonomic risk factors have been identified which may cause or aggravate MSDs.

2) Work-related risk factors to be considered in the evaluation process include, but are not limited to:

(a) Physical risk factors including force, postures (awkward and static), static loading and sustained exertion, fatigue, repetition, contact stress, extreme temperatures, and vibration.
(b) Administrative issues including job rotation/enlargement, inadequate staffing, excessive overtime, inadequate or lack of rest breaks, stress from deadlines, lack of training, work pace, work methods, and psychosocial issues.
(c) Environmental risk factors including noise, lighting, glare, air quality, temperature, humidity, and personal protective equipment and clothing.
(d) Combination of risk factors such as, but not limited to, highly repetitive, forceful work with no job rotation or precision work done in a dimly lit room.

E. Setting Priorities. Worksite evaluations will be scheduled based upon the following:

(a) Any job, process, operation, or workstation which has contributed to a worker's current MSD;
(b) A job, process, operation, or workstation that has historically contributed to MSDs; and
(c) Specific jobs, processes, operations, or workstations that have the potential to cause MSDs.

F. Worksite Evaluations Methods. Various methods may be used to evaluate problem jobs:

(1) Walk-through and observations
(2) Employee interviews
(3) Surveys and questionnaires
(4) Checklists
(5) Detailed worksite evaluations

G Control of the Ergonomic Risk Factors. HVV LLC will take steps to reduce hazards by using a three-tier hierarchy of control (in order of preference):

(1) Engineering controls. The most desirable and reliable means to reduce workplace exposure to potentially harmful effects. This is achieved by focusing on the physical modifications of jobs, workstations, tools, equipment, or processes.

(2) Administrative controls. This means controlling or preventing workplace exposure to potentially harmful effects by implementing administrative changes such as job rotation, job enlargement, rest/recovery breaks, work pace adjustment, redesign of methods, and worker education.

(3) Personal protective equipment (PPE). Although not recognized as an effective means of controlling hazards and do not take the place of engineering or administrative controls, there are acceptable forms of PPE, which include kneepads and anti-vibration gloves.

H. Training. Training is intended to enhance the ability of managers, supervisors, and employees to recognize work-related ergonomic risk factors and to understand and apply appropriate control strategies. Training in the recognition and control of ergonomic risk factors will be given as follows:

(1) To all new employees during orientation.
(2) To all employees assuming a new job assignment.
(3) When new jobs, tasks, tools, equipment, machinery, workstations, or processes are introduced.
(4) When high exposure levels to ergonomic risk factors have been identified.

The minimum for all managers, supervisors, and employees will include the following elements:

(1) An explanation of HVV LLC ergonomics program and their role in the program;
(2) A list of the exposures which have been associated with the development of MSDs;
(3) A description of MSD signs and symptoms and consequences of injuries caused by work and non work-related risk factors;
(4) An emphasis on the importance of early reporting of MSD signs and symptoms and injuries to management, and;
(5) The methods used by HVV LLC to minimize work and non work-related risk factors.

I. Program Evaluation and Follow-Up. In order to ensure that issues have been addressed and that new problems have not been created, monitoring and evaluation will be conducted on an on-going basis. The methods include use of individual interviews and checklists to reevaluate the job/task to ensure that risks have been reduced, minimized, or eliminated.

4. INDIVIDUAL RESPONSIBILITIES

A. Ergonomics Program Coordinator. The chief safety officer will perform the tasks of the Ergonomics Program Coordinator. Ergonomics Program Coordinator will report directly to upper management and be responsible for this policy and program. All evaluations, controls, and training will be coordinated under the direction of the Ergonomics Program Coordinator in collaboration with management. The Ergonomics Program Coordinator will monitor the results of the program to determine additional areas of focus as needed.

The Ergonomics Program Coordinator will:

(1) ensure that evaluators performing worksite evaluations and training are properly trained;
(2) ensure that control measures are implemented in a timely manner;
(3) ensure that a system is in place for employees to report MSD signs or symptoms and suspected work-related risk factors to managers and supervisors;
(4) ensure that accurate records are maintained and provide documentation upon request;
(5) schedule manager, supervisor, and employee training and maintain records to include date, name of instructor, topic, and materials used, and;
(6) monitor the program on a quarterly basis and provide an annual review.
(7) follow-up with any ergonomics strategy and/or solutions.

B. Managers. Duties of all managers will include:

(1) accountability for the health and safety of all employees within their departments through the active support of the ergonomics program;
(2) allocating human and/or financial resources;
(3) attending ergonomics training to familiarize themselves with the elements of the program, recognition and control of work-related ergonomic risk factors, MSD signs and symptoms, early reporting requirements and procedures, and medical management;
(4) ensuring that supervisors and employees have received the appropriate training;
(5) ensuring that ergonomics practices and principles are considered when conducting worksite evaluations, and;
(6) ensuring that recommended controls are implemented and/or used appropriately through active follow-up.

C. Supervisors. Duties of all supervisors will include:

(1) attending ergonomics training to familiarize themselves with the elements of the program, recognition and control of work-related ergonomics risk factors, MSD signs and symptoms, early reporting requirements and procedures, and medical management;
(2) ensuring that employees have received the appropriate training;
(3) ensuring that employees are provided with and use the appropriate tools, equipment, parts, and materials in accordance with ergonomic requirements;
(4) ensuring that employees understand the MSD signs and symptoms and early reporting system;
(5) responding promptly to employee reports;
(6) providing appropriate workers' compensation documentation to employees as required by all regulations;

(7) seeking clarification from Human Resources when return-to-work directives from the health care provider are unclear, and;
(8) maintaining clear communication with managers and employees.

D. Employees. Every employee of HVV LLC is responsible for conducting himself/herself in accordance with this policy and program. All employees will:

(1) when provided, use the appropriate tools, equipment, parts, materials, and procedures in the manner established by managers and supervisors;
(2) ensure that equipment is properly maintained in good condition and when not, report it immediately;
(3) provide feedback to supervisors regarding the effectiveness of design changes, new tools or equipment, or other interventions;
(4) attend ergonomics training as required and apply the knowledge and skills acquired to actual jobs, tasks, processes, and work activities;
(5) report MSD signs or symptoms and work-related MSD hazards to the supervisor as early as possible to facilitate medical treatment and initiate proactive interventions, and;
(6) take responsibility in their personal health and safety.

APPENDIX K

EMERGENCY ACTION PLAN

PURPOSE:

To provide a systematic method of implementing an Emergency Action Plan for a mobile workforce, so as to ensure a minimum of confusion and injury in an emergency.

POLICY:

An emergency action plan (EAP) is a written document required by particular OSHA standards. The purpose of an EAP is to facilitate and organize employer and employee actions during workplace emergencies. Well developed emergency plans and proper employee training (such that employees understand their roles and responsibilities within the plan) will result in fewer and less severe employee injuries and less structural damage to the facility during emergencies. A poorly prepared plan, likely will lead to a disorganized evacuation or emergency response, resulting in confusion, injury, and property damage.

Because our employees work in a variety of client facilities and in multiple locations within a location, an Emergency Action Plan needs to be adaptable to any situation. The project superintendent on a job is responsible for coordinating with the client on the evacuation route and emergency procedures for each specific the job, and thereafter advising all employees of that information.

At a minimum, the plan must include but is not limited to the following elements [:

- Means of reporting fires and other emergencies
- Evacuation procedures and emergency escape route assignments
- Procedures to be followed by employees who remain to operate critical plant operations before they evacuate
- Procedures to account for all employees after an emergency evacuation has been completed
- Rescue and medical duties for those employees who are to perform them
- Names or job titles of persons who can be contacted for further information or explanation of duties under the plan

PROCEDURES

How is an Emergency Determined

An emergency is a serious, unexpected, and often dangerous situation requiring immediate action. In our line of work this could entail hazardous or combustible vapors, fires, etc. An emergency can be determined by any HVV employee, based on their experience and training.

Hazardous vapors may be evaluated by using a Photoionization detector. HVV maintains a MiniRAE 2000 Portable VOC Monitor, PGM-7600. The MiniRAE 2000 is a broadband VOC gas monitor and datalogger for work in hazardous environments. Preset alarm thresholds for STEL, TWA and low and high peak values can be programmed into the instrument. All HVV employees are trained in the calibration and use of the MiniRAE 2000. A copy of the operation and maintenance manual is always kept with the instrument for additional reference. Generally, the instrument is calibrated each day prior to use. If the instrument is to be used for an entire 8 hour

day, the calibration is checked every four hours. The instrument is charged nightly, so that it is ready for immediate use on any given day.

Combustible atmosphere conditions may be evaluated with an MSA Explosimeter, Model 2A. The instrument quickly detects and measures concentrations of combustible vapors and gases in air. Gas concentrations of up to 100% of the LEL (lower explosive limit) can be measured directly. All HVV employees are trained in the calibration and use of the MSA Explosimeter. A copy of the operation and maintenance manual is always kept with the instrument for additional reference. Generally, the instrument is calibrated each day prior to use. If the instrument is to be used for an entire 8 hour day, the calibration is checked every four hours. The instrument is charged nightly, so that it is ready for immediate use on any given day.

Other emergency conditions are evaluated and determined visually, olfactory, auditorily, etc. These conditions can represent fires, traffic accidents, building collapse, etc.

Means of Reporting Emergencies

Dialing "911" is a common method for reporting emergencies if external emergency personnel are used at the workplace. Internal numbers may be used for reporting emergencies. Internal numbers and proceedures will Ibe incorporated into the site specific health and safety plan for a specific project. Internal and external emergency numbers will be provided to each employee and will be posted on, or near, each phone. In some cases, employees are requested to activate manual pull stations or other alarm systems. No matter what system is used, it is imperative that emergency situations be immediately reported. Fires and other emergency situations can reach dangerous levels in seconds and any delay in getting emergency responders to the scene can result in additional loss of life and property.

Evacuation Procedures and Emergency Escape Route Assignments

A disorganized evacuation can result in confusion, injury, and property damage. When developing a site specific emergency action plan, it is important to determine the following:

- Conditions under which an evacuation would be necessary;
- Conditions under which it may be better to shelter-in-place;
- A clear chain of command and designation of the person in your business authorized to order an evacuation or shutdown;
- Specific evacuation procedures, including routes and exits;
- Procedures for assisting visitors and employees to evacuate, particularly those with disabilities or who do not speak English;
- Designation of what, if any, employees will remain after the evacuation alarm to shut down critical operations or perform other duties before evacuating;
- A means of accounting for employees after an evacuation;
- Special equipment for employees; and

The emergency evacuation plan for a temporary job will be posted in trailers or office areas and shall identify the safest most direct route to the client's gate. All employees will be refreshed as to the emergency route during the daily Health and Safety meeting.

Due to the possible dispersion of our personnel around a plant it is not practical to attempt to draw evacuation maps for every work site in the facility. In lieu of evacuation plans, all personnel have been instructed to have the senior representative on their job coordinate with the client contact person to ascertain the evacuation route to be taken by client's personnel in the unit being worked at the beginning of the project. Employees will follow the individual evacuation plans to be used by client in the various jobsites. After the safe rally point has been reached, the senior employee will ask a client's representative to call the Company's site supervisor on the phone with an accurate head count and location.

In the event that an employee is the first person to spot a fire or other emergency he/she is authorized to sound an alarm. Employees shall vacate the area as soon as an alarm is sounded. The most important function of all employees is to report to the senior representative on site. Employees are not employed to fight fires.

All employees are informed of their responsibilities under this plan upon initial assignment to the plant. All employees have their emergency duties reinforced in regular daily safety meetings.

HVV LLC will continue to provide a detailed emergency evacuation plan and map during all jobs and projects when applicable.

Procedures to be Followed By Employees Who Remain To Operate Critical Equipment Before They Evacuate

HVV employees will remain only long enough to determine that all equipment operated as part of the specific scope of work is shut down, if practical and safe. Equipment could be soil boring equipment, sampling pumps, air sampling equipment, etc. If applicable and safe, equipment will be locked out and tagged out.

Procedures to Account For All Employees After An Emergency Evacuation Has Been Completed

The site specific plan developed for any project will designate a common meeting place for all HVV employees in the event of an emergency situation requiring evacuation. The plan may be one prepared by the client for their specific business operation. All HVV employees designated to a specific job, will be familiar with the common meeting place. The highest level HVV employee (supervisor or project manager) will be in charge of determining if all employees are accounted for.

Rescue and Medical Duties For Those Employees Who Are To Perform Them

Most small organizations rely on site specific emergency services provided by the client or local public resources such as the local fire department or hospital to provide these services. HVV employees will contact the appropriate emergency services provider for the specific client and/or conditions. Names and telephone numbers will be posted and each employee will be provided with a copy of the list of names and telephone numbers for each specific job.

Names or Job Titles Of Persons Who Can Be Contacted For Further Information or Explanation Of Duties Under The Plan

An HVV supervisor or project manager can be contacted for additional information at (518) 371-7940.

APPENDIX L

FIRE PREVENTION PROGRAM

PURPOSE:

Fire Prevention/Protection Program is intended to provide compliance with all related OSHA regulations and standard safe work practices. The purpose of the policy is to prevent fires and to provide guidelines for action in the event that a fire does occur.

Fire prevention program combines the following policies:

- HazCom Training Policy
- PPE Policy
- Electrical Safety Policy
- Emergency Action Plan

These policies encompass methods used for incidence avoidance, incident response and specialized training required in the event of a fire.

Issues addressed in the above policies include, but are not limited to:

- Evacuation Procedure
- Extinguisher Training
- Hot Work Safety Training (if applicable)
- Confined Space Entry Safety Training (if applicable)
- Emergency Life Support Training
- Respiratory Protective Devices Training (if applicable)
- Assured Grounding Programs

POLICY:

Employees shall be informed of the proper actions to take in the event of a fire. This includes, but is not limited to; notification and evacuation procedures. It is STRESSED that at no time does the task of fighting fire supersede an employee's primary duties of:

- Ensuring their own personal safety and the safety of others.
- Reporting the incident to the proper authority and ensuring personnel accountability for yourself and all subordinates at the jobsite, in accordance with company and client policy.

PROCEDURE:

- All employees are responsible for good housekeeping practices to enhance fire prevention methods. Supervisors will be held accountable for the housekeeping of their job sites.
- If applicable, welding machine mufflers will be equipped with an approved spark arresting muffler.
- Only approved containers will be used during fueling operations. These shall be of the self-closing type.
- Combustible and/or flammable material shall be kept under the control of the supervisor. It Combustible and/or flammable material shall be stored in compliance with the most restrictive applicable OSHA and/or client regulations. The quantity of flammable/combustible material shall be kept to a minimum on the job site.
- Welding, cutting and grinding sparks shall be contained.

- Hot work areas shall be kept wetted down, and a fire extinguisher and hose maintained on each jobsite.
- Oily rags shall be immediately disposed of in designated hazardous waste containers.
- No hot work is to be performed without a Hot Work Permit.
- All vehicle entry into process areas requires a permit or permission from the operator.
- Use bonding straps to discharge and prevent static charges during transfer of flammable liquids from one container to another.
- Report all spills or suspicious odors immediately.
- Fire extinguishers are to be kept in areas easily accessible to employees. On job sites fire extinguishers are typically kept in company vehicles unless the scope of work involves combustible materials or an ignition source. In these situation a fire extinguisher is to be kept in a location immediately available.
- Only approved fire extinguishers are to be used. They must have an inspection tag attached. Extinguishers are to be maintained in a fully charged, ready to operate state. Extinguishers are to be inspected before each use and documented annually.
- Training is provided to all employees who use or may use fire extinguishers. Training occurs subsequent to hire during initial employment training. Review of fire procedures are discussed and demonstrated through annual health and safety refreshers.
- **NEVER** put yourself or others a risk while attempting to extinguish an incipient fire.
- **DO NOT USE** any fire hoses larger than 1-3/4", unless fully trained as an industrial firefighter.
- **NEVER** attempt to extinguish a pressurized-fuel fed fire.
- **DO NOT** direct a fire nozzle with a straight stream at any type of LPG fire. This action could extinguish the fire, producing an LPG vapor cloud capable of detonation.
- **DO NOT USE** fire monitors as the force can damage small equipment and certain high chrome alloy equipment cannot have water applied as cracking could occur.
- **DO NOT APPLY** water to any acid or caustic release as it can cause a violent reaction. Additionally, low concentration acids or caustics become extremely corrosive, causing an increasing leak condition.

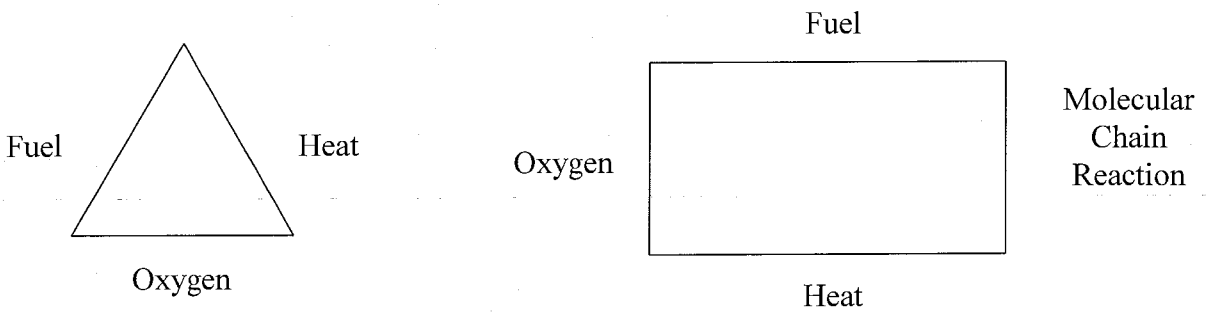
IN THE EVENT OF A FIRE:

- Remain calm
- Only extinguish a fire when it is clearly within your abilities and the equipment available
- Know the location of the nearest alarm and how to activate the emergency system
- Know the evacuation routes and collection points

- If the fire cannot be extinguished, leave the area immediately and report to your evacuation area
- Await further instructions from the Incident Commander, or designated responsible personnel

BASIC FIRE SCIENCE:

- The combination of fuel, heat, oxygen equals the well-know fire triangle. To understand fire better, a fourth factor is added, a molecular chain reaction. This is due to the fact that fire results from a series of reactions in which complicated molecules "crack" into easily oxidized fragments. Disruption of this chain, along with the removal of fuel, heat or oxygen, is recognized as a method of fire extinguishment through the use of dry chemical extinguishers.



- **Heat Energy** - Can be produced by building up molecules (composition) or breaking apart (decomposition) by heat or a solution when materials are dissolved in a liquid, or by combustion.
- **Heat Transfer** - A law of physics states that heat tends to flow up from a hot substance or place to a cold substance or place. This is through conduction (transfer of heat through a medium such as metals) or through convection (transfer of heat with a medium-usually circulatory).
- **Fuels** - Those substances that will burn when heat is applied. The most common fuels are not pure elements such as carbon, but compounds and mixtures such as paper and wood.
- **Oxygen** - Makes up a major portion of the oceans and earth's crust and one-fifth of our atmosphere. Atmospheric oxygen is the major source of oxygen that supports combustion. Oxygen itself does not burn, however, without it, combustion is impossible. Normal burning is the combination of fuels with oxygen under the influence of heat.
- **Combustion** - A rapid oxidation or chemical combination accompanied by heat.
- **Oxidation** - The ability of materials to produce oxygen during a chemical reaction.
- **Spontaneous Combustion** - When oxidation is allowed to occur, enough oxygen is available, heat is produced, molecules become more energetic and combine with oxygen at an increasing rate, temperatures rise and visible heat (flames) are produced.

CLASSES OF FIRES:

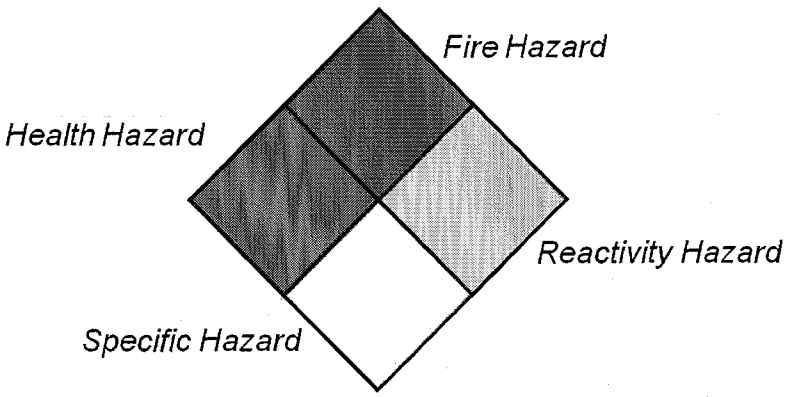
- Class A - **Ordinary combustibles (wood/paper/textiles)**

- Class B - **Flammable liquids (gasoline/oils/grease)**
- Class C - **Live electric (wiring/generators/motors)**
- Class D - **Combustible metals (finely divided form/chips, turnings)**

TYPES OF FIRE EXTINGUISHERS:

- **Water** - extinguisher for ordinary combustible fires
- **Dry Chemical or CO2** - extinguisher for electrical equipment fires and for flammable liquid fires
- **Multipurpose Dry Chemical** - extinguisher for ordinary combustible fires, liquid fires, and electrical equipment fires
- **Foam** - extinguishing agent for hydrocarbon fires

NFPA Diamond:



Scale ranges from 0 (lowest hazard) to 4 (highest hazard)

Fire Hazard (Red)	**Health Hazard (Blue)**	**Reactivity (Yellow)**	**Specific Hazards (White)**
Flash Points	4 Deadly	4 may detonate	Oxidizer = OX
4 below 73^0 F	3 Extreme Danger	3 shock and heat, may detonate	Acid = ACID
3 below 100^0 F	2 Hazardous	2 violent chemical change	Corrosive = COR
2 from 100 - 200^0 F	1 Slight Hazard	1 unstable if heated	Use no water = ~~W~~
1 above 200^0 F	0 Normal Material	0 stable	Radioactive =
0 will not burn			

APPENDIX M

PERSONAL PROTECTIVE EQUIPMENT PROGRAM

INTRODUCTION

The purpose of the Personal Protective Equipment Policies is to protect the employees of HVV LLC. from exposure to work place hazards and the risk of injury through the use of personal protective equipment (PPE). PPE is not a substitute for more effective control methods and its use will be considered only when other means of protection against hazards are not adequate or feasible. It will be used in conjunction with other controls unless no other means of hazard control exist.

Personal protective equipment will be required, used, and maintained when it has been determined that its use is required to ensure the safety and health of our employees and that such use will lessen the likelihood of occupational injury and/or illness.

This section addresses general PPE requirements, including eye and face, head, foot and leg, hand and arm, and body (torso) protection. Separate programs exist for respiratory protection, hearing protection. The use of PPE is also addressed in the basic safety rules and the excavation, confined space, fall protection, and hazcon programs.

The HVV LLC. Personal Protective Equipment Policies includes the following topics:

- Responsibilities of supervisors and employees
- Hazard assessment
- PPE selection
- Employee training
- Cleaning and Maintenance of PPE
- General PPE

RESPONSIBILITIES OF SUPERVISORS AND EMPLOYEES

Chief safety officer is responsible for the development, implementation, and administration of HVV LLC's PPE policies.

The project manager will notify site supervisor and/or safety officer regarding potential workplace hazards prior to the start of the project. The site supervisor and or safety officer is responsible for assessing work areas to determine if hazards are present that would necessitate the use of additional personal protective equipment. When such hazards exist, the safety officer is responsible for defining what PPE is required and for communicating the requirements to those who are affected.

The chief safety officer is responsible to make company supplies and equipment available and to inspect employee supplied or purchased PPE to insure in meets with OSHA and HVV LLC standards.

Employees are requires to follow the PPE policies stated in the HVV LLC Safety Policy. If an employee notices a potential or unaddressed safety issue they should immediately notify site supervisor and or safety officer.

Employees are required to:

1. Attend required training sessions.
2. Properly care for, clean, maintain, store and inspect PPE as required.
3. Follow HVV LLC PPE policies and rules.
4. Inform the supervisor of the need to repair or replace PPE.
5. Properly wear PPE as required. If an employee is unsure how to use their PPE they must contact the safety officer for retraining or clarification.

HAZARD ASSESSMENT FOR PPE

Based upon the propose scope of work an initial hazard assessment will be generated. The site supervisor and or safety officer will conduct a walk-through survey of work areas to determine if hazards are present that would necessitate the use of additional personal protective equipment.

The site supervisor and or safety officer will conduct, review, and update the hazard assessment for PPE whenever:

- a job changes
- new equipment or process is installed
- there has been an accident
- supervisor or employee requests it

SELECTION OF PPE

Once the hazards of a workplace have been identified, the project manager will determine if the hazards can first be eliminated or reduced by methods other than PPE If such methods are not adequate or feasible, then the safety officer will determine the suitability of the PPE presently available; and as necessary, will select new or additional equipment which ensures a level of protection greater than the minimum required to protect our employees from the hazards

Care will be taken to recognize the possibility of multiple and simultaneous exposure to a variety of hazards. Adequate protection against the highest level of each of the hazards will be recommended for use.

All personal protective clothing and equipment will be of safe design and construction

for the work to be performed and will be maintained in a sanitary and reliable condition. Only those items of protective clothing and equipment that meet NIOSH or ANSI (American National Standards Institute) standards will be procured or accepted for use. Newly purchased PPE must conform to the updated ANSI standards which have been incorporated into the PPE regulations, as follows:

Eye and Face Protection ANSI Z87.1-1989

Head Protection ANSI Z89.1-1986

Foot Protection ANSI Z41.1-1991

Hand Protection (There are no ANSI standards for gloves, however, selection must be based on the performance characteristics of the glove in relation to the tasks to be performed.)

Affected employees whose jobs require the use of PPE will be informed of the PPE selection. Careful consideration will be given to the comfort and proper fit of PPE in order to ensure that the right size is selected and that it will be used.

EMPLOYEE TRAINING

All HVV LLC. Employees will receive 40 hours of HAZWOPER training, three days of supervised hands on training, and eight hours of refresher training annually. Any worker required to wear PPE will receive training in the proper use and care of PPE before being allowed to perform work requiring the use of PPE. Periodic retraining will be offered to PPE users as needed. The training will include, but not necessarily be limited to, the following subjects:

- When PPE is necessary to be worn
- What PPE is necessary
- How to properly don, doff, adjust, and wear PPE
- The limitations of the PPE
- The proper care, maintenance, useful life, and disposal of the PPE

After the training, the employees will demonstrate that they understand how to use PPE properly, or they will be retrained.

Retraining

The need for retraining will be indicated when:

- An employee's work habits or knowledge indicates a lack of the necessary understanding, motivation, and skills required to use the PPE (i.e., uses PPE improperly)

- Changes in the work place make previous training out-of-date
- Changes in the types of PPE to be used make previous training out-of-date
- At the request of an employee.

CLEANING AND MAINTENANCE OF PPE

It is important that all PPE be kept clean and properly maintained. Cleaning is particularly important for eye and face protection where dirty or fogged lenses could impair vision. Employees must inspect, clean, and maintain their PPE according to the manufacturers' instructions before and after each use. Supervisors are responsible for ensuring that users properly maintain their PPE in good condition.

Personal protective equipment must not be shared between employees until it has been properly cleaned and sanitized. PPE will be distributed for individual use whenever possible.

If employees provide their own PPE, the safety officer will make sure that it is adequate for the work place hazards, and that it is maintained in a clean and reliable condition.

Defective or damaged PPE will not be used and will be immediately discarded and replaced.

NOTE: *Defective equipment can be worse than no PPE at all. Employees would avoid a hazardous situation if they knew they were not protected; but they would get closer to the hazard if they erroneously believed they were protected, and therefore would be at greater risk.*

It is also important to ensure that contaminated PPE which cannot be decontaminated is disposed of in a manner that protects employees from exposure to hazards.

GENERAL PPE

PPE (Personal Protective Equipment) is equipment worn to minimize exposure by creating a barrier between you and a hazard. Personal protective equipment is not a substitute for good engineering, administrative controls, or good work practices. PPE is used in conjunction with these controls to ensure safety and health. Examples of PPE include respirators, gloves, aprons, as well as fall, head, eye and foot protection. PPE does not reduce the hazard itself, nor does it guarantee permanent or total protection. PPE is merely used to reduce or minimize the exposure or contact to injurious physical, chemical or biological agents.

Head Protection - Head injuries are caused by falling or flying objects, or by bumping

the head against a fixed object. Head protection must do two things - resist penetration and absorb the shock of the blow. Protective helmets are also used to protect against electrical shock.

Protective helmets come in different types and classes that provide protection against specific hazards. Hard hats shall comply with ANSI Z89.1-1986, Class A or B. Class B is required for exposure to high voltage shocks, above 600 volts.

Appropriate head protection is required for all construction work where there is the potential for head injury from impact, falling or flying objects, or electrical shocks. In non-construction areas, the appropriate head protection must be worn when working in areas where there is the potential for injury from falling objects or overhead hazards. Helmets used in electrical work applications must be non-conductive. Observe the following general requirements for the selection, use, maintenance, and inspection of helmets:

- Must meet ANSI standards.
- Adjust headband to the proper size in order to provide sufficient clearance between the shell and the headband.
- Chinstraps should be kept in place and adjusted so that the helmet stays in place on the head.
- In very cold weather, helmet liners may be used.
- Drilling or punching holes in the helmet shell in an attempt to get additional ventilation is not allowed. This lessens the helmet's ability to sustain impact.
- Visually inspect helmets and all components daily for signs of cracks, penetration, or any other damage that might reduce the degree of safety originally provided.
- Never alter a helmet such that the performance of the helmet is compromised.
- Helmets should not be stored or carried on the rear-window shelf of an automobile, since sunlight and extreme heat may adversely affect the degree of protection.

Where the possibility of hair or head contamination (with chemical, radioactive, or other undesirable agent) exists, a close-fitting head cover is to be worn. Where hazardous liquids may fall or drip from overhead, the head cover must be resistant to the hazardous chemical. When both contamination and contact hazards exists, head covers must be used in conjunction with helmets.

Where there is risk of injury from hair entanglements in moving parts of machinery, combustibles, or toxic contaminants, employees shall confine their hair with nets, or other suitable restrictive devices to eliminate the hazard. Crane operators, when in an enclosed cab, have the option of not wearing a hard hat due to the possible obstruction

of view.

Eye and Face Protection - Employees working in locations where there is a risk of receiving eye injuries such as punctures, abrasions, contusions, or burns as a result of coming in contact with flying particles, hazardous substances, projections, or injurious light rays which are inherent to the work or environment shall be safeguarded by means of face or eye protection.

Suitable screens or shields isolating the hazardous exposure may be considered adequate safeguarding for nearby employees, i.e. welding screens.

Protection against light rays and radiant energy is spelled out in Title 8, GISO, 3382, Tables EP-1 and EP-2.

Protective eyewear must be in accordance with the American National Standards Institute (ANSI). Protection should be based on kind and degree of hazard present and should be:

- reasonably comfortable
- fit properly
- durable
- cleanable
- sanitary
- in good condition.

The types of eye and face protection vary. Some common examples are as follows::

- Safety glasses - look very much like normal eyeglasses, but are designed to protect against flying particles. Safety glasses have lenses that are impact resistant and frames that are far stronger than normal eyeglasses. Safety glasses must be worn whenever there is the possibility of flying particles entering the eye. Normal eyeglasses fitted with side shields are not sufficient, although it is possible to get prescription safety glasses.
- Goggles - must be worn when there is potential of a splash from a hazardous material. Like safety glasses, goggles are impact resistant. Chemical splash goggles should have indirect or no ventilation so hazardous substances cannot drain into the eye area. They may be worn over prescription glasses.
- Face shields - appropriate when working with large volumes of hazardous materials, either for protection from splash to the face or from flying particles. Face shields must be used in conjunction with safety glasses or goggles.

Contact lenses may be worn in conjunction with eye and face protection, but are not designed to offer any protection from chemical contact. If a contact lens becomes

contaminated with a hazardous chemical, the lens should be removed immediately and discarded. Use the emergency eyewash as appropriate.

Side shields shall be worn whenever the hazard of flying objects is angular as well as frontal.

Body (torso) Protection - Many hazards can threaten the torso: heat, splashes from hot metals and liquids, impacts, cuts, chemicals, and radiation. A variety of protective clothing is available: vests, jackets, aprons, coveralls, and full body suits. Fire retardant wool and specially treated cotton clothing items are comfortable, and they adapt well to a variety of workplace temperatures. Other types of protection include leather, rubberized fabrics, and disposable suits. You must wear body (torso) protection if it is required in your area.

In all cases, clothing appropriate for the work being done shall be worn. Loose sleeves, tails, ties, lapels, cuffs, or other loose clothing which can become entangled in moving machinery will not be worn.

Clothing containing flammable liquids, corrosive substances, pesticides, irritants, or oxidizing agents shall be removed and not worn until properly laundered.

- **Arm and Hand Protection** - Arm and hand protection is required when injury can be prevented by their use. Supervisors are to evaluate tasks and make arm and hand protection available when needed. There is a wide assortment of gloves, hand pads, and sleeves for protection from various hazards. Hazards can include, but are not limited to, skin absorption of harmful substances, severe cuts or lacerations, severe abrasions, punctures, chemical burns, electrical shock, vibration, amputation, or harmful temperature extremes. No glove can protect against all hazards so select the appropriate glove for the job.

Follow these guidelines when arm and hand protection is necessary:

- Where there is risk of injury from glove entanglement in moving parts of machinery, employees shall not wear gloves and use other methods to protect their hands from injury exposure
- Verify that your gloves are compatible with your specific applications, processes, and materials before using. Check the Material Safety Data Sheets (MSDS) for listed PPE required for safe handling.
- Inspect gloves and arm barriers for defects before using. Never use defective or altered arm and hand protection.
- When performing processes during which gloves will receive prolonged, direct exposure to chemicals, use a glove specifically designed for chemical handling.
- To avoid the risk of chemical cross-contamination, immediately remove gloves after use.

- Double gloving provides additional barrier protection and allows the outer glove to be disposed of after contact with chemicals without exposing the hand.
- Do not use powdered gloves with substances known to pose inhalant hazards.
- If you develop any allergies (for example latex) or have problems with glove use, report them to your supervisor or instructor.
- Jewelry, such as rings has caused the loss of many fingers. Be aware that wrist watches, and other jewelry can be caught in moving machinery, or caught on a protruding hook or nail. Never wear metallic jewelry or other objects when working around electrically energized equipment.

Examples of gloves that are available:

Disposable Gloves: Usually made of lightweight plastic, can help guard against irritants and bio-hazards and are often used for food-handling and health care operations.

Fabric Gloves: Gloves made of cotton or fabric blends are generally used to improve your grip when handling slippery objects. They also help insulate your hands from mild heat or cold.

Chemical Resistant Gloves: May be made of neoprene, nitrile, rubber, or vinyl. Help protect hands from corrosives such as organic acids and petroleum-based products. Glove type is specific for the chemical being handled.

Leather Gloves: Used to guard against injuries from sparks or scraping against rough surfaces. They are also used in combination with an insulated liner when working with electricity.

Metal Mesh Gloves: Used to protect against accidental cuts and scratches. Primarily used by persons working with cutting tools or other sharp instruments.

Thermal Gloves: Designed to insulate your hands from intense heat or cold. Most often used by persons working with molten materials or cryogens.

Foot Protection - Foot guards, safety shoes or boots, and/or leggings must be worn as necessary to protect the feet and legs from falling or rolling objects, sharp objects, molten metal, hot or cold surfaces, and wet or slippery surfaces.

Aluminum alloy, fiberglass, or galvanized steel foot guards can be worn over regular work shoes. Be aware that they may present the possibility of catching on something and causing you to trip.

Safety shoes must be sturdy and have an impact-resistant toe. In some shoes, metal insoles protect against puncture wounds. Additional protection, such as metatarsal guards, may be found in some types of footwear. Heat-resistant soled shoes protect against hot surfaces like those found in the roofing, paving, and hot metal industries. Safety shoes come in a variety of styles and materials, such as leather and rubber boots and oxfords.

Leggings protect the lower leg and feet from molten metal or welding sparks. Safety snaps permit their rapid removal.

Safety footwear is classified according to its ability to meet minimum requirements for both compression and impact tests. These requirements and testing procedures are found in the American National Standards Institute (ANSI) standards. Protective footwear must comply with the ANSI standards.

Respiratory Protection

Respiratory protection must be addressed when working in hazardous atmospheres. For further information on respiratory protection; please refer to the Respiratory Protection Program

Hearing Protection

Hearing protection will be made available to all employees exposed to sources of noise 85 dB or greater, as measured by a sound level meter or identified by the contracting company. In general, anytime someone must elevate their voice to be heard, hearing protection will be worn. For further information on hearing protection; please refer to the hearing protection Program.

APPENDIX N

FIRST AID PROGRAM

First Aid

First aid is generally defined as medical attention that is usually administered immediately after the injury occurs and at the location where it occurred to provide adequate care until emergency medical services arrive. The administration of First Aid care often consists of a one-time, short-term treatment and requires little technology or training to administer. First aid does not take the place of proper medical care. First aid can include cleaning minor cuts, scrapes, or scratches; treating a minor burn; applying bandages and dressings; the use of non-prescription medicine; draining blisters; removing debris from the eyes; massage; and drinking fluids to relieve heat stress.

The first-aid program is reviewed periodically to determine if it continues to address the needs of the specific workplace. Training, supplies, equipment and first-aid policies are added or modified to account for changes in workplace safety and health hazards, worksite locations and worker schedules since the last program review.

The guide includes the following topics:

- Management Leadership and Employee Involvement
- Worksite Analysis
- Hazard Prevention and Control
- First aid supplies
- Safety and Health Training
- Medical care availability

Management Leadership and Employee Involvement

Site safety officer will be responsible for implementing the First Aid Guide at the work site. Chief Safety officer is responsible for enforcing the program and insuring compliance with the procedures. Employees are required to follow the guide line and notify the site safety officer or chief safety offices regarding violations of the plan, restocking of first aid kits, change in work plan necessitating additional safety equipment, and/or injuries.

Worksite Analysis

Because of varying work scopes and locations the First Aid Guide may need updating before site work can start. Prior to site work the site the site supervisor, safety officer and chief safety officer must review the proposed work scope to determine if additional safety concerns exist which may require additional supplies. When reviewing the guide particular attention is given to the following major causes of injury on work sites:

1. **Caught in/under/between** - a part of the body is squeezed, pinched or crushed in machinery.
2. **Falls from elevation** - falls from ladders, roofs or other elevated surfaces

3. **Fall at same level** - slips, trips and falls on flat surfaces
4. **Struck by/against** - impacting a part of the body against something or hit by a moving or flying objects, or by noise (noise impacts the ear drum)
5. **Motor vehicle accidents** - traffic accidents
6. **Work-related musculoskeletal disorders of the lower extremities** (knees, ankles and feet) and
7. **Musculoskeletal Injuries of Upper Body (Neck, back and arms)** - from overexertion, kneeling, squatting, or other repetitive motion, lifting, awkward posture, hand pinching or gripping or vibration.

Hazard Prevention and Control

When possible work tasks will be designed to minimize the risk of injury. Steps to ovoid and reduce injury are specified in the programs and basic safety rules outlined in the HHV LLC Safety Policy.

Do not help an injured person if:

- You will be putting yourself in danger, get help instead of rushing in!
- Don't enter a confined space to rescue someone unless you have proper training and equipment.
- Do not enter an area to rescue a victim of electric shock, until all power has been turned off, locked out and tagged out.
- If there's been a major chemical spill, don't enter to rescue someone unless you have proper training and equipment.

First aid supplies

Based on federal OSHA Standard 1910.151(b), adequate first aid supplies are readily available to HHV LLC employees. The first aid supplies are meant to treat minor injuries that occur in the workplace and correspond to the hazards which can be reasonably expected to occur. Protection equipment for blood borne pathogens is also included. Adequate first aid supplies are stored in areas where they are readily available for emergency access. Typically at field work sites first aid equipment is stored in company vehicles and can be carried to where needed. All company vehicles are equipped with first aid kits. These kits are enclosed in a sealed well marked protective container. Containers must be clearly marked, unlocked, protected from damage, deterioration, or contamination and sealed. Prior to work at a job site or after use of a safety kits, employees are required to inspect the first aid kit. The site safety officer should immediately be notified of deficiencies in the first aid kit. The site safety officer is responsible for restocking the kit.

Safety and Health Training

All HVV LLC employees are required to attend an annual health and safety refresher. The refresher is tailored to the typical work performed as well as any anticipated variation in work

projects for the projected year. A part of this training is to recognize potential hazards and learn how to avoid them, as well as review basic first aid and applicable OSHA regulations

The HVV LLC Chief Safety officer is certified in CPR for the professional rescuers and outdoor emergency care (equivalent to advanced first aid). Additional training will be made available to employees on a site by site basis. Site safety officers maybe trained through the American Heart Association, the American Red Cross, the National Safety Council, or other nationally recognized and private educational organizations.

Typical first aid response protocol.

- Make sure area is safe for responder to enter and administer aid.
- Evaluate extent of injuries.
- Call 911.
- Notify the first aid provider, clinic, or supervisor. Describe the extent of injuries.
- Administer first aid to minor injuries.
- Stabilize injured worker until first responder/ems arrive.
- Give first aid or CPR if necessary, but only if you know what you're doing.
- Do not remove a victim with a spinal injury unless further danger is imminent.
- Keep people out of the area.
- Keep a shock victim covered to reduce heat loss
- Calm and reassure the injured person. Don't move them until trained help arrives.
- Stop severe bleeding by applying hand pressure to the wound.
- If emergency aid cannot be given at the site remove the injured worker to a provider
- Use of barrier devices such as medical exam gloves, masks, eye protection, and gowns whenever contact with blood or body fluids is expected.
- Washing hands after any contact with blood or body fluids, even if barrier devices are used. Hands should be washed as soon as gloves are removed.
- Taking care to prevent injuries from sharps, including needles and scalpels. Any sharp objects contaminated with blood are considered "sharps" for the purposes of universal precautions. For example, if an employee cuts herself on broken glass, the glass is considered potentially infectious.

Medical care availability

As required by OSHA standard 29 CFR 1910.151, medical care is made available to HVV LLC employees. Typically an infirmary, clinic, or hospital is in near proximity to the workplace. In the absence of an infirmary, clinic, or hospital in near proximity to the job site that can be used for the treatment of all injured employees, a person or persons shall be adequately trained to render first aid. The degree of training required is based upon the perceived level of hazards encountered at the job site. A current list of emergency telephone numbers is posted for employees use.

Every effort is made to allow vehicle entrance to work sites. This expedites the response time of medical professionals and or delivering the injured worker to a medical facility.

Should access to the work area become limited or emergency services unavailable the work and site safety plans will be reevaluated by site supervisor and the site safety officer. To maintain medical care availability for the employee, HHV LLC. may upgrade the first aid training and supplies to the site safety officer and or arrange for safe transportation of injured workers to an appropriate health care facility.

Employees are encouraged to maintain a current list of emergency telephone numbers (police, fire, ambulance, poison control) in their cell phones.

Emergency chart

EMERGENCY FIRST AID CHART

This First Aid Chart is not intended to take the place of qualified help in the event of an emergency. In any emergency, always seek medical advice and assistance when you think it is needed. It is also recommended that you take a certified CPR and first aid course.

ANIMAL BITE

Flush the wound area with water and then wash with soap and water for at least five minutes. Cover with a clean dressing or cloth. Immediately seek care at a hospital or physician.

BLACK EYE

As soon as possible following the injury, dip a cloth in ice water and hold next to the area for at least 10 minutes. A "black eye" is essentially a bruise around the eye that will cause pain and swelling and gradually fade in time. If the bruise does not fade or if there is a change in vision, consult a physician.

CUTS

Minor – Wash wound area with soap and water, not alcohol; cover with a sterile gauze bandage.

Major – If blood appears to be gushing or spurting, follow these instructions and call for help. Take a clean cloth or towel and press hard on the cut for 10 minutes. Do not remove pressure to see if it's working. If possible, raise the cut above the level of the chest. After 10 minutes, if the bleeding has stopped, cover the cut with a bandage. If the bleeding hasn't stopped, try pressing harder for five more minutes and seek medical help.

BURNS

Minor – Immediately cool the burn area by putting it under cool running water or in a sink filled with cool water for at least five minutes or until the pain subsides. Never apply butter, grease or ointment. Don't open blisters or remove dead skin. Cover with gauze. If blisters break, apply a clean dressing. If the burn is on the face, covers an area bigger than your hand or if

CHOKING

If the person is choking and unable to talk or breathe, get behind the person and wrap your arms around the waist. Make a fist, grasp fist with other hand. Place fist against the stomach just above the navel but well below the lower tip of the breastbone. Pull fist upward into the stomach with a quick upward thrust. Repeat up to four times. If choking continues, seek medical help. If the victim becomes unconscious, lay him or her down, roll to side, pull the tongue and jaw forward and with your index finger, dislodge any visible matter. Perform mouth-to-mouth resuscitation and/or CPR.

CONVULSION/SEIZURE

Gently prevent person from hurting him or herself on nearby objects. Loosen clothing after jerking subsides. Have person lie down. Help keep the airway open. Turn head to the side in case of vomiting to prevent choking on inhaled vomitus. If breathing stops, administer mouth-to-mouth resuscitation or CPR. After seizure, allow patient to rest. Seek medical attention.

ELECTRIC SHOCK

Turn off electricity if possible. If not possible, pull victim from the electrical contact with a dry rope, wooden pole or cloth. Do not touch victim until contact with electric current is broken. Administer CPR. Call for emergency help.

EYE INJURIES

Chemicals – Have person turn head so injured side is down. Flood eye with water for at least 15 minutes. Cover eye with clean cloth and seek professional help.

object, pull the upper lid down and over the lower lid and let it slide back up. This may dislodge the particle. If pain and tearing persist, seek medical help.

FAINTING

Lay patient on his or her back and raise both legs above the heart. Check airway to be certain it is clear. Loosen tight clothing and apply cold cloths to the face. If fainting lasts more than a minute or two, keep patient covered and seek medical help.

FALLS

Stop any bleeding and cover wounds with clean dressings. Keep victim comfortably warm to prevent shock. If you suspect broken bones, do not move person unless absolutely necessary (such as in case of fire). Call for emergency help.

FISHHOOKS

Fishhook injuries carry a high risk of infection, so if you can reach a physician, do so. If you are far from medical help, push the hook farther through the tissue until it goes through the skin. Don't pull it out; the barb will cause further injury. Using wire cutters, cut off the barb, and then pull the hook back through the skin. Clean and bandage the wound and seek medical attention as soon as possible.

FRACTURES/BREAKS

Stop any bleeding and cover wound with clean dressing. If it is a simple fracture, set it in a splint (wood, corrugated cardboard, rolled-up blanket, pillow, etc.) supported with cloth or rope ties. Do not move patient if back or neck injury is suspected. Keep person warm and treat for shock (see next column). Call

safe for slight frostbite. Elevate the affected area, cover with dry and warm garments and consider pain relievers if there is slight pain. Keep frostbitten toes or fingers separate with clean, dry cloths. Hospitalization is necessary for children whose body temperatures drop below 93°F and for adults who have severe frostbite. Don't sit in front of an oven or fire to warm the frostbitten area; unequal exposure to the heat could burn the tissue. Don't massage the damaged area or rub with snow. Do not break blisters or give alcoholic drinks. Contact your physician or emergency room immediately.

HEAD INJURY/ CONCUSSION

Usual symptoms of simple concussion include headache, slight dizziness, queasy stomach or vomiting. These usually require an ice pack to the head and rest. Observe for any severe symptoms such as unusual drowsiness, unequal pupils, persistent vomiting, confusion and lack of coordination. If one or more of these conditions are present, immediately seek medical care.

INSECT BITES AND STINGS

Bee or wasp sting – Try to remove stinger by gently scraping with a clean knife blade. Cleanse with soap and water and apply an ice compress to reduce swelling. If person has an allergic reaction (will happen within 30 minutes), hives, itching all over, wheezing, vomiting or a history of allergic reaction, follow directions on bee sting kit, if available. Call for emergency help.

Tick bite – Cover the insect's body with a heavy oil or lighter

NOSEBLEED

Have person sit down and lean forward. Pinch nose and have person breathe through the mouth. Or pack bleeding nostril(s) with gauze and pinch. If bleeding persists, call a doctor.

POISONING

Don't force to vomit immediately. Call poison control. Tell them what substance and how much was swallowed. Take the bottle or package to the phone when you call. Directions on the container may not be up to date. Always follow the instructions given by the poison control center. Do not give the patient fluids or cause to vomit if unconscious or in convulsions. Call for emergency help.

SHOCK

Have person lie down, loosen clothing and cover to prevent loss of body heat. Be cautious not to overheat. Check pulse rate and seek professional help.

SPLINTERS

Tweezers remove most splinters easily, but a physician should remove deeply embedded splinters. If the length of the splinter is visible under the skin, use a sterilized needle to slit the skin over the splinter and pull out the splinter with the tweezers. Clean the wound.

SPRAINS & STRAINS

Elevate the injured joint to a comfortable position. Apply an ice bag or a cold compress over the sprain to reduce pain and swelling. Ability to move does not rule out fracture. Person should not bear weight on a sprain. Sprains that continue to swell should be examined by a physician.

bleeding hasn't stopped, try pressing harder for five more minutes and seek medical help

BURNS

Minor – Immediately cool the burn area by putting it under cool running water or in a sink filled with cool water for at least five minutes or until the pain subsides. Never apply butter, grease or ointment. Don't open blisters or remove dead skin. Cover with gauze. If blisters break, apply a clean dressing. If the burn is on the face, covers an area bigger than your hand or if it blisters, call the doctor or emergency number.

Severe – Have victim lie down and cover him or her. Never remove clothing or clean the burns. Call for emergency help.

Chemical – Quickly flush area with water for five minutes, cover with gauze and call for emergency help.

ELECTRIC SHOCK

Turn off electricity if possible. If not possible, pull victim from the electrical contact with a dry rope, wooden pole or cloth. Do not touch victim until contact with electric current is broken. Administer CPR. Call for emergency help.

EYE INJURIES

Chemicals – Have person turn head so injured side is down. Flood eye with water for at least 15 minutes. Cover eye with clean cloth and seek professional help.

Foreign particle – Do not rub the eye, that may cause deeper injury. Try to locate the object; if it is in the pupil, or seems embedded in the white of the eye, go immediately to the emergency room. If the object is floating in the liquid surface, you can try to remove it. Hold the lower lid open, look up, and using the edge of a clean cloth, brush the matter quickly off the eye's surface. If you can't see an and then pull the hook back through the skin. Clean and bandage the wound and seek medical attention as soon as possible.

FRACTURES/BREAKS

Stop any bleeding and cover wound with clean dressing. If it is a simple fracture, set it in a splint (wood, corrugated cardboard, rolled-up blanket, pillow, etc.) supported with cloth or rope ties. Do not move patient if back or neck injury is suspected. Keep person warm and treat for shock (see next column). Call for emergency help.

FROSTBITE

Signs and symptoms: The skin of hands, feet, face or other areas first becomes red, then turns gray or white. Never rub frostbitten area with snow; that will only continue the chilling of the tissue and cause further damage. A gradual warming, by immersing the area in water that is slightly warmer than body, is

INSECT BITES AND STINGS

Bee or wasp sting – Try to remove stinger by gently scraping with a clean knife blade. Cleanse with soap and water and apply an ice compress to reduce swelling. If person has an allergic reaction (will happen within 30 minutes), hives, itching all over, wheezing, vomiting or a history of allergic reaction, follow directions on bee sting kit, if available. Call for emergency help.

Tick bite – Cover the insect's body with a heavy oil or lighter fluid and allow to remain for about 20 minutes. Carefully remove with tweezers, being sure to remove all parts of the insect. Scrub area with soap and water.

Itchy bites – Use hydrocortisone cream, calamine lotion or rubbing alcohol.

sterilized needle to slit the skin over the splinter and pull out the splinter with the tweezers. Clean the wound.

SPRAINS & STRAINS

Elevate the injured joint to a comfortable position. Apply an ice bag or a cold compress over the sprain to reduce pain and swelling. Ability to move does not rule out fracture. Person should not bear weight on a sprain. Sprains that continue to swell should be examined by a physician.

UNCONSCIOUSNESS

When person cannot be aroused, lay in a flat position and make sure the victim's airway is clear. Check pulse rate. If no pulse is felt, begin administering CPR. Keep the person comfortable and warm. Never give an unconscious person food or liquid. If vomiting occurs, turn head to the side to prevent choking on inhaled vomitus. Call for medical help.

ABCs OF LIFE SUPPORT

This emergency first aid procedure consists of recognizing stoppage of breathing and heartbeat — then applying cardiopulmonary resuscitation (CPR). This involves: (A) opening and maintaining person's airway; (B) rescue breathing; (C) providing artificial circulation by external cardiac compression (heart massage).

A **Airway open.** Turn person on back and quickly remove any foreign matter from mouth. Place your hand under person's neck and lift, tilting head back as far as possible with other hand. This opens an airway.

B **Breathing restored.** If person is not breathing, place your mouth tightly over his or hers, pinch nostrils and blow into mouth until you see the chest rise. Remove your mouth. Give two breaths and check for neck pulse (see C below). If pulse is present, continue rescue breathing at a rate of 12 times per minute.

C **Circulation maintained.** Quickly feel for neck pulse: Keeping person's head tilted with one hand, use middle and index fingers of other hand to feel for carotid pulse in neck artery under side angle of lower jaw. If no pulse, start rescue breathing and external cardiac compressions.

Person's back should be on firm surface. Place heel of your hand on lower breastbone (about 1 1/2 inches up from the tip), with fingers off chest and other hand on top. Gently rock forward, exerting pressure down, to force blood out of the heart. Release pressure. Alternate (B) breathing with (C) circulation.

Two rescuers: Give 60 chest compressions per minute — one breath after each five compressions. One rescuer: Perform both artificial circulation and rescue breathing, giving 80 chest compressions per minute — two full breaths after each 15 compressions.

For small children and infants: Cover nose and mouth with your mouth, blow gently, 20 times per minute. For compressions, use only heel of one hand for children; only the tips of index and middle fingers for infants. Give 80 to 100 compressions per minute, with one breath after each five compressions.

APPENDIX O

GAS MONITOR PROCEDURES

GAS MONITOR PROCEDURES

1.0 Purpose

1.1 To ensure proper use and accuracy of the gas monitors that will be used on a job site where hazardous gases may exist. Because the types of gas monitors change employees are required to upgrade training on new meters

2.0 Scope

2.1 This section applies to all employees and subcontractors who will be either using a personal gas monitor, or performing work on a job site where continuous air monitoring is required.

3.0 Training

3.1 All employees who may be exposed to hazards environments are required to receive training on how to recognize such hazards, and how to minimize their exposure to them. Employees shall receive training as soon after employment as possible, and before they are required to work in areas where hazards exist.

3.2 All employees are required to properly use gas monitors. Training will be conducted prior to use by a capable individual. If an employee is unsure of a meters operation they must request and receive retraining prior to use.

3.3 Reference manuals for operation of HVV LLC's gas meters will be kept with the instrument and a file copy available to workers upon request.

4.0 Definitions

Zero (fresh air) Calibration – This is done in a clean atmosphere of 20.9% oxygen and no detectable VOC, toxic, or combustible gases. It is used to set the zero point for each sensor.

Span Calibration – is the set of operations that establish, under specified conditions, the relationship between the values of quantities indicated by a measuring instrument and the corresponding values realized by given standards. Note: Refer to the gas bottle label for specific values.

Bump Testing – Ensures that all sensors are reading accurately according to the set values of the gas being applied. Note: Refer to the gas bottle label for specific values.

STEL – Short Term Exposure Limit

TWA – Time Weighted Average

LEL – Lower Explosive Limit

5.0 Zero Calibration

5.1 After the gas monitor is turned on in a safe, well ventilated, clean air environment, and is in operation mode, the oxygen sensor should read 20.9%. All other sensors should read 0. If this not the case, zero calibration should be performed. Refer to the manufacturer's reference guide for proper procedure.

6.0 Span Calibration

6.1 All monitors shall be calibrated every 30 days. Employees are encouraged to recalibrate sooner if deemed necessary. Refer to the manufacturer's reference guide for proper calibration procedure.

7.0 Bump Testing

7.1 All monitors shall be bump tested daily or prior to each use. Refer to the manufacturer's reference guide for proper bump testing procedure.

8.0 Alarm Values

8.1 Peak, STEL, and TWA values shall be set to meet or exceed the OSHA standards for the specific gases that are being monitored.

8.2 Alarm levels for LEL's shall not exceed 10%.

8.3 Alarm values shall meet site specific requirements that exceed OSHA standards.

9.0 Common Instrumentation Used by HVV

9.1 Photoionization Detector

Hazardous vapors may be evaluated by using a Photoionization detector. HVV maintains a MiniRAE 2000 Portable VOC Monitor, PGM-7600. The MiniRAE 2000 is a broadband VOC gas monitor and datalogger for work in hazardous environments. Preset alarm thresholds for STEL, TWA and low and high peak values can be programmed into the instrument. All HVV employees are trained in the calibration and use of the MiniRAE 2000. A copy of the operation and maintenance manual is always kept with the instrument for additional reference. Generally, the instrument is calibrated each day prior to use. If the instrument is to be used for an entire 8 hour

day, the calibration is checked every four hours. The instrument is charged nightly, so that it is ready for immediate use on any given day.

9.2 MSA Explosimeter

Combustible atmosphere conditions may be evaluated with an MSA Explosimeter, Model 2A. The instrument quickly detects and measures concentrations of combustible vapors and gases in air. Gas concentrations of up to 100% of the LEL (lower explosive limit) can be measured directly. All HVV employees are trained in the calibration and use of the MSA Explosimeter. A copy of the operation and maintenance manual is always kept with the instrument for additional reference. Generally, the instrument is calibrated each day prior to use. If the instrument is to be used for an entire 8 hour day, the calibration is checked every four hours. The instrument is charged nightly, so that it is ready for immediate use on any given day.

APPENDIX D-3
NYSDOH GENERIC COMMUNITY AIR MONITORING PLAN

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.

APPENDIX E
CITIZEN PARTICIPATION PLAN

HANSON
HYDROGEOLOGIC & ENVIRONMENTAL CONSULTANTS
902 ROUTE 146 CLIFTON PARK, NY 12065
VAN VLEET, LLC

Brownfield Cleanup Program

Citizen Participation Plan
For
Tim Bayly Property

Site # C442043

800 Broadway

City of Rensselaer

Rensselaer County, New York

July 25, 2014

Revised September 4, 2014

TABLE OF CONTENTS

Note: The information presented in this Citizen Participation Plan was current to the best of our knowledge as of the date of preparation. Portions of this Citizen Participation Plan may be revised as necessary during the remedial investigation and remedial process.

Remedial Party: Tim Bayly Development, LLC (Applicant/Volunteer)
Site Name: Tim Bayly Property
Site Number: C442043
Site Address: 800 Broadway, City of Rensselaer
Site County: Rensselaer

1.0 NEW YORK STATE BROWNFIELD CLEANUP PROGRAM

The New York State Brownfield Cleanup Program (BCP) is designed to encourage and assist private parties to redevelop or reuse sites impacted by or potentially impacted by the presence of environmental contamination. The program provides incentives for private parties to investigate and remediate/cleanup sites prior to redevelopment or reuse. Typically BCP properties are former industrial and/or commercial properties, where operations resulted in contamination to the environment. Redevelopment through the BCP can result in improved economic conditions in the area of the property.

The BCP is administered by the New York State Department of Environmental Conservation (NYSDEC), which oversees Applicants accepted into the BCP as they conduct brownfield site remedial activities. The BCP contains strict investigation and remediation (cleanup) requirements, ensuring that cleanups protect public health and the environment based on the intended use of the brownfield site. 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: www.dec.state.ny.us/website/der/bcp

2.0 Citizen Participation Plan Overview

A Citizen Participation (CP) Plan provides members of the affected and interested public with information about how NYSDEC will inform and involve them during the investigation and remediation (cleanup) of a site under the BCP.

This CP Plan has been developed for the site under the BCP. Appendix D contains a map locating the site. NYSDEC is committed to informing and involving the public concerning the investigation and remediation (cleanup) of the site. This CP Plan describes the public information and involvement program that will be carried out with assistance from the Applicant.

Appendix A of this CP Plan identifies NYSDEC project contact(s) to whom the public may address questions or request information about the sites remedial program. The locations of the sites document repositories also are identified in Appendix A. The document repositories provide
convenient access to important project documents for public review and comment.

Appendix B contains the brownfield site contact list. This list has been developed to keep the community informed about, and involved in, the sites investigation and remediation process. The brownfield site contact list includes, at a minimum:

- Chief executive officer and zoning board of each county, city, town and village in which the site is located;
- Residents on and/or 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 and/or adjacent to the site for purposes of posting and/or dissemination at the facility; and
- Document repositories and their contacts.

The brownfield site contact list will be used periodically to distribute fact sheets that provide updates about the status of the project, including notifications of upcoming remedial activities at the site (such as fieldwork), as well as availability of project documents and announcements about public comment periods.

Additional individuals and organizations may be added to the site contact list by signing up for the NYSDEC's Division of Environmental Remediation email listserv at: www.dec.ny.gov/chemical/61092.html.

Appendix C identifies the CP activities that have been and will be conducted during the sites

remedial program.

The CP activities are designed to achieve the following objectives:

- Help the interested and affected public to understand contamination issues related to a brownfield site, and the nature and progress of an Applicants efforts, under State oversight, to investigate and, if appropriate, remediate (clean up) a brownfield site.
- Ensure open communication between the public and project staff throughout a brownfield sites remedial process.
- Create opportunities for the public to contribute information, opinions and perspectives that have potential to influence decisions about a brownfield sites investigation and remediation (cleanup).

This CP Plan may be revised due to changes in major issues of public concern or in the nature and scope of remedial activities. Modifications may include additions to the site contact list, updates to major issues of concern to the public, and changes in planned citizen participation activities. The public is encouraged to discuss its ideas and suggestions about the citizen participation program with the project contact(s) listed in Appendix A.

3.0 SITE INFORMATION

3.1 Site Description

The project site is currently referred to as the Tim Bayly Property. The site is located at 800 Broadway, at the northeast corner of the intersection of Broadway and Partition Street, in the City of Rensselaer (See Figures 1 and 2). The site is located in a mixed commercial and residential urban area. The site contains a vacant one story brick structure with a flat roof and full basement. The structure occupies the majority of the 0.08 acre (3,548 square feet) lot. A detailed survey of the site is included as Figure 3.

Adjoining properties include;

North: 810 Broadway, a vacant property formerly the City of Rensselaer Library, and the

Rensselaer County Bank, currently owned by 810 Broadway LLC;

North and East: Property identified as “north of 1 Partition Street, a vacant parcel with an access easement to 810 Broadway LLC.

East: A three story brick and wood framed multi-unit apartment building.

South and East: Land drops to a lower level containing a railroad yard.

3.2 Site History

The site was the location of Roxy Cleaners from 1958 to 1978. Prior owners included: Harry Khachadoorian, March 19, 1946 to July 26, 1946, H & E Holding Company, Incorporated, July 26, 1946 to October 6, 1986, and Tracy Siedhoff, October 6, 1986 to April 29, 2013.

Relative to the site history, recent work performed by Arcadis, in 2013, identified volatile organic compounds (VOCs) associated with dry cleaning products in the groundwater beneath the sidewalk adjacent to the site, and within sub-slab and interior air samples collected in the basement of the structure. Based on the age of the structure asbestos containing building materials may also be present in and/or on the structure.

3.3 Environmental History

There are no known environmental reports that were prepared specifically for 800 Broadway. However, the City of Rensselaer commissioned a Phase I and Phase II report for two city-owned properties in the immediate area; 824 Broadway and North of 1 Partition Street (referred to collectively as the "City Parcels"). 824 Broadway is two lots to the north of 800 Broadway (the northern edge of 800 Broadway is about 30 feet south of the southern edge of 824 Broadway). The other parcel, (North of 1 Partition Street borders 800 Broadway on the east and the north.

Both reports were prepared by Arcadis of New York, Inc. The Phase I report is dated September 26, 2012 and the Phase II report is dated August 2, 2013. The reports were made available to the applicant by the City of Rensselaer. In the course of conducting the Phase I and Phase II for the City Parcels a great deal of information relevant to a Phase I and a Phase II for 800 Broadway was collected. Copies of both of these reports are contained in repository and were made part of the BCP Application for this site. A summary of the information relevant to 800 Broadway includes:

Phase I report:

Section 2.2, Identification of Recognized Environmental Conditions and prior operators at 800 Broadway as Roxy Cleaners from at least 1958 to 1978.

Section 4.3, Physical Environmental Setting is fully applicable to 800 Broadway.

Section 5.4, Database of Environmental Records is fully applicable to 800 Broadway.

Section 5.5, Area Radon information is fully applicable to 800 Broadway.

Section 5.6, Publically Available Maps contains as an attachment (Figure 1) the USGS 7.5 minute quad map upon which 800 Broadway appears (the Troy Quadrangle).

Section 5.7, Historic Aerial Photos contains as an attachment (Appendix E) aerial photos that include 800 Broadway from 1952, 1973, 1978, 1984, 1986, 1994, 1995, 2000 and 2008.

Section 5.8, Historic Topographic Maps contains as an attachment (Appendix F) the 1898, 1928, and 1950 U.S. Geological Survey 15 Minute Topographic maps of the Troy Quadrangle and the 1953 and 1980 U.S. Geological Survey 7.5 Minute Topographic maps.

Section 5.9, Historic City Directories contains as an attachment (Appendix G) directories from Broadway and Partition Street from 1973, 1990, 1995 and 2000. Significantly, the report also indicates that the contractor reviewed city directories from 1958, 1960, 1965, 1971, 1973, 1976, 1978, 1981, and 1986 in the Research room at City Hall. Roxy Cleaners was listed as the occupant of 800 Broadway in the 1958, 1960, 1969, 1971, 1976, and 1978 city directories.

Section 5.10 Fire Insurance Maps contains Sanborn maps for properties in the vicinity of the Site as an attachment (Appendix H). Maps are provided for the years 1909, 1925, 1949, and 1967. The report notes that during this span of time, the area consisted of residential and commercial establishments.

Conclusions: The Phase I report identified three recognized environmental conditions (RECs) with respect to the City Parcels. One of those RECs was the historic use of 800 Broadway as a Roxy Cleaners from at least 1958 to 1978.

The Phase II report:

The scope of work included: surface soil sampling; subsurface soil sampling; sump groundwater sampling; the installation, development and sampling of monitoring wells; indoor air sampling; outdoor air sampling; sub-slab air sampling; and soil vapor sampling.

Surface soil samples were collected at 800 Broadway from beneath the floor in areas where the concrete had previously been removed. Surface soil was tested for Target Compound List (TCL) VOCs by United States Environmental Protection Agency (USEPA) sampling methods. No VOCs were detected at concentrations greater than the values determined by NYSDEC to allow for unrestricted use of the property.

Subsurface soils were collected from soil borings in the City ROW (sidewalk) areas around 800 Broadway. No VOCs were detected within the subsurface soils exceeding unrestricted use SCOs.

Groundwater samples were taken from five wells, four in the immediate vicinity of 800 Broadway (only 3 of the four wells yielded sufficient groundwater for analysis) and analyzed for TCL VOCs. Chlorinated solvents were detected at concentrations exceeding Class GA (potable fresh groundwater) standards in one monitoring well adjacent to the south side of 800 Broadway. One monitoring well was also sampled for VOCs and semi-volatile organic compounds (SVOCs) associated with petroleum compounds due to a petroleum spill at an up gradient Stewart's station that was "closed does not meet

standards". No VOCs or SVOCs typically associated with gasoline and/or diesel fuel were identified.

Soil vapor samples collected from the four monitoring wells in the area of 800 Broadway identified various chlorinated solvents typically associated with dry cleaning.

Sub-slab and indoor air samples were collected at 800 Broadway. Chlorinated solvents historically used in dry cleaning processes were detected at levels that would require mitigation under NYSDOH guidelines.

Based on the usage and the reports from Arcadis, there are no other suspected contaminants except those associated with dry cleaning materials. The results of the sampling and the prior uses suggest that the source of contamination was the chemicals used in the prior dry cleaning operation.

4.0 PROJECT DESCRIPTION

Applicant plans to redevelop the existing building on site as a retail liquor store. The first floor would be the public area and the basement used for storage. The applicant is also considering adding a second story to the building. This addition would either be used as a residential apartment or office space. The City of Rensselaer Planning Commission has issued site plan approval and the Zoning Board of Appeals has approved the needed parking variance for the project.

5.0 PROPOSED REMEDIAL PROCESS

The Applicant has applied for and been accepted into the New York Brownfield Cleanup Program as a Volunteer. This means that the Applicant was not responsible for the disposal or discharge of the on-site contaminants or whose ownership or operation of the site took place after the discharge or disposal of contaminants.

To achieve this goal, the Applicant will conduct remedial activities at the site with oversight provided by NYSDEC. The Brownfield Cleanup Agreement provides the responsibilities of each party in conducting a remedial program at the site. The Applicant will conduct a remedial investigation (RI) of the site, with NYSDEC oversight, and with the following goals:

1) Define/confirm the nature and extent of contamination in soil, groundwater and any other impacted media; by performing additional subsurface soil and groundwater sampling, and sub-slab, indoor and ambient air sampling to supplement the data collected to date.

2) Identify the source(s) of the contamination;

3) Assess the impact of the contamination on public health and/or the environment; and

4) Provide information to support the development of a Remedial Work Plan to address the contamination, potential impacts to interior air quality or to support a conclusion that the contamination does not need to be addressed.

The Applicant will prepare an RI Report after it completes the RI. This report will summarize the

results of the RI and will include the Applicants recommendation of whether remediation (cleanup) is needed to address site-related contamination or if institutional or engineering controls offer a reasonable alternative to remediation. The RI Report is subject to review and approval by NYSDEC. Before the RI Report is approved, a fact sheet that describes the RI Report will be sent to the sites contact list.

NYSDEC determines whether the site poses a significant threat to public health and/or the environment. If NYSDEC determines that the site is 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 community 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. For more information about the TAG Program and the availability of TAGs, go online at: www.dec.ny.gov/regulations/2590.html.

After NYSDEC approves the RI Report, the Applicant will develop a Remedial Work Plan. The Remedial Work Plan will describe how the Applicant would address the contamination related to the site.

The public would have the opportunity to review and comment on the remediation (cleanup) proposal. The site contact list would be sent a fact sheet that describes the Remedial Work Plan and announces a 45-day public comment period. NYSDEC would factor this input into its decision to approve, reject or modify the Remedial Work Plan.

Approval of the Remedial Work Plan by NYSDEC would allow the Applicant to design and construct the alternative selected to remediate (clean up) the site. The site contact list would receive notification before the start of site remediation. When the Applicant completes remedial activities, it will prepare a Final Engineering Report that certifies that remediation (cleanup) activities have been achieved or will be achieved within a specific time frame. NYSDEC will review the report to be certain that the remediation is protective of public health and the environment for the intended use for the site. The site contact list would receive a fact sheet that announces the completion of remedial activities and the review of the Final Engineering Report. NYSDEC would then issue the Applicant a Certificate of Completion. This Certificate states that remediation (cleanup) goals have been achieved, and relieve the Applicant from future remedial liability, subject to statutory conditions. If the Applicant uses institutional controls or engineering
controls to achieve remedial objectives, the site contact list would receive a fact sheet discussing such controls. An institutional control is a non-physical means of enforcing a restriction on the use of real property that limits human or environmental exposure, restricts the use of groundwater, provides notice to potential owners, operators, or members of the public, or prevents actions that would interfere with the effectiveness of a remedial program or with the effectiveness and/or integrity of site management at or pertaining to a brownfield site. An example of an institutional control is an environmental easement. An engineering control is a physical barrier or method employed to actively or passively contain, stabilize, or monitor contamination, restrict the movement of contamination to ensure the long-term effectiveness of a

remedial program, or eliminate potential exposure pathways to contamination. Examples include caps, vapor barriers and sub-slab depressurization/ventilation systems.

Site management will be conducted by the Applicant as required with appropriate NYSDEC oversight. Activities required to be conducted to inform and involve the public during the sites remedial process are introduced in Section 6 and identified in the chart in Appendix C.

6.0 CITIZEN PARTICIPATION ACTIVITIES

CP activities that have already occurred and are planned during the investigation and remediation of the site under the BCP are included in Appendix C: Summary of Citizen Participation Activities. NYSDEC will ensure that these CP activities are conducted, with appropriate assistance from the Applicant.

All CP activities seek to provide the public with significant information about site findings and planned remedial activities, and some activities announce comment periods and request public input about important draft documents such as the Proposed Remedial Work Plan.

The CP Plan for the site may be revised based on changes in the sites remedial program or major issues of public concern. All written materials developed for the public will be reviewed and approved by NYSDEC for clarity and accuracy before they are distributed.

7.0 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 sites remedial process. At this juncture the public has not identified any major concerns with the project. However, issues that can arise with these types of activities include:

- Dust
- Noise
- Health Risks
- Site Security
- Truck Traffic
- Traffic Disruptions

Mitigation of those concerns will be, in part, a responsibility of the contractor performing the work.

Dust: At this time little opportunity for development of dust is anticipated during site activities. Soil boring activities may develop minor dust if drilling through the sidewalk in the City ROW, but this will be minor and can be mitigated with the use of water to prevent dust development.

Noise: Soil boring activities may result in noise during installation of soil borings and monitoring wells. The noise will be similar to a typical piece of roadway repair equipment. All soil boring activities will take place during typical work day hours between 8:00 a.m. and 5:00 p.m.

Health Risks: No health risks are anticipated for bystanders and non-site personnel. If appropriate, site personnel will perform air monitoring, establish corrective actions and stop work action levels. The only potential health risk anticipated at this time is possible exposure to chlorinated VOC vapors.

Site Security: Temporary barriers, cones and/or flagging will be used during any exterior related activities to prevent access to soil boring areas by unauthorized personnel. The building will be locked at all times to prevent unauthorized access.

Traffic: Vehicles associated with the project may use on street parking. Soil boring and sampling equipment may block the adjacent sidewalk at times during site activities. Sidewalks on the opposite side of the road will offer alternatives for persons needing to pass through.

APPENDIX A – PROJECT CONTACTS AND DOCUMENTS REPOSITORY

NYSDEC Project Manager

James Quinn
New York State Department of Environmental Conservation
Division of Environmental Remediation
1130 North Westcott Rd
Schenectady, NY I 2306
Phone: (518) 357-2273
Email: James.Quinn@dec.ny.gov

NYSDOH Project Manager

Scarlett McLaughlin
Public Health Specialist
New York State Department of Health
Bureau of Environmental Exposure Investigation
Empire State Plaza – Corning Tower Room 1787
Albany, NY I 2237
Phone: (518) 402-7860
Email: BEEI@health.ny.gov

Document Repository

Planning and Development Agency
City of Rensselaer
City Hall
62 Washington Street
Rensselaer, NY 12144

APPENDIX B – BROWNFIELD SITE CONTACTS LIST

1. Chief Executive Officer and Planning Board Chair of County and City in which site is located.

   a. City of Rensselaer

      President
      Rensselaer City Common Council
      Rensselaer City Hall
      62 Washington Street
      Rensselaer, N.Y. 12144-2696

      Daniel Dwyer, Mayor
      City of Rensselaer
      City Hall
      62 Washington Street
      Rensselaer, N.Y. 12144-2696

      City of Rensselaer Planning Commission Chair
      Christine VanVorst
      City Hall
      62 Washington Street
      Rensselaer, NY 12144

      Charles Moore, AICP
      Director, Rensselaer Planning and Development Agency
      City Hall, 62 Washington Street
      Rensselaer, NY 12144
      Charles.moore@rensselaerny.gov

   b. Rensselaer County

      Rensselaer County Executive
      Kathleen M. Jamino
      Rensselaer County Office Building
      Troy, N.Y. 12180

      Rensselaer county Economic Development and Planning Department
      Linda von der Heide, Principal Planner
      1600 7th Avenue
      Troy, NY 12180
      lvonderheide@rensco.com

Chair
Rensselaer County Legislature
Ned Pattison Gov. Ctr.
1600 7th Ave., Third Floor
Troy, NY 12180

Executive Director
Rensselaer Co. EMC
Ned Pattison Gov. Ctr.
1600 7th Ave., Third Floor
Troy, NY 12180

Director
Rensselaer County Health Department
Health Bldg – 1600 7th Avenue
Troy, NY 12180

2. Residents, Owners and Occupants of the Site and Properties Adjacent to the Site (See Map at end of this Appendix.

   a. 143.44-1-2
   New York Central Lines LLC
   500 Water St (J-9I0)
   Jacksonville FL 32202

   b. 143.52-3-17.2 12
   Noonan, Stephanie & Mustari, Jr Anthony
   12 Fairway Ct
   Albany NY 12268

   c. 143.523-17.1
   City of Rensselaer
   62 Washington St
   Rensselaer NY 12144

   d. 143.52-41.1
   National Railroad & Passenger Corp
   4th Floor South Tower
   Philadelphia PA 19104

   e. 143.52-4-1.2
   Stewarts Shops Corp
   Saratoga Springs NY 2286-0435

f. 143.52-3-16
Atwater, Lee & Atwater, Ann
3 Partition St
Rensselaer NY 12144-2233

g. 143.52-3-14
Atwater, Lee R & Atwater, Ann E
3 Partition St
Rensselaer NY 12144-2133

h. 143.44-1-1.1
Amtrak
30th &Market St
Philadelphia PA 19104

i. 143.52-3-18
Tim Bayly Development, LLC
360 West 34th St., Apt. 11C
New York NY 10001

j. 143.52-3-19
810 Broadway LLC
810 Broadway
Rensselaer NY 12144

k. 143.52-3-12
Dayter, Dawn M
817 First St
Rensselaer NY 12144-2122

l. 143.52-3-20
Opalka, Chester & Karen A & City of Rensselaer
62 Washington St
Rensselaer NY 12144

m. 143.52-3-21
City of Rensselaer
62 Washington St
Rensselaer NY 12144

n. 143.52-3-22
American Legion & Gerald O'Neil Post 1683
836 Broadway
Rensselaer NY 12144

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

   a. Troy Record
      501 Broadway
      Troy, NY 12180

   b. Times Union
      Box 15000
      News Plaza
      Albany NY 12212.

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

   Dominick Tagliento, Commissioner
   City of Rensselaer Water Department
   City Hall,
   62 Washington Street
   Rensselaer, N.Y. 12144

   City of Troy
   Department of Public Utilities
   25 Water Plant Road
   Troy, New York 12182
   Phone: (518) 237-0438
   Fax: (518) 233-7038

5. Any person who has requested to be placed on the contact list.

   None known.

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

   Sally Ann Shields
   Superintendent of Schools
   Rensselaer City School District
   25 Van Rensselaer Drive
   Rensselaer, NY 12144

   Administrator
   Doane Stuart School
   199 Washington Avenue
   Rensselaer, NY 12144

The City Planning Department was consulted regarding day care facilities. The Department is not aware of any such facilities in the vicinity of the project.

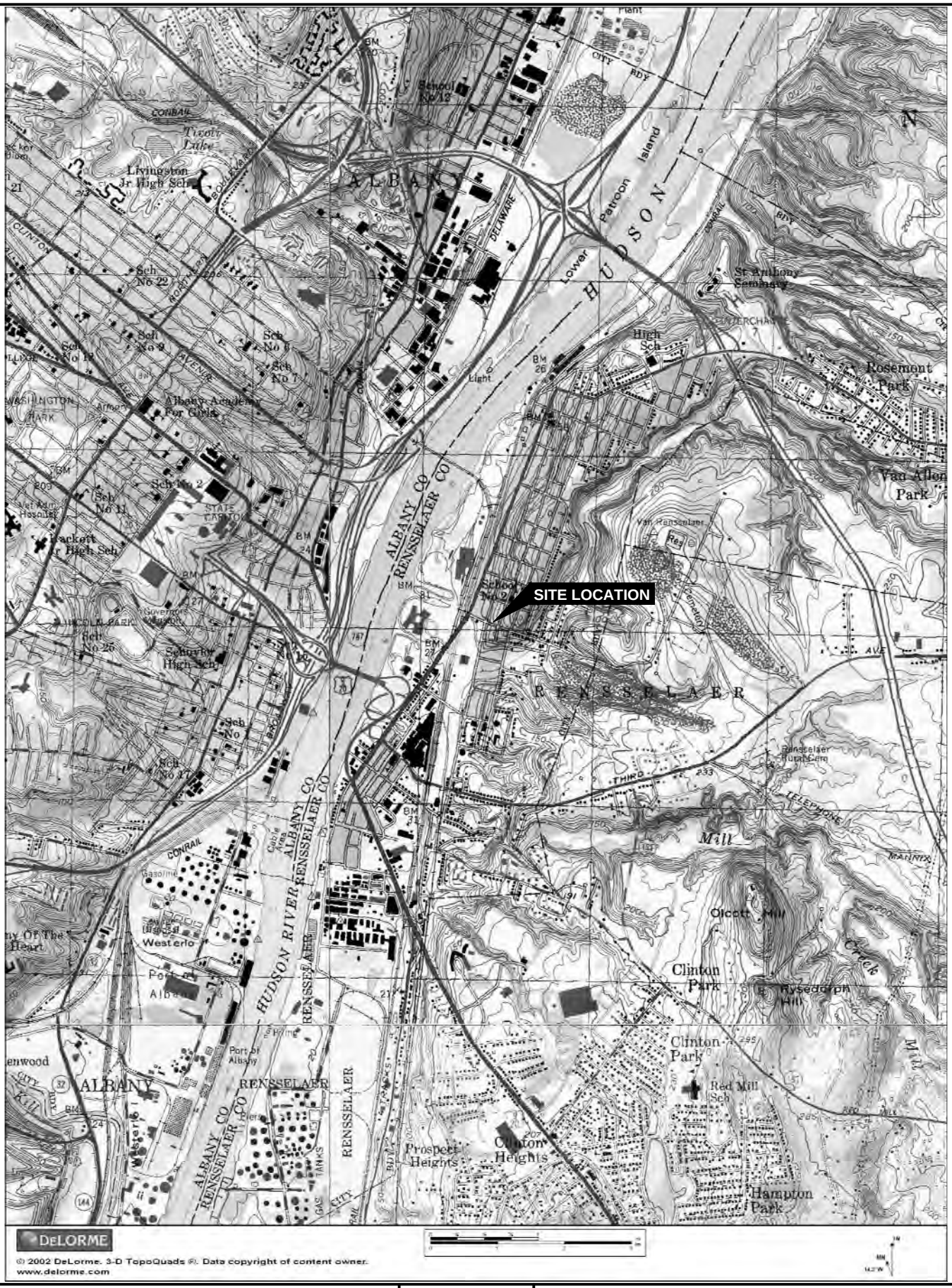
7. The location of a document repository for the project.

City of Rensselaer
Planning and Development Agency
City Hall
62 Washington Street
Rensselaer, NY 12144

APPENDIX C - IDENTIFICATION OF CITIZEN PARTICIPATION ACTIVITIES

Required Citizen Participation Activity	CP activity(s) occur at this point	Status/Completed or Estimated Time Frame
Application Process: • Prepare brownfield site contact list (BSCL) • Establish document repositories • Publish notice in Environmental Notice Bulletin (ENB) announcing receipt of application and 30-day comment period • Publish above ENB content in local newspaper • Mail above ENB content to BSCL	At time of preparation of application to participate in BCP When NYSDEC determines that BCP application is complete. The 30-day comment period begins on date of publication of notice in ENB. End date of comment period is as stated in ENB notice. Therefore, ENB notice, newspaper notice and notice to the BSCL should be provided to the public at the same time.	BCP Application Feb.28, 2014 Completed Completed April 15, 2014 April 24, 2014
After Execution of Brownfield Site Cleanup Agreement: • Prepare citizen participation (CP) plan	Draft CP Plan must be submitted within 20 days of entering Brownfield Site Cleanup Agreement. CP Plan must be approved by NYSDEC before distribution	Draft CP Plan submitted on July 25, 2014.
After Remedial Investigation (RI) Work Plan Received: • Mail fact sheet to BSCL about proposed RI activities and announcing 30-day public comment period on draft RI Work Plan	Before NYSDEC approves RI Work Plan. If RI Work Plan is submitted with application, comment periods will be combined and public notice will include fact sheet. 30-day comment period begins/ends as per dates identified in fact sheet.	
After RI Completion: • C Mail fact sheet to BSCL describing results of RI	Before NYSDEC approves RI Report	
After Remedial Work Plan (RWP) Received: • C Mail fact sheet to BSCL about proposed RWP and announcing 45-day comment period • Public meeting by NYSDEC about proposed RWP (if requested by public)	Before NYSDEC approves RWP. 45-day comment period begins/ends as per dates identified in fact sheet. Public meeting would be held within the 45-day comment period.	
After Approval of RWP: • Mail fact sheet to BSCL summarizing upcoming remedial construction	Before the start of remedial construction	
After Remedial Action Completed: • C Mail fact sheet to BSCL announcing that remedial construction has been completed • C Mail fact sheet to BSCL announcing issuance of Certificate of Completion (COC)	At the time NYSDEC approves Final Engineering Report. These two fact sheets should be combined when possible if there is not a delay in issuance of COC.	

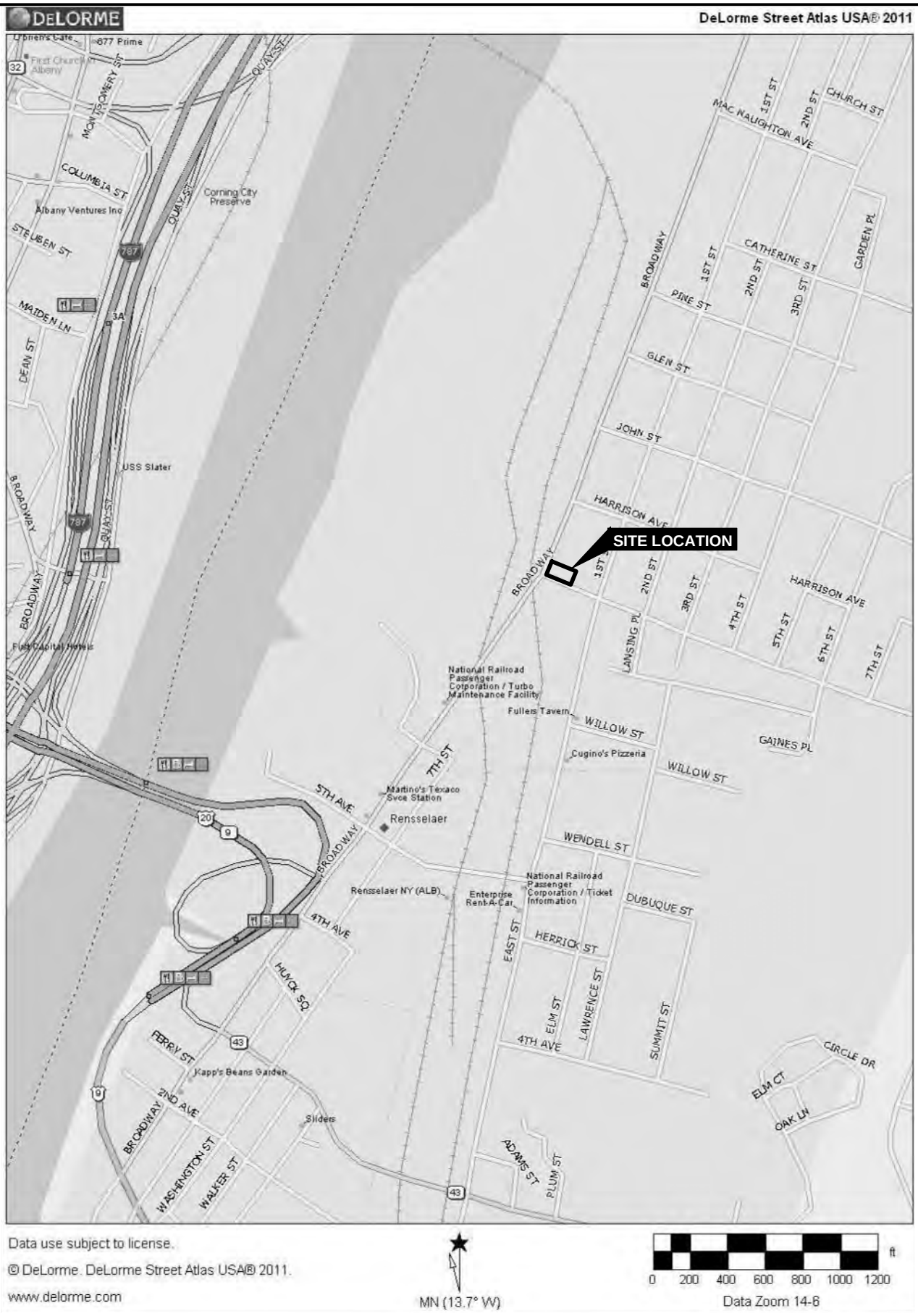
APPENDIX D – SITE MAPS



SITE LOCATION MAP
800 BROADWAY
RENNSELAER, NEW YORK

FIG-1

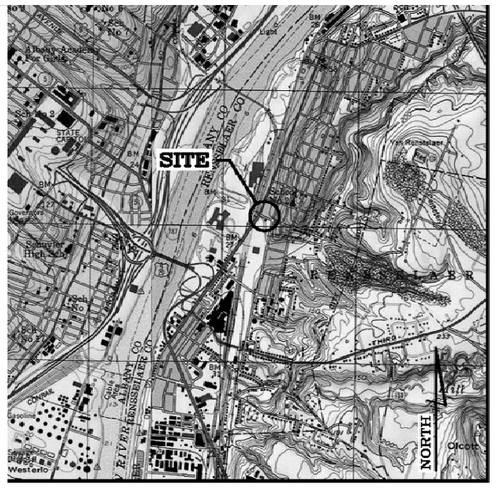
HANSON VANVLEET, LLC
WATER SUPPLY & ENVIRONMENTAL CONSULTANTS
902 ROUTE 146 CLIFTON PARK, NEW YORK 12065 (518) 371-7940 FAX (518) 371-5885



SITE LOCATION MAP
800 BROADWAY
RENNSELAER, NEW YORK

FIG-2

HANSON VANVLEET, LLC
WATER SUPPLY & ENVIRONMENTAL CONSULTANTS
902 ROUTE 146 CLIFTON PARK, NEW YORK 12065 (518) 371-7940 FAX (518) 371-5885



SITE LOCATION MAP
SCALE: 1" = 2,000'

MAP REFERENCES:

1) RENSSELAER COUNTY REAL PROPERTY TAX MAP
CITY OF RENSSELAER
SECTION: 143.52
BLOCK: 3
LOT No.: 18

MAP ENTITLED: "RENSSELAER STREET LOTS"
FILED: RENSSELAER COUNTY CLERK'S OFFICE
DATE: OCTOBER 27, 1814
RECORDED: JUNE 14, 1832
PREPARED BY: EVERT Van ALLEN
DRAWER 38, MAP No. 23

MAP ENTITLED: "MAP OF PROPERTY OF EAST ALBANY IN GREENBUSH"
FILED: RENSSELAER COUNTY CLERK'S OFFICE
RECORDED: JUNE 22, 1857
DRAWER 25, MAP No. 21

DEED REFERENCE:

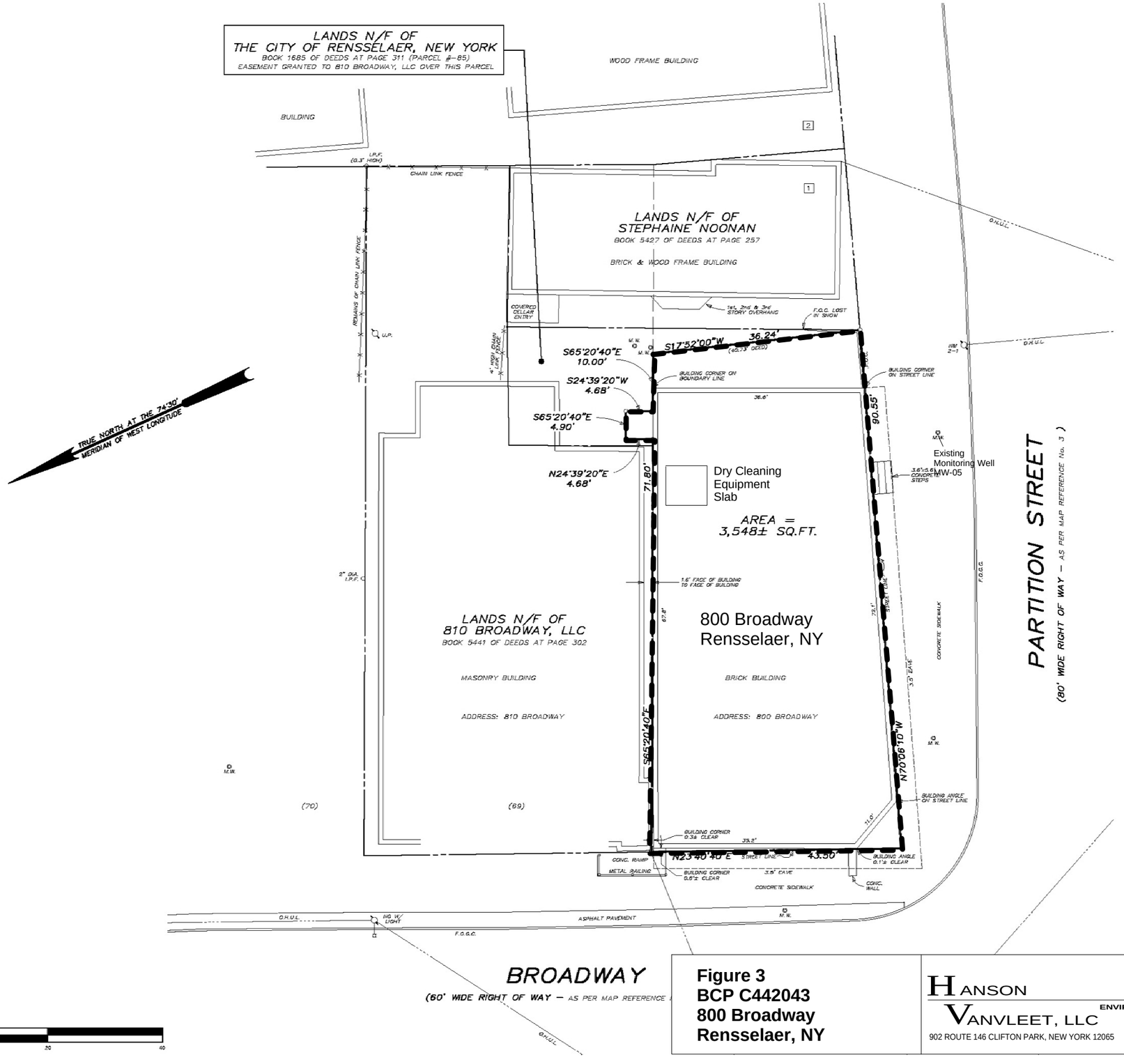
1) **RECORD TITLE** WARRANTY DEED
GRANTOR: TRACY SIEDHOFF
GRANTEE: TIM BAYLY DEVELOPMENT LLC
DATED: APRIL 29, 2013
RECORDED: JUNE 12, 2013
BOOK 6811 OF DEEDS AT PAGE 217

NOTES:

1) BOUNDARY SURVEY AS PREPARED FOR TIM BAYLY DEVELOPMENT LLC.
2) NO FIELD MONUMENTATION SET.
3) ALL UNDERGROUND UTILITIES, IF ANY, NOT FIELD LOCATED.
4) THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN UP-TO-DATE ABSTRACT OF TITLE AND IS MADE SUBJECT TO WHATEVER STATE OF FACTS SUCH A DOCUMENTS WOULD REVEAL.
5) THIS SURVEY WAS PREPARED WITH APPROXIMATELY 15 INCHES OF SNOW & ICE COVER.

LEGEND:

CONC. DENOTES CONCRETE
DIA. DENOTES DIAMETER
F.O.C. DENOTES FACE OF CURB
F.O.G.C. DENOTES FACE OF GRANITE CURB
I.P.F. DENOTES IRON PIPE FOUND
M.W. DENOTES MONITORING WELL
N/F DENOTES NOW OR FORMERLY
NG DENOTES NIAGARA MOHAWK UTILITY POLE
O.H.U.L. DENOTES OVERHEAD UTILITY LINES
O.T.S.L. DENOTES OVERHEAD TRAFFIC SIGNAL LIGHTS
(69) DENOTES LOT NUMBER AS PER MAP REFERENCE No. 2
[2] DENOTES LOT NUMBER AS PER MAP REFERENCE No. 3



GRAPHIC SCALE
10 0 10 20 40

Figure 3
BCP C442043
800 Broadway
Rensselaer, NY

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