SUB SLAB VAPOR & INDOOR AIR INVESTIGATION WORK PLAN
COOPERVISION, INC.
SCOTTSVILLE, NEW YORK
(VCA SITE #V00175-8)

by

Haley & Aldrich of New York
Rochester, New York

For

New York State Department of Environmental Conservation,
Region 8
Avon, New York

File No. 70665-014
February 2009

Haley & Aldrich of New York
200 Town Centre Drive
Suite 2
Rochester, NY 14623-4264

Tel: 585.359.9000
Fax: 585.359.4650
HaleyAldrich.com

4 February 2009
File No. 70665-014

New York State Department of Environmental Conservation
Region 8
Division of Environmental Remediation
6274 East Avon-Lima Road
Avon, New York 14414-9519

Attention: Mr. Frank Sowers, P.E.

Subject: Indoor Air Investigation Work Plan
CooperVision, Inc.
Scottsville, New York
(VCA Site #V00175-8)

Ladies and Gentlemen:

As requested by the New York State Department of Environmental Conservation (NYSDEC), Haley & Aldrich is submitting this Indoor Air Investigation Work Plan on behalf of CooperVision, Inc. for the CooperVision, Inc. Facility in Scottsville, New York soil vapor sampling effort. This work is being conducted under a Voluntary Cleanup Agreement (VCA) between CooperVision, Inc, and the (NYSDEC), which was executed by NYSDEC in May 2001 for the above referenced site ("the Site").

This Work Plan contains the following:

- A brief site description and recent project history that relates to the work plan activities,
- Details of sub-slab and indoor air sampling.
- Plan for reporting of the data related to the described activities.

Sincerely yours,
HALEY & ALDRICH OF NEW YORK

Susan L Boyle
Senior Engineer

Vincent B. Dick
Vice President

Enclosures

cc: Julia M. Guastella; New York State Department of Health
Carol R. Kaufman; The Cooper Companies, Inc..
Dennis Snyder; CooperVision, Inc.
Christopher H. Marraro, Howrey LLP

C:\Documents and Settings\gmc\Local Settings\Temporary Internet Files\OLK88\2009_0129_Work Plan_SVI Investigation_Final2.doc

New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 8
6274 East Avon-Lima Road, Avon, New York 14414-9519
Phone: (585) 226-2466 • **FAX:** (585) 226-8696
Website: www.dec.ny.gov

Alexander B. Grannis
Commissioner

February 5, 2009

Mr. Christopher H. Marraro, Esq.
Howrey, LLP
1299 Pennsylvania Avenue, NW
Washington, DC 20004-2402

Dear Mr. Marraro:

Re: CooperVision Site #V00175-8
Sub Slab Vapor & Indoor Air Investigation Work Plan; February 2009
Village of Scottsville, Monroe County

The New York State Department of Environmental Conservation has completed its review of the Sub Slab Vapor & Indoor Air Investigation Work Plan (the Work Plan) dated February 2009 prepared by Haley & Aldrich of New York for the CooperVision facility located in the Village of Scottsville, Monroe County. Based upon the information and representations given in the Work Plan, the Work Plan is hereby approved with the following modification: for vinyl chloride, the minimum reporting limit will be 0.25 micrograms per cubic meter for the indoor air and outdoor air samples. The minimum reporting limit for all other compounds, including the sub-slab vapor sample for vinyl chloride, will be 1 microgram per cubic meter.

Please contact me at (585) 226-5357 when the schedule for each sampling event is confirmed.

Sincerely,

Frank Sowers

Frank Sowers, P.E.
Environmental Engineer 2

cc:
Vince Dick (Haley & Aldrich)
Claire DeBergalis (Haley & Aldrich)
Tarun Patel (CooperVision)
Susan Boyle (Haley & Aldrich)
file

ec:
Bart Putzig
Jim Charles
Julia Kenney
Jeff Kosmala

TABLE OF CONTENTS

LIST OF FIGURES

1. INTRODUCTION

This Work Plan provides the scope of activities and sampling locations for an indoor air investigation to be conducted at residential properties located along Briarwood Lane and Nathanial Drive in Scottsville, New York.

1.1 Project Setting Description

The CooperVision facility is located at 711 North Road in Scottsville, New York on an approximately 5.4 acre parcel of land (See Figures 1 and 2). The property includes an original building with additions having a total area of approximately 50,000 sq. ft. Soil and groundwater on some portions of the property have been found to have volatile organic compounds (VOCs), primarily 1,1,1-trichloroethane (TCA). CooperVision, Inc. applied to the NYSDEC and was accepted for participation in New York State's Voluntary Cleanup (VC) Program for the CooperVision facility.

Remedial activities completed under the VC Program at the CooperVision Site to-date, which included enhanced bio-remediation using Hydrogen Release Compound (HRC) and the installation of a sub-slab depressurization system, are described in a Preliminary Report on Remediation Activities dated 10 April 2002 and the Draft Final Engineering Report (FER) dated 7 May 2007.

1.2 Recent Activities

To facilitate closeout of the VC Program two reports (Draft FER and Operations Maintenance and Monitoring (OM&M) Plan) were submitted to the NYSDEC for review in June 2007. After review of these documents and associated site conditions, the NYSDEC and NYSDOH expressed concerns regarding the potential for offsite migration of contaminated groundwater and vapor as a result of contaminant concentrations detected in 2006 at monitoring well MW-204 which is located on the easternmost edge of the Site.

Groundwater monitoring has occurred at the Site since 1997. In October 2006, concentrations of chlorinated compounds in MW-204, the easternmost downgradient well located along the eastern property boundary (see Figure 2), 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), and 1,1,1-trichloroethane (TCA) were detected at levels higher than what has historically been detected in this well. Since the 2006 sampling and results, the chlorinated compound detections have decreased to low concentrations; consistent with what otherwise historically had been detected in this well.

Even though the chlorinated compound detections have decreased, the NYSDEC and NYSDOH requested that a program be planned and conducted for the offsite sampling of soil vapor concentrations.

With this request of the NYSDEC, a soil vapor investigation work plan was submitted by CooperVision (dated 27 March 2008) to investigate for the potential presence of soil vapor at the easternmost property boundary and in the public right-of-way along the east side of Briarwood Lane.

The program was implemented between March and October 2008 in several phases with an overall summary report submitted to the NYSDEC on 28 October 2008. The program showed the presence of soil vapor at certain onsite and right-of-way locations along Briarwood Lane. Evaluation of the data indicated that the most likely migration pathway

of the vapor contaminants appeared to be via utility lines, particularly a gas utility that crosses Briarwood Lane at the approximate locations of the soil vapor points with the highest concentrations. To mitigate this potential migration pathway, several soil-bentonite-concrete (SBC) collars were installed in September 2008 around the utility lines and bedding consistent with a NYSDEC approved work plan (dated August 2008).

Additional soil vapor data collected in October 2008 indicated reductions in the concentrations of onsite and right-of-way points, potentially due to the action of the bentonite collars inhibiting the migration of the compounds along the utility preferential pathway. However, NYSDEC and NYSDOH still requested that additional sampling be performed on the properties to the east of Briarwood Lane.

Ten soil vapor points were installed at five separate locations (shallow and deep sample points) as shown on Figure 2, attached, during the week of 22 December. Samples were obtained from seven of the ten points (3 were not sampled due to the presence of shallow groundwater in the sample points).

The analytical results from these new points ranged from non-detect to 27 ug/cubic meter, Figure 2. While these values are very low, NYSDEC and NYSDOH requested that CooperVision continue with the plan to obtain samples within some of the nearby residential units.

1.3 Work Plan Objectives

The objectives of this Indoor Air Investigation work plan are listed below:

- Present a plan for investigation of sub-slab vapor and indoor air in certain adjacent residential units to the east of the CooperVision facility near where detections of soil vapor were found on the property;
- Collect residential unit sub-slab and indoor air data to determine if monitoring or mitigation is required; and.
- Report results of the completed investigation activities.

2. SAMPLING WORK SCOPE

Sub-slab, indoor air, and ambient air sampling will be conducted in accordance with the *October 2006 New York State Department of Health (NYSDOH) Guidance for Evaluation Soil Vapor Intrusion in the State of New York* (NYSDOH Guidance). The investigation will target the residential buildings closest to Briarwood Lane as shown on Figure 3. The sample locations identified on Figure 3 were selected based on the following criteria: location compared with detected compounds in the last round of monitoring, the configuration of the buildings, and the feedback from the two property owners to date relative to sample locations that conform with their operation and maintenance of the property and that minimize disruption to tenants.

2.1 Access Agreements

An access agreement has been signed with Pathstone Properties (the southern off-site property). An access agreement must still be negotiated with North Road Townhomes LLC (the northern off-site property).

2.2 Pre-Sampling Survey

A building inspection and household product inventory will be performed prior to sampling activities, in accordance with the NYSDOH Guidance to minimize conditions that may interfere with the proposed testing. The information from the inventory will be documented on a building inventory form (Appendix A). A photoionization detector (PID) that detects VOCs to the ppb level will also be used during the survey. Prior to sampling, potential interference from products or activities that could release volatile chemicals to the indoor air from residence contents or practices will be controlled by securing them in an air tight container during the sampling event to the extent practicable.

A summary of the elements of the pre-sampling survey is described in the sections below.

2.2.1 Building Inspection

A building inspection will be completed in each of the building locations being sampled as part of this investigation. The inspection will be documented on a building inventory form and would generally include the following elements:

- An inspection of the structure type, floor layout, air flows and physical building conditions, including whether or not the buildings have basements or are slab-on-grade.
- An evaluation of the type of heating, ventilation and cooling (HVAC) systems and/or other mechanical equipment that can affect indoor air pressure gradients
- An evaluation of construction characteristics, including foundation cracks and utility penetrations or other potential preferential vapor pathways.
- An evaluation of recent renovations or maintenance that may have resulted in the release of organic vapors (i.e. – fresh paint, carpet, etc.).
- An evaluation of recent use of petroleum products, petroleum-based finishes or products containing volatile chemicals.

Additional guidance for performing the building inspection and preparing the site for sampling can be found in Section 2.11.1 of the NYSDOH Guidance.

2.2.2 Product Inventory

In conjunction with the building inspection, a product inventory will be completed in each unit being sampled to identify potential vapor sources that will interfere with the indoor air sampling results.

An inventory of chemicals and possible vapor sources will be completed for all floors of the buildings being sampled and documented on a building inventory form, targeting those chemicals that have compounds in common with the site contaminants of concern (TCA, and breakdown products). If products are found within sampling areas, i.e. basement locations, the products will be removed from sampling area and contained within an air tight container for the duration of the sampling event. The information collected during the Product Inventory will be documented on a Product Inventory form (Appendix A).

Additional guidance for performing the building inspection and preparing the site for sampling can be found in Sections 2.7.2 and 2.11.1, of the NYSDOH Guidance.

2.3 Sub-Slab Residential Soil Vapor Sampling

2.3.1 Point Installation

A temporary soil vapor probe will be installed beneath the basement slab (or first floor slab if no basement is present), within the structures noted on Figure 2. If a basement is not present in the structure, and sub-slab sampling cannot be performed without causing significant disturbance (e.g. damaging carpet, or wood or ceramic floors) to the residence, or the property owner or occupant refuses to allow sub-slab sampling, a temporary soil vapor probe will not be installed beneath the slab and an alternate nearby building interior location will be sought, within reason.

The location of the sub-slab sampling points have been determined based upon residence construction, foundation type, and information concerning utilities as determined by pre-sampling visits to the property to date and discussions with property owners . The depth of the probe will be installed approximately 2 inches below the base of the slab. The probe will be constructed of inert tubing of appropriate size (1/8 to ¼ inch in diameter. The sampling point will be sealed with hydrated bentonite or cement grout to prevent the infiltration of indoor air during sampling.

2.3.2 Sub-Slab Sampling

In accordance with the NYSDOH Guidance, the sub-slab vapor probes will be briefly evacuated to purge any stagnant vapors within the probe (the purge volume will approximately three probe volumes). During the purging process, Helium tracer gas will be released around the probe at the ground surface, and vapor samples will be collected from the installed probe and analyzed for helium to assess potential short-circuiting and ensure that the surface seal is intact. Purging will occur at a rate of less than 0.2 L/min in accordance with NYSDOH Guidance.

The samples will be collected immediately after purging. The soil vapor samples will be collected in dedicated, laboratory-supplied "batch certified clean" stainless steel SUMMA® canisters with average target fill-time of approximately 24-hours per canister.

Prior to sending the samples to the laboratory, field staff will confirm that a negative pressure remains in each canister. Initial and final vacuum readings will be documented and included in a final summary report. The SUMMA® canisters final vacuum conditions will be recorded on the Chain of Custody (COC) before shipping to the analytical laboratory and upon arrival at the laboratory to verify sample integrity.
The sub-slab vapor samples will be shipped at ambient temperature under the COC to the ELAP certified environmental laboratory for 5 day turnaround analysis of target volatile organic compounds (VOC) using EPA Method TO-15. The target compound list will consist of TCA, 1,1-DCA, 1,1-DCE, Chloroethane, and Vinyl Chloride. The laboratory results will be reported in units of micrograms per cubic meter (ug/M^3).

2.4 Residential Indoor Air Sampling

A handheld PID (ppb) will be used to perform an indoor ambient air screening prior to the initiation of the indoor air sampling event. The PID will be used to identify potential sources of VOC within the residence and assist in the placing of the SUMMA® canister. Additionally, as described in Section 2.2 above, prior to the initiation of indoor air sampling activities, a building inventory will be completed to identify potential VOC sources from interior materials (e.g., residential construction materials, household products) that may affect the sample analysis. If a chemical known to contain site-

specific compounds is identified in the residence (e.g. products containing TCA or other target compounds), that product will be placed in containment for the duration of the testing and then replaced afterward.

Although there will be no control over activities conducted in the residences throughout the sampling duration, a reasonable attempt will be made to select a sampling location away from VOC sources inside the structure and avoiding resident activities, to mitigate analytical interference to the extent feasible.

In accordance with the NYSDOH Guidance, an indoor air sample will be collected at each residential unit that undergoes sub-slab sampling . Indoor air sampling will be performed concurrently with sub-slab soil vapor sampling in the basement level of the residential structure. If no basement is present in the residential structure, air sampling will be performed on the main living level (1st floor) of the structure. The SUMMA® canister used to collect the indoor air sample will be placed on a table, bench or similar structure, roughly 3 to 5 feet above floor level, to approximate the breathing zone of residents. If sump is present in sampling area, or basement, indoor ambient canisters will be placed within approximate vicinity of sump in the breathing zone, roughly 3 to 5 feet above floor level.

As with the sub-slab vapor samples, the indoor air samples will be collected using batch certified 6-Liter SUMMA® canisters equipped with an integrated flow controller over a 24-hour period.

Prior to sending the samples to the laboratory, field staff will confirm that a negative pressure remains in each canister. Initial and final vacuum readings will be documented and included in a final summary report. The indoor air samples will be shipped at ambient temperature under the COC to an ELAP certified environmental laboratory for analysis of target volatile organic compounds (VOC) using EPA Method TO-15 requesting 5 day turnaround. The target compound list will consist of TCA, 1,1-DCA, 1,1-DCE, Chloroethane, and Vinyl Chloride. The laboratory results will be reported in units of micrograms per cubic meter.

2.5 Outdoor Ambient Air Sampling

In accordance with the NYSDOH Guidance, at least one outdoor ambient air sample will be collected concurrently with the sub-slab and indoor air sampling event. Outdoor ambient air samples will be collected upwind of the residential area, based on prevailing wind directions, using batch certified 6-Liter SUMMA® canisters equipped with an integrated flow controller over a 24-hour period

Prior to sending the samples to the laboratory, field staff will confirm that a negative pressure remains in each canister. Initial and final vacuum readings will be documented and included in a final summary report. The ambient air samples will be shipped at ambient temperature under the COC to the ELAP certified environmental laboratory for analysis of target volatile organic compounds (VOC) using EPA Method TO-1 requesting 5 day turnaround. The target compound list will consist of TCA, 1,1-DCA, 1,1-DCE, Chloroethane, and Vinyl Chloride. The laboratory results will be reported in units of micrograms per cubic meter.

2.6 Health & Safety

Previous soil vapor sampling work has been conducted under a Health and Safety plan (HASP) which covers procedures for performing the sampling. That plan has been updated to also cover conduct of the work described herein and is included in Appendix B.

2.7 Waste Management

It is not anticipated that contaminated soil and/or groundwater will be generated as a result of sampling point installation or sampling. All personal protective equipment, such as disposable gloves, will be collected, contained and disposed of as uncontaminated solid waste in approved disposal containers.

3. SUB-SLAB VAPOR AND INDOOR AIR SAMPLE SCREENING & ANALYSIS

After the data are generated by the analytical laboratory, they will be evaluated to make decisions regarding the need for further assessment. This evaluation will include the following:

- Comparison of sub-slab vapor and indoor air data with ambient outdoor concentrations;
- Comparison of indoor air data with sub-slab vapor data;
- Comparison of the indoor air and sub-slab vapor data with the previously collected soil vapor data;
- Comparison of sub-slab and indoor air data with screening criteria matrices presented in NYSDOH Guidance.
- Comparison of indoor air data with risk-based indoor air criteria, if applicable.

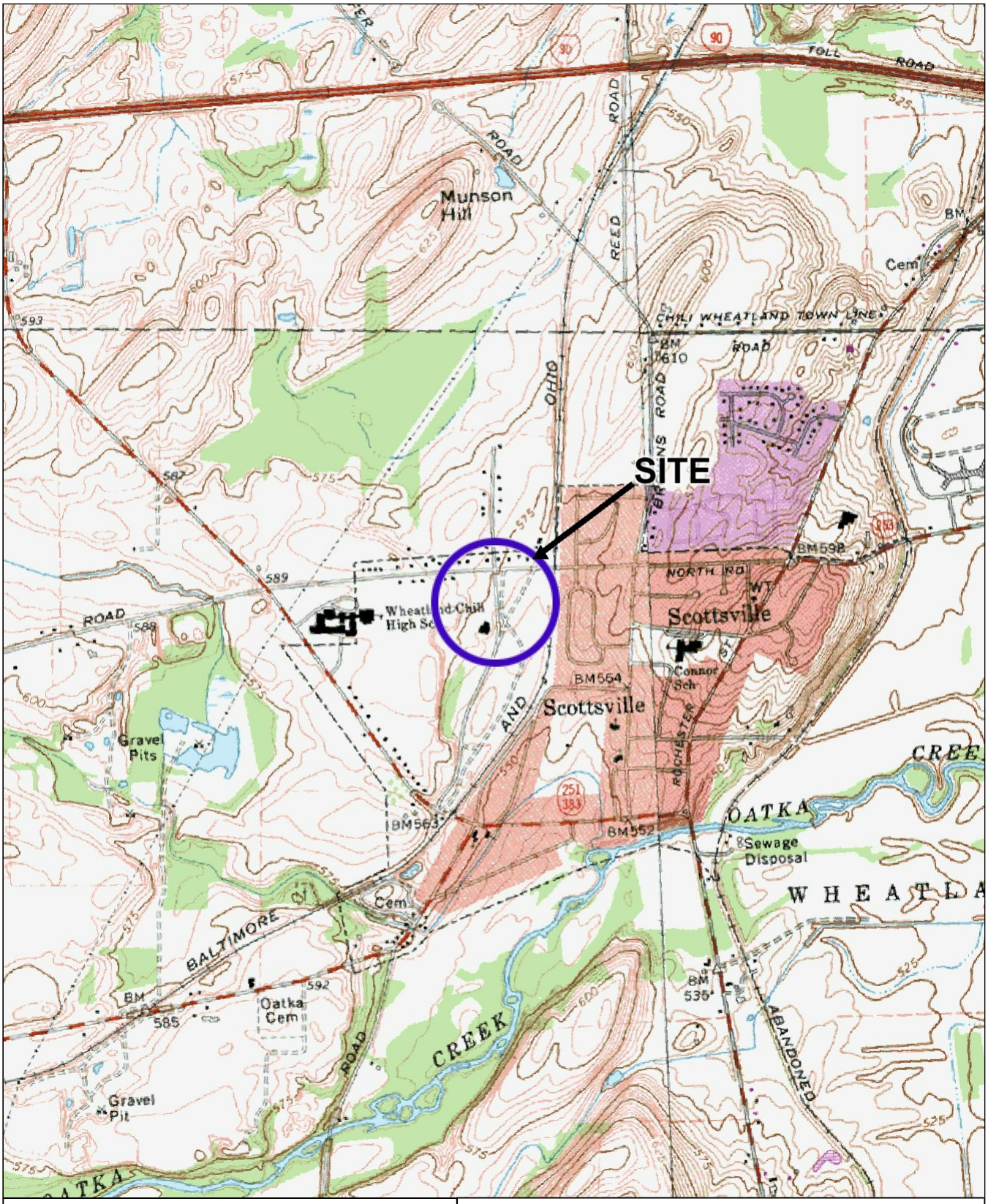
Based on this evaluation, one or more of the following next steps may be considered:

1. No Further Action;
2. Confirmation sub-slab vapor and indoor air sampling;.
3. Further monitoring of conditions; or
4. Installation of mitigative steps.

The preliminary (non-validated) results of the sampling activities will be reported to the NYSDEC and NYSDOH during the week of 23 February. Validated results will be provided the week of 9 March after the full laboratory package is received.

Schedule & Reporting

To the extent possible, these additional investigations will be conducted as a single event during several days in the week of 9 February 2009; however, the actual schedule of field activities will be dependent upon the timeframe in which permission to access the residential structures is obtained. Note that permission to sample one vacant unit on the southern property was allowed only until 1 February when that unit will become occupied; therefore that sampling proceeded on that schedule apart from the remaining sampling. Only those residential structures for which written permission to sample has been granted by the property owner will be sampled during this phase of the investigation.



SITE COORDINATES:43°1'45"N 77°45'25"W

N
W
E
S

U.S.G.S. QUADRANGLE: CLIFTON, NY

HALEY & ALDRICH

COOPERVISION, INC. AND ADJACENT RESIDENTIAL BUILDINGS
SCOTTSVILLE, NEW YORK

PROJECT LOCUS

SCALE: 1:24,000
DECEMBER 2008

FIGURE 1

70665-014 1.PDF

G:\PROJECTS\70665\014 - VCA CLOSEOUT - 2008-09\70665-014-SITEPLAN-SV LOCATIONS AND DATA5.DWG

FAIRVIEW

BRIARWOOD LANE

CL

DITCH

#705-1

BUILDING

BUILDING

SV-101S/
SV-101D

B1

SV-103S/
SV-103D

PARKING LOT

PARKING LOT

NORTHERN PROPERTY BUILDING SAMPLE LOCATIONS HAVE BEEN OWNER OR FIELD VERIFIED. SEE NOTE 4

DITCH SAMPLE NO. 1

SV-102S/
SV-102D

#709-2

BUILDING

BUILDING

SV-6D
EL. 567.00

SV-6S
EL. 567.05

SV-104S/
SV-104D

SV-105S/
SV-105D

SV-7S
EL. 566.03

SV-7D
EL. 565.99

#2

BUILDING

#8

#10

BUILDING

#16

BUILDING

SV-106S/
SV-106D

NATHANIEL DR

SOUTHERN PROPERTY BUILDING SAMPLE LOCATIONS HAVE BEEN OWNER OR FIELD VERIFIED. SEE NOTE 4

SV-8D
EL. 564.87

SV-8S
EL. 564.87

DITCH SAMPLE NO. 2
(SEDIMENT & WATER SAMPLES)

#64

#60

BUILDING

BUILDING

SV-107S/
SV-107D

BUILDING

N

W

E

S

0 50 100

SCALE IN FEET

LEGEND

- SV-1 LOCATION OF SOIL VAPOR POINTS INSTALLED APR 2008
- SV-1 LOCATION OF SOIL VAPOR POINTS INSTALLED DEC 2008
- LOCATION OF KNOWN NATURAL GAS PIPELINE UTILITIES
- LOCATION OF KNOWN WATER UTILITIES
- LOCATION OF SANITARY SEWER EASEMENT
- LOCATION OF STORM SEWER EASEMENT
- PROPERTY BOUNDARY
- PROPOSED BASEMENT SUBSLAB SAMPLE LOCATION
- PROPOSED FLOOR SUBSLAB SAMPLE LOCATION (NO BASEMENT PRESENT)

NOTES:

1. ALL LOCATIONS ARE APPROXIMATE AND NOT TO SCALE.
2. GAS PIPELINE LOCATIONS BASED ON RECORDS PROVIDED BY RG&E AND ATLANTIC SURVEYING & MAPPING.
3. PROPERTY BOUNDARIES BASED ON RECORDS FROM MONROE COUNTY AND ATLANTIC SURVEYING & MAPPING.
4. SAMPLE LOCATIONS SUBJECT TO OWNER / OCCUPANT APPROVAL. LOCATIONS MAY CHANGE AT THE TIME OF INSTALLATION.

HALEY & ALDRICH

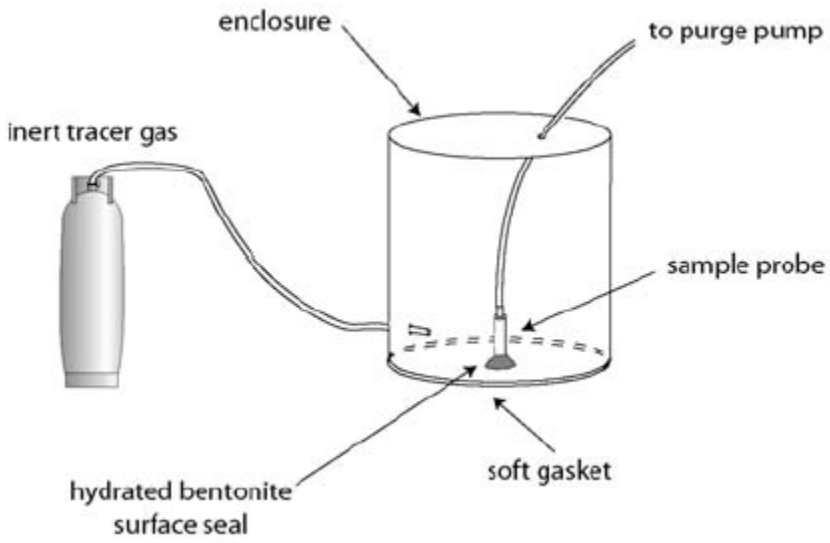
COOPERVISION, INC -
711 NORTH ROAD
SCOTTSVILLE, NEW YORK

SITE SCHEMATIC - PROPOSED INDOOR SOIL VAPOR POINTS

SCALE: AS SHOWN
FEBRUARY 2009

FIGURE 2

FIGURE 3
SCHEMATIC OF HELIUM TRACER GAS TEST
INDOOR AIR INVESTIGATION WORK PLAN
COOPERVISION, INC.
70665-014



Schematic of Helium Tracer Gas Test

Reference: Guidance for Evaluating Soil Vapor Intrusion in the State of New York. New York State Department of Health, October 2006.

APPENDIX A

Indoor Air Assessment Questionnaire & Building Inventory for Residential Structures

NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name _____ Date/Time Prepared _____

Preparer's Affiliation _____ Phone No._____

Purpose of Investigation_____

1. OCCUPANT:

Interviewed: Y / N

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

Number of Occupants/persons at this location _____ Age of Occupants _____

2. OWNER OR LANDLORD: (Check if same as occupant ___)

Interviewed: Y / N

Last Name: _____First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential	School	Commercial/Multi-use
Industrial	Church	Other: _____

If the property is residential, type? (Circle appropriate response)

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other:_____

If multiple units, how many? _____

If the property is commercial, type?

Business Type(s) _____

Does it include residences (i.e., multi-use)? Y / N If yes, how many? _____

Other characteristics:

Number of floors_____ Building age_____

Is the building insulated? Y / N How air tight? Tight / Average / Not Tight

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow between floors

_____

_____

_____

Airflow near source

_____

_____

_____

Outdoor air infiltration

_____

_____

_____

Infiltration into air ducts

_____

_____

_____

5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

a. Above grade construction:	wood frame	concrete	stone	brick
b. Basement type:	full	crawlspace	slab	other _____
c. Basement floor:	concrete	dirt	stone	other _____
d. Basement floor:	uncovered	covered	covered with _____	
e. Concrete floor:	unsealed	sealed	sealed with _____	
f. Foundation walls:	poured	block	stone	other _____
g. Foundation walls:	unsealed	sealed	sealed with _____	
h. The basement is:	wet	damp	dry	moldy
i. The basement is:	finished	unfinished	partially finished	
j. Sump present?	Y / N			
k. Water in sump?	Y / N / not applicable			

Basement/Lowest level depth below grade: _____(feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

_____

_____

6. HEATING, VENTING and AIR CONDITIONING (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation	Heat pump	Hot water baseboard	
Space Heaters	Stream radiation	Radiant floor	
Electric baseboard	Wood stove	Outdoor wood boiler	Other _____

The primary type of fuel used is:

Natural Gas	Fuel Oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Domestic hot water tank fueled by: _____

Boiler/furnace located in:	Basement	Outdoors	Main Floor	Other_____
Air conditioning:	Central Air	Window units	Open Windows	None

Are there air distribution ducts present? Y / N

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

_____

_____

_____

_____

7. OCCUPANCY

Is basement/lowest level occupied? Full-time Occasionally Seldom Almost Never

Level	**General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)**
Basement	_____
1st Floor	_____
2nd Floor	_____
3rd Floor	_____
4th Floor	_____

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage? Y / N

b. Does the garage have a separate heating unit? Y / N / NA

c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car) Y / N / NA Please specify_____

d. Has the building ever had a fire? Y / N When?_____

e. Is a kerosene or unvented gas space heater present? Y / N Where? _____

f. Is there a workshop or hobby/craft area? Y / N Where & Type? _____

g. Is there smoking in the building? Y / N How frequently? _____

h. Have cleaning products been used recently? Y / N When & Type? _____

i. Have cosmetic products been used recently? Y / N When & Type? _____

j. Has painting/staining been done in the last 6 months? Y / N Where & When? _____

k. Is there new carpet, drapes or other textiles? Y / N Where & When? _____

l. Have air fresheners been used recently? Y / N When & Type? _____

m. Is there a kitchen exhaust fan? Y / N If yes, where vented?_____

n. Is there a bathroom exhaust fan? Y / N If yes, where vented?_____

o. Is there a clothes dryer? Y / N If yes, is it vented outside? Y / N

p. Has there been a pesticide application? Y / N When & Type?_____

Are there odors in the building? Y / N
If yes, please describe: _____

Do any of the building occupants use solvents at work? Y / N
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist

If yes, what types of solvents are used? _____

If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

Is there a radon mitigation system for the building/structure? Y / N Date of Installation: _____
Is the system active or passive? Active/Passive

9. WATER AND SEWAGE

Water Supply:	Public Water	Drilled Well	Driven Well	Dug Well	Other: _____
Sewage Disposal:	Public Sewer	Septic Tank	Leach Field	Dry Well	Other: _____

10. RELOCATION INFORMATION (for oil spill residential emergency)

a. Provide reasons why relocation is recommended: _____

b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel

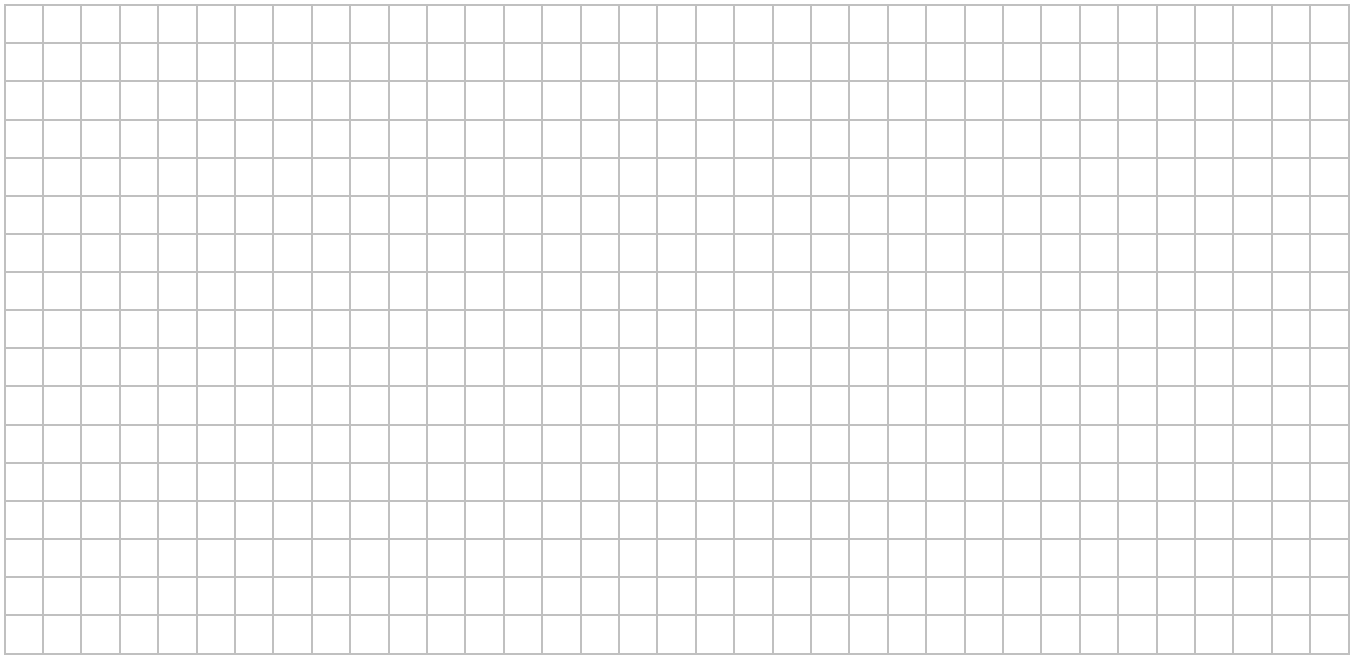
c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

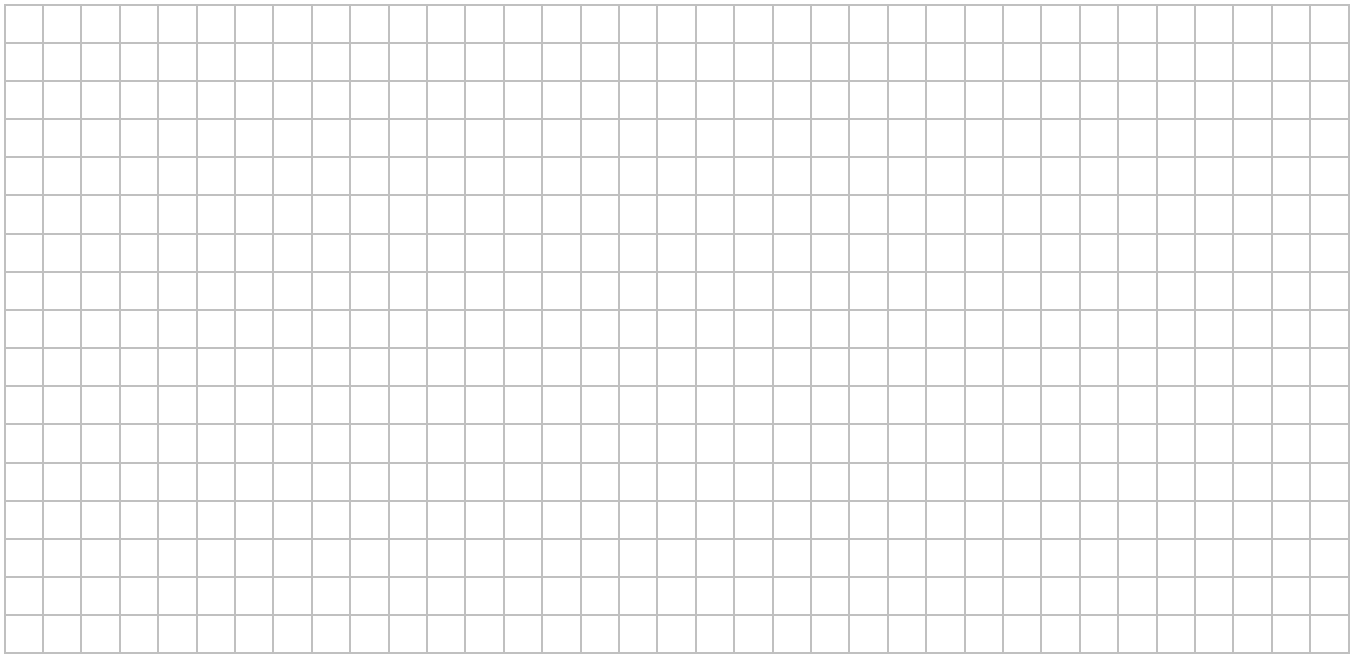
11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:



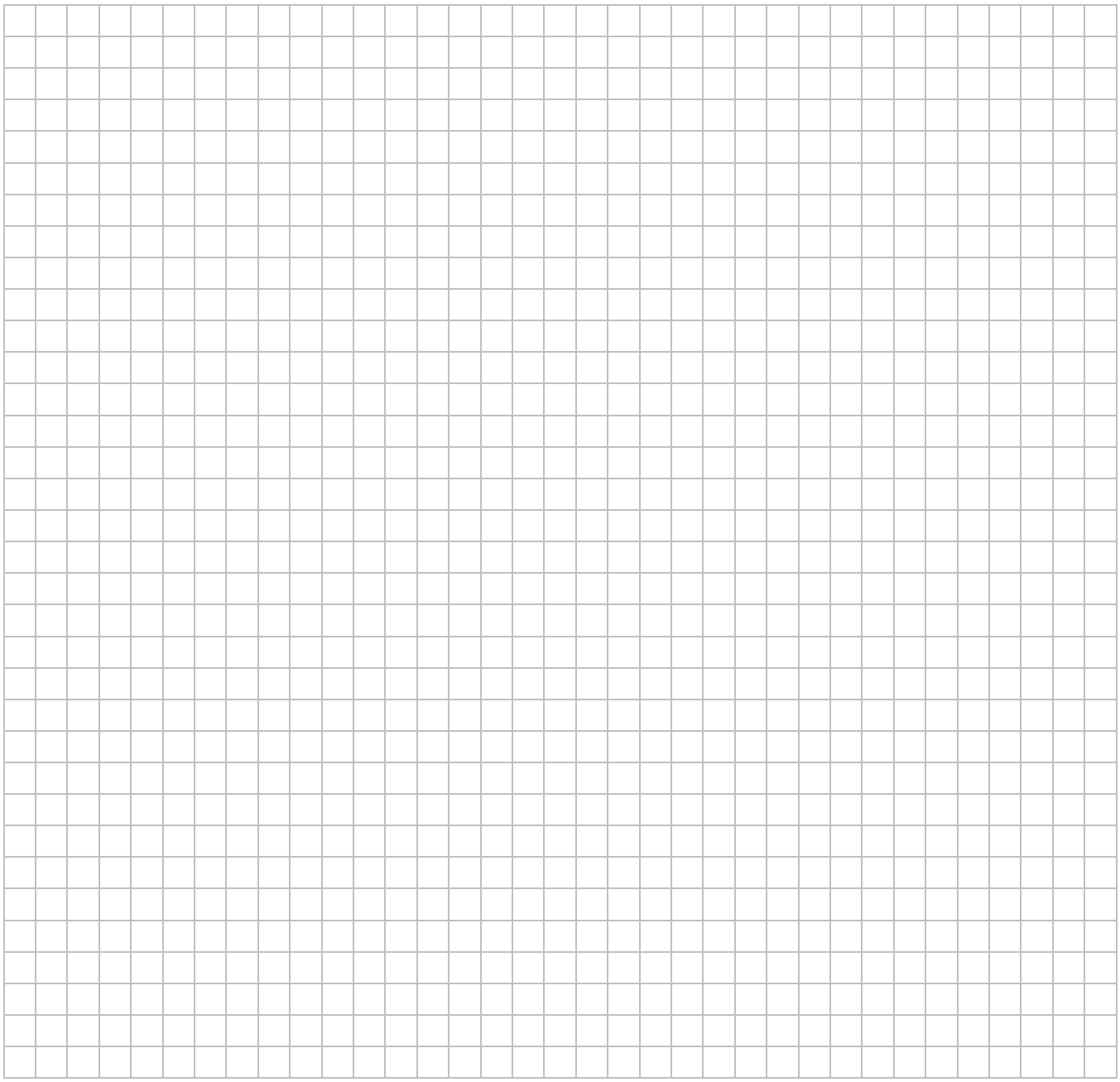
First Floor:



12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.



13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: _____

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo** Y / N

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

APPENDIX B

Health & Safety Plan

HALEY & ALDRICH, INC.
SITE-SPECIFIC HEALTH & SAFETY PLAN

For

CooperVision, Inc.

711 North Road, Scottsville, New York

Project/File No. 70665-012

Prepared by:	Claire DeBergalis	Date: 18 March 2008
Revised by:	Michael G. Beikirch	Date: 10 December 2008
Revised by:	Claire DeBergalis	Date: 29 January 2009

APPROVALS: The following signatures constitute approval of this Health & Safety Plan

Michael G. Beikirch - Local H&S Coordinator — Date: 1-29-09

Susan L. Boyle – Site Project Manager — Date: 1-29-09

Date printed: 1/29/2009 at 3:09 PM

Note: This HASP has been developed for Haley & Aldrich purposes only and is not for use by others.

TABLE OF CONTENTS

1. PROJECT INFORMATION AND EMERGENCY RESOURCES

Project Name: CooperVision, Inc.	**H&A File No.: 70665-012**
Location: 711 North Road, Scottsville, New York	
Client/Site Contact: Phone Number: Emergency Phone Number:	Bernie Hallatt 585-264-3222
H&A Project Manager: Phone Number: Emergency Phone Number:	Susan L. Boyle 585-321-4222 585-760-3548
Local Health & Safety Coordinator: Phone Number: Emergency Phone Number:	Michael G. Beikirch 585-321-4229 585-370-6568
Nearest Hospital: Address: (see map on next page) Phone Number:	Strong Memorial Hospital 601 Elmwood Avenue Rochester, NY 14624 585-275-2100
Emergency Response Number:	**911**
Other Local Emergency Response Number:	911
Other Ambulance, Fire, Police, or Environmental Emergency Resources:	911

Work Scope:

This Site-Specific Health and Safety Plan addresses the health and safety practices and procedures that will be employed by all Haley & Aldrich employees participating in the site characterization of the Project Site. This plan is based on an assessment of the site-specific health and safety risks available to Haley & Aldrich and Haley & Aldrich's experience with other project sites. The scope of work for the Site Characterization includes:

Task #1: Semi-Annual Groundwater Monitoring: Thirteen (13) onsite groundwater monitoring wells will be sampled using Waterra tubing and low-flow techniques during the Spring and Fall of each calendar year.

Task #2: Soil Vapor Probe Installation: Seven (7) permanent soil vapor points will be installed onsite and at the western property-right-of-way. The probes will be installed to a depth of up to 9 feet below ground using a hand auger. In the event that a hand auger can not be used, the points will be installed using direct-push (GeoProbe) methods. In December 2008 an additional seven (7) permanent soil vapor points will be installed onsite (1) and offsite in the residential neighborhood east of the site. (6) Methods will be similar as performed in March 2008.

Task #3: Soil Vapor Sampling: One soil vapor sample will be obtained from each of the seven (7) soil vapor points. One confirmation sample will also be obtained from each of the points no longer than approximately six months following the initial sampling. Subsequent samples will be collected as requested or necessary. In addition to the soil vapor samples, one ambient air sample will be collected from the site during each soil vapor sampling event. In December 2008 one soil vapor sample will be obtained from each of the additional seven (7) permanent soil vapor points. Sampling methodology will be similar as performed in March 2008.

Task #4: Building Inspection and Inventory: Prior to sampling activities a building inspection and inventory will be collected from within each of the four (4) westernmost residential apartment buildings located along Briarwood Lane to determine the most appropriate sampling locations within the buildings (i.e. – basement, living space if no basement, etc.) and to document potential alternate sources of indoor air contamination (i.e. – household chemicals).

Task #5: Sub-Slab Vapor Probe Installation: One (1) sub-slab vapor point will be installed within the each of the four westernmost apartment buildings located along Briarwood Lane. The 4 points will be installed to a depth of up to 6 inches below ground surface/floor surface using a hand auger.

Task #6: Sub-Slab Vapor, Indoor Air, and Ambient Air Sampling: One sub-slab vapor and one indoor air sample will be collected from each of the four (4) locations (at each of the four westernmost apartment buildings located along Briarwood lane). In addition, 1 ambient air sample will be collected from outside the apartment buildings at an upwind location during each day sampling is conducted.

Task #7: Well Decommissioning & Site Restoration: Following completion of site monitoring and Department approval, the existing onsite monitoring wells will be decommissioned and other miscellaneous site restoration activities (such as asphalt patching) will be performed.

Subcontractor(s) to be involved in on-site activities:

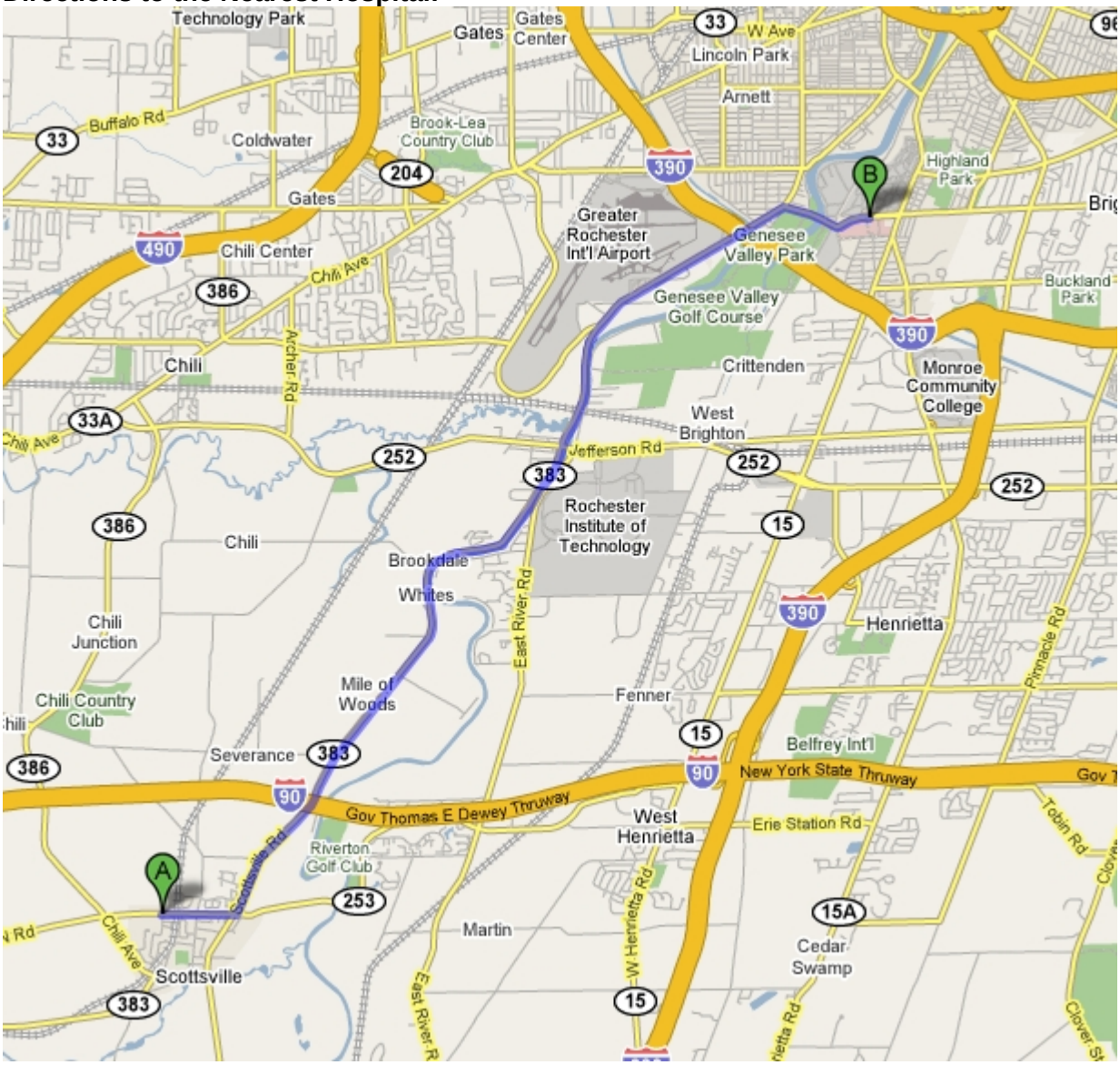
Firm Name	Work Activity
Drilling Subcontractor	Well Decomissioning

Projected Start Date: April 2008; December 2008; January & February 2009

Projected Completion Date: To Be Determined;

Estimated Number of Days to Complete Field Work:
Task 1 & 3: 3 to 7 days semiannually until completion of the project;
Task 2: 1 day
Task 4, 5, & 6: 2 to 3 days
Task 7: 2 to 3 days following project completion

Directions to the Nearest Hospital:



From: 711 N Rd
Scottsville, NY 14546
Edit

Drive: 10.6 mi – about 21 mins

1. Head **east** on **N Rd** toward **Fairview Rd** 0.7 mi
2. Turn **left** at **RT-383/Scottsville Rd** 9.1 mi
3. Slight **right** at **Elmwood Ave** 0.8 mi

To: **Strong Memorial Hospital**
601 Elmwood Ave #655, Rochester, NY 14642
Edit

2. SITE DESCRIPTION

Site Classification:

☑ Industrial	☐ Commercial	☐ Other

General Description:

The CooperVision facility is located at 711 North Road in Scottsville, New York on an approximately 5.4 acre parcel of land. The property includes an original building with additions having a total area of approximately 50,000 sq. ft. Also on the property is a paved parking lot and grass areas. A drainage ditch is present along the western portion of the site. Residential townhouse properties are present east of the site.

Background and Historic Site Usage:

Prior to 1976, the site consisted of undeveloped agricultural land. The site was purchased, developed, and operated by Union Corporation thereafter for the manufacturing of contact lens eyewear. CooperVision acquired the property in 1983. Today, CooperVision continues to manufacture contact lenses at the facility. Soil and groundwater on some portions of the property have been found to be impacted by volatile organic compounds (VOCs), primarily 1,1,1-trichloroethane (TCA), likely resulting from activities by the former owner.

Project Scope:

The project scope consists of ongoing semi-annual groundwater sampling at existing groundwater monitoring wells and soil vapor investigation (installation of soil vapor points and subsequent sampling) on the subject and at the property line to determine if there is a potential for migration of soil vapor offsite to the west of the site.

Additionally, the project scope includes a vapor intrusion investigation in the apartment buildings/townhouses located along the eastern side of Briarwood Lane adjacent to the eastern side of CooperVision. Specifically, the investigation targets the four apartment buildings located closest to Briarwood Lane. Prior to sampling activities, a building inspection and inventory will be completed in the four target buildings. The vapor intrusion investigation will consist of sub-slab vapor sampling, indoor air sampling and ambient air sampling. One sub-slab vapor and one indoor air sample will be collected from each of the four apartment buildings. Between 1 and 3 ambient air samples will be collected from outside the buildings in an upwind location.

In the future, the project will be expanded to include decommissioning of the onsite groundwater monitoring wells and soil vapor sampling points and site restoration so that the site may be closed.

Overview of Hazards:

Site hazards include:

- Traffic hazards given that the groundwater and soil vapor sampling locations are located in an active parking lot and right-of-way
- Noise hazards from an air handling unit at one of the groundwater monitoring locations
- Chemical hazards from groundwater and potentially soil vapor impacted by chlorinated compounds.
- A potential pinch hazard is present during the installation of the soil vapor points due to the use of slam-bars.
- Ergonomics associated with the use of a power drill or corer.
- Household pets (allergies, aggressive animals)
- Entering residences with unknown occupants (recommended that field staff are escorted or utilizing the buddy system)
- Fall hazard from basement stairs in the residential units.
- A drilling hazard is anticipated to exist when the groundwater wells are decommissioned.

Site Status: Indicate current activity status and describe operations at the site.

☑ Active ☐ Inactive

☐ Partially active ☐ Other

The site is currently an active contact-lens manufacturer. Operations occur at the site 24-hours a day, seven days a week. Additionally, work will take place on the residential apartment properties adjacent to the actual site property. While the apartments are active 24 hours per day, the activity level is anticipated to be typical with that associated with a domestic residence (i.e. - light to moderate).

Site Plan:

Is a site plan or sketch available? ☑ Y ☐ N

Work Areas:

List/identify each specific work area(s) on the job site and indicate its location(s) on the site plan:

1. <u>Groundwater Monitoring Wells – (outdoor locations)</u>
   MW-2, MW-3, MW-202, MW-203, MW-204, MW-205, OWD-302D, OWS-302S, OW-304, MW-401, MW-402, MW-501, MW-502: Located throughout parking lot to the south and west of the site building.

2. <u>Soil Vapor Sampling Points – (outdoor locations)</u>
   SV-1 and SV-2: South of the site building
   SV-3, SV-4, and SV-5: Along the eastern property boundary
   SV-6 and SV-7: Along the eastern right-of-way
   SV-101: Along the eastern site property boundary

SV-102 through SV-107: in the residential neighborhood east of the site.

3. Sub-Slab Vapor Sampling & Indoor Air – (indoor locations)
   Within each of the four apartment buildings located closest to Briarwood Lane. The actual location of the sampling points inside the residences will be determined in the field, based on a pre-sampling building inspection and inventory.

2. Ambient Air Sampling – (outdoor locations)
   One to three ambient air samples will be collected from locations upwind of the target apartment buildings. The locations will be determined based on field conditions.

3. PROJECT TASK BREAKDOWN

List and describe each distinct work task below.

Task No.	Detailed Task Description	Employee(s)	Work Date(s) or Duration
1	Semi-annual groundwater monitoring	Two (2) H&A field staff	3 days/Semi-annually
2	Soil Vapor Point Installation	Two (2) H&A field staff/possible drilling subcontractor	1-2 days
3	Soil Vapor Sampling/ambient air sampling	Two (2) H&A field staff	1 to 2 days semi-annually or as necessary
4	Pre-Sampling Building Inspection and Inventory	Two (2) H&A field staff (or (1) H&A field staff with an escort.	1 day
5	Sub-Slab Vapor Point Installation	Two (2) H&A field staff (or (1) H&A field staff with an escort.	1 day
6	Sub-Slab Vapor Sampling/Indoor Air Sampling/Ambient air sampling	Two (2) H&A field staff (or (1) H&A field staff with an escort.	1 to 2 days
7	Well Decommissioning and Site Restoration	Drilling Subcontractor H&A field staff	1 week at the completion of project

Task #1: Semi-Annual Groundwater Monitoring: Thirteen (13) onsite groundwater monitoring wells will be sampled using Waterra tubing and low-flow techniques during the Spring and Fall of each calendar year.

Task #2: Soil Vapor Probe Installation: Seven (7) permanent soil vapor points will be installed onsite and at the western property-right-of-way. The probes will be installed to a depth of up to 9 feet below ground using a hand auger. In the event that a hand auger can not be used, the points will be installed using direct-push (GeoProbe) methods. In December 2008 an additional seven (7) soil vapor points will be installed onsite (1) and offsite (6) in the residential neighborhood east of the site. Methods will be similar as performed in March 2008.

Task #3: Soil Vapor Sampling: One soil vapor sample will be obtained from each of the seven (7) soil vapor points. One confirmation sample will also be obtained from each of the points no longer than approximately six months following the initial sampling. Subsequent samples will be collected as requested or necessary. In addition to the soil vapor samples, one ambient air sample will be collected from the site during each soil vapor sampling event. In December 2008

one soil vapor sample will be obtained from each of the additional seven (7) soil vapor points. Sampling methodology will be similar as performed in March 2008.

Task #4: Building Inspection and Inventory: Prior to sampling activities a building inspection and inventory will be collected from within each of the four (4) westernmost residential apartment buildings located along Briarwood Lane to determine the most appropriate sampling locations within the buildings (i.e. – basement, living space if no basement, etc.) and to document potential alternate sources of indoor air contamination (i.e. – household chemicals).

Task #5: Sub-Slab Vapor Probe Installation: One (1) sub-slab vapor point will be installed within the each of the four westernmost apartment buildings located along Briarwood Lane. The 4 points will be installed to a depth of up to 6 inches below ground surface/floor surface using a hand auger.

Task #6: Sub-Slab Vapor, Indoor Air, and Ambient Air Sampling: One sub-slab vapor and one indoor air sample will be collected from each of the four (4) locations (at each of the four westernmost apartment buildings located along Briarwood lane). In addition, 1 ambient air sample will be collected from outside the apartment buildings at an upwind location during each day sampling is conducted.

Task #7: Well Decommissioning and Site Restoration: Following completion of site monitoring and Department approval, the existing onsite monitoring wells will be decommissioned and other miscellaneous site restoration activities (such as asphalt patching) will be performed.

4. HAZARD ASSESSMENT

Material Safety Data Sheets (MSDS) of hazardous materials used during the execution of work shall be available on site. MSDSs are required for chemicals used to prepare samples, calibration gases, etc. MSDSs are not required for waste materials.

Chemical Hazards:

Does chemical analysis data indicate that the site is contaminated? ☑ Y ☐ N

Indicate the potential physical state of the hazardous materials at the site.

- ☑ Gas/Vapor
- ☐ Sludge
- ☑ Liquid
- ☐ Solid/Particulate

Indicate the anticipated or actual class of compounds at the site.

- ☐ Asbestos
- ☐ Inorganics
- ☐ BTEX
- ☐ Pesticides
- ☑ Chlorinated Solvents
- ☐ Petroleum products
- ☐ Heavy Metals
- ☐ Other

Impacted Environments:

Indicate media in which contamination is expected.

- ☑ Air
- ☑ Groundwater
- ☐ Soil
- ☐ Sediment
- ☐ Surface water
- ☐ Other

Estimated concentrations:

Indicate medium of major chemicals expected to be encountered by onsite personnel.

Work Activity	Media	Chemical	Anticipated Concentration
Groundwater Monitoring	GW	1,1,1-TCA, 1,1-DCA, 1,1-DCE, Chloroethene, VC	ND – 400 ppm
Soil Vapor Point Installation	SO, A	1,1,1-TCA, 1,1-DCA, 1,1-DCE, Chloroethene, VC	ND – 30 ppb in air ND - 0.2 ppm in soil
Soil Vapor Sampling	A	1,1,1-TCA, 1,1-DCA, 1,1-DCE, Chloroethene, VC	D – 30 ppb in air ND - 0.2 ppm
Pre-Sampling Building Inspection/Inventory	N/A	N/A	N/A
Sub-Slab Vapor Point Installation	A	1,1,1-TCA, 1,1-DCA, 1,1-DCE, Chloroethene, VC	ND – 30 ppb in air
Sub-Slab Vapor/Indoor Air/Ambient Air Sampling	A	1,1,1-TCA, 1,1-DCA, 1,1-DCE, Chloroethene, VC	ND – 30 ppb in air
Monitoring Well Decommissioning & Site Restoration	GW, SO	1,1,1-TCA, 1,1-DCA, 1,1-DCE, Chloroethene, VC	ND – 400 ppm in GW ND - 0.2 ppm

(Media key: A = Air; GW = Groundwater; SW = Surface Water; SO = Soil; SE = Sediment)

Chemicals of Concern:

1,1,1 Trichloroethane

The health effects for 1,1,1 TCA are as follows- Inhalation of vapors will irritate the respiratory tract. Affects the central nervous system. Symptoms include headache, dizziness, weakness, and nausea. Higher levels of exposure (> 5000 PPM) can cause irregular heart beat, kidney and liver damage, fall in blood pressure, unconsciousness and even death. Harmful if swallowed. Symptoms similar to inhalation will occur along with nausea, vomiting. Aspiration of material into the lungs can cause chemical pneumonitis, which can be fatal. If aspirated, may be rapidly absorbed through the lungs and result in injury to other body systems. Causes mild irritation and redness, especially on prolonged contact. Repeated contact may cause drying or flaking of the skin. Liquids and vapors cause irritation. Symptoms include tearing, redness, stinging, and swelling. Prolonged or repeated skin contact may cause dermatitis. Chronic exposure may affect the kidneys and liver. Dioxane is a suspected human carcinogen based on animal data. Personnel with CNS, kidney, liver or heart disease may be more susceptible to the effects of this substance. Use of alcoholic beverages may aggravate symptoms.

The OSHA permissible exposure limit (PEL) for 1,1,1 TCA is 350 PPM for an 8-hour time weighted average.

1,1-Dichloroethylene (1,1-DCE)

1,1-Dichloroethylene (1,1-DCE) is a colorless, class IB flammable liquid with a slightly acrid, chloroform-like odor.

1,1 -DCE is incompatible with strong oxidizers, strong alkalis, potassium hydroxide, and metals such as copper, and contains inhibitors to prevent polymerization.

There is no OSHA PEL for 1,1-DCE. The 8-hour TWA for 1,1-DCE is 1.0 ppm. The standard routes of entry in the body are through inhalation, ingestion, skin and eye contact. The points of attack are the respiratory system, central nervous system, and eyes.

Symptoms that may occur as a result of exposure to 1,1-DCE include irritation to the eyes; respiratory system distress; central nervous system depression.

Vinyl Chloride (VC)

Vinyl Chloride (VC) is a colorless, liquid or flammable gas with a pleasant odor at high concentrations.

VC is incompatible with oxidizers, peroxides, and metals such as copper, aluminum, iron and steel. VC polymerizes in air, sunlight, or heat unless it is stabilized by inhibitors such as phenol. It attacks iron and steel in the presence of moisture.

The OSHA PEL for VC is 1 ppm as am 8-hour TWA, and an acceptable ceiling of 5 ppm in a 15 minute period. The standard routes of entry in the body are through inhalation, skin and eye contact. The points of attack are the respiratory system, central nervous system, liver, blood, and lymphatic system.

Symptoms that may occur as a result of exposure to VC include weakness and exhaustion; abdominal pain; gastrointestinal bleeding; enlarged liver; and pallor or cyanosis of the extremities. Liquid VC can cause frostbite. VC can also cause liver cancer.

1,1-Dichloroethane (1,1-DCA)

1,1-Dichloroethane (1,1-DCA) is a colorless, class IB flammable, oily liquid with a chloroform-like odor.

1,1-DCA is incompatible with strong oxidizers and strong caustics.

The OSHA PEL for 1,1-DCA is 100 ppm as an 8-hour TWA. The standard routes of entry in the body are through inhalation, ingestion, skin and eye contact. The points of attack are the liver, kidney, lungs, central nervous system, skin and eyes.

Symptoms that may occur as a result of exposure to 1,1-DCA include irritation to the skin; central nervous system depression; and liver, kidney, and lung damage.

Chloroethane

Chloroethane is a colorless gas at room temperature and pressure with a sharp odor. It can kept as a liquid under pressure, however it quickly evaporates when exposed to room air. Chloroethane is flammable.

The OSHA PEL for Chloroethane is 1,000 ppm as an 8-hour TWA. The standard routes of entry into the body are through ingestion and inhalation. High levels of Chloroethane can affect you nervous system, causing lack of muscle control and unconsciousness.

Brief exposure to chloroethane can induce feelings of inebriation, and at higher levels and can lack of muscle coordination and unconsciousness as well as stomach cramps, nausea, vomiting, and eye irritation. It can produce a numbing sensation when applied to the skin, but can cause frost-bite if applied too long. Chloroethane is not classified as a carcinogen.

TABLE 1
OCCUPATIONAL EXPOSURE LIMITS (CONCENTRATIONS IN AIR)

(CIRCLE CONTAMINANTS OF CONCERN, WRITE ADDITIONAL CONTAMINANTS AND EXPOSURE ON LAST PAGE)

CHEMICAL	ROUTES OF EXPOSURE	IDLH	Ceiling	STEL	PEL	TLV	REL	PID (IP eV)	FID	ODOR THRES-HOLD	IRRITATION THRESHOLD	ODOR DESCRIPTION
VAPORS & GASES												
Acetone	R, I, C	2500	-	750 [ACGIH]	1000	500	250	9.69	60	13	-	fragrent, mint-like
Ammonia	R, I, C	300	-	35 [NOSH, ACGIH]	50	25	25	10.18**	-	0.5-2	10	Pungent suffocating odor
Benzene	R,A,I,C	Ca [500]	-	1 [NIOSH]; 2.5 [ACGIH]	1	0.5	0.1	9.24	150	4.68	-	Solvent, aromatic
Carbon tetrachloride (Tetrachloromethane)	R,A,I,C	Ca [200]	25 [instantaneous] 200 [5 min peak in any 4 hrs]	2 [NIOSH, 60-min]; 10 [ACGIH]	2	5	Ca	11.47**	10	50	-	Sweet, pungent, ether-like
Chlorobenzene	R,I,C	1000	-	-	75	10	-	9.07	200	0.68	-	Almond-like
Chloroform	R,I,C	Ca [500]	50 [OSHA]	2 [NIOSH, 60-min]	-	10	-	11.42**	65	50	-	Sweet, pleasant
o-Dichlorobenzene	R,A,I,C	200	50 [NIOSH, OSHA]	50 [ACGIH]	-	25	-	9.06	50	0.3	E 20-30	Pleasant, aromatic
p-Dichlorobenzene	R,A,I,C	Ca [150]	-	-	75	10	Ca	8.98	-	0.18	E 80-160	Distinct, aromatic, mothball-like
Dichlorodifluoromethane (Freon 12)	R,C	15000	-	-	1000	1000	1000	11.75**	15	-	-	Ether-like when at very high concs.
1,1-Dichloroethane	R,I,C	3000	-	-	100	100	100	11.06**	80	200	-	Distinct, chloroform-like
1,2-Dichloroethane (Ethylene dichloride)	R,I,A,C	Ca [50]	100 [OSHA]	2 ppm [NIOSH]; 200 ppm [OSHA, 5-min max peak in any 3 hours]	50	10	1	11.05**	80	88	-	Chloroform-like
1,1-Dichloroethylene (1,1-DCE, Vinylidene chloride)	R,A,I,C	Ca [ND]	-	-	-	5	Ca	10.00**	40	190	-	Chloroform-like
1,2-Dichloroethylene	R,I,C	1000	-	-	200	200	200	9.65	50	0.85	-	Bitter, chloroform-like
Ethanol	R,I,C	3300	-	-	1000	1000	1000	10.47**	25	10	-	Weak, ether-like, wine-like
Ethylbenzene	R,I,C	800	-	125 [NIOSH; ACGIH]	100	100	100	8.76	100	2.3	E 200	Aromatic
Ethylene Glycol	R,I,C	ND	50 [OSHA]; 100 mg/m^3 [ACGIH]	-	-	-	-	-	-	-	-	Odorless
Formaldehyde	I,C	Ca [20]	0.1 [NIOSH, 15-min]; 0.3 [ACGIH]	2	0.75	-	Ca [0.016]	10.88**	-	0.83	-	Pungent, suffocating
Gasoline	R,I,A,C	Ca [ND]	-	500 [OSHA; ACGIH]	300	300	-	-	-	-	E 0.5	Petroleum-like
n-Hexane	R,I,C	1100	-	-	500	50	50	10.18	70	130	E.T 1400-1500	Gasoline-like
Hydrogen Cyanide	R,A,I,C	50	4.7 [ACGIH; Skin]	4.7 [NIOSH - skin]	10 [skin]		-	-	-	0.58	-	Bitter almond
Hydrogen peroxide	R,I,C	75	-	-	1	1	1	10.54**	-	-	-	Sharp
Methanol	R,I,A,C	6000	-	250 [NIOSH; ACGIH; skin]	200	200 [skin]	200	10.84**	12	1000	-	Pungent
Methyl Ethyl Ketone Peroxide	R,I,C	ND	0.2 [NIOSH; ACGIH] 0.7 [OSHA]	-	-	-	-	-	-	-	-	Characteristic odor
Methyl Chloroform (1,1,1-TCA)	R,I,C	700	350 [NIOSH, 15-min]	450 [ACGIH]	350	350	Ca	11.00**	105	20-100	-	Chloroform-like
Methylene Chloride (Dichloromethane, Methylene dichloride)	R,I,A,C	Ca [2300]	-	125	25	50	Ca	11.32**	100	25-50	E 5000	Chloroform-like
Methyl Mercaptan	R,C	150	10 [OSHA] 0.5 [NIOSH, 15-min]	-	-	0.5	-	9.44	-	-	-	Garlic, rotten cabbage
MIBK (Hexone)	R,I,C	500	-	75 [NIOSH; ACGIH]	100	50	50	9.30	-	-	-	Pleasant
Naptha (coal tar)	R,I,C	1000	-	-	100	400	100	-	-	-	-	Aromatic
Naphthalene	R,A,I,C	250	-	15 [NIOSH; ACGIH]	10	10	10	8.12	-	0.3	E 15	Mothball-like
Octane	R,I,C	1000	385 [NIOSH, 15-min]	-	500	300	75	9.82	80	48	-	Gasoline-like
Pentachlorophenol	R,A,I,C	2.5 mg/m^3	-	-	0.5 mg/m^3 [skin]	0.5 mg/m^3 [skin]	0.5 mg/m^3 [skin]	-	-	-	-	Pungent when hot, benzene-like
Phenol	R,A,I,C	250	15.6 [NIOSH, 15-min]	-	5 [skin]	5 [skin]	5 [skin]	8.50	-	0.04	E.N.T. 68	Sweet, acrid
Propane	R,C	2100	-	-	1000	1000	1000	11.07**	80	1600	-	Odorless (commonly smells foul due to additive for odor detection)
Stoddard Solvent (Mineral Sprits)	R,Cl,I	20000 mg/m^3	1800 mg/m^3 [NIOSH, 15-min]	-	500	100	350 mg/m^3	-	-	1	E 400	Kerosene-like
Styrene	R,I,A,C	700	200 [OSHA]	100 [NIOSH]; 600 [OSHA, 5-min max peak in any 3 hours]; 40 [ACGIH]	100	20	50	8.40	85	0.047	E 200-400	Sweet, floral
1,1,2,2-Tetrachloroethane	R,I,A,C	Ca [100]	-	-	5 [skin]	1 [skin]	1 [skin]	11.10**	100	1.5	-	Pungent, chloroform-like
Tetrachloroethylene (Perchloroethylene, Perc, PCE)	R,I,A,C	Ca [150]	200 [OSHA]	300 [OSHA, 5-min max peak in any 3-hours]; 100 [ACGIH]	100	25	Ca	9.32	70	4.68	N.T513-690	Chloroform-like
Toluene	R,A,I,C	500	300 [OSHA]	150 [NIOSH]; 500 [OSHA, 10-min max peak]	200	50	100	8.82	110	2.14	E300-400	Sweet, pungent, benzene-like
Trichloroethylene (TCE)	R,I,A,C	Ca [1000]	200 [OSHA]	300 [OSHA, 5-min max peak in any 2-hours]; 100 [ACGIH]	100	50	Ca	9.45	70	21.4	-	Chloroform-like
1,2,3-Trimethylbenzene	R,I,C	ND	-	-	-	-	25	8.48	-	-	-	Distinctive, aromatic
1,2,4-Trimethylbenzene	R,I,C	ND	-	-	-	-	25	8.27	-	-	-	Distinctive, aromatic
1,3,5-Trimethylbenzene	R,I,C	ND	-	-	-	-	25	8.39	-	-	-	Distinctive, aromatic
Turpentine	R,A,I,C	800	-	-	100	20	100	-	-	200	E.N 200	Pine-like
Vinyl Chloride	R,C	Ca [ND]	5 [OSHA, 15-min]	-	1	1	Ca	9.99	-	3000	-	Pleasant odor at high concs.
Xylenes	R,A,I,C	900	-	150 [NIOSH; ACGIH]	100	100	100	8.56 (m- and o-) 8.44 (p-)	111/116	1.1	E.N.T. 200	Aromatic

TABLE 1
OCCUPATIONAL EXPOSURE LIMITS (CONCENTRATIONS IN AIR)

(CIRCLE CONTAMINANTS OF CONCERN, WRITE ADDITIONAL CONTAMINANTS AND EXPOSURE ON LAST PAGE)

CHEMICAL	ROUTES OF EXPOSURE	IDLH	Ceiling	STEL	PEL	TLV	REL	PID (IP eV)	FID	ODOR THRES-HOLD	IRRITATION THRESHOLD	ODOR DESCRIPTION
DUSTS, MISTS, FUMES, AND MISCELLANEOUS COMPOUNDS												
Asbestos	R	Ca (ND)	-	-	0.1 fiber/cc	0.1 fiber/cc	0.1 fiber/cc	-	-	-	-	-
PCBs-42% Chlorine	R,A,I,C	Ca [5 mg/m^3]	-	-	1 mg/m^3 [skin]	1 mg/m^3 [skin]	0.001 mg/m^3	-	-	-	-	Mild, hydrocarbon
PCBs-54% Chlorine	R,A,I,C	Ca [5 mg/m^3]	-	-	0.5 mg/m^3 [skin]	0.5 mg/m^3 [skin]	0.001 mg/m^3	-	-	-	-	Mild, hydrocarbon
Aluminum - metal dust	R,C	ND	-	-	15 mg/m^3 (total); 5 mg/m^3 (respirable)	10 mg/m^3	10 mg/m^3 (total); 5 mg/m^3 (respirable)	-	-	-	-	-
Aluminum - soluble salts	R,I,C	ND	-	-	2 mg/m^3	2 mg/m^3	2 mg/m^3	-	-	-	-	-
Arsenic- inorganic	R,A,I,C	Ca [5 mg/m^3]	0.002 mg/m^3 [NIOSH, 15-min]	-	0.01 mg/m^3	0.01 mg/m^3	Ca	-	-	-	-	-
Barium:soluble compounds	R,I,C	50 mg/m^3	-	-	0.5 mg/m^3	0.5 mg/m^3	0.5 mg/m^3	-	-	-	-	-
Beryllium	R,C	Ca [4 mg/m^3]	0.005 mg/m^3 [OSHA]; 0.025 mg/m^3 [OSHA, 30-min max peak]; 0.0005 mg/m^3	0.01 mg/m^3 [ACGIH]	0.002 mg/m^3	0.002 mg/m^3	Ca	-	-	-	-	-
Cadmium dusts	R,I	Ca [9 mg/m^3]	-	-	0.005 mg/m^3	0.01 mg/m^3	Ca	-	-	-	-	-
Chromates (Cr(VI) Compounds) & Chromic Acid	R,I,C	Ca [15 mg/m^3]	0.1 mg/m^3 [OSHA]	-	0.001 mg/m^3	0.05 mg/m^3 [water soluble]; 0.01 mg/m^3 [insoluble]	Ca	-	-	-	-	-
Chromium (III) Compounds	R,I,C	25 mg/m^3	-	-	0.5 mg/m^3	0.5 mg/m^3	0.5 mg/m^3	-	-	-	-	-
Chromium Metal	R,I,C	250 mg/m^3	-	-	1 mg/m^3	0.5 mg/m^3	0.5 mg/m^3	-	-	-	-	-
Copper - dust & mist	R,I,C	100 mg/m^3	-	-	1 mg/m^3	1 mg/m^3	1 mg/m^3	-	-	-	-	-
Lead	R,I,C	100 mg/m^3	-	-	0.050 mg/m^3	0.05 mg/m^3	0.050 mg/m^3	-	-	-	-	-
Manganese (compounds and fume)	R,I	500 mg/m^3	5 mg/m^3 [OSHA]	3 mg/m^3 [NIOSH]	-	0.2 mg/m^3	1 mg/m^3	-	-	-	-	-
Mercury & Inorganic Mercury Compounds	R,I,A,C	10 mg/m^3	0.1 mg/m^3 [NIOSH, Skin]; 0.1 mg/m^3 [OSHA]	-	-	0.025 mg/m^3	0.05 mg/m^3 [skin]	-	-	-	-	-
Organo-Mercury Compounds	R,A,I,C	2 mg/m^3	0.04 mg/m^3 [OSHA]	0.03 mg/m^3 [NIOSH]	0.01 mg/m^3	0.01 mg/m^3 [alkyl]; 0.1 mg/m^3 [metal]; 1.5 mg/m^3 [aryl]	0.01 mg/m^3	-	-	-	-	-
Nickel (metal and compounds)	R,I,C	Ca [10 mg/m^3]	-	-	1 mg/m^3	1 mg/m^3 [soluble inorganic compounds]; 1 mg/m^3 [insoluble	0.015 mg/m^3	-	-	-	-	-
Particulate (Not otherwise regulated)	R, C	ND	-	-	15 mg/m^3 (total); 5 mg/m^3 (respirable)	10 mg/m^3 (inhalable); 3 mg/m^3 (respirable)	-	-	-	-	-	-
Portland cement	R,I,C	5000 mg/m^3	-	-	50 mppcf	10 mg/m^3	10 mg/m^3 (total); 5 mg/m^3 (respirable)	-	-	-	-	-
Selenium compounds	R,I,C	1 mg/m^3	-	-	0.2 mg/m^3	0.2 mg/m^3	0.2 mg/m^3	-	-	-	-	-
Silica, crystalline	R, C	Ca [25 mg/m^3 (cristobalie, tridymite); 50 mg/m^3 (quartz, tripoli)]	-	-	Dependent on silicon dioxide content of silica (see Appendix C of the NIOSH Pocket Guide to Chemical Hazards, 2005)	Dependent on minerology [see ACGIH 2005 TLVs and BEIs Handbook]	0.05 mg/m^3	-	-	-	-	-
Silver (metal and soluble compounds)	R,I,C	10 mg/m^3	-	-	0.01 mg/m^3	0.1 mg/m^3	0.01 mg/m^3	-	-	-	-	-
Thallium, soluble	R,A,I,C	15 mg/m^3	-	-	0.1 mg/m^3 [skin]	0.1 mg/m^3 [skin]	0.1 mg/m^3 [skin]	-	-	-	-	-
Tin (metal)	R,C	100 mg/m^3	-	-	2 mg/m^3	2	2 mg/m^3	-	-	-	-	-
Tin (organic compounds)	R,A,I,C	25 mg/m^3	-	-	0.1 mg/m^3	0.1 mg/m^3 [skin]	0.1 mg/m^3 [skin]	-	-	-	-	-
Zinc oxide dust & fume	R	500 mg/m^3	15 mg/m^3 [NIOSH, dust]	10 mg/m^3 [NIOSH; ACGIH; fume]	15 mg/m^3 (total dust); 5 mg/m^3 (respirable dust); 5 mg/m^3 [fume]	2 mg/m^3 [respirable]	5 mg/m^3 (total dust); 5 mg/m^3 [fume]	-	-	-	-	-

NOTES & ABBREVIATIONS:

All units in parts per million (ppm) unless otherwise noted.
R = Respiratory (Inhalation)
I = Ingestion
A = Skin Absorption
C = Skin Contact
-: Not available
ND: Not detectable.
Ca = Carcinogen
** = Use 11.7 eV lamp
IP: Ionization potential
eV: Electrovolts

IDLH: Immediately dangerous to life and health
Ceiling: Highest allowable instantaneous C = Skin and/or Eye Contact
STEL: Short-term exposure limit. Exposure period is 15 minutes unless otherwise indicated
PEL: OSHA Permissible Exposure Limit (legally-enforceable)
REL: NIOSH Recommended Exposure Limit
PID: Photoionization Detector
OSHA: United States Occupational Safety and Health Administration
NIOSH: National Institute of Occupational Safety and Health
TLV: ACGIH Threshold Limit Value
ACGIH: American Conference of Governmental Industrial Hygienists

Physical Hazards:

Indicate all hazards that may be present for each task. If any of these potential hazards are checked, it is the project manager's responsibility to determine how to eliminate/minimize the hazard to protect onsite personnel.

Copy and paste a checkmark "✓"into appropriate boxes.

Physical Hazard Checklist							
Potential Job Hazards	**Task 1** GW Sampling	**Task 2** SV Point Installation	**Task 3** SV Sampling	**Task 4** Building Inspection/ Inventory	**Task 5** Sub-Slab Point Installation	**Task 6** Sub-Slab/Indoor Air/Ambient Air Sampling	**Task 7** MW Decom.
Confined space entry*							
Underground utilities		✓					
Overhead utilities							
Electrical hazards							
Excavations greater than 4' depth							
Fall hazards				✓	✓	✓	
Heavy equipment							
Drilling hazards							✓
Noise (above 85 dBA)	✓				✓		✓
Traffic concerns	✓	✓	✓				✓
Extreme weather conditions	✓	✓	✓				✓
Rough terrain for drilling equipment							
Buried drums							
Heavy lifting (more than 50 lbs)							
High risk fire hazard							
Poisonous insects or plants							
Water hazards							
Use of a boat							
Lockout/Tagout requirements							
Other: Pinch hazard for soil vapor installation		✓			✓		
Other: Presence of household pets				✓	✓	✓	
Other: Entering building with unknown occupants				✓	✓	✓	

***CONFINED SPACE ENTRY REQUIRES SPECIAL PROCEDURES, PERMITS AND TRAINING AND MUST BE APPROVED BY THE CORPORATE HEALTH & SAFETY MANAGER.**

Potential Activity Hazards and Hazard Controls:

Copy and paste a checkmark "✓" adjacent to potential activity hazards and relevant hazard controls.

POTENTIAL ACTIVITY HAZARDS

Abrasions and Cuts ✓
Access
Asphyxiation
Bacteria
Biological Hazards
Bloodborne Pathogens
Cave Ins
Chemical/Thermal Burns
Chemicals
Cold Stress
Compressed Gases
Confined Spaces
Congestion
Defective Equipment
Dermatitis
Dropping Materials/Tools to Lower Levels
Drowning or Flowing Water
Electrical Shock
Energized Equipment
Equipment Misuse ✓
Ergonomics
Excavations
Explosions
Fatigue
Fire
Flammability
Flying debris
Foreign Body in Eye ✓
Frostbite/Cold ✓
Fueling and Fuel Storage
Fugitive Dust ✓
Fumes ✓
Generated Wastes
Guards removed
Hazardous Materials ✓
Heat Stress (cramps, exhaustion, stroke)
Heavy Equipment Operation
Heavy Equipment/Stability
Heavy Lifting
High crime area (violence)
High Winds
Hoists, Rigging, Slings, Cables
Housekeeping – Improper ✓
Illumination - Poor
Impact ✓
Inability to Maintain Communication
Inclement Weather ✓
Inclines
Insects/Reptiles
Mold
Moving Equipment, Conveyors or Vehicles ✓
Muddy Site Conditions
New Personnel
Noise ✓
Odor ✓
Overhead Utilities
Overhead Work
Overloaded Equipment
Oxygen deficiency
Pinch Points ✓
Poisonous Plants
Pressure
Pressurized Lines
Radiation
Repetitive Motion
Rigging - Improper
Sharp Objects ✓
Silicosis
Slips, Trips, and Falls ✓
Sprains and Strains ✓
Steam
Sunburn ✓
Surface Water Run-off
Toxicity ✓
Traffic ✓
Underground Utilities ✓
Uneven Terrain
Unsafe Atmosphere
Vibration
Visibility - Poor
Visitors Known/Unknown ✓
VOC Emissions ✓
Weight ✓
Work at Depth
Work at Heights
Work over Water
Working on Ice

HAZARD CONTROLS

Air Monitoring ✓
Appropriate Clothing/Monitoring Of Weather ✓
Appropriate Labels/Signage
Barricades/Fencing/Silt Fencing
Buddy System - Attendant✓
Chock Blocks
Confined Space Procedures
Decontamination Procedures ✓
Derived Waste Management Plan
Drinking Water/Fluids
Dust Abatement Measures
Emergency Action Plan Procedures
Equipment Inspection
Equipment Manuals/Training
Exclusion/Work Zones
Exhaust Ventilation
Eye Protection ✓
Fall Protection
Fire Extinguisher
Flotation Devices/Lifelines
Gloves ✓
Ground Fault Interrupter
Grounded Hydraulic Attachments
Grounded Equipment/Tanks
Hand Signal Communication
Hard Hat
Hazardous/Flammable Material Storage
Hearing Protection ✓
High Visibility Safety Vest
Hoses, Access to Water ✓
Hotwork Procedures
Isolation of Energy Sources(Lockout/Tagout)
Machine/Equipment Guards
Manual Lifting Equipment
Police Detail
Proper Lifting Techniques
Proper Tool for Job ✓
Proper Work Position/Tools
Protective Equipment ✓
Radio Communication
Respirator, (Specify Type)
Safety Harness /Lanyard/Scaffold
Security Escort
Sloping, Shoring, Trench Box
Spill Prevention Measures
Spill Kits
Stormwater Control
Traffic Controls ✓
Procedures/Methods
Vehicle Inspection
Visitor Orientation Escort✓ **(public)**
Window Cleaning/Defrost

Specific Activity Hazards and Precautions

Onsite Work:
The site is a manufacturing site that is active 24-hours per day, 7 days per week. Because the work tasks must take place in a utilized parking lot, work will have to be temporarily ceased in-between shift changes to avoid car hazards.

Offsite Work (residences):
Because the offsite work site consists of residences, the following site specific hazards are present:

- Household Pets – Haley & Aldrich should inquire of presence of pets (dogs, cats, etc.) in the apartments. If present, Haley & Aldrich will request that they be sequestered safely and/or caged/leashed if Haley & Aldrich personnel were to enter a room where pets are kept during site visits and sampling.
- Entering residences alone – Haley & Aldrich personnel should utilize the buddy system and/or request an escort during all visits which require Haley & Aldrich personnel enter the residence interiors.
- Fall Hazard – Units with basements have stairs.

Safety Meetings

All H&A personnel visiting the site will be given an orientation safety meeting and are required to read and sign this HASP. Daily safety meetings will be conducted onsite and documented on a Health & Safety Tailgate Meeting Form.

Utility Locators and Underground Hazards

Prior to drilling or excavating, Haley & Aldrich staff members will ensure that permission has been gained from the property owner to access the property. Contact site facilities and commercial utility clearance personnel to assist with location of underground utilities. Before marking any proposed exploration location, it is critical that all readily available information on underground utilities and structures be obtained. The estimated location of utility installations, such as gas, electric, fuel, steam, sewer, telephone, fiber optic, water, drainage or any other underground installation that may be expected to be encountered during drilling work, will be identified with the appropriate authority. Appropriate authorities include client representatives, utility companies, nonprofit organizations (e.g., "Dig-Safe), and others.

Heavy Equipment

Staff Members must be especially careful and alert when working with contractors who use heavy equipment, since equipment failure or breakage can lead to accidents and worker injury. Cranes and equipment for drilling, pile driving, test pitting and coring is of special concern. Should these devices fail during operation the likelihood of worker injury is high. Equipment of this nature should be visually inspected and checked for proper working order prior to the commencement of field work. Those that operate heavy equipment must meet all of the requirements to operate heavy equipment. Haley & Aldrich, Inc. staff members that supervise projects or are associated with such high risk projects that involve digging should use due diligence when working with a construction firm. Maintain visual contact with operators at all

times and keep out of the strike zone whenever possible. Always approach heavy equipment with an awareness of the swing radius and traffic routes of each piece of equipment and never go beneath a hoisted load. High-visibility safety vests must be worn onsite at all times. Avoid fumes created by heavy equipment exhaust.

Noise Reduction

Site activities in proximity to heavy equipment often expose workers to excessive noise. It is anticipated that situations may arise when noise levels may exceed the OSHA Action Level of 85 dBA in an 8-hour time-weighted average (TWA). An example of this possibility is working in close proximity to the subcontractor during drilling activities onsite. If excessive noise levels occur, efforts will be made to control this by issuance of earplugs to all personnel and by implementing a system of hand signals understood by all.

Work Site Access & Controls (Standard Precautions)

The work area is restricted to authorized personnel. Clearly define the work area before beginning activities for the day. Caution tape and safety cones must be provided as necessary for vehicular traffic concerns and to protect passers-by. Proper housekeeping is essential to avoid creating hazards to pedestrian and vehicular traffic. Running equipment will not be left unattended at any time. Test borings and test pits will be backfilled upon completion and the area restored. Drilling equipment will be secured above test borings during work stoppages and at the end of the workday.

Site Security

Equipment will not be left onsite during none work hours. The monitoring wells and soil vapor points will be closed and not accessible during non work hours.

Weather Related Hazards

H&A employees and their subcontractors should be aware of potential health effects and/or physical hazards of working during inclement weather. Refer to OP1003-Cold Stress and OP1015-Heat Stress for discussion on weather hazards.

5. PROTECTIVE MEASURES

Personal Protective Equipment Requirements:

Copy and paste a checkmark "✓"into appropriate boxes.

Required PPE	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7
	GW Sampling	SV Point Installation	SV Sampling	Building Inventory/ Inspection	Sub-Slab Point Installation	Sub-Slab/Indoor Air/Ambient Air Sampling	MW Decom.
Hard hat							✓
Safety glasses w/side shields	✓	✓			✓		✓
Steel-toe footwear	✓	✓			✓		✓
Hearing protection (plugs, muffs)	✓	✓			✓		✓
Tyvek ™ coveralls	✓	✓					
PE-coated Tyvek™ coveralls							
Boots, chemical resistant	✓						
Boot covers, disposable							
Leather work gloves							
Inner gloves - Nitrile	✓	✓	✓		✓	✓	✓
Outer gloves - Neoprene	✓	✓					
Tape all wrist/ankle interfaces							
Half-face respirator*							
Full-face respirator*							
Organic vapor cartridges							
Acid gas cartridges							
Other cartridges: GME-P100							
P-100 (HEPA) filters							
Face shield							
Personal Flotation Device (PFD)							
High-Visibility Safety Vest	✓	✓	✓				✓
Other:							
Level of protection required [C or D]:	D Mod	D Mod	D Mod	D Mod	D Mod	D Mod	D Mod

* In the event of respirator use, H&A staff must be medically qualified, fit tested and clean shaven with no facial hair that will interfere with the seal.

The required PPE checked in any box above must be on site during the task being performed. Work shall not commence unless the required PPE is present.

Site Safety Equipment Requirements:

Check all items that are required to be on site.

Site Safety Equipment

☐ Fire Extinguisher	☑ First Aid Kit	☐ Flashlight
☐ Air horn/signaling device	☑ Cellular Phone	☐ Duct tape
☐ Ladder	☐ Barricade tape	☐ Drum dolly
☐ Two-way radio	☑ Safety cones	☐ Harness/Lanyard
☐ Other		

The required equipment checked in any box above must be on site during the task being performed. Work shall not commence unless the equipment is present.

6. MONITORING PLAN AND EQUIPMENT

Is air/exposure monitoring required at this work site for personal protection? ☑ Y ☐ N

Is perimeter monitoring required for community protection? ☐ Y ☑ N

Monitoring/Screening Equipment Requirements:

Check all items that are required to be on site.

Required Monitoring/Screening Equipment

- ☐ Photo-Ionization Detector (PID) 10.2eV
- ☐ Photo-Ionization Detector (PID) 11.7eV
- ☐ Photovac Micro Tip (PID) 10.6eV
- ☐ Organic Vapor Monitor (FID)
- ☐ Photovac Gas Chromatagraph (GC)
- ☐ Combustible Gas Indicator (CGI) (LEL)
- ☐ Multiple Gas Detector LEL/O2/H2S/CO
- ☐ Dust Monitors (RAMs)
- ☑ Colorimetric tubes
- ☑ Other RAE Mini Rae 2000; Air Samples for VC & DCE

The required equipment checked in any box above must be on site. Work shall not commence unless the equipment is present.

Standard Action Levels and Required Responses:

Exposure Guidelines for common contaminants are listed in Table 1 - Occupational Exposure Limits in the Chemical Hazards section above.

Requirements for PPE upgrades based on monitoring are in Table 2 - Monitoring Methods, Action Levels and Protective Measures following the Specific Monitoring Requirements section below.

Action levels for readings obtained with a multiple gas detector are listed below.

Instrument	Normal	Operating levels	Action levels – required responses
Oxygen Meter	20.9%	Between 19.5-23.5%	Below 19.5 %: leave area, requires supplied air Above 23.5%: leave area, fire hazard
CGI	0%	Less than 10%	Greater than 10%: fire/explosion hazard; cease work
Hydrogen Sulfide	0%	Less than 10 ppm.	Greater than 15 ppm (or 10 ppm for 8 hrs) requires supplied air respirator
Carbon Monoxide	0%	Less than 25 ppm	Greater than 200 ppm for 1 hour (or 25 ppm for 8 hrs) requires supplied air respirator

Standard Air Monitoring Plan (Volatiles):

- Prior to the beginning of work obtain background readings with the PID away from the site.
- Monitor the breathing zone when site soil is exposed (e.g., while drilling or excavating is occurring, etc.) with the PID.
- Monitoring should be conducted most frequently (e.g., every 15-30 minutes) when drilling or excavation first begins in a particular area and when soil is removed from the hole. After this, and if no exceedances of exposure limits are noted (see below), monitoring may be conducted less frequently (e.g., every 60 minutes).
- H&A general exposure limits will be used when a mixture of potentially volatile chemicals are suspected to be present in soil at the site.
- Monitor breathing zone during groundwater purging and sampling activities

In summary, if a reading of 10 ppm above background is detected with the PID for 5 minutes or longer, back away for a few minutes. Screen the air again after any vapors/gases have been given a chance to dissipate. If 10 ppm above background is still noted, evacuate the area and call the LHSC and PM for further guidance.

- Record monitoring data and PPE upgrades in field book or on Record of Field Monitoring form and maintain with project files.

- Air monitoring for exposure should be based on the frequency established under the Standard Air Monitoring Plan or under the Specific Monitoring Requirements. Record time, location and results of monitoring and actions taken based upon the readings.

Standard Dust Control Measures and Monitoring Plan:

Dust Control Measures:

It is anticipated that exposure to airborne dust can be mitigated during work operations as necessary to control dust emissions by means of limiting the area of exposed soils and through the use of water sprays. If dust emissions cannot be controlled by these standard measures, additional measures may be employed such as the use of a tackifier (if approved) to stabilize soil exposures or by covering exposed soil and stockpiles with tarpaulins, plastic sheeting or geotextile fabric. Otherwise cease work immediately and contact the Project Manager or the Corporate Health & Safety Manager for assistance. It is not permissible for dust emissions to escape from the site at any time and perimeter dust monitoring may be required to insure public safety.

Dust Monitoring:

Respirable Aerosol Monitors (RAM) can be used to monitor total dust levels in work zones and/or at the site perimeter. These instruments do not give specific readings of contaminant concentration (e.g. metals, asbestos, etc.). Depending upon the contaminants present, it may be mandatory for all workers to upgrade to level C protection using a half-face air-purifying respirator with HEPA (P-100) filters if dust levels cannot be adequately controlled during any of the on-site tasks. The H&A Site Safety Officer (SSO) will determine PPE upgrades based upon visual determination as necessary and the OSHA PEL for each known or suspected

contaminant. The OSHA PEL/STEL for Respirable Nuisance Dust is 5 mg/m^3 (8 hour TWA). Action levels for fugitive dust at the site perimeter are based upon the daily PM_{10} dust standard of 0.15 mg/m^3 in the National Ambient Air Quality Standard for Inhalable Dust (NAAQS).

Personal dust monitoring using an industrial hygiene pump and a filter cassette may be conducted on each day of operations. In such cases samples are collected from workers with the greatest potential dust exposure and analyzed by an accredited laboratory for specific contaminants.

Specific Monitoring Requirements:

Monitoring requirements and frequency is indicated by task and location below.

Task Number:	1,2,3,5, 6,7	Frequency	Continuous	times per	Continuously during invasive and/or sampling activities

VOC monitoring using a PID will occur continuously during groundwater monitoring (task 1), soil vapor installation (task 2), soil vapor sampling (task 3), sub-slab vapor point installation (task 5), sub-slab/indoor air/ambient air sampling (task 6), and site restoration (task 7) when personnel are present onsite.

TABLE 2
Last Revised September 2002

MONITORING METHOD, ACTION LEVELS AND PROTECTIVE MEASURES

INSTRUMENT	HAZARD	ACTION LEVEL	ACTION RESPONSE
Respirable Dust Monitor	Total Particulates	> 5 mg/m^3	Upgrade to Level C Protection
OVA, HNU[2], Photovac Microtip	Total Organic Vapors	Background	Level D Protection
		10 ppm > background or lowest OSHA permissible exposure limit, whichever is lower, or as modified for this task. Sustained for >5 minutes in the breathing zone.	Upgrade to Level C - site evacuation may be necessary for specific compounds
		50 ppm over background, unless lower values required due to respirator protection factors	Cease work; upgrade to Level B[3] may be required
Explosimeter[4] (LEL)	Flammable/Explosive Atmosphere	<10% Scale Reading	Proceed with work
		10-15% Scale Reading	Monitor with extreme caution
		>15% Scale Reading	Evacuate site
0xygen Meter[5]	Oxygen-Deficient Atmosphere	19.5% - 23.5% 0_2	Normal - Continue work
		< 19.5% 0_2	Evacuate site; oxygen deficient
		> 23.5% 0_2	Evacuate site; fire hazard
Radiation Meter[6]	Ionizing Radiation	0.1 Millirem/Hour	If > 0.1, radiation sources may be present[7]
		> 1 Millirem/Hour	Evacuate site; radiation hazard
Drager Tubes	Vapors/Gases	Species Dependent > 1 ppm vinyl chloride > 1 ppm benzene > 1 ppm 1,1-DCE	Consult Table 1 or other resources for concentration toxicity/detection data. Upgrade to Level C if concentration of compounds exceed thresholds shown at left; May need to cease work if other levels exceeded - site specific
Gas Chromatograph (GC)	Organic Vapors	3 ppm total OV > background or > lowest specific OSHA permissible exposure limit, whichever is lower	On-site monitoring or tedlar bag sample collection for off-site/laboratory analysis

Notes:
1. Monitor breathing zone.
2. Can also be used to monitor some inorganic species.
3. Positive pressure demand self contained breathing apparatus
4. Lower explosive limit (LEL) scale is 0-100%. LEL for most gasses is 15%.
5. Normal atmospheric oxygen concentration at sea level is 20%
6. Background gamma radiation is ~0.01-0.02 millirems/hour.
7. Contact H&A Health and Safety staff immediately.

Calibration and Use of Equipment:

Calibrate all monitoring equipment in accordance with manufacturers requirements, H&A calibration (OP) standards and site specific requirements (e.g., at the beginning and end of each work day). Calibration of equipment shall be documented in the field notes or Daily Field Report (DFR). Documentation should include:

- Date/time
- Zero reading before calibration
- Concentration of calibration gas
- Reading obtained with calibration gas before adjusting span\
- Final reading obtained with calibration gas after adjusting span

7. DECONTAMINATION AND DISPOSAL METHODS

Personal Hygiene Safeguards:

The following minimum personal hygiene safeguards shall be adhered to:

- No smoking or tobacco products on any Hazwoper project.
- No eating or drinking in the exclusion zone.
- It is required that personnel present on site wash hands before eating, smoking, taking medication, chewing gum/tobacco, using the restroom, or applying cosmetics and before leaving the site for the day.
- It is recommended that personnel present on site shower or bathe at home at the end of each day of working on the site.

Standard Personal Decontamination Procedures:

Outer gloves and boots should be decontaminated periodically as necessary and at the end of the day. Brush off solids with a hard brush and clean with soap and water or other appropriate cleaner whenever possible. Remove inner gloves carefully by turning them inside out during removal. Wash hands and forearms frequently. It is good practice to wear work-designated clothing while on-site which can be removed as soon as possible. Non-disposable overalls and outer work clothing should be bagged onsite prior to laundering. If gross contamination is encountered on-site contact the Project Manager and LHSC to discuss proper decontamination procedures. The steps required for decontamination will depend upon the degree and type of contamination but will generally follow the sequence below.

1. Remove and wipe clean hard hat
2. Rinse boots and gloves of gross contamination
3. Scrub boots and gloves clean
4. Rinse boots and gloves
5. Remove outer boots
6. Remove outer gloves
7. Remove Tyvek coverall
8. Remove respirator, wipe clean and store, if applicable
9. Remove inner gloves

Location of Decontamination Station:

At each work/installation location.

Disposal of PPE:

PPE that is not grossly contaminated can be bagged and disposed in regular trash receptacles. PPE that is grossly contaminated must be bagged (sealed) and field personnel should communicate with the Project Manager to determine proper client-approved, on-site disposal.

Waste PPE shall not be brought back to the H&A office or lab.

Tools & Equipment Decontamination:

All decontamination should be conducted at the site and not at the office or lab.

Check all equipment and materials needed for decontamination of tools and other equipment.

☐ Acetone	☐ Distilled water	☐ Poly sheeting
☑ Alconox soap	☐ Drums for water	☐ Steam cleaner
☐ Brushes	☐ Hexane	☑ Tap water
☑ Disposal bags	☐ Methanol	☐ Washtubs
☑ 5 gallon pails	☐ Other Paper towels	

Standard Equipment Decontamination Procedures:

Air monitoring instrumentation and delicate instruments that are difficult to decontaminate or sensitive to water should be protected from contamination during use through the use of plastic sheeting. To the extent possible, efforts should be taken to limit the degree of contamination to hand tools and sampling equipment during use. Proper PPE must be worn while performing decontamination, including the wearing of chemical safety glasses and gloves. Storage or transport of decontamination solvents in squirt bottles is not permitted as they may discharge their contents upon ambient temperature change or leak if overturned. Standard equipment decontamination procedures are as follows. Any additional requirements are listed under Specific Equipment Decontamination Procedures below.

Pretreatment of heavily contaminated equipment may be conducted as necessary:

1. Remove gross contamination using a brush or wiping with a paper towel
2. Soak in a solution of Alconox and water (if possible)
3. Wipe off excess contamination with a paper towel

Standard decontamination procedure:

1. Wash using a solution of Alconox and water
2. Rinse with potable water
3. Rinse with distilled water

Specific Equipment Decontamination Procedures:

1. Wash using a solution of Alconox and water

2. Rinse in potable water

Waste equipment/decon materials shall not be brought back to the H&A office.

Disposal Methods for Contaminated Materials:

Excess sample solids, decontamination materials, rags, brushes, poly sheeting, etc. that are determined to be free of contamination through field screening can usually be disposed into client-approved, on-site trash receptacles. Uncontaminated wash water may be discarded onto the ground surface away from surface water bodies in areas where infiltration can occur. Purge water from the groundwater wells and associated decontamination water is to be discharged to the sanitary sewer system via the basin drain in the janitor's closet. PPE may be discarded in onsite dumpsters.

Disposal Methods for Contaminated Soils:

Contaminated soil cuttings and spoils must be drummed for disposal off-site unless otherwise specifically directed. Soil cuttings and spoils determined to be free of contamination through field screening can usually be returned to the boreholes or excavations from which they came. Any additional requirements are listed under Specific Disposal Methods for Contaminated Soils below.

Contaminated Soil Sent to Geotechnical Lab:

Assignments that include geotechnical lab testing on contaminated samples must be accompanied with written data that will provide information on the type and extent of contamination. Project Managers must communicate any anticipated or known chemical hazards to the lab when assigning geotechnical tests. Preferably, a copy of this HASP should be forwarded to the laboratory for their review. If the contamination is not known, the PM must contact the laboratory and discuss the source of the sample to help identify any potential hazards that may be associated with the sample.

8. CONTINGENCY PLANNING

How H&A responds to an emergency depends on whether we are at an active facility or another other location. Many active facilities have very stringent requirements for the mitigation of emergencies. Therefore, the PM is responsible for identifying any specific requirements from the client contact.

As a rule of thumb, the following are H&A's basic responses to handling Emergencies. Typically, H&A does not mitigate emergencies. When Clients request or require specific functions such as First Aid/CPR trained personnel on site, we typically conform. Before any Project Manager or LHSC agrees to something more stringent, many issues should be considered such as training, safety, feasibility of an adequate response, insurance requirements, and much more.

Fire:

- Major Fires - Major fires will be mitigated by the local fire departments or by client's on-site fire/emergency response departments.
- Incipient Stage Fires -Incipient stage fires will be extinguished by on-site personnel using fire extinguishers. Only those who have received annual training may use an extinguisher.

Medical:

All H&A employee injuries and illnesses will be documented using the Supervisor's Accident / Injury / Near Miss Report (SAIR). This form is available on the Intranet.

- First Aid - First aid will be addressed using the on-site first aid kit. H&A employees are not required or expected to administer first aid/CPR to any H&A, Contractor, or Civilian personnel at any time and it is H&A's position that those who do are doing it on their behalf and not as a function of their job.
- Trauma - Based upon the nature of the injury, the injured party may be transported to the nearest hospital or emergency clinic by on-site personnel or by ambulance. First response to a trauma incident is to call 911 or facility security. H&A staff members are expected to assist in ancillary roles only such as directing ambulances to the scene. It is the discretion of the staff member on site whether an ambulance should be procured in remote locations where ambulance services will not be effective.

Hazardous Materials Spill:

- Small incidental spills (e.g. pint of motor oil) caused by H&A employees and/or by the contractor will be mitigated by the H&A staff member and/or the contractor.
- Large spills (e.g. large leak from heavy equipment fuel tank). The contractor is responsible for cleanup. In the event that it posses a serious human or environmental threat, the local Fire Department and/or client emergency response department will be contacted. Once emergency has been mitigated typically clean up will be provided by a vendor.

Rescue:

H&A employees will not enter any confined spaces for rescue purposes.

Weather Related Emergencies:

H&A employees and their subcontractors should be aware of potential health effects and/or physical hazards of working during inclement weather. If applicable, safeguards against the effects and hazards of heat stress, cold stress, frostbite, thunderstorms, and lightning, etc., should be included with the section pertaining to physical hazards in this HASP.

Evacuation Alarms:

Evacuation alarms and/or emergency information will be communicated among personnel on site through verbal communication.

Emergency Services:

Emergency services will be summoned via on-site or cellular phone.

Emergency Evacuation Plan:

The site evacuation plan is as follows:

1. Establish a designated meeting area to conduct a head count in the event of an emergency evacuation.
2. If the work area is not near an emergency exit, exit via the closest route and meet at the designated meeting area.
3. Notify emergency response personnel (fire, police and ambulance) of the number of missing or unaccounted for employees and their suspected location.
4. Administer first aid will in the meeting area as necessary.

Under no circumstances should any personnel re-enter the site area without the approval of the corporate H&S manager, the H&S coordinator, and the fire department official in charge.

9. HEALTH & SAFETY PLAN ACKNOWEDGMENT FORM

Note: Only H&A employees sign this page.

I hereby acknowledge receipt and briefing on this Health & Safety Plan prior to the start of on-site work and declare that I understand and agree to follow the provisions and procedures set forth herein while working on this site.

PRINTED NAME	SIGNATURE	DATE

10. PRE-JOB SAFETY CHECKLIST

The following checklist is designed to help Project Managers verify that all Health & Safety requirements are satisfied for projects involving site work and to aid in the preparation of the site-specific HASP.

Please initial and date the appropriate box once each requirement has been satisfied prior to commencement of site work.

#	Project H&S Requirements	Approval by PM or LHSC (initial each box or place NA)	Date Approved
1	Project site history has been researched and summarized, current site conditions have been determined and documentation of previous investigations, risk analyses and chemical data has been assembled and summarized.		
2	Project work scope has been outlined and potential chemical and physical hazards associated with work tasks have been identified.		
3	Task Safety Analysis has been performed and attached to the HASP.		
4	H&A personnel to be involved with the project have been identified and are current with medical surveillance, OSHA 40 hour and 8 hour refresher training. Hazwoper site supervisor requirements are satisfied.		
5	Additional training requirements have been met: e.g. nuclear density gauge, DOT, Confined Space Entry, Competent Person Training for Excavation, OSHA 10 hour certification, Railway Safety Training, etc.		
6	H&A personnel that may be required to wear a respirator are medically qualified and have current certification of fit testing.		
7	Client's additional H&S requirements have been met: e.g. facility safety orientations, safety documentation, meetings, special PPE requirements		
8	H&A subcontractors have met H&A's minimum requirements including: current OSHA 40 hour training, medical surveillance, written HASP, insurance, MSDSs.		
9	MSDSs are on site and available for chemicals on site.		
10	Safety equipment is available: e.g. flashlight, telephone, ladders, traffic cones, barricade tape, fire extinguisher, first aid kit, PPE, respiratory protection, air and dust monitoring instrumentation (calibrated), personal flotation device (PFD), 90' life line with ring, decontamination equipment, etc.		
11	HASP and supporting documentation is complete and signed by all members.		

APPENDIX A
HASP Amendment Form

This Appendix is to be used whenever there is an immediate change in the project scope that would require an amendment to the HASP. For project scope changes associated with "add-on" tasks, the changes must be made in the body of the HASP. Before changes can be made, a review of the potential hazards must be initiated by the H&A Project Manager.

Amendment No.	
Site Name:	
Work Assignment No.:	
Date:	
Type of Amendment:	
Reason for Amendment:	
Alternate Safeguard Procedures:	
Required Changes in PPE:	

Project Manager Signature: _____ Date: _____

Local Health and Safety Coordinator: _____ Date: _____

This original form must remain on site with the original HASP. If additional HASPs are in the field, it is the Project Manager's responsibility to forward a signed copy of this amendment to those who have copies.

APPENDIX B
Issuance and Compliance
Site Safety Officer Role and Responsibilities
Training Requirements

This Health & Safety Plan (HASP) has been prepared in accordance with the requirements of Title 29 the Code of Federal Regulations (CFR) Section 1910.120/1926.65 to provide guidance for the protection of onsite personnel from physical harm and chemical exposure while working at the subject site.

The specific requirements of this HASP include precautions for hazards that exist during this project and may be revised as new information is received or as site conditions change.

- This HASP must be signed by all Haley & Aldrich (H&A) staff members who will work on the project, including H&A visitors. By signing the Health and Safety Plan Acknowledgement Form personnel are acknowledging that they are aware of the specific hazards of the site and agree to follow the provisions and procedures required to safeguard themselves and others from those hazards.
- This HASP or a current signed copy must be retained at the site at all times when H&A staff members are present.
- Deviations from this HASP are not permitted without prior approval from the above signed. Unauthorized deviations may constitute a violation of H&A company procedures/policies and may result in disciplinary action.
- Revisions to this HASP must be outlined within the contents of the HASP. If immediate or minor changes are necessary, the LHSC and H&A Project Manager may use Appendix A (HASP Amendment Form), located in the back of this HASP. Any revision to the HASP requires personnel to be informed of the changes and that they understand the requirements of the change.
- This HASP is not for H&A Subcontractor use. Each subcontractor engaged is responsible for all matters relating to the health and safety of their personnel and the safe operation of their equipment. This HASP will be made available as a reference so that subcontractors are informed of the potential hazards associated with the site to the extent we are aware. Subcontractors must develop their own HASP which must be, at a minimum, at least as protective as this HASP.
- This Site Specific HASP provides only site-specific descriptions and work procedures. General safety and health compliance programs in support of this HASP (e.g., injury reporting, medical surveillance, personal protective equipment (PPE) selection, etc. are described in detail in the H&A Corporate Health and Safety Program Manual and within Standard Operating Procedures (OPs). Both the manual and OPs can be located on the Company Intranet. When appropriate, users of this HASP should always refer to these resources and incorporate to the extent possible. The manual and OPs are available to clients and regulators per request.

Site Safety Officer:

The site safety officer (SSO) is defined as the individual responsible to the employer with the authority and knowledge necessary to implement the HASP and verify compliance with applicable health and safety requirements.

The H&A Project Manager may designate any person as the site safety officer (SSO) and determines the order of authority on site. Usually the highest ranking person on site is the SSO. A site safety officer must be on site at all times. When none of the designated SSOs are present on site, the senior person for H&A on site will default to the SSO. This project has identified the following hierarchy for SSO.

1. Claire L. DeBergalis

2. David Nostrant

3. Ethan Lee

Site Safety Officer Roles and Responsibilities:

The SSO is responsible for field implementation of this HASP and enforcement of safety rules and regulations. SSO functions include:

- Act as H&A's liaison for health and safety issues with client, staff, subcontractors, and agencies.
- Verify that utility clearance has been performed by H&A subcontractors.
- Oversee day-to-day implementation of the HASP by H&A employees on site.
- Interact with subcontractor project personnel on health and safety matters.
- Verify use of required PPE as outlined in the HASP.
- Inspect and maintain H&A safety equipment, including calibration of air monitoring instrumentation used by H&A.
- Perform changes to HASP and document in Appendix A of the HASP as needed and notify appropriate persons of changes.
- Investigate and report on-site accidents and incidents involving H&A and its subcontractors.
- Verify that site personnel are familiar with site safety requirements (e.g., the hospital route and emergency contact numbers).
- Report accidents, injuries, and near misses to the H&A PM and Local Health and Safety Coordinator (LHSC) as needed.

The SSO will conduct initial site safety orientations with site personnel (including subcontractors) and conduct toolbox and safety meetings thereafter with H&A employees and H&A subcontractors at regular intervals and in accordance with H&A policy and contractual obligations. The SSO will track the attendance of site personnel at H&A orientations, toolbox

talks, and safety meetings. Subcontractors will document training and provide training rosters to the H&A SSO.

The SSO will report accidents such as injury, overexposure, or property damage to the Local Health and Safety Coordinator, to the Project Manager, and to the safety managers of other on-site consultants and contractors. The SSO will consult with the safety managers of other on-site consultants and subcontractors on specific health and safety issues arising over the course of the project, as needed.

Health and Safety Training Requirements:

Personnel will not be permitted to supervise or participate in field activities until they have been trained to a level required by their job function and responsibility. H&A staff members, contractors, subcontractors, and consultants who have the potential to be exposed to contaminated materials or physical hazards must complete the training described in the following sections.

The H&A Project Manager/LHSC will be responsible for maintaining and providing to the client/site manager documentation of H&A staff members' compliance with required training as requested. Records shall be maintained per OSHA requirements.

40-Hour Health and Safety Training

The 40-Hour Health and Safety Training course provides instruction on the nature of hazardous waste work, protective measures, proper use of personal protective equipment, recognition of signs and symptoms which might indicate exposure to hazardous substances, and decontamination procedures. It is required for all personnel working on-site, such as equipment operators, general laborers, and supervisors, who may be potentially exposed to hazardous substances, health hazards, or safety hazards consistent with 29 CFR 1910.120.

8-hour Annual Refresher Training

Personnel who complete the 40-hour health and safety training are subsequently required to attend an annual 8-hour refresher course to remain current in their training. When required, site personnel must be able to show proof of completion (i.e., certification) at an 8-hr refresher training course within the past 12 months.

8-Hour Supervisor Training

On-site managers and supervisors directly responsible for, or who supervise staff members engaged in hazardous waste operations, should have eight additional hours of Supervisor training in accordance with 29 CFR 1910.120. Supervisor Training includes, but is not limited to, accident reporting/investigation, regulatory compliance, work practice observations, auditing, and emergency response procedures.

Additional Training for Specific Projects

H&A personnel will ensure their personnel have received additional training on specific instrumentation, equipment, confined space entry, construction hazards, etc., as necessary to perform their duties. This specialized training will be provided to personnel before engaging in the specific work activities including:

- Client specific training or orientation
- Competent person excavations
- Confined space entry (entrant, supervisor, and attendant)
- Heavy equipment including aerial lifts and forklifts
- First aid/ CPR
- Diving certification
- Use of fall protection
- Commercial drivers license
- Use of nuclear density gauges
- Asbestos awareness