Indoor Environmental Quality Investigation

Leroy Junior High School
600 East Pine Street
Leroy, McLean County, Illinois
IDPH File No. 603130301

Illinois Department of Public Health
Division of Environmental Health
Toxicology Program
June 2003

PURPOSE

The Illinois Department of Public Health (IDPH) conducted an indoor environmental quality investigation at the Leroy Junior High School in response to a request by HDC Engineering (HDC), on behalf of the Leroy school district. The purpose of the investigation was to determine if underground volatile organic compounds (VOCs) may be causing vapor intrusion into the school. Our investigation was limited to air sampling three classrooms for VOCs and reviewing the subsequent data package.

BACKGROUND AND STATEMENT OF ISSUES

In 2002, HDC conducted a leaking underground storage tank (LUST) investigation located to the southeast of the former bus maintenance garage (Attachment 1). During the investigation, soil and groundwater monitoring well samples contained concentrations of fuel and solvent materials. This solvent contamination was believed to be the result of a former employee using tetrachloroethene (TCE) as a cleaner for degreasing equipment in the bus maintenance garage over several years.

On June 3, 2003, IDPH staff and HDC met at the Leroy Junior High School at approximately 8 am. HDC provided air sampling equipment that was used to collect indoor air samples. Three Summa canisters and air flow controllers were contracted from Severn Trent Laboratories (STL), 5815 Middlebrook Pike, Knoxville, Tennessee 37921-5947. STL also provided laboratory services. The air sampling event was conducted on a day when classes were not in session. However, school custodians, clerical staff, plumbing contractors, teachers' training, and basketball clinic activities were being conducted during the air sampling. Prior to the air sampling event, IDPH faxed the District Superintendent a list of things to avoid at least 24 hours prior to the air sampling.

Junior High School Classrooms 60 and 61 were air sampled because their east locations sit on a concrete slab above the VOC contaminated soil and groundwater plume. The High School Classroom 6 was selected as a background air sample since it was located on the ground floor in the west wing of the school campus and not above any known VOC contamination. All classrooms were off limits to school personnel during the 8-hour sampling period.

RESULTS

All three air samples were collected with Summa canisters and flow controllers according to Attachment 2. The analytical method used by STL Knoxville to analyze the results was EPA Method TO-15. This method achieved minimum detection limits of at least one part per billion (1ppb). The analytical results are in a summary table provided by HDC and is accompanied with the laboratory's data in Attachment 3.

CONCLUSIONS AND RECOMMENDATIONS

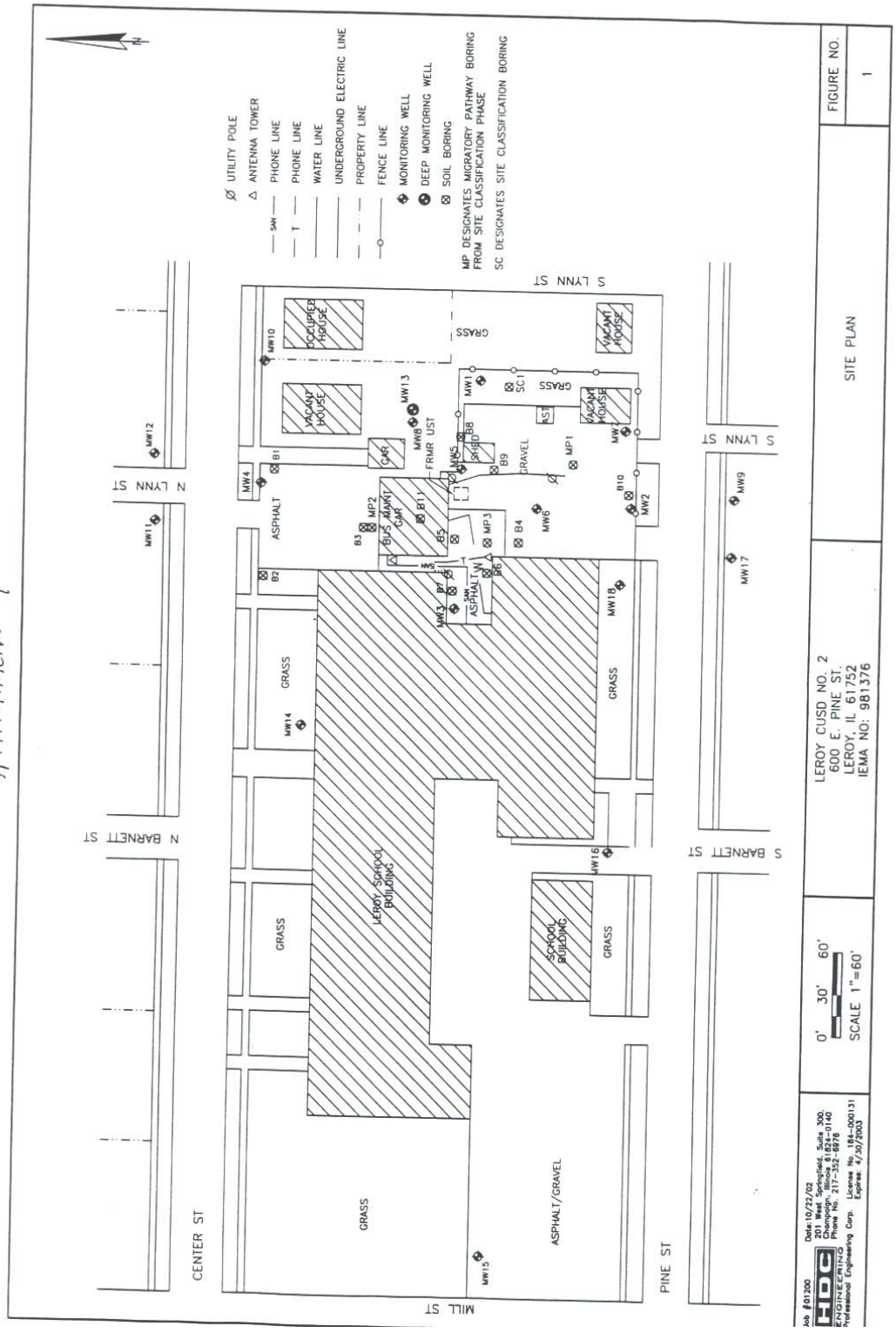
No VOCs, including tetrachloroethene and its breakdown products, were detected above comparison values in the air samples. Therefore, no apparent vapor intrusion of VOCs into the school was occurring at the time of air sampling activities. Some of the VOCs contaminated soil will be removed along with the contaminated soil in the proposed excavation area of the former underground storage tank at the bus maintenance garage (Attachment 4). Plans are to remove and relocate the bus maintenance garage so excavation can be completed. Currently, there are no plans to excavate any additional area which may include only VOC contaminated soil. However, some additional VOC contaminated soil may be removed when footings for the new school addition are dug in this area.

Precautions should be used during soil remediation activities to limit inhalation exposure to site contaminants by students, faculty, staff, and nearby residents. A public fact sheet should be developed that discusses the environmental study and upcoming remedial project. It should include statements that a health and safety plan and air monitoring plan have been developed to ensure a safe working environment and no off-site health impacts.

Preparer of Report

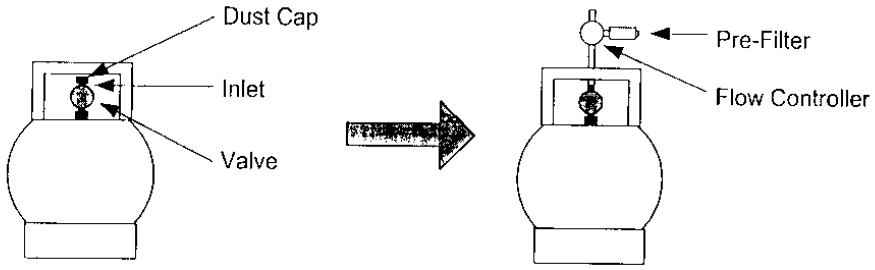
Cary Ware
Environmental Health Specialist
Illinois Department of Public Health

ATTACHMENT 1



ATTACHMENT 2-1

STL Knoxville
Use of a Flow Controlled Summa Canister
Page 1 of 2



1. Remove dust cap from the valve of the Summa canister. Note: if the cap is loose this does not mean that the canister leaked during transit.
2. If a flow controller has been provided, remove the low pressure port plug, and attach the flow controller to the cylinder inlet turning the threaded nut until it is hand tight. Then, remove the cap from the micron filter.
3. Use a 9/16 inch wrench to tighten the nut. Turning 1/4 to 1/2 turn beyond hand tight is sufficient.
4. Complete the sample label, noting one side of the label has sampling information. If using your own label, please do not cover up or remove canister information tag.
5. To initiate sampling event, turn valve counter clockwise.
6. Note start time. The valve must be closed at the end point, i.e. 2, 4, 6, 8 or 24 hours, by turning clockwise until snug.
7. If the valve is not closed at the end point, the canister will eventually go to ambient pressure.
   The duration which you may go beyond the set point of the flow controller will vary with the set point of the flow controller.
8. After closing the valve, remove the flow controller from the canister, replace the dust cap on the canister, replace all plugs and caps on flow controller, and return to the laboratory in the shipping containers in which they were received.
9. Please note that the flow controllers are not to be adjusted in the field.
10. Please do not remove the canister information tag for any reason, this is a record of the canister's certification.
11. Please see the reverse side for detailed flow controller instructions, and call your STL project manager with any questions regarding the above information.

ATTACHMENT 2-2

STL Knoxville
Use of a Flow Controlled Summa Canister
Page 2 of 2

Looking at the flow controller (**Figure 1**), you will notice that there are three connectors. Connector [A] mounts to the SUMMA can and is labeled **LP** for "Low Pressure". Connector [B] is labeled **HP** for "High Pressure" and has a 2-micron filter attached to it. The air sample will be drawn into the canister through this port. Connector [C] is also a "High Pressure" port and is capped.

Warning! - Do not remove the cap from connector [C] ! - This will invalidate the calibration of the flow controller!

Figure 1

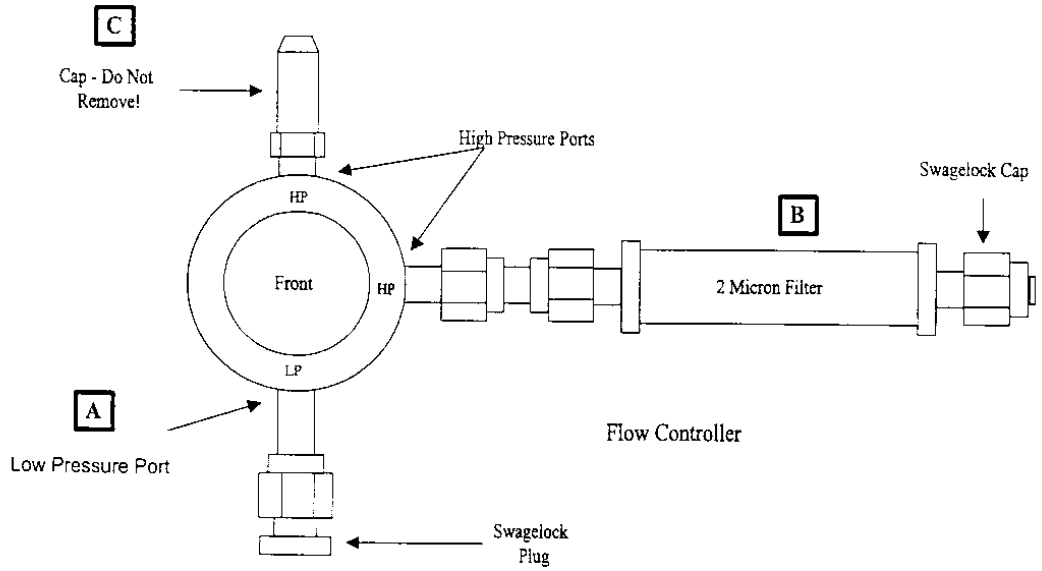
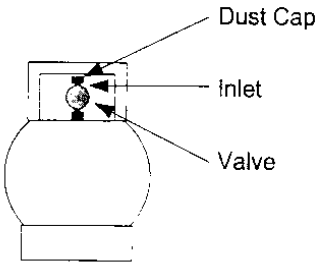


Figure 2



To install the flow controller onto the canister, first remove the cap from the valve on the canister (**Figure 2**). Remove the swagelock plug from connector [A] on the flow controller. Attach connector [A] of the flow controller to the valve of the canister with a 9/16" wrench. Note: This is the only way the flow controller will fit on the canister.

Next, completely remove the swagelock cap from the 2 micron filter on connector [B]. If needed, attach your sampling lines to the filter. Fully open the valve on the canister to begin sampling. Once sampling is complete, close the valve on the canister. Remove the flow controller from the canister. Replace all caps and plugs on the canister and flow controller.

Sc006r0, 3/31/03

ATTACHMENT 3-1

HDC ENGINEERING

201 W. Springfield Ave., Suite 300
P.O. Box 140
Champaign, Illinois 61824-0140
BUS. (217) 352-6976
FAX (217) 356-0570

June 25, 2003

Cary Ware
Illinois Department of Public Health
2125 S. First St.
Champaign, IL 61820-7499

RE: LeRoy School District No. 2
LeRoy, Illinois

Dear Mr. Ware:

The results for the air samples are enclosed for your review. I also included a summary table. Thank you again for your help. If you have any questions or need additional information, I can be reached at (217) 352-6976 or at kevins@hdc-eng.com.

Respectfully,
HDC Engineering

Kevin Saylor, PE
Environmental Engineer

cc: File (ltr-datatoIDPH3.doc)

ATTACHMENT 3-2

LeRoy CUSD No. 2
HDC Project No. 03198
Results of STL Air Analyses

VOC Compound	Classroom 6	Classroom 60	Office 61
Dichlorodifluoromethane	0.74	2.3	3.1
Chlorodifluoromethane	0.31 J	0.35 J	5.6
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	ND	ND
Chloromethane	0.69 J	0.81 J	0.79 J
Vinyl chloride	ND	ND	ND
n-Butane	3.0	0.9	1.2
1,3-Butadiene	ND	ND	ND
Bromomethane	ND	ND	ND
Chloroethane	ND	ND	ND
Trichlorofluoromethane	0.51	0.49 J	0.74
Pentane	0.77 J	ND	2.6
1,1-Dichloroethene	ND	ND	ND
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ND	0.12 J
Carbon disulfide	0.24 J	0.2 J,B	0.18 J,B
3-Chloropropene	ND	ND	ND
Methylene chloride	9.9	0.83 J	1.4
trans-1,2-Dichloroethene	ND	ND	ND
n-Hexane	0.76	ND	0.2 J
1,1-Dichloroethane	ND	ND	ND
cis-1,2-Dichloroethene	ND	ND	ND
Chloroform	0.77	ND	ND
1,1,1-Trichloroethane	0.14 J	ND	0.16 J
Cyclohexane	0.39 J	ND	ND
Carbon tetrachloride	ND	ND	ND
Benzene	2.6	0.19 J	0.25 J
1,2-Dichloroethane	ND	ND	ND
n-Heptane	1.1	ND	ND
Trichloroethene	ND	ND	0.36 J
1,2-Dichloropropane	ND	ND	ND
Dibromomethane	ND	ND	ND
Bromodichloromethane	ND	ND	ND
cis-1,3-Dichloropropene	ND	ND	ND
Toluene	6.9	0.66	1.3
n-Octane	0.49	ND	ND
trans-1,3-Dichloropropene	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND
Tetrachloroethene	0.91	0.63	0.3 J
Dibromochloromethane	ND	ND	ND
1,2-Dibromoethane (EDB)	ND	ND	ND
Chlorobenzene	ND	ND	ND
Ethylbenzene	1.3	ND	0.12 J
m-Xylene & p-Xylene	4.5	ND	0.28 J
Nonane	7.5	ND	ND
o-Xylene	1.4	ND	0.12 J
Styrene	ND	ND	0.15 J

TO-15 Results
06/25/2003

ATTACHMENT 3-3

LeRoy CUSD No. 2
HDC Project No. 03198
Results of STL Air Analyses

VOC Compound	Classroom 6	Classroom 60	Office 61
Bromoform	ND	ND	ND
Cumene	0.34 J	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND
n-Propylbenzene	0.54	ND	ND
1,3,5-Trimethylbenzene	0.86	ND	ND
n-Decane	7.6	ND	ND
alpha-Methylstyrene	ND	ND	ND
1,2,4-Trimethylbenzene	2.1	ND	ND
1,3-Dichlorobenzene	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND
Benzyl chloride	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND
n-Undecane	2.7	ND	0.15 J
n-Dodecane	0.36 J	ND	ND
1,2,4-Trichlorobenzene	ND	ND	ND
Hexachlorobutadiene	ND	ND	ND
Naphthalene	ND	ND	ND
Methanol	65	59 B	56 B
Ethyl ether	0.24 J	ND	ND
Acetone	32	15 J	11 J
Acrylonitrile	ND	ND	ND
Vinyl acetate	ND	0.95 J	0.39 J
2-Butanone (MEK)	2.9	1.2 J	0.67 J
1-Butanol	4.4	1.0 J	1.2
4-Methyl-2-pentanone (MIBK)	ND	ND	6.6
2-Hexanone	ND	ND	ND
Methyl tert-butyl ether	ND	ND	ND
Acrolein	0.75 J	0.89 J	0.47 J
Acetonitrile	0.42 J	0.43 J	0.44 J

All results ppb (v/v)
J = Estimated result. Result is less than reporting limit.
B = Method blank contamination. The associated method blank contains the target analyte at a reportable limit.
Samples collected with SUMMA canisters over an 8-hour period on 06/03/03.

NIOSH 100 ppb

ATTACHMENT 3-4

HDC ENGINEERING INC

Client Sample ID: 087 CLASSROOM 6

GC/MS Volatiles

Lot-Sample #...: H3F050205-001 Work Order #...: FP1EL1AA Matrix.....: AIR
Date Sampled...: 06/03/03 Date Received..: 06/05/03
Prep Date.....: 06/10/03 Analysis Date..: 06/10/03
Prep Batch #...: 3162235
Dilution Factor: 2.13 Method.....: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dichlorodifluoromethane	**0.74**	**0.43**	**ppb(v/v)**	**0.11**
Chlorodifluoromethane	**0.31 J**	**0.43**	**ppb(v/v)**	**0.064**
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	0.43	ppb(v/v)	0.13
Chloromethane	**0.69 J**	**1.1**	**ppb(v/v)**	**0.13**
Vinyl chloride	ND	0.43	ppb(v/v)	0.11
n-Butane	**3.0**	**0.43**	**ppb(v/v)**	**0.085**
1,3-Butadiene	ND	0.43	ppb(v/v)	0.13
Bromomethane	ND	0.43	ppb(v/v)	0.13
Chloroethane	ND	0.43	ppb(v/v)	0.11
Trichlorofluoromethane	**0.51**	**0.43**	**ppb(v/v)**	**0.085**
Pentane	**0.77 J**	**1.1**	**ppb(v/v)**	**0.11**
1,1-Dichloroethene	ND	0.43	ppb(v/v)	0.085
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	0.43	ppb(v/v)	0.11
Carbon disulfide	**0.24 J**	**0.43**	**ppb(v/v)**	**0.085**
3-Chloropropene	ND	0.43	ppb(v/v)	0.11
Methylene chloride	**9.9**	**1.1**	**ppb(v/v)**	**0.51**
trans-1,2-Dichloroethene	ND	0.43	ppb(v/v)	0.11
n-Hexane	**0.76**	**0.43**	**ppb(v/v)**	**0.11**
1,1-Dichloroethane	ND	0.43	ppb(v/v)	0.11
cis-1,2-Dichloroethene	ND	0.43	ppb(v/v)	0.11
Chloroform	**0.77**	**0.43**	**ppb(v/v)**	**0.085**
1,1,1-Trichloroethane	**0.14 J**	**0.43**	**ppb(v/v)**	**0.11**
Cyclohexane	**0.39 J**	**1.1**	**ppb(v/v)**	**0.13**
Carbon tetrachloride	ND	0.43	ppb(v/v)	0.13
Benzene	**2.6**	**0.43**	**ppb(v/v)**	**0.13**
1,2-Dichloroethane	ND	0.43	ppb(v/v)	0.11
n-Heptane	**1.1**	**0.43**	**ppb(v/v)**	**0.11**
Trichloroethene	ND	0.43	ppb(v/v)	0.13
1,2-Dichloropropane	ND	0.43	ppb(v/v)	0.11
Dibromomethane	ND	0.43	ppb(v/v)	0.11
Bromodichloromethane	ND	0.43	ppb(v/v)	0.11
cis-1,3-Dichloropropene	ND	0.43	ppb(v/v)	0.13
Toluene	**6.9**	**0.43**	**ppb(v/v)**	**0.19**
n-Octane	**0.49**	**0.43**	**ppb(v/v)**	**0.085**
trans-1,3-Dichloropropene	ND	0.43	ppb(v/v)	0.11
1,1,2-Trichloroethane	ND	0.43	ppb(v/v)	0.13
Tetrachloroethene	**0.91**	**0.43**	**ppb(v/v)**	**0.13**

(Continued on next page)

ATTACHMENT 3-5

HDC ENGINEERING INC

Client Sample ID: 087 CLASSROOM 6

GC/MS Volatiles

Lot-Sample #...: H3F050205-001 Work Order #...: FP1EL1AA Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dibromochloromethane	ND	0.43	ppb(v/v)	0.11
1,2-Dibromoethane (EDB)	ND	0.43	ppb(v/v)	0.13
Chlorobenzene	ND	0.43	ppb(v/v)	0.13
Ethylbenzene	**1.3**	**0.43**	**ppb(v/v)**	**0.11**
m-Xylene & p-Xylene	**4.5**	**0.43**	**ppb(v/v)**	**0.11**
Nonane	**7.5**	**0.43**	**ppb(v/v)**	**0.085**
o-Xylene	**1.4**	**0.43**	**ppb(v/v)**	**0.11**
Styrene	ND	0.43	ppb(v/v)	0.13
Bromoform	ND	0.43	ppb(v/v)	0.085
Cumene	**0.34 J**	**0.43**	**ppb(v/v)**	**0.13**
1,1,2,2-Tetrachloroethane	ND	0.43	ppb(v/v)	0.085
n-Propylbenzene	**0.54**	**0.43**	**ppb(v/v)**	**0.11**
1,3,5-Trimethylbenzene	**0.86**	**0.43**	**ppb(v/v)**	**0.13**
n-Decane	**7.6**	**0.43**	**ppb(v/v)**	**0.11**
alpha-Methylstyrene	ND	0.43	ppb(v/v)	0.13
1,2,4-Trimethylbenzene	**2.1**	**0.43**	**ppb(v/v)**	**0.11**
1,3-Dichlorobenzene	ND	0.43	ppb(v/v)	0.085
1,4-Dichlorobenzene	ND	0.43	ppb(v/v)	0.11
Benzyl chloride	ND	0.43	ppb(v/v)	0.11
1,2-Dichlorobenzene	ND	0.43	ppb(v/v)	0.11
n-Undecane	**2.7**	**0.43**	**ppb(v/v)**	**0.13**
n-Dodecane	**0.36 J**	**0.43**	**ppb(v/v)**	**0.17**
1,2,4-Trichloro-benzene	ND	0.43	ppb(v/v)	0.13
Hexachlorobutadiene	ND	0.43	ppb(v/v)	0.064
Naphthalene	ND	0.43	ppb(v/v)	0.19
Methanol	**65**	**21**	**ppb(v/v)**	**0.19**
Ethyl ether	**0.24 J**	**1.1**	**ppb(v/v)**	**0.15**
Acetone	**32**	**11**	**ppb(v/v)**	**0.51**
Acrylonitrile	ND	1.1	ppb(v/v)	0.11
Vinyl acetate	ND	1.1	ppb(v/v)	0.28
2-Butanone (MEK)	**2.9**	**1.1**	**ppb(v/v)**	**0.28**
1-Butanol	**4.4**	**1.1**	**ppb(v/v)**	**0.26**
4-Methyl-2-pentanone (MIBK)	ND	1.1	ppb(v/v)	0.79
2-Hexanone	ND	1.1	ppb(v/v)	0.58
Methyl tert-butyl ether	ND	1.1	ppb(v/v)	0.19
Acrolein	**0.75 J**	**1.1**	**ppb(v/v)**	**0.11**
Acetonitrile	**0.42 J**	**2.1**	**ppb(v/v)**	**0.28**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	104	(70 - 130)
Toluene-d8	104	(70 - 130)
4-Bromofluorobenzene	110	(70 - 130)

(Continued on next page)

ATTACHMENT 3-6

HDC ENGINEERING INC

Client Sample ID: 087 CLASSROOM 6

GC/MS Volatiles

Lot-Sample #...: H3F050205-001 Work Order #...: FP1EL1AA Matrix.....: AIR

NOTE(S):

J Estimated result. Result is less than RL.

ATTACHMENT 3-7

HDC ENGINEERING INC

Client Sample ID: 2952 CLASSROOM 60

GC/MS Volatiles

Lot-Sample #...: H3F050205-002 Work Order #...: FP1EN1AA Matrix.....: AIR
Date Sampled...: 06/03/03 Date Received..: 06/05/03
Prep Date.....: 06/09/03 Analysis Date..: 06/10/03
Prep Batch #...: 3161302
Dilution Factor: 3.1 Method.....: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dichlorodifluoromethane	**2.3**	**0.62**	**ppb(v/v)**	**0.16**
Chlorodifluoromethane	**0.35 J**	**0.62**	**ppb(v/v)**	**0.093**
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	0.62	ppb(v/v)	0.19
Chloromethane	**0.81 J**	**1.6**	**ppb(v/v)**	**0.19**
Vinyl chloride	ND	0.62	ppb(v/v)	0.16
n-Butane	**0.90**	**0.62**	**ppb(v/v)**	**0.12**
1,3-Butadiene	ND	0.62	ppb(v/v)	0.19
Bromomethane	ND	0.62	ppb(v/v)	0.19
Chloroethane	ND	0.62	ppb(v/v)	0.16
Trichlorofluoromethane	**0.49 J**	**0.62**	**ppb(v/v)**	**0.12**
Pentane	ND	1.6	ppb(v/v)	0.16
1,1-Dichloroethene	ND	0.62	ppb(v/v)	0.12
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	0.62	ppb(v/v)	0.16
Carbon disulfide	**0.20 J,B**	**0.62**	**ppb(v/v)**	**0.12**
3-Chloropropene	ND	0.62	ppb(v/v)	0.16
Methylene chloride	**0.83 J**	**1.6**	**ppb(v/v)**	**0.74**
trans-1,2-Dichloroethene	ND	0.62	ppb(v/v)	0.16
n-Hexane	ND	0.62	ppb(v/v)	0.16
1,1-Dichloroethane	ND	0.62	ppb(v/v)	0.16
cis-1,2-Dichloroethene	ND	0.62	ppb(v/v)	0.16
Chloroform	ND	0.62	ppb(v/v)	0.12
1,1,1-Trichloroethane	ND	0.62	ppb(v/v)	0.16
Cyclohexane	ND	1.6	ppb(v/v)	0.19
Carbon tetrachloride	ND	0.62	ppb(v/v)	0.19
Benzene	**0.19 J**	**0.62**	**ppb(v/v)**	**0.19**
1,2-Dichloroethane	ND	0.62	ppb(v/v)	0.16
n-Heptane	ND	0.62	ppb(v/v)	0.16
Trichloroethene	ND	0.62	ppb(v/v)	0.19
1,2-Dichloropropane	ND	0.62	ppb(v/v)	0.16
Dibromomethane	ND	0.62	ppb(v/v)	0.16
Bromodichloromethane	ND	0.62	ppb(v/v)	0.16
cis-1,3-Dichloropropene	ND	0.62	ppb(v/v)	0.19
Toluene	**0.66**	**0.62**	**ppb(v/v)**	**0.28**
n-Octane	ND	0.62	ppb(v/v)	0.12
trans-1,3-Dichloropropene	ND	0.62	ppb(v/v)	0.16
1,1,2-Trichloroethane	ND	0.62	ppb(v/v)	0.19
Tetrachloroethene	**0.63**	**0.62**	**ppb(v/v)**	**0.19**

(Continued on next page)

ATTACHMENT 3-8

HDC ENGINEERING INC

Client Sample ID: 2952 CLASSROOM 60

GC/MS Volatiles

Lot-Sample #...: H3F050205-002 Work Order #...: FP1EN1AA Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dibromochloromethane	ND	0.62	ppb(v/v)	0.16
1,2-Dibromoethane (EDB)	ND	0.62	ppb(v/v)	0.19
Chlorobenzene	ND	0.62	ppb(v/v)	0.19
Ethylbenzene	ND	0.62	ppb(v/v)	0.16
m-Xylene & p-Xylene	ND	0.62	ppb(v/v)	0.16
Nonane	ND	0.62	ppb(v/v)	0.12
o-Xylene	ND	0.62	ppb(v/v)	0.16
Styrene	ND	0.62	ppb(v/v)	0.19
Bromoform	ND	0.62	ppb(v/v)	0.12
Cumene	ND	0.62	ppb(v/v)	0.19
1,1,2,2-Tetrachloroethane	ND	0.62	ppb(v/v)	0.12
n-Propylbenzene	ND	0.62	ppb(v/v)	0.16
1,3,5-Trimethylbenzene	ND	0.62	ppb(v/v)	0.19
n-Decane	ND	0.62	ppb(v/v)	0.16
alpha-Methylstyrene	ND	0.62	ppb(v/v)	0.19
1,2,4-Trimethylbenzene	ND	0.62	ppb(v/v)	0.16
1,3-Dichlorobenzene	ND	0.62	ppb(v/v)	0.12
1,4-Dichlorobenzene	ND	0.62	ppb(v/v)	0.16
Benzyl chloride	ND	0.62	ppb(v/v)	0.16
1,2-Dichlorobenzene	ND	0.62	ppb(v/v)	0.16
n-Undecane	ND	0.62	ppb(v/v)	0.19
n-Dodecane	ND	0.62	ppb(v/v)	0.25
1,2,4-Trichloro-benzene	ND	0.62	ppb(v/v)	0.19
Hexachlorobutadiene	ND	0.62	ppb(v/v)	0.093
Naphthalene	ND	0.62	ppb(v/v)	0.28
Methanol	**59 B**	**31**	**ppb(v/v)**	**0.28**
Ethyl ether	ND	1.6	ppb(v/v)	0.22
Acetone	**15 J**	**16**	**ppb(v/v)**	**0.74**
Acrylonitrile	ND	1.6	ppb(v/v)	0.16
Vinyl acetate	**0.95 J**	**1.6**	**ppb(v/v)**	**0.40**
2-Butanone (MEK)	**1.2 J**	**1.6**	**ppb(v/v)**	**0.40**
1-Butanol	**1.0 J**	**1.6**	**ppb(v/v)**	**0.37**
4-Methyl-2-pentanone (MIBK)	ND	1.6	ppb(v/v)	1.1
2-Hexanone	ND	1.6	ppb(v/v)	0.84
Methyl tert-butyl ether	ND	1.6	ppb(v/v)	0.28
Acrolein	**0.89 J**	**1.6**	**ppb(v/v)**	**0.16**
Acetonitrile	**0.43 J**	**3.1**	**ppb(v/v)**	**0.40**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	106	(70 - 130)
Toluene-d8	105	(70 - 130)
4-Bromofluorobenzene	104	(70 - 130)

(Continued on next page)

ATTACHMENT 3-9

HDC ENGINEERING INC

Client Sample ID: 2952 CLASSROOM 60

GC/MS Volatiles

Lot-Sample #...: H3F050205-002 Work Order #...: FP1EN1AA Matrix.....: AIR

NOTE(S):

J Estimated result. Result is less than RL.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

ATTACHMENT 3-9

HDC ENGINEERING INC

Client Sample ID: 1937 OFFICE 61

GC/MS Volatiles

Lot-Sample #...: H3F050205-003 Work Order #...: FP1EQ1AA Matrix.....: AIR
Date Sampled...: 06/03/03 Date Received..: 06/05/03
Prep Date.....: 06/09/03 Analysis Date..: 06/10/03
Prep Batch #...: 3161302
Dilution Factor: 2.35 Method.....: EPA-2 TO-15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dichlorodifluoromethane	**3.1**	**0.47**	**ppb(v/v)**	**0.12**
Chlorodifluoromethane	**5.6**	**0.47**	**ppb(v/v)**	**0.070**
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	0.47	ppb(v/v)	0.14
Chloromethane	**0.79 J**	**1.2**	**ppb(v/v)**	**0.14**
Vinyl chloride	ND	0.47	ppb(v/v)	0.12
n-Butane	**1.2**	**0.47**	**ppb(v/v)**	**0.094**
1,3-Butadiene	ND	0.47	ppb(v/v)	0.14
Bromomethane	ND	0.47	ppb(v/v)	0.14
Chloroethane	ND	0.47	ppb(v/v)	0.12
Trichlorofluoromethane	**0.74**	**0.47**	**ppb(v/v)**	**0.094**
Pentane	**2.6**	**1.2**	**ppb(v/v)**	**0.12**
1,1-Dichloroethene	ND	0.47	ppb(v/v)	0.094
1,1,2-Trichloro-1,2,2-trifluoroethane	**0.12 J**	**0.47**	**ppb(v/v)**	**0.12**
Carbon disulfide	**0.18 J,B**	**0.47**	**ppb(v/v)**	**0.094**
3-Chloropropene	ND	0.47	ppb(v/v)	0.12
Methylene chloride	**1.4**	**1.2**	**ppb(v/v)**	**0.56**
trans-1,2-Dichloroethene	ND	0.47	ppb(v/v)	0.12
n-Hexane	**0.20 J**	**0.47**	**ppb(v/v)**	**0.12**
1,1-Dichloroethane	ND	0.47	ppb(v/v)	0.12
cis-1,2-Dichloroethene	ND	0.47	ppb(v/v)	0.12
Chloroform	ND	0.47	ppb(v/v)	0.094
1,1,1-Trichloroethane	**0.16 J**	**0.47**	**ppb(v/v)**	**0.12**
Cyclohexane	ND	1.2	ppb(v/v)	0.14
Carbon tetrachloride	ND	0.47	ppb(v/v)	0.14
Benzene	**0.25 J**	**0.47**	**ppb(v/v)**	**0.14**
1,2-Dichloroethane	ND	0.47	ppb(v/v)	0.12
n-Heptane	ND	0.47	ppb(v/v)	0.12
Trichloroethene	**0.36 J**	**0.47**	**ppb(v/v)**	**0.14**
1,2-Dichloropropane	ND	0.47	ppb(v/v)	0.12
Dibromomethane	ND	0.47	ppb(v/v)	0.12
Bromodichloromethane	ND	0.47	ppb(v/v)	0.12
cis-1,3-Dichloropropene	ND	0.47	ppb(v/v)	0.14
Toluene	**1.3**	**0.47**	**ppb(v/v)**	**0.21**
n-Octane	ND	0.47	ppb(v/v)	0.094
trans-1,3-Dichloropropene	ND	0.47	ppb(v/v)	0.12
1,1,2-Trichloroethane	ND	0.47	ppb(v/v)	0.14
Tetrachloroethene	**0.30 J**	**0.47**	**ppb(v/v)**	**0.14**

(Continued on next page)

ATTACHMENT 3-10

HDC ENGINEERING INC

Client Sample ID: 1937 OFFICE 61

GC/MS Volatiles

Lot-Sample #...: H3F050205-003 Work Order #...: FP1EQ1AA Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Dibromochloromethane	ND	0.47	ppb(v/v)	0.12
1,2-Dibromoethane (EDB)	ND	0.47	ppb(v/v)	0.14
Chlorobenzene	ND	0.47	ppb(v/v)	0.14
Ethylbenzene	**0.12 J**	**0.47**	**ppb(v/v)**	**0.12**
m-Xylene & p-Xylene	**0.28 J**	**0.47**	**ppb(v/v)**	**0.12**
Nonane	ND	0.47	ppb(v/v)	0.094
o-Xylene	**0.12 J**	**0.47**	**ppb(v/v)**	**0.12**
Styrene	**0.15 J**	**0.47**	**ppb(v/v)**	**0.14**
Bromoform	ND	0.47	ppb(v/v)	0.094
Cumene	ND	0.47	ppb(v/v)	0.14
1,1,2,2-Tetrachloroethane	ND	0.47	ppb(v/v)	0.094
n-Propylbenzene	ND	0.47	ppb(v/v)	0.12
1,3,5-Trimethylbenzene	ND	0.47	ppb(v/v)	0.14
n-Decane	ND	0.47	ppb(v/v)	0.12
alpha-Methylstyrene	ND	0.47	ppb(v/v)	0.14
1,2,4-Trimethylbenzene	ND	0.47	ppb(v/v)	0.12
1,3-Dichlorobenzene	ND	0.47	ppb(v/v)	0.094
1,4-Dichlorobenzene	ND	0.47	ppb(v/v)	0.12
Benzyl chloride	ND	0.47	ppb(v/v)	0.12
1,2-Dichlorobenzene	ND	0.47	ppb(v/v)	0.12
n-Undecane	**0.15 J**	**0.47**	**ppb(v/v)**	**0.14**
n-Dodecane	ND	0.47	ppb(v/v)	0.19
1,2,4-Trichloro-benzene	ND	0.47	ppb(v/v)	0.14
Hexachlorobutadiene	ND	0.47	ppb(v/v)	0.070
Naphthalene	ND	0.47	ppb(v/v)	0.21
Methanol	**56 B**	**24**	**ppb(v/v)**	**0.21**
Ethyl ether	ND	1.2	ppb(v/v)	0.16
Acetone	**11 J**	**12**	**ppb(v/v)**	**0.56**
Acrylonitrile	ND	1.2	ppb(v/v)	0.12
Vinyl acetate	**0.39 J**	**1.2**	**ppb(v/v)**	**0.31**
2-Butanone (MEK)	**0.67 J**	**1.2**	**ppb(v/v)**	**0.31**
1-Butanol	**1.2**	**1.2**	**ppb(v/v)**	**0.28**
4-Methyl-2-pentanone (MIBK)	**6.6**	**1.2**	**ppb(v/v)**	**0.87**
2-Hexanone	ND	1.2	ppb(v/v)	0.63
Methyl tert-butyl ether	ND	1.2	ppb(v/v)	0.21
Acrolein	**0.47 J**	**1.2**	**ppb(v/v)**	**0.12**
Acetonitrile	**0.44 J**	**2.4**	**ppb(v/v)**	**0.31**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	103	(70 - 130)
Toluene-d8	104	(70 - 130)
4-Bromofluorobenzene	104	(70 - 130)

(Continued on next page)

ATTACHMENT 3-11

HDC ENGINEERING INC

Client Sample ID: 1937 OFFICE 61

GC/MS Volatiles

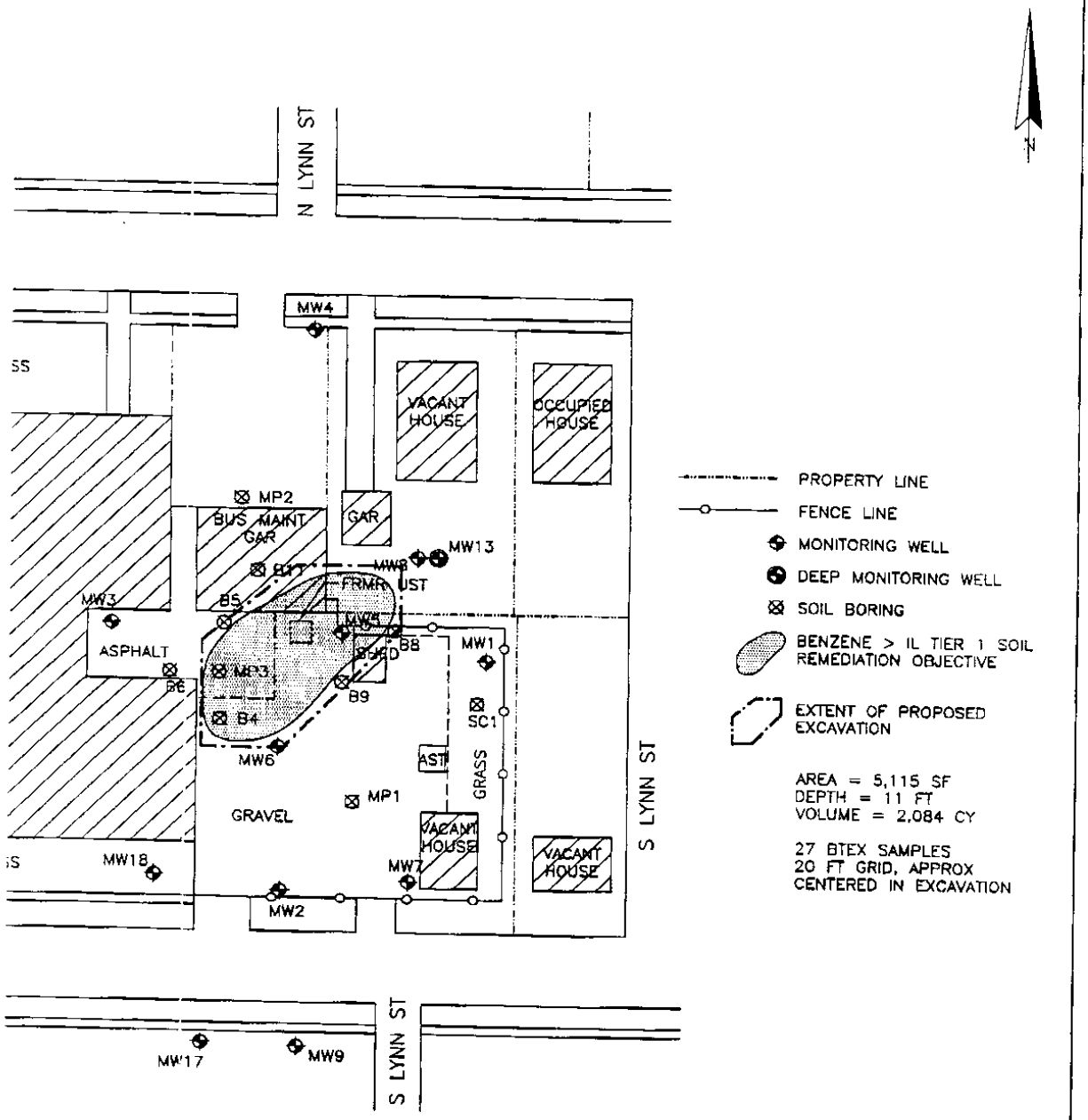
Lot-Sample #...: H3F050205-003 Work Order #...: FP1EQ1AA Matrix.....: AIR

NOTE(S) :

J Estimated result. Result is less than RL.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

ATTACHMENT 4



D. 2 ST. 52 376	PROPOSED EXCAVATION	FIGURE NO. 5