LOCKHEED MARTIN

DATE: 31 March 2006

TO: Jeff Catanzarita, U.S. EPA/ERT Work Assignment Manager

THROUGH: Jeffrey Bradstreet, REAC Air Response Section Leader

FROM: Amy E. DuBois, REAC Task Leader

SUBJECT: DOCUMENT TRANSMITTAL UNDER WORK ASSIGNMENT # 0-165

Attached please find the following document prepared under this work assignment:

FINAL ANALYTICAL TAGA REPORT
LITTLE VALLEY SITE
LITTLE VALLEY, NY
MARCH 2006

cc: Central File - WA # 0-165(w/attachment)
Electronic File – I:/Archive/REAC4/0-165/DFA/033106
Dennis A. Miller, REAC Program Manager (w/o attachment)

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1.0 INTRODUCTION

The Environmental Protection Agency (EPA)/Environmental Response Team (ERT) issued Work Assignment (WA) Number 0-165, Little Valley Site in Little Valley, NY, to Lockheed Martin under the Response Engineering and Analytical Contract (REAC). As an element of this WA, REAC personnel were to conduct target compound monitoring using the ECA Trace Atmospheric Gas Analyzer (TAGA) IIe, to assist U.S. EPA Region II in its investigation of residential indoor air quality.

The TAGA air monitoring events conducted on 25 and 26 January 2006 were screening in nature. Air monitoring for trichloroethene (TCE), and tetrachloroethene (PCE) was performed in accordance with the REAC Draft Standard Operating Procedure (SOP) # 1711, *Trace Atmospheric Gas Analyzer (TAGA) IIe Operations*. Real-time monitoring for the target compounds was performed using a selected ion technique.

2.0 METHODOLOGY

2.1 Mass Spectrometer/Mass Spectrometer General Theory

The ECA TAGA IIe is based upon the Perkin-Elmer API 365 mass spectrometer/mass spectrometer (MS/MS) and is a direct air-monitoring instrument capable of detecting, in real time, trace levels of many organic compounds in ambient air. The technique of triple quadrupole MS/MS is used to differentiate and quantitate compounds.

The initial step in the MS/MS process involves simultaneous chemical ionization of the compounds present in a sample of ambient air. The ionization produces both positive and negative ions by donating or removing one or more electrons. The chemical ionization is a "soft" ionization technique, which allows ions to be formed with little or no structural fragmentation. These ions are called parent ions. The parent ions with different mass-to-charge (m/z) ratios are separated by the first quadrupole (the first MS of the MS/MS system). The quadrupole scans selected m/z ratios allowing only the parent ions with these ratios to pass through the quadrupole. Parent ions with m/z ratios different than those selected are discriminated electronically and fail to pass through the quadrupole.

The parent ions selected in the first quadrupole are accelerated through a collision cell containing uncharged nitrogen molecules in the second quadrupole. A portion of the parent ions entering the second quadrupole fragments as they collide with the nitrogen molecules. These fragment ions are called daughter ions. This process, in the second quadrupole, is called collision induced dissociation. The daughter ions are separated according to their m/z ratios by the third quadrupole (the second MS of the MS/MS system). The quadrupole scans selected m/z ratios, allowing only the daughter ions with these ratios to pass through the quadrupole. Daughter ions with m/z ratios different than those selected are discriminated electronically and fail to pass through the quadrupole. Daughter ions with the selected m/z ratios are then counted by an electron multiplier. The resulting signals are measured in ion counts per second (icps) for each parent/daughter ion pair selected. The intensity of the icps for each parent/daughter ion pair is directly proportional to the ambient air concentration of the compound that produced the ion pair. All of the ions discussed in this report have a single charge. The m/z ratios of all of the ions discussed are equal to the ion masses in atomic mass units (amu). Therefore, the terms parent and daughter masses are synonymous with parent and daughter ion m/z ratios.

2.2 TAGA Procedure

The TAGA was used to analyze indoor air during stationary monitoring events. Indoor monitoring utilized a 200-foot corrugated Teflon® sampling hose. The proximal end was attached to the TAGA source inlet, while the distal end was taken inside a unit during the monitoring event. Air was continuously drawn through the hose at a set flow rate and transported to the TAGA source during the monitoring event.

2.2.1 TAGA Mass Calibration

At the beginning of the monitoring period, a gas mixture containing benzene, toluene, xylenes, tetrachloroethene, trichloroethene, 1,1-dichloroethene, and vinyl chloride was introduced by a mass flow controller (MFC) into the sample air flow (SAF). The tuning parameters for the first quadrupole at 30, 78, 106, 130, and 166 amu, and the third quadrupole at 78, 105, 131, 164, and 166 amu were optimized for sensitivity and mass assignment. The peak widths were limited between 0.55 amu and 0.85 amu. The mass assignments were set to the correct values within 0.15 amu.

2.2.2 TAGA Response Factor Measurements

The TAGA was calibrated for the target compounds at the beginning, middle, and end of the monitoring period. The calibration system consisted of a regulated gas cylinder containing a gas standard mixture of the target compounds connected to an in-line MFC. The MFC was calibrated with a National Institute of Standards and Technology (NIST) traceable flow rate meter. The gas standard certification is presented in Appendix A. The gas cylinder standard containing a known mixture of target compounds, certified by the supplier, was regulated at preset flow rates, and diluted with ambient air. The dilution of the gas cylinder standard resulted in known analyte concentrations. The calibration consisted of a zero point and five known concentrations obtained by setting the MFC to 0, 10, 20, 40, 80, and 90 milliliters per minute (mL/min) with the SAF at 1,500 milliliters per second (mL/sec).

The approximate concentration range of standards introduced into the TAGA was between 2 and 22 parts per billion by volume (ppbv). Utilizing the analytes' concentrations, gas flow rates, air sampling flow rates, and atmospheric pressure, response factors (RFs), in units of ion counts per second per part per billion by volume (icps/ppbv), were calculated for each calibration by using a least-square-fit algorithm to calculate the slope of its curve. The coefficient of variation was checked for each ion pair's RF to ensure that it was greater than 0.90. The intermediate response factor (IRF) was calculated between pairs of calibrations and used to quantify target compounds in ambient air.

2.2.3 Transport Efficiency

The transport efficiency and residence time for the target compounds through the 200-foot length of corrugated Teflon® sampling hose were determined prior to and at the conclusion of indoor air monitoring activities each day. The transport efficiency was determined by introducing a know concentration of the target compounds into the proximal end and then into the distal end of the sampling hose. The signal intensity of each ion pair for each compound was measured in icps and the percent (%) transport efficiency calculated using the equation below:

$$\%\ transport\ efficiency = \frac{signal\ intensity\ at\ the\ distal\ end\ of\ the\ hose}{signal\ intensity\ at\ the\ proximal\ end\ of\ the\ hose} \times 100$$

A transport efficiency of 85 percent is considered acceptable and results are summarized in Table 1.

The residence time is the interval, in seconds, it takes the air sample to travel the length of the sampling hose. The residence time was determined by introducing a gas standard at the distal end of the sampling hose and recording the time difference between the standard introduction and the signal response observed at the TAGA. The offset sequence (Figures 1b to 8b), which is the total number of sequences acquired during the residence time, is applied to the monitoring files (Figures 1c to 11c).

2.2.4 TAGA Air Monitoring

TAGA monitoring was performed by continuously drawing air through the Teflon® hose at a flow-rate of approximately 1,500 mL/sec. The air was then passed through a glass splitter where the pressure gradient between the mass spectrometer core and the atmosphere causes a sample flow of approximately 10 mL/min into the ionization source through a heated transfer line. The flow into the TAGA source was controlled so that the ionization source pressure was maintained at an optimum value of approximately 1.4-1.6 torr. The remaining airflow was drawn through the air pump and vented from the TAGA bus.

Monitoring was performed in the parent/daughter ion-monitoring mode. As monitoring proceeded, the operator pressed letter keys (flags), alphabetically on a computer keyboard, to denote events or locations during the monitoring event. This information was also recorded on an event log sheet. The intensity of each parent/daughter ion pair monitored by the TAGA was recorded in a permanent file on the computer's hard drive. One set of recorded measurements of all the ion pairs is called a sequence.

At the beginning of each survey, a one-minute pre-entry ambient data segment was collected. At the operator's signal, the sampler then entered the unit while holding the distal end of the hose at breathing height. The sampler proceeded to each room in the unit where one-minute data segments were collected. After the rooms in the unit were monitored, a one-minute post-exit ambient data segment was collected. Upon completion of the one-minute post-exit ambient data segment, the instrumentation was challenged with the calibration standard, which was introduced at 30 mL/min (approximately 7 ppbv), to verify that the system was functioning properly.

2.3 Meteorological Monitoring

United States Department of Commerce, National Oceanic and Atmospheric Administration, National Climatic Data Center provided the meteorological data for 24 January through 27 January 2006. Data were collected at the Jamestown Automatic Weather Observing Station, Jamestown, NY 10 miles west of the Little Valley Site. Meteorological data, such as wind speed, wind direction, and rainfall, are summarized in Table 2 for the periods during which monitoring occurred. The compiled meteorological data are presented in Appendix B. The reported data for rainfall is an average of the data recorded during the hour preceding the time recorded in the table. The reported meteorological data for wind speed and direction represent a five-minute average collected immediately prior to the time recorded in the table. Because of the distance of the meteorological monitoring location from the study location, care should be exercised in relating meteorological conditions existing at the Little Valley Site.

3.0 TAGA AIR MONITORING RESULTS

The TAGA was used to survey indoor air of numerous residential units in the vicinity of the Little Valley Site to determine the impact of the subsurface gas plume to indoor air quality.

3.1 Surveys

Figures 1a through 11a, present the approximate floor plans of each survey. The monitoring locations marked by letters are the "flags" that the TAGA operator placed into the file. These "flags" mark events and are carried through the rest of the data presentation.

3.2 TAGA File Event Summaries

Figures 1b through 11b present the TAGA file event summaries. These are the observations made during the file acquisition by the TAGA operator, along with the times from the TAGA file and the letter "flags" used to mark the data, which are recorded by the TAGA computer.

3.3 Graphical Presentations

Figures 1c through 11c are the graphical representations of the TAGA files. A graph of each target compound concentration is presented with ppbv plotted on the vertical axis, and time into the acquisition, in minutes, on the horizontal axis. The target compound concentration was calculated by averaging the concentrations obtained from the ion pairs that were monitored for each target compound. There are two horizontal lines on each graph. The lower line is set at the detection limit (DL) for the compound. The higher line is set at the concentration equal to the quantitation limit (QL) for the target compound. When high concentrations are represented, the lower DL line may not be readily discerned. Transient, momentary spikes above the QL line are occasionally observed. These spikes, electronic in nature, do not affect average concentrations. They may be distinguished from elevated concentrations because the spikes are only present for one sequence and are often only present for one ion pair for the monitored compound.

3.4 TAGA Target Compound Summaries

Figures 1d through 11d present the TAGA target compound summaries. These figures contain the concentrations of the target compounds averaged over time, at the various locations logged into the TAGA file event summaries.

4.0 DISCUSSION OF RESULTS

The TAGA target compound summaries are represented in Figures 1d through 11d. Residential units were the subject of this investigation. Each of the units was surveyed separately. During each survey, a one-minute average was measured at various locations within room areas. Only the highest average concentrations above the QL are listed below. No potential interferences were observed. Therefore, all the ion pairs were used for the calculated result, graphic representation, detection limit, and quantitation limit.

4.1 Unit 007 Survey, LVS004

The Unit 007 survey on 25 January 2006 at 08:29:07 is represented in Figures 1a through 1d. The average wind speed at the automated reporting station for the five-minute period ending at 08:55 was 21 miles per hour (mph) from 280 degrees. There was light snow during the preceding hour. The highest average concentration inside the unit was: tetrachloroethene, 0.6 ppbv, in the kitchen between flags D and E. Trichloroethene was not detected above the quantitation limit at any of the monitoring locations.

4.2 Unit 003 Survey, LVS005

The Unit 003 survey on 25 January 2006 at 09:38:57 is represented in Figures 2a through 2d. The average wind speed at the automated reporting station for the five-minute period ending at 09:48 was 23 mph from 290 degrees. There was snow during the preceding hour. The highest average concentration inside the unit was: trichloroethene at 0.16 ppbv at the abandoned water tank, between flags T and U. Tetrachloroethene was not detected above the quantitation limit at any of the monitoring locations.

4.3 Unit 022 Survey, LVS006

The Unit 022 survey on 25 January 2006 at 11:46:14 is represented in Figures 3a through 3d. The average wind speed at the automated reporting station for the five-minute period ending at 11:59 was 21 mph from 300 degrees. There was snow during the preceding hour. Trichloroethene and tetrachloroethene were not detected above the quantitation limits at any of the monitoring locations.

4.4 Unit 013 Survey, LVS008

The Unit 013 survey on 25 January 2006 at 13:25:57 is represented in Figures 4a through 4d. The average wind speed at the automated reporting station for the five-minute period ending at 13:48 was 21 mph from 300 degrees. There was snow during the preceding hour. Trichloroethene and tetrachloroethene were not detected above the quantitation limits at any of the monitoring locations.

4.5 Unit 017 Survey, LVS009

The Unit 017 survey on 25 January 2006 at 16:28:25 is represented in Figures 5a through 5d. The average wind speed at the automated reporting station for the five-minute period ending at 16:50 was 21 mph from 290 degrees. There was snow during the preceding hour. Trichloroethene and tetrachloroethene were not detected above the quantitation limits at any of the monitoring locations.

4.6 Unit 009 Survey, LVS014

The Unit 009 survey on 26 January 2006 at 09:17:40 and is represented in Figures 6a through 6d. The average wind speed at the automated reporting station for the five-minute period ending at 09:52 was 12 mph from 330 degrees. There was no precipitation during the preceding hour. The highest average concentration inside the unit was: trichloroethene at 0.27 ppbv in the dining room, between flags F and G. Tetrachloroethene was not detected above the quantitation limit at any of the monitoring locations.

4.7 Unit 004 Survey, LVS015

The Unit 004 survey on 26 January 2006 at 10:04:21 and is represented in Figures 7a through 7d. The average wind speed at the automated reporting station for the five-minute period ending at 09:52 was 12 mph from 330 degrees. There was no precipitation during the preceding hour. Trichloroethene and tetrachloroethene were not detected above the quantitation limits at any of the monitoring locations.

4.8 Unit 014 Survey, LVS016

The Unit 014 survey on 26 January 2006 at 11:57:01 is represented in Figures 8a through 8d. The average wind speed at the automated reporting station for the five-minute period ending at 11:54 was 12 mph from 290 degrees. There was no precipitation during the preceding hour. Trichloroethene and tetrachloroethene were not detected above the quantitation limits at any of the monitoring locations.

4.9 Unit 008 Survey, LVS018

The Unit 008 survey on 26 January 2006 at 13:13:31 is represented in Figures 8a through 8d. The average wind speed at the automated reporting station for the five-minute period ending at 13:58 was 8 mph from 270 degrees. There was no precipitation during the preceding hour. Trichloroethene and tetrachloroethene were not detected above the quantitation limits at any of the monitoring locations.

4.10 Unit 012 Survey, LVS019

The Unit 012 survey on 26 January 2006 at 13:57:17 is represented in Figures 8a through 8d. The average wind speed at the automated reporting station for the five-minute period ending at 13:58 was 8 mph from 270 degrees. There was no precipitation during the preceding hour. Trichloroethene and tetrachloroethene were not detected above the quantitation limits at any of the monitoring locations.

4.11 Unit 020 Survey, LVS020

The Unit 020 survey on 26 January 2006 at 17:09:02 is represented in Figures 8a through 8d. The average wind speed at the automated reporting station for the five-minute period ending at 17:48 was 5 mph from 270 degrees. There was no precipitation during the preceding hour. The highest average concentration inside the unit was: trichloroethene at 0.25 ppbv at the sump, between flags T and U. Tetrachloroethene was not detected above the quantitation limits at any of the other monitoring locations.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

The compound parent/daughter ion pairs used are listed below.

Compound	Parent Ion Mass	Daughter Ion Mass
Trichloroethene	130	95
Trichloroethene	132	95
Trichloroethene	132	97
Tetrachloroethene	164	129
Tetrachloroethene	166	129
Tetrachloroethene	166	131

Table 3, documents the RFs and IRFs generated during the calibration procedure for the individual ion pairs. Intermediate Response Factors were used to quantitate the ion pair concentrations.

The summaries of detection and quantitation limit data for the monitoring periods (Section 5.3 and Table 4) document the concentration, in ppbv, required for a compound's ion pair to be considered detectable and

quantifiable during the specified monitoring period. The DL is defined as three times the standard deviation of the concentration for a compound's ion pair measured in an ambient air sample. The QL is defined as 10 times the standard deviation of the concentration for the same conditions.

The summaries of the target compound detection and quantitation limits measured during the monitoring periods (Section 5.4 and Table 4) document the concentration, in ppbv, required for the compound to be considered detectable and quantifiable. The detection and quantitation limits for a compound result from averaging the appropriate detection and quantitation limits of the compound's ion pairs.

5.1 Intermediate Response Factor for Ion Pairs

Response factors were generated from the initial and final calibration events, as described in the procedure (Section 2.2.2.). Table 3 contains the RFs in units of icps/ppbv. The initial and final RFs were used to calculate the IRFs, which were used to calculate the reported concentration results.

The following equation was used to calculate the IRFs found in Tables 3 and 4:

$$IRF = \frac{2(RF_1 \times RF_2)}{(RF_1 + RF_2)}$$

where:

IRF = Intermediate response factor (icps/ppbv)
RF_1 = The RF for an ion pair measured during the first calibration event (icps/ppbv)
RF_2 = The RF for the same ion pair measured during the second calibration event (icps/ppbv)

For example, the entry for the 130/95 ion pair of trichloroethene from Table 3 for files LVS002 and LVS007, 25 January 2006 is:

RF_1 = 2062.54 icps/ppbv
RF_2 = 2188.35 icps/ppbv

therefore,

$$IRF = \frac{2(2062.54 \times 2188.35)}{(2062.54 + 2188.35)} = \frac{9027118.8}{4250.89} = 2123.58 \text{ icps/ppbv}$$

The result, 2123.58 rounded to 2123.6 icps/ppbv, is the intermediate response factor reported in Table 3 and used in Table 4.

5.2 Error Bars

The potential maximum concentration percent deviations for each target compound are presented in Table 3 and are called "error bars" for simplicity. They represent the potential bias in the concentration due to changes in the sensitivity of the TAGA instrument. Errors bars were calculated using the following equation:

$$\text{error bar} = \frac{|RF_1 - RF_2|}{(RF_1 + RF_2)} \times 100$$

where:

error bar = Maximum concentration percent deviation
RF_1 = The RF for an ion pair measured during the first calibration event (icps/ppbv)
RF_2 = The RF for the same ion pair measured during the second calibration event (icps/ppbv)

For example, the entry for the 130/95 ion pair of trichloroethene from Table 3 for files LVS002 and LVS007, 25 January 2006 is:

RF_1 = 2062.54 icps/ppbv
RF_2 = 2188.35 icps/ppbv

$$\text{error bar} = \frac{|2062.54 - 2188.35|}{(2062.54 + 2188.35)} \times 100 = 2.96\%$$

The percent error bar calculated for the 130/95 ion pair of dichloroethene is 2.96% for files LVS002 and LVS007, 25 January 2006.

The above calculation was repeated for each ion pair. The error bars for each compound's ions were averaged to give a single value for the compound. This averaged error bar can be applied to the samples analyzed between the two calibrations of the monitoring period.

5.3 Ion Pair Detection and Quantitation Limits

The DLs and QLs were calculated using the standard deviation (SD) of the compound's ion pair intensity measured in an ambient air sample and its RF. The SD reflects the variability of the instrument's response to the ambient air sample.

The following equation was used to calculate the DLs found in Table 4:

$$DL = \frac{3 \times SD}{IRF}$$

where:

DL = Detection limit for an ion pair (ppbv)
SD = Standard deviation of the ion intensity measured in an ambient air sample (icps)
IRF = Intermediate response factor for an ion pair (icps/ppbv)

For example, the entry for the 130/95 ion pair of trichloroethene from Table 4, files LVS002 and LVS007, 25 January 2006 is:

SD = 27.526 icps
IRF = 2123.6 icps/ppbv

$$DL = \frac{3 \times 27.526}{2123.6} = 0.0389 \text{ ppbv}$$

The following equation was used to calculate the quantitation limits found in Table 4:

$$QL = \frac{10 \times SD}{IRF}$$

where:

QL = Quantitation limit concentration for an ion pair (ppbv)
SD = Standard deviation of the ion intensity measured in an ambient air sample (icps)
IRF = Intermediate response factor for an ion pair (icps/ppbv)

For example, the entry for the 130/95 ion pair of trichloroethene from Table 4, files LVS002 and LVS007, 25 January 2006 is:

SD = 27.526 icps
IRF = 2123.6 icps/ppbv

$$QL = \frac{10 \times 27.526}{2123.6} = 0.1296 \text{ ppbv}$$

5.4 Compound Detection and Quantitation Limits

Averaging the respective DLs and QLs of the target compound's ion pairs found in Table 4 generated the DLs and QLs found in Table 4.

The following equation was used to calculate the compound's DL:

$$DL_c = \frac{DL_1 + DL_2 + \ldots\ldots + DL_n}{n}$$

where:

DL_c = Detection limit for a compound (ppbv)
DL_1 = Detection limit for the first ion pair (ppbv)
DL_2 = Detection limit for the second ion pair (ppbv)
DL_n = Detection limit for the n^{th} ion pair (ppbv)
n = Number of ion pairs to be averaged

For example, using the entries for the 130/95, 132/95, and 132/97 ion pairs of trichloroethene from Table 4 for files LVS002 and LVS007, 25 January 2006 is:

$$DL_c = \frac{0.0389 + 0.0624 + 0.0211}{3} = \frac{0.1224}{3} = 0.0408\text{ppbv}$$

This result, 0.0408 ppbv, rounded to 0.041 ppbv is the DL for trichloroethene found in the 25 January 2006 section of Table 4.

The following equation was used to calculate the compound's QL:

$$QL_c = \frac{QL_1 + QL_2 + \ldots\ldots + QL_n}{n}$$

where:

QL_c = Quantitation limit for a compound (ppbv)
QL_1 = Quantitation limit for the first ion pair (ppbv)
QL_2 = Quantitation limit for the second ion pair (ppbv)
QL_n = Quantitation limit for the n^{th} ion pair (ppbv)
n = Number of ion pairs to be averaged

For example, using the entries for the 130/95, 132/95, and 132/97 ion pairs of trichloroethene from Table 4 for files LVS002 and LVS007, 25 January 2006 is:

$$QL_c = \frac{0.1296 + 0.2081 + 0.0703}{3} = \frac{0.408}{3} \; 0.136 \text{ ppbv}$$

This result, 0.136 ppbv, rounded to 0.14 ppbv is the QL for trichloroethene found in the 25 January 2006 section of Table 4.

TABLES

Table 1
Summary of Transport Efficiencies Measured on 25 and 26 January 2006
Little Valley Site
Little Valley, NY
March 2006

Transport Efficiency for 25 January 2006 at 08:06 File: LVS003				
Start Sequence:		358	859	
End Sequence:		545	1002	
Compound	PM/DM	Proximal Intensity (icps)	Distal Intensity (icps)	Transport Efficiency (%)
Trichloroethene	130/95	45658.3	44647.6	97.8%
Trichloroethene	132/95	13792.0	13441.9	97.5%
Trichloroethene	132/97	28352.3	27761.0	97.9%
Average Trichloroethene Transport Efficiency:				97.7%
Tetrachloroethene	164/129	37774.5	36503.9	96.6%
Tetrachloroethene	166/129	11688.0	11322.4	96.9%
Tetrachloroethene	166/131	33224.2	32109.4	96.6%
Average Tetrachloroethene Transport Efficiency:				96.7%
Transport Efficiency for 25 January 2006 at 17:26 File: LVS011				
Start Sequence:		116	440	
End Sequence:		209	541	
Compound	PM/DM	Proximal Intensity (icps)	Distal Intensity (icps)	Transport Efficiency (%)
Trichloroethene	130/95	43269.0	42183.0	97.5%
Trichloroethene	132/95	12892.0	12795.3	99.2%
Trichloroethene	132/97	28347.6	27995.4	98.8%
Average Trichloroethene Transport Efficiency:				98.5%
Tetrachloroethene	164/129	33401.2	32716.2	97.9%
Tetrachloroethene	166/129	9362.2	9255.5	98.9%
Tetrachloroethene	166/131	31543.1	30912.7	98.0%
Average Tetrachloroethene Transport Efficiency:				98.3%

PM/DM = Parent mass/Daughter mass
icps = Ion counts per second
% = Percent

Table 1 (cont'd)
Summary of Transport Efficiencies Measured on 25 and 26 January 2006
Little Valley Site
Little Valley, NY
March 2006

Transport Efficiency for 26 January 2006 at 09:03 File: LVS013				
Start Sequence:		171	466	
End Sequence:		266	560	
Compound	PM/DM	Proximal Intensity (icps)	Distal Intensity (icps)	Transport Efficiency (%)
Trichloroethene	130/95	66592.3	64711.3	97.2%
Trichloroethene	132/95	18930.0	18463.7	97.5%
Trichloroethene	132/97	40573.8	39848.3	98.2%
Average Trichloroethene Transport Efficiency:				97.6%
Tetrachloroethene	164/129	50936.0	49151.7	96.5%
Tetrachloroethene	166/129	14059.3	13575.3	96.6%
Tetrachloroethene	166/131	44416.7	42851.2	96.5%
Average Tetrachloroethene Transport Efficiency:				96.5%
Transport Efficiency for 26 January 2006 at 17:58 File: LVS022				
Start Sequence:		151	435	
End Sequence:		246	529	
Compound	PM/DM	Proximal Intensity (icps)	Distal Intensity (icps)	Transport Efficiency (%)
Trichloroethene	130/95	58499.9	56976.0	97.4%
Trichloroethene	132/95	15290.9	14860.6	97.2%
Trichloroethene	132/97	33796.7	33080.5	97.9%
Average Trichloroethene Transport Efficiency:				97.5%
Tetrachloroethene	164/129	44899.8	43329.7	96.5%
Tetrachloroethene	166/129	11787.6	11286.5	95.7%
Tetrachloroethene	166/131	38402.6	37000.9	96.4%
Average Tetrachloroethene Transport Efficiency:				96.2%

PM/DM = Parent mass/Daughter mass
icps = Ion counts per second
% = Percent

Table 2
Summary of Meteorological Conditions during Monitoring on 25 and 26 January 2006
Little Valley Site
Little Valley, NY
March 2006

File	Date	Start Time	Wind Speed (mph)	Wind Direction	Precipitation
LVS004	1/25/2006	08:29:07	21	280	Snow
LVS005	1/25/2006	09:38:57	23	290	Snow
LVS006	1/25/2006	11:46:14	21	300	Snow
LVS008	1/25/2006	13:25:57	21	300	Snow
LVS009	1/25/2006	16:28:25	21	290	Snow
LVS014	1/26/2006	09:17:40	12	330	-
LVS015	1/26/2006	10:04:21	12	330	-
LVS016	1/26/2006	11:57:01	12	290	-
LVS018	1/26/2006	13:13:31	8	270	-
LVS019	1/26/2006	13:57:17	8	270	-
LVS020	1/26/2006	17:09:02	5	270	-

The wind direction is the direction from which the wind is blowing.
mph = Miles per hour
- = No precipitation

Table 3
Summary of Response Factors and Error Bars for 25 and 26 January 2006
Little Valley Site
Little Valley, NY
March 2006

Calibration Files: LVS002 and LVS007 on 25 January 2006 Used for Survey Files: LVS004, LVS005, and LVS006						
Compound	PM/DM	Initial Response Factor	Final Response Factor	Percent Difference (%)	Intermediate Response Factor	Error Bar (%)
Trichloroethene	130/95	2062.54	2188.35	6.10	2123.6	2.96
Trichloroethene	132/95	708.21	740.30	4.53	723.90	2.22
Trichloroethene	132/97	1489.1	1558.9	4.69	1523.2	2.29
					Average:	2.5
Tetrachloroethene	164/129	1990.0	1913.5	3.84	1951.0	1.96
Tetrachloroethene	166/129	641.05	585.71	8.63	612.13	4.51
Tetrachloroethene	166/131	1840.9	1750.1	4.93	1794.3	2.53
					Average:	3.0

Calibration Files: LVS007 and LVS010 on 25 January 2006 Used for Survey Files: LVS008 and LVS009						
Compound	PM/DM	Initial Response Factor	Final Response Factor	Percent Difference (%)	Intermediate Response Factor	Error Bar (%)
Trichloroethene	130/95	2188.35	2482.40	13.4	2326.1	6.30
Trichloroethene	132/95	740.30	803.84	8.58	770.76	4.11
Trichloroethene	132/97	1558.9	1732.5	11.1	1641.1	5.27
					Average:	5.2
Tetrachloroethene	164/129	1913.5	2063.8	7.85	1985.8	3.78
Tetrachloroethene	166/129	585.71	607.81	3.77	596.55	1.85
Tetrachloroethene	166/131	1750.1	1901.9	8.67	1822.8	4.16
					Average:	3.3

Response factors are in units of icps/ppbv
PM/DM = Parent Mass/Daughter Mass
% = Percent
icps = Ion counts per second
ppbv = Parts per billion by volume

Table 3 (cont.)
Summary of Response Factors and Error Bars for 25 and 26 January 2006
Little Valley Site
Little Valley, NY
March 2006

Calibration Files: LVS012 and LVS017 on 26 January 2006 Used for Survey Files: LVS014, LVS015, and LVS016						
Compound	PM/DM	Initial Response Factor	Final Response Factor	Percent Difference (%)	Intermediate Response Factor	Error Bar (%)
Trichloroethene	130/95	2227.6	1845.4	17.2	2018.6	9.38
Trichloroethene	132/95	659.53	569.85	13.6	611.42	7.30
Trichloroethene	132/97	1419.1	1219.4	14.1	1311.7	7.57
					Average:	8.1
Tetrachloroethene	164/129	1927.2	1559.6	19.1	1724.0	10.5
Tetrachloroethene	166/129	549.81	446.59	18.8	492.85	10.4
Tetrachloroethene	166/131	1678.7	1427.8	14.9	1543.1	8.08
					Average:	9.7
Calibration Files: LVS017 and LVS021 on 26 January 2006 Used for Survey Files: LVS018, LVS019, and LVS020						
Compound	PM/DM	Initial Response Factor	Final Response Factor	Percent Difference (%)	Intermediate Response Factor	Error Bar (%)
Trichloroethene	130/95	1845.4	1959.6	6.19	1900.8	3.00
Trichloroethene	132/95	569.85	594.01	4.24	581.68	2.08
Trichloroethene	132/97	1219.4	1347.7	10.5	1280.3	5.00
					Average:	3.4
Tetrachloroethene	164/129	1559.6	1768.9	13.4	1657.7	6.29
Tetrachloroethene	166/129	446.59	486.86	9.02	465.86	4.31
Tetrachloroethene	166/131	1427.8	1594.8	11.7	1506.7	5.53
					Average:	5.4

Response factors are in the units of icps/ppbv
PM/DM = Parent Mass/Daughter Mass
% = Percent
icps = Ion counts per second
ppbv = Parts per billion by volume

Table 4
Summary of Detection and Quantitation Limit Data for 25 and 26 January 2006
Little Valley Site
Little Valley, NY
March 2006

Calibration Files: LVS002 and LVS007 on 25 January 2006 Used for Survey Files: LVS004, LVS005, and LVS006							
Compound	PM/DM	Intermediate Response Factor	Standard Deviation (icps)	Detection Limit (icps)	Quantitation Limit (icps)	Detection Limit (ppbv)	Quantitation Limit (ppbv)
Trichloroethene	130/95	2123.6	27.526	82.577	275.26	0.0389	0.1296
Trichloroethene	132/95	723.90	15.061	45.182	150.61	0.0624	0.2081
Trichloroethene	132/97	1523.2	10.710	32.131	107.10	0.0211	0.0703
					Average:	0.041	0.14
Tetrachloroethene	164/129	1951.0	17.065	51.195	170.65	0.0262	0.0875
Tetrachloroethene	166/129	612.13	6.7691	20.307	67.691	0.0332	0.1111
Tetrachloroethene	166/131	1794.3	11.854	35.561	118.54	0.0198	0.0661
					Average:	0.026	0.088

Calibration Files: LVS007 and LVS010 on 25 January 2006 Used for Survey Files: LVS008 and LVS009							
Compound	PM/DM	Intermediate Response Factor	Standard Deviation (icps)	Detection Limit (icps)	Quantitation Limit (icps)	Detection Limit (ppbv)	Quantitation Limit (ppbv)
Trichloroethene	130/95	2326.1	26.902	80.705	269.02	0.03470	0.1157
Trichloroethene	132/95	770.76	16.731	50.194	167.31	0.06512	0.2171
Trichloroethene	132/97	1641.1	16.992	50.975	169.92	0.03106	0.1035
					Average:	0.044	0.15
Tetrachloroethene	164/129	1985.8	16.460	49.380	164.60	0.02487	0.0829
Tetrachloroethene	166/129	596.55	6.9185	20.755	69.185	0.03479	0.1160
Tetrachloroethene	166/131	1822.8	13.861	41.583	138.61	0.02281	0.0760
					Average:	0.027	0.092

Response factors are in the units of icps/ppbv
PM/DM = Parent Mass/Daughter Mass
icps = Ion counts per second
ppbv = Parts per billion by volume

Table 4 (cont.)
Summary of Detection and Quantitation Limit Data for 25 and 26 January 2006
Little Valley Site
Little Valley, NY
March 2006

Calibration Files: LVS012 and LVS017 on 26 January 2006 Used for Survey Files: LVS014, LVS015, and LVS016							
Compound	PM/DM	Intermediate Response Factor	Standard Deviation (icps)	Detection Limit (icps)	Quantitation Limit (icps)	Detection Limit (ppbv)	Quantitation Limit (ppbv)
Trichloroethene	130/95	2018.6	31.049	93.147	310.49	0.04614	0.1538
Trichloroethene	132/95	611.42	17.827	53.481	178.27	0.08747	0.2916
Trichloroethene	132/97	1311.7	14.290	42.870	142.90	0.03268	0.1089
					Average:	0.055	0.18
Tetrachloroethene	164/129	1724.0	18.129	54.388	181.29	0.03155	0.1052
Tetrachloroethene	166/129	492.85	8.4915	25.474	84.915	0.05169	0.1723
Tetrachloroethene	166/131	1543.1	16.722	50.167	167.22	0.03251	0.1084
					Average:	0.039	0.13
Calibration Files: LVS017 and LVS021 on 26 January 2006 Used for Survey Files: LVS018, LVS019, and LVS020							
Compound	PM/DM	Intermediate Response Factor	Standard Deviation (icps)	Detection Limit (icps)	Quantitation Limit (icps)	Detection Limit (ppbv)	Quantitation Limit (ppbv)
Trichloroethene	130/95	1900.8	26.643	79.928	266.43	0.04205	0.1402
Trichloroethene	132/95	581.68	15.003	45.010	150.03	0.07738	0.2579
Trichloroethene	132/97	1280.3	11.187	33.560	111.87	0.02621	0.0874
					Average:	0.049	0.16
Tetrachloroethene	164/129	1657.7	13.864	41.591	138.64	0.02509	0.0836
Tetrachloroethene	166/129	465.86	7.5646	22.694	75.646	0.04871	0.1624
Tetrachloroethene	166/131	1506.7	12.151	36.454	121.51	0.02419	0.0807
					Average:	0.033	0.11

Response factors are in the units of icps/ppbv
PM/DM = Parent Mass/Daughter Mass
icps = Ion counts per second
ppbv = Parts per billion by volume

FIGURES

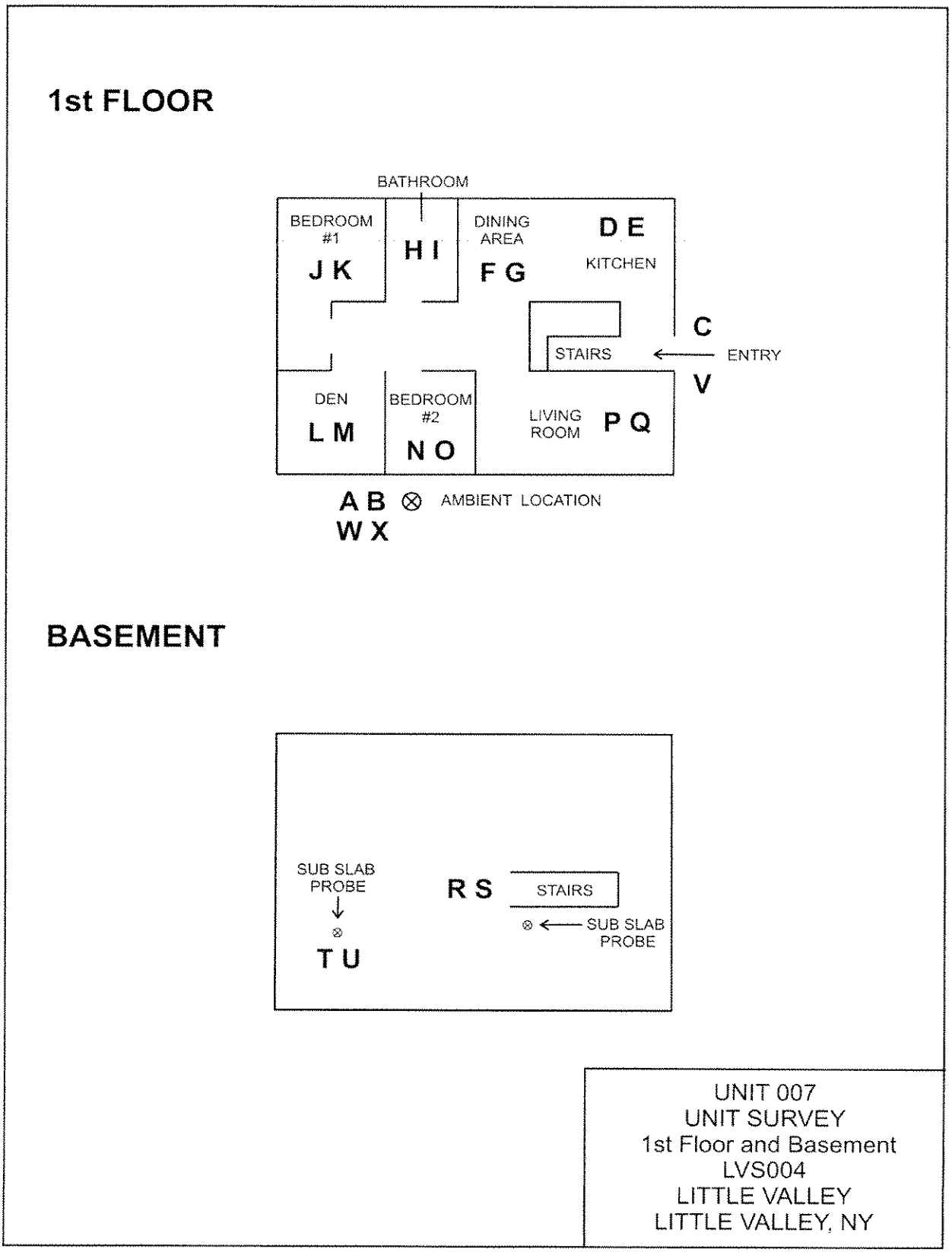


Figure 1a Unit 007 Survey Floor Plan, LVS004

Figure 1b

TAGA File Event Summary
File: LVS004 Acquired on 25 January 2006 at 08:29:07
Title: Unit 007 Survey

Flag	Offset Time	Offset Sequence	Description
A	2.7	259	Start of the pre-entry ambient
B	3.8	361	End of the pre-entry ambient
C	5.5	523	Entering the Unit
D	5.8	556	Start of the Kitchen
E	7.0	662	End of the Kitchen
F	7.4	706	Start of the Dining Area
G	8.4	800	End of the Dining Area
H	8.7	825	Start of the Bathroom
I	9.7	918	End of the Bathroom
J	10.2	966	Start of Bedroom 1
K	11.4	1080	End of Bedroom 1
L	11.6	1106	Start of the Den
M	12.8	1220	End of the Den
N	13.2	1250	Start of Bedroom 2
O	14.2	1353	End of Bedroom 2
P	14.6	1385	Start of the Living Room
Q	15.6	1483	End of the Living Room
R	16.6	1576	Start of the Basement
S	17.6	1674	End of the Basement
T	18.2	1726	Start of the Sub-slab probe
U	19.2	1823	End of the Sub-slab probe
V	19.9	1885	Exiting the Unit
W	20.3	1931	Start of the post-exit ambient
X	22.4	2125	End of the post-exit ambient
Y	23.6	2242	Start of the 30 mL/min spike
Z	24.7	2343	End of the 30 mL/min spike

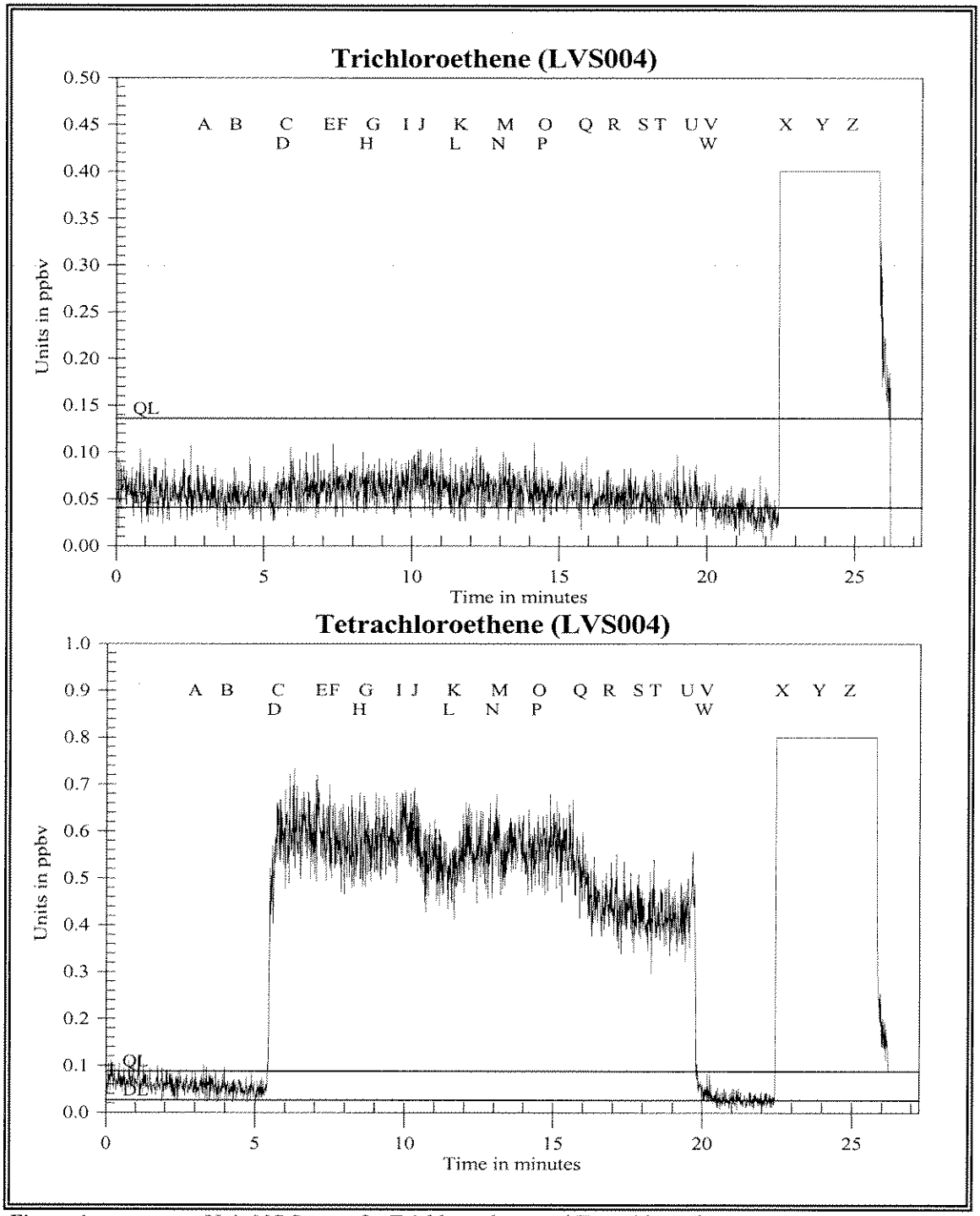


Figure 1c Unit 007 Survey for Trichloroethene and Tetrachloroethene

Figure 1d

TAGA Target Compound Survey Summary for Unit 007 File: LVS004 Acquired on 25 January 2006 at 08:29:07			
		Trichloroethene	Tetrachloroethene
	Detection Limits (DL):	0.041	0.026
	Quantitation Limits (QL):	0.14	0.088
Flags	Description	Trichloroethene	Tetrachloroethene
A - B	Pre-entry ambient	0.053J	0.056J
D - E	Kitchen	0.061J	0.60
F - G	Dining Area	0.064J	0.57
H - I	Bathroom	0.061J	0.58
J - K	Bedroom 1	0.066J	0.55
L - M	Den	0.062J	0.55
N - O	Bedroom 2	0.059J	0.56
P - Q	Living Room	0.057J	0.57
R - S	Basement	0.053J	0.44
T - U	Sub-slab Probe	0.049J	0.42
W - X	Post-exit ambient	DL=0.041	0.027J
Y - Z	30 mL/min spike	6.3	6.4

Concentrations are given in parts per billion by volume
J = Concentration detected at or below the quantitation limit.

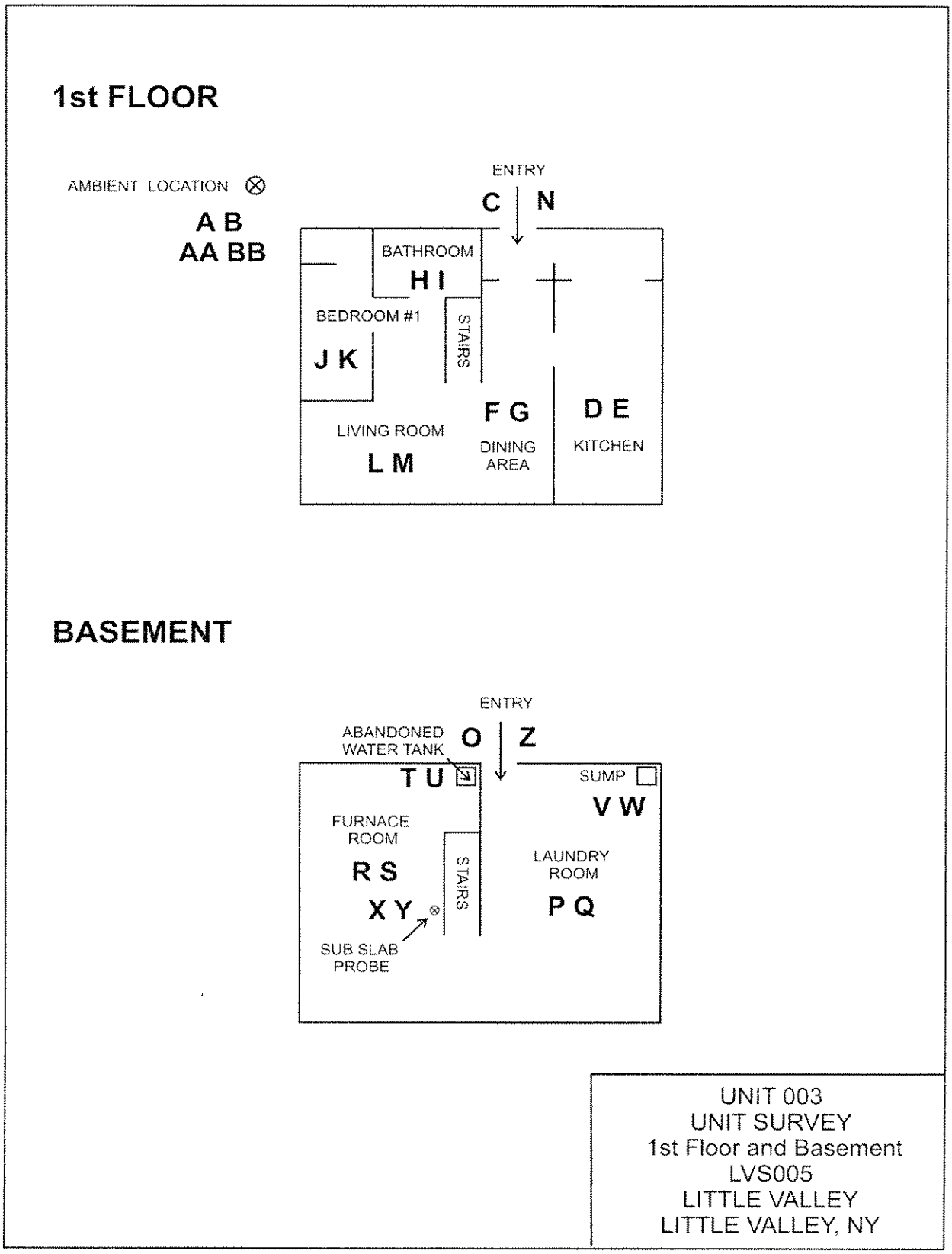


Figure 2a Unit 003 Survey Floor Plan, LVS005

Figure 2b

TAGA File Event Summary File: LVS005 Acquired on 25 January 2006 at 09:38:57 Title: Unit 003 Survey			
Flag	Offset Time	Offset Sequence	Description
A	2.4	227	Start of the pre-entry ambient
B	3.4	322	End of the pre-entry ambient
C	6.8	646	Entering the Unit
D	7.3	698	Start of the Kitchen
E	8.2	782	End of the Kitchen
F	8.7	822	Start of the Dining Area
G	9.7	918	End of the Dining Area
H	10.1	958	Start of the Bathroom
I	11.1	1053	End of the Bathroom
J	11.4	1084	Start of Bedroom 1
K	12.6	1195	End of Bedroom 1
L	12.8	1214	Start of the Living Room
M	13.8	1309	End of the Living Room
N	14.6	1382	Exiting the Unit
O	14.9	1417	Entering the Basement
P	15.4	1464	Start of the Laundry Room
Q	16.6	1573	End of the Laundry Room
R	17.1	1627	Start of the Furnace Room
S	18.2	1724	End of the Furnace Room
T	18.6	1769	Start of the Abandoned Water Tank
U	19.8	1877	End of the Abandoned Water Tank
V	20.1	1913	Start of the Sump
W	21.2	2010	End of the Sump
X	21.7	2064	Start of the Sub-slab Probe
Y	22.6	2146	End of the Sub-slab Probe
Z	24.0	2282	Exiting the Unit
AA	24.3	2310	Start of the post-exit ambient
BB	25.7	2439	End of the post-exit ambient
CC	26.8	2540	Start of the 30 mL/min spike
DD	27.6	2625	End of the 30 mL/min spike

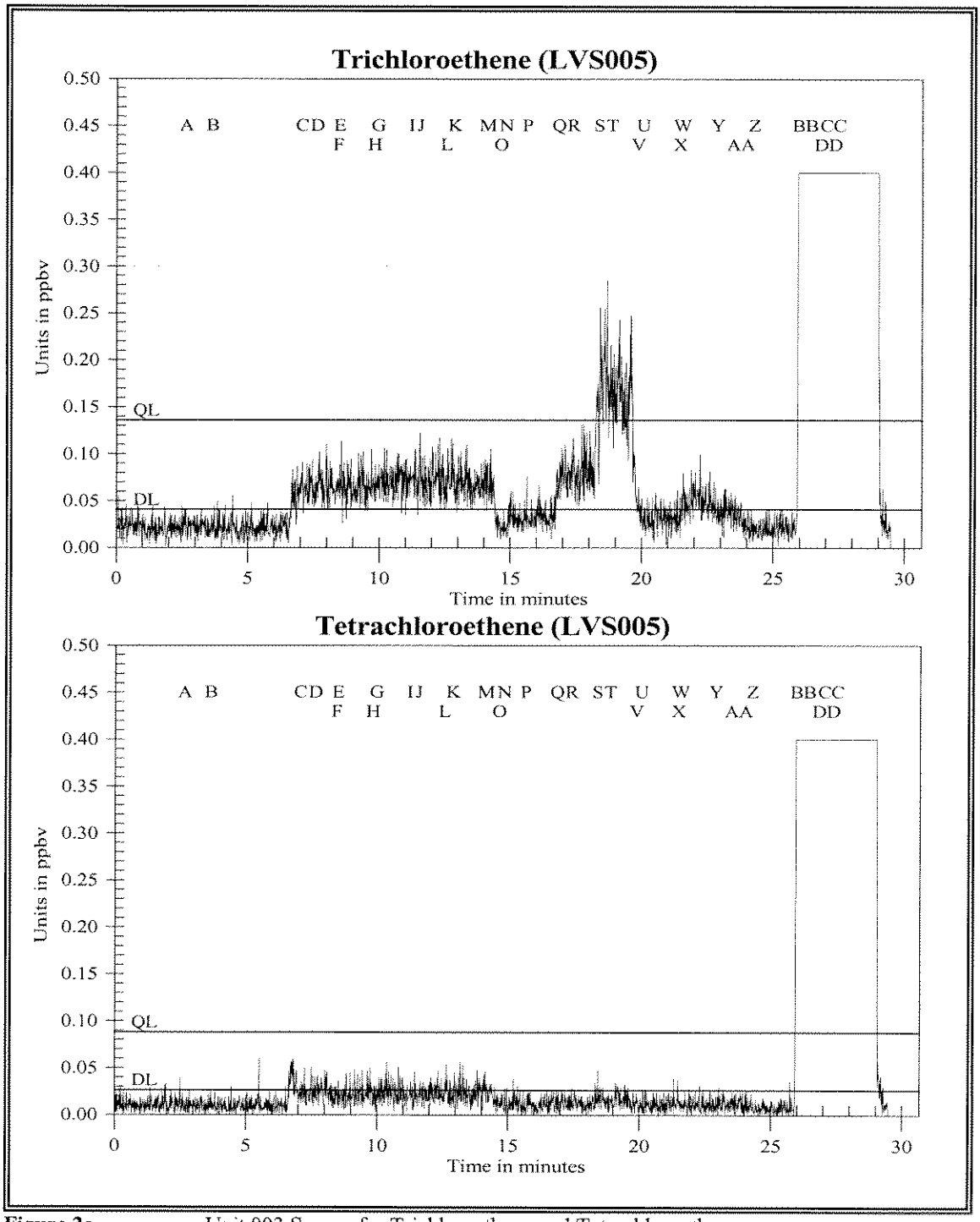


Figure 2c Unit 003 Survey for Trichloroethene and Tetrachloroethene

Figure 2d

TAGA Target Compound Survey Summary for Unit 003 File: LVS005 Acquired on 25 January 2006 at 09:38:57			
		Trichloroethene	Tetrachloroethene
	Detection Limits (DL):	0.041	0.026
	Quantitation Limits (QL):	0.14	0.088
Flags	Description	Trichloroethene	Tetrachloroethene
A - B	Pre-entry ambient	DL=0.041	DL=0.026
D - E	Kitchen	0.066J	DL=0.026
F - G	Dining Area	0.064J	DL=0.026
H - I	Bathroom	0.072J	DL=0.026
J - K	Bedroom 1	0.070J	DL=0.026
L - M	Living Room	0.069J	DL=0.026
P - Q	Laundry Room	DL=0.041	DL=0.026
R - S	Furnace Room	0.079J	DL=0.026
T - U	Abandoned Water Tank	0.16	DL=0.026
V - W	Sump	DL=0.041	DL=0.026
X - Y	Sub-slab Probe	0.051J	DL=0.026
AA - BB	Post-exit ambient	DL=0.041	DL=0.026
CC - DD	30 mL/min spike	5.4	5.2

Concentrations are given in parts per billion by volume
J = Concentration detected at or below the quantitation limit.

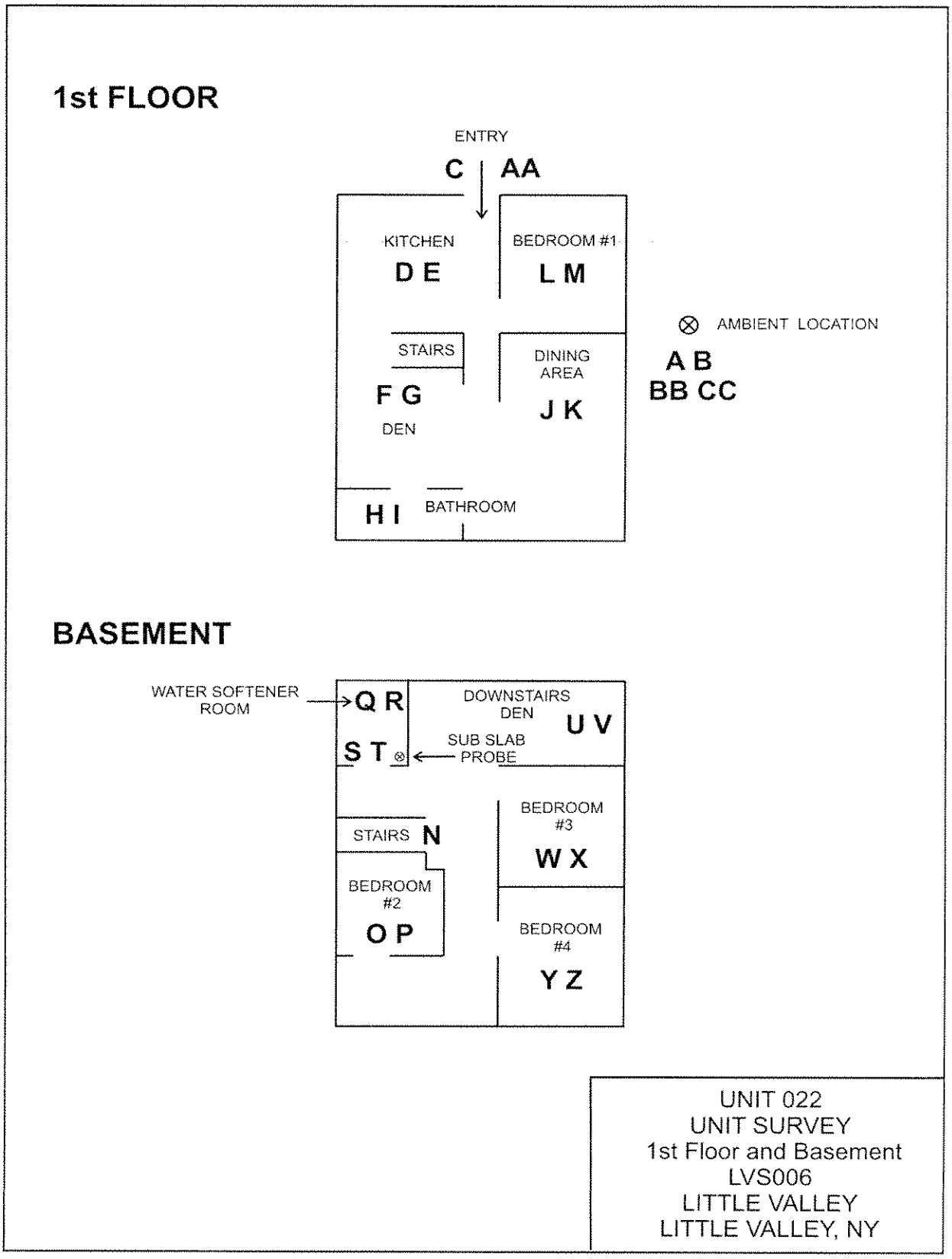


Figure 3a Unit 022 Survey Floor Plan, LVS006

Figure 3b

TAGA File Event Summary File: LVS006 Acquired on 25 January 2006 at 11:46:14 Title: Unit 022 Survey			
Flag	Offset Time	Offset Sequence	Description
A	1.4	132	Start of the pre-entry ambient
B	2.4	230	End of the pre-entry ambient
C	4.5	425	Entering the Unit
D	4.8	455	Start of the Kitchen
E	5.9	562	End of the Kitchen
F	9.2	872	Start of the Den
G	10.1	964	End of the Den
H	10.8	1028	Start of the Bathroom
I	11.8	1124	End of the Bathroom
J	12.6	1200	Start of the Dining Area
K	13.6	1296	End of the Dining Area
L	15.0	1423	Start of Bedroom 1
M	16.0	1516	End of Bedroom 1
N	16.8	1597	Entering the Basement
O	17.3	1644	Start of Bedroom 2
P	18.4	1743	End of Bedroom 2
Q	19.2	1826	Start of the Water Softener Room
R	20.2	1921	End of the Water Softerner Room
S	20.6	1953	Start of the Sub-slab Probe
T	21.5	2046	End of the Sub-slab Probe
U	22.2	2111	Start of the Downstairs Den
V	23.2	2206	End of the Downstairs Den
W	23.6	2238	Start of Bedroom 3
X	24.6	2334	End of Bedroom 3
Y	25.0	2371	Start of Bedroom 4
Z	26.0	2465	End of Bedroom 4
AA	27.4	2598	Exiting the Unit
BB	27.9	2649	Start of the post-exit ambient
CC	28.8	2732	End of the post-exit ambient
DD	29.6	2806	Start of the 30 mL/min spike
EE	30.5	2900	End of the 30 mL/min spike

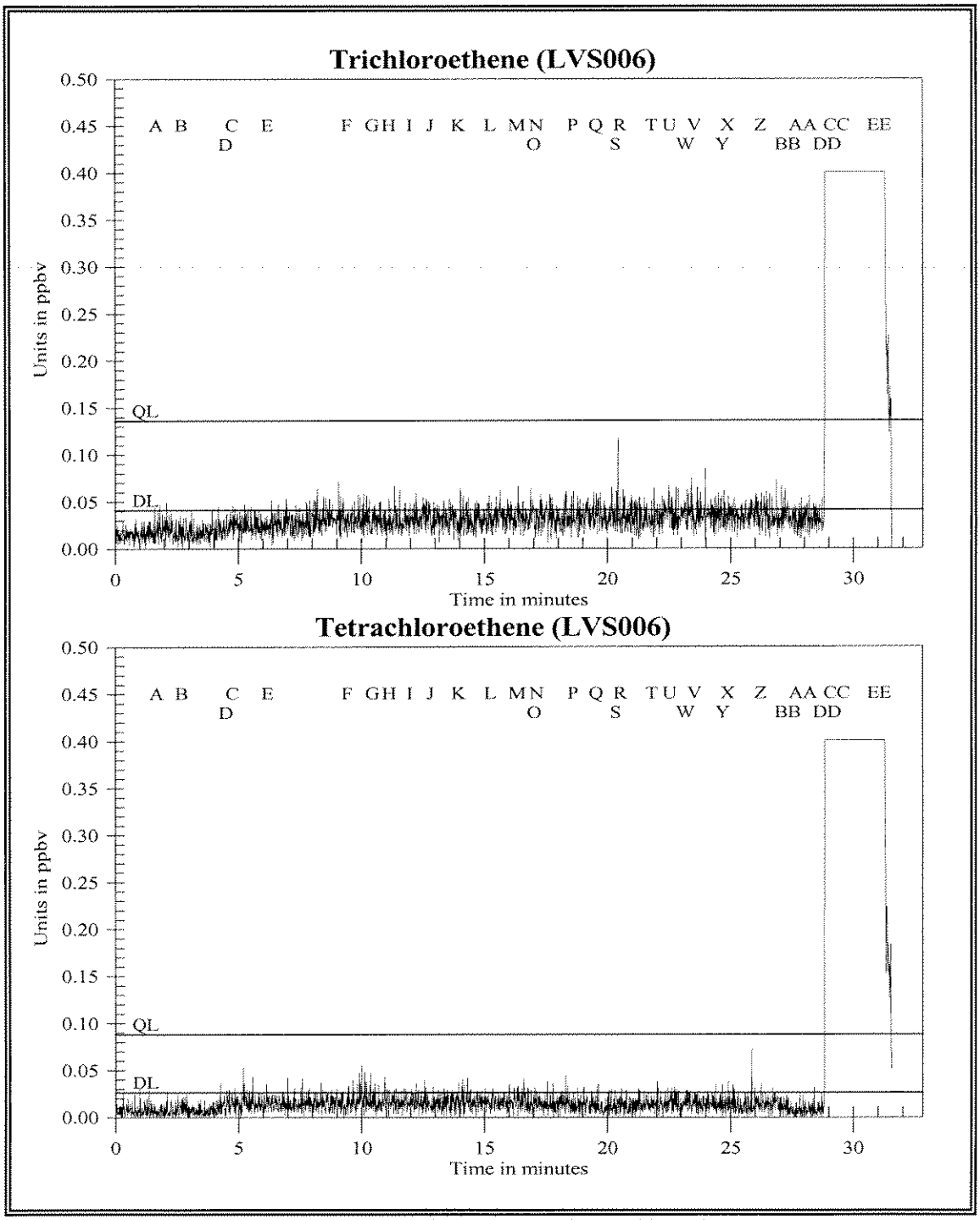


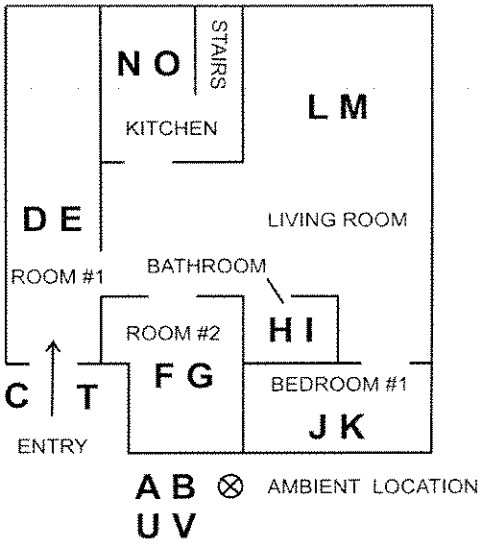
Figure 3c Unit 022 Survey for Trichloroethene and Tetrachloroethene

Figure 3d

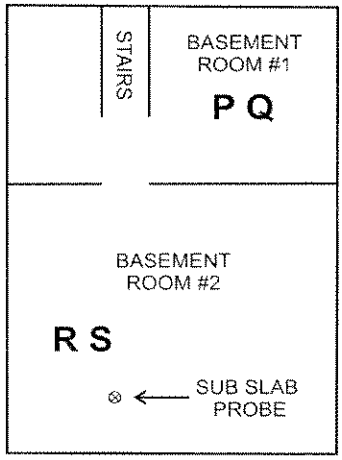
TAGA Target Compound Survey Summary for Unit 022 File: LVS006 Acquired on 25 January 2006 at 11:46:14			
		Trichloroethene	Tetrachloroethene
	Detection Limits (DL):	0.041	0.026
	Quantitation Limits (QL):	0.14	0.088
Flags	Description	Trichloroethene	Tetrachloroethene
A - B	Pre-entry ambient	DL=0.041	DL=0.026
D - E	Kitchen	DL=0.041	DL=0.026
F - G	Den	DL=0.041	DL=0.026
H - I	Bathroom	DL=0.041	DL=0.026
J - K	Dining Area	DL=0.041	DL=0.026
L - M	Bedroom 1	DL=0.041	DL=0.026
O - P	Bedroom 2	DL=0.041	DL=0.026
Q - R	Water Softener Room	DL=0.041	DL=0.026
S - T	Sub-slab Probe	DL=0.041	DL=0.026
U - V	Downstairs Den	DL=0.041	DL=0.026
W - X	Bedroom 3	DL=0.041	DL=0.026
Y - Z	Bedroom 4	DL=0.041	DL=0.026
BB - CC	Post-exit ambient	DL=0.041	DL=0.026
DD - EE	30 mL/min spike	5.8	5.7

Concentrations are given in parts per billion by volume
J = Concentration detected at or below the quantitation limit.

1st FLOOR



BASEMENT



UNIT 013
UNIT SURVEY
1st Floor and Basement
LVS008
LITTLE VALLEY
LITTLE VALLEY, NY

Figure 4a Unit 013 Survey Floor Plan, LVS008

Figure 4b

TAGA File Event Summary File: LVS008 Acquired on 25 January 2006 at 13:25:57 Title: Unit 013 Survey			
Flag	Offset Time	Offset Sequence	Description
A	1.4	132	Start of the pre-entry ambient
B	2.4	230	End of the pre-entry ambient
C	5.3	505	Entering the Unit
D	7.0	668	Start of the Entrance Room 1
E	8.2	781	End of the Entrance Room 1
F	9.2	876	Start of the Entrance Room 2
G	10.2	972	End of the Entrance Room 2
H	11.0	1042	Start of the Bathroom
I	12.0	1140	End of the Bathroom
J	12.4	1175	Start of the Bedroom 1
K	13.4	1271	End of the Bedroom 1
L	13.9	1319	Start of the Living Room
M	15.0	1425	End of the Living Room
N	15.2	1447	Start of the Kitchen
O	16.2	1540	End of the Kitchen
P	17.2	1633	Start of the Basement Room 1
Q	18.2	1731	End of the Basement Room 1
R	18.6	1765	Start of the Basement Room 2
S	19.6	1858	End of the Basement Room 2
T	20.6	1953	Exiting the Unit
U	21.5	2037	Start of the post-exit ambient
V	22.2	2107	End of the post-exit ambient
W	23.7	2246	Start of the 30 mL/min spike
X	24.7	2342	End of the 30 mL/min spike

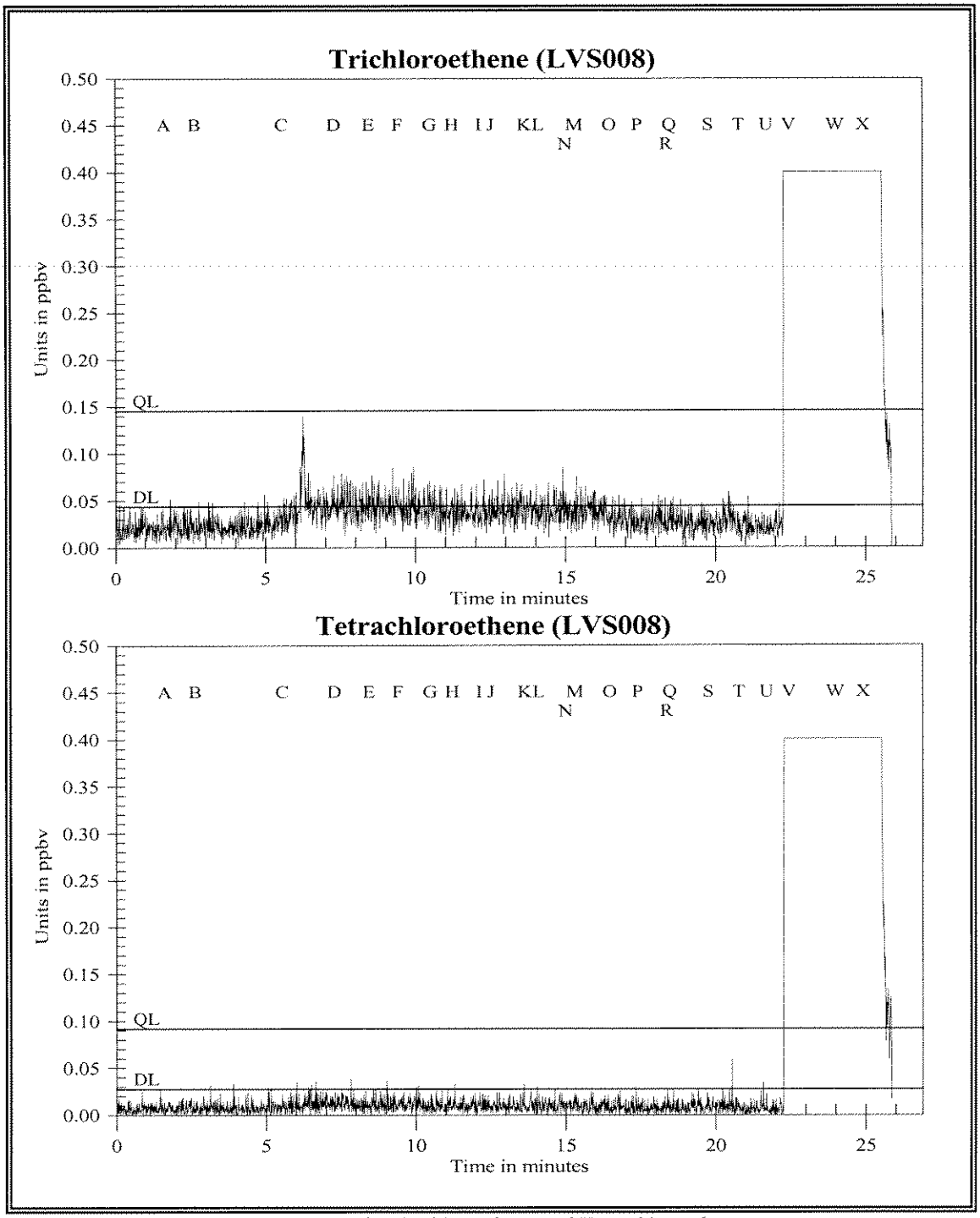


Figure 4c Unit 013 Survey for Trichloroethene and Tetrachloroethene

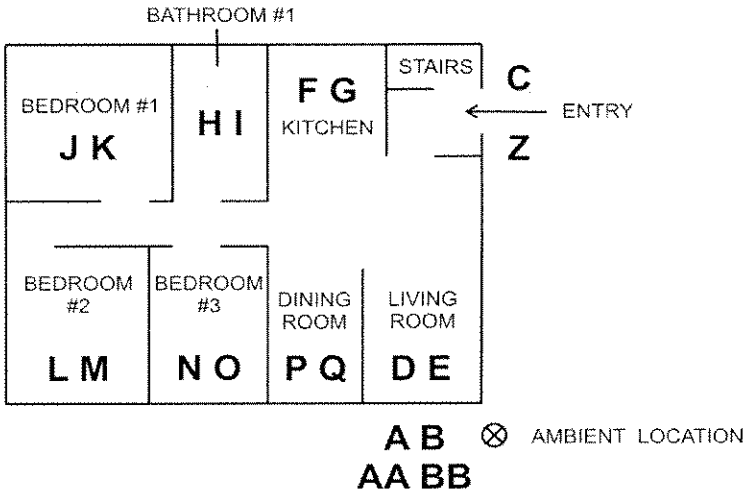
Figure 4d

TAGA Target Compound Survey Summary for Unit 013 File: LVS008 Acquired on 25 January 2006 at 13:25:57			
		Trichloroethene	Tetrachloroethene
	Detection Limits (DL):	0.044	0.027
	Quantitation Limits (QL):	0.15	0.092
Flags	Description	Trichloroethene	Tetrachloroethene
A - B	Pre-entry ambient	DL=0.044	DL=0.027
D - E	Entrance Room 1	DL=0.044	DL=0.027
F - G	Entrance Room 2	DL=0.044	DL=0.027
H - I	Bathroom	DL=0.044	DL=0.027
J - K	Bedroom 1	DL=0.044	DL=0.027
L - M	Living Room	DL=0.044	DL=0.027
N - O	Kitchen	DL=0.044	DL=0.027
P - Q	Basement Room 1	DL=0.044	DL=0.027
R - S	Basement Room 2	DL=0.044	DL=0.027
U - V	Post-exit ambient	DL=0.044	DL=0.027
W - X	30 mL/min spike	5.4	5.5

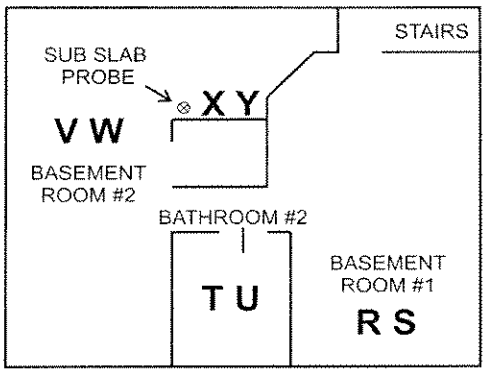
Concentrations are given in parts per billion by volume

J = Concentration detected at or below the quantitation limit.

1st FLOOR



BASEMENT



UNIT 017
UNIT SURVEY
1st Floor and Basement
LVS009
LITTLE VALLEY
LITTLE VALLEY, NY

Figure 5a Unit 017 Survey Floor Plan, LVS009

Figure 5b

TAGA File Event Summary File: LVS009 Acquired on 25 January 2006 at 16:28:25 Title: Unit 017 Survey			
Flag	Offset Time	Offset Sequence	Description
A	1.9	180	Start of the pre-entry ambient
B	2.9	276	End of the pre-entry ambient
C	4.5	428	Entering the Unit
D	5.2	491	Start of the Living Room
E	6.2	586	End of the Living Room
F	6.6	629	Start of the Kitchen
G	7.6	725	End of the Kitchen
H	8.3	784	Start of Bathroom 1
I	9.3	879	End of Bathroom 1
J	9.7	923	Start of Bedroom 1
K	10.7	1018	End of Bedroom 1
L	11.2	1061	Start of Bedroom 2
M	12.1	1154	End of Bedroom 2
N	12.5	1192	Start of Bedroom 3
O	13.5	1285	End of Bedroom 3
P	14.3	1356	Start of the Dining Room
Q	15.3	1451	End of the Dining Room
R	16.6	1575	Start of Basement Room 1
S	17.6	1671	End of Basement Room 1
T	18.0	1712	Start of Bathroom 2
U	19.0	1807	End of Bathroom 2
V	19.5	1849	Start of Basement Room 2
W	20.5	1945	End of Basement Room 2
X	21.0	1997	Start of the Sub-slab Probe
Y	22.1	2095	End of the Sub-slab Probe
Z	23.0	2182	Exiting the Unit
AA	23.6	2239	Start of the post-exit ambient
BB	24.9	2363	End of the post-exit ambient
CC	25.8	2451	Start of the 30 mL/min spike
DD	26.9	2554	End of the 30 mL/min spike

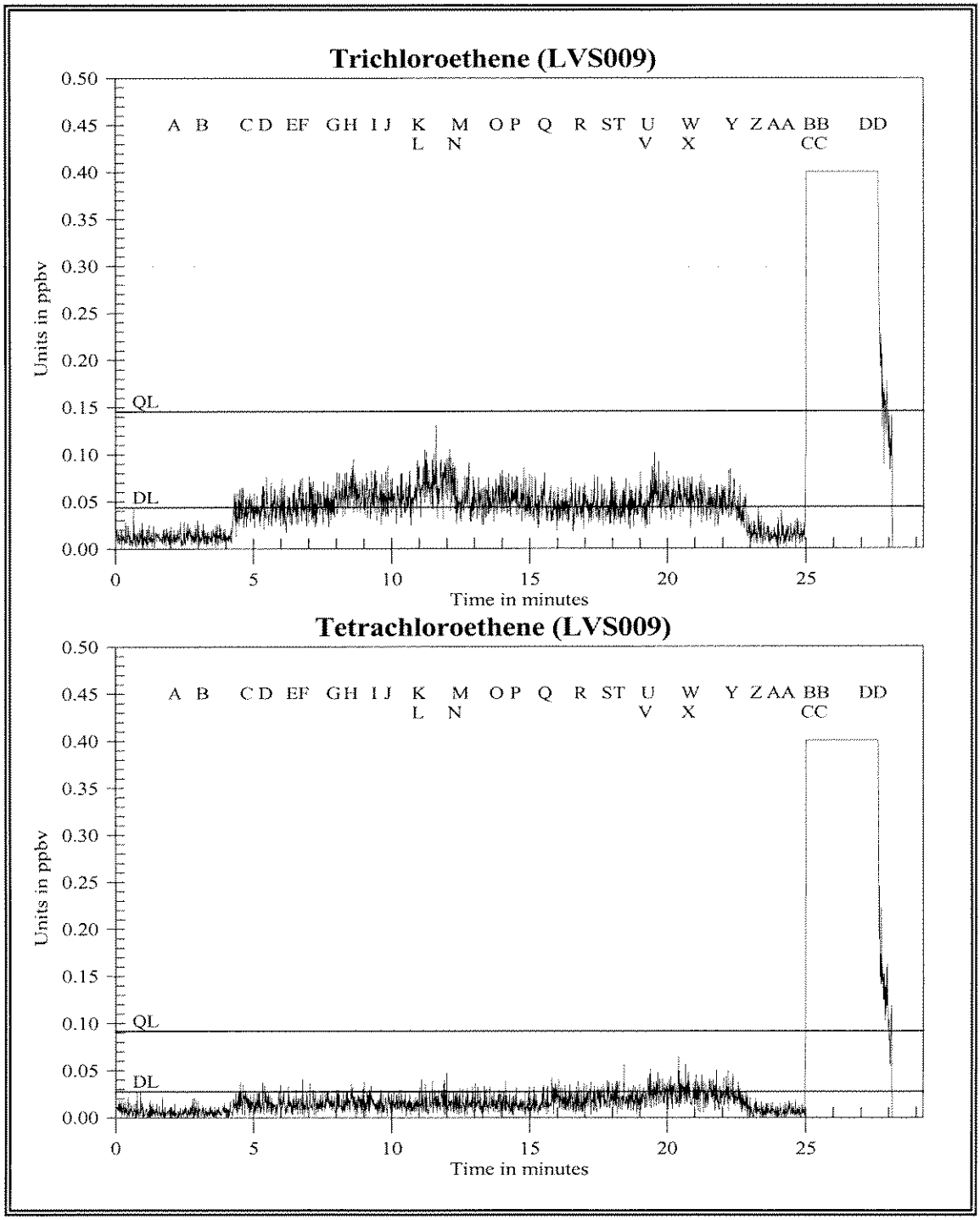


Figure 5c Unit 017 Survey for Trichloroethene and Tetrachloroethene

Figure 5d

TAGA Target Compound Survey Summary for Unit 017 File: LVS009 Acquired on 25 January 2006 at 16:28:25			
		Trichloroethene	Tetrachloroethene
	Detection Limits (DL):	0.044	0.027
	Quantitation Limits (QL):	0.15	0.092
Flags	Description	Trichloroethene	Tetrachloroethene
A - B	Pre-entry ambient	DL=0.044	DL=0.027
D - E	Living Room	DL=0.044	DL=0.027
F - G	Kitchen	0.047J	DL=0.027
H - I	Bathroom 1	0.058J	DL=0.027
J - K	Bedroom 1	0.053J	DL=0.027
L - M	Bedroom 2	0.072J	DL=0.027
N - O	Bedroom 3	0.051J	DL=0.027
P - Q	Dining Room	0.050J	DL=0.027
R - S	Basement Room 1	0.045J	DL=0.027
T - U	Bathroom 2	0.045J	DL=0.027
V - W	Basement Room 2	0.056J	DL=0.027
X - Y	Sub-slab Probe	0.049J	DL=0.027
AA - BB	Post-exit ambient	DL=0.044	DL=0.027
CC - DD	30 mL/min spike	5.8	5.2

Concentrations are given in parts per billion by volume
J = Concentration detected at or below the quantitation limit.

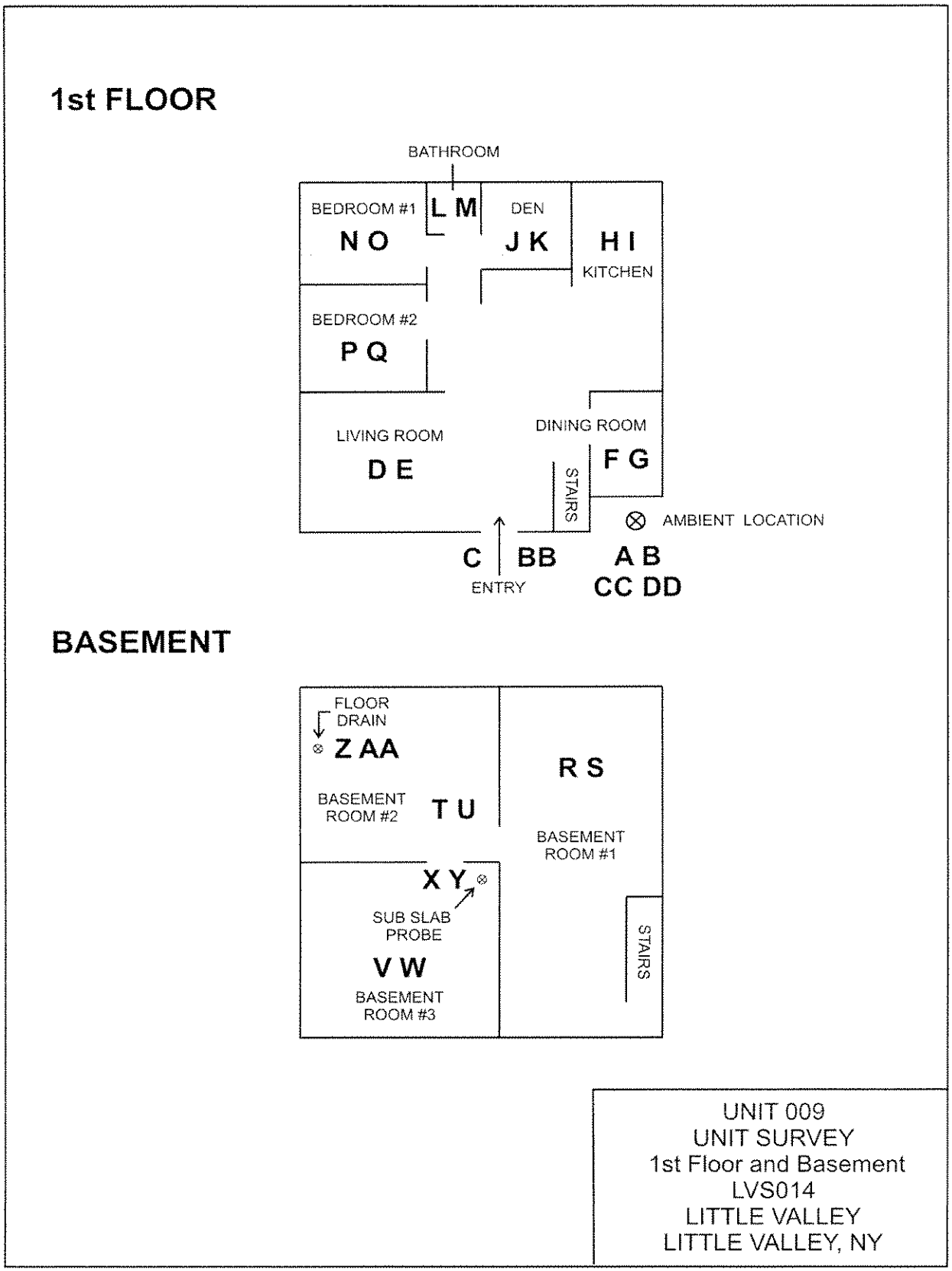


Figure 6a Unit 009 Survey Floor Plan, LVS014

Figure 6b

TAGA File Event Summary
File: LVS014 Acquired on 26 January 2006 at 09:17:40
Title: Unit 009 Survey

Flag	Offset Time	Offset Sequence	Description
A	1.1	104	Start of the pre-entry ambient
B	2.3	217	End of the pre-entry ambient
C	3.5	331	Entering the Unit
D	3.8	359	Start of the Living Room
E	4.8	459	End of the Living Room
F	5.3	500	Start of the Dining Room
G	6.4	606	End of the Dining Room
H	6.5	617	Start of the Kitchen
I	7.5	712	End of the Kitchen
J	8.1	766	Start of the Den
K	9.0	859	End of the Den
L	9.3	880	Start of the Bathroom
M	10.3	974	End of the Bathroom
N	10.5	1000	Start of Bedroom 1
O	11.5	1093	End of Bedroom 1
P	11.8	1122	Start of Bedroom 2
Q	13.0	1232	End of Bedroom 2
R	13.8	1307	Start of Basement Room 1
S	14.8	1405	End of Basement Room 1
T	15.2	1446	Start of Basement Room 2
U	16.2	1539	End of Basement Room 2
V	16.7	1587	Start of Basement Room 3
W	17.7	1683	End of Basement Room 3
X	18.3	1737	Start of the Sub-slab Probe
Y	19.3	1830	End of the Sub-slab Probe
Z	19.7	1873	Start of the Floor Drain
AA	20.7	1968	End of the Floor Drain
BB	22.0	2088	Exiting the Unit
CC	22.5	2132	Start of the post-exit ambient
DD	23.5	2232	End of the post-exit ambient
EE	24.9	2365	Start of the 30 mL/min spike
FF	25.9	2461	End of the 30 mL/min spike

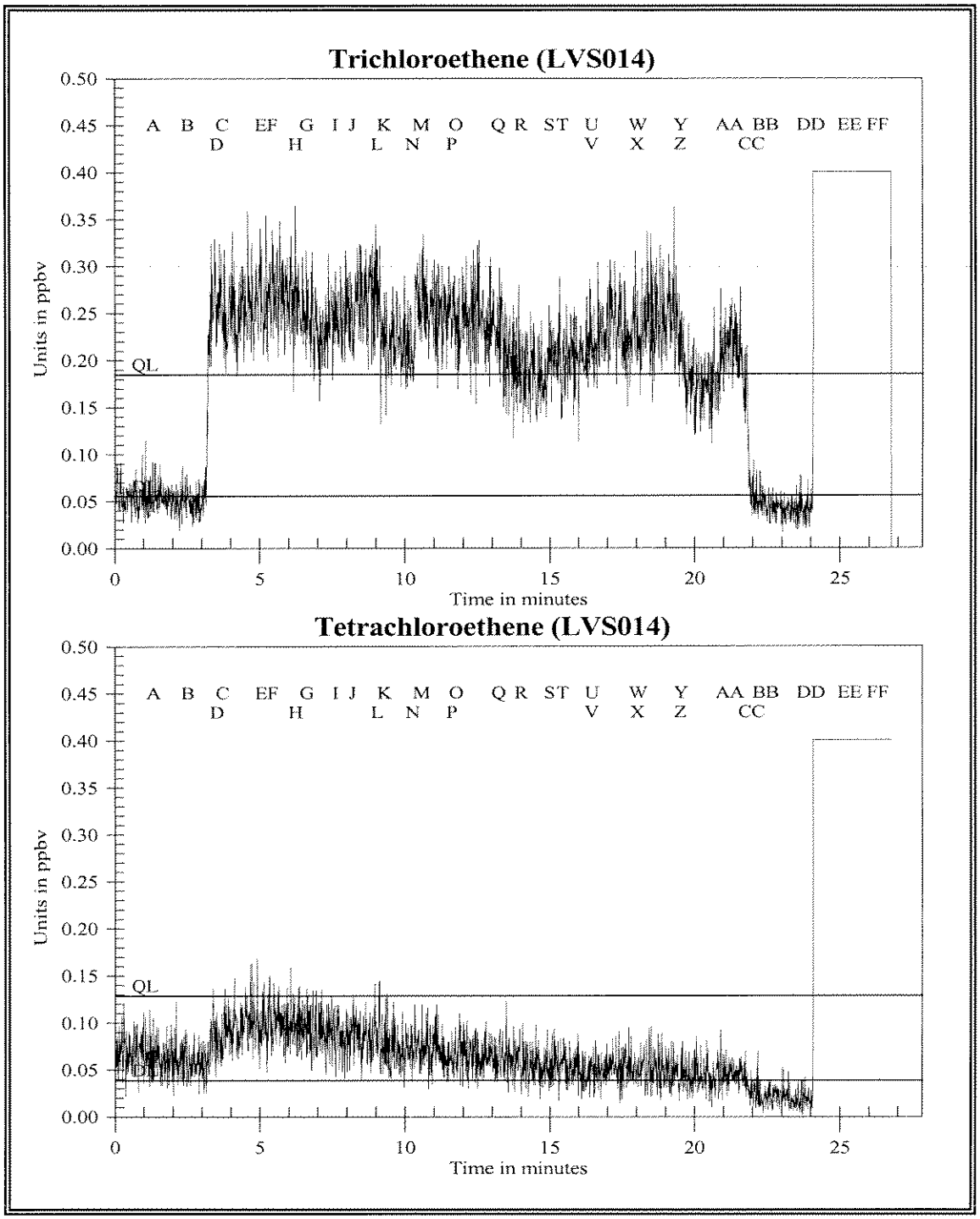


Figure 6c Unit 009 Survey for Trichloroethene and Tetrachloroethene

Figure 6d

TAGA Target Compound Survey Summary for Unit 009 File: LVS014 Acquired on 26 January 2006 at 09:17:40			
		Trichloroethene	Tetrachloroethene
	Detection Limits (DL):	0.055	0.039
	Quantitation Limits (QL):	0.18	0.13
Flags	Description	Trichloroethene	Tetrachloroethene
A - B	Pre-entry ambient	DL=0.055	0.061J
D - E	Living Room	0.25	0.098J
F - G	Dining Room	0.27	0.10J
H - I	Kitchen	0.24	0.091J
J - K	Den	0.26	0.086J
L - M	Bathroom	0.22	0.073J
N - O	Bedroom 1	0.25	0.071J
P - Q	Bedroom 2	0.24	0.067J
R - S	Basement Room 1	0.19	0.055J
T - U	Basement Room 2	0.20	0.051J
V - W	Basement Room 3	0.23	0.051J
X - Y	Sub-slab Probe	0.25	0.049J
Z - AA	Floor Drain	0.17J	0.042J
CC - DD	Post-exit ambient	DL=0.055	DL=0.039
EE - FF	30 mL/min spike	10.	9.4

Concentrations are given in parts per billion by volume
J = Concentration detected at or below the quantitation limit.

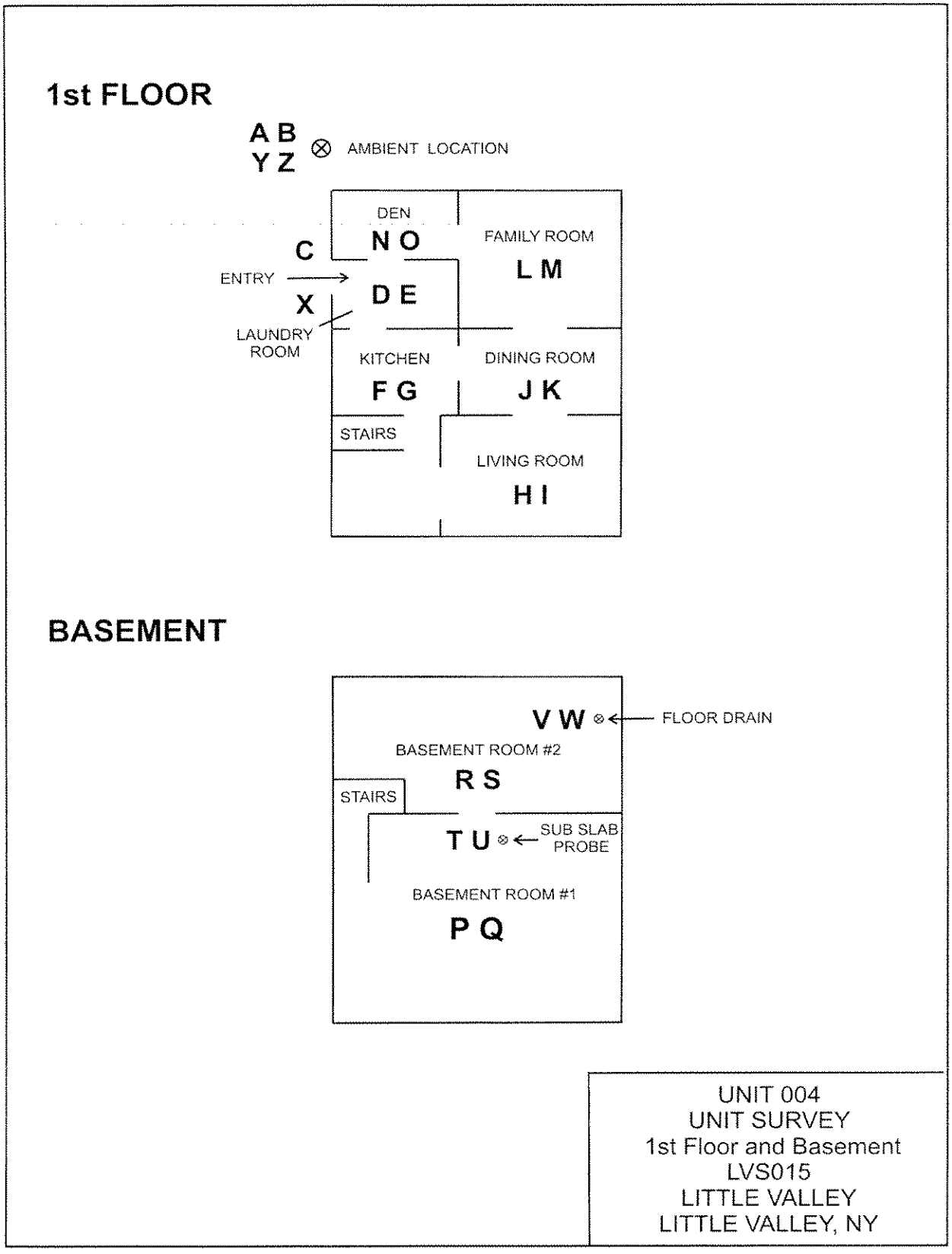


Figure 7a Unit 004 Survey Floor Plan, LVS015

Figure 7b

TAGA File Event Summary File: LVS015 Acquired on 26 January 2006 at 10:04:21 Title: Unit 004 Survey			
Flag	Offset Time	Offset Sequence	Description
A	1.3	128	Start of the pre-entry ambient
B	2.4	225	End of the pre-entry ambient
C	3.6	345	Entering the Unit
D	4.1	386	Start of the Laundry Room
E	5.1	481	End of the Laundry Room
F	5.5	520	Start of the Kitchen
G	6.5	614	End of the Kitchen
H	6.8	644	Start of the Living Room
I	7.8	739	End of the Living Room
J	8.1	766	Start of the Dining Room
K	9.1	862	End of the Dining Room
L	9.3	886	Start of the Family Room
M	10.3	982	End of the Family Room
N	10.8	1022	Start of the Den
O	11.7	1115	End of the Den
P	13.2	1250	Start of Basement Room 1
Q	14.2	1346	End of Basement Room 1
R	14.4	1370	Start of Basement Room 2
S	15.4	1465	End of Basement Room 2
T	15.9	1508	Start of the Sub-slab Probe
U	16.9	1602	End of the Sub-slab Probe
V	18.0	1708	Start of the Corner Floor Drain
W	19.0	1803	End of the Corner Floor Drain
X	20.7	1968	Exiting the Unit
Y	21.5	2037	Start of the post-exit ambient
Z	22.5	2136	End of the post-exit ambient
AA	23.5	2234	Start of the 30 mL/min spike
BB	24.5	2330	End of the 30 mL/min spike

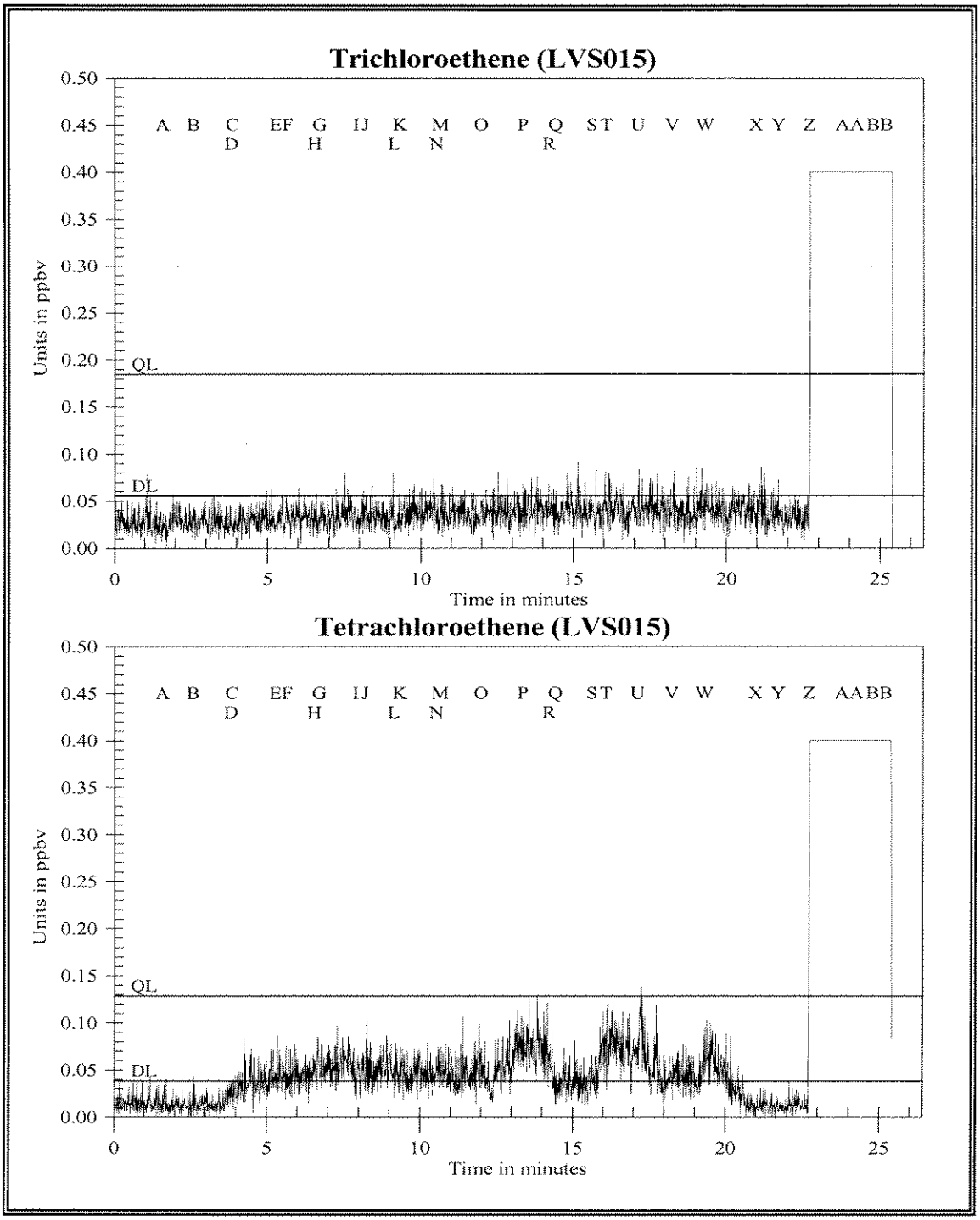


Figure 7c Unit 004 Survey for Trichloroethene and Tetrachloroethene

Figure 7d

TAGA Target Compound Survey Summary for Unit 004 File: LVS015 Acquired on 26 January 2006 at 10:04:21			
		Trichloroethene	Tetrachloroethene
	Detection Limits (DL):	0.055	0.039
	Quantitation Limits (QL):	0.18	0.13
Flags	Description	Trichloroethene	Tetrachloroethene
A - B	Pre-entry ambient	DL=0.055	DL=0.039
D - E	Laundry Room	DL=0.055	DL=0.039
F - G	Kitchen	DL=0.055	0.045J
H - I	Living Room	DL=0.055	0.056J
J - K	Dining Room	DL=0.055	0.051J
L - M	Family Room	DL=0.055	0.046J
N - O	Den	DL=0.055	0.045J
P - Q	Basement Room 1	DL=0.055	0.076J
R - S	Basement Room 2	DL=0.055	DL=0.039
T - U	Sub-slab Probe	DL=0.055	0.076J
V - W	Corner Floor Drain	DL=0.055	0.043J
Y - Z	Post-exit ambient	DL=0.055	DL=0.039
AA - BB	30 mL/min spike	9.8	8.9

Concentrations are given in parts per billion by volume
J = Concentration detected at or below the quantitation limit.

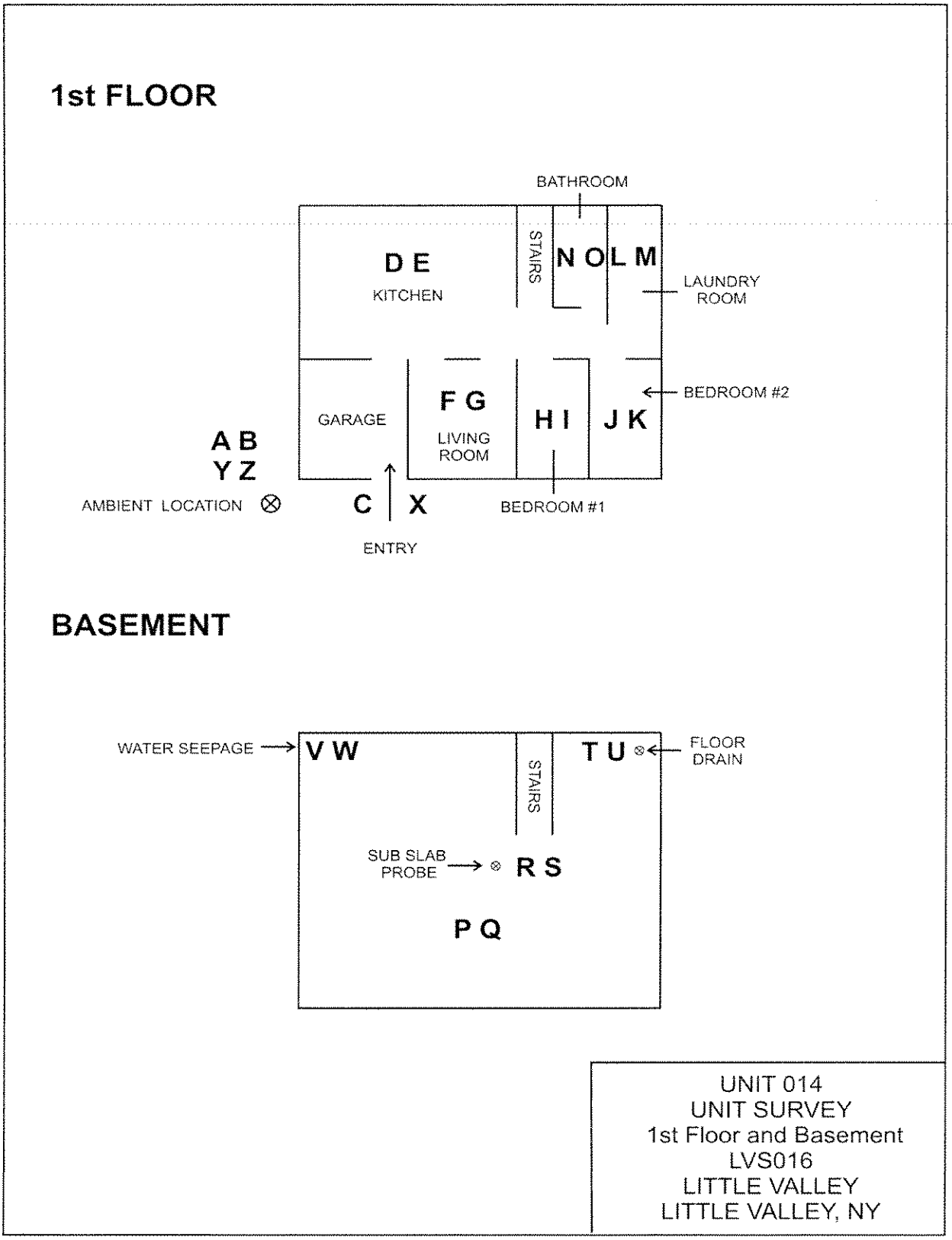


Figure 8a Unit 014 Survey Floor Plan, LVS016

Figure 8b

TAGA File Event Summary File: LVS016 Acquired on 26 January 2006 at 11:57:01 Title: Unit 014 Survey			
Flag	Offset Time	Offset Sequence	Description
A	1.5	147	Start of the pre-entry ambient
B	2.6	244	End of the pre-entry ambient
C	4.2	403	Entering the Unit
D	4.6	438	Start of the Kitchen
E	5.6	533	End of the Kitchen
F	6.1	579	Start of the Living Room
G	7.1	675	End of the Living Room
H	7.6	720	Start of Bedroom 1
I	8.5	811	End of Bedroom 1
J	8.8	835	Start of Bedroom 2
K	9.9	941	End of Bedroom 2
L	10.0	954	Start of the Laundry Room
M	10.9	1035	End of the Laundry Room
N	11.2	1063	Start of the Bathroom
O	12.2	1160	End of the Bathroom
P	12.8	1218	Start of the Center of the Basement
Q	13.8	1311	End of the Center of the Basement
R	14.1	1338	Start of the Sub-slab Probe
S	15.1	1436	End of the Sub-slab Probe
T	15.5	1473	Start of the Floor Drain
U	16.5	1566	End of the Floor Drain
V	16.9	1609	Start of the Water Seepage
W	18.0	1713	End of the Water Seepage
X	18.9	1794	Exiting the Unit
Y	19.5	1854	Start of the post-exit ambient
Z	20.4	1941	End of the post-exit ambient
AA	21.8	2066	Start of the 30 mL/min spike
BB	22.8	2161	End of the 30 mL/min spike

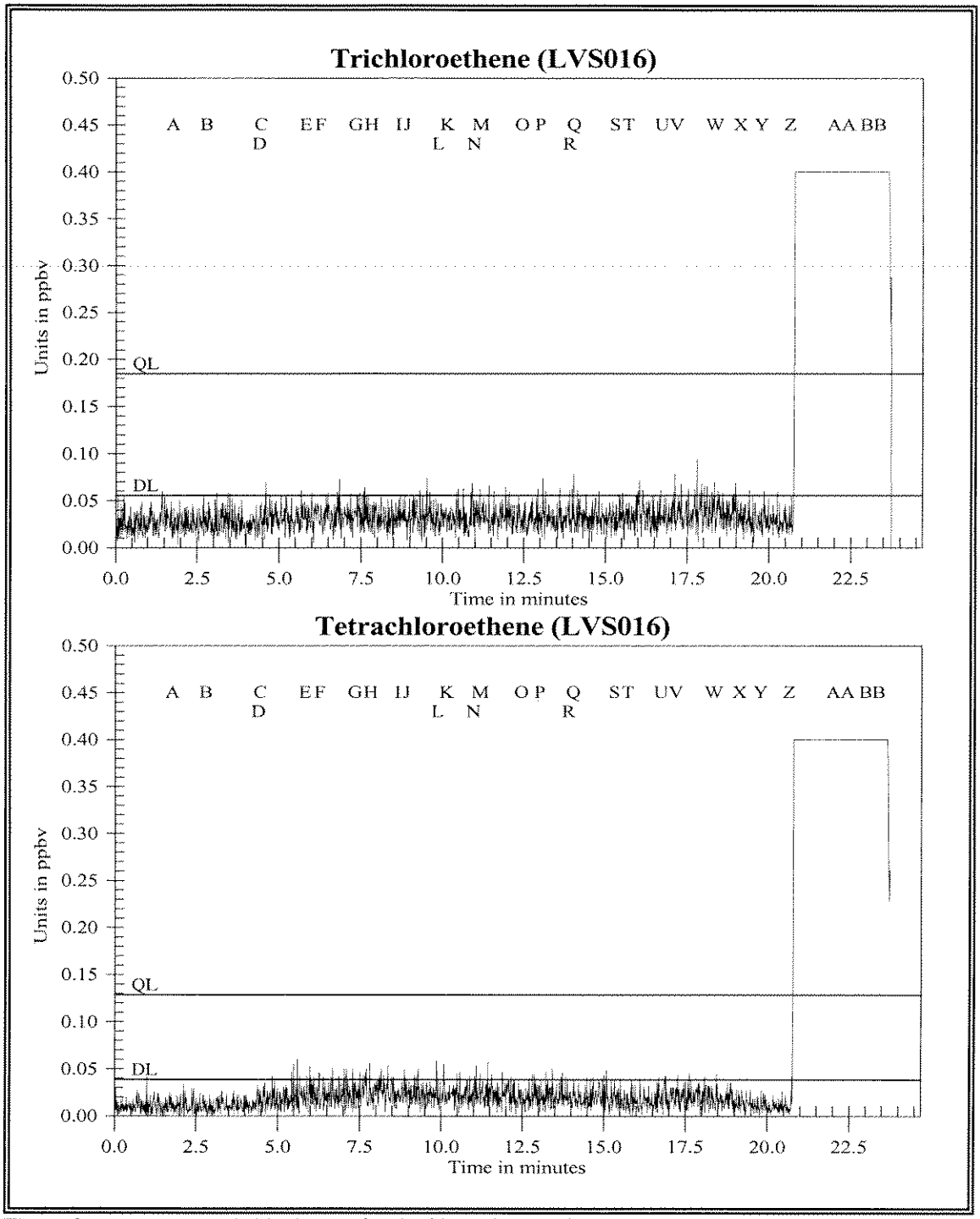


Figure 8c Unit 014 Survey for Trichloroethene and Tetrachloroethene

Figure 8d

TAGA Target Compound Survey Summary for Unit 014 File: LVS016 Acquired on 26 January 2006 at 11:57:01			
		Trichloroethene	Tetrachloroethene
	Detection Limits (DL):	0.055	0.039
	Quantitation Limits (QL):	0.18	0.13
Flags	Description	Trichloroethene	Tetrachloroethene
A - B	Pre-entry ambient	DL=0.055	DL=0.039
D - E	Kitchen	DL=0.055	DL=0.039
F - G	Living Room	DL=0.055	DL=0.039
H - I	Bedroom 1	DL=0.055	DL=0.039
J - K	Bedroom 2	DL=0.055	DL=0.039
L - M	Laundry Room	DL=0.055	DL=0.039
N - O	Bathroom	DL=0.055	DL=0.039
P - Q	Basement	DL=0.055	DL=0.039
R - S	Sub-slab Probe	DL=0.055	DL=0.039
T - U	Floor Drain	DL=0.055	DL=0.039
V - W	Water Seepage	DL=0.055	DL=0.039
Y - Z	Post-exit ambient	DL=0.055	DL=0.039
AA - BB	30 mL/min spike	9.5	8.5

Concentrations are given in parts per billion by volume
J = Concentration detected at or below the quantitation limit.

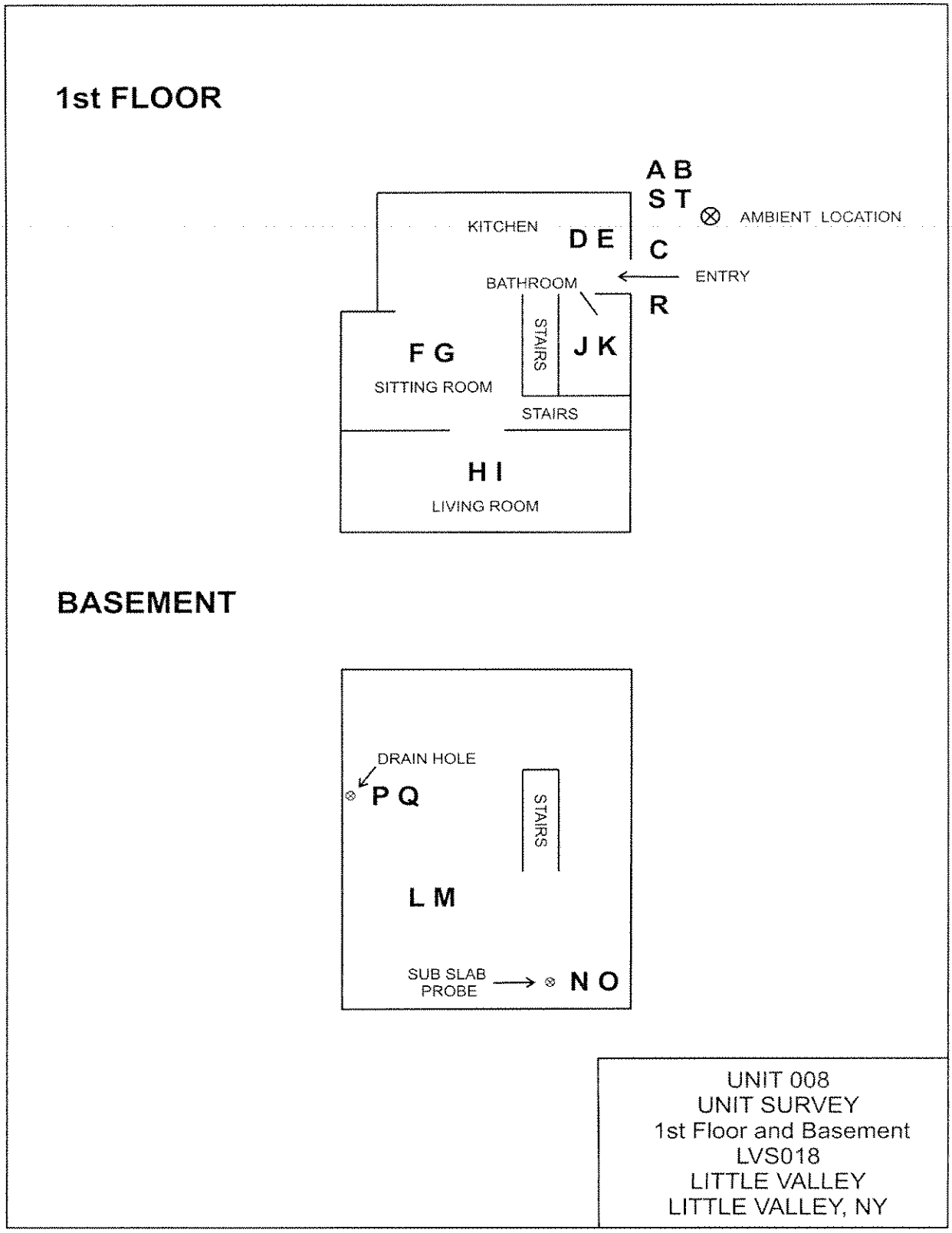


Figure 9a Unit 008 Survey Floor Plan, LVS018

Figure 9b

TAGA File Event Summary File: LVS018 Acquired on 26 January 2006 at 13:13:31 Title: Unit 008 Survey			
Flag	Offset Time	Offset Sequence	Description
A	1.9	177	Start of the pre-entry ambient
B	2.8	270	End of the pre-entry ambient
C	4.0	376	Entering the Unit
D	4.4	416	Start of the Kitchen
E	5.4	514	End of the Kitchen
F	5.8	550	Start of the Sitting Room
G	6.8	645	End of the Sitting Room
H	7.0	666	Start of the Living Room
I	8.0	759	End of the Living Room
J	8.4	794	Start of the Bathroom
K	9.4	889	End of the Bathroom
L	10.0	954	Start of the Center of the Basement
M	11.0	1049	End of the Center of the Basement
N	11.4	1087	Start of the Sub-slab Probe
O	12.4	1182	End of the Sub-slab Probe
P	12.8	1215	Start of the Drain Hole
Q	13.8	1315	End of the Drain Hole
R	14.6	1387	Exiting the Unit
S	15.2	1443	Start of the post-exit ambient
T	16.2	1534	End of the post-exit ambient
U	17.2	1631	Start of the 30 mL/min spike
V	18.2	1726	End of the 30 mL/min spike

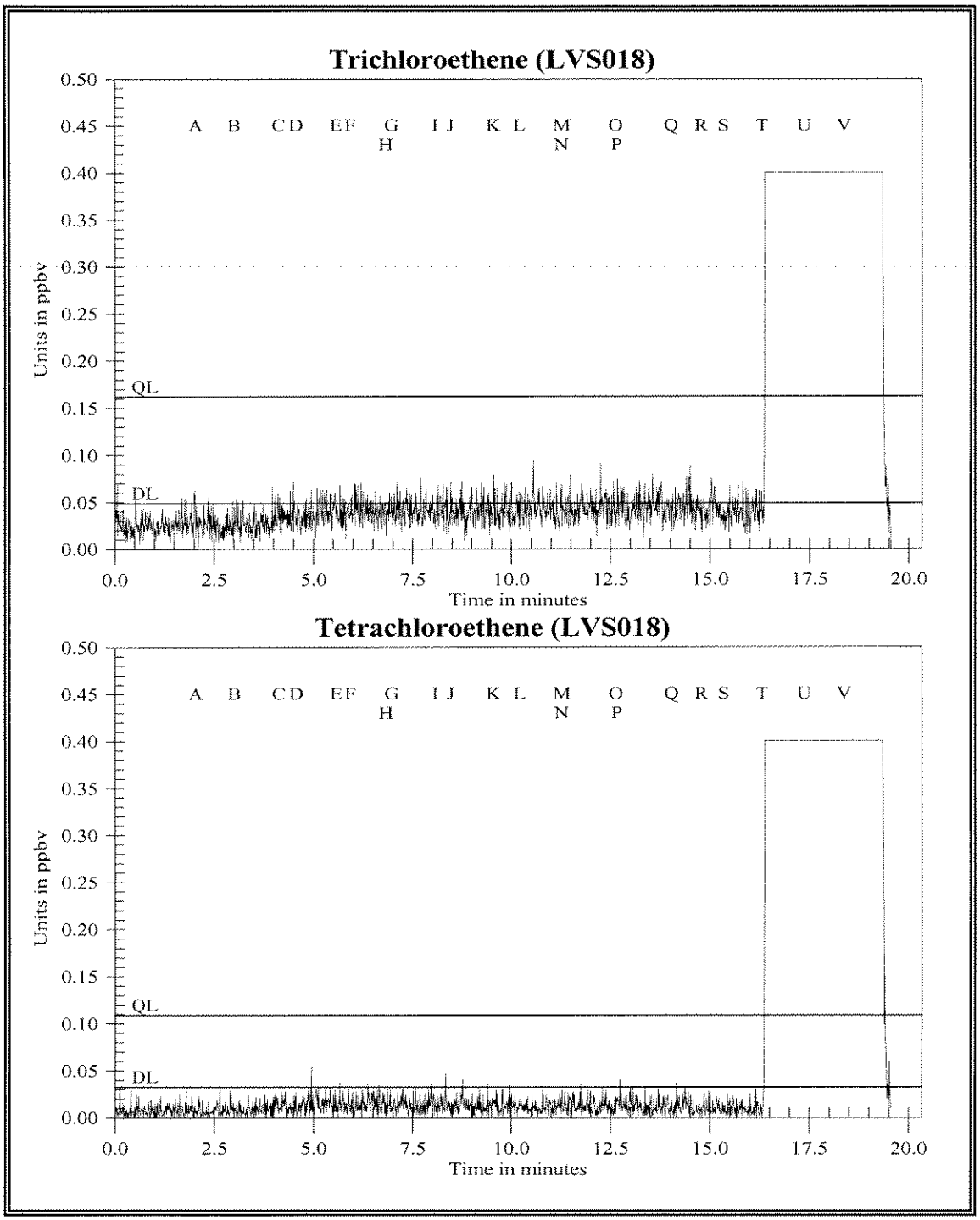


Figure 9c Unit 008 Survey for Trichloroethene and Tetrachloroethene

Figure 9d

TAGA Target Compound Survey Summary for Unit 008 File: LVS018 Acquired on 26 January 2006 at 13:13:31			
		Trichloroethene	Tetrachloroethene
	Detection Limits (DL):	0.049	0.033
	Quantitation Limits (QL):	0.16	0.11
Flags	Description	Trichloroethene	Tetrachloroethene
A - B	Pre-entry ambient	DL=0.049	DL=0.033
D - E	Kitchen	DL=0.049	DL=0.033
F - G	Sitting Room	DL=0.049	DL=0.033
H - I	Living Room	DL=0.049	DL=0.033
J - K	Bathroom	DL=0.049	DL=0.033
L - M	Basement	DL=0.049	DL=0.033
N - O	Sub-slab Probe	DL=0.049	DL=0.033
P - Q	Drain Hole	DL=0.049	DL=0.033
S - T	Post-exit ambient	DL=0.049	DL=0.033
U - V	30 mL/min spike	9.1	8.4

Concentrations are given in parts per billion by volume
J = Concentration detected at or below the quantitation limit.

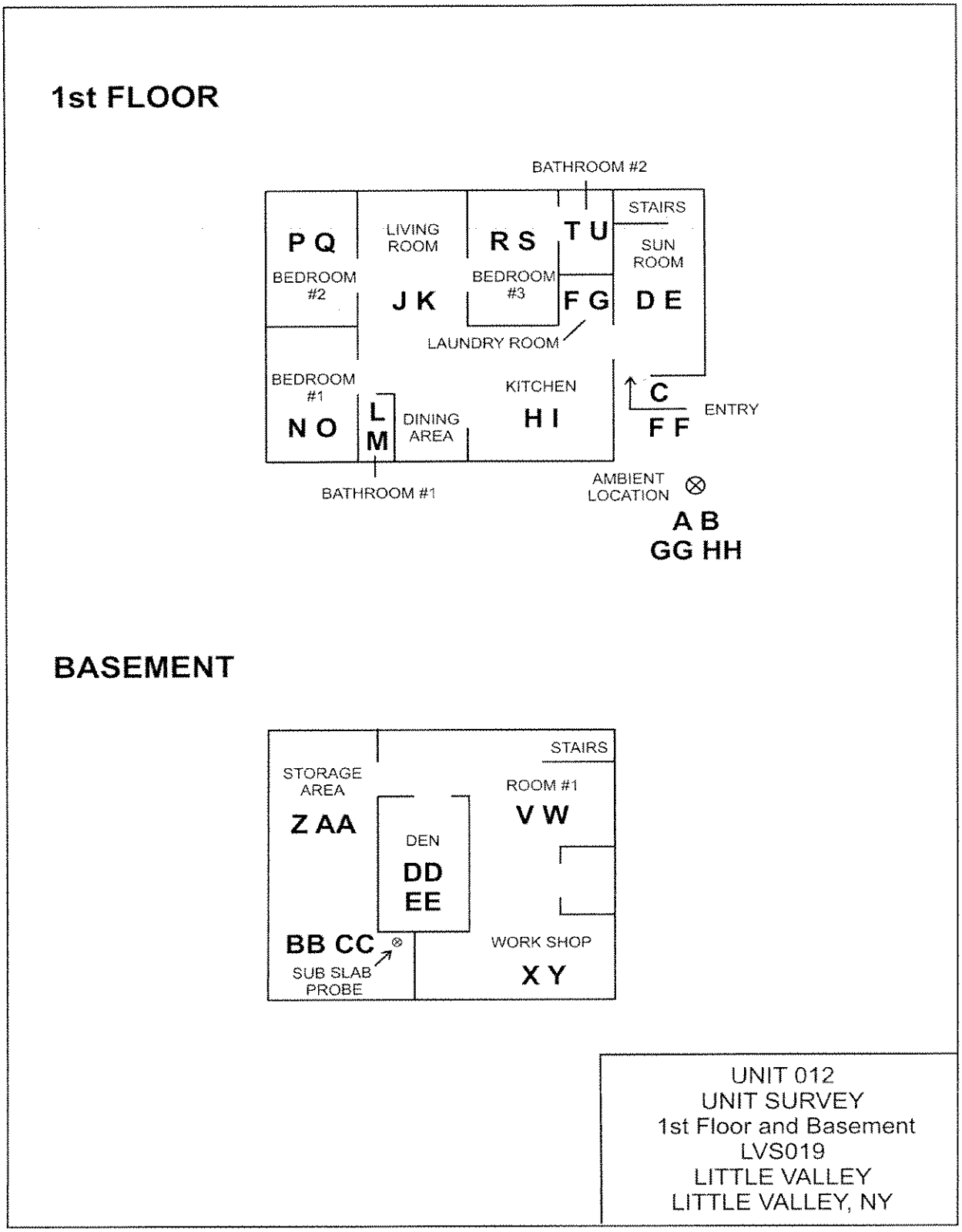


Figure 10a Unit 012 Survey Floor Plan, LVS019

Figure 10b

TAGA File Event Summary
File: LVS019 Acquired on 26 January 2006 at 13:57:17
Title: Unit 012 Survey

Flag	Offset Time	Offset Sequence	Description
A	1.6	153	Start of the pre-entry ambient
B	2.5	242	End of the pre-entry ambient
C	3.8	357	Entering the Unit
D	4.0	381	Start of the Sun Room
E	5.0	476	End of the Sun Room
F	5.3	506	Start of the Laundry Room
G	6.4	604	End of the Laundry Room
H	6.8	647	Start of the Kitchen
I	7.8	743	End of the Kitchen
J	8.2	783	Start of the Living Room and Dining Area
K	9.2	876	End of the Living Room and Dining Area
L	9.6	914	Start of Bathroom 1
M	10.6	1011	End of Bathroom 1
N	10.9	1033	Start of Bedroom 1
O	11.9	1128	End of Bedroom 1
P	12.3	1164	Start of Bedroom 2
Q	13.3	1259	End of Bedroom 2
R	13.7	1297	Start of Bedroom 3
S	14.7	1394	End of Bedroom 3
T	14.9	1417	Start of Bathroom 2
U	15.9	1514	End of Bathroom 2
V	17.7	1685	Start of Basement Room 1
W	18.7	1778	End of Basement Room 1
X	19.2	1824	Start of the Workshop
Y	20.2	1922	End of the Workshop
Z	21.1	2003	Start of the Storage Area
AA	22.1	2096	End of the Storage Area
BB	22.3	2118	Start of the Sub-slab Probe
CC	23.4	2224	End of the Sub-slab Probe
DD	23.8	2259	Start of the Den
EE	24.8	2352	End of the Den
FF	25.5	2425	Exiting the Unit
GG	26.3	2496	Start of the post-exit ambient
HH	27.3	2594	End of the post-exit ambient
II	28.2	2675	Start of the 30 mL/min spike
JJ	29.2	2768	End of the 30 mL/min spike

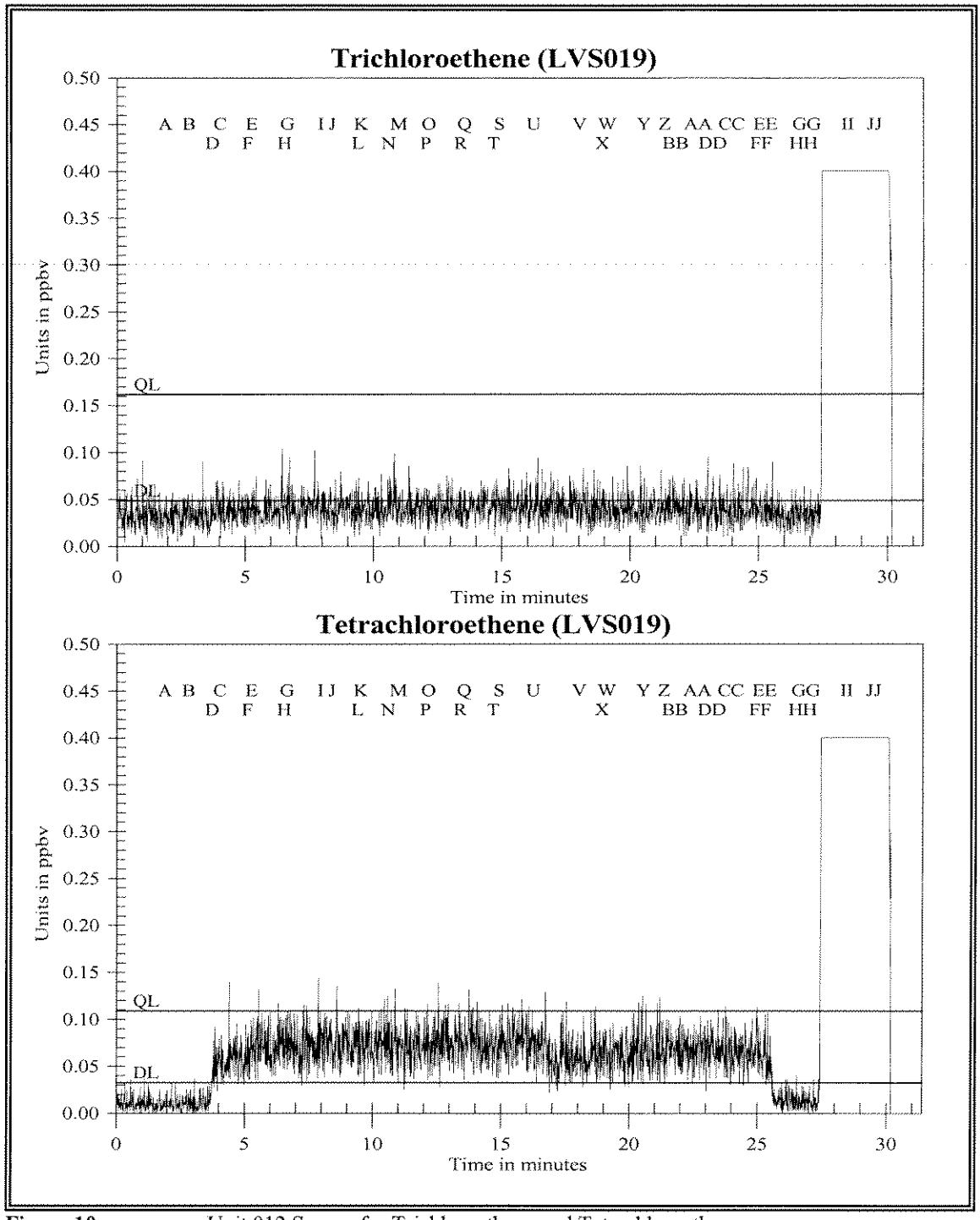


Figure 10c Unit 012 Survey for Trichloroethene and Tetrachloroethene

Figure 10d

TAGA Target Compound Survey Summary for Unit 012 File: LVS019 Acquired on 26 January 2006 at 13:57:17			
		Trichloroethene	Tetrachloroethene
	Detection Limits (DL):	0.049	0.033
	Quantitation Limits (QL):	0.16	0.11
Flags	Description	Trichloroethene	Tetrachloroethene
A - B	Pre-entry ambient	DL=0.049	DL=0.033
D - E	Sun Room	DL=0.049	0.057J
F - G	Laundry Room	DL=0.049	0.071J
H - I	Kitchen	DL=0.049	0.071J
J - K	Living Room and Dining Area	DL=0.049	0.073J
L - M	Bathroom 1	DL=0.049	0.074J
N - O	Bedroom 1	DL=0.049	0.071J
P - Q	Bedroom 2	DL=0.049	0.076J
R - S	Bedroom 3	DL=0.049	0.074J
T - U	Bathroom 2	DL=0.049	0.077J
V - W	Basement Room 1	DL=0.049	0.060J
X - Y	Workshop	DL=0.049	0.063J
Z - AA	Storage Area	DL=0.049	0.069J
BB - CC	Sub-slab Probe	DL=0.049	0.067J
DD - EE	Den	DL=0.049	0.063J
GG - HH	Post-exit ambient	DL=0.049	DL=0.033
II - JJ	30 mL/min spike	9.3	9.0

Concentrations are given in parts per billion by volume
J = Concentration detected at or below the quantitation limit.

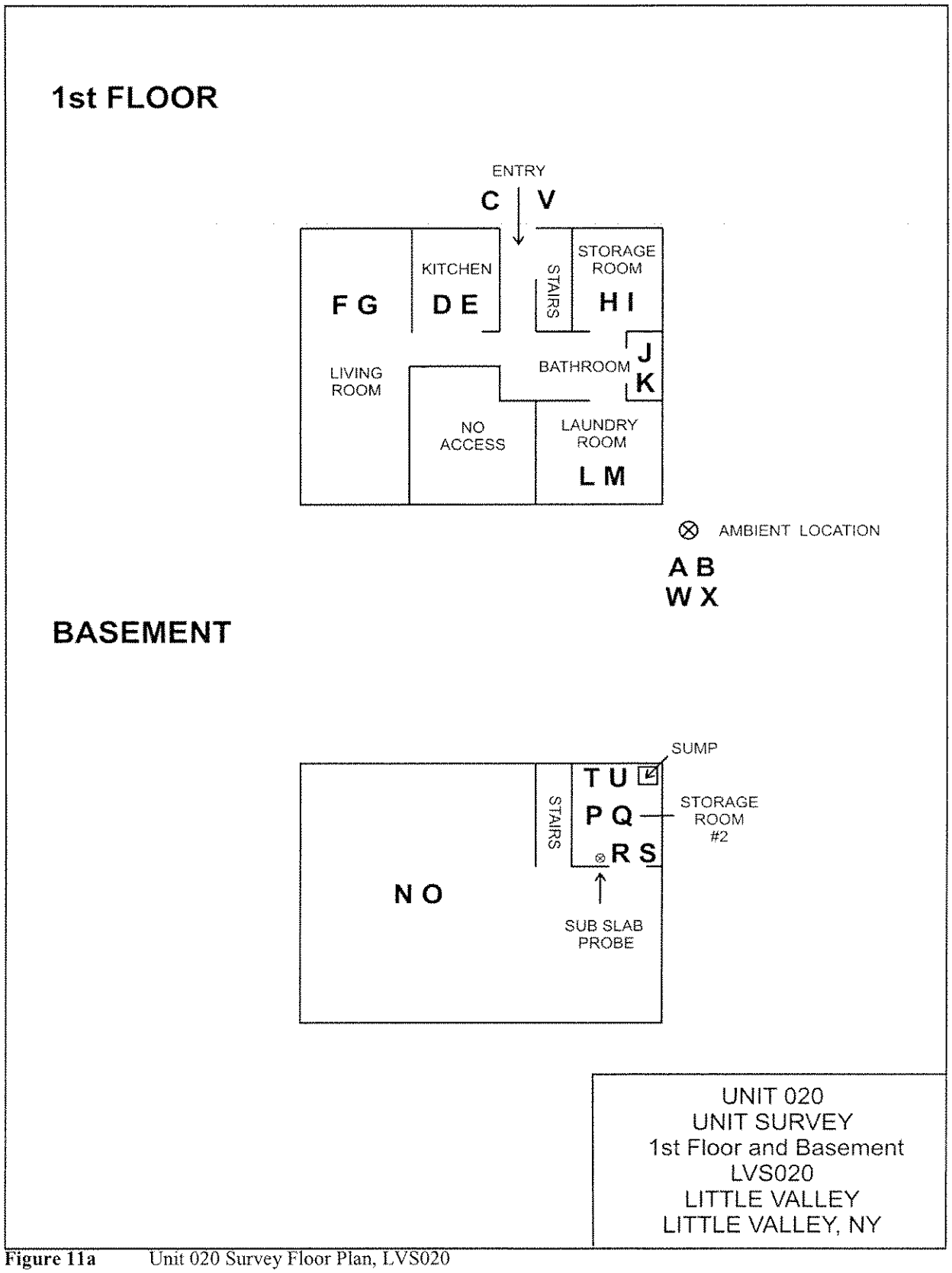


Figure 11a Unit 020 Survey Floor Plan, LVS020

Figure 11b

TAGA File Event Summary File: LVS020 Acquired on 26 January 2006 at 17:09:02 Title: Unit 020 Survey			
Flag	Offset Time	Offset Sequence	Description
A	1.9	177	Start of the pre-entry ambient
B	3.1	291	End of the pre-entry ambient
C	4.3	410	Entering the Unit
D	4.6	435	Start of the Kitchen
E	5.6	530	End of the Kitchen
F	6.0	568	Start of the Living Room
G	7.0	663	End of the Living Room
H	7.4	704	Start of the Storage Room
I	8.4	799	End of the Storage Room
J	8.6	819	Start of the Bathroom
K	9.6	916	End of the Bathroom
L	9.9	943	Start of the Laundry Room
M	10.9	1038	End of the Laundry Room
N	12.0	1136	Start of the Basement
O	13.0	1231	End of the Basement
P	13.4	1277	Start of the Storage Room 2
Q	14.4	1371	End of the Storage Room 2
R	14.7	1394	Start of the Sub-slab Probe
S	15.7	1487	End of the Sub-slab Probe
T	16.0	1519	Start of the Sump
U	17.0	1615	End of the Sump
V	18.1	1715	Exiting the Unit
W	19.3	1837	Start of the post-exit ambient
X	20.3	1931	End of the post-exit ambient
Y	21.3	2019	Start of the 30 mL/min spike
Z	22.3	2117	End of the 30 mL/min spike

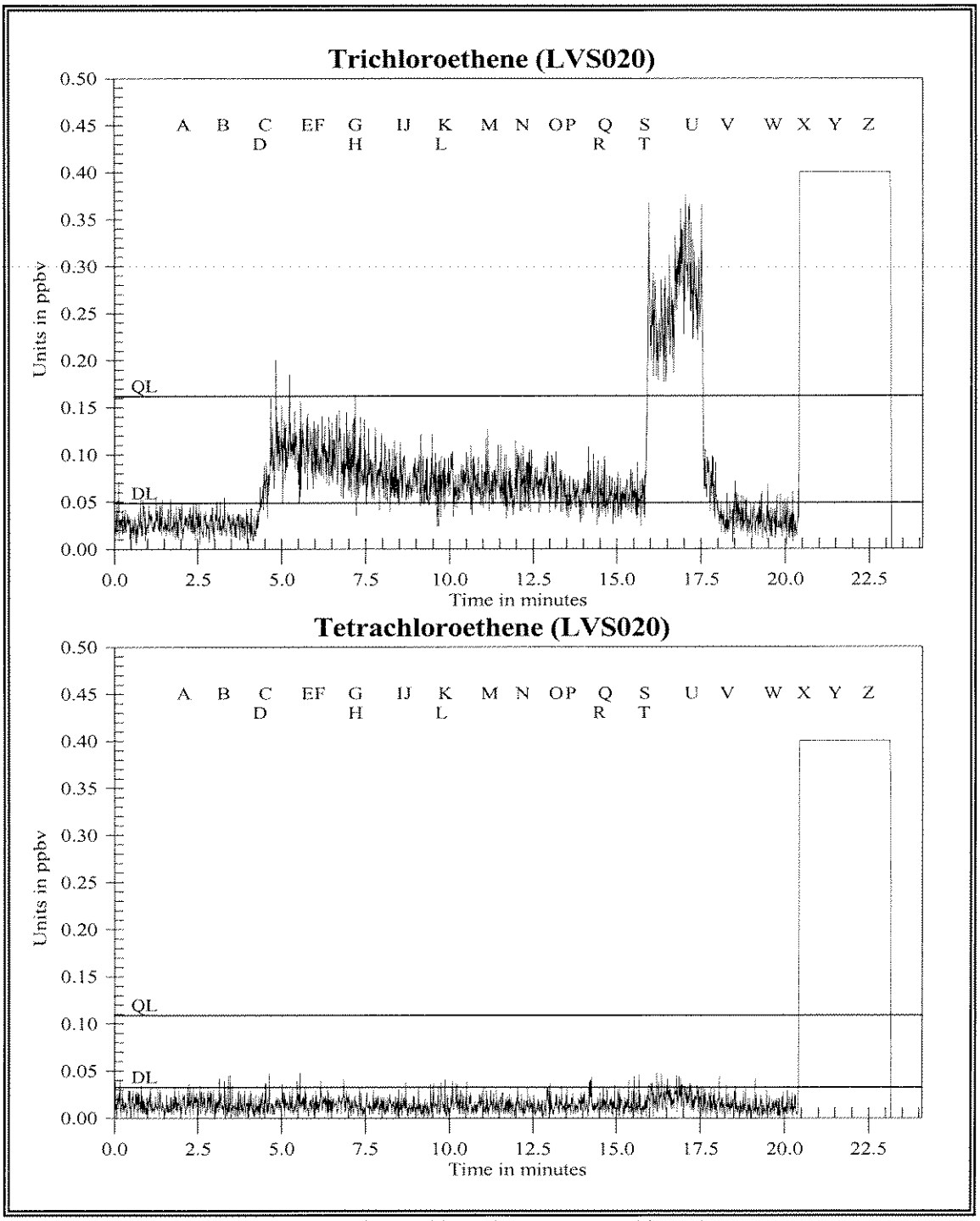


Figure 11c Unit 020 Survey for Trichloroethene and Tetrachloroethene

Figure 11d

TAGA Target Compound Survey Summary for Unit 020 File: LVS020 Acquired on 26 January 2006 at 17:09:02			
		Trichloroethene	Tetrachloroethene
	Detection Limits (DL):	0.049	0.033
	Quantitation Limits (QL):	0.16	0.11
Flags	Description	Trichloroethene	Tetrachloroethene
A - B	Pre-entry ambient	DL=0.049	DL=0.033
D - E	Kitchen	0.10J	DL=0.033
F - G	Living Room	0.098J	DL=0.033
H - I	Storage Room	0.079J	DL=0.033
J - K	Bathroom	0.071J	DL=0.033
L - M	Laundry Room	0.070J	DL=0.033
N - O	Basement	0.072J	DL=0.033
P - Q	Storage Room 2	0.058J	DL=0.033
R - S	Sub-slab Probe	0.055J	DL=0.033
T - U	Sump	0.25	DL=0.033
W - X	Post-exit ambient	DL=0.049	DL=0.033
Y - Z	30 mL/min spike	8.2	7.1

Concentrations are given in parts per billion by volume
J = Concentration detected at or below the quantitation limit.

APPENDIX A

Standard Gas Cylinder Certification

Little Valley Site

Final Analytical Report

March 2006

SPECTRA GASES
3434 Route 22 West • Branchburg, NJ 08876 USA Tel: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Website: http://www.spectra-gases.com

SHIPPED FROM: 80 INDUSTRIAL DRIVE ALPHA, NJ 08865 TEL: (908) 454-7455

SHIPPED TO: Lockheed Martin/Reac
GSA Raritan Depot, Bldg 209, Bay F
2890 Woodbridge Ave
Edison, NJ 08837

CERTIFICATE OF ANALYSIS

SGI ORDER # :	0074275		
ITEM# :	1	**CYLINDER # :**	CC-197362
CERTIFICATION DATE:	7/5/2005	**CYLINDER PRES:**	1365 psig
P.O.# :	GG82167N07	**CYLINDER VALVE:**	CGA 350
BLEND TYPE:	CERTIFIED	**PRODUCT EXPIRATION DATE:**	7/5/2006

ANALYTICAL ACCURACY: +/- 2%

COMPONENT	REQUESTED GAS CONC	ANALYSIS
Vinyl Chloride	20.0 ppm	20.6 ppm
1,1-Dichloroethene	20.0 ppm	20.2 ppm
Benzene	20.0 ppm	20.4 ppm
Trichloroethylene	20.0 ppm	20.1 ppm
Toluene	20.0 ppm	20.3 ppm
Tetrachloroethylene	20.0 ppm	20.2 ppm
p-Xylene	10.0 ppm	10.1 ppm
m-Xylene	10.0 ppm	10.1 ppm
o-Xylene	10.0 ppm	10.1 ppm
Nitrogen	Balance	Balance

ANALYST: April Chamberlain **DATE:** 7/5/2005

APPENDIX B

Compiled Meteorological Data

Little Valley Site

Final Analytical Report

March 2006

Local Climatological Data-Hourly Observations
Jamestown Automatic Weather Observing Station Jamestown, NY
Elevation: 1722ft.
Latitude: 42°15'N
Longitude: 79° 27'W
24 January – 27 January 2006

Date	Time	Dry Bulb Temp (°F)	Wet Bulb Temp (°F)	Dew Point Temp (°F)	Relative Humidity%	Wind Speed (mph)	Wind Direction	Station Pressure (Inches Hg)	Weather type
1/24/2006	55	23	21	18	81	8	240	28.09	
1/24/2006	155	23	22	19	85	8	220	28.07	
1/24/2006	255	23	22	19	85	7	220	28.07	
1/24/2006	355	25	24	21	85	8	220	28.04	
1/24/2006	455	23	22	19	85	8	210	28.02	
1/24/2006	549	21	20	19	92	7	210	28.00	
1/24/2006	655	21	20	18	88	7	200	27.98	
1/24/2006	759	21	20	18	88	8	200	27.96	
1/24/2006	854	27	24	19	72	14	210	27.93	
1/24/2006	954	30	25	16	56	15	200	27.89	
1/24/2006	1057	34	29	19	54	14	200	27.86	
1/24/2006	1148	36	30	21	55	17	210	27.82	
1/24/2006	1252	37	31	21	52	17	220	27.77	
1/24/2006	1356	36	31	23	59	16	220	27.71	snow
1/24/2006	1455	37	32	23	57	16	210	27.68	
1/24/2006	1555	34	31	27	76	25	240	27.69	snow
1/24/2006	1648	32	30	28	85	16	240	27.71	snow
1/24/2006	1659	32	30	28	85	14	230	27.71	snow
1/24/2006	1752	32	30	28	85	18	260	27.72	snow, fog
1/24/2006	1823	32	30	28	85	16	240	27.72	snow
1/24/2006	1847	32	30	28	85	14	240	27.72	snow
1/24/2006	1956	32	30	28	85	16	250	27.72	
1/24/2006	2049	32	30	28	85	15	250	27.71	snow
1/24/2006	2147	M	M	M	M	13	250	27.71	snow, mist
1/24/2006	2247	32	30	28	85	17	260	27.72	snow, mist
1/24/2006	2355	30	29	28	92	21	260	27.72	
1/25/2006	55	30	29	27	89	17	250	27.72	
1/25/2006	155	30	29	27	89	17	270	27.74	
1/25/2006	255	30	28	25	82	15	250	27.75	
1/25/2006	355	28	27	25	89	7	260	27.76	
1/25/2006	435	28	27	25	89	17	280	27.77	
1/25/2006	455	27	26	23	85	15	270	27.78	
1/25/2006	530	27	26	23	85	16	270	27.79	snow
1/25/2006	548	27	26	25	92	18	270	27.80	snow, mist
1/25/2006	728	27	27	27	100	14	260	27.83	snow, mist
1/25/2006	753	27	27	27	100	16	260	27.83	snow

Wind direction is the direction from which the wind is blowing.

°F = Degree in Fahrenheit

% = Percent

mph = miles per hour

Local Climatological Data-Hourly Observations
Jamestown Automatic Weather Observing Station Jamestown, NY
Elevation: 1722ft.
Latitude: 42°15'N
Longitude: 79° 27'W
24 January – 27 January 2006

Date	Time	Dry Bulb Temp (°F)	Wet Bulb Temp (°F)	Dew Point Temp (°F)	Relative Humidity%	Wind Speed (mph)	Wind Direction	Station Pressure (Inches Hg)	Weather type
1/25/2006	855	27	26	23	85	21	280	27.84	snow
1/25/2006	948	27	26	23	85	23	290	27.86	snow
1/25/2006	1058	27	26	23	85	18	290	27.92	snow
1/25/2006	1159	27	25	21	78	21	300	27.96	snow
1/25/2006	1248	25	24	21	85	15	300	27.97	snow
1/25/2006	1348	25	24	21	85	21	300	27.99	snow
1/25/2006	1458	25	23	19	78	20	300	28.03	snow
1/25/2006	1548	25	23	19	78	24	300	28.06	snow
1/25/2006	1650	25	23	19	78	21	290	28.09	snow
1/25/2006	1755	23	21	18	81	21	300	28.12	snow
1/25/2006	1857	21	20	18	88	21	300	28.15	snow
1/25/2006	1950	21	19	16	81	21	300	28.18	
1/25/2006	2057	19	18	14	81	23	300	28.21	snow
1/25/2006	2255	19	17	12	74	16	310	28.25	
1/25/2006	2355	19	17	10	68	16	300	28.26	
1/26/2006	55	19	17	10	68	18	300	28.26	
1/26/2006	155	18	16	10	71	15	310	28.28	
1/26/2006	255	18	16	10	71	12	310	28.30	
1/26/2006	355	18	16	10	71	10	300	28.31	
1/26/2006	455	16	14	9	74	17	310	28.33	
1/26/2006	559	16	14	9	74	12	320	28.36	
1/26/2006	758	12	11	7	80	9	320	28.42	
1/26/2006	853	12	11	7	80	8	320	28.46	
1/26/2006	952	14	12	7	74	12	330	28.48	
1/26/2006	1058	14	13	9	80	14	290	28.51	snow
1/26/2006	1154	16	14	7	67	12	290	28.53	
1/26/2006	1248	18	15	7	62	13	290	28.54	
1/26/2006	1358	18	16	9	68	8	270	28.54	
1/26/2006	1459	19	16	9	65	8	290	28.56	
1/26/2006	1552	19	16	9	65	10	280	28.56	
1/26/2006	1647	19	17	10	68	10	290	28.58	
1/26/2006	1748	18	16	10	71	5	270	28.60	
1/26/2006	1847	16	14	9	74	0	0	28.60	
1/26/2006	1956	16	14	10	77	0	0	28.62	
1/26/2006	2047	16	15	12	84	5	250	28.63	
1/26/2006	2157	16	15	12	84	3	250	28.64	

Wind direction is the direction from which the wind is blowing.

°F = Degree in Fahrenheit

% = Percent

mph = miles per hour

Local Climatological Data-Hourly Observations
Jamestown Automatic Weather Observing Station Jamestown, NY
Elevation: 1722ft.
Latitude: 42°15'N
Longitude: 79° 27'W
24 January – 27 January 2006

Date	Time	Dry Bulb Temp (°F)	Wet Bulb Temp (°F)	Dew Point Temp (°F)	Relative Humidity%	Wind Speed (mph)	Wind Direction	Station Pressure (Inches Hg)	Weather type
1/26/2006	2255	16	14	10	77	7	240	28.64	
1/26/2006	2355	14	13	10	84	6	230	28.64	
1/27/2006	55	10	10	9	96	3	210	28.64	
1/27/2006	155	12	11	9	88	6	200	28.64	
1/27/2006	255	10	9	7	88	3	200	28.64	
1/27/2006	355	10	9	5	80	5	190	28.64	
1/27/2006	435	10	9	7	88	5	180	28.64	
1/27/2006	455	10	9	7	88	5	200	28.64	
1/27/2006	552	10	9	7	88	6	210	28.64	
1/27/2006	651	10	9	7	88	5	200	28.65	
1/27/2006	750	10	9	7	88	6	200	28.65	
1/27/2006	857	12	11	10	92	7	210	28.65	
1/27/2006	948	16	M	12	M	6	210	M	
1/27/2006	1055	21	20	19	92	7	210	28.64	
1/27/2006	1152	27	25	21	78	9	210	28.62	
1/27/2006	1249	30	27	21	69	10	220	28.59	
1/27/2006	1358	34	29	21	59	8	210	28.54	
1/27/2006	1453	36	31	23	59	13	200	28.51	
1/27/2006	1557	37	31	21	52	12	200	28.50	
1/27/2006	1651	36	31	21	55	9	210	28.50	
1/27/2006	1755	34	29	19	54	12	210	28.50	
1/27/2006	1854	34	29	19	54	13	210	28.50	
1/27/2006	1952	34	29	19	54	12	210	28.49	
1/27/2006	2058	32	28	19	59	9	210	28.46	
1/27/2006	2156	34	29	19	54	13	210	28.43	
1/27/2006	2355	32	27	18	56	9	200	28.41	

Wind direction is the direction from which the wind is blowing.

°F = Degree in Fahrenheit

% = Percent

mph = miles per hour