Final

March 2010 Soil Vapor Investigation Buildings 1, 4, and Tank Storage Area Sampling Event

Former Hampshire Chemical Corp. Facility
Waterloo, New York

Prepared for

The Dow Chemical Company

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CH2MHILL

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Acronyms and Abbreviations

µg/L	micrograms per liter
µg/m^3	microgram per cubic meter
AACO	Amended Administrative Consent Order
AF	attenuation factor
AOC	area of concern
AST	aboveground storage tank
COPC	chemical of potential concern
DCA	dichloroethane
DCE	dichloroethene
DCP	dichloropropane
DQE	data quality evaluation
ELCR	excess lifetime cancer risk
facility	former Hampshire Chemical Corp. facility in Waterloo, New York
Guidance	*Guidance for Evaluating Soil Vapor Intrusion in the State of New York*
HCC	Hampshire Chemical Corp.
HCl	hydrochloric acid
HI	hazard index
HQ	hazard quotient
MIBK	methyl isobutyl ketone (4-methyl-2-pentanone)
MPA	mercaptopropionic acid
NaSH	sodium hydrosulfide
NFA	no further action
NYCRR	New York Codes Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PCE	tetrachloroethene
QA	quality assurance

QC	quality control
RCRA	Resource Conservation and Recovery Act
RFI	Resource Conservation and Recovery Act facility investigation
RSL	regional screening level
SOP	standard operating procedure
SVI	soil vapor investigation
SWMU	solid waste management unit
T-acid	thioglycolic acid
TAGM	Technical and Administrative Guidance Memorandum
TCE	trichloroethene
the Departments	New York State Department of Environmental Conservation and New York State Department of Health
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

SECTION 1

Introduction

This document presents the results of the Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) March 2010 vapor intrusion activities conducted pursuant to the New York State Department of Environmental Conservation (NYSDEC)-approved soil vapor investigation (SVI) work plan (CH2M HILL 2007) for the former Hampshire Chemical Corp. (HCC) facility in Waterloo, New York (facility). This RFI work was conducted pursuant to an Amended Administrative Consent Order (AACO) executed between HCC and NYSDEC (Index Number 8-20000218-3281, June 1, 2004). Additional RFI work will be performed pursuant to a Second Amended Order on Consent (Index No. CO 8-20000218-3281, August 12, 2011).

Sampling activities described in this report correspond to the March 2010 field event and were conducted at the request of NYSDEC in correspondence dated November 8, 2006, which requested an SVI work plan to address potential vapor intrusion pathways at the facility. That work plan was submitted to NYSDEC on February 26, 2007, and conditionally approved by NYSDEC in a letter dated April 25, 2007. The work plan was revised in June 2007 (CH2M HILL 2007), and the March 2010 samples were collected according to the revised work plan. The sampling and evaluation was consistent with the *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (Guidance; New York State Department of Health [NYSDOH] 2006).

Reports for previous SVI sampling events (April and November 2008) also were conducted in accordance with the revised work plan (CH2M HILL 2007), and were submitted to NYSDEC and NYSDOH (the Departments). Comments were received from the Departments in a letter dated June 2010 on the *SVI Report – Building 1, 4 and Tank Storage Area Sampling Event* (CH2M HILL 2010) for the November 2008 field event, after a draft of the report for the April 2010 field event had been prepared. The Departments approved the report and commented that use of United States Environmental Protection Agency (USEPA) regional screening levels (RSLs), attenuation factors (AFs), and other USEPA-recommended risk-based screening levels are not part of the Guidance. The Departments requested that USEPA methodologies not be included in future vapor intrusion reports for the facility. Because this report was already in preparation, changes were not made to delete the USEPA risk-based results; however, the conclusions of this report are based on the Guidance.

The Departments also provided additional comments on the *SVI Report* (CH2M HILL 2010) for the November 2008 field event in a letter dated November 18, 2010, and indicated their decisions are based on indoor air results and the matrices and other information found in the Guidance. The Departments provided comments and recommendations on the detected concentrations of carbon tetrachloride in indoor air at the plant and trichloroethene (TCE) in the Tank Storage Area. It should be noted that the sampling event described in this report was performed before receiving the Departments' November 2010 letter, and their comments and recommendations will be addressed in a revised SVI work plan.

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SECTION 2

Site Background

The facility is located at 228 East Main Street in the village of Waterloo, Seneca County, New York (Figure 1). It is bordered to the north by East Main Street, the east by Gorham Street, the west by East Water Street, and the south by the Seneca-Cayuga Canal.

The facility is regulated under 6 New York Codes Rules and Regulations (NYCRR) Part 373 and RCRA with NYSDEC as the lead agency. HCC has retained environmental liabilities for the facility in accordance with the terms described in the purchase agreement between HCC and Bruno Bock, the current property owner. The site is operated by Evans Chemetics, a wholly owned subsidiary of Bruno Bock.

RFI efforts have been performed at the facility since 1993 to determine the nature and extent of releases to the environment. The solid waste management units (SWMUs) and areas of concern (AOCs) that have been identified for further investigation and/or corrective measures are represented on Figure 2. The RFI data have been compared to the applicable NYSDEC screening levels current at the time the report was prepared for each medium (groundwater, soil, sediment), and various RFI reports summarizing the data have been submitted to NYSDEC, including the RFI report (CH2M HILL 2006). Comments on this May 2006 RFI were provided by the Departments in a letter dated November 8, 2006, which requested that an SVI work plan be submitted to address potential vapor intrusion pathways at the facility. That work plan was submitted to NYSDEC on February 26, 2007, and revised in June 2007 based on clarifications obtained during the March 12, 2007, site visit (CH2M HILL 2007).

Building surveys were completed during site walkthroughs in April 2006 and January 2007. The results of the building surveys are documented in Section 2.3 of the revised SVI work plan (CH2M HILL 2007).

The first phase of the SVI was executed in April 2008, and consisted of a subslab soil vapor and ambient air sampling event. The results of the investigation were submitted to NYSDEC in the *April 2008 SVI Report, Buildings 1, 2, 3, 4, and Tank Storage Area* (CH2MHILL 2011) and submitted to NYSDEC in April 2011. Subslab soil vapor concentrations exceeded the applicable generic USEPA screening levels, and it was concluded that a round of subslab soil vapor samples be collected concurrently with indoor air samples.

The second phase of SVI was conducted in November 2008, and included a subslab, indoor air, and ambient air sampling event. A chemical inventory of the products present in the buildings under evaluation also was performed. These data were summarized in the *SVI Report, Buildings 1, 2, 3, 4, and Tank Storage Area Sampling Event* (CH2M HILL 2010) and submitted to NYSDEC in February 2010. No further evaluation at Buildings 2-A/2-B, 2, and 3 was proposed in the corresponding report because vapor intrusion does not appear to be contributing to indoor air levels above risk-based concentrations. It also was recommended that one indoor air/subslab vapor sampling event be conducted at Buildings 1, 4, and the Tank Storage Area to confirm the site-specific AF and that

cumulative risks are within the USEPA risk management range. If the results of this additional sampling event indicate cumulative risks are still within the USEPA risk management range, then no further action (NFA) will be requested.

An additional round of sampling subsequently was performed at Buildings 1, 4, and the Tank Storage Area in March 2010 to further investigate the potential vapor intrusion pathway at the facility, and the results are presented in this report.

2.1 Building 1

Building 1, the site boiler room, is in the southeastern area of the facility, south of Building 2/MPA [mercaptopropionic acid] Process Area (Figure 3). Historically, a release of sodium hydrosulfide (NaSH) was reported in September 1995 from a vent on the roof of Building 2 to surficial soil on the ground below within the facility. Site personnel estimated the release to be less than 100 pounds. NaSH-impacted site soil was analyzed for reactive sulfide, and approximately 6.5 cubic yards of soil later were excavated for offsite disposal (CH2M HILL 2006). This former NaSH spill area is known as AOC C (Figure 2).

In 1999, contaminated soil adjacent to Building 2 in AOC C was excavated. Soil samples collected at the time of the excavation reported detected concentrations of acetone, benzene, methyl isobutyl ketone (4-methyl-2-pentanone or MIBK), and methylene chloride above associated NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 screening levels (CH2M HILL 2006). No volatile organic compounds (VOCs) were detected in the soil samples collected from AOC C in August 2007 as part of the RFI addendum field activities (CH2M HILL 2008).

The groundwater data associated with AOC C were collected from monitoring wells MW-7 and MW-8 (Figure 6). MW-8 had a detected concentration of chloroform at 1.08 micrograms per liter (µg/L) in 2005 (CH2M HILL 2008). No other VOCs were detected in these wells.

Soil and groundwater data collected from AOC C are summarized in the RFI addendum report, which was submitted to NYSDEC in November 2008 (CH2M HILL 2008). The primary potential vapor intrusion pathway at Building 1 is VOCs migrating from soil at AOC C through the soil vadose zone and into the subslab vapor space.

According to the April 2008 chemical inventory for Building 1, aboveground storage tanks (ASTs) of MIBK and ammonium bisulfate were identified west of Buildings 1 and 2, and hydrochloric acid (HCl), epichlorohydrin, and acrylonitrile ASTs were identified south of Building 1, along the canal bank.

2.2 Building 4

Building 4 is adjacent to and northwest of Building 3 (Figure 4). Building 4/4A contains the process for purification of thioglycolic acid (T-acid) and the manufacture of thioglycolates.

AOC B, the former Building 4 pit, was a below-grade sump located along the southern end of Building 4, extending from the western wall nearly the length of the building. The sump was a collection point for wash water in Building 4. Liquids that collected in the sump were

pumped to the facility wastewater treatment plant for treatment and discharge to the canal via a permitted outfall.

In July 1994, discolored soil was encountered in the foundation excavation for a new T-acid tower in Building 4. The discolored soil triggered an investigation of the area that found the source of impacts to be the below-grade sump later designated as AOC B. VOCs MIBK, acetone, carbon disulfide, chloroform, toluene, and xylenes have been detected in soil in AOC B.

The groundwater data associated with AOC B were collected from MW-01, MW-02, MW-03, MW-22, MW-23, PZ-1, PZ-4, PZ-5, PZ-6, PZ-7, BLDG4-FD, BLDG4-PW, and BLDG4-PIT-SSP (Figure 6). VOCs that have been detected in groundwater at these locations are 1,1-dichloroethane (1,1-DCA); 1,2-dichloropropane (1,2-DCP); methyl ethyl ketone; MIBK; acetone; benzene; carbon disulfide; chlorobenzene; chloroform; cis-1,2-dichloroethene (cis-1,2-DCE); ethylbenzene; methylene chloride; toluene; trans-1,2-DCE; TCE; vinyl chloride; and total xylenes.

Soil and groundwater data collected from AOC B are summarized in the RFI addendum report (CH2M HILL 2008). The primary potential vapor intrusion pathway for Building 4 includes VOCs potentially migrating from groundwater and soil at AOC B through the soil vadose zone and into the subslab vapor space.

According to the April 2008 chemical inventory for Building 4, MIBK, T-acid, sulfuric acid, potassium iodate, and other products were identified in Building 4.

2.3 Tank Storage Area

The Tank Storage Area is located northwest of Building 4 (Figure 5) and adjacent to MW-01 (Figure 6). AOC B is southeast of the Tank Storage Area. VOCs detected in soil and groundwater at AOC B are discussed in Section 2.2.

As part of the RFI addendum field activities, PZ-3 was installed inside the Tank Storage Area. In December 2007, six VOCs were detected in groundwater from PZ-3: 1,2-DCA; 1,2-DCP; MIBK; acetone; carbon disulfide; and toluene (CH2M HILL 2008).

The groundwater data collected from this area are summarized in the RFI addendum report (CH2M HILL 2008). The primary potential vapor intrusion pathway for the Tank Storage Area includes VOCs potentially migrating from groundwater at the Tank Storage Area through the soil vadose zone and into the subslab vapor space.

According to the April 2008 chemical inventory of the Tank Storage Area, sodium hydrosulfide, glycerin, glycerol monothioglycolate, and ammonium thioglycolate tanks are located within this area.

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SECTION 3

Sampling Procedures and Methods

On March 23, 2010, CH2M HILL conducted an SVI in Buildings 1, 4, and the Tank Storage Area at the facility. The purpose of the sampling event was to collect data to evaluate potential vapor intrusion pathways into the buildings located either above or in close proximity to VOCs identified in subsurface soil and/or groundwater. Subslab and indoor samples were collected from Buildings 1, 4, and the Tank Storage Area, and outdoor ambient air samples were collected within the facility property. The sample locations are shown on Figures 3 through 5, and the field sampling log sheets are provided as Appendix A.

3.1 Subslab Vapor Sampling

Three subslab samples (SG-4, SG-7a, and SG-9) were collected over an 8-hour period from inside Buildings 1, 4, and the Tank Storage Area, respectively, in the manner described in the standard operating procedure (SOP; CH2M HILL 2007).

3.2 Outdoor Air and Indoor Air Sampling

Two outdoor ambient air samples (SG-B2 and SG-B4) were collected over an 8-hour period during daytime working hours. The ambient air samples were collected concurrently with the subslab soil vapor and indoor air samples. Sample SG-B2 was collected upwind and on the west side of Building 1, and sample SG-B4 was collected upwind of Building 4 and the Tank Storage Area, on the northeast side.

Four indoor air samples (IA-3, IA-5, IA-6, and IA-7) were collected in Buildings 1, 4, and the Tank Storage Area concurrently with the associated subslab and ambient air samples. One indoor air sample (IA-3) was collected in Building 1. One indoor air sample (IA-5) was collected in Building 4, and a second indoor air sample (IA-6) was collected in Building 11-A, which shares air space with Building 4. One indoor air sample (IA-3) was collected in the Tank Storage Area.

3.3 Quality Assurance/Quality Control

Quality assurance (QA)/quality control (QC) samples for this sampling event included a duplicate subslab sample (field duplicate; SG-Dup) of SG-7a and a field blank (SG-FB). The tubing from the field duplicate was connected to the parent canister using a "T" fixture, so the samples drew the same air from the subslab probe once the valves were opened simultaneously. One field blank was collected by placing two canisters side-by-side and not opening one of the valves. The field duplicate and field blank samples were analyzed similar to the subslab, indoor, and ambient air samples.

3.4 Laboratory Analysis and Validation

Columbia Analytical Services of Simi Valley, California (NYSDOH Environmental Laboratory Approval Program, New York Laboratory Identification Number 11221) supplied certified clean SUMMA canisters with individual tracking numbers and calibrated flow regulators. Air samples were collected using evacuated stainless steel SUMMA canisters and analyzed in accordance with *Compendium Method TO-15: Determination of VOCs in Air Collected in Specially Prepared Canisters and Analyzed by GC/MS* (USEPA 1999).

The data were validated using applicable quality criteria in the *National Functional Guidelines for Organic Data Review* (USEPA 1994) and USEPA Region 2 data validation procedures (USEPA 2007). Appendix B contains the laboratory data package and the data quality evaluation (DQE) report for the samples collected during this investigation.

SECTION 4

Production-Related Compounds

The primary chemicals manufactured at the facility are T-acid, thiodipropionate esters, and MPA. Most of the chemicals are produced using batch operations.

The manufacturing processes typically involve hydrolysis, esterification, and substitution reactions. Unit processes include spray drying, refluxing, phase separation, fractionation, filtration, extraction, distillation, and carbon absorption for color and impurity removal. VOC raw materials used in the production processes at the site include acetone, acrylonitrile, benzene, butanol, chloroform, isopropyl alcohol, MIBK, methylene chloride, toluene, and other chemicals. As a result, elevated concentrations of some of these chemicals have the potential to be detected in the indoor air samples. A list of chemicals used in the production processes and analytical laboratory areas at the site is summarized in Appendix C, as recorded by the CH2M HILL field personnel during the April 2008 site visit.

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SECTION 5

Data Evaluation and Analytical Results

The subslab and indoor air sample results from each building were evaluated for the detected chemicals, and the results are presented in Tables 1 through 3. Indoor air samples were used to assess current exposures to volatile chemicals in air. As stated in the Guidance (NYSDOH 2006), the detection of volatile chemicals in indoor air samples does not necessarily indicate soil vapor intrusion is occurring or actions should be taken to address exposures.

The following lines of evidence were evaluated in this report to determine the potential significance of the vapor intrusion pathways in the various buildings. The last two bullets in this list are not part of the Guidance, but are included as a secondary evaluation for additional lines of evidence in the interpretation of data for compounds that are not included in the Guidance (NYSDOH 2006) ; however, the conclusions of the evaluation predominantly are based on the Guidance (NYSDOH 2006).

- Comparison between types of sampling results – subslab vapor, indoor air, and ambient outdoor air.
- Comparison of the sampling results to background levels of volatile chemicals in indoor air – 90th percentile indoor air background levels from NYSDOH (2006). Concentrations of detected VOCs were compared to the values presented in Table C.1 NYSDOH 2003: *Study of Volatile Organic Chemicals in air of Fuel Oil Heated Homes* (2006). Because the buildings being investigated are used for industrial purposes, concentrations of detected VOCs also are discussed in the context of Table C.2 NYSDOH 2003: *Building Assessment and Survey Evaluation (BASE) Database* (2006), which contains background levels of various VOCs from indoor air at randomly selected public and commercial office buildings across the United States.
- Comparison of the sampling results to the NYSDOH air guideline values.
- Use of the NYSDOH decision matrices to determine actions, if necessary.

  Comparison of sampling results to USEPA RSLs (May 2010) to estimate potential human health risks (cancer and noncancer health effects) associated with exposure to the volatile chemicals in air.
- Estimation of a site-specific AF (the ratio of indoor air to subslab vapor concentrations).

The concentration levels of the chemicals were compared to the criteria described in Section 5.1. The site-specific AF calculation is described in Section 5.2. The results are summarized in Section 5.3.

5.1 Criteria Used for Comparison

5.1.1 Site-Specific Outdoor Ambient Air Concentrations

As stated in the Guidance (NYSDOH 2006), "New York State currently does not have any standards, criteria or guidance values for concentrations of compounds measured in subslab soil vapor samples. Additionally, there are currently no databases available of background levels of volatile chemicals in soil vapor." NYSDOH (2006) guidance suggests that a comparison of subslab soil vapor results with background outdoor air concentrations will provide some perspective on the need for additional investigations. Therefore, as a first step, indoor air and subslab vapor sample results from the buildings were compared with the site-specific ambient air concentrations to provide one line of evidence to determine if vapor intrusion is a potential concern. Ambient air sample SG-B2 represents the outdoor air conditions for Building 1, and ambient air sample SG-B4 represents the outdoor air conditions for Building 4 and the Tank Storage Area. The site-specific ambient air analytical results are listed in Tables 1 through 3.

5.1.2 90th Percentile Indoor Air Background Levels (NYSDOH)

The 90th percentile indoor air background levels are provided in NYSDOH (2006) Appendix C, Table C.1. Background indoor air concentrations are not risk-based, and an exceedance only indicates if the subslab soil vapor concentration or indoor air concentration is different from background aboveground indoor air concentrations, which provides one line of evidence in determining if the vapor detections are potentially site-related and/or if additional investigations are needed to further assess the soil vapor intrusion pathway. Some of the detected chemicals do not have background indoor air concentrations listed in the Guidance (NYSDOH 2006), so these comparisons could not be made for all detected chemicals. As noted above, indoor air concentrations were compared to background levels for fuel-heated homes (Table C.1; NYSDOH 2006) and discussed in the context of background levels in indoor air for public office and commercial buildings (Table C.2; NYSDOH 2006).

5.1.3 Air Guideline Values (NYSDOH)

NYSDOH (2006) provides air guideline values for three VOCs (methylene chloride, tetrachloroethene [PCE], and TCE) all of which were detected in the indoor air samples at the facility. These results were compared to available NYSDOH air guideline values.

5.1.4 Decision Matrices (NYSDOH)

NYSDOH (2006) has developed two matrices (Matrix 1 and Matrix 2; Appendix D) to use as risk management tools in making decisions when soil vapor may be entering buildings. Each matrix provides three to four criteria ranges for indoor air (shown in the columns of the matrix) and ranges for subslab vapor concentrations (shown in the rows of the matrix). Matrix 1 originally was developed for TCE with lower criteria ranges (from <0.25 microgram per cubic meter [$\mu g/m^3$] to ≥ 5.0 $\mu g/m^3$ for indoor air, and from <5 $\mu g/m^3$ to ≥250 $\mu g/m^3$ for subslab). Matrix 2 originally was developed for PCE with higher criteria ranges (from <3 $\mu g/m^3$ to ≥100 $\mu g/m^3$ for indoor air, and from <100 $\mu g/m^3$ to ≥1,000 $\mu g/m^3$ for subslab vapor).

Because the matrices are risk management tools, NYSDOH intends to assign chemicals to one of these two matrices, if possible (NYSDOH 2006). Seven chemicals have been assigned to the two matrices to date, as summarized in the following table and provided via e-mail dated March 9, 2009, from NYSDOH (Appendix D). The assignments are based on various factors, including, but not limited to, the following (NYSDOH 2006):

- Human health risks, including such factors as a chemical's ability to cause cancer, reproductive, developmental, liver, kidney, nervous system, immune system, or other effects, in animals and humans and the doses that may cause those effects
- The data gaps in its toxicological database
- Background concentrations of volatile chemicals in indoor air
- Analytical capabilities currently available

Volatile Chemical	Soil Vapor/Indoor Air Matrix
Carbon tetrachloride	Matrix 1
Trichloroethene	Matrix 1
Vinyl chloride	Matrix 1
1,1-Dichloroethene	Matrix 2
Cis-1,2-dichloroethene	Matrix 2
Tetrachloroethene	Matrix 2
1,1,1-Trichloroethane	Matrix 2

The matrices provide recommended actions based on both indoor air and subslab vapor concentrations. Based on the relationship between subslab vapor concentrations and corresponding indoor air concentrations, the types of recommended actions include the following:

- NFA
- Take reasonable and practical actions to identify source(s) and reduce exposures
- Monitor
- Mitigate

5.1.5 Regional Screening Levels for Chemical Contaminants at Superfund Sites (USEPA 2009)

All detected concentrations from the indoor air were compared to the USEPA RSLs for chemical contaminants at Superfund sites for industrial air (USEPA 2009, revised May 2010). All detected concentrations from the subslab vapor samples were compared to shallow soil gas screening levels (based on the indoor air screening levels adjusted using the site-specific AF of 0.008). The calculation of the site-specific AF is described in Section 5.2.

5.2 Site-Specific Attenuation Factor Calculation

To calculate the site-specific AF, three pairs of the subslab vapor concentrations with their associated indoor air concentrations were selected. These samples were selected because the results appear to indicate that some VOCs in indoor air may be related to vapor intrusion. For a VOC detected in indoor air to be considered potentially associated with vapor intrusion, the VOC must be detected at a high enough concentration in the subsurface (i.e., subslab soil vapor samples) to present a significant potential subsurface vapor source. In addition, concentrations in indoor air must be significantly higher than the outdoor concentrations to be able to differentiate between the influence of ambient outdoor sources (or background concentrations) and subsurface vapor sources.

There is considerable temporal and spatial variability in indoor, outdoor, and subslab soil vapor samples collected in and below a structure. A research study funded by the Environmental Security Technology Certification Program (2007) showed that spatial and temporal variability for subslab soil vapor samples is at least one order of magnitude. Several databases of background outdoor air and background indoor air concentrations indicate that background indoor air concentrations can be 2 to 4 times higher than outdoor air concentrations at structures without subsurface VOC impacts (NYSDOH 2006). Therefore, on the basis of these studies of variability in vapor intrusion sample results, the following general guidelines were used to identify VOCs that have significant potential subsurface source strength to affect indoor air and significantly higher indoor than outdoor concentrations:

- Subslab soil vapor concentration is more than 10 times the indoor air concentration
- Indoor air concentration is more than 3 times the outdoor air concentration

The sample locations, indoor air concentrations, subslab vapor concentrations, and the ratios of indoor air concentration to subslab vapor concentration are listed in the following table.

	Indoor Air (µg/m^3)	Subslab (µg/m^3)	Ratio of Concentrations:
Building 1	IA-3	SG-4	Indoor Air/Subslab
Chloroform	1.4	770	1.82E-03
Building 4	IA-5/IA-6*	SG-7A/Dup**	Indoor Air/Subslab
Carbon disulfide	14	1000	1.40E-02
Chloroform	4.3	190	2.26E-02
	Site-Specific Attenuation Factor		**8E-03**

*Higher concentration between IA-5 and IA-6 was selected in the calculation.
**Higher concentration between SG-7 and its duplicate was selected in the calculation.

The geometric mean of the site-specific AF is approximately 8E-03. Therefore, in this report, the data evaluation and human health risk assessment for subslab data are based on the site-specific AF of 8E-03. There is uncertainty associated with using this mean AF for the three buildings because of potential differences in subsurface and building characteristics. However, because of the small dataset for VOCs potentially related to vapor intrusion, sufficient data were not available to calculate building-specific AFs.

5.3 Analytical Results

As mentioned in Section 5.1.1, indoor air and subslab vapor data were compared to site-specific outdoor ambient air data to provide one line of evidence to determine if vapor intrusion is a potential concern. The indoor air and subslab vapor laboratory data were compared with the other criteria described in Section 5.1. The subslab vapor, indoor air, and outdoor ambient air results are presented in Tables 1 through 3. The comparison results of the exceedances for each building are summarized in the following sections.

Appendix E presents the QA/QC results table for this sampling event. Low levels of acetone (1.6J µg/m^3) and toluene (0.56 µg/m^3) were detected in the field blank; however, the detected concentrations are well below the NYSDOH 90th percentile indoor air background levels. These VOC concentrations in the field blank canister may have come from laboratory air, residual air in the canister, or the valve may have leaked.

5.3.1 Building 1

In the subslab sample (SG-4), eight VOCs (1,1,1-trichloroethane; 1,1-DCA; 1,1-DCE; 1,2-DCP; chloroform; MIBK; PCE; and TCE) exceeded NYSDOH background concentrations. No VOCs exceeded the NYSDOH air guideline values. Three VOCs (carbon tetrachloride, PCE, and TCE) that have been assigned to the two NYSDOH decision matrices were detected in the subslab sample. One VOC (chloroform) exceeded the shallow soil gas screening level based on the USEPA RSL and site-specific AF of 0.008.

In the indoor air sample (IA-3), chloroform was equal to the NYSDOH background concentration, and MIBK and TCE exceeded the NYSDOH background concentrations presented in Table C.1. The chloroform concentration in the indoor air sample slightly exceeded the indoor air 90th percentile background concentration presented in Table C.2; however, the TCE concentration in indoor air did not exceed the 90th percentile background concentration presented in Table C.2. No VOCs exceeded the NYSDOH air guideline values. TCE is the only of the three chemicals that has been assigned to the NYSDOH matrices. Two VOCs (acrylonitrile and chloroform) exceeded the USEPA RSLs.

The acrylonitrile concentration in the indoor air sample was greater than the concentrations in both the corresponding site-specific outdoor ambient air and subslab vapor samples, indicating there may be an indoor source of acrylonitrile. No NYSDOH background concentration or air guideline value for acrylonitrile is available for comparison. The chloroform concentration in the indoor air sample exceeded the concentration in the corresponding site-specific outdoor ambient air and was more than two orders of magnitude lower than the concentration in the subslab vapor. No air guideline value for chloroform is available for comparison.

Three VOCs (carbon tetrachloride, PCE, and TCE) that have been assigned to the two NYSDOH decision matrices were detected in subslab and indoor air samples at Building 1.

Both subslab and indoor air samples did not exceed the NYSDOH background concentration for carbon tetrachloride and are less than ambient levels. Because the concentrations in indoor and subslab samples are less than ambient levels, the data do not indicate significant subsurface source strength for vapor intrusion. The matrix shows a recommendation to identify the source and reduce exposure for carbon tetrachloride.

Both subslab and indoor air samples exceeded the NYSDOH background concentration for PCE, and the matrix analyses recommend NFA for PCE.

Both subslab and indoor air samples exceeded the NYSDOH background concentration for TCE of 0.5 µg/m^3 presented on Table C.1 (NYSDOH 2006); however, the indoor air concentration for TCE was less than the 90th percentile background value of 4.2 µg/m^3 presented in Table C.2 (NYSDOH 2006). The matrix analyses show a recommendation to identify the source and reduce exposure. However, the TCE concentration in the subslab sample (4.8 µg/m^3) is similar to the concentration measured in ambient air (3.3 µg/m^3) and does not indicate significant subsurface source strength for vapor intrusion. TCE in the indoor air sample did not exceed the NYSDOH air guideline value, and TCE in the subslab vapor sample did not exceed the shallow soil gas screening level based on the USEPA RSL and site-specific AF of 0.008.

In the outdoor ambient air sample (SG-B2), two VOCs (MIBK and TCE) exceeded the NYSDOH background concentrations. As described in Section 4, MIBK is a production-related compound.

5.3.2 Building 4

In the subslab samples (SG-7a and SG-Dup), 15 VOCs exceeded the NYSDOH background concentrations. These VOCs are 1,1-DCA; 1,1-DCE; 1,2-DCP; chloroethane; chloroform; cis-1,2-DCE; ethylbenzene; MIBK; methylene chloride; styrene; toluene; TCE; vinyl chloride; m,p-xylene; and o-xylene. No VOCs exceeded available NYSDOH air guideline values. Three VOCs (1,1-DCE; carbon tetrachloride; and TCE) that have been assigned to the two NYSDOH decision matrices were detected in the subslab samples. Chloroform exceeded the shallow soil gas screening level based on the USEPA RSL and site-specific AF of 0.008.

In indoor air sample IA-5, four VOCs (1,1-DCE; chloroform; MIBK; and TCE) exceeded the NYSDOH background concentrations presented in Table C.1 (NYSDOH 2006). The TCE concentrations in the two indoor air samples did not exceed the 90th percentile background concentration presented in Table C. 2 (NYSDOH 2006). Only one VOC (MIBK) exceeded the NYSDOH background concentrations presented on Tables C.1 and C.2 (NYSDOH 2006) at the second indoor air sample (IA-6). No VOCs exceeded NYSDOH air guideline values. Three VOCs (1,1-DCE; carbon tetrachloride; and TCE) that have been assigned to the two NYSDOH decision matrices were detected in the indoor air samples. Acrylonitrile and chloroform exceeded USEPA RSLs.

The acrylonitrile concentration in indoor air sample IA-6 was more than an order of magnitude greater than the concentrations in both the corresponding site-specific outdoor ambient air and subslab vapor samples, indicating a potential indoor source for acrylonitrile. Acrylonitrile is related to site production processes as described in Section 4. No NYSDOH background concentration or air guideline value for acrylonitrile is available for comparison. Chloroform concentration in indoor air sample IA-5 exceeded the concentration in the corresponding site-specific outdoor ambient air and was more than an order of magnitude lower than the concentration in the subslab vapor.

During the 2010 sampling event, three VOCs (1,1-DCE; carbon tetrachloride; and TCE) that have been assigned to the two NYSDOH decision matrices were detected in both subslab and indoor air samples at Building 1.

According to the NYSDOH matrix analyses, NFA was recommended for 1,1-DCE.

The matrix shows a recommendation to identify the source and reduce exposure for carbon tetrachloride; however, carbon tetrachloride concentrations in the subslab vapor, indoor air, and ambient air samples were all within the same order of magnitude (0.52 to 0.67 $\mu g/m^3$), suggesting the subslab soil vapor or indoor sources are not significant contributors to carbon tetrachloride in indoor air. Carbon tetrachloride in the indoor air samples did not exceed the NYSDOH background concentration.

The matrix shows a recommendation to identify the source and reduce exposure for TCE. TCE concentrations in subslab samples are less than the concentration in ambient air. TCE concentrations in the subslab samples exceeded the concentrations detected in both of the indoor air samples but are low in magnitude (2.2 and 4.4 $\mu g/m^3$), indicating there is not significant subsurface source strength for vapor intrusion. The TCE concentration in one of the indoor air samples (IA-5) exceeded the NYSDOH background concentration. TCE in the indoor air samples did not exceed the NYSDOH air guideline value, and TCE in the subslab vapor samples did not exceed the shallow soil gas screening level based on the USEPA RSL and site-specific AF of 0.008.

In the outdoor ambient air sample (SG-B4), two VOCs (MIBK and TCE) exceeded the NYSDOH background concentrations. As described in Section 4, MIBK is a production-related compound.

5.3.3 Tank Storage Area

In the subslab sample (SG-9), four VOCs (1,2-DCP; chloroform; MIBK; and TCE) exceeded the NYSDOH background concentrations. One VOC (TCE) exceeded the NYSDOH air guideline value. Two VOCs (carbon tetrachloride and TCE) that have been assigned to the two NYSDOH decision matrices were detected in the subslab sample. No VOCs exceeded the shallow soil gas screening levels based on the USEPA RSLs and site-specific AF of 0.008.

In the indoor air sample (IA-7), MIBK and TCE exceeded the NYSDOH background concentrations presented in Table C.1. TCE did not exceed the 90th percentile background value presented on Table C. 2. No VOCs exceeded the NYSDOH air guideline values. Two VOCs (carbon tetrachloride and TCE) that have been assigned to the two NYSDOH decision matrices were detected in the subslab sample. Acrylonitrile was detected in indoor air and exceeded the USEPA RSL, but no NYSDOH background concentration or air guideline value for acrylonitrile is available for comparison. Acrylonitrile was not detected in the subslab sample, indicating ambient air may be contributing to the presence of acrylonitrile in indoor air. As described in Section 4, acrylonitrile is related to site production processes.

Two VOCs (carbon tetrachloride and TCE) that have been assigned to the two NYSDOH decision matrices were detected in both subslab and indoor air samples.

The matrix shows a recommendation to identify the source and reduce exposure for carbon tetrachloride; however, carbon tetrachloride concentrations in the subslab vapor, indoor air, and ambient air samples were all within the same order of magnitude (0.5 to 0.64 $\mu g/m^3$), suggesting the subslab soil vapor or indoor sources are not significant contributors to carbon tetrachloride in indoor air. Carbon tetrachloride in the indoor air samples did not exceed the NYSDOH background concentration.

The matrix recommendation for TCE is to monitor it because TCE was detected in the subslab vapor at a concentration of 13 $\mu g/m^3$. TCE in the indoor air sample was more than an order of magnitude lower than in the subslab sample. The TCE concentration in indoor air (0.51 $\mu g/m^3$) was slightly greater than the NYSDOH background concentration (0.5 $\mu g/m^3$) but did not exceed the NYSDOH air guideline value.

In the outdoor ambient air sample (SG-B4), two VOCs (MIBK and TCE) exceeded the NYSDOH background concentrations.

SECTION 6

Human Health Risk Assessment

As an additional line of evidence to evaluate the potential significance of the vapor intrusion pathway at Buildings 1, 4, and the Tank Storage Area, potential human health risks have been calculated for the industrial scenario for the indoor air pathway using subslab vapor and indoor air data at individual sampling locations. Excess lifetime cancer risk (ELCR) and noncancer hazards indices (HIs) were calculated for each location using detected VOC results. The estimated health risks and noncancer hazards for subslab vapor and indoor air are presented in Tables 4 and 5, respectively. Chemicals that are the largest contributors to total ELCRs and noncarcinogenic hazards have been identified and are presented along with risk results.

Although this risk assessment produces numerical estimates of risk, these numbers might not predict actual health outcomes because they are based largely on hypothetical assumptions. Their purpose is to provide a frame of reference for risk management decision making. Interpretation of the risk estimates provided should consider the nature and weight of evidence supporting these estimates, as well as the magnitude of uncertainty surrounding them.

This section summarizes potential ELCRs and noncancer health hazards in the context of USEPA's risk management range (i.e., 1E-06 [1:1,000,000] to 1E-04 [1:10,000] cancer risk and an HI of 1).

For this evaluation, the potential for unacceptable human health risk is identified using the following risk thresholds:

- ELCR values are compared to the risk-management range of 1E-06 to 1E-04. ELCR values exceeding 1E-06 involve a risk management decision that includes evaluating site-specific characteristics and exposure scenario factors to assess whether remedial action is warranted.
- An HI greater than 1 indicates there is some potential for adverse noncancer health effects associated with exposure to the chemicals of potential concern (COPCs).

Cancer Risk Estimation Method

The potential for cancer effects is evaluated by estimating ELCRs. This risk is the incremental increase in the probability of developing cancer during one's lifetime in addition to the background probability of developing cancer (i.e., if no exposure to the COPCs occurs). For example, a 2E-06 ELCR means that, for every 1 million people exposed to the carcinogen throughout their lifetimes, the average incidence of cancer might increase by two additional cases of cancer.

ELCRs were estimated by using the following formula:

$$Risk = \frac{Conc.}{SL} \times 1E-06$$

where:

Risk	=	ELCR (unitless probability)
Conc.	=	Measured soil gas or indoor air concentration (µg/m^3)
SL	=	Carcinogenic screening level (µg/m^3)

Although synergistic or antagonistic interactions might occur between cancer-causing chemicals and other chemicals, information is generally lacking in the toxicological literature to predict quantitatively the effects of these potential interactions. Therefore, cancer risks for individual chemicals are treated as additive (i.e., were summed) for each sample location in this assessment. This is consistent with USEPA guidelines on chemical mixtures (USEPA 1986). For estimating the cancer risks from exposure to multiple carcinogens from a single sample location, the following equation is used:

$$Risk_T = \sum_1^N Risk_i$$

where:

$Risk_T$	=	Total cancer risk from sample location
$Risk_i$	=	Cancer risk for the i^{th} chemical
N	=	Number of chemicals

Noncancer Risk Estimation Method

For noncancer effects, the likelihood that a receptor will develop an adverse effect is estimated by comparing the predicted level of exposure for a particular chemical with the highest level of exposure that is considered protective (i.e., the screening level). The ratio of the measured soil gas or indoor air concentration divided by the screening level is termed the hazard quotient (HQ):

$$HQ = Conc./SL$$

Where:

HQ	=	Hazard quotient (unitless)
Conc.	=	Measured soil gas or indoor air concentration (µg/m^3)
SL	=	Noncarcinogenic screening level (µg/m^3)

When the HQ for a chemical exceeds 1 (i.e., concentration exceeds the screening level), there is a concern for potential noncancer health effects. To assess the potential for noncancer effects posed by exposure to multiple chemicals, an HI approach was used according to USEPA guidance (USEPA 1989). This approach assumes that the noncancer hazard associated with exposure to more than one chemical is additive; therefore, synergistic or antagonistic interactions between chemicals are not quantitatively addressed. The HI may

exceed 1 even if the individual HQs are less than 1. In this case, the chemicals may be segregated by similar mechanisms of toxicity and toxicological effects. Separate HIs may then be derived based on mechanism and effect.

The HI is calculated as follows:

$$HI = \sum_{1}^{N} Conc_i \Big/ SL_i$$

where:

HI	=	Hazard index
$Conc_i$	=	Measured soil gas or indoor air concentration for the i^{th} chemical ($\mu g/m^3$)
SL_i	=	Screening level for the i^{th} chemical ($\mu g/m^3$)
N	=	Number of chemicals

6.1 Subslab Vapor Risk Evaluation

The estimated indoor air cumulative cancer risk and noncancer HI estimates for each subslab vapor sample point were calculated using a risk ratio approach (ratio of measured subslab vapor concentration to subslab vapor screening levels) as described above. The subslab data indicate potential future conditions of VOCs in the subsurface that may enter a structure. The screening levels used were USEPA RSLs for industrial air (USEPA 2010) with the site-specific AF of 0.008 (see Section 5.2) for subslab vapor to indoor air applied. Carcinogenic screening levels were based on a target risk of 1E-06, and noncarcinogenic screening levels were based on a target HQ of 1. The ELCR and noncancer HI estimates for each building are described below.

6.1.1 Building 1

The ELCR for Building 1 was 1E-05, which is within USEPA's risk management range of 1E-06 to 1E-04. The major contributor to the ELCR was chloroform. The estimated cumulative noncancer HI was less than 1, which is below USEPA's threshold of 1. The major contributor to the estimated cumulative noncancer HI was chloroform.

6.1.2 Building 4

The ELCR results ranged from 2E-06 in subslab vapor sample SG-7a to 3E-06 in the duplicate. The major contributor was chloroform in both samples. The estimated cumulative noncancer HIs were less than 1, which is below USEPA's threshold of 1. The major contributors to the estimated cumulative noncancer HIs were carbon disulfide and chloroform in both samples and 1,2-DCP in the duplicate.

6.1.3 Tank Storage Area

The ELCR for the Tank Storage Area was 7E-07 in subslab vapor sample SG-9, which is below USEPA's risk management range of 1E-06 to 1E-04. The major contributor to the ELCR was chloroform. The estimated cumulative noncancer HI was less than 1, which is

below USEPA's threshold of 1. The major contributors to the estimated cumulative noncancer HI were 1,2-DCP and chloroform.

6.2 Indoor Air Risk Evaluation

The estimated indoor air cumulative cancer risk and noncancer HI estimates for each indoor air sample point were calculated using a risk ratio approach (ratio of measured indoor air concentration to indoor air screening levels) as described above. The indoor air screening levels used were USEPA RSLs for industrial air. Carcinogenic RSLs were based on a target risk of 1E-06 and noncarcinogenic RSLs were based on an HI of 1. The ELCR and noncancer HI estimates for each building are described below.

6.2.1 Building 1

The ELCR for Building 1 was 2E-05, which is within USEPA's risk management range of 1E-06 to 1E-04. The major contributors to the ELCR were acrylonitrile and chloroform. The estimated cumulative noncancer HI was less than 1, which is below USEPA's threshold of 1. The major contributor to the estimated cumulative noncancer HI was acrylonitrile.

As described in Section 5.3.1, concentrations of acrylonitrile indoor air, outdoor ambient air, and subslab soil vapor at Building 1 indicate there may be an indoor source. Risks were recalculated for indoor air excluding acrylonitrile resulting in an ELCR of 4E-06, which is within USEPA's risk management range of 1E-06 to 1E-04. The estimated cumulative noncancer HI was less than 1, which is below USEPA's threshold of 1.

6.2.2 Building 4

The ELCR for Building 4 range from 9E-06 in indoor air sample IA-5 to 4E-05 in the IA-6, both of which are within USEPA's risk management range of 1E-06 to 1E-04. The major contributor to the ELCR was chloroform in IA-5 and acrylonitrile in IA-6. The estimated cumulative noncancer HI was less than 1, which is below USEPA's threshold of 1. The major contributor to the estimated cumulative noncancer HI was MIBK in IA-5 and acrylonitrile in IA-6.

As described in Section 5.3.2, concentrations of chloroform in indoor air sample IA-5 and acrylonitrile in IA-6, outdoor ambient air, and subslab soil vapor at Building 4 indicate there may be indoor sources of VOCs. Risks were recalculated for indoor air for sample IA-5, excluding chloroform, resulting in an ELCR of 1E-06, which is within USEPA's risk management range of 1E-06 to 1E-04. Risks were recalculated for indoor air for sample IA-6, excluding acrylonitrile, resulting in an ELCR of 2E-06, which is within USEPA's risk management range of 1E-06 to 1E-04. The estimated cumulative noncancer HI at each location was less than 1, which is below USEPA's threshold of 1.

6.2.3 Tank Storage Area

The ELCR for the Tank Storage Area was 4E-06, which is within USEPA's risk management range of 1E-06 to 1E-04. The major contributor to the ELCR was acrylonitrile. The estimated cumulative noncancer HI was less than 1, which is below USEPA's threshold of 1. The major contributor to the estimated cumulative noncancer HI was acrylonitrile.

As described in Section 5.3.3, concentrations of acrylonitrile indicate a potential indoor source. Risks were recalculated for indoor air excluding acrylonitrile resulting in an ELCR of 2E-06, which is within USEPA's risk management range of 1E-06 to 1E-04. The estimated cumulative noncancer HI was less than 1, which is below USEPA's threshold of 1.

6.3 Uncertainty Associated with Human Health Assessment

A number of uncertainties are inherent in the estimates of potential cancer risks and noncancer health hazards presented in this risk assessment. These uncertainties are generally associated with (1) the sampling and analysis or (2) the assumptions and models that make up the risk assessment process. The potential effect of the uncertainties on risk estimates (overestimation or underestimation) varies from readily predicted to difficult to assess. Thus, it is important to specify the assumptions and uncertainties inherent in the risk assessment to place the risk estimates in proper perspective (USEPA 1989).

The general assumptions used in selecting subslab vapor and indoor air constituents to evaluate quantitatively were conservative to ensure that true constituents of concern were not eliminated from the quantitative risk assessment. All detected subslab vapor and indoor air constituents were quantitatively evaluated in this risk assessment. Detection of constituents in subslab vapor and indoor air is not necessarily indicative of subsurface vapor intrusion into buildings; therefore, including all detected constituents in subslab vapor and indoor air likely overstates the ELCRs and noncancer HIs associated with vapor intrusion. The calculations that were performed without including acrylonitrile are likely to be a better representation of potential cancer risks and noncancer hazards potentially associated with vapor intrusion than the calculations that included all detected VOCs.

The shallow soil gas screening levels used for the subslab data were based on USEPA RSLs for industrial air with the site-specific AF of 0.008 for subslab vapor to indoor air applied. The site-specific AF was calculated based on only three pairs of the subslab vapor concentrations and their associated indoor air concentrations, so there is uncertainty associated with this value. Therefore, using the site-specific AF may underestimate or overestimate the ELCRs and noncancer HIs for subslab vapor.

Elevated reporting limits were reported in one or more samples. This may underestimate the ELCRs and noncancer HIs for those samples because VOCs may actually be present at levels less than the elevated reporting limits, but they were eliminated from the risk/hazard calculations because they were flagged as nondetects.

The uncertainties identified in each component of risk assessment ultimately contribute to uncertainty in risk characterization. The addition of risks and HIs across constituents contributes to uncertainty based on the interaction of constituents such as additivity or synergism. The simple assumption of additivity used for this assessment may over- or underestimate risk; however, this approach follows USEPA guidance and a better alternative is not available at this time.

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SECTION 7

Conclusions

7.1 Summary

Results from the comparison of indoor air results to NYSDOH air guideline values and the NYSDOH matrix analysis are summarized in the following sections. In addition, some information related to other lines of evidence used in the vapor intrusion evaluation is presented below.

7.1.1 Building 1

In the subslab sample from Building 1, eight VOCs exceeded the NYSDOH background concentrations. In the indoor air sample, chloroform was equal to the NYSDOH background concentration, and MIBK and TCE exceeded the NYSDOH background concentrations.

No VOCs exceeded the NYSDOH air guideline values in Building 1.

Three VOCs (carbon tetrachloride, PCE, and TCE) that have been assigned to the two NYSDOH decision matrices were detected in both subslab and indoor air samples at Building 1 during the March 2010 sampling event. The matrix shows a recommendation to identify the source and reduce exposure for carbon tetrachloride; however, both subslab and indoor air samples did not exceed the NYSDOH background concentration for carbon tetrachloride, indicating there is not significant subsurface source strength for carbon tetrachloride for the vapor intrusion pathway. According to the NYSDOH matrix analyses, NFA was recommended for PCE. The matrix shows a recommendation to identify the source and reduce exposure for TCE. However, the TCE concentration in the subslab sample (4.8 $\mu g/m^3$) is similar to the concentration measured in ambient air (3.3 $\mu g/m^3$) and does not indicate significant subsurface source strength for vapor intrusion. The TCE concentration in indoor air did not exceed the NYSDOH air guideline value, and TCE in the subslab vapor sample did not exceed the shallow soil gas screening level based on the USEPA RSL and site-specific AF of 0.008.

Based on the comparison of data to NYSDOH air guideline values and the results of the recommendations from the NYSDOH decisions matrices, no additional indoor air or subslab sampling is recommended for Building 1.

7.1.2 Building 4

In the subslab samples for Building 4, 15 VOCs exceeded the NYSDOH background concentrations. No VOCs exceeded available NYSDOH air guideline values in the subslab samples. In the indoor air samples, 1,1-DCE; chloroform; MIBK; and TCE exceeded NYSDOH background concentrations. No VOCs exceeded the NYSDOH air guideline values in the indoor air samples.

Three VOCs (1,1-DCE; carbon tetrachloride; and TCE) that have been assigned to the two NYSDOH decision matrices were detected in both subslab and indoor air samples at Building 4 during the 2010 sampling event. According to the NYSDOH matrix analyses, NFA was recommended for 1,1-DCE. The matrix shows a recommendation to identify the source and reduce exposure for carbon tetrachloride and TCE. Carbon tetrachloride concentrations in the subslab vapor, indoor air, and ambient air samples were all within the same order of magnitude (0.52 to 0.67 $\mu g/m^3$), suggesting the subslab soil vapor or indoor sources are not significant contributors to the carbon tetrachloride concentrations in indoor air. In addition, carbon tetrachloride in the indoor air samples did not exceed the NYSDOH background concentration. TCE concentrations in subslab samples are less than the concentration in ambient air. TCE concentrations in the subslab samples exceeded the concentrations detected in both of the indoor air samples but are low in magnitude (2.2 and 4.4 $\mu g/m^3$), indicating there is not significant subsurface source strength for vapor intrusion. The TCE concentration in one of the indoor air samples (IA-5) exceeded the NYSDOH background concentration, but TCE detected in the indoor air samples did not exceed the NYSDOH air guideline value. TCE in the subslab vapor samples did not exceed the shallow soil gas screening level based on the USEPA RSL and site-specific AF of 0.008.

The matrix shows a recommendation to identify the source and reduce exposure for carbon tetrachloride and TCE, so additional subslab and indoor air sampling is recommended for Building 4.

7.1.3 Tank Storage Area

In the subslab sample for the Tank Storage Area, four VOCs exceeded NYSDOH background concentrations. In the indoor air sample, MIBK and TCE exceeded the NYSDOH background concentrations. No VOCs exceeded the NYSDOH air guideline values in the indoor air sample for the Tank Storage Area.

Two VOCs (carbon tetrachloride and TCE) that have been assigned to the two NYSDOH decision matrices were detected in both subslab and indoor air samples at the Tank Storage Area during the 2010 sampling event. The matrix recommendation for TCE was to monitor it because TCE was detected in the subslab vapor at a concentration of 13 $\mu g/m^3$. Subslab concentrations of TCE from the 2008 sampling event were more than an order of magnitude higher than in 2010, ranging from 482 to 520 $\mu g/m^3$ in 2008. TCE in the indoor air sample was more than an order of magnitude lower than in the subslab sample. The TCE concentration in indoor air (0.51 $\mu g/m^3$) essentially was equal to the NYSDOH background concentration (0.5 $\mu g/m^3$) and did not exceed the NYSDOH air guideline value.

The matrix recommendation for carbon tetrachloride was to identify the source and reduce exposure; however, carbon tetrachloride concentrations in the subslab vapor, indoor air, and ambient air samples were all within the same order of magnitude (0.5 to 0.64 $\mu g/m^3$), suggesting the subslab soil vapor or indoor sources may not be significant contributors to carbon tetrachloride in indoor air. Carbon tetrachloride in the indoor air samples did not exceed the NYSDOH background concentration.

Based on the NYSDOH matrix recommendation for TCE and because of the limited sample coverage in Building 4 and uncertainties related to temporal variation in the subslab sample

results for TCE, additional subslab and indoor air sampling is recommended for TCE in the Tank Storage Area.

7.2 Proposed Path Forward

Based on the evaluation of the subslab and indoor air sampling data obtained during the March 2010 SVI, no further evaluation is proposed at Building 1. Additional subslab and indoor air sampling is proposed for Building 4 and the Tank Storage Area. Details of the additional sampling will be provided to the Departments in a revised SVI work plan for review and approval.

Detected VOCs in future sampling events will be evaluated based on NYSDOH 90th percentile indoor air background levels (Tables C.1 and C.2), air guideline values, and decision matrices. However, detected VOCs that do not have NYSDOH guidance values will be discussed based on USEPA RSLs.

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SECTION 8

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Tables

TABLE 1
Ambient Air, Indoor Air, and Subslab Vapor Results - Building 1
Former Hampshire Chemical Corp. Facility, Waterloo, New York

Location ID					(AF=0.008)	(AF=0.008)	WAT-SGB2	WAT-SGB2	WAT-SGB2	WAT-IA-3	IA-3	WAT-SG04	WAT-SG04	WAT-SG04
Location Group			Carcinogenic		Carcinogenic		Ambient Air	Ambient Air	Ambient Air	Indoor Air	Indoor Air	Subslab Vapor	Subslab Vapor	Subslab Vapor
Field Sample ID	NYSDOH 2003	NYSDOH 2006	Target Risk	Noncancer	Target Risk	Noncancer	WAT-SG-B2-042308	WAT-SG-B2-110408	WAT-SG-B2-032310	WAT-IA-3-110408	WAT-IA-3-032310	WAT-SG-4-042308	WAT-SG-4-110408	WAT-SG-4-032310
Sample Date	Study of VOCs	Air Guideline	(TR) = 1E-06	Hazard Index	(TR) = 1E-06	Hazard Index	4/23/2008	11/4/2008	3/23/2010	11/4/2008	3/23/2010	4/23/2008	11/4/2008	3/23/2010
Sample Type	90th Percentile	Values	Inhalation	(HI) = 1 Inhalation	Inhalation	(HI) = 1 Inhalation	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Matrix	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	Vapor	Vapor	Vapor	Air	Vapor	Vapor	Vapor	Vapor
	a	b	c	d	e	f	g1	g2	g3					
Volatile Organics, by Method TO15 (UG/M3)														
1,1,1-Trichloroethane	3.1	--	--	2.19E+04	--	2.7E+06	0.15 U	0.15 U	0.13 U	0.55 U	0.15 U	**12**[a]	**29**[a]	**19**[a]
1,1,2,2-Tetrachloroethane	<0.25	--	2.11E-01	--	2.6E+01	--	0.15 U	0.15 U	0.13 U	0.55 U	0.15 U	0.41 U	1 U	0.13 U
1,1,2-Trichloroethane	<0.25	--	7.67E-01	--	9.6E+01	--	0.15 U	0.15 U	0.13 U	0.55 U	0.15 U	0.41 U	1 U	0.13 U
1,1-Dichloroethane	<0.25	--	7.67E+00	--	9.6E+02	--	0.15 U	0.15 U	0.13 U	0.55 U	0.15 U	**2.1**[a]	**5.1**[a]	**4.1**[a]
1,1-Dichloroethene	<0.25	--	--	8.76E+02	--	1.1E+05	0.15 U	0.15 U	0.13 U	0.55 U	0.15 U	0.41 U	1 U	**0.34**[a]
1,2-Dichloroethane	<0.25	--	4.72E-01	1.06E+04	5.9E+01	1.3E+06	0.15 U	0.15 U	0.13 U	0.55 U	0.15 U	0.41 U	1 U	0.13 U
1,2-Dichloropropane	<0.25	--	1.23E+00	1.75E+01	1.5E+02	2.2E+03	0.15 U	0.15 U	0.13 U	0.55 U	0.15 U	**3.9**[a]	**8.4**[a]	**8**[a]
2-Butanone	16	--	--	2.19E+04	--	2.7E+06	**3.1**	2 U	6.3 U	3.9 U	**1.2 J**	3.7 U	3.9 U	**2 J**
Acetone	110	--	--	1.35E+05	--	1.7E+07	17 U	12 U	8.9 U	45 U	**25**[g3]	17 U	11 U	**37**
Acrylonitrile	--	--	1.80E-01	8.76E+00	2.3E+01	1.1E+03	**1.3**	**0.71 J**	**0.33 J**	**0.42 J**[c]	**2.7**[c,g3]	**0.86 J**	5.2 U	**0.38 J**
Benzene	15	--	1.57E+00	1.31E+02	2.0E+02	1.6E+04	**0.57**	**0.62**	**0.62**	**0.79**[g2]	**1.1**[g3]	**0.81**	1 U	**0.18**
Bromodichloromethane	--	--	3.31E-01	--	4.1E+01	--	0.15 U	0.15 U	0.13 U	0.55 U	0.15 U	0.41 U	1 U	**0.15**
Bromoform	--	--	1.11E+01	--	1.4E+03	--	0.76 U	0.74 U	0.63 U	2.7 U	0.74 U	2.1 U	5.2 U	0.63 U
Bromomethane	--	--	--	2.19E+01	--	2.7E+03	0.15 U	0.15 U	0.13 U	0.55 U	0.15 U	0.41 U	1 U	0.13 U
Carbon disulfide	--	--	--	3.07E+03	--	3.8E+05	0.71 U	0.74 U	6.3 U	2.7 U	7.4 U	2.2 U	**20**	**11**
Carbon tetrachloride	0.8	--	2.04E+00	4.38E+02	2.6E+02	5.5E+04	**0.27**	**0.67**	**0.54**	**0.45 J**	**0.49**	0.41 U	1 U	**0.25**
Chlorobenzene	<0.25	--	--	2.19E+02	--	2.7E+04	0.15 U	0.15 U	0.13 U	0.55 U	0.15 U	0.41 U	1 U	0.13 U
Chloroethane	<0.25	--	--	4.38E+04	--	5.5E+06	0.15 U	0.15 U	0.13 U	0.55 U	0.15 U	0.41 U	1 U	**0.22**
Chloroform	1.4	--	5.33E-01	4.28E+02	6.7E+01	5.4E+04	**1.1**	**0.12 J**	**0.28**	**7**[a,c,g2]	**1.4**[c,g3]	**440**[a,e]	**1,000**[e]	**770**[a,e]
Chloromethane	3.3	--	--	3.94E+02	--	4.9E+04	**0.29**	**0.42**	**0.42**	**1.1**[g2]	**0.38**	**0.62**	**1.1**	0.25 U
cis-1,2-Dichloroethylene	<0.25	--	--	--	--	--	0.15 U	0.15 U	0.13 U	0.55 U	0.15 U	0.41 U	1 U	0.13 U
cis-1,3-Dichloropropene	<0.25	--	--	--	--	--	0.76 U	0.74 U	0.63 U	2.7 U	0.74 U	2.1 U	5.2 U	0.63 U
Dibromochloromethane	--	--	4.54E-01	--	5.7E+01	--	0.15 U	0.15 U	0.13 U	0.55 U	0.15 U	0.41 U	1 U	0.13 U
Ethylbenzene	7.3	--	4.91E+00	4.38E+03	6.1E+02	5.5E+05	**0.24 J**	**0.38 J**	**0.32 J**	**0.93 J**[g2]	**0.54 J**[g3]	**0.61 J**	**0.67 J**	**0.39 J**
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	2.2	--	--	1.31E+04	--	1.6E+06	**120**	**300**	**140**[a]	**770**[a,g2]	**410**[a,g3]	**100**[a]	**18**[a]	**10**[a]
Methylene chloride	22	60	2.61E+01	4.56E+03	3.3E+03	5.7E+05	**0.39 J**	**0.54 J**	**0.28 J**	2.7 U	0.74 U	**0.39 J**	**0.83 J**	**0.35 J**
Styrene	1.3	--	--	4.38E+03	--	5.5E+05	0.76 U	**0.46 J**	0.63 U	**0.72 J**[g2]	0.74 U	2.1 U	**1.3 J**	0.63 U
tert-Butyl Methyl Ether	--	--	4.72E+01	1.31E+04	5.9E+03	1.6E+06	NA	NA	0.13 U	NA	0.15 U	NA	NA	0.13 U
Tetrachloroethene	2.9	100	2.08E+00	1.19E+03	2.6E+02	1.5E+05	0.15 U	**0.14 J**	**0.084 J**	0.55 U	**0.087 J**[g3]	**17**[a]	**38**[a]	**34**[a]
Toluene	58	--	--	2.19E+04	--	2.7E+06	1.2 U	17 U	**2.4**	45 U	**4.7**[g3]	**5.8**	48 U	**2.2**
Trans-1,2-Dichloroethene	--	--	--	2.63E+02	--	3.3E+04	0.15 U	0.15 U	0.13 U	0.55 U	0.15 U	0.41 U	1 U	0.13 U
trans-1,3-Dichloropropene	<0.25	--	--	--	--	--	0.76 U	0.74 U	0.63 U	2.7 U	0.74 U	2.1 U	5.2 U	0.63 U
Trichloroethene	0.5	5	6.13E+00	--	7.7E+02	--	0.15 U	0.15 U	**3.3**[a]	0.55 U	**1.4**[a]	**2.5**[a]	**5.1**[a]	**4.8**[a]
Vinyl chloride	<0.25	--	2.79E+00	4.38E+02	3.5E+02	5.5E+04	0.15 U	0.15 U	0.13 U	0.55 U	0.15 U	0.41 U	1 U	0.13 U
m,p-xylene	12	--	--	3.07E+03	--	3.8E+05	**0.91**	**0.81**	**0.78**	**2.5 J**[g2]	**1.8**[g3]	**4.3**	1.4 U	**0.57 J**
o-xylene	7.6	--	--	3.07E+03	--	3.8E+05	**0.39 J**	**0.28 J**	**0.41 J**	**0.61 J**[g2]	**0.69 J**[g3]	**2.9**	**0.65 J**	**0.25 J**
Epichlorohydrin	--	--	1.02E+01	4.38E+00	1.3E+03	5.5E+02	NF	NF	NF	NF	NF	NF	NF	NF

TABLE 1
Ambient Air, Indoor Air, and Subslab Vapor Results - Building 1
Former Hampshire Chemical Corp. Facility, Waterloo, New York

Location ID					(AF=0.008)	(AF=0.008)	WAT-SGB2	WAT-SGB2	WAT-SGB2	WAT-IA-3	IA-3	WAT-SG04	WAT-SG04	WAT-SG04
Location Group			**Carcinogenic**		**Carcinogenic**		**Ambient Air**	**Ambient Air**	**Ambient Air**	Indoor Air	Indoor Air	Subslab Vapor	Subslab Vapor	Subslab Vapor
Field Sample ID	**NYSDOH 2003**	**NYSDOH 2006**	**Target Risk**	**Noncancer**	**Target Risk**	**Noncancer**	**WAT-SG-B2-042308**	**WAT-SG-B2-110408**	**WAT-SG-B2-032310**	WAT-IA-3-110408	WAT-IA-3-032310	WAT-SG-4-042308	WAT-SG-4-110408	WAT-SG-4-032310
Sample Date	**Study of VOCs**	**Air Guideline**	**(TR) = 1E-06**	**Hazard Index**	**(TR) = 1E-06**	**Hazard Index**	**4/23/2008**	**11/4/2008**	**3/23/2010**	11/4/2008	3/23/2010	4/23/2008	11/4/2008	3/23/2010
Sample Type	**90th Percentile**	**Values**	**Inhalation**	**(HI) = 1 Inhalation**	**Inhalation**	**(HI) = 1 Inhalation**	**Normal**	**Normal**	**Normal**	Normal	Normal	Normal	Normal	Normal
Matrix	**(ug/m3)**	**(ug/m3)**	**(ug/m3)**	**(ug/m3)**	**(ug/m3)**	**(ug/m3)**	**Vapor**	**Vapor**	**Vapor**	Air	Vapor	Vapor	Vapor	Vapor
	a	**b**	**c**	**d**	**e**	**f**	**g1**	**g2**	**g3**					
Tentatively Identified Compounds (UG/M3)														
1,2,3-Trichloropropane	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
1,2,4-Trimethylbenzene	--	--	--	3.1E+01	--	3.9E+03	NF	NF	NF	NF	NF	NF	NF	NF
2-ethyl-1-hexanol	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
2-Methylnaphthalene	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
3-methyl-1-butene	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
3-methylhexane	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
4-Methyl-1-pentene	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
Aniline	--	--	--	4.4E+00	--	5.5E+02	NF	NF	NF	NF	NF	NF	NF	NF
Benzaldehyde	--	--	--	--	--	--	**20 JN**	NF	**9 N**	NF	NF	NF	NF	NF
Butane	--	--	--	--	--	--	NF	NF	NF	**40 T**	**6.4 N**	NF	NF	NF
Cyclohexanone	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	**23 N**
Dimethyl Sulfide	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
Dimethyl trisulfide	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
Ethyl acetate	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
Hexamethylcyclotrisiloxane	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	**600 T**	**7.5 N**
Isobutane	--	--	--	--	--	--	NF	NF	NF	NF	**4 N**	NF	**40 T**	**43 N**
Isopentane	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
Isopropyl alcohol	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
Methyl disulfide	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
Naphthalene	--	--	0.36	1.3E+01	4.5E+01	1.6E+03	NF	NF	NF	NF	NF	NF	NF	NF
n-Butanol	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	**9.7 N**
n-Nonanal	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
n-Pentane	--	--	--	--	--	--	NF	NF	NF	NF	**5.6 N**	NF	NF	NF
Propane	--	--	--	--	--	--	NF	NF	**8.6 N**	**30 T**	NF	NF	NF	NF
Ethanol	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
n-Decane	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
n-Undecane	--	--	--	--	--	--	NF	NF	NF	NF	NF	**70 J**	NF	NF
Propene	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF

Notes:
a = Exceedance of New York State Department of Health (NYSDOH) 2003: Study of volatile organic chemicals in air of fuel oil heated homes 90th Percentile
b = Exceedance of New York State Department of Health (NYSDOH) 2006; Air Guidance Values
c = Exceedance of USEPA cancer risk-based screening level
d = Exceedance of USEPA non-cancer hazard index screening level
e = Exceedance of USEPA cancer risk-based screening level at attenuation factor of 0.008
f = Exceedance of USEPA non-cancer hazard index screening level at attenuation factor of 0.008
g1 = Exceedance of April 2008 site-specific outdoor ambient air concentration
g2 = Exceedance of November 2008 site-specific outdoor ambient air concentration
g3 = Exceedance of March 2010 site-specific outdoor ambient air concentration
All compounds and criteria are in ug/m3
Analysis Method is TO15
-- indicates no criteria established
J = estimated value
U = compound not detect at or above method detection limit
Bold font indicates the constituent detected
Shading in yellow indicates that the constituent was detected above criteria
NA = Not Analyzed
NF = Not found by laboratory library search

TABLE 2
Ambient Air, Indoor Air, and Subslab Vapor Results - Building 4
Former Hampshire Chemical Corp. Facility, Waterloo, New York

Location ID					(AF=0.008)	(AF=0.008)	WAT-SGB4	WAT-SGB4	WAT-SGB4	WAT-IA-5	WAT-IA-5	WAT-IA-6	WAT-IA-6	WAT-SG07	WAT-SG07A
Location Group			Carcinogenic		Carcinogenic		Ambient Air	Ambient Air	Ambient Air	Indoor Air	Indoor Air	Indoor Air	Indoor Air	Subslab Vapor	Subslab Vapor
Field Sample ID	**NYSDOH 2003**	**NYSDOH 2006**	**Target Risk**	**Noncancer**	**Target Risk**	**Noncancer**	WAT-SG-B4-042408	WAT-SG-B4-110508	WAT-SG-B4-032310	WAT-IA-5-110508	WAT-IA-5-032310	WAT-IA-6-110508	WAT-IA-6-032310	WAT-SG-7-042408	WAT-SG-7a-042408
Sample Date	**Study of VOCs**	**Air Guideline**	**(TR) = 1E-06**	**Hazard Index**	**(TR) = 1E-06**	**Hazard Index**	4/24/2008	11/5/2008	3/23/2010	11/5/2008	3/23/2010	11/5/2008	3/23/2010	4/24/2008	4/24/2008
Sample Type	**90th Percentile**	**Values**	**Inhalation**	**(HI) = 1 Inhalation**	**Inhalation**	**(HI) = 1 Inhalation**	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Matrix	**(ug/m3)**	**(ug/m3)**	**(ug/m3)**	**(ug/m3)**	**(ug/m3)**	**(ug/m3)**	Vapor	Vapor	Vapor	Air	Vapor	Air	Vapor	Vapor	Vapor
	a	**b**	**c**	**d**	**e**	**f**	**g1**	**g2**	**g3**						
Volatile Organics, by Method TO15 (UG/M3)															
1,1,1-Trichloroethane	3.1	--	--	2.19E+04	--	2.7E+06	0.16 U	0.13 U	0.14 U	0.15 U	0.13 U	0.15 U	0.14 U	20 U	120 U
1,1,2,2-Tetrachloroethane	<0.25	--	2.11E-01	--	2.6E+01	--	0.16 U	0.13 U	0.14 U	0.15 U	0.13 U	0.15 U	0.14 U	20 U	120 U
1,1,2-Trichloroethane	<0.25	--	7.67E-01	--	9.6E+01	--	0.16 U	0.13 U	0.14 U	0.15 U	0.13 U	0.15 U	0.14 U	20 U	120 U
1,1-Dichloroethane	<0.25	--	7.67E+00	--	9.6E+02	--	0.16 U	0.13 U	0.14 U	0.15 U	0.13 U	0.15 U	0.14 U	**84**[a]	120 U
1,1-Dichloroethene	<0.25	--	--	8.76E+02	--	1.1E+05	**0.11 J**	0.13 U	0.14 U	0.15 U	**0.74**[a,g3]	0.15 U	0.14 U	20 U	120 U
1,2-Dichloroethane	<0.25	--	4.72E-01	1.06E+04	5.9E+01	1.3E+06	0.16 U	0.13 U	0.14 U	0.15 U	0.13 U	0.15 U	0.14 U	20 U	120 U
1,2-Dichloropropane	<0.25	--	1.23E+00	1.75E+01	1.5E+02	2.2E+03	0.16 U	0.13 U	0.14 U	0.15 U	0.13 U	0.15 U	0.14 U	**52**[a]	120 U
2-Butanone	16	--	--	2.19E+04	--	2.7E+06	0.98 U	**1.6**	**0.99 J**	**1.9**[g2]	**1.3 J**[g3]	**2.2**[g2]	7.1 U	17 U	610 U
Acetone	110	--	--	1.35E+05	--	1.7E+07	**35**	**14**	**18**	**9.4**	**15**	**13**	24 U	1800 U	1600 U
Acrylonitrile	--	--	1.80E-01	8.76E+00	2.3E+01	1.1E+03	**1.1**	**0.51 J**	**0.39 J**	**0.16 J**	0.63 U	**0.55 J**[c,g2]	**6.7**[c,g3]	100 U	610 U
Benzene	15	--	1.57E+00	1.31E+02	2.0E+02	1.6E+04	**0.48**	**0.57**	**0.68**	**0.5**	**0.69**[g3]	**0.57**	**0.73**[g3]	20 U	120 U
Bromodichloromethane	--	--	3.31E-01	--	4.1E+01	--	0.16 U	0.13 U	0.14 U	0.15 U	0.13 U	0.15 U	0.14 U	20 U	120 U
Bromoform	--	--	1.11E+01	--	1.4E+03	--	0.79 U	0.67 U	0.71 U	0.75 U	0.63 U	0.76 U	0.71 U	100 U	610 U
Bromomethane	--	--	--	2.19E+01	--	2.7E+03	0.16 U	0.13 U	0.14 U	0.15 U	0.13 U	0.15 U	0.14 U	20 U	120 U
Carbon disulfide	--	--	--	3.07E+03	--	3.8E+05	0.92 U	**0.3 J**	**0.83 J**	**2.2**[g2]	**14**[g3]	**4.1**[g2]	**3.8 J**[g3]	310 U	**3800**
Carbon tetrachloride	0.8	--	2.04E+00	4.38E+02	2.6E+02	5.5E+04	**0.38**	**0.59**	**0.52**	**0.56**	**0.67**[g3]	**0.61**[g2]	**0.63**[g3]	20 U	120 U
Chlorobenzene	<0.25	--	--	2.19E+02	--	2.7E+04	0.16 U	0.13 U	0.14 U	0.15 U	0.13 U	0.15 U	0.14 U	20 U	120 U
Chloroethane	<0.25	--	--	4.38E+04	--	5.5E+06	**0.086 J**	0.13 U	0.14 U	0.15 U	0.13 U	0.15 U	0.14 U	20 U	120 U
Chloroform	1.4	--	5.33E-01	4.28E+02	6.7E+01	5.4E+04	**1.3**	**0.088 J**	**0.15**	**0.15**[g2]	**4.3**[a,c,g3]	**0.43**[g2]	**0.47**[g3]	**24000**[a,e]	**1300**[a,e]
Chloromethane	3.3	--	--	3.94E+02	--	4.9E+04	**0.56**	**0.35**	**0.47**	**0.41**[g2]	**0.52**[g3]	**0.33**	**0.46**	20 U	120 U
cis-1,2-Dichloroethylene	<0.25	--	--	--	--	--	0.16 U	0.13 U	0.14 U	0.15 U	0.13 U	0.15 U	0.14 U	**19 J**[a]	120 U
cis-1,3-Dichloropropene	<0.25	--	--	--	--	--	0.79 U	0.67 U	0.71 U	0.75 U	0.63 U	0.76 U	0.71 U	100 U	610 U
Dibromochloromethane	--	--	4.54E-01	--	5.7E+01	--	0.16 U	0.13 U	0.14 U	0.15 U	0.13 U	0.15 U	0.14 U	20 U	120 U
Ethylbenzene	7.3	--	4.91E+00	4.38E+03	6.1E+02	5.5E+05	**0.25 J**	**4.9**	**0.35 J**	**0.47 J**	**0.33 J**	**0.97**	**0.51 J**[g3]	**870**[a,e]	**430 J**[a]
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	2.2	--	--	1.31E+04	--	1.6E+06	**94**	**110**	**52**[a]	**40**[a]	**560**[a,g3]	**54**[a]	**130**[a,g3]	**12000**[a]	**86000**[a]
Methylene chloride	22	60	2.61E+01	4.56E+03	3.3E+03	5.7E+05	**0.36 J**	**0.38 J**	**0.29 J**	**0.31 J**	**0.34 J**[g3]	**0.39 J**[g2]	**0.3 J**[g3]	**35 J**[a]	**240 J**[a]
Styrene	1.3	--	--	4.38E+03	--	5.5E+05	**0.12 J**	0.67 U	0.71 U	**0.19 J**[g2]	0.63 U	**0.17 J**[g2]	0.71 U	100 U	610 U
tert-Butyl Methyl Ether	--	--	4.72E+01	1.31E+04	5.9E+03	1.6E+06	NA	NA	0.14 U	NA	0.13 U	NA	0.14 U	NA	NA
Tetrachloroethene	2.9	100	2.08E+00	1.19E+03	2.6E+02	1.5E+05	0.16 U	0.13 U	0.14 U	0.15 U	0.13 U	**0.076 J**[g2]	0.14 U	**26**[a]	120 U
Toluene	58	--	--	2.19E+04	--	2.7E+06	**13**	**18**	**9.3**	**1.8**	**3.3**	**4.5**	**1.8**	72 U	380 U
Trans-1,2-Dichloroethene	--	--	--	2.63E+02	--	3.3E+04	0.16 U	0.13 U	0.14 U	0.15 U	0.13 U	0.15 U	0.14 U	20 U	120 U
trans-1,3-Dichloropropene	<0.25	--	--	--	--	--	0.79 U	0.67 U	0.71 U	0.75 U	0.63 U	0.76 U	0.71 U	100 U	610 U
Trichloroethene	0.5	5	6.13E+00	--	7.7E+02	--	**0.45**	0.13 U	**5**[a]	0.15 U	**0.78**[a]	0.15 U	**0.11 J**	**54**[a]	120 U
Vinyl chloride	<0.25	--	2.79E+00	4.38E+02	3.5E+02	5.5E+04	0.16 U	0.13 U	0.14 U	0.15 U	0.13 U	0.15 U	0.14 U	20 U	120 U
m,p-xylene	12	--	--	3.07E+03	--	3.8E+05	**0.83**	**16**	**1.1**	**1.5**	**1.1**	**3.2**	**1.7**[g3]	**4600**[a]	**8600**[a]
o-xylene	7.6	--	--	3.07E+03	--	3.8E+05	**0.21 J**	**3.9**	**0.59 J**	**0.39 J**	**0.39 J**	**0.83**	**0.49 J**	**950**[a]	**1700**[a]
Epichlorohydrin	--	--	1.02E+01	4.38E+00	1.3E+03	5.5E+02	NF	NF	NF	NF	NF	NF	NF	NF	NF

TABLE 2
Ambient Air, Indoor Air, and Subslab Vapor Results - Building 4
Former Hampshire Chemical Corp. Facility, Waterloo, New York

Location ID					(AF=0.008)	(AF=0.008)	WAT-SGB4	WAT-SGB4	WAT-SGB4	WAT-IA-5	WAT-IA-5	WAT-IA-6	WAT-IA-6	WAT-SG07	WAT-SG07A
Location Group			Carcinogenic		Carcinogenic		Ambient Air	Ambient Air	Ambient Air	Indoor Air	Indoor Air	Indoor Air	Indoor Air	Subslab Vapor	Subslab Vapor
Field Sample ID	**NYSDOH 2003**	**NYSDOH 2006**	**Target Risk**	**Noncancer**	**Target Risk**	**Noncancer**	WAT-SG-B4-042408	WAT-SG-B4-110508	WAT-SG-B4-032310	WAT-IA-5-110508	WAT-IA-5-032310	WAT-IA-6-110508	WAT-IA-6-032310	WAT-SG-7-042408	WAT-SG-7a-042408
Sample Date	**Study of VOCs**	**Air Guideline**	**(TR) = 1E-06**	**Hazard Index**	**(TR) = 1E-06**	**Hazard Index**	4/24/2008	11/5/2008	3/23/2010	11/5/2008	3/23/2010	11/5/2008	3/23/2010	4/24/2008	4/24/2008
Sample Type	**90th Percentile**	**Values**	**Inhalation**	**(HI) = 1 Inhalation**	**Inhalation**	**(HI) = 1 Inhalation**	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Matrix	**(ug/m3)**	**(ug/m3)**	**(ug/m3)**	**(ug/m3)**	**(ug/m3)**	**(ug/m3)**	Vapor	Vapor	Vapor	Air	Vapor	Air	Vapor	Vapor	Vapor
	a	**b**	**c**	**d**	**e**	**f**	**g1**	**g2**	**g3**						
Tentatively Identified Compounds (UG/M3)															
1,2,3-Trichloropropane	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF	NF
1,2,3,4-Tetramethylbenzene	--	--	--	--	--	--	NF	NF	NF	NF	**12 N**	NF	**6.8 N**	NF	NF
1,2,4-Trimethylbenzene	--	--	--	3.1E+01	--	3.9E+03	NF	NF	NF	NF	NF	**5 T**	NF	NF	NF
2-ethyl-1-hexanol	--	--	--	--	--	--	NF	NF	NF	NF	NF	**7 T**	NF	NF	NF
2-Methylnaphthalene	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF	NF
3-methyl-1-butene	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF	NF
3-methylhexane	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF	NF
3-Methylpentane	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF	NF
4-Methyl-1-pentene	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF	NF
Aniline	--	--	--	4.4E+00	--	5.5E+02	NF	NF	NF	NF	NF	NF	NF	NF	NF
Benzaldehyde	--	--	--	--	--	--	**9 JN**	**6 T**	NF	**10 T**	NF	**5 T**	NF	NF	NF
Butane	--	--	--	--	--	--	**10 JN**	NF	**7.9 N**	NF	NF	NF	NF	NF	NF
Dimethyl Sulfide	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF	NF
Dimethyl trisulfide	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF	NF
Ethyl acetate	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF	NF
Hexamethylcyclotrisiloxane	--	--	--	--	--	--	**10 JN**	NF	NF	NF	NF	NF	NF	NF	NF
Isobutane	--	--	--	--	--	--	NF	NF	NF	**4 T**	**9.7 N**	NF	NF	NF	NF
Isooctanol	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF	NF
Isopentane	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF	NF
Isopropyl alcohol	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF	NF
Methyl disulfide	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF	NF
Naphthalene	--	--	3.6E-01	1.3E+01	4.5E+01	1.6E+03	NF	NF	NF	NF	NF	NF	NF	NF	NF
n-Butanol	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF	NF
n-Nonanal	--	--	--	--	--	--	**40 JN**	NF	NF	NF	NF	NF	NF	NF	NF
n-Pentane	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF	NF
Propane	--	--	--	--	--	--	NF	**30 T**	**13 N**	**80 T**	**90 N**	**60 T**	**81 N**	NF	NF
Ethanol	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF	NF
n-Decane	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF	NF
n-Undecane	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF	NF
Propene	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF	NF

Notes:
a = Exceedance of New York State Department of Health (NYSDOH) 2003: Study of volatile organic chemicals in air of fuel oil heated homes 90th Percentile
b = Exceedance of New York State Department of Health (NYSDOH) 2006; Air Guidance Values
c = Exceedance of USEPA cancer risk-based screening level
d = Exceedance of USEPA non-cancer hazard index screening level
e = Exceedance of USEPA cancer risk-based screening level at attenuation factor of 0.008
f = Exceedance of USEPA non-cancer hazard index screening level at attenuation factor of 0.008
g1 = Exceedance of April 2008 site-specific outdoor ambient air concentration
g2 = Exceedance of November 2008 site-specific outdoor ambient air concentration
g3 = Exceedance of March 2010 site-specific outdoor ambient air concentration
All compounds and criteria are in ug/m3
Analysis Method is TO15
-- indicates no criteria established
J = estimated value
U = compound not detect at or above method detection limit
Bold font indicates the constituent detected
Shading in yellow indicates that the constituent was detected above criteria
NA = Not Analyzed
NF = Not found by laboratory library search

TABLE 2
Ambient Air, Indoor Air, and Subslab Vapor Results - Building 4
Former Hampshire Chemical Corp. Facility, Waterloo, New York

Location ID					(AF=0.008)	(AF=0.008)	WAT-SG07A	WAT-SG07A	WAT-SG07A	WAT-SG08	WAT-SG08
Location Group			Carcinogenic		Carcinogenic		Subslab Vapor	Subslab Vapor	Subslab Vapor	Subslab Vapor	Subslab Vapor
Field Sample ID	NYSDOH 2003	NYSDOH 2006	Target Risk	Noncancer	Target Risk	Noncancer	WAT-SG-7a-110508	WAT-SG-7a-032310	WAT-SG-DUP-032310	WAT-SG-8-042408	WAT-SG-8-110508
Sample Date	Study of VOCs	Air Guideline	(TR) = 1E-06	Hazard Index	(TR) = 1E-06	Hazard Index	11/5/2008	3/23/2010	3/23/2010	4/24/2008	11/5/2008
Sample Type	90th Percentile	Values	Inhalation	(HI) = 1 Inhalation	Inhalation	(HI) = 1 Inhalation	Normal	Normal	Duplicate	Normal	Normal
Matrix	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	Vapor	Vapor	Vapor	Vapor	Vapor
	a	b	c	d	e	f					
Volatile Organics, by Method TO15 (UG/M3)											
1,1,1-Trichloroethane	3.1	--	--	2.19E+04	--	2.7E+06	0.73 U	0.13 U	0.13 U	1.7 U	0.34 U
1,1,2,2-Tetrachloroethane	<0.25	--	2.11E-01	--	2.6E+01	--	0.73 U	0.13 U	0.13 U	1.7 U	0.34 U
1,1,2-Trichloroethane	<0.25	--	7.67E-01	--	9.6E+01	--	0.73 U	0.13 U	0.13 U	1.7 U	0.34 U
1,1-Dichloroethane	<0.25	--	7.67E+00	--	9.6E+02	--	**23[a]**	**2.4[a]**	**11[a]**	1.7 U	0.34 U
1,1-Dichloroethene	<0.25	--	--	8.76E+02	--	1.1E+05	0.73 U	**0.86[a]**	**1.5[a]**	1.7 U	0.34 U
1,2-Dichloroethane	<0.25	--	4.72E-01	1.06E+04	5.9E+01	1.3E+06	0.73 U	**0.12 J**	**0.11 J**	1.7 U	0.34 U
1,2-Dichloropropane	<0.25	--	1.23E+00	1.75E+01	1.5E+02	2.2E+03	**9.1[a]**	**1.4[a]**	**6[a]**	**2.1[a]**	**0.33 J[a]**
2-Butanone	16	--	--	2.19E+04	--	2.7E+06	**18[a]**	**2.8 J**	**3.7 J**	**32[a]**	**7.2**
Acetone	110	--	--	1.35E+05	--	1.7E+07	**86**	**42 J**	**75**	230 U	**43**
Acrylonitrile	--	--	1.80E-01	8.76E+00	2.3E+01	1.1E+03	3.7 U	**0.39 J**	0.63 U	**3.3 J**	**4.1**
Benzene	15	--	1.57E+00	1.31E+02	2.0E+02	1.6E+04	**0.39 J**	**1.1**	**2.2**	**5**	**1.2**
Bromodichloromethane	--	--	3.31E-01	--	4.1E+01	--	0.73 U	0.13 U	0.13 U	1.7 U	0.34 U
Bromoform	--	--	1.11E+01	--	1.4E+03	--	3.7 U	0.64 U	0.63 U	8.5 U	1.7 U
Bromomethane	--	--	--	2.19E+01	--	2.7E+03	0.73 U	**0.093 J**	**0.26**	1.7 U	0.34 U
Carbon disulfide	--	--	--	3.07E+03	--	3.8E+05	**1,600**	**820**	**1000**	**43**	**70**
Carbon tetrachloride	0.8	--	2.04E+00	4.38E+02	2.6E+02	5.5E+04	**3[a]**	**0.62**	**0.53**	1.7 U	**0.54**
Chlorobenzene	<0.25	--	--	2.19E+02	--	2.7E+04	0.73 U	0.13 U	0.13 U	**2.3[a]**	**0.65[a]**
Chloroethane	<0.25	--	--	4.38E+04	--	5.5E+06	0.73 U	**0.39[a]**	**0.49[a]**	1.7 U	0.34 U
Chloroform	1.4	--	5.33E-01	4.28E+02	6.7E+01	5.4E+04	**1300[a,e]**	**99[a,e]**	**190[a,e]**	**170[a,e]**	**9.3[a]**
Chloromethane	3.3	--	--	3.94E+02	--	4.9E+04	0.73 U	**0.49**	**0.5**	**2.1**	0.34 U
cis-1,2-Dichloroethylene	<0.25	--	--	--	--	--	**5[a]**	**1.7[a]**	**9.9[a]**	1.7 U	**0.58[a]**
cis-1,3-Dichloropropene	<0.25	--	--	--	--	--	3.7 U	0.64 U	0.63 U	8.5 U	1.7 U
Dibromochloromethane	--	--	4.54E-01	--	5.7E+01	--	0.73 U	0.13 U	0.13 U	1.7 U	0.34 U
Ethylbenzene	7.3	--	4.91E+00	4.38E+03	6.1E+02	5.5E+05	**22[a]**	**12[a]**	**60[a]**	**1.6 J**	**0.94 J**
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	2.2	--	--	1.31E+04	--	1.6E+06	**2,100[a]**	**260[a]**	**930[a]**	**380 J[a]**	**31[a]**
Methylene chloride	22	60	2.61E+01	4.56E+03	3.3E+03	5.7E+05	**32[a]**	**11**	**82[a]**	**2.3 J**	**0.46 J**
Styrene	1.3	--	--	4.38E+03	--	5.5E+05	**3.1 J[a]**	**1.6[a]**	**1.7[a]**	8.5 U	**0.62 J**
tert-Butyl Methyl Ether	--	--	4.72E+01	1.31E+04	5.9E+03	1.6E+06	NA	0.13 U	**0.13**	NA	NA
Tetrachloroethene	2.9	100	2.08E+00	1.19E+03	2.6E+02	1.5E+05	**5.4[a]**	**0.8**	**2.8**	**3[a]**	**0.19 J**
Toluene	58	--	--	2.19E+04	--	2.7E+06	**280[a]**	**62[a]**	**82[a]**	**130[a]**	**30**
Trans-1,2-Dichloroethene	--	--	--	2.63E+02	--	3.3E+04	**0.9**	**0.32**	**2.3**	1.7 U	0.34 U
trans-1,3-Dichloropropene	<0.25	--	--	--	--	--	3.7 U	0.64 U	0.63 U	8.5 U	1.7 U
Trichloroethene	0.5	5	6.13E+00	--	7.7E+02	--	**2.3[a]**	**2.2[a]**	**4.4[a]**	**1.7[a]**	**1.1[a]**
Vinyl chloride	<0.25	--	2.79E+00	4.38E+02	3.5E+02	5.5E+04	0.73 U	**0.096 J**	**0.83[a]**	1.7 U	0.34 U
m,p-xylene	12	--	--	3.07E+03	--	3.8E+05	**310[a]**	**99[a]**	**600[a]**	**15[a]**	**3.1**
o-xylene	7.6	--	--	3.07E+03	--	3.8E+05	**89[a]**	**23[a]**	**120[a]**	**4.3 J**	**0.9 J**
Epichlorohydrin	--	--	1.02E+01	4.38E+00	1.3E+03	5.5E+02	NF	NF	NF	NF	NF

TABLE 2
Ambient Air, Indoor Air, and Subslab Vapor Results - Building 4
Former Hampshire Chemical Corp. Facility, Waterloo, New York

Location ID					**(AF=0.008)**	**(AF=0.008)**	WAT-SG07A	WAT-SG07A	WAT-SG07A	WAT-SG08	WAT-SG08
Location Group			**Carcinogenic**		**Carcinogenic**		Subslab Vapor	Subslab Vapor	Subslab Vapor	Subslab Vapor	Subslab Vapor
Field Sample ID	**NYSDOH 2003**	**NYSDOH 2006**	**Target Risk**	**Noncancer**	**Target Risk**	**Noncancer**	WAT-SG-7a-110508	WAT-SG-7a-032310	WAT-SG-DUP-032310	WAT-SG-8-042408	WAT-SG-8-110508
Sample Date	**Study of VOCs**	**Air Guideline**	**(TR) = 1E-06**	**Hazard Index**	**(TR) = 1E-06**	**Hazard Index**	11/5/2008	3/23/2010	3/23/2010	4/24/2008	11/5/2008
Sample Type	**90th Percentile**	**Values**	**Inhalation**	**(HI) = 1 Inhalation**	**Inhalation**	**(HI) = 1 Inhalation**	Normal	Normal	Duplicate	Normal	Normal
Matrix	**(ug/m3)**	**(ug/m3)**	**(ug/m3)**	**(ug/m3)**	**(ug/m3)**	**(ug/m3)**	Vapor	Vapor	Vapor	Vapor	Vapor
	a	**b**	**c**	**d**	**e**	**f**					
Tentatively Identified Compounds (UG/M3)											
1,2,3-Trichloropropane	--	--	--	--	--	--	NF	NF	NF	NF	NF
1,2,3,4-Tetramethylbenzene	--	--	--	--	--	--	NF	NF	NF	NF	NF
1,2,4-Trimethylbenzene	--	--	--	3.1E+01	--	3.9E+03	NF	NF	NF	NF	NF
2-ethyl-1-hexanol	--	--	--	--	--	--	NF	NF	NF	NF	**40 T**
2-Methylnaphthalene	--	--	--	--	--	--	NF	NF	NF	NF	NF
3-methyl-1-butene	--	--	--	--	--	--	**2000 T**	NF	NF	NF	NF
3-methylhexane	--	--	--	--	--	--	NF	NF	NF	NF	NF
3-Methylpentane	--	--	--	--	--	--	NF	NF	NF	**300 JN**	NF
4-Methyl-1-pentene	--	--	--	--	--	--	**800 T**	NF	NF	NF	NF
Aniline	--	--	--	4.4E+00	--	5.5E+02	NF	NF	NF	NF	NF
Benzaldehyde	--	--	--	--	--	--	NF	NF	NF	NF	NF
Butane	--	--	--	--	--	--	NF	NF	NF	NF	NF
Dimethyl Sulfide	--	--	--	--	--	--	NF	NF	NF	NF	NF
Dimethyl trisulfide	--	--	--	--	--	--	NF	NF	NF	NF	NF
Ethyl acetate	--	--	--	--	--	--	NF	NF	NF	NF	**20 T**
Hexamethylcyclotrisiloxane	--	--	--	--	--	--	NF	NF	NF	NF	NF
Isobutane	--	--	--	--	--	--	NF	NF	NF	NF	NF
Isooctanol	--	--	--	--	--	--	NF	NF	NF	**400 JN**	NF
Isopentane	--	--	--	--	--	--	NF	**260 N**	NF	NF	NF
Isopropyl alcohol	--	--	--	--	--	--	NF	NF	NF	NF	NF
Methyl disulfide	--	--	--	--	--	--	NF	NF	NF	NF	NF
Naphthalene	--	--	3.6E-01	1.3E+01	4.5E+01	1.6E+03	NF	NF	NF	NF	NF
n-Butanol	--	--	--	--	--	--	NF	NF	NF	NF	NF
n-Nonanal	--	--	--	--	--	--	NF	NF	NF	NF	NF
n-Pentane	--	--	--	--	--	--	NF	**140 N**	NF	NF	NF
Propane	--	--	--	--	--	--	NF	NF	NF	NF	**70 T**
Ethanol	--	--	--	--	--	--	NF	NF	NF	NF	NF
n-Decane	--	--	--	--	--	--	NF	NF	NF	NF	NF
n-Undecane	--	--	--	--	--	--	NF	NF	NF	NF	NF
Propene	--	--	--	--	--	--	NF	NF	NF	NF	NF

Notes:
a = Exceedance of New York State Department of Health (NYSDOH) 2003: Study of volatile organic chemicals in air of fuel oil heated homes 90th Percentile
b = Exceedance of New York State Department of Health (NYSDOH) 2006; Air Guidance Values
c = Exceedance of USEPA cancer risk-based screening level
d = Exceedance of USEPA non-cancer hazard index screening level
e = Exceedance of USEPA cancer risk-based screening level at attenuation factor of 0.008
f = Exceedance of USEPA non-cancer hazard index screening level at attenuation factor of 0.008
g1 = Exceedance of April 2008 site-specific outdoor ambient air concentration
g2 = Exceedance of November 2008 site-specific outdoor ambient air concentration
g3 = Exceedance of March 2010 site-specific outdoor ambient air concentration
All compounds and criteria are in ug/m3
Analysis Method is TO15
-- indicates no criteria established
J = estimated value
U = compound not detect at or above method detection limit
Bold font indicates the constituent detected
Shading in yellow indicates that the constituent was detected above criteria
NA = Not Analyzed
NF = Not found by laboratory library search

TABLE 3
Ambient Air, Indoor Air, and Subslab Vapor Results - Tank Storage Area
Former Hampshire Chemical Corp. Facility, Waterloo, New York

Location ID					(AF=0.008)	(AF=0.008)	WAT-SGB4	WAT-SGB4	WAT-SGB4	WAT-IA-7	WAT-IA-7	WAT-SG09	WAT-SG09	WAT-SG09
Location Group			Carcinogenic		Carcinogenic		Ambient Air	Ambient Air	Ambient Air	Indoor Air	Indoor Air	Subslab Vapor	Subslab Vapor	Subslab Vapor
Field Sample ID	NYSDOH 2003	NYSDOH 2006	Target Risk	Noncancer	Target Risk	Noncancer	WAT-SG-B4-042408	WAT-SG-B4-110508	WAT-SG-B4-032310	WAT-IA-7-110508	WAT-IA-7-032310	WAT-SG-9-042408	WAT-SG-9-110508	WAT-SG-9-032310
Sample Date	Study of VOCs	Air Guideline	(TR) = 1E-06	Hazard Index	(TR) = 1E-06	Hazard Index	4/24/2008	11/5/2008	3/23/2010	11/5/2008	3/23/2010	4/24/2008	11/5/2008	3/23/2010
Sample Type	90th Percentile	Values	Inhalation	(HI) = 1 Inhalation	Inhalation	(HI) = 1 Inhalation	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Matrix	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	Vapor	Vapor	Vapor	Vapor	Vapor	Vapor	Vapor	Vapor
	a	b	c	d	e	f	g1	g2	g3					
Volatile Organics, by Method TO15 (UG/M3)														
1,1,1-Trichloroethane	3.1	--	--	2.19E+04	--	2.7E+06	0.16 U	0.13 U	0.14 U	0.16 U	0.13 U	0.49 U	0.29 U	0.14 U
1,1,2,2-Tetrachloroethane	<0.25	--	2.11E-01	--	2.6E+01	--	0.16 U	0.13 U	0.14 U	0.16 U	0.13 U	0.49 U	0.29 U	0.14 U
1,1,2-Trichloroethane	<0.25	--	7.67E-01	--	9.6E+01	--	0.16 U	0.13 U	0.14 U	0.16 U	0.13 U	0.49 U	**0.86[a]**	**0.092 J**
1,1-Dichloroethane	<0.25	--	7.67E+00	--	9.6E+02	--	0.16 U	0.13 U	0.14 U	0.16 U	0.13 U	0.49 U	**0.21 J**	0.14 U
1,1-Dichloroethene	<0.25	--	--	8.76E+02	--	1.1E+05	**0.11 J**	0.13 U	0.14 U	0.16 U	0.13 U	0.49 U	0.29 U	0.14 U
1,2-Dichloroethane	<0.25	--	4.72E-01	1.06E+04	5.9E+01	1.3E+06	0.16 U	0.13 U	0.14 U	0.16 U	**0.13 J[g3]**	0.49 U	**0.73[a]**	**0.15**
1,2-Dichloropropane	<0.25	--	1.23E+00	1.75E+01	1.5E+02	2.2E+03	0.16 U	0.13 U	0.14 U	0.16 U	0.13 U	**15[a]**	**20[a]**	**1.7[a]**
2-Butanone	16	--	--	2.19E+04	--	2.7E+06	0.98 U	**1.6**	**0.99 J**	**3.9[g2]**	6.7 U	1.3 U	**2.6**	**1.1 J**
Acetone	110	--	--	1.35E+05	--	1.7E+07	**35**	**14**	**18**	**18[g2]**	**30[g3]**	13 U	**11 J**	**14**
Acrylonitrile	--	--	1.80E-01	8.76E+00	2.3E+01	1.1E+03	**1.1**	**0.51 J**	**0.39 J**	**0.19 J[c]**	**0.38 J[c]**	2.4 U	1.4 U	0.68 U
Benzene	15	--	1.57E+00	1.31E+02	2.0E+02	1.6E+04	**0.48**	**0.57**	**0.68**	**0.57**	**0.71[g3]**	**0.66**	**0.43**	**0.55**
Bromodichloromethane	--	--	3.31E-01	--	4.1E+01	--	0.16 U	0.13 U	0.14 U	0.16 U	0.13 U	0.49 U	0.29 U	0.14 U
Bromoform	--	--	1.11E+01	--	1.4E+03	--	0.79 U	0.67 U	0.71 U	0.81 U	0.67 U	2.4 U	1.4 U	0.68 U
Bromomethane	--	--	--	2.19E+01	--	2.7E+03	0.16 U	0.13 U	0.14 U	0.16 U	0.13 U	0.49 U	0.29 U	0.14 U
Carbon disulfide	--	--	--	3.07E+03	--	3.8E+05	0.92 U	**0.3 J**	**0.83 J**	**9.4[g2]**	**11[g3]**	3.8 U	**3.8**	**5.7 J**
Carbon tetrachloride	0.8	--	2.04E+00	4.38E+02	2.6E+02	5.5E+04	**0.38**	**0.59**	**0.52**	**0.57**	**0.64[g3]**	0.49 U	**0.67**	**0.5**
Chlorobenzene	<0.25	--	--	2.19E+02	--	2.7E+04	0.16 U	0.13 U	0.14 U	0.16 U	0.13 U	0.49 U	**0.45[a]**	**0.086 N**
Chloroethane	<0.25	--	--	4.38E+04	--	5.5E+06	**0.086 J**	0.13 U	0.14 U	0.16 U	0.13 U	0.49 U	0.29 U	0.14 U
Chloroform	1.4	--	5.33E-01	4.28E+02	6.7E+01	5.4E+04	**1.3**	**0.088 J**	**0.15**	**0.42[g2]**	**0.39[g3]**	**270[a,e]**	**390[a,e]**	**41[a]**
Chloromethane	3.3	--	--	3.94E+02	--	4.9E+04	**0.56**	**0.35**	**0.47**	**0.4[g2]**	**0.46**	**0.51**	0.29 U	**0.38**
cis-1,2-Dichloroethylene	<0.25	--	--	--	--	--	0.16 U	0.13 U	0.14 U	0.16 U	0.13 U	0.49 U	0.29 U	0.14 U
cis-1,3-Dichloropropene	<0.25	--	--	--	--	--	0.79 U	0.67 U	0.71 U	0.81 U	0.67 U	2.4 U	1.4 U	0.68 U
Dibromochloromethane	--	--	4.54E-01	--	5.7E+01	--	0.16 U	0.13 U	0.14 U	0.16 U	0.13 U	0.49 U	0.29 U	0.14 U
Ethylbenzene	7.3	--	4.91E+00	4.38E+03	6.1E+02	5.5E+05	**0.25 J**	**4.9**	**0.35 J**	**0.88**	**0.26 J**	2.4 U	**0.16 J**	0.68 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	2.2	--	--	1.31E+04	--	1.6E+06	**94**	**110**	**52[a]**	**47[a]**	**79[a,g3]**	**11 J[a]**	**2**	**53[a]**
Methylene chloride	22	60	2.61E+01	4.56E+03	3.3E+03	5.7E+05	**0.36 J**	**0.38 J**	**0.29 J**	**0.52 J[g2]**	**0.32 J[g3]**	**0.31 J**	**0.28 J**	0.68 U
Styrene	1.3	--	--	4.38E+03	--	5.5E+05	**0.12 J**	0.67 U	0.71 U	**0.22 J[g2]**	0.67 U	2.4 U	1.4 U	0.68 U
tert-Butyl Methyl Ether	--	--	4.72E+01	1.31E+04	5.9E+03	1.6E+06	NA	NA	0.14 U	NA	0.13 U	NA	NA	0.14 U
Tetrachloroethene	2.9	100	2.08E+00	1.19E+03	2.6E+02	1.5E+05	0.16 U	0.13 U	0.14 U	**0.1 J[g2]**	0.13 U	**6.4[a]**	**5[a]**	**0.27**
Toluene	58	--	--	2.19E+04	--	2.7E+06	**13**	**18**	**9.3**	**5.6**	**2.6**	1.6 U	**2.6**	**1.8**
Trans-1,2-Dichloroethene	--	--	--	2.63E+02	--	3.3E+04	0.16 U	0.13 U	0.14 U	0.16 U	0.13 U	0.49 U	0.29 U	0.14 U
trans-1,3-Dichloropropene	<0.25	--	--	--	--	--	0.79 U	0.67 U	0.71 U	0.81 U	0.67 U	2.4 U	1.4 U	0.68 U
Trichloroethene	0.5	5	6.13E+00	--	7.7E+02	--	**0.45**	0.13 U	**5[a]**	**0.095 J[g2]**	**0.51[a]**	**520[a]**	**482[a]**	**13[a]**
Vinyl chloride	<0.25	--	2.79E+00	4.38E+02	3.5E+02	5.5E+04	0.16 U	0.13 U	0.14 U	0.16 U	0.13 U	0.49 U	0.29 U	0.14 U
m,p-xylene	12	--	--	3.07E+03	--	3.8E+05	**0.83**	**16**	**1.1**	**2.7**	**0.82**	**1.3 J**	**0.49 J**	**0.61 J**
o-xylene	7.6	--	--	3.07E+03	--	3.8E+05	**0.21 J**	**3.9**	**0.59 J**	**0.71 J**	**0.49 J**	**0.54 J**	**0.15 J**	0.68 U
Epichlorohydrin	--	--	1.02E+01	4.38E+00	1.3E+03	5.5E+02	NF	NF	NF	NF	NF	NF	NF	NF

TABLE 3
Ambient Air, Indoor Air, and Subslab Vapor Results - Tank Storage Area
Former Hampshire Chemical Corp. Facility, Waterloo, New York

Location ID					**(AF=0.008)**	**(AF=0.008)**	WAT-SGB4	WAT-SGB4	WAT-SGB4	WAT-IA-7	WAT-IA-7	WAT-SG09	WAT-SG09	WAT-SG09
Location Group			**Carcinogenic**		**Carcinogenic**		Ambient Air	Ambient Air	Ambient Air	Indoor Air	Indoor Air	Subslab Vapor	Subslab Vapor	Subslab Vapor
Field Sample ID	**NYSDOH 2003**	**NYSDOH 2006**	**Target Risk**	**Noncancer**	**Target Risk**	**Noncancer**	WAT-SG-B4-042408	WAT-SG-B4-110508	WAT-SG-B4-032310	WAT-IA-7-110508	WAT-IA-7-032310	WAT-SG-9-042408	WAT-SG-9-110508	WAT-SG-9-032310
Sample Date	**Study of VOCs**	**Air Guideline**	**(TR) = 1E-06**	**Hazard Index**	**(TR) = 1E-06**	**Hazard Index**	4/24/2008	11/5/2008	3/23/2010	11/5/2008	3/23/2010	4/24/2008	11/5/2008	3/23/2010
Sample Type	**90th Percentile**	**Values**	**Inhalation**	**(HI) = 1 Inhalation**	**Inhalation**	**(HI) = 1 Inhalation**	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Matrix	**(ug/m3)**	**(ug/m3)**	**(ug/m3)**	**(ug/m3)**	**(ug/m3)**	**(ug/m3)**	Vapor	Vapor	Vapor	Vapor	Vapor	Vapor	Vapor	Vapor
	a	**b**	**c**	**d**	**e**	**f**	**g1**	**g2**	**g3**					
Tentatively Identified Compounds (UG/M3)														
1,2,3-Trichloropropane	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
1,2,3,4-Tetramethylbenzene	--	--	--	--	--	--	NF	NF	NF	NF	**12 N**	NF	NF	NF
1,2,4-Trimethylbenzene	--	--	--	3.1E+01	--	3.9E+03	NF	NF	NF	**5 T**	NF	NF	NF	NF
2-ethyl-1-hexanol	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
2-Methylnaphthalene	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
3-methyl-1-butene	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
3-methylhexane	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
4-Methyl-1-pentene	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
Aniline	--	--	--	4.4E+00	--	5.5E+02	NF	NF	NF	NF	NF	NF	NF	NF
Benzaldehyde	--	--	--	--	--	--	**9 JN**	**6 T**	NF	**20 T**	**13 N**	NF	NF	NF
Butane	--	--	--	--	--	--	**10 JN**	NF	**7.9 N**	NF	NF	NF	NF	NF
Dimethyl Sulfide	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
Dimethyl trisulfide	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
Ethyl acetate	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	**10 T**	NF
Hexamethylcyclotrisiloxane	--	--	--	--	--	--	**10 JN**	NF	NF	NF	NF	NF	NF	NF
Isobutane	--	--	--	--	--	--	NF	NF	NF	**6 T**	NF	NF	**10 T**	NF
Isopentane	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
Isopropyl alcohol	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
Methyl disulfide	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
Naphthalene	--	--	3.6E-01	1.3E+01	4.5E+01	1.6E+03	NF	NF	NF	NF	NF	NF	NF	NF
n-Butanol	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
n-Nonanal	--	--	--	--	--	--	**40 JN**	NF	NF	NF	NF	NF	NF	NF
n-Pentane	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	**4.8 N**
Propane	--	--	--	--	--	--	NF	**30 T**	**13 N**	**70 T**	**20 N**	**10 JN**	NF	**15 N**
Ethanol	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
n-Decane	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF
n-Undecane	--	--	--	--	--	--	NF	NF	NF	**4 T**	NF	NF	NF	NF
Propene	--	--	--	--	--	--	NF	NF	NF	NF	NF	NF	NF	NF

Notes:
a = Exceedance of New York State Department of Health (NYSDOH) 2003: Study of volatile organic chemicals in air of fuel oil heated homes 90th Percentile
b = Exceedance of New York State Department of Health (NYSDOH) 2006; Air Guidance Values
c = Exceedance of USEPA cancer risk-based screening level
d = Exceedance of USEPA non-cancer hazard index screening level
e = Exceedance of USEPA cancer risk-based screening level at attenuation factor of 0.008
f = Exceedance of USEPA non-cancer hazard index screening level at attenuation factor of 0.008
g1 = Exceedance of April 2008 site-specific outdoor ambient air concentration
g2 = Exceedance of November 2008 site-specific outdoor ambient air concentration
g3 = Exceedance of March 2010 site-specific outdoor ambient air concentration
All compounds and criteria are in ug/m3
Analysis Method is TO15
-- indicates no criteria established
J = estimated value
U = compound not detect at or above method detection limit
Bold font indicates the constituent detected
Shading in yellow indicates that the constituent was detected above criteria
NA = Not Analyzed
NF = Not found by laboratory library search

TABLE 4
Carcinogenic Risk and Non-Carcinogenic Hazard Index - Subslab Soil Vapor
Former Hampshire Chemical Corp. Facility, Waterloo, New York

Location	Sample ID	Sample Date	Analyte	CAS #	Sample Concentration (ug/m3)		Industrial Soil Vapor Cancer RSL[1] (ug/m3)	Industrial Sub-slab Soil Vapor (AF=0.008) Cancer RBSL (ug/m3)	Cancer Risk	% Contribution	Industrial Soil Vapor Non-Cancer RSL[1] (ug/m3)	Industrial Sub-slab Soil Vapor (AF=0.008) Non-Cancer RBSL (ug/m3)	Non-Cancer Hazard Quotient	% Contribution
Building 1	WAT-SG-4-032310	3/23/2010	1,1,1-Trichloroethane	71-55-6	**19**	[a]	--	--	--	--	22000	2750000	6.91E-06	0.0
			1,1-Dichloroethane	75-34-3	**4.1**	[a]	7.7	963	4.3E-09	0.0	--	--	--	--
			1,1-Dichloroethene	75-35-4	**0.34**	[a]	--	--	--	--	876	109500	3.11E-06	0.0
			1,2-Dichloropropane	78-87-5	**8**	[a]	1.2	150	5.3E-08	0.5	18	2250	3.56E-03	19.2
			2-Butanone	78-93-3	**2**	**J**	--	--	--	--	21900	2737500	7.31E-07	0.0
			Acetone	67-64-1	**37**		--	--	--	--	135000	16875000	2.19E-06	0.0
			Acrylonitrile	107-13-1	**0.38**	**J**	0.18	23	1.7E-08	0.1	9	1095	3.47E-04	1.9
			Benzene	71-43-2	**0.18**		1.57	196	9.2E-10	0.0	131	16375	1.10E-05	0.1
			Bromodichloromethane	75-27-4	**0.15**		0.33	41	3.6E-09	0.0	--	--	--	
			Carbon disulfide	75-15-0	**11**		--	--	--	--	3100	387500	2.84E-05	0.2
			Carbon tetrachloride	56-23-5	**0.25**		2.04	255	9.8E-10	8.3E-03	438	54750	4.57E-06	0.0
			Chloroethane	75-00-3	**0.22**		--	--	--	--	43800	5475000	4.02E-08	0.0
			Chloroform	67-66-3	**770**	[a,e]	0.53	66	1.2E-05	98.2	430	53750	1.43E-02	77.3
			Ethylbenzene	100-41-4	**0.39**	**J**	4.9	613	6.4E-10	0.0	4400	550000	7.09E-07	0.0
			Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	108-10-1	**10**	[a]	--	--	--	--	13000	1625000	6.15E-06	0.0
			Methylene chloride	75-09-2	**0.35**	**J**	26	3250	1.1E-10	0.0	4600	575000	6.09E-07	0.0
			Tetrachloroethene	127-18-4	**34**	[a]	2.1	263	1.3E-07	1.1	1200	150000	2.27E-04	1.2
			Toluene	108-88-3	**2.2**		--	--	--	--	21900	2737500	8.04E-07	0.0
			Trichloroethene	79-01-6	**4.8**	[a]	6.1	763	6.3E-09	0.1	--	--	--	--
			m,p-xylene	108-38-3/1	**0.57**	**J**	--	--	--	--	3100	387500	1.47E-06	0.0
			o-xylene	95-47-6	**0.25**	**J**	--	--	--	--	3100	387500	6.45E-07	0.0
								Total Risk	1E-05			Hazard Index	2E-02	
Building 4	WAT-SG-7a-032310	3/23/2010	1,1-Dichloroethane	75-34-3	**2.4**	[a]	7.7	963	2.5E-09	0.2	--	--	--	--
			1,1-Dichloroethene	75-35-4	**0.86**	[a]	--	--	--	--	876	109500	7.85E-06	0.1
			1,2-Dichloroethane	107-06-2	**0.12**	**J**	0.47	59	2.0E-09	0.1	10600	1325000	9.06E-08	0.0
			1,2-Dichloropropane	78-87-5	**1.4**	[a]	1.23	154	9.1E-09	0.6	18	2250	6.22E-04	11.1
			2-Butanone	78-93-3	**2.8**	**J**	--	--	--	--	22000	2750000	1.02E-06	0.0
			Acetone	67-64-1	**42**	**J**	--	--	--	--	140000	17500000	2.40E-06	0.0
			Acrylonitrile	107-13-1	**0.39**	**J**	0.18	23	0.0	1.1	9	1095	3.56E-04	6.3
			Benzene	71-43-2	**1.1**		1.57	196	5.6E-09	0.4	130	16250	6.77E-05	1.2
			Bromomethane	74-83-9	**0.093**	**J**	--	--	--	--	22	2737.5	3.40E-05	0.6
			Carbon disulfide	75-15-0	**820**		--	--	--	--	3100	387500	2.12E-03	37.6
			Carbon tetrachloride	56-23-5	**0.62**		2.04	255	2.4E-09	0.2	438	54750	1.13E-05	0.2
			Chloroethane	75-00-3	**0.39**	[a]	--	--	--	--	43800	5475000	7.12E-08	0.0
			Chloroform	67-66-3	**99**	[a,e]	0.53	67	1.5E-06	95.6	430	53750	1.84E-03	32.7
			Chloromethane	74-87-3	**0.49**		--	--	--	--	394	49250	9.95E-06	0.2
			cis-1,2-Dichloroethylene	156-59-2	**1.7**	[a]	--	--	--	--	--	--	--	--
			Ethylbenzene	100-41-4	**12**	[a]	4.9	613	2.0E-08	1.3	4400	550000	2.18E-05	0.4
			Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	108-10-1	**260**	[a]	--	--	--	--	13000	1625000	1.60E-04	2.8
			Methylene chloride	75-09-2	**11**		26	3250	3.4E-09	0.2	4600	575000	1.91E-05	0.3
			Styrene	100-42-5	**1.6**	[a]	--	--	--	--	4400	550000	2.91E-06	0.1
			Tetrachloroethene	127-18-4	**0.8**		2.1	263	3.0E-09	0.2	1200	150000	5.33E-06	0.1
			Toluene	108-88-3	**62**	[a]	--	--	--	--	22000	2750000	2.25E-05	0.4
			Trans-1,2-Dichloroethene	156-60-5	**0.32**		--	--	--	--	260	32500	9.85E-06	0.2
			Trichloroethene	79-01-6	**2.2**	[a]	6.1	763	2.9E-09	0.2	--	--	--	--
			Vinyl chloride	75-01-4	**0.096**	**J**	2.79	349	2.8E-10	0.0	438	54750	1.75E-06	0.0
			m,p-xylene	108-38-3/1	**99**	[a]	--	--	--	--	3100	387500	2.55E-04	4.5
			o-xylene	95-47-6	**23**	[a]	--	--	--	--	3100	387500	5.94E-05	1.1
								Total Risk	2E-06			Hazard Index	6E-03	

TABLE 4
Carcinogenic Risk and Non-Carcinogenic Hazard Index - Subslab Soil Vapor
Former Hampshire Chemical Corp. Facility, Waterloo, New York

Location	Sample ID	Sample Date	Analyte	CAS #	Sample Concentration (ug/m3)		Industrial Soil Vapor Cancer RSL[1] (ug/m3)	Industrial Sub-slab Soil Vapor (AF=0.008) Cancer RBSL (ug/m3)	Cancer Risk	% Contribution	Industrial Soil Vapor Non-Cancer RSL[1] (ug/m3)	Industrial Sub-slab Soil Vapor (AF=0.008) Non-Cancer RBSL (ug/m3)	Non-Cancer Hazard Quotient	% Contribution
Building 4	WAT-SG-DUP-032310	3/23/2010	1,1-Dichloroethane	75-34-3	**11**	a	7.7	963	1.1E-08	0.4	--	--	--	--
			1,1-Dichloroethene	75-35-4	**1.5**	a	--	--	--	--	876	109500	1.37E-05	0.1
			1,2-Dichloroethane	107-06-2	**0.11**	J	0.5	59	1.9E-09	0.1	10600	1325000	8.30E-08	0.0
			1,2-Dichloropropane	78-87-5	**6**	a	1.2	150	4.0E-08	1.3	18	2250	2.67E-03	22.5
			2-Butanone	78-93-3	**3.7**	J	--	--	--	--	22000	2750000	1.35E-06	0.0
			Acetone	67-64-1	**75**		--	--	--	--	140000	17500000	4.29E-06	0.0
			Benzene	71-43-2	**2.2**		1.6	200	1.1E-08	0.4	130	16250	1.35E-04	1.1
			Bromomethane	74-83-9	**0.26**		--	--	--	--	21.9	2737.5	9.50E-05	0.8
			Carbon disulfide	75-15-0	**1000**		--	--	--	--	3100	387500	2.58E-03	21.7
			Carbon tetrachloride	56-23-5	**0.53**		0.82	103	5.2E-09	0.2	438	54750	9.68E-06	0.1
			Chloroethane	75-00-3	**0.49**	a	--	--	--	--	43800	5475000	8.95E-08	0.0
			Chloroform	67-66-3	**190**	a,e	0.53	66	2.9E-06	93.1	430	53750	3.53E-03	29.8
			Chloromethane	74-87-3	**0.5**		--	--	--	--	394	49250	1.02E-05	0.1
			cis-1,2-Dichloroethylene	156-59-2	**9.9**	a	--	--	--	--	--	--	--	--
			Ethylbenzene	100-41-4	**60**	a	4.9	613	9.8E-08	3.2	4400	550000	1.09E-04	0.9
			Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	108-10-1	**930**	a	--	--	--	--	13000	1625000	5.72E-04	4.8
			Methylene chloride	75-09-2	**82**	a	26	3250	2.5E-08	0.8	4600	575000	1.43E-04	1.2
			Styrene	100-42-5	**1.7**	a	--	--	--	--	4400	550000	3.09E-06	0.0
			tert-Butyl Methyl Ether	1634-04-4	**0.13**		13100	1637500	7.9E-14	2.6E-06	13100	1637500	7.94E-08	0.0
			Tetrachloroethene	127-18-4	**2.8**		2.1	263	1.1E-08	0.3	1200	150000	1.87E-05	0.2
			Toluene	108-88-3	**82**	a	--	--	--	--	22000	2750000	2.98E-05	0.3
			Trans-1,2-Dichloroethene	156-60-5	**2.3**		--	--	--	--	260	32500	7.08E-05	0.6
			Trichloroethene	79-01-6	**4.4**	a	6.1	763	5.8E-09	0.2	--	--	--	--
			Vinyl chloride	75-01-4	**0.83**	a	2.79	349	2.4E-09	0.1	438	54750	1.52E-05	0.13
			m,p-xylene	108-38-3/1	**600**	a	--	--	--	--	3100	387500	1.55E-03	13.0
			o-xylene	95-47-6	**120**	a	--	--	--	--	3100	387500	3.10E-04	2.6
								Total Risk	3E-06			Hazard Index	1E-02	
Tank Storage Area	WAT-SG-9-032310	3/23/2010	1,1,2-Trichloroethane	79-00-5	**0.092**	J	0.77	96	9.6E-10	0.1	--	--	--	
			1,2-Dichloroethane	107-06-2	**0.15**		0.47	59	2.6E-09	0.4	11000	1375000	1.09E-07	0.0
			1,2-Dichloropropane	78-87-5	**1.7**	a	1.2	150	1.1E-08	1.7	18	2250	7.56E-04	46.5
			2-Butanone	78-93-3	**1.1**	J	--	--	--	--	22000	2750000	4.00E-07	0.0
			Acetone	67-64-1	**14**		--	--	--	--	140000	17500000	8.00E-07	0.0
			Benzene	71-43-2	**0.55**		1.6	200	2.8E-09	0.4	130	16250	3.38E-05	2.1
			Carbon disulfide	75-15-0	**5.7**	J	--	--	--	--	3100	387500	1.47E-05	0.9
			Carbon tetrachloride	56-23-5	**0.5**		0.82	103	4.9E-09	0.7	438	54750	9.13E-06	0.6
			Chlorobenzene	108-90-7	**0.086**	N	--	--	--	--	220	27500	3.13E-06	0.2
			Chloroform	67-66-3	**41**	a	0.53	66	6.2E-07	93.9	430	53750	7.63E-04	46.9
			Chloromethane	74-87-3	**0.38**		--	--	--	--	394	49250	7.72E-06	0.5
			Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	108-10-1	**53**	a	--	--	--	--	13000	1625000	3.26E-05	2.0
			Tetrachloroethene	127-18-4	**0.27**		2.1	263	1.0E-09	0.2	1200	150000	1.80E-06	0.1
			Toluene	108-88-3	**1.8**		--	--	--	--	22000	2750000	6.55E-07	0.0
			Trichloroethene	79-01-6	**13**	a	6.1	763	1.7E-08	2.6	--	--	--	--
			m,p-xylene	108-38-3/1	**0.61**	J	--	--	--	--	3100	387500	1.57E-06	0.1
								Total Risk	7E-07			Hazard Index	2E-03	

Note:

	Compound with cancer risk>10^-6 and/or HI>1
	Compound detected above criteria
1	U.S. Environmental Protection Agency (USEPA). 2010. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. May.
J	Estimated value
a	Exceedance of New York State Department of Health (NYSDOH) 2003: Study of volatile organic chemicals in air of fuel oil heated homes 90th Percentile
e	Exceedance of USEPA cancer risk-based screening level at attenuation factor of 0.008
AF	Attenuation factor
RBSL	Risk-based Screening Level = RSL/AF.

TABLE 5
Carcinogenic Risk and Non-Carcinogenic Hazard Index - Indoor Air
Former Hampshire Chemical Corp. Facility, Waterloo, New York

Location	Sample ID	Sample Date	Analyte	CAS #	Sample Concentration (ug/m3)		Industrial Indoor Air Cancer RSL[1] (ug/m3)	Cancer Risk	% Contribution	Industrial Indoor Air Non-Cancer RSL[1] (ug/m3)	Non-Cancer Hazard Quotient	% Contribution
Building 1	WAT-IA-3-032310	3/23/2010	2-Butanone	78-93-3	**1.2**	**J**	--	--	--	21900	5.48E-05	0.02
			Acetone	67-64-1	**25**	g3	--	--	--	135000	1.85E-04	0.05
			Acrylonitrile	107-13-1	**2.7**	c,g3	0.18	1.5E-05	79.2	8.8	3.07E-01	86.8
			Benzene	71-43-2	**1.1**	g3	1.6	6.9E-07	3.6	130	8.46E-03	2.4
			Carbon tetrachloride	56-23-5	**0.49**		2.04	2.4E-07	1.3	438	1.12E-03	0.3
			Chloroform	67-66-3	**1.4**	c,g3	0.53	2.6E-06	13.9	430	3.26E-03	0.9
			Chloromethane	74-87-3	**0.38**		--	--	--	390	9.74E-04	0.3
			Ethylbenzene	100-41-4	**0.54**	J g3	4.9	1.1E-07	0.6	4400	1.23E-04	0.03
			Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	108-10-1	**410**	a,g3	--	--	--	13000	3.15E-02	8.9
			Tetrachloroethene	127-18-4	**0.087**	J g3	2.08	4.2E-08	0.2	1190	7.31E-05	0.02
			Toluene	108-88-3	**4.7**	g3	--	--	--	21900	2.15E-04	0.06
			Trichloroethene	79-01-6	**1.4**	a	6.13	2.3E-07	1.2	--	--	--
			m,p-xylene	108-38-3/1	**1.8**	g3	--	--	--	3100	5.81E-04	0.2
			o-xylene	95-47-6	**0.69**	J g3	--	--	--	3100	2.23E-04	0.06
							Total Risk:	2E-05		Hazard Index	4E-01	
Building 1	WAT-IA-3-032310	3/23/2010	2-Butanone	78-93-3	**1.2**	**J**	--	--	--	21900	5.48E-05	0.12
(Excluding Acrylonitrile)			Acetone	67-64-1	**25**	g3	--	--	--	135000	1.85E-04	0.40
			Benzene	71-43-2	**1.1**	g3	1.6	6.9E-07	17.4	130	8.46E-03	18.1
			Carbon tetrachloride	56-23-5	**0.49**		2.04	2.4E-07	6.1	438	1.12E-03	2.4
			Chloroform	67-66-3	**1.4**	c,g3	0.53	2.6E-06	66.9	430	3.26E-03	7.0
			Chloromethane	74-87-3	**0.38**		--	--	--	390	9.74E-04	2.1
			Ethylbenzene	100-41-4	**0.54**	J g3	4.9	1.1E-07	2.8	4400	1.23E-04	0.3
			Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	108-10-1	**410**	a,g3	--	--	--	13000	3.15E-02	67.4
			Tetrachloroethene	127-18-4	**0.087**	J g3	2.08	4.2E-08	1.1	1190	7.31E-05	0.2
			Toluene	108-88-3	**4.7**	g3	--	--	--	21900	2.15E-04	0.5
			Trichloroethene	79-01-6	**1.4**	a	6.13	2.3E-07	5.8	--	--	--
			m,p-xylene	108-38-3/1	**1.8**	g3	--	--	--	3100	5.81E-04	1.2
			o-xylene	95-47-6	**0.69**	J g3	--	--	--	3100	2.23E-04	0.5
							Total Risk:	4E-06		Hazard Index	5E-02	
Building 4	WAT-IA-5-032310	3/23/2010	1,1-Dichloroethene	75-35-4	**0.74**	a,g3	--	--	--	876	8.45E-04	1.25
			2-Butanone	78-93-3	**1.3**	J g3	--	--	--	21900	5.94E-05	0.09
			Acetone	67-64-1	**15**		--	--	--	135000	1.11E-04	0.16
			Benzene	71-43-2	**0.69**	g3	1.6	4.3E-07	4.7	130	5.31E-03	7.9
			Carbon disulfide	75-15-0	**14**	g3	--	--	--	3070	4.56E-03	6.75
			Carbon tetrachloride	56-23-5	**0.67**	g3	2.04	3.3E-07	3.6	438	1.53E-03	2.3
			Chloroform	67-66-3	**4.3**	a,c,g3	0.53	8.1E-06	89.3	430	1.00E-02	14.8
			Chloromethane	74-87-3	**0.52**	g3	--	--	--	390	1.33E-03	2.0
			Ethylbenzene	100-41-4	**0.33**	**J**	4.9	6.7E-08	0.7	4400	7.50E-05	0.1
			Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	108-10-1	**560**	a,g3	--	--	--	13000	4.31E-02	63.7
			Methylene chloride	75-09-2	**0.34**	J g3	26.10	1.3E-08	0.1	4560	7.46E-05	0.1
			Toluene	108-88-3	**3.3**		--	--	--	21900	1.51E-04	0.2
			Trichloroethene	79-01-6	**0.78**	a	6.13	1.3E-07	1.4	--	--	--
			m,p-xylene	108-38-3/1	**1.1**		--	--	--	3100	3.55E-04	0.5
			o-xylene	95-47-6	**0.39**	**J**	--	--	--	3100	1.26E-04	0.2
							Total Risk:	9E-06		Hazard Index	7E-02	

TABLE 5
Carcinogenic Risk and Non-Carcinogenic Hazard Index - Indoor Air
Former Hampshire Chemical Corp. Facility, Waterloo, New York

Location	Sample ID	Sample Date	Analyte	CAS #	Sample Concentration (ug/m3)		Industrial Indoor Air Cancer RSL[1] (ug/m3)	Cancer Risk	% Contribution	Industrial Indoor Air Non-Cancer RSL[1] (ug/m3)	Non-Cancer Hazard Quotient	% Contribution
Building 4	WAT-IA-5-032310	3/23/2010	1,1-Dichloroethene	75-35-4	**0.74**	a,g3	--	--	--	876	8.45E-04	1.5
(Excluding Chloroform)			2-Butanone	78-93-3	**1.3**	Jg3	--	--	--	21900	5.94E-05	0.10
			Acetone	67-64-1	**15**		--	--	--	135000	1.11E-04	0.19
			Benzene	71-43-2	**0.69**	g3	1.6	4.3E-07	44.6	130	5.31E-03	9.2
			Carbon disulfide	75-15-0	**14**	g3	--	--	--	3070	4.56E-03	7.92
			Carbon tetrachloride	56-23-5	**0.67**	g3	2.04	3.3E-07	34.0	438	1.53E-03	2.7
			Chloromethane	74-87-3	**0.52**	g3	--	--	--	390	1.33E-03	2.3
			Ethylbenzene	100-41-4	**0.33**	J	4.9	6.7E-08	7.0	4400	7.50E-05	0.1
			Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	108-10-1	**560**	a,g3	--	--	--	13000	4.31E-02	74.8
			Methylene chloride	75-09-2	**0.34**	Jg3	26.10	1.3E-08	1.3	4560	7.46E-05	0.1
			Toluene	108-88-3	**3.3**		--	--	--	21900	1.51E-04	0.3
			Trichloroethene	79-01-6	**0.78**	a	6.13	1.3E-07	13.2	--	--	--
			m,p-xylene	108-38-3/1	**1.1**		--	--	--	3100	3.55E-04	0.6
			o-xylene	95-47-6	**0.39**	J	--	--	--	3100	1.26E-04	0.2
							Total Risk:	1E-06		Hazard Index	6E-02	
Building 4	WAT-IA-6-032310	3/23/2010	Acrylonitrile	107-13-1	**6.7**	c,g3	0.18	3.7E-05	95.4	8.76	7.65E-01	97.26
			Benzene	71-43-2	**0.73**	g3	1.6	4.6E-07	1.2	130	5.62E-03	0.7
			Carbon disulfide	75-15-0	**3.8**	Jg3	--	--	--	3070	1.24E-03	0.16
			Carbon tetrachloride	56-23-5	**0.63**	g3	2.04	3.1E-07	0.8	438	1.44E-03	0.2
			Chloroform	67-66-3	**0.47**	g3	0.53	8.9E-07	2.3	430	1.09E-03	0.1
			Chloromethane	74-87-3	**0.46**		--	--	--	390	1.18E-03	0.1
			Ethylbenzene	100-41-4	**0.51**	Jg3	4.9	1.0E-07	0.3	4400	1.16E-04	0.01
			Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	108-10-1	**130**	a,g3	--	--	--	13000	1.00E-02	1.3
			Methylene chloride	75-09-2	**0.3**	Jg3	26.10	1.1E-08	0.03	4560	6.58E-05	0.01
			Toluene	108-88-3	**1.8**		--	--	--	21900	8.22E-05	0.01
			Trichloroethene	79-01-6	**0.11**	J	6.13	1.8E-08	0.05	--	--	--
			m,p-xylene	108-38-3/1	**1.7**	g3	--	--	--	3100	5.48E-04	0.07
			o-xylene	95-47-6	**0.49**	J	--	--	--	3100	1.58E-04	0.02
							Total Risk:	4E-05		Hazard Index	8E-01	
Building 4	WAT-IA-6-032310	3/23/2010	Benzene	71-43-2	**0.73**	g3	1.6	4.6E-07	25.6	130	5.62E-03	26.1
(Excluding Acrylonitrile)			Carbon disulfide	75-15-0	**3.8**	Jg3	--	--	--	3070	1.24E-03	5.75
			Carbon tetrachloride	56-23-5	**0.63**	g3	2.04	3.1E-07	17.3	438	1.44E-03	6.7
			Chloroform	67-66-3	**0.47**	g3	0.53	8.9E-07	49.7	430	1.09E-03	5.1
			Chloromethane	74-87-3	**0.46**		--	--	--	390	1.18E-03	5.5
			Ethylbenzene	100-41-4	**0.51**	Jg3	4.9	1.0E-07	5.8	4400	1.16E-04	0.5
			Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	108-10-1	**130**	a,g3	--	--	--	13000	1.00E-02	46.4
			Methylene chloride	75-09-2	**0.3**	Jg3	26.10	1.1E-08	0.6	4560	6.58E-05	0.31
			Toluene	108-88-3	**1.8**		--	--	--	21900	8.22E-05	0.4
			Trichloroethene	79-01-6	**0.11**	J	6.13	1.8E-08	1.0	--	--	--
			m,p-xylene	108-38-3/1	**1.7**	g3	--	--	--	3100	5.48E-04	2.5
			o-xylene	95-47-6	**0.49**	J	--	--	--	3100	1.58E-04	0.7
							Total Risk:	2E-06		Hazard Index	2E-02	

TABLE 5
Carcinogenic Risk and Non-Carcinogenic Hazard Index - Indoor Air
Former Hampshire Chemical Corp. Facility, Waterloo, New York

Location	Sample ID	Sample Date	Analyte	CAS #	Sample Concentration (ug/m3)		Industrial Indoor Air Cancer RSL[1] (ug/m3)	Cancer Risk	% Contribution	Industrial Indoor Air Non-Cancer RSL[1] (ug/m3)	Non-Cancer Hazard Quotient	% Contribution
Tank Storage Area	WAT-IA-7-032310	3/23/2010	1,2-Dichloroethane	107-06-2	**0.13**	J[g3]	0.47	2.8E-07	7.3	10600	1.23E-05	0.02
			Acetone	67-64-1	**30**	[g3]	--	--	--	135000	2.22E-04	0.4
			Acrylonitrile	107-13-1	**0.38**	J[c]	0.18	2.1E-06	56.3	8.76	4.34E-02	68.91
			Benzene	71-43-2	**0.71**	[g3]	1.6	4.4E-07	11.8	130	5.46E-03	8.7
			Carbon disulfide	75-15-0	**11**	[g3]	--	--	--	3070	3.58E-03	5.69
			Carbon tetrachloride	56-23-5	**0.64**	[g3]	2.04	3.1E-07	8.4	438	1.46E-03	2.3
			Chloroform	67-66-3	**0.39**	[g3]	0.53	7.4E-07	19.6	430	9.07E-04	1.4
			Chloromethane	74-87-3	**0.46**		--	--	--	390	1.18E-03	1.9
			Ethylbenzene	100-41-4	**0.26**	J	4.9	5.3E-08	1.4	4400	5.91E-05	0.09
			Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	108-10-1	**79**	[a,g3]	--	--	--	13000	6.08E-03	9.7
			Methylene chloride	75-09-2	**0.32**	J[g3]	26.10	1.2E-08	0.3	4560	7.02E-05	0.11
			Toluene	108-88-3	**2.6**		--	--	--	21900	1.19E-04	0.2
			Trichloroethene	79-01-6	**0.51**	[a]	6.13	8.3E-08	2.2	--	--	--
			m,p-xylene	108-38-3/1	**0.82**		--	--	--	3100	2.65E-04	0.4
			o-xylene	95-47-6	**0.49**	J	--	--	--	3100	1.58E-04	0.3
							Total Risk:	4E-06		Hazard Index	6E-02	
Tank Storage Area (Excluding Acrylonitrile)	WAT-IA-7-032310	3/23/2010	1,2-Dichloroethane	107-06-2	**0.13**	J[g3]	0.47	2.8E-07	16.8	10600	1.23E-05	0.06
			Acetone	67-64-1	**30**	[g3]	--	--	--	135000	2.22E-04	1.1
			Benzene	71-43-2	**0.71**	[g3]	1.6	4.4E-07	27.0	130	5.46E-03	27.9
			Carbon disulfide	75-15-0	**11**	[g3]	--	--	--	3070	3.58E-03	18.30
			Carbon tetrachloride	56-23-5	**0.64**	[g3]	2.04	3.1E-07	19.1	438	1.46E-03	7.5
			Chloroform	67-66-3	**0.39**	[g3]	0.53	7.4E-07	44.8	430	9.07E-04	4.6
			Chloromethane	74-87-3	**0.46**		--	--	--	390	1.18E-03	6.0
			Ethylbenzene	100-41-4	**0.26**	J	4.9	5.3E-08	3.2	4400	5.91E-05	0.30
			Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	108-10-1	**79**	[a,g3]	--	--	--	13000	6.08E-03	31.0
			Methylene chloride	75-09-2	**0.32**	J[g3]	26.10	1.2E-08	0.7	4560	7.02E-05	0.36
			Toluene	108-88-3	**2.6**		--	--	--	21900	1.19E-04	0.6
			Trichloroethene	79-01-6	**0.51**	[a]	6.13	8.3E-08	5.1	--	--	--
			m,p-xylene	108-38-3/1	**0.82**		--	--	--	3100	2.65E-04	1.4
			o-xylene	95-47-6	**0.49**	J	--	--	--	3100	1.58E-04	0.8
							Total Risk:	2E-06		Hazard Index	2E-02	

Note:

	Compound with cancer risk>10^-6 and/or HI>1
	Compound detected above criteria
1	U.S. Environmental Protection Agency (USEPA). 2010. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. May.
J	Estimated value
a	Exceedance of New York State Department of Health (NYSDOH) 2003: Study of volatile organic chemicals in air of fuel oil heated homes 90th Percentile
c	Exceedance of USEPA cancer risk-based screening level
g3	Exceedance of March 2010 site-specific outdoor ambient air concentration

Figures

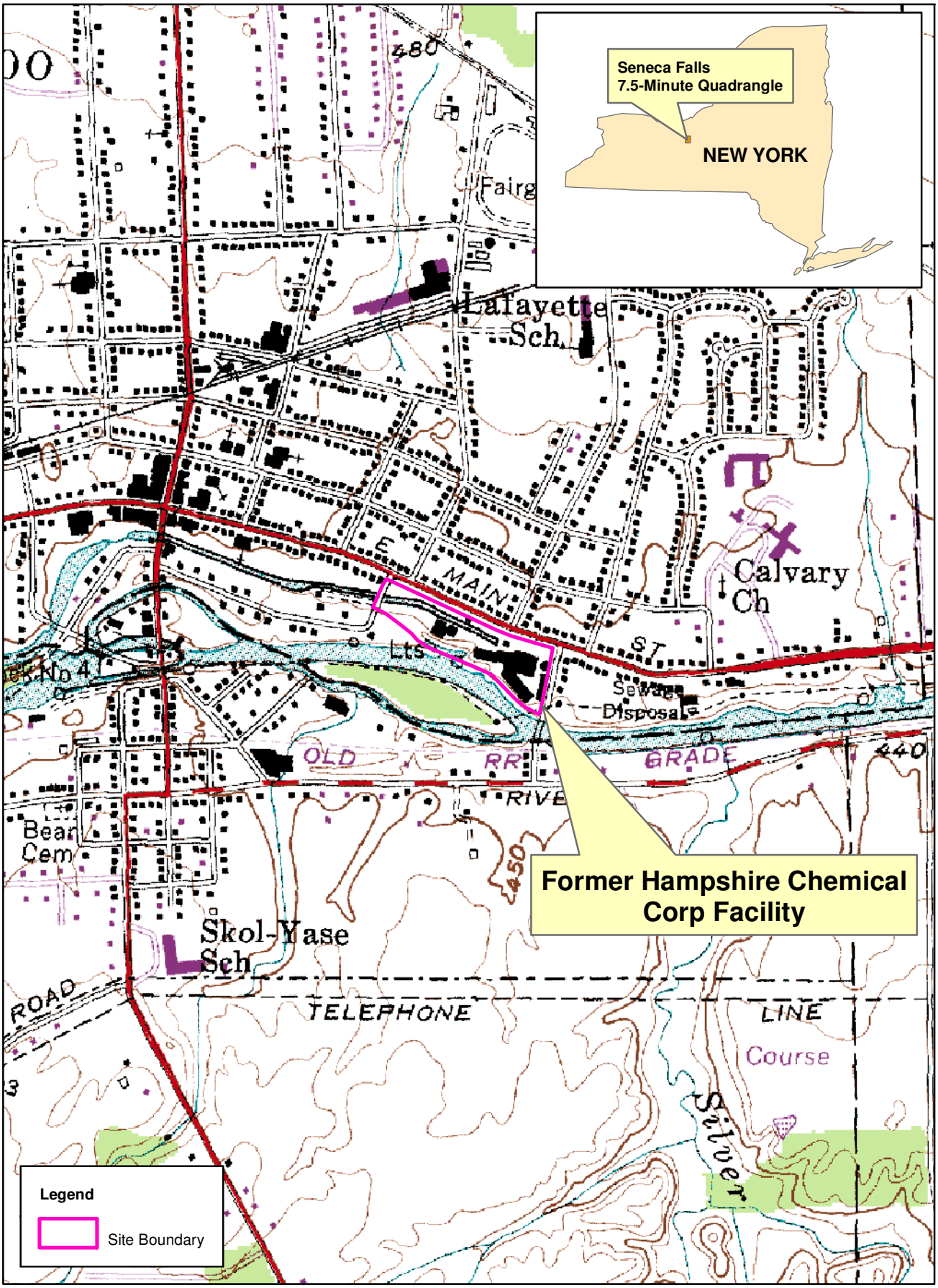

Figure 1
Facility Location Map
Soil Vapor Investigation Report, Buildings 1, 2, 3, 4, and Tank Storage Area
Former Hampshire Chemical Corp Facility
Waterloo, New York

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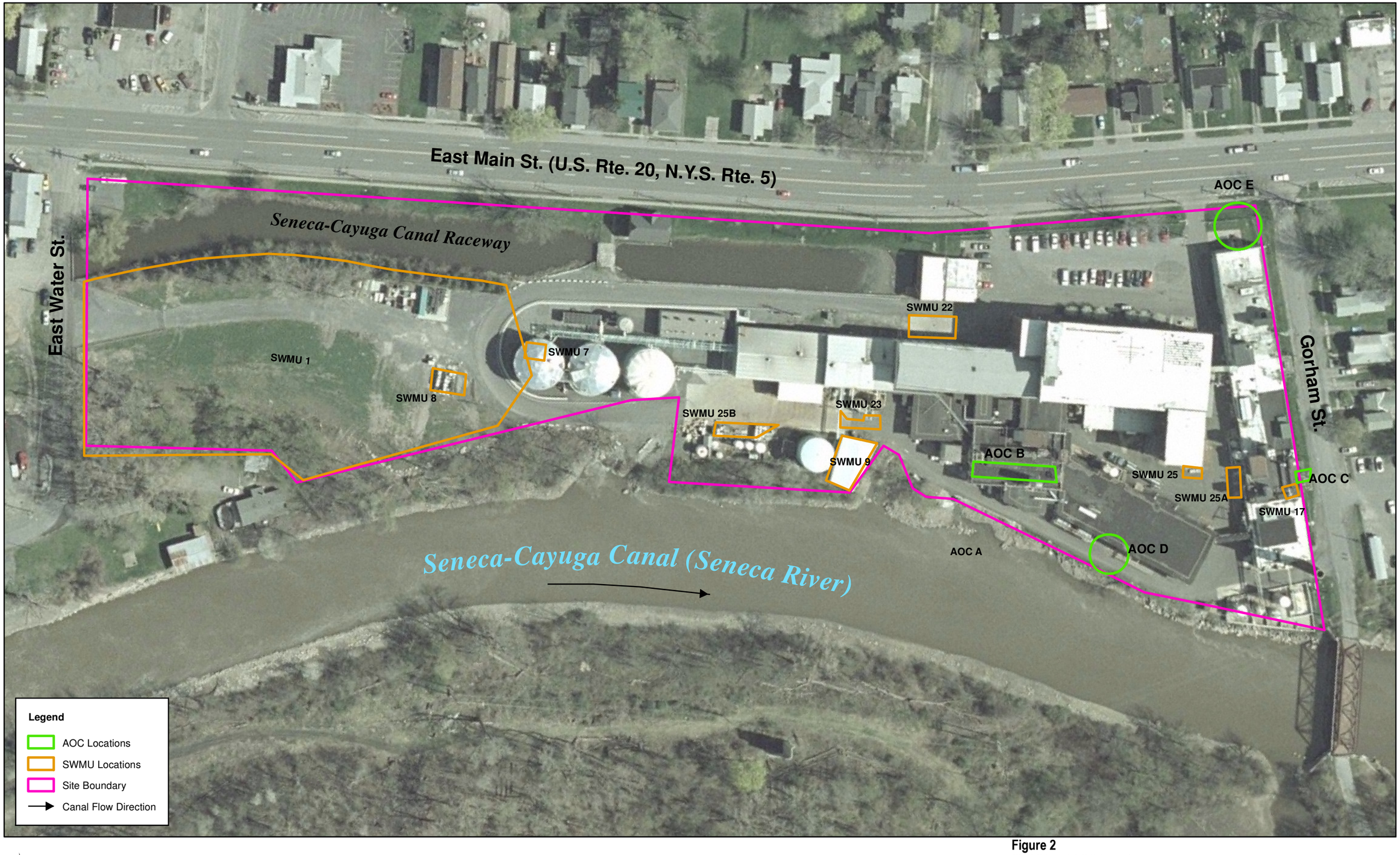

Figure 2
SWMU and AOC Locations
Soil Vapor Investigation Report, Buildings 1, 2, 3, 4, and Tank Storage Area
Former Hampshire Chemical Corp Facility
Waterloo, New York

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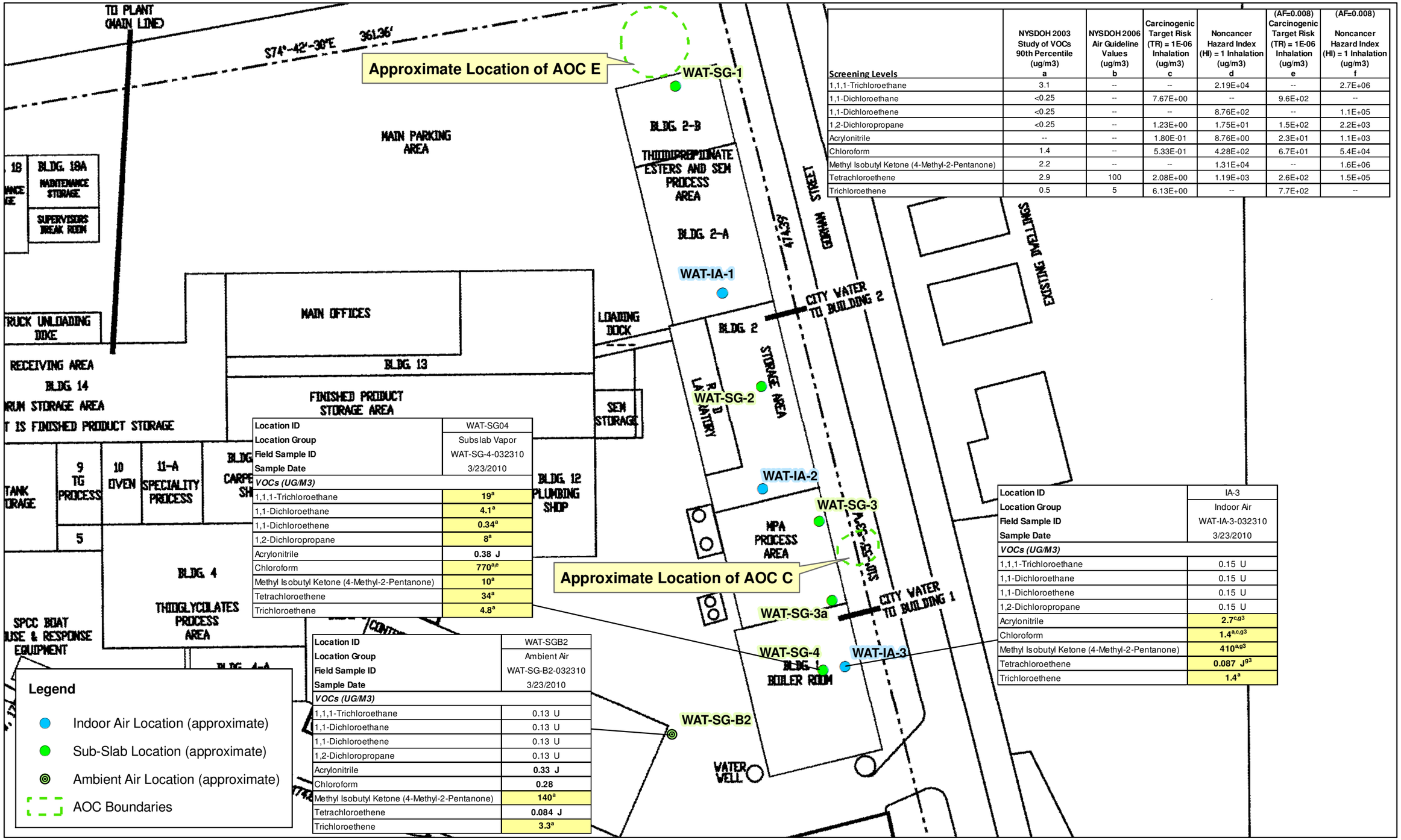

Screening Levels	NYSDOH 2003 Study of VOCs 90th Percentile (ug/m3) a	NYSDOH 2006 Air Guideline Values (ug/m3) b	Carcinogenic Target Risk (TR) = 1E-06 Inhalation (ug/m3) c	Noncancer Hazard Index (HI) = 1 Inhalation (ug/m3) d	(AF=0.008) Carcinogenic Target Risk (TR) = 1E-06 Inhalation (ug/m3) e	(AF=0.008) Noncancer Hazard Index (HI) = 1 Inhalation (ug/m3) f
1,1,1-Trichloroethane	3.1	--	--	2.19E+04	--	2.7E+06
1,1-Dichloroethane	<0.25	--	7.67E+00	--	9.6E+02	--
1,1-Dichloroethene	<0.25	--	--	8.76E+02	--	1.1E+05
1,2-Dichloropropane	<0.25	--	1.23E+00	1.75E+01	1.5E+02	2.2E+03
Acrylonitrile	--	--	1.80E-01	8.76E+00	2.3E+01	1.1E+03
Chloroform	1.4	--	5.33E-01	4.28E+02	6.7E+01	5.4E+04
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	2.2	--	--	1.31E+04	--	1.6E+06
Tetrachloroethene	2.9	100	2.08E+00	1.19E+03	2.6E+02	1.5E+05
Trichloroethene	0.5	5	6.13E+00	--	7.7E+02	--

Location ID	WAT-SG04
Location Group	Subslab Vapor
Field Sample ID	WAT-SG-4-032310
Sample Date	3/23/2010
VOCs (UG/M3)	
1,1,1-Trichloroethane	19[a]
1,1-Dichloroethane	4.1[a]
1,1-Dichloroethene	0.34[a]
1,2-Dichloropropane	8[a]
Acrylonitrile	0.38 J
Chloroform	770[a,e]
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	10[a]
Tetrachloroethene	34[a]
Trichloroethene	4.8[a]

Location ID	WAT-SGB2
Location Group	Ambient Air
Field Sample ID	WAT-SG-B2-032310
Sample Date	3/23/2010
VOCs (UG/M3)	
1,1,1-Trichloroethane	0.13 U
1,1-Dichloroethane	0.13 U
1,1-Dichloroethene	0.13 U
1,2-Dichloropropane	0.13 U
Acrylonitrile	0.33 J
Chloroform	0.28
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	140[a]
Tetrachloroethene	0.084 J
Trichloroethene	3.3[a]

Location ID	IA-3
Location Group	Indoor Air
Field Sample ID	WAT-IA-3-032310
Sample Date	3/23/2010
VOCs (UG/M3)	
1,1,1-Trichloroethane	0.15 U
1,1-Dichloroethane	0.15 U
1,1-Dichloroethene	0.15 U
1,2-Dichloropropane	0.15 U
Acrylonitrile	2.7[c,g3]
Chloroform	1.4[a,c,g3]
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	410[a,g3]
Tetrachloroethene	0.087 J[g3]
Trichloroethene	1.4[a]

UG/M3 = micrograms per cubic meter
AF = attenuation factor

Figure 3
Building 1
Former Hampshire Chemical Corp Facility
Waterloo, New York

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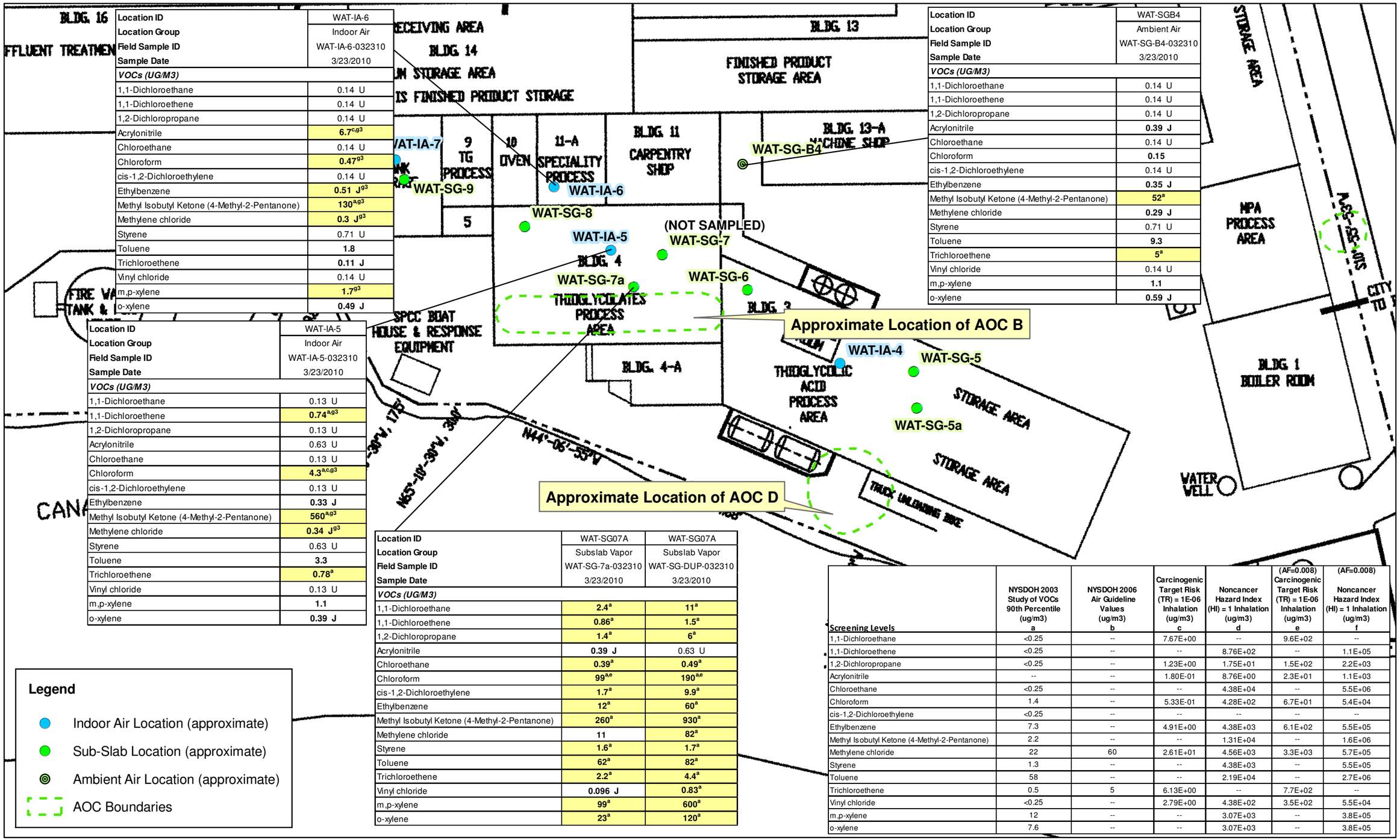

Location ID	WAT-IA-6
Location Group	Indoor Air
Field Sample ID	WAT-IA-6-032310
Sample Date	3/23/2010
VOCs (UG/M3)	
1,1-Dichloroethane	0.14 U
1,1-Dichloroethene	0.14 U
1,2-Dichloropropane	0.14 U
Acrylonitrile	**6.7[c,g3]**
Chloroethane	0.14 U
Chloroform	**0.47[g3]**
cis-1,2-Dichloroethylene	0.14 U
Ethylbenzene	**0.51 J[g3]**
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	**130[a,g3]**
Methylene chloride	**0.3 J[g3]**
Styrene	0.71 U
Toluene	**1.8**
Trichloroethene	**0.11 J**
Vinyl chloride	0.14 U
m,p-xylene	**1.7[g3]**
o-xylene	**0.49 J**

Location ID	WAT-IA-5
Location Group	Indoor Air
Field Sample ID	WAT-IA-5-032310
Sample Date	3/23/2010
VOCs (UG/M3)	
1,1-Dichloroethane	0.13 U
1,1-Dichloroethene	**0.74[a,g3]**
1,2-Dichloropropane	0.13 U
Acrylonitrile	0.63 U
Chloroethane	0.13 U
Chloroform	**4.3[a,c,g3]**
cis-1,2-Dichloroethylene	0.13 U
Ethylbenzene	**0.33 J**
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	**560[a,g3]**
Methylene chloride	**0.34 J[g3]**
Styrene	0.63 U
Toluene	**3.3**
Trichloroethene	**0.78[a]**
Vinyl chloride	0.13 U
m,p-xylene	**1.1**
o-xylene	**0.39 J**

Location ID	WAT-SGB4
Location Group	Ambient Air
Field Sample ID	WAT-SG-B4-032310
Sample Date	3/23/2010
VOCs (UG/M3)	
1,1-Dichloroethane	0.14 U
1,1-Dichloroethene	0.14 U
1,2-Dichloropropane	0.14 U
Acrylonitrile	**0.39 J**
Chloroethane	0.14 U
Chloroform	**0.15**
cis-1,2-Dichloroethylene	0.14 U
Ethylbenzene	**0.35 J**
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	**52[a]**
Methylene chloride	**0.29 J**
Styrene	0.71 U
Toluene	**9.3**
Trichloroethene	**5[a]**
Vinyl chloride	0.14 U
m,p-xylene	**1.1**
o-xylene	**0.59 J**

Location ID	WAT-SG07A	WAT-SG07A
Location Group	Subslab Vapor	Subslab Vapor
Field Sample ID	WAT-SG-7a-032310	WAT-SG-DUP-032310
Sample Date	3/23/2010	3/23/2010
VOCs (UG/M3)		
1,1-Dichloroethane	**2.4[a]**	**11[a]**
1,1-Dichloroethene	**0.86[a]**	**1.5[a]**
1,2-Dichloropropane	**1.4[a]**	**6[a]**
Acrylonitrile	**0.39 J**	0.63 U
Chloroethane	**0.39[a]**	**0.49[a]**
Chloroform	**99[a,e]**	**190[a,e]**
cis-1,2-Dichloroethylene	**1.7[a]**	**9.9[a]**
Ethylbenzene	**12[a]**	**60[a]**
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	**260[a]**	**930[a]**
Methylene chloride	**11**	**82[a]**
Styrene	**1.6[a]**	**1.7[a]**
Toluene	**62[a]**	**82[a]**
Trichloroethene	**2.2[a]**	**4.4[a]**
Vinyl chloride	**0.096 J**	**0.83[a]**
m,p-xylene	**99[a]**	**600[a]**
o-xylene	**23[a]**	**120[a]**

Screening Levels	NYSDOH 2003 Study of VOCs 90th Percentile (ug/m3) a	NYSDOH 2006 Air Guideline Values (ug/m3) b	Carcinogenic Target Risk (TR) = 1E-06 Inhalation (ug/m3) c	Noncancer Hazard Index (HI) = 1 Inhalation (ug/m3) d	(AF=0.008) Carcinogenic Target Risk (TR) = 1E-06 Inhalation (ug/m3) e	(AF=0.008) Noncancer Hazard Index (HI) = 1 Inhalation (ug/m3) f
1,1-Dichloroethane	<0.25	--	7.67E+00	--	9.6E+02	--
1,1-Dichloroethene	<0.25	--	--	8.76E+02	--	1.1E+05
1,2-Dichloropropane	<0.25	--	1.23E+00	1.75E+01	1.5E+02	2.2E+03
Acrylonitrile	--	--	1.80E-01	8.76E+00	2.3E+01	1.1E+03
Chloroethane	<0.25	--	--	4.38E+04	--	5.5E+06
Chloroform	1.4	--	5.33E-01	4.28E+02	6.7E+01	5.4E+04
cis-1,2-Dichloroethylene	<0.25	--	--	--	--	--
Ethylbenzene	7.3	--	4.91E+00	4.38E+03	6.1E+02	5.5E+05
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	2.2	--	--	1.31E+04	--	1.6E+06
Methylene chloride	22	60	2.61E+01	4.56E+03	3.3E+03	5.7E+05
Styrene	1.3	--	--	4.38E+03	--	5.5E+05
Toluene	58	--	--	2.19E+04	--	2.7E+06
Trichloroethene	0.5	5	6.13E+00	--	7.7E+02	--
Vinyl chloride	<0.25	--	2.79E+00	4.38E+02	3.5E+02	5.5E+04
m,p-xylene	12	--	--	3.07E+03	--	3.8E+05
o-xylene	7.6	--	--	3.07E+03	--	3.8E+05

Legend

- Indoor Air Location (approximate)
- Sub-Slab Location (approximate)
- Ambient Air Location (approximate)
- AOC Boundaries

0 40 80

Feet

N

UG/M3 = micrograms per cubic meter
AF = attenuation factor

Figure 4
Building 4
Former Hampshire Chemical Corp Facility
Waterloo, New York

\\NORTHEND\PROJ\DOW\WATERLOO\GIS_FOLDERS\MAPFILES\VI REPORT\FIGURE4_BLDG4.MXD MUNWIN 8/25/10

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Location ID	WAT-IA-7
Location Group	Indoor Air
Field Sample ID	WAT-IA-7-032310
Sample Date	3/23/2010
VOCs (UG/M3)	
1,2-Dichloropropane	0.13 U
Acrylonitrile	**0.38 J[c]**
Chloroform	**0.39[g3]**
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	**79[a,g3]**
Trichloroethene	**0.51[a]**

Location ID	WAT-SG09
Location Group	Subslab Vapor
Field Sample ID	WAT-SG-9-032310
Sample Date	3/23/2010
VOCs (UG/M3)	
1,2-Dichloropropane	**1.7[a]**
Acrylonitrile	0.68 U
Chloroform	**41[a]**
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	**53[a]**
Trichloroethene	**13[a]**

Location ID	WAT-SGB4
Location Group	Ambient Air
Field Sample ID	WAT-SG-B4-032310
Sample Date	3/23/2010
VOCs (UG/M3)	
1,2-Dichloropropane	0.14 U
Acrylonitrile	**0.39 J**
Chloroform	**0.15**
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	**52[a]**
Trichloroethene	**5[a]**

RECEIVING AREA
BLDG. 14
DRUM STORAGE AREA
BLDG. 13
FINISHED PRODUCT STORAGE AREA
BLDG. 13-A
MACHINE SHOP
BLDG. 11
CARPENTRY SHOP
11-A
SPECIALITY PROCESS
10
DIVEN
9
TG PROCESS
5
TANK STORAGE
WAT-IA-7
WAT-SG-9
WAT-IA-6
WAT-SG-B4
WAT-SG-8
WAT-IA-5
WAT-SG-7
BLDG. 4
WAT-SG-7a
WAT-SG-6
THIODIGLYCOLATES PROCESS AREA
SPCC BOAT HOUSE & RESPONSE EQUIPMENT
BLDG. 4-A
BLDG. 3
CONTROL ROOM
WAT-IA-4
WAT-SG-5
THIODIGLYCOLIC ACID PROCESS AREA
STORAGE AREA
WAT-SG-5a
STORAGE AREA
TRUCK UNLOADING AREA
MPA PROCESS AREA
BLDG. 1
BOILER ROOM
WATER WELL
CITY TO
Approximate Location of AOC B
Approximate Location of AOC D
CANAL
200.00'
N27°10'-30"W, 175'
N65°-10'-30"W, 340'
N44°-06'-55"W
174.58'
N42°-09'-30"W
10.58'
N42°-28'-40"W
46.77'
N58°-32'-49"W
46.19'
N57°-52'-34"W

Legend

- Indoor Air Location (approximate)
- Sub-Slab Location (approximate)
- Ambient Air Location (approximate)
- AOC Boundaries

Screening Levels	NYSDOH 2003 Study of VOCs 90th Percentile (ug/m3) a	NYSDOH 2006 Air Guideline Values (ug/m3) b	Carcinogenic Target Risk (TR) = 1E-06 Inhalation (ug/m3) c	Noncancer Hazard Index (HI) = 1 Inhalation (ug/m3) d	(AF=0.008) Carcinogenic Target Risk (TR) = 1E-06 Inhalation (ug/m3) e	(AF=0.008) Noncancer Hazard Index (HI) = 1 Inhalation (ug/m3) f
1,2-Dichloropropane	<0.25	--	1.23E+00	1.75E+01	1.5E+02	2.2E+03
Acrylonitrile	--	--	1.80E-01	8.76E+00	2.3E+01	1.1E+03
Chloroform	1.4	--	5.33E-01	4.28E+02	6.7E+01	5.4E+04
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	2.2	--	--	1.31E+04	--	1.6E+06
Trichloroethene	0.5	5	6.13E+00	--	7.7E+02	--

0 40 80
Feet

UG/M3 = micrograms per cubic meter
AF = attenuation factor

Figure 5
Tank Storage Area
Former Hampshire Chemical Corp Facility
Waterloo, New York

\\NORTHEND\PROJ\DOW\WATERLOO\GIS_FOLDERS\MAPFILES\VI REPORT\FIGURE5_TANKSTORAGE.MXD MUNWIN 8/25/10

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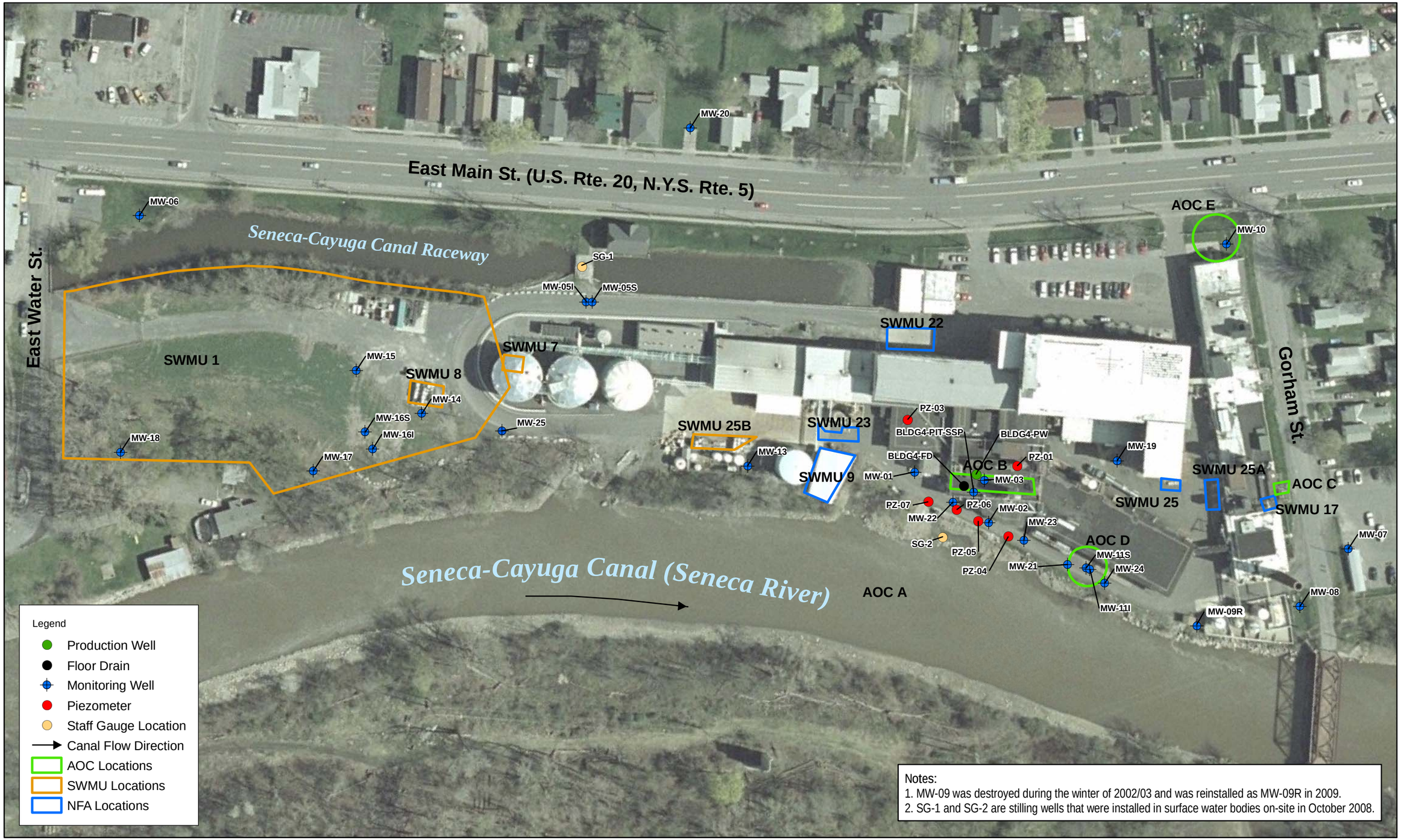

FIGURE 6
Groundwater and Surface Water Monitoring Locations
Former Hampshire Chemical Corp Facility
Waterloo, New York

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\\APHRODITE\PROJ\DOW\WATERLOO\MAPDOCS\RFI ADDENDUM\FIGURE9_GW_SW_SAMPLING_RH.MXD RHURSEY 11/24/2009 16:33:03

Appendixes

Appendix A
Field Sampling Log Sheets

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Indoor Vapor Intrusion Assessment
Sub Slab Vapor Sampling Field Log

Project Info

Project Name: Former Hampshire Chemical Corp. Facility, Waterloo, NY **Project # :** 369548

By: Lisa La Fortune/NJO; Graham Sharkey/ NJO **Date:** 3/23/2010

Structure

Identification: Building 1

Address:

Sample Location type:

- [x] concrete slab on grade
- [ ] concrete footing w/crawl space
- [ ] basement
- [ ] Yard or Driveway
- [ ] other (describe)

Soil Vapor Sampling System

Probe type (describe): Stainless steel tubing, finished as a flushmount

Probe to sample interface system (describe): Stainless steel swagelok fittings and poly-teflon lined tubing

Sample collection type: [ ] Syringe [ ] Tedlar bag [x] Summa canister

Other info (describe other aspects)

Soil Vapor Probe Purging & Sampling Log

Sample location (show in diagram)	WAT-SG-4			
Sample Identification (field ID)	WAT-SG-4-032310			
Date Sampled	3/23/2010			
Depth of installed probe (feet bgs)	9.5			
Leak check (probe/sampling interface)	pass			
Calculated dead volume (1 purge volume), ml	17			
Purge rate, ml/min.	100			
Purge duration, min. (3 volumes)	0.5			
Purge vacuum, " Hg	0			
Max PID Reading, ppmv (optional)				
Purge completed (time of day)	11:57			
Sampling period started (time of day)	11:59			
Sampling rate, ml/min				
Sampling vacuum, " Hg (initial/end)	-30/-2			
Sampling period ended (time of day)	21:05			

Observations and Comments:

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Indoor Vapor Intrusion Assessment
Sub Slab Vapor Sampling Field Log

Project Info

Project Name: Former Hampshire Chemical Corp. Facility, Waterloo, NY **Project # :** 369548

By: Lisa La Fortune/NJO; Graham Sharkey/ NJO **Date:** 3/23/2010

Structure

Identification: Building 4

Address:

Sample Location type:

- [x] concrete slab on grade
- [ ] concrete footing w/crawl space
- [ ] basement
- [ ] Yard or Driveway
- [ ] other (describe)

Soil Vapor Sampling System

Probe type (describe): Stainless steel tubing, finished as a flushmount

Probe to sample interface system (describe): Stainless steel swagelok fittings and poly-teflon lined tubing

Sample collection type: [ ] Syringe [ ] Tedlar bag [x] Summa canister

Other info (describe other aspects)

Soil Vapor Probe Purging & Sampling Log

Sample location (show in diagram)	WAT-SG-7a*1	WAT-SG-8*2		
Sample Identification (field ID)	WAT-SG-7a-032310			
Date Sampled	3/23/2010			
Depth of installed probe (inches bgs)	15.0			
Leak check (probe/sampling interface)	pass			
Calculated dead volume (1 purge volume), ml	19			
Purge rate, ml/min.	100			
Purge duration, min. (3 volumes)	0.88			
Purge vacuum, " Hg	0			
Max PID Reading, ppmv (optional)				
Purge completed (time of day)	11:47			
Sampling period started (time of day)	11:49			
Sampling rate, ml/min				
Sampling vacuum, " Hg (initial/end)	-30/-4			
Sampling period ended (time of day)	20:57			

Observations and Comments: *1 Duplicate sample (WAT-SG-DUP-032310) was collected at WAT-SG-7a.

*2 Could not purge; did not collect sample because of water in air tubing.

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Indoor Vapor Intrusion Assessment
Sub Slab Vapor Sampling Field Log

Project Info

Project Name: Former Hampshire Chemical Corp. Facility, Waterloo, NY **Project # :** 369548

By: Lisa La Fortune/NJO; Graham Sharkey/ NJO **Date:** 3/23/2010

Structure

Identification: Tank Storage Area

Address:

Sample Location type:

- [x] concrete slab on grade
- [ ] concrete footing w/crawl space
- [ ] basement
- [ ] Yard or Driveway
- [ ] other (describe)

Soil Vapor Sampling System

Probe type (describe): Stainless steel tubing, finished as a flushmount

Probe to sample interface system (describe): Stainless steel swagelok fittings and poly-teflon lined tubing

Sample collection type: [ ] Syringe [ ] Tedlar bag [x] Summa canister

Other info (describe other aspects)

Soil Vapor Probe Purging & Sampling Log

Sample location (show in diagram)	WAT-SG-9			
Sample Identification (field ID)	WAT-SG-9-032310			
Date Sampled	3/23/2010			
Depth of installed probe (inches bgs)	8.00			
Leak check (probe/sampling interface)	pass/0 ppm			
Calculated dead volume (1 purge volume), ml	16			
Purge rate, ml/min.	100			
Purge duration, min. (3 volumes)	0.48			
Purge vacuum, " Hg	0			
Max PID Reading, ppmv (optional)				
Purge completed (time of day)	11:14			
Sampling period started (time of day)	11:16			
Sampling rate, ml/min				
Sampling vacuum, " Hg (initial/end)	-30/-4			
Sampling period ended (time of day)	20:48			

Observations and Comments:

Appendix B

Validated Laboratory Data Package and CD

Columbia Analytical Services, Inc. 2655 Park Center Drive, Suite A | Simi Valley, CA 93065 | 805.526.7161 | 805.526.7270 fax | www.caslab.com

LABORATORY REPORT

April 14, 2010

Dave Newman
CH2M Hill
119 Cherry Hill Road, Suite 300
Parsippany, NJ 07054

RE: DOW Waterloo, NY / 386132.05.C1.FI

Dear Dave:

Enclosed are the results of the samples submitted to our laboratory on March 26, 2010. For your reference, these analyses have been assigned our service request number P1001084.

All analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 92 pages.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L10-3; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-09-TX; Minnesota Department of Health, Certificate No. 11495AA. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

Columbia Analytical Services, Inc.

Kate Aguilera

Kate Aguilera
Project Manager

Client:	CH2M Hill	CAS Project No:	P1001084
Project:	DOW Waterloo, NY / 386132.05.C1.FI	NJ Certification ID:	CA009

CASE NARRATIVE

The samples were received intact under chain of custody on March 26, 2010 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Volatile Organic Compound Analysis

The samples were analyzed for selected volatile organic compounds and tentatively identified compounds in accordance with EPA Method TO-15 from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition (EPA/625/R-96/010b), January, 1999. The analytical system was comprised of a gas chromatograph / mass spectrometer (GC/MS) interfaced to a whole-air preconcentrator.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for utilization of less than the complete report.

Client: CH2M Hill **Folder:** P1001084

Project: DOW Waterloo, NY 386132.05.C1.FI

Detailed Sample Information

CAS Sample ID	Client Sample ID	Container Type	Pi1 (Hg)	Pi1 (psig)	Pf1	Pi2 (Hg)	Pi2 (psig)	Pf2	Cont ID	Order #	FC ID
P1001084-001.01	SGP-10-032410	6.0 L-Summa Canister Ambient		0.4	3.7				AC01103	**17081**	FC00674
P1001084-002.01	SGP-9-032410	6.0 L-Summa Canister Ambient	-13.1	-6.4	3.5				AC01467	**17081**	FC00470
P1001084-003.01	SGP-RP-032410	6.0 L-Summa Canister Ambient	-2.5	-1.2	3.5				AC01335	**17081**	FC00111
P1001084-004.01	RP-IA-032410	6.0 L-Summa Canister Ambient	-3.1	-1.5	3.6				AC01240	**17081**	FC00783
P1001084-005.01	SGP-SWMU1-032410	6.0 L-Summa Canister Ambient	-5.5	-2.7	3.5				AC01462	**17081**	FC00619
P1001084-006.01	RP-CS-1-032410	6.0 L-Summa Canister Ambient	-7.1	-3.5	3.5				AC01590	**17081**	FC00557
P1001084-007.01	SGP-DUP-032410	6.0 L-Summa Canister Ambient		0.7	3.5				AC00642	**17081**	FC00462
P1001084-008.01	WAT-SG-B2-032310	6.0 L-Summa Canister Ambient		0.4	4.3				AC00824	**17081**	FC00812
P1001084-009.01	WAT-SG-B4-032310	6.0 L-Summa Canister Ambient	-3.3	-1.6	3.9				AC00977	**17081**	FC00386
P1001084-010.01	WAT-SG-FB-032310	6.0 L-Summa Canister Ambient	-29.7	-14.6	3.5				AC01257	**17081**	FC00223
P1001084-011.01	WAT-IA-3-032310	6.0 L-Summa Canister Ambient	-4.6	-2.3	3.6				AC01425	**17081**	FC00522
P1001084-012.01	WAT-IA-5-032310	6.0 L-Summa Canister Ambient	-0.2	-0.1	3.6				AC00515	**17081**	FC00354
P1001084-013.01	WAT-IA-7-032310	6.0 L-Summa Canister Ambient	-2.1	-1.0	3.5				AC00527	**17081**	FC00439
P1001084-014.01	WAT-IA-6-032310	6.0 L-Summa Canister Ambient	-3.7	-1.8	3.5				AC00623	**17081**	FC00413
P1001084-015.01	WAT-SG-4-032310	6.0 L-Summa Canister Source	-0.7	-0.3	3.5				SC01013	**17081**	OA01357
P1001084-016.01	WAT-SG-7a-032310	6.0 L-Summa Canister Source	-1.1	-0.5	3.5				SC00139	**17081**	OA01344
P1001084-017.01	WAT-SG-DUP-032310	6.0 L-Summa Canister Source	-0.2	-0.1	3.6				SC00592	**17081**	OA00808
P1001084-018.01	WAT-SG-9-032310	6.0 L-Summa Canister Source	-2.6	-1.3	3.5				SC00982	**17081**	OA01411
P1001084-019.01	SC00847	6.0 L-Summa Canister Source							SC00847	**17081**	
P1001084-020.01	SC01093	6.0 L-Summa Canister Source							SC01093	**17081**	
P1001084-021.01	AC00383	6.0 L-Summa Canister Ambient							AC00383	**17081**	
P1001084-022.01	AC01677	6.0 L-Summa Canister Ambient							AC01677	**17081**	

Air - Chain of Custody Record & Analytical Service Request

Columbia Analytical Services™
2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P1001084

CAS Contact: KATE AGUILERA

Company Name & Address (Reporting Information):
CH2M HILL
119 CHERRY HILL RD, STE 300
PARSIPPANY, NJ 07054

Project Name: DoD WATERLOO, NY

Project Number: 386132.05.C1.FI

Project Manager: DAVID NEUSMAN

P.O. # / Billing Information: 9387714

Phone: 973 3169300

Fax: 973-334 5847

Email Address for Result Reporting: lisa.lafortune@ch2m.com

Sampler (Print & Sign): GRAHAM SUMMERS / Lisa La Fortune

Analysis Method and/or Analytes

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Sample Type (Air/Tube/ Solid)	Canister ID (Bar Code # - AC, SC, etc.)	Flow Controller (Bar Code - FC #)	Sample Volume	TO-15 see Purchase Order				Comments e.g. Actual Preservative or specific instructions
SGP-10-032410	(1) -10.4	3/24/10	1247	AIR	AC01103	FC00674	6L	X				
SGP-9-032410	(2) -12.8		1450		AC01467	FC00470		X				
SGP-RP-032410	(3) -2.4		1500		AC01335	FC00111		X				
RP-IA-032410	(4) -2.9		1510		AC01240	FC00683		X				
SGP-SWMU1-032410	(5) -5.1		1445		AC01462	FC00619		X				
RP-CS-1-032410	(6) -6.8		1505		AC01590	FC00557		X				
SGP-Dup-032410	(7) -10.7	↓	—	↓	AC00642	FC00462	↓	X				
WAT-SG-B2-032310	(8) -10.4	3/23/10	1855	AIR	AC00824	FC00812	6L	X				
WAT-SG-B4-032310	(9) -3.2		2025		AC00977	FC00386		X				
WAT-SG-FB-032310	(10) -25.6		1928		AC01257	FC00223		X				
WAT-IA-3-032310	(11) -4.4		2023		AC01425	FC00522		X				
WAT-IA-5-032310	(12) -0.2		1850		AC00515	FC00354		X				
WAT-IA-7-032310	(13) -2.1		1929		AC00527	FC00439		X				WAT-IA-7-032310
WAT-IA-6-032310	(14) -3.6	↓	2019	↓	AC00623	FC00413	↓	X				WAT-IA-6-032310

Report Tier Levels - please select
Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) X

EDD required: (Yes) / No
Type: Lab Spec 7
EDD Units: mg/m3

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
			Ultamura	3/26/10	0945
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank
Temperature ____ °C

Air - Chain of Custody Record & Analytical Service Request

Columbia Analytical Services™
2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P1001084

Company Name & Address (Reporting Information)
CH2M HILL
119 Cherry Hill Road, Ste 300
Parsippany, NJ 07054

Project Name: Dow Waterloo

Project Number: 386132.05.C1.FI

CAS Contact: KATE AGOILERA

Project Manager: David Newman

P.O. # / Billing Information: 938714

Phone: 973 316 9300 Fax: 973 334 5847

Email Address for Result Reporting: lisa.lafortune@ch2m.com

Sampler (Print & Sign): Graham Sharkey / GSharkey

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Sample Type (Air/Tube/ Solid)	Canister ID (Bar Code # - AC, SC, etc.)	Flow Controller (Bar Code - FC #)	Sample Volume	Analysis Method and/or Analytes: TO-15 (see PO)				Comments e.g. Actual Preservative or specific instructions
WAT-SG-4-032310	(15)-05	03/23/10	2104	AIR	SC01013	OA01357	6L	X				
WAT-SG-7a-032310	(11)-13	↓	2057	↓	SC00139	OA01344	↓	X				
WAT-SG-Dup-032310	(17)-04	↓	—	↓	SC00592	OA00808	↓	X				
WAT-SG-9-032310	(18)-26	↓	2048	↓	SC00982	OA01411	↓	X				
	-24.2											
	-24.1											
	-25A											
	-25B											

Report Tier Levels - please select
Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) X

EDD required (Yes) No
Type: Lab Spec 7
EDD Units: mg/m³

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank
Temperature °C

Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: CH2M Hill Work order: P1001084

Project: DOW Waterloo, NY / 386132.05.C1.FI

Sample(s) received on: 03/26/10 Date opened: 03/26/10 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Was a **chain-of-custody** provided?	☒	☐	☐
5	Was the **chain-of-custody** properly completed?	☒	☐	☐
6	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
7	Was **sample volume** received adequate for analysis?	☒	☐	☐
8	Are samples within specified holding times?	☒	☐	☐
9	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☐	☐	☒
	Cooler Temperature _____ °C Blank Temperature _____ °C			
10	Was a **trip blank** received?	☐	☒	☐
	Trip blank supplied by CAS: _____			
11	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
12	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☐	☐	☒
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
13	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
14	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1001084-001.01	6.0 L Ambient Can					
P1001084-002.01	6.0 L Ambient Can					
P1001084-003.01	6.0 L Ambient Can					
P1001084-004.01	6.0 L Ambient Can					
P1001084-005.01	6.0 L Ambient Can					
P1001084-006.01	6.0 L Ambient Can					

Explain any discrepancies: (include lab sample ID numbers): _____

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12); Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: CH2M Hill Work order: P1001084

Project: DOW Waterloo, NY / 386132.05.C1.FI

Sample(s) received on: 03/26/10 Date opened: 03/26/10 by: MZAMORA

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1001084-007.01	6.0 L Ambient Can					
P1001084-008.01	6.0 L Ambient Can					
P1001084-009.01	6.0 L Ambient Can					
P1001084-010.01	6.0 L Ambient Can					
P1001084-011.01	6.0 L Ambient Can					
P1001084-012.01	6.0 L Ambient Can					
P1001084-013.01	6.0 L Ambient Can					
P1001084-014.01	6.0 L Ambient Can					
P1001084-015.01	6.0 L Source Can					
P1001084-016.01	6.0 L Source Can					
P1001084-017.01	6.0 L Source Can					
P1001084-018.01	6.0 L Source Can					

Explain any discrepancies: (include lab sample ID numbers):

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12);
Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **SGP-10-032410**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-001

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01103

Date Collected: 3/24/10
Date Received: 3/26/10
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): 0.4 Final Pressure (psig): 3.7

Canister Dilution Factor: 1.22

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	**Chloromethane**	**0.45**	0.24	0.13	**0.22**	0.12	0.065	
75-01-4	Vinyl Chloride	0.12	0.12	0.079	0.048	0.048	0.031	U
74-83-9	Bromomethane	0.12	0.12	0.089	0.031	0.031	0.023	U
75-00-3	Chloroethane	0.12	0.12	0.098	0.046	0.046	0.037	U
67-64-1	**Acetone**	**12**	6.1	1.6	**5.2**	2.6	0.67	
107-13-1	Acrylonitrile	0.61	0.61	0.27	0.28	0.28	0.12	U
75-35-4	1,1-Dichloroethene	0.12	0.12	0.092	0.031	0.031	0.023	U
75-09-2	Methylene Chloride	0.61	0.61	0.23	0.18	0.18	0.067	U
75-15-0	Carbon Disulfide	6.1	6.1	0.29	2.0	2.0	0.094	U
156-60-5	trans-1,2-Dichloroethene	0.12	0.12	0.072	0.031	0.031	0.018	U
75-34-3	1,1-Dichloroethane	0.12	0.12	0.076	0.030	0.030	0.019	U
1634-04-4	Methyl tert-Butyl Ether	0.12	0.12	0.085	0.034	0.034	0.024	U
78-93-3	**2-Butanone (MEK)**	**0.64**	6.1	0.27	**0.22**	2.1	0.091	J
156-59-2	cis-1,2-Dichloroethene	0.12	0.12	0.070	0.031	0.031	0.018	U
67-66-3	**Chloroform**	**0.13**	0.12	0.072	**0.026**	0.025	0.015	
107-06-2	1,2-Dichloroethane	0.12	0.12	0.076	0.030	0.030	0.019	U
71-55-6	1,1,1-Trichloroethane	0.12	0.12	0.090	0.022	0.022	0.017	U
71-43-2	**Benzene**	**0.61**	0.12	0.084	**0.19**	0.038	0.026	

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Verified By: _____ Date: 4/9/10

Client: **CH2M Hill**
Client Sample ID: **SGP-10-032410**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-001

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01103

Date Collected: 3/24/10
Date Received: 3/26/10
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): 0.4 Final Pressure (psig): 3.7

Canister Dilution Factor: 1.22

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	**Carbon Tetrachloride**	**0.54**	0.12	0.092	**0.085**	0.019	0.015	
78-87-5	1,2-Dichloropropane	0.12	0.12	0.089	0.026	0.026	0.019	U
75-27-4	Bromodichloromethane	0.12	0.12	0.088	0.018	0.018	0.013	U
79-01-6	Trichloroethene	0.12	0.12	0.076	0.023	0.023	0.014	U
10061-01-5	cis-1,3-Dichloropropene	0.61	0.61	0.20	0.13	0.13	0.043	U
108-10-1	**4-Methyl-2-pentanone**	**0.31**	0.61	0.23	**0.075**	0.15	0.057	J
10061-02-6	trans-1,3-Dichloropropene	0.61	0.61	0.24	0.13	0.13	0.054	U
79-00-5	1,1,2-Trichloroethane	0.12	0.12	0.067	0.022	0.022	0.012	U
108-88-3	**Toluene**	**1.1**	0.61	0.23	**0.30**	0.16	0.062	
124-48-1	Dibromochloromethane	0.12	0.12	0.083	0.014	0.014	0.0097	U
127-18-4	Tetrachloroethene	0.12	0.12	0.072	0.018	0.018	0.011	U
108-90-7	Chlorobenzene	0.12	0.12	0.061	0.027	0.027	0.013	U
100-41-4	Ethylbenzene	0.61	0.61	0.23	0.14	0.14	0.053	U
179601-23-1	m,p-Xylenes	0.61	0.61	0.44	0.14	0.14	0.10	U
75-25-2	Bromoform	0.61	0.61	0.26	0.059	0.059	0.025	U
100-42-5	Styrene	0.61	0.61	0.23	0.14	0.14	0.054	U
95-47-6	o-Xylene	0.61	0.61	0.23	0.14	0.14	0.053	U
79-34-5	1,1,2,2-Tetrachloroethane	0.12	0.12	0.070	0.018	0.018	0.010	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **SGP-10-032410** CAS Project ID: P1001084
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI** CAS Sample ID: P1001084-001

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 3/24/10
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 3/26/10
Analyst: Chris Cornett Date Analyzed: 3/31/10
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes: **T**
Container ID: AC01103

Initial Pressure (psig): 0.4 Final Pressure (psig): 3.7

Canister Dilution Factor: 1.22

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
5.41	Isobutane	**3.5**	
5.97	n-Butane	**4.1**	
23.82	Benzaldehyde	**7.3**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **SGP-9-032410**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-002

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01467

Date Collected: 3/24/10
Date Received: 3/26/10
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -6.4 Final Pressure (psig): 3.5

Canister Dilution Factor: 2.19

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	**Chloromethane**	**0.25**	0.44	0.24	**0.12**	0.21	0.12	**J**
75-01-4	Vinyl Chloride	0.22	0.22	0.14	0.086	0.086	0.056	**U**
74-83-9	Bromomethane	0.22	0.22	0.16	0.056	0.056	0.041	**U**
75-00-3	Chloroethane	0.22	0.22	0.18	0.083	0.083	0.066	**U**
67-64-1	**Acetone**	**57**	11	2.8	**24**	4.6	1.2	
107-13-1	Acrylonitrile	1.1	1.1	0.48	0.50	0.50	0.22	**U**
75-35-4	1,1-Dichloroethene	0.22	0.22	0.16	0.055	0.055	0.041	**U**
75-09-2	**Methylene Chloride**	**0.45**	1.1	0.42	**0.13**	0.32	0.12	**J**
75-15-0	Carbon Disulfide	11	11	0.53	3.5	3.5	0.17	**U**
156-60-5	trans-1,2-Dichloroethene	0.22	0.22	0.13	0.055	0.055	0.033	**U**
75-34-3	1,1-Dichloroethane	0.22	0.22	0.14	0.054	0.054	0.034	**U**
1634-04-4	Methyl tert-Butyl Ether	0.22	0.22	0.15	0.061	0.061	0.043	**U**
78-93-3	**2-Butanone (MEK)**	**12**	11	0.48	**4.2**	3.7	0.16	
156-59-2	cis-1,2-Dichloroethene	0.22	0.22	0.12	0.055	0.055	0.031	**U**
67-66-3	Chloroform	0.22	0.22	0.13	0.045	0.045	0.026	**U**
107-06-2	1,2-Dichloroethane	0.22	0.22	0.14	0.054	0.054	0.034	**U**
71-55-6	1,1,1-Trichloroethane	0.22	0.22	0.16	0.040	0.040	0.030	**U**
71-43-2	**Benzene**	**0.93**	0.22	0.15	**0.29**	0.069	0.047	

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **SGP-9-032410**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-002

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01467

Date Collected: 3/24/10
Date Received: 3/26/10
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -6.4 Final Pressure (psig): 3.5

Canister Dilution Factor: 2.19

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	**Carbon Tetrachloride**	**0.51**	0.22	0.16	**0.081**	0.035	0.026	
78-87-5	1,2-Dichloropropane	0.22	0.22	0.16	0.047	0.047	0.035	U
75-27-4	Bromodichloromethane	0.22	0.22	0.16	0.033	0.033	0.024	U
79-01-6	Trichloroethene	0.22	0.22	0.14	0.041	0.041	0.025	U
10061-01-5	cis-1,3-Dichloropropene	1.1	1.1	0.35	0.24	0.24	0.077	U
108-10-1	**4-Methyl-2-pentanone**	**1.7**	1.1	0.42	**0.41**	0.27	0.10	
10061-02-6	trans-1,3-Dichloropropene	1.1	1.1	0.44	0.24	0.24	0.097	U
79-00-5	1,1,2-Trichloroethane	0.22	0.22	0.12	0.040	0.040	0.022	U
108-88-3	**Toluene**	**3.1**	1.1	0.42	**0.83**	0.29	0.11	
124-48-1	Dibromochloromethane	0.22	0.22	0.15	0.026	0.026	0.017	U
127-18-4	Tetrachloroethene	0.22	0.22	0.13	0.032	0.032	0.019	U
108-90-7	Chlorobenzene	0.22	0.22	0.11	0.048	0.048	0.024	U
100-41-4	Ethylbenzene	1.1	1.1	0.42	0.25	0.25	0.096	U
179601-23-1	**m,p-Xylenes**	**1.1**	1.1	0.79	**0.25**	0.25	0.18	J
75-25-2	Bromoform	1.1	1.1	0.46	0.11	0.11	0.044	U
100-42-5	Styrene	1.1	1.1	0.42	0.26	0.26	0.098	U
95-47-6	**o-Xylene**	**0.67**	1.1	0.42	**0.15**	0.25	0.096	J
79-34-5	1,1,2,2-Tetrachloroethane	0.22	0.22	0.12	0.032	0.032	0.018	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **SGP-9-032410** CAS Project ID: P1001084
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI** CAS Sample ID: P1001084-002

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 3/24/10
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 3/26/10
Analyst: Chris Cornett Date Analyzed: 3/31/10
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes: **T**
Container ID: AC01467

Initial Pressure (psig): -6.4 Final Pressure (psig): 3.5

Canister Dilution Factor: 2.19

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
8.72	Unidentified Compound	**55**	
11.72	Isopropyl Cyanate	**33**	
20.77	Hexamethylcyclotrisiloxane	**26**	
23.82	Benzaldehyde	**10**	
26.27	n-Nonanal	**10**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **SGP-RP-032410**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-003

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01335

Date Collected: 3/24/10
Date Received: 3/26/10
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -1.2 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.35

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	**Chloromethane**	**0.41**	0.27	0.15	**0.20**	0.13	0.072	
75-01-4	Vinyl Chloride	0.14	0.14	0.088	0.053	0.053	0.034	**U**
74-83-9	Bromomethane	0.14	0.14	0.099	0.035	0.035	0.025	**U**
75-00-3	Chloroethane	0.14	0.14	0.11	0.051	0.051	0.041	**U**
67-64-1	**Acetone**	**12**	6.8	1.8	**5.1**	2.8	0.74	
107-13-1	Acrylonitrile	0.68	0.68	0.30	0.31	0.31	0.14	**U**
75-35-4	1,1-Dichloroethene	0.14	0.14	0.10	0.034	0.034	0.026	**U**
75-09-2	Methylene Chloride	0.68	0.68	0.26	0.19	0.19	0.074	**U**
75-15-0	Carbon Disulfide	6.8	6.8	0.32	2.2	2.2	0.10	**U**
156-60-5	trans-1,2-Dichloroethene	0.14	0.14	0.080	0.034	0.034	0.020	**U**
75-34-3	1,1-Dichloroethane	0.14	0.14	0.084	0.033	0.033	0.021	**U**
1634-04-4	Methyl tert-Butyl Ether	0.14	0.14	0.095	0.037	0.037	0.026	**U**
78-93-3	**2-Butanone (MEK)**	**2.5**	6.8	0.30	**0.84**	2.3	0.10	**J**
156-59-2	cis-1,2-Dichloroethene	0.14	0.14	0.077	0.034	0.034	0.019	**U**
67-66-3	Chloroform	0.14	0.14	0.080	0.028	0.028	0.016	**U**
107-06-2	1,2-Dichloroethane	0.14	0.14	0.084	0.033	0.033	0.021	**U**
71-55-6	1,1,1-Trichloroethane	0.14	0.14	0.10	0.025	0.025	0.018	**U**
71-43-2	**Benzene**	**0.54**	0.14	0.093	**0.17**	0.042	0.029	

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **SGP-RP-032410**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-003

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01335

Date Collected: 3/24/10
Date Received: 3/26/10
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -1.2 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.35

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	**Carbon Tetrachloride**	**0.55**	0.14	0.10	**0.088**	0.021	0.016	
78-87-5	1,2-Dichloropropane	0.14	0.14	0.099	0.029	0.029	0.021	U
75-27-4	Bromodichloromethane	0.14	0.14	0.097	0.020	0.020	0.015	U
79-01-6	Trichloroethene	0.14	0.14	0.084	0.025	0.025	0.016	U
10061-01-5	cis-1,3-Dichloropropene	0.68	0.68	0.22	0.15	0.15	0.048	U
108-10-1	**4-Methyl-2-pentanone**	**0.85**	0.68	0.26	**0.21**	0.16	0.063	
10061-02-6	trans-1,3-Dichloropropene	0.68	0.68	0.27	0.15	0.15	0.059	U
79-00-5	1,1,2-Trichloroethane	0.14	0.14	0.074	0.025	0.025	0.014	U
108-88-3	**Toluene**	**3.0**	0.68	0.26	**0.78**	0.18	0.068	
124-48-1	Dibromochloromethane	0.14	0.14	0.092	0.016	0.016	0.011	U
127-18-4	Tetrachloroethene	0.14	0.14	0.080	0.020	0.020	0.012	U
108-90-7	Chlorobenzene	0.14	0.14	0.068	0.029	0.029	0.015	U
100-41-4	Ethylbenzene	0.68	0.68	0.26	0.16	0.16	0.059	U
179601-23-1	**m,p-Xylenes**	**0.63**	0.68	0.49	**0.15**	0.16	0.11	J
75-25-2	Bromoform	0.68	0.68	0.28	0.065	0.065	0.027	U
100-42-5	Styrene	0.68	0.68	0.26	0.16	0.16	0.060	U
95-47-6	**o-Xylene**	**0.26**	0.68	0.26	**0.061**	0.16	0.059	J
79-34-5	1,1,2,2-Tetrachloroethane	0.14	0.14	0.077	0.020	0.020	0.011	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Verified By: _____ Date: 4/8/10

Client: **CH2M Hill**
Client Sample ID: **SGP-RP-032410** CAS Project ID: P1001084
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI** CAS Sample ID: P1001084-003

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 3/24/10
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 3/26/10
Analyst: Chris Cornett Date Analyzed: 3/31/10
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes: **T**
Container ID: AC01335

Initial Pressure (psig): -1.2 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.35

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
5.41	Acetaldehyde + Isobutane	**4.1**	
23.82	Benzaldehyde	**5.2**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **RP-IA-032410**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-004

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01240

Date Collected: 3/24/10
Date Received: 3/26/10
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -1.5 Final Pressure (psig): 3.6

Canister Dilution Factor: 1.39

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	**Chloromethane**	**0.46**	0.28	0.15	**0.22**	0.13	0.074	
75-01-4	Vinyl Chloride	0.14	0.14	0.090	0.054	0.054	0.035	U
74-83-9	Bromomethane	0.14	0.14	0.10	0.036	0.036	0.026	U
75-00-3	Chloroethane	0.14	0.14	0.11	0.053	0.053	0.042	U
67-64-1	**Acetone**	**20**	7.0	1.8	**8.6**	2.9	0.76	
107-13-1	Acrylonitrile	0.70	0.70	0.31	0.32	0.32	0.14	U
75-35-4	1,1-Dichloroethene	0.14	0.14	0.10	0.035	0.035	0.026	U
75-09-2	Methylene Chloride	0.70	0.70	0.26	0.20	0.20	0.076	U
75-15-0	Carbon Disulfide	7.0	7.0	0.33	2.2	2.2	0.11	U
156-60-5	trans-1,2-Dichloroethene	0.14	0.14	0.082	0.035	0.035	0.021	U
75-34-3	1,1-Dichloroethane	0.14	0.14	0.086	0.034	0.034	0.021	U
1634-04-4	Methyl tert-Butyl Ether	0.14	0.14	0.097	0.039	0.039	0.027	U
78-93-3	**2-Butanone (MEK)**	**16**	7.0	0.31	**5.3**	2.4	0.10	
156-59-2	cis-1,2-Dichloroethene	0.14	0.14	0.079	0.035	0.035	0.020	U
67-66-3	**Chloroform**	**0.085**	0.14	0.082	**0.017**	0.028	0.017	J
107-06-2	1,2-Dichloroethane	0.14	0.14	0.086	0.034	0.034	0.021	U
71-55-6	1,1,1-Trichloroethane	0.14	0.14	0.10	0.025	0.025	0.019	U
71-43-2	**Benzene**	**0.75**	0.14	0.096	**0.23**	0.044	0.030	

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **RP-IA-032410**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-004

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01240

Date Collected: 3/24/10
Date Received: 3/26/10
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -1.5 Final Pressure (psig): 3.6

Canister Dilution Factor: 1.39

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	**Carbon Tetrachloride**	**0.53**	0.14	0.10	**0.084**	0.022	0.017	
78-87-5	1,2-Dichloropropane	0.14	0.14	0.10	0.030	0.030	0.022	U
75-27-4	Bromodichloromethane	0.14	0.14	0.10	0.021	0.021	0.015	U
79-01-6	Trichloroethene	0.14	0.14	0.086	0.026	0.026	0.016	U
10061-01-5	cis-1,3-Dichloropropene	0.70	0.70	0.22	0.15	0.15	0.049	U
108-10-1	**4-Methyl-2-pentanone**	**4.8**	0.70	0.26	**1.2**	0.17	0.064	
10061-02-6	trans-1,3-Dichloropropene	0.70	0.70	0.28	0.15	0.15	0.061	U
79-00-5	1,1,2-Trichloroethane	0.14	0.14	0.076	0.025	0.025	0.014	U
108-88-3	**Toluene**	**2.1**	0.70	0.26	**0.56**	0.18	0.070	
124-48-1	Dibromochloromethane	0.14	0.14	0.095	0.016	0.016	0.011	U
127-18-4	**Tetrachloroethene**	**0.29**	0.14	0.082	**0.043**	0.021	0.012	
108-90-7	Chlorobenzene	0.14	0.14	0.070	0.030	0.030	0.015	U
100-41-4	**Ethylbenzene**	**0.31**	0.70	0.26	**0.071**	0.16	0.061	J
179601-23-1	**m,p-Xylenes**	**0.82**	0.70	0.50	**0.19**	0.16	0.12	
75-25-2	Bromoform	0.70	0.70	0.29	0.067	0.067	0.028	U
100-42-5	**Styrene**	**0.30**	0.70	0.26	**0.071**	0.16	0.062	J
95-47-6	**o-Xylene**	**0.38**	0.70	0.26	**0.088**	0.16	0.061	J
79-34-5	1,1,2,2-Tetrachloroethane	0.14	0.14	0.079	0.020	0.020	0.012	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **RP-IA-032410** CAS Project ID: P1001084
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI** CAS Sample ID: P1001084-004

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 3/24/10
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 3/26/10
Analyst: Chris Cornett Date Analyzed: 3/31/10
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes: **T**
Container ID: AC01240

Initial Pressure (psig): -1.5 Final Pressure (psig): 3.6

Canister Dilution Factor: 1.39

GC/MS Retention Time	Compound Identification	Concentration µg/m³	Data Qualifier
4.52	1,1-Difluoroethane	**30**	
5.38	Acetaldehyde + Isobutane	**23**	
5.96	n-Butane	**3.8**	
8.76	Isoprene	**5.4**	
14.74	1-Butanol	**13**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **SGP-SWMU1-032410**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-005

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01462

Date Collected: 3/24/10
Date Received: 3/26/10
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -2.7 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.52

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	**Chloromethane**	**0.52**	0.30	0.17	**0.25**	0.15	0.081	
75-01-4	Vinyl Chloride	0.15	0.15	0.099	0.059	0.059	0.039	U
74-83-9	Bromomethane	0.15	0.15	0.11	0.039	0.039	0.029	U
75-00-3	Chloroethane	0.15	0.15	0.12	0.058	0.058	0.046	U
67-64-1	**Acetone**	**14**	7.6	2.0	**5.8**	3.2	0.83	
107-13-1	Acrylonitrile	0.76	0.76	0.33	0.35	0.35	0.15	U
75-35-4	1,1-Dichloroethene	0.15	0.15	0.11	0.038	0.038	0.029	U
75-09-2	Methylene Chloride	0.76	0.76	0.29	0.22	0.22	0.083	U
75-15-0	Carbon Disulfide	7.6	7.6	0.36	2.4	2.4	0.12	U
156-60-5	trans-1,2-Dichloroethene	0.15	0.15	0.090	0.038	0.038	0.023	U
75-34-3	1,1-Dichloroethane	0.15	0.15	0.094	0.038	0.038	0.023	U
1634-04-4	Methyl tert-Butyl Ether	0.15	0.15	0.11	0.042	0.042	0.030	U
78-93-3	**2-Butanone (MEK)**	**1.5**	7.6	0.33	**0.51**	2.6	0.11	J
156-59-2	cis-1,2-Dichloroethene	0.15	0.15	0.087	0.038	0.038	0.022	U
67-66-3	Chloroform	0.15	0.15	0.090	0.031	0.031	0.018	U
107-06-2	1,2-Dichloroethane	0.15	0.15	0.094	0.038	0.038	0.023	U
71-55-6	1,1,1-Trichloroethane	0.15	0.15	0.11	0.028	0.028	0.021	U
71-43-2	**Benzene**	**0.53**	0.15	0.10	**0.17**	0.048	0.033	

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Verified By: _____ Date: 4/8/10

Client: **CH2M Hill**
Client Sample ID: **SGP-SWMU1-032410**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-005

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01462

Date Collected: 3/24/10
Date Received: 3/26/10
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -2.7 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.52

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	**Carbon Tetrachloride**	**0.56**	0.15	0.11	**0.089**	0.024	0.018	
78-87-5	1,2-Dichloropropane	0.15	0.15	0.11	0.033	0.033	0.024	U
75-27-4	Bromodichloromethane	0.15	0.15	0.11	0.023	0.023	0.016	U
79-01-6	Trichloroethene	0.15	0.15	0.094	0.028	0.028	0.018	U
10061-01-5	cis-1,3-Dichloropropene	0.76	0.76	0.24	0.17	0.17	0.054	U
108-10-1	**4-Methyl-2-pentanone**	**0.49**	0.76	0.29	**0.12**	0.19	0.070	J
10061-02-6	trans-1,3-Dichloropropene	0.76	0.76	0.30	0.17	0.17	0.067	U
79-00-5	1,1,2-Trichloroethane	0.15	0.15	0.084	0.028	0.028	0.015	U
108-88-3	**Toluene**	**1.2**	0.76	0.29	**0.32**	0.20	0.077	
124-48-1	Dibromochloromethane	0.15	0.15	0.10	0.018	0.018	0.012	U
127-18-4	**Tetrachloroethene**	**0.19**	0.15	0.090	**0.028**	0.022	0.013	
108-90-7	Chlorobenzene	0.15	0.15	0.076	0.033	0.033	0.017	U
100-41-4	Ethylbenzene	0.76	0.76	0.29	0.18	0.18	0.067	U
179601-23-1	m,p-Xylenes	0.76	0.76	0.55	0.18	0.18	0.13	U
75-25-2	Bromoform	0.76	0.76	0.32	0.074	0.074	0.031	U
100-42-5	Styrene	0.76	0.76	0.29	0.18	0.18	0.068	U
95-47-6	o-Xylene	0.76	0.76	0.29	0.18	0.18	0.067	U
79-34-5	1,1,2,2-Tetrachloroethane	0.15	0.15	0.087	0.022	0.022	0.013	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **SGP-SWMU1-032410** CAS Project ID: P1001084
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI** CAS Sample ID: P1001084-005

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 3/24/10
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 3/26/10
Analyst: Chris Cornett Date Analyzed: 3/31/10
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes: **T**
Container ID: AC01462

Initial Pressure (psig): -2.7 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.52

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
5.41	Acetaldehyde	**26**	
23.82	Benzaldehyde	**5.6**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **RP-CS-1-032410**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-006

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01590

Date Collected: 3/24/10
Date Received: 3/26/10
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -3.5 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.63

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	**Chloromethane**	**0.49**	0.33	0.18	**0.24**	0.16	0.087	
75-01-4	Vinyl Chloride	0.16	0.16	0.11	0.064	0.064	0.041	**U**
74-83-9	Bromomethane	0.16	0.16	0.12	0.042	0.042	0.031	**U**
75-00-3	Chloroethane	0.16	0.16	0.13	0.062	0.062	0.049	**U**
67-64-1	**Acetone**	**20**	8.2	2.1	**8.5**	3.4	0.89	**M1**
107-13-1	Acrylonitrile	0.82	0.82	0.36	0.38	0.38	0.17	**U**
75-35-4	1,1-Dichloroethene	0.16	0.16	0.12	0.041	0.041	0.031	**U**
75-09-2	**Methylene Chloride**	**0.45**	0.82	0.31	**0.13**	0.23	0.089	**J**
75-15-0	Carbon Disulfide	8.2	8.2	0.39	2.6	2.6	0.13	**U**
156-60-5	trans-1,2-Dichloroethene	0.16	0.16	0.096	0.041	0.041	0.024	**U**
75-34-3	1,1-Dichloroethane	0.16	0.16	0.10	0.040	0.040	0.025	**U**
1634-04-4	Methyl tert-Butyl Ether	0.16	0.16	0.11	0.045	0.045	0.032	**U**
78-93-3	**2-Butanone (MEK)**	**3.2**	8.2	0.36	**1.1**	2.8	0.12	**J**
156-59-2	**cis-1,2-Dichloroethene**	**4.0**	0.16	0.093	**1.0**	0.041	0.023	
67-66-3	**Chloroform**	**0.31**	0.16	0.096	**0.063**	0.033	0.020	
107-06-2	1,2-Dichloroethane	0.16	0.16	0.10	0.040	0.040	0.025	**U**
71-55-6	1,1,1-Trichloroethane	0.16	0.16	0.12	0.030	0.030	0.022	**U**
71-43-2	**Benzene**	**0.71**	0.16	0.11	**0.22**	0.051	0.035	

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
M1 = Matrix interference due to coelution with a non-target compound; results may be biased high.

Verified By: _____ Date: 4/8/16

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **RP-CS-1-032410**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-006

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01590

Date Collected: 3/24/10
Date Received: 3/26/10
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -3.5 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.63

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	**Carbon Tetrachloride**	**0.61**	0.16	0.12	**0.097**	0.026	0.019	
78-87-5	1,2-Dichloropropane	0.16	0.16	0.12	0.035	0.035	0.026	U
75-27-4	Bromodichloromethane	0.16	0.16	0.12	0.024	0.024	0.018	U
79-01-6	**Trichloroethene**	**49**	0.16	0.10	**9.1**	0.030	0.019	
10061-01-5	cis-1,3-Dichloropropene	0.82	0.82	0.26	0.18	0.18	0.057	U
108-10-1	**4-Methyl-2-pentanone**	**1.5**	0.82	0.31	**0.36**	0.20	0.076	
10061-02-6	trans-1,3-Dichloropropene	0.82	0.82	0.33	0.18	0.18	0.072	U
79-00-5	1,1,2-Trichloroethane	0.16	0.16	0.090	0.030	0.030	0.016	U
108-88-3	**Toluene**	**6.8**	0.82	0.31	**1.8**	0.22	0.082	
124-48-1	Dibromochloromethane	0.16	0.16	0.11	0.019	0.019	0.013	U
127-18-4	**Tetrachloroethene**	**0.72**	0.16	0.096	**0.11**	0.024	0.014	
108-90-7	Chlorobenzene	0.16	0.16	0.082	0.035	0.035	0.018	U
100-41-4	**Ethylbenzene**	**0.33**	0.82	0.31	**0.075**	0.19	0.071	J
179601-23-1	**m,p-Xylenes**	**1.1**	0.82	0.59	**0.26**	0.19	0.14	
75-25-2	Bromoform	0.82	0.82	0.34	0.079	0.079	0.033	U
100-42-5	Styrene	0.82	0.82	0.31	0.19	0.19	0.073	U
95-47-6	**o-Xylene**	**0.75**	0.82	0.31	**0.17**	0.19	0.071	J
79-34-5	1,1,2,2-Tetrachloroethane	0.16	0.16	0.093	0.024	0.024	0.014	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **RP-CS-1-032410**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-006

Tentatively Identified Compounds

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes: **T**
Container ID: AC01590

Date Collected: 3/24/10
Date Received: 3/26/10
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -3.5 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.63

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
4.45	1,1,3,3,3-Pentafluro-1-Propene	**5.4**	
5.29	Unidentified Polyfluorinated Compound	**6.2**	
5.40	Acetaldehyde + Isobutane	**13**	
7.76	Isopentane	**13**	
8.59	n-Pentane	**20**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **SGP-DUP-032410**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-007

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00642

Date Collected: 3/24/10
Date Received: 3/26/10
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): 0.7 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.18

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	**Chloromethane**	**0.41**	0.24	0.13	**0.20**	0.11	0.063	
75-01-4	Vinyl Chloride	0.12	0.12	0.077	0.046	0.046	0.030	**U**
74-83-9	Bromomethane	0.12	0.12	0.086	0.030	0.030	0.022	**U**
75-00-3	Chloroethane	0.12	0.12	0.094	0.045	0.045	0.036	**U**
67-64-1	**Acetone**	**41**	5.9	1.5	**17**	2.5	0.65	
107-13-1	Acrylonitrile	0.59	0.59	0.26	0.27	0.27	0.12	**U**
75-35-4	1,1-Dichloroethene	0.12	0.12	0.089	0.030	0.030	0.022	**U**
75-09-2	**Methylene Chloride**	**0.26**	0.59	0.22	**0.075**	0.17	0.065	**J**
75-15-0	Carbon Disulfide	5.9	5.9	0.28	1.9	1.9	0.091	**U**
156-60-5	trans-1,2-Dichloroethene	0.12	0.12	0.070	0.030	0.030	0.018	**U**
75-34-3	1,1-Dichloroethane	0.12	0.12	0.073	0.029	0.029	0.018	**U**
1634-04-4	Methyl tert-Butyl Ether	0.12	0.12	0.083	0.033	0.033	0.023	**U**
78-93-3	**2-Butanone (MEK)**	**4.0**	5.9	0.26	**1.3**	2.0	0.088	**J**
156-59-2	cis-1,2-Dichloroethene	0.12	0.12	0.067	0.030	0.030	0.017	**U**
67-66-3	**Chloroform**	**2.4**	0.12	0.070	**0.48**	0.024	0.014	
107-06-2	1,2-Dichloroethane	0.12	0.12	0.073	0.029	0.029	0.018	**U**
71-55-6	1,1,1-Trichloroethane	0.12	0.12	0.087	0.022	0.022	0.016	**U**
71-43-2	**Benzene**	**0.58**	0.12	0.081	**0.18**	0.037	0.025	

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **SGP-DUP-032410**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-007

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00642

Date Collected: 3/24/10
Date Received: 3/26/10
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): 0.7 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.18

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	**Carbon Tetrachloride**	**0.57**	0.12	0.089	**0.091**	0.019	0.014	
78-87-5	1,2-Dichloropropane	0.12	0.12	0.086	0.026	0.026	0.019	U
75-27-4	Bromodichloromethane	0.12	0.12	0.085	0.018	0.018	0.013	U
79-01-6	Trichloroethene	0.12	0.12	0.073	0.022	0.022	0.014	U
10061-01-5	cis-1,3-Dichloropropene	0.59	0.59	0.19	0.13	0.13	0.042	U
108-10-1	**4-Methyl-2-pentanone**	**0.65**	0.59	0.22	**0.16**	0.14	0.055	
10061-02-6	trans-1,3-Dichloropropene	0.59	0.59	0.24	0.13	0.13	0.052	U
79-00-5	1,1,2-Trichloroethane	0.12	0.12	0.065	0.022	0.022	0.012	U
108-88-3	**Toluene**	**1.5**	0.59	0.22	**0.39**	0.16	0.060	
124-48-1	Dibromochloromethane	0.12	0.12	0.080	0.014	0.014	0.0094	U
127-18-4	**Tetrachloroethene**	**0.52**	0.12	0.070	**0.077**	0.017	0.010	
108-90-7	Chlorobenzene	0.12	0.12	0.059	0.026	0.026	0.013	U
100-41-4	**Ethylbenzene**	**0.23**	0.59	0.22	**0.053**	0.14	0.052	J
179601-23-1	**m,p-Xylenes**	**0.72**	0.59	0.42	**0.17**	0.14	0.098	
75-25-2	Bromoform	0.59	0.59	0.25	0.057	0.057	0.024	U
100-42-5	Styrene	0.59	0.59	0.22	0.14	0.14	0.053	U
95-47-6	**o-Xylene**	**0.32**	0.59	0.22	**0.074**	0.14	0.052	J
79-34-5	1,1,2,2-Tetrachloroethane	0.12	0.12	0.067	0.017	0.017	0.0098	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **SGP-DUP-032410** CAS Project ID: P1001084
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI** CAS Sample ID: P1001084-007

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 3/24/10
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 3/26/10
Analyst: Chris Cornett Date Analyzed: 3/31/10
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes: **T**
Container ID: AC00642

Initial Pressure (psig): 0.7 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.18

GC/MS Retention Time	Compound Identification	Concentration µg/m³	Data Qualifier
5.41	Acetaldehyde + Isobutane	**12**	
5.80	Isobutene	**6.9**	
5.96	n-Butane	**4.2**	
11.37	n-Butanal	**3.3**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

Verified By: _____ Date: 4/8/16

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-B2-032310**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-008

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00824

Date Collected: 3/23/10
Date Received: 3/26/10
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): 0.4 Final Pressure (psig): 4.3

Canister Dilution Factor: 1.26

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	**Chloromethane**	**0.42**	0.25	0.14	**0.21**	0.12	0.067	
75-01-4	Vinyl Chloride	0.13	0.13	0.082	0.049	0.049	0.032	U
74-83-9	Bromomethane	0.13	0.13	0.092	0.032	0.032	0.024	U
75-00-3	Chloroethane	0.13	0.13	0.10	0.048	0.048	0.038	U
67-64-1	**Acetone**	**8.9**	6.3	1.6	**3.7**	2.7	0.69	
107-13-1	**Acrylonitrile**	**0.33**	0.63	0.28	**0.15**	0.29	0.13	J
75-35-4	1,1-Dichloroethene	0.13	0.13	0.095	0.032	0.032	0.024	U
75-09-2	**Methylene Chloride**	**0.28**	0.63	0.24	**0.080**	0.18	0.069	J
75-15-0	Carbon Disulfide	6.3	6.3	0.30	2.0	2.0	0.097	U
156-60-5	trans-1,2-Dichloroethene	0.13	0.13	0.074	0.032	0.032	0.019	U
75-34-3	1,1-Dichloroethane	0.13	0.13	0.078	0.031	0.031	0.019	U
1634-04-4	Methyl tert-Butyl Ether	0.13	0.13	0.088	0.035	0.035	0.024	U
78-93-3	**2-Butanone (MEK)**	**1.1**	6.3	0.28	**0.36**	2.1	0.094	J
156-59-2	cis-1,2-Dichloroethene	0.13	0.13	0.072	0.032	0.032	0.018	U
67-66-3	**Chloroform**	**0.28**	0.13	0.074	**0.057**	0.026	0.015	
107-06-2	1,2-Dichloroethane	0.13	0.13	0.078	0.031	0.031	0.019	U
71-55-6	1,1,1-Trichloroethane	0.13	0.13	0.093	0.023	0.023	0.017	U
71-43-2	**Benzene**	**0.62**	0.13	0.087	**0.20**	0.039	0.027	

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-B2-032310**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-008

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00824

Date Collected: 3/23/10
Date Received: 3/26/10
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): 0.4 Final Pressure (psig): 4.3

Canister Dilution Factor: 1.26

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	**Carbon Tetrachloride**	**0.54**	0.13	0.095	**0.087**	0.020	0.015	
78-87-5	1,2-Dichloropropane	0.13	0.13	0.092	0.027	0.027	0.020	U
75-27-4	Bromodichloromethane	0.13	0.13	0.091	0.019	0.019	0.014	U
79-01-6	**Trichloroethene**	**3.3**	0.13	0.078	**0.61**	0.023	0.015	
10061-01-5	cis-1,3-Dichloropropene	0.63	0.63	0.20	0.14	0.14	0.044	U
108-10-1	**4-Methyl-2-pentanone**	**140**	0.63	0.24	**33**	0.15	0.058	
10061-02-6	trans-1,3-Dichloropropene	0.63	0.63	0.25	0.14	0.14	0.056	U
79-00-5	1,1,2-Trichloroethane	0.13	0.13	0.069	0.023	0.023	0.013	U
108-88-3	**Toluene**	**2.4**	0.63	0.24	**0.64**	0.17	0.064	
124-48-1	Dibromochloromethane	0.13	0.13	0.086	0.015	0.015	0.010	U
127-18-4	**Tetrachloroethene**	**0.084**	0.13	0.074	**0.012**	0.019	0.011	J
108-90-7	Chlorobenzene	0.13	0.13	0.063	0.027	0.027	0.014	U
100-41-4	**Ethylbenzene**	**0.32**	0.63	0.24	**0.074**	0.15	0.055	J
179601-23-1	**m,p-Xylenes**	**0.78**	0.63	0.45	**0.18**	0.15	0.10	
75-25-2	Bromoform	0.63	0.63	0.26	0.061	0.061	0.026	U
100-42-5	Styrene	0.63	0.63	0.24	0.15	0.15	0.056	U
95-47-6	**o-Xylene**	**0.41**	0.63	0.24	**0.095**	0.15	0.055	J
79-34-5	1,1,2,2-Tetrachloroethane	0.13	0.13	0.072	0.018	0.018	0.010	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-B2-032310** CAS Project ID: P1001084
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI** CAS Sample ID: P1001084-008

Tentatively Identified Compounds

Test Code:	EPA TO-15	Date Collected:	3/23/10
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13	Date Received:	3/26/10
Analyst:	Chris Cornett	Date Analyzed:	3/31/10
Sampling Media:	6.0 L Summa Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:	**T**		
Container ID:	AC00824		

Initial Pressure (psig): 0.4 Final Pressure (psig): 4.3

Canister Dilution Factor: 1.26

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
4.70	Propane	**8.6**	
5.41	Acetaldehyde + Isobutane	**5.0**	
23.82	Benzaldehyde	**9.4**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-B4-032310**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-009

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00977

Date Collected: 3/23/10
Date Received: 3/26/10
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -1.6 Final Pressure (psig): 3.9

Canister Dilution Factor: 1.42

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	**Chloromethane**	**0.47**	0.28	0.16	**0.23**	0.14	0.076	
75-01-4	Vinyl Chloride	0.14	0.14	0.092	0.056	0.056	0.036	U
74-83-9	Bromomethane	0.14	0.14	0.10	0.037	0.037	0.027	U
75-00-3	Chloroethane	0.14	0.14	0.11	0.054	0.054	0.043	U
67-64-1	**Acetone**	**18**	7.1	1.8	**7.7**	3.0	0.78	
107-13-1	**Acrylonitrile**	**0.39**	0.71	0.31	**0.18**	0.33	0.14	J
75-35-4	1,1-Dichloroethene	0.14	0.14	0.11	0.036	0.036	0.027	U
75-09-2	**Methylene Chloride**	**0.29**	0.71	0.27	**0.083**	0.20	0.078	J
75-15-0	**Carbon Disulfide**	**0.83**	7.1	0.34	**0.27**	2.3	0.11	J
156-60-5	trans-1,2-Dichloroethene	0.14	0.14	0.084	0.036	0.036	0.021	U
75-34-3	1,1-Dichloroethane	0.14	0.14	0.088	0.035	0.035	0.022	U
1634-04-4	Methyl tert-Butyl Ether	0.14	0.14	0.099	0.039	0.039	0.028	U
78-93-3	**2-Butanone (MEK)**	**0.99**	7.1	0.31	**0.33**	2.4	0.11	J
156-59-2	cis-1,2-Dichloroethene	0.14	0.14	0.081	0.036	0.036	0.020	U
67-66-3	**Chloroform**	**0.15**	0.14	0.084	**0.032**	0.029	0.017	
107-06-2	1,2-Dichloroethane	0.14	0.14	0.088	0.035	0.035	0.022	U
71-55-6	1,1,1-Trichloroethane	0.14	0.14	0.11	0.026	0.026	0.019	U
71-43-2	**Benzene**	**0.68**	0.14	0.098	**0.21**	0.044	0.031	

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-B4-032310**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-009

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00977

Date Collected: 3/23/10
Date Received: 3/26/10
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -1.6 Final Pressure (psig): 3.9

Canister Dilution Factor: 1.42

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	**Carbon Tetrachloride**	**0.52**	0.14	0.11	**0.082**	0.023	0.017	
78-87-5	1,2-Dichloropropane	0.14	0.14	0.10	0.031	0.031	0.022	U
75-27-4	Bromodichloromethane	0.14	0.14	0.10	0.021	0.021	0.015	U
79-01-6	**Trichloroethene**	**5.0**	0.14	0.088	**0.94**	0.026	0.016	
10061-01-5	cis-1,3-Dichloropropene	0.71	0.71	0.23	0.16	0.16	0.050	U
108-10-1	**4-Methyl-2-pentanone**	**52**	0.71	0.27	**13**	0.17	0.066	
10061-02-6	trans-1,3-Dichloropropene	0.71	0.71	0.28	0.16	0.16	0.063	U
79-00-5	1,1,2-Trichloroethane	0.14	0.14	0.078	0.026	0.026	0.014	U
108-88-3	**Toluene**	**9.3**	0.71	0.27	**2.5**	0.19	0.072	
124-48-1	Dibromochloromethane	0.14	0.14	0.097	0.017	0.017	0.011	U
127-18-4	Tetrachloroethene	0.14	0.14	0.084	0.021	0.021	0.012	U
108-90-7	Chlorobenzene	0.14	0.14	0.071	0.031	0.031	0.015	U
100-41-4	**Ethylbenzene**	**0.35**	0.71	0.27	**0.081**	0.16	0.062	J
179601-23-1	**m,p-Xylenes**	**1.1**	0.71	0.51	**0.25**	0.16	0.12	
75-25-2	Bromoform	0.71	0.71	0.30	0.069	0.069	0.029	U
100-42-5	Styrene	0.71	0.71	0.27	0.17	0.17	0.063	U
95-47-6	**o-Xylene**	**0.59**	0.71	0.27	**0.14**	0.16	0.062	J
79-34-5	1,1,2,2-Tetrachloroethane	0.14	0.14	0.081	0.021	0.021	0.012	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-B4-032310**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-009

Tentatively Identified Compounds

Test Code:	EPA TO-15	Date Collected:	3/23/10
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13	Date Received:	3/26/10
Analyst:	Chris Cornett	Date Analyzed:	3/31/10
Sampling Media:	6.0 L Summa Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:	**T**		
Container ID:	AC00977		

Initial Pressure (psig): -1.6 Final Pressure (psig): 3.9

Canister Dilution Factor: 1.42

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
4.70	Propane	**13**	
5.96	n-Butane	**7.9**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-FB-032310**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-010

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01257

Date Collected: 3/23/10
Date Received: 3/26/10
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	Chloromethane	0.20	0.20	0.11	0.097	0.097	0.053	U
75-01-4	Vinyl Chloride	0.10	0.10	0.065	0.039	0.039	0.025	U
74-83-9	Bromomethane	0.10	0.10	0.073	0.026	0.026	0.019	U
75-00-3	Chloroethane	0.10	0.10	0.080	0.038	0.038	0.030	U
67-64-1	**Acetone**	**1.6**	5.0	1.3	**0.69**	2.1	0.55	J
107-13-1	Acrylonitrile	0.50	0.50	0.22	0.23	0.23	0.10	U
75-35-4	1,1-Dichloroethene	0.10	0.10	0.075	0.025	0.025	0.019	U
75-09-2	Methylene Chloride	0.50	0.50	0.19	0.14	0.14	0.055	U
75-15-0	Carbon Disulfide	5.0	5.0	0.24	1.6	1.6	0.077	U
156-60-5	trans-1,2-Dichloroethene	0.10	0.10	0.059	0.025	0.025	0.015	U
75-34-3	1,1-Dichloroethane	0.10	0.10	0.062	0.025	0.025	0.015	U
1634-04-4	Methyl tert-Butyl Ether	0.10	0.10	0.070	0.028	0.028	0.019	U
78-93-3	2-Butanone (MEK)	5.0	5.0	0.22	1.7	1.7	0.075	U
156-59-2	cis-1,2-Dichloroethene	0.10	0.10	0.057	0.025	0.025	0.014	U
67-66-3	Chloroform	0.10	0.10	0.059	0.020	0.020	0.012	U
107-06-2	1,2-Dichloroethane	0.10	0.10	0.062	0.025	0.025	0.015	U
71-55-6	1,1,1-Trichloroethane	0.10	0.10	0.074	0.018	0.018	0.014	U
71-43-2	Benzene	0.10	0.10	0.069	0.031	0.031	0.022	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Verified By: _____ Date: 4/8/10

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-FB-032310**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-010

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01257

Date Collected: 3/23/10
Date Received: 3/26/10
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	0.10	0.10	0.075	0.016	0.016	0.012	U
78-87-5	1,2-Dichloropropane	0.10	0.10	0.073	0.022	0.022	0.016	U
75-27-4	Bromodichloromethane	0.10	0.10	0.072	0.015	0.015	0.011	U
79-01-6	Trichloroethene	0.10	0.10	0.062	0.019	0.019	0.012	U
10061-01-5	cis-1,3-Dichloropropene	0.50	0.50	0.16	0.11	0.11	0.035	U
108-10-1	4-Methyl-2-pentanone	0.50	0.50	0.19	0.12	0.12	0.046	U
10061-02-6	trans-1,3-Dichloropropene	0.50	0.50	0.20	0.11	0.11	0.044	U
79-00-5	1,1,2-Trichloroethane	0.10	0.10	0.055	0.018	0.018	0.010	U
108-88-3	**Toluene**	**0.56**	0.50	0.19	**0.15**	0.13	0.050	
124-48-1	Dibromochloromethane	0.10	0.10	0.068	0.012	0.012	0.0080	U
127-18-4	Tetrachloroethene	0.10	0.10	0.059	0.015	0.015	0.0087	U
108-90-7	Chlorobenzene	0.10	0.10	0.050	0.022	0.022	0.011	U
100-41-4	Ethylbenzene	0.50	0.50	0.19	0.12	0.12	0.044	U
179601-23-1	m,p-Xylenes	0.50	0.50	0.36	0.12	0.12	0.083	U
75-25-2	Bromoform	0.50	0.50	0.21	0.048	0.048	0.020	U
100-42-5	Styrene	0.50	0.50	0.19	0.12	0.12	0.045	U
95-47-6	o-Xylene	0.50	0.50	0.19	0.12	0.12	0.044	U
79-34-5	1,1,2,2-Tetrachloroethane	0.10	0.10	0.057	0.015	0.015	0.0083	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-FB-032310** CAS Project ID: P1001084
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI** CAS Sample ID: P1001084-010

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 3/23/10
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 3/26/10
Analyst: Chris Cornett Date Analyzed: 3/31/10
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AC01257

Canister Dilution Factor: 1.00

GC/MS Retention Time	Compound Identification	Concentration µg/m³	Data Qualifier
	Epichlorohydrin	NF	

NF = Compound was searched for, but not found.

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-IA-3-032310**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-011

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01425

Date Collected: 3/23/10
Date Received: 3/26/10
Date Analyzed: 4/1 - 4/2/10
Volume(s) Analyzed: 1.00 Liter(s)
0.10 Liter(s)

Initial Pressure (psig): -2.3 Final Pressure (psig): 3.6

Canister Dilution Factor: 1.48

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	**Chloromethane**	**0.38**	0.30	0.16	**0.19**	0.14	0.079	
75-01-4	Vinyl Chloride	0.15	0.15	0.096	0.058	0.058	0.038	**U**
74-83-9	Bromomethane	0.15	0.15	0.11	0.038	0.038	0.028	**U**
75-00-3	Chloroethane	0.15	0.15	0.12	0.056	0.056	0.045	**U**
67-64-1	**Acetone**	**25**	7.4	1.9	**11**	3.1	0.81	
107-13-1	**Acrylonitrile**	**2.7**	0.74	0.33	**1.3**	0.34	0.15	
75-35-4	1,1-Dichloroethene	0.15	0.15	0.11	0.037	0.037	0.028	**U**
75-09-2	Methylene Chloride	0.74	0.74	0.28	0.21	0.21	0.081	**U**
75-15-0	Carbon Disulfide	7.4	7.4	0.36	2.4	2.4	0.11	**U**
156-60-5	trans-1,2-Dichloroethene	0.15	0.15	0.087	0.037	0.037	0.022	**U**
75-34-3	1,1-Dichloroethane	0.15	0.15	0.092	0.037	0.037	0.023	**U**
1634-04-4	Methyl tert-Butyl Ether	0.15	0.15	0.10	0.041	0.041	0.029	**U**
78-93-3	**2-Butanone (MEK)**	**1.2**	7.4	0.33	**0.42**	2.5	0.11	**J**
156-59-2	cis-1,2-Dichloroethene	0.15	0.15	0.084	0.037	0.037	0.021	**U**
67-66-3	**Chloroform**	**1.4**	0.15	0.087	**0.28**	0.030	0.018	
107-06-2	1,2-Dichloroethane	0.15	0.15	0.092	0.037	0.037	0.023	**U**
71-55-6	1,1,1-Trichloroethane	0.15	0.15	0.11	0.027	0.027	0.020	**U**
71-43-2	**Benzene**	**1.1**	0.15	0.10	**0.35**	0.046	0.032	

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-IA-3-032310**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-011

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01425

Date Collected: 3/23/10
Date Received: 3/26/10
Date Analyzed: 4/1 - 4/2/10
Volume(s) Analyzed: 1.00 Liter(s)
0.10 Liter(s)

Initial Pressure (psig): -2.3 Final Pressure (psig): 3.6

Canister Dilution Factor: 1.48

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	**Carbon Tetrachloride**	**0.49**	0.15	0.11	**0.078**	0.024	0.018	
78-87-5	1,2-Dichloropropane	0.15	0.15	0.11	0.032	0.032	0.023	U
75-27-4	Bromodichloromethane	0.15	0.15	0.11	0.022	0.022	0.016	U
79-01-6	**Trichloroethene**	**1.4**	0.15	0.092	**0.26**	0.028	0.017	
10061-01-5	cis-1,3-Dichloropropene	0.74	0.74	0.24	0.16	0.16	0.052	U
108-10-1	**4-Methyl-2-pentanone**	**410**	7.4	0.28	**100**	1.8	0.069	D
10061-02-6	trans-1,3-Dichloropropene	0.74	0.74	0.30	0.16	0.16	0.065	U
79-00-5	1,1,2-Trichloroethane	0.15	0.15	0.081	0.027	0.027	0.015	U
108-88-3	**Toluene**	**4.7**	0.74	0.28	**1.2**	0.20	0.075	
124-48-1	Dibromochloromethane	0.15	0.15	0.10	0.017	0.017	0.012	U
127-18-4	**Tetrachloroethene**	**0.087**	0.15	0.087	**0.013**	0.022	0.013	J
108-90-7	Chlorobenzene	0.15	0.15	0.074	0.032	0.032	0.016	U
100-41-4	**Ethylbenzene**	**0.54**	0.74	0.28	**0.13**	0.17	0.065	J
179601-23-1	**m,p-Xylenes**	**1.8**	0.74	0.53	**0.41**	0.17	0.12	
75-25-2	Bromoform	0.74	0.74	0.31	0.072	0.072	0.030	U
100-42-5	Styrene	0.74	0.74	0.28	0.17	0.17	0.066	U
95-47-6	**o-Xylene**	**0.69**	0.74	0.28	**0.16**	0.17	0.065	J
79-34-5	1,1,2,2-Tetrachloroethane	0.15	0.15	0.084	0.022	0.022	0.012	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
D = The reported result is from a dilution.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-IA-3-032310** CAS Project ID: P1001084
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI** CAS Sample ID: P1001084-011

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 3/23/10
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 3/26/10
Analyst: Chris Cornett Date Analyzed: 4/1 - 4/2/10
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes: **T** 0.10 Liter(s)
Container ID: AC01425

Initial Pressure (psig): -2.3 Final Pressure (psig): 3.6

Canister Dilution Factor: 1.48

GC/MS Retention Time	Compound Identification	Concentration µg/m³	Data Qualifier
5.40	Isobutane	**4.0**	
5.96	n-Butane	**6.4**	
8.59	n-Pentane	**5.6**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-IA-5-032310**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-012

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00515

Date Collected: 3/23/10
Date Received: 3/26/10
Date Analyzed: 4/1/10 & 4/3/10
Volume(s) Analyzed: 1.00 Liter(s)
0.10 Liter(s)

Initial Pressure (psig): -0.1 Final Pressure (psig): 3.6

Canister Dilution Factor: 1.25

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	**Chloromethane**	**0.52**	0.25	0.14	**0.25**	0.12	0.067	
75-01-4	Vinyl Chloride	0.13	0.13	0.081	0.049	0.049	0.032	U
74-83-9	Bromomethane	0.13	0.13	0.091	0.032	0.032	0.024	U
75-00-3	Chloroethane	0.13	0.13	0.10	0.047	0.047	0.038	U
67-64-1	**Acetone**	**15**	6.3	1.6	**6.4**	2.6	0.68	
107-13-1	Acrylonitrile	0.63	0.63	0.28	0.29	0.29	0.13	U
75-35-4	**1,1-Dichloroethene**	**0.74**	0.13	0.094	**0.19**	0.032	0.024	
75-09-2	**Methylene Chloride**	**0.34**	0.63	0.24	**0.096**	0.18	0.068	J
75-15-0	**Carbon Disulfide**	**14**	6.3	0.30	**4.5**	2.0	0.096	
156-60-5	trans-1,2-Dichloroethene	0.13	0.13	0.074	0.032	0.032	0.019	U
75-34-3	1,1-Dichloroethane	0.13	0.13	0.078	0.031	0.031	0.019	U
1634-04-4	Methyl tert-Butyl Ether	0.13	0.13	0.088	0.035	0.035	0.024	U
78-93-3	**2-Butanone (MEK)**	**1.3**	6.3	0.28	**0.45**	2.1	0.093	J
156-59-2	cis-1,2-Dichloroethene	0.13	0.13	0.071	0.032	0.032	0.018	U
67-66-3	**Chloroform**	**4.3**	0.13	0.074	**0.88**	0.026	0.015	
107-06-2	1,2-Dichloroethane	0.13	0.13	0.078	0.031	0.031	0.019	U
71-55-6	1,1,1-Trichloroethane	0.13	0.13	0.093	0.023	0.023	0.017	U
71-43-2	**Benzene**	**0.69**	0.13	0.086	**0.22**	0.039	0.027	

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-IA-5-032310**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-012

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00515

Date Collected: 3/23/10
Date Received: 3/26/10
Date Analyzed: 4/1/10 & 4/3/10
Volume(s) Analyzed: 1.00 Liter(s)
0.10 Liter(s)

Initial Pressure (psig): -0.1 Final Pressure (psig): 3.6

Canister Dilution Factor: 1.25

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	**Carbon Tetrachloride**	**0.67**	0.13	0.094	**0.11**	0.020	0.015	
78-87-5	1,2-Dichloropropane	0.13	0.13	0.091	0.027	0.027	0.020	U
75-27-4	Bromodichloromethane	0.13	0.13	0.090	0.019	0.019	0.013	U
79-01-6	**Trichloroethene**	**0.78**	0.13	0.078	**0.14**	0.023	0.014	
10061-01-5	cis-1,3-Dichloropropene	0.63	0.63	0.20	0.14	0.14	0.044	U
108-10-1	**4-Methyl-2-pentanone**	**560**	6.3	0.24	**140**	1.5	0.058	D
10061-02-6	trans-1,3-Dichloropropene	0.63	0.63	0.25	0.14	0.14	0.055	U
79-00-5	1,1,2-Trichloroethane	0.13	0.13	0.069	0.023	0.023	0.013	U
108-88-3	**Toluene**	**3.3**	0.63	0.24	**0.87**	0.17	0.063	
124-48-1	Dibromochloromethane	0.13	0.13	0.085	0.015	0.015	0.010	U
127-18-4	Tetrachloroethene	0.13	0.13	0.074	0.018	0.018	0.011	U
108-90-7	Chlorobenzene	0.13	0.13	0.063	0.027	0.027	0.014	U
100-41-4	**Ethylbenzene**	**0.33**	0.63	0.24	**0.076**	0.14	0.055	J
179601-23-1	**m,p-Xylenes**	**1.1**	0.63	0.45	**0.25**	0.14	0.10	
75-25-2	Bromoform	0.63	0.63	0.26	0.060	0.060	0.025	U
100-42-5	Styrene	0.63	0.63	0.24	0.15	0.15	0.056	U
95-47-6	**o-Xylene**	**0.39**	0.63	0.24	**0.091**	0.14	0.055	J
79-34-5	1,1,2,2-Tetrachloroethane	0.13	0.13	0.071	0.018	0.018	0.010	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
D = The reported result is from a dilution.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-IA-5-032310**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-012

Tentatively Identified Compounds

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes: **T**
Container ID: AC00515

Date Collected: 3/23/10
Date Received: 3/26/10
Date Analyzed: 4/1/10 & 4/3/10
Volume(s) Analyzed: 1.00 Liter(s)
0.10 Liter(s)

Initial Pressure (psig): -0.1 Final Pressure (psig): 3.6

Canister Dilution Factor: 1.25

GC/MS Retention Time	Compound Identification	Concentration µg/m³	Data Qualifier
4.70	Propane	**98**	
5.40	Isobutane	**9.7**	
26.26	Cymene Isomer	**10**	
26.79	1,2,3,4-Tetramethyl Benzene	**12**	
27.23	$C_{10}H_{12}$ Aromatic Compound	**12**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-IA-7-032310**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-013

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00527

Date Collected: 3/23/10
Date Received: 3/26/10
Date Analyzed: 4/1/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -1.0 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.33

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	**Chloromethane**	**0.46**	0.27	0.15	**0.22**	0.13	0.071	
75-01-4	Vinyl Chloride	0.13	0.13	0.086	0.052	0.052	0.034	**U**
74-83-9	Bromomethane	0.13	0.13	0.097	0.034	0.034	0.025	**U**
75-00-3	Chloroethane	0.13	0.13	0.11	0.050	0.050	0.040	**U**
67-64-1	**Acetone**	**30**	6.7	1.7	**13**	2.8	0.73	
107-13-1	**Acrylonitrile**	**0.38**	0.67	0.29	**0.18**	0.31	0.13	**J**
75-35-4	1,1-Dichloroethene	0.13	0.13	0.10	0.034	0.034	0.025	**U**
75-09-2	**Methylene Chloride**	**0.32**	0.67	0.25	**0.093**	0.19	0.073	**J**
75-15-0	**Carbon Disulfide**	**11**	6.7	0.32	**3.6**	2.1	0.10	
156-60-5	trans-1,2-Dichloroethene	0.13	0.13	0.078	0.034	0.034	0.020	**U**
75-34-3	1,1-Dichloroethane	0.13	0.13	0.082	0.033	0.033	0.020	**U**
1634-04-4	Methyl tert-Butyl Ether	0.13	0.13	0.093	0.037	0.037	0.026	**U**
78-93-3	**2-Butanone (MEK)**	**1.1**	6.7	0.29	**0.36**	2.3	0.099	**J**
156-59-2	cis-1,2-Dichloroethene	0.13	0.13	0.076	0.034	0.034	0.019	**U**
67-66-3	**Chloroform**	**0.39**	0.13	0.078	**0.080**	0.027	0.016	
107-06-2	**1,2-Dichloroethane**	**0.13**	0.13	0.082	**0.033**	0.033	0.020	**J**
71-55-6	1,1,1-Trichloroethane	0.13	0.13	0.098	0.024	0.024	0.018	**U**
71-43-2	**Benzene**	**0.71**	0.13	0.092	**0.22**	0.042	0.029	

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-IA-7-032310**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-013

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00527

Date Collected: 3/23/10
Date Received: 3/26/10
Date Analyzed: 4/1/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -1.0 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.33

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	**Carbon Tetrachloride**	**0.64**	0.13	0.10	**0.10**	0.021	0.016	
78-87-5	1,2-Dichloropropane	0.13	0.13	0.097	0.029	0.029	0.021	U
75-27-4	Bromodichloromethane	0.13	0.13	0.096	0.020	0.020	0.014	U
79-01-6	**Trichloroethene**	**0.51**	0.13	0.082	**0.095**	0.025	0.015	
10061-01-5	cis-1,3-Dichloropropene	0.67	0.67	0.21	0.15	0.15	0.047	U
108-10-1	**4-Methyl-2-pentanone**	**79**	0.67	0.25	**19**	0.16	0.062	
10061-02-6	trans-1,3-Dichloropropene	0.67	0.67	0.27	0.15	0.15	0.059	U
79-00-5	1,1,2-Trichloroethane	0.13	0.13	0.073	0.024	0.024	0.013	U
108-88-3	**Toluene**	**2.6**	0.67	0.25	**0.69**	0.18	0.067	
124-48-1	Dibromochloromethane	0.13	0.13	0.090	0.016	0.016	0.011	U
127-18-4	Tetrachloroethene	0.13	0.13	0.078	0.020	0.020	0.012	U
108-90-7	Chlorobenzene	0.13	0.13	0.067	0.029	0.029	0.014	U
100-41-4	**Ethylbenzene**	**0.26**	0.67	0.25	**0.061**	0.15	0.058	J
179601-23-1	**m,p-Xylenes**	**0.82**	0.67	0.48	**0.19**	0.15	0.11	
75-25-2	Bromoform	0.67	0.67	0.28	0.064	0.064	0.027	U
100-42-5	Styrene	0.67	0.67	0.25	0.16	0.16	0.059	U
95-47-6	**o-Xylene**	**0.49**	0.67	0.25	**0.11**	0.15	0.058	J
79-34-5	1,1,2,2-Tetrachloroethane	0.13	0.13	0.076	0.019	0.019	0.011	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-IA-7-032310** CAS Project ID: P1001084
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI** CAS Sample ID: P1001084-013

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 3/23/10
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 3/26/10
Analyst: Chris Cornett Date Analyzed: 4/1/10
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes: **T**
Container ID: AC00527

Initial Pressure (psig): -1.0 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.33

GC/MS Retention Time	Compound Identification	Concentration µg/m³	Data Qualifier
4.70	Propane	**20**	
23.82	Benzaldehyde	**13**	
26.26	Cymene Isomer	**9.4**	
26.79	1,2,3,4-Tetramethyl Benzene	**12**	
27.23	$C_{10}H_{12}$ Aromatic Compound	**12**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-IA-6-032310**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-014

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00623

Date Collected: 3/23/10
Date Received: 3/26/10
Date Analyzed: 4/1/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -1.8 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.41

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	**Chloromethane**	**0.46**	0.28	0.16	**0.22**	0.14	0.075	
75-01-4	Vinyl Chloride	0.14	0.14	0.092	0.055	0.055	0.036	**U**
74-83-9	Bromomethane	0.14	0.14	0.10	0.036	0.036	0.027	**U**
75-00-3	Chloroethane	0.14	0.14	0.11	0.053	0.053	0.043	**U**
67-64-1	**Acetone**	**24**	7.1	1.8	**10**	3.0	0.77	
107-13-1	**Acrylonitrile**	**6.7**	0.71	0.31	**3.1**	0.32	0.14	
75-35-4	1,1-Dichloroethene	0.14	0.14	0.11	0.036	0.036	0.027	**U**
75-09-2	**Methylene Chloride**	**0.30**	0.71	0.27	**0.085**	0.20	0.077	**J**
75-15-0	**Carbon Disulfide**	**3.8**	7.1	0.34	**1.2**	2.3	0.11	**J**
156-60-5	trans-1,2-Dichloroethene	0.14	0.14	0.083	0.036	0.036	0.021	**U**
75-34-3	1,1-Dichloroethane	0.14	0.14	0.087	0.035	0.035	0.022	**U**
1634-04-4	Methyl tert-Butyl Ether	0.14	0.14	0.099	0.039	0.039	0.027	**U**
78-93-3	**2-Butanone (MEK)**	**1.0**	7.1	0.31	**0.34**	2.4	0.11	**J**
156-59-2	cis-1,2-Dichloroethene	0.14	0.14	0.080	0.036	0.036	0.020	**U**
67-66-3	**Chloroform**	**0.47**	0.14	0.083	**0.096**	0.029	0.017	
107-06-2	1,2-Dichloroethane	0.14	0.14	0.087	0.035	0.035	0.022	**U**
71-55-6	1,1,1-Trichloroethane	0.14	0.14	0.10	0.026	0.026	0.019	**U**
71-43-2	**Benzene**	**0.73**	0.14	0.097	**0.23**	0.044	0.030	

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-IA-6-032310**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-014

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC00623

Date Collected: 3/23/10
Date Received: 3/26/10
Date Analyzed: 4/1/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -1.8 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.41

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	**Carbon Tetrachloride**	**0.63**	0.14	0.11	**0.10**	0.022	0.017	
78-87-5	1,2-Dichloropropane	0.14	0.14	0.10	0.031	0.031	0.022	**U**
75-27-4	Bromodichloromethane	0.14	0.14	0.10	0.021	0.021	0.015	**U**
79-01-6	**Trichloroethene**	**0.11**	0.14	0.087	**0.021**	0.026	0.016	**J**
10061-01-5	cis-1,3-Dichloropropene	0.71	0.71	0.23	0.16	0.16	0.050	**U**
108-10-1	**4-Methyl-2-pentanone**	**130**	0.71	0.27	**31**	0.17	0.065	
10061-02-6	trans-1,3-Dichloropropene	0.71	0.71	0.28	0.16	0.16	0.062	**U**
79-00-5	1,1,2-Trichloroethane	0.14	0.14	0.078	0.026	0.026	0.014	**U**
108-88-3	**Toluene**	**1.8**	0.71	0.27	**0.46**	0.19	0.071	
124-48-1	Dibromochloromethane	0.14	0.14	0.096	0.017	0.017	0.011	**U**
127-18-4	Tetrachloroethene	0.14	0.14	0.083	0.021	0.021	0.012	**U**
108-90-7	Chlorobenzene	0.14	0.14	0.071	0.031	0.031	0.015	**U**
100-41-4	**Ethylbenzene**	**0.51**	0.71	0.27	**0.12**	0.16	0.062	**J**
179601-23-1	**m,p-Xylenes**	**1.7**	0.71	0.51	**0.39**	0.16	0.12	
75-25-2	Bromoform	0.71	0.71	0.30	0.068	0.068	0.029	**U**
100-42-5	Styrene	0.71	0.71	0.27	0.17	0.17	0.063	**U**
95-47-6	**o-Xylene**	**0.49**	0.71	0.27	**0.11**	0.16	0.062	**J**
79-34-5	1,1,2,2-Tetrachloroethane	0.14	0.14	0.080	0.021	0.021	0.012	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-IA-6-032310** CAS Project ID: P1001084
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI** CAS Sample ID: P1001084-014

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 3/23/10
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 3/26/10
Analyst: Chris Cornett Date Analyzed: 4/1/10
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes: **T**
Container ID: AC00623

Initial Pressure (psig): -1.8 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.41

GC/MS Retention Time	Compound Identification	Concentration µg/m³	Data Qualifier
4.71	Propane	**81**	
5.41	Acetaldehyde + Isobutane	**7.9**	
26.26	Cymene Isomer	**6.4**	
26.79	1,2,3,4-Tetramethyl Benzene	**6.8**	
27.23	$C_{10}H_{12}$ Aromatic Compound	**7.0**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

Verified By: _____ Date: 4/8/16

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-4-032310**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-015

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: SC01013

Date Collected: 3/23/10
Date Received: 3/26/10
Date Analyzed: 4/1/10 & 4/3/10
Volume(s) Analyzed: 1.00 Liter(s)
0.050 Liter(s)

Initial Pressure (psig): -0.3 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.26

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	Chloromethane	0.25	0.25	0.14	0.12	0.12	0.067	U
75-01-4	Vinyl Chloride	0.13	0.13	0.082	0.049	0.049	0.032	U
74-83-9	Bromomethane	0.13	0.13	0.092	0.032	0.032	0.024	U
75-00-3	**Chloroethane**	**0.22**	0.13	0.10	**0.084**	0.048	0.038	
67-64-1	**Acetone**	**37**	6.3	1.6	**15**	2.7	0.69	
107-13-1	**Acrylonitrile**	**0.38**	0.63	0.28	**0.18**	0.29	0.13	J
75-35-4	**1,1-Dichloroethene**	**0.34**	0.13	0.095	**0.086**	0.032	0.024	
75-09-2	**Methylene Chloride**	**0.35**	0.63	0.24	**0.10**	0.18	0.069	J
75-15-0	**Carbon Disulfide**	**11**	6.3	0.30	**3.4**	2.0	0.097	
156-60-5	trans-1,2-Dichloroethene	0.13	0.13	0.074	0.032	0.032	0.019	U
75-34-3	**1,1-Dichloroethane**	**4.1**	0.13	0.078	**1.0**	0.031	0.019	
1634-04-4	Methyl tert-Butyl Ether	0.13	0.13	0.088	0.035	0.035	0.024	U
78-93-3	**2-Butanone (MEK)**	**2.0**	6.3	0.28	**0.69**	2.1	0.094	J
156-59-2	cis-1,2-Dichloroethene	0.13	0.13	0.072	0.032	0.032	0.018	U
67-66-3	**Chloroform**	**770**	2.5	0.074	**160**	0.52	0.015	D
107-06-2	1,2-Dichloroethane	0.13	0.13	0.078	0.031	0.031	0.019	U
71-55-6	**1,1,1-Trichloroethane**	**19**	0.13	0.093	**3.6**	0.023	0.017	
71-43-2	**Benzene**	**0.18**	0.13	0.087	**0.055**	0.039	0.027	

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
D = The reported result is from a dilution.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-4-032310**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-015

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: SC01013

Date Collected: 3/23/10
Date Received: 3/26/10
Date Analyzed: 4/1/10 & 4/3/10
Volume(s) Analyzed: 1.00 Liter(s)
0.050 Liter(s)

Initial Pressure (psig): -0.3 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.26

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	**Carbon Tetrachloride**	**0.25**	0.13	0.095	**0.040**	0.020	0.015	
78-87-5	**1,2-Dichloropropane**	**8.0**	0.13	0.092	**1.7**	0.027	0.020	
75-27-4	**Bromodichloromethane**	**0.15**	0.13	0.091	**0.023**	0.019	0.014	
79-01-6	**Trichloroethene**	**4.8**	0.13	0.078	**0.90**	0.023	0.015	
10061-01-5	cis-1,3-Dichloropropene	0.63	0.63	0.20	0.14	0.14	0.044	U
108-10-1	**4-Methyl-2-pentanone**	**10**	0.63	0.24	**2.5**	0.15	0.058	
10061-02-6	trans-1,3-Dichloropropene	0.63	0.63	0.25	0.14	0.14	0.056	U
79-00-5	1,1,2-Trichloroethane	0.13	0.13	0.069	0.023	0.023	0.013	U
108-88-3	**Toluene**	**2.2**	0.63	0.24	**0.59**	0.17	0.064	
124-48-1	Dibromochloromethane	0.13	0.13	0.086	0.015	0.015	0.010	U
127-18-4	**Tetrachloroethene**	**34**	0.13	0.074	**5.0**	0.019	0.011	
108-90-7	Chlorobenzene	0.13	0.13	0.063	0.027	0.027	0.014	U
100-41-4	**Ethylbenzene**	**0.39**	0.63	0.24	**0.090**	0.15	0.055	J
179601-23-1	**m,p-Xylenes**	**0.57**	0.63	0.45	**0.13**	0.15	0.10	J
75-25-2	Bromoform	0.63	0.63	0.26	0.061	0.061	0.026	U
100-42-5	Styrene	0.63	0.63	0.24	0.15	0.15	0.056	U
95-47-6	**o-Xylene**	**0.25**	0.63	0.24	**0.057**	0.15	0.055	J
79-34-5	1,1,2,2-Tetrachloroethane	0.13	0.13	0.072	0.018	0.018	0.010	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Verified By: _____ Date: 4/8/10

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-4-032310** CAS Project ID: P1001084
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI** CAS Sample ID: P1001084-015

Tentatively Identified Compounds

Test Code:	EPA TO-15	Date Collected:	3/23/10
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13	Date Received:	3/26/10
Analyst:	Chris Cornett	Date Analyzed:	4/1/10 & 4/3/10
Sampling Media:	6.0 L Summa Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:	**T**		0.050 Liter(s)
Container ID:	SC01013		

Initial Pressure (psig): -0.3 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.26

GC/MS Retention Time	Compound Identification	Concentration µg/m³	Data Qualifier
5.39	Isobutane	**43**	
14.74	1-Butanol	**9.7**	
20.77	Hexamethylcyclotrisiloxane	**7.5**	
21.19	Unidentified Polyfluorinated Compound	**34**	
22.22	Cyclohexanone	**23**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-7a-032310**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-016

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: SC00139

Date Collected: 3/23/10
Date Received: 3/26/10
Date Analyzed: 4/3/10 & 4/5/10
Volume(s) Analyzed: 1.00 Liter(s)
0.050 Liter(s)

Initial Pressure (psig): -0.5 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.28

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	**Chloromethane**	**0.49**	0.26	0.14	**0.24**	0.12	0.068	
75-01-4	**Vinyl Chloride**	**0.096**	0.13	0.083	**0.038**	0.050	0.033	**J**
74-83-9	**Bromomethane**	**0.093**	0.13	0.093	**0.024**	0.033	0.024	**J**
75-00-3	**Chloroethane**	**0.39**	0.13	0.10	**0.15**	0.049	0.039	
67-64-1	**Acetone**	**42**	6.4	1.7	**18**	2.7	0.70	**M1**
107-13-1	**Acrylonitrile**	**0.39**	0.64	0.28	**0.18**	0.30	0.13	**J**
75-35-4	**1,1-Dichloroethene**	**0.86**	0.13	0.096	**0.22**	0.032	0.024	
75-09-2	**Methylene Chloride**	**11**	0.64	0.24	**3.3**	0.18	0.070	
75-15-0	**Carbon Disulfide**	**820**	130	0.31	**260**	41	0.099	**D**
156-60-5	**trans-1,2-Dichloroethene**	**0.32**	0.13	0.076	**0.080**	0.032	0.019	
75-34-3	**1,1-Dichloroethane**	**2.4**	0.13	0.079	**0.58**	0.032	0.020	
1634-04-4	Methyl tert-Butyl Ether	0.13	0.13	0.090	0.036	0.036	0.025	**U**
78-93-3	**2-Butanone (MEK)**	**2.8**	6.4	0.28	**0.95**	2.2	0.096	**J**
156-59-2	**cis-1,2-Dichloroethene**	**1.7**	0.13	0.073	**0.42**	0.032	0.018	
67-66-3	**Chloroform**	**99**	0.13	0.076	**20**	0.026	0.015	
107-06-2	**1,2-Dichloroethane**	**0.12**	0.13	0.079	**0.029**	0.032	0.020	**J**
71-55-6	1,1,1-Trichloroethane	0.13	0.13	0.095	0.023	0.023	0.017	**U**
71-43-2	**Benzene**	**1.1**	0.13	0.088	**0.35**	0.040	0.028	

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
D = The reported result is from a dilution.
M1 = Matrix interference due to coelution with a non-target compound; results may be biased high.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-7a-032310**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-016

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: SC00139

Date Collected: 3/23/10
Date Received: 3/26/10
Date Analyzed: 4/3/10 & 4/5/10
Volume(s) Analyzed: 1.00 Liter(s)
0.050 Liter(s)

Initial Pressure (psig): -0.5 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.28

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	**Carbon Tetrachloride**	**0.62**	0.13	0.096	**0.098**	0.020	0.015	
78-87-5	**1,2-Dichloropropane**	**1.4**	0.13	0.093	**0.29**	0.028	0.020	
75-27-4	Bromodichloromethane	0.13	0.13	0.092	0.019	0.019	0.014	**U**
79-01-6	**Trichloroethene**	**2.2**	0.13	0.079	**0.41**	0.024	0.015	
10061-01-5	cis-1,3-Dichloropropene	0.64	0.64	0.20	0.14	0.14	0.045	**U**
108-10-1	**4-Methyl-2-pentanone**	**260**	13	0.24	**63**	3.1	0.059	**D**
10061-02-6	trans-1,3-Dichloropropene	0.64	0.64	0.26	0.14	0.14	0.056	**U**
79-00-5	1,1,2-Trichloroethane	0.13	0.13	0.070	0.023	0.023	0.013	**U**
108-88-3	**Toluene**	**62**	0.64	0.24	**16**	0.17	0.065	
124-48-1	Dibromochloromethane	0.13	0.13	0.087	0.015	0.015	0.010	**U**
127-18-4	**Tetrachloroethene**	**0.80**	0.13	0.076	**0.12**	0.019	0.011	
108-90-7	Chlorobenzene	0.13	0.13	0.064	0.028	0.028	0.014	**U**
100-41-4	**Ethylbenzene**	**12**	0.64	0.24	**2.8**	0.15	0.056	
179601-23-1	**m,p-Xylenes**	**99**	0.64	0.46	**23**	0.15	0.11	
75-25-2	Bromoform	0.64	0.64	0.27	0.062	0.062	0.026	**U**
100-42-5	**Styrene**	**1.6**	0.64	0.24	**0.37**	0.15	0.057	
95-47-6	**o-Xylene**	**23**	0.64	0.24	**5.3**	0.15	0.056	
79-34-5	1,1,2,2-Tetrachloroethane	0.13	0.13	0.073	0.019	0.019	0.011	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
D = The reported result is from a dilution.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-7a-032310** CAS Project ID: P1001084
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI** CAS Sample ID: P1001084-016

Tentatively Identified Compounds

Test Code:	EPA TO-15	Date Collected:	3/23/10
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13	Date Received:	3/26/10
Analyst:	Chris Cornett	Date Analyzed:	4/3/10 & 4/5/10
Sampling Media:	6.0 L Summa Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:	**T**		0.050 Liter(s)
Container ID:	SC00139		

Initial Pressure (psig): -0.5 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.28

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
7.77	Isopentane	**260**	
8.60	n-Pentane	**140**	
9.31	C_5H_{10} Compound	**240**	
23.35	Unidentified Compound	**380**	
25.18	2,2-Oxybispentane	**200**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-DUP-032310**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-017

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: SC00592

Date Collected: 3/23/10
Date Received: 3/26/10
Date Analyzed: 4/3/10 & 4/5/10
Volume(s) Analyzed: 1.00 Liter(s)
0.050 Liter(s)

Initial Pressure (psig): -0.1 Final Pressure (psig): 3.6

Canister Dilution Factor: 1.25

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	**Chloromethane**	**0.50**	0.25	0.14	**0.24**	0.12	0.067	
75-01-4	**Vinyl Chloride**	**0.83**	0.13	0.081	**0.32**	0.049	0.032	
74-83-9	**Bromomethane**	**0.26**	0.13	0.091	**0.068**	0.032	0.024	
75-00-3	**Chloroethane**	**0.49**	0.13	0.10	**0.18**	0.047	0.038	
67-64-1	**Acetone**	**75**	6.3	1.6	**32**	2.6	0.68	
107-13-1	Acrylonitrile	0.63	0.63	0.28	0.29	0.29	0.13	**U**
75-35-4	**1,1-Dichloroethene**	**1.5**	0.13	0.094	**0.38**	0.032	0.024	
75-09-2	**Methylene Chloride**	**82**	0.63	0.24	**24**	0.18	0.068	
75-15-0	**Carbon Disulfide**	**1,000**	130	0.30	**320**	40	0.096	**D**
156-60-5	**trans-1,2-Dichloroethene**	**2.3**	0.13	0.074	**0.59**	0.032	0.019	
75-34-3	**1,1-Dichloroethane**	**11**	0.13	0.078	**2.8**	0.031	0.019	
1634-04-4	**Methyl tert-Butyl Ether**	**0.13**	0.13	0.088	**0.036**	0.035	0.024	
78-93-3	**2-Butanone (MEK)**	**3.7**	6.3	0.28	**1.2**	2.1	0.093	**J**
156-59-2	**cis-1,2-Dichloroethene**	**9.9**	0.13	0.071	**2.5**	0.032	0.018	
67-66-3	**Chloroform**	**190**	2.5	0.074	**39**	0.51	0.015	**D**
107-06-2	**1,2-Dichloroethane**	**0.11**	0.13	0.078	**0.028**	0.031	0.019	**J**
71-55-6	1,1,1-Trichloroethane	0.13	0.13	0.093	0.023	0.023	0.017	**U**
71-43-2	**Benzene**	**2.2**	0.13	0.086	**0.69**	0.039	0.027	

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
D = The reported result is from a dilution.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-DUP-032310**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-017

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: SC00592

Date Collected: 3/23/10
Date Received: 3/26/10
Date Analyzed: 4/3/10 & 4/5/10
Volume(s) Analyzed: 1.00 Liter(s)
0.050 Liter(s)

Initial Pressure (psig): -0.1 Final Pressure (psig): 3.6

Canister Dilution Factor: 1.25

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	**Carbon Tetrachloride**	**0.53**	0.13	0.094	**0.085**	0.020	0.015	
78-87-5	**1,2-Dichloropropane**	**6.0**	0.13	0.091	**1.3**	0.027	0.020	
75-27-4	Bromodichloromethane	0.13	0.13	0.090	0.019	0.019	0.013	**U**
79-01-6	**Trichloroethene**	**4.4**	0.13	0.078	**0.82**	0.023	0.014	
10061-01-5	cis-1,3-Dichloropropene	0.63	0.63	0.20	0.14	0.14	0.044	**U**
108-10-1	**4-Methyl-2-pentanone**	**930**	13	0.24	**230**	3.1	0.058	**D**
10061-02-6	trans-1,3-Dichloropropene	0.63	0.63	0.25	0.14	0.14	0.055	**U**
79-00-5	1,1,2-Trichloroethane	0.13	0.13	0.069	0.023	0.023	0.013	**U**
108-88-3	**Toluene**	**82**	0.63	0.24	**22**	0.17	0.063	
124-48-1	Dibromochloromethane	0.13	0.13	0.085	0.015	0.015	0.010	**U**
127-18-4	**Tetrachloroethene**	**2.8**	0.13	0.074	**0.41**	0.018	0.011	
108-90-7	Chlorobenzene	0.13	0.13	0.063	0.027	0.027	0.014	**U**
100-41-4	**Ethylbenzene**	**60**	0.63	0.24	**14**	0.14	0.055	
179601-23-1	**m,p-Xylenes**	**600**	13	0.45	**140**	2.9	0.10	**D**
75-25-2	Bromoform	0.63	0.63	0.26	0.060	0.060	0.025	**U**
100-42-5	**Styrene**	**1.7**	0.63	0.24	**0.40**	0.15	0.056	
95-47-6	**o-Xylene**	**120**	0.63	0.24	**28**	0.14	0.055	
79-34-5	1,1,2,2-Tetrachloroethane	0.13	0.13	0.071	0.018	0.018	0.010	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
D = The reported result is from a dilution.

Verified By: _____ Date: 4/5/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-DUP-032310** CAS Project ID: P1001084
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI** CAS Sample ID: P1001084-017

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 3/23/10
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 3/26/10
Analyst: Chris Cornett Date Analyzed: 4/3/10 & 4/5/10
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 0.050 Liter(s)
Test Notes: **T**
Container ID: SC00592

Initial Pressure (psig): -0.1 Final Pressure (psig): 3.6

Canister Dilution Factor: 1.25

GC/MS Retention Time	Compound Identification	Concentration µg/m³	Data Qualifier
9.30	C_5H_{10} Compound	**1,400**	
23.34	Unidentified Compound	**2,100**	
25.17	2,2-Oxybispentane	**1,300**	
25.24	Unidentified Compound	**810**	
27.00	Unidentified Compound	**940**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-9-032310**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-018

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: SC00982

Date Collected: 3/23/10
Date Received: 3/26/10
Date Analyzed: 4/3/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -1.3 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.36

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	**Chloromethane**	**0.38**	0.27	0.15	**0.19**	0.13	0.072	
75-01-4	Vinyl Chloride	0.14	0.14	0.088	0.053	0.053	0.035	**U**
74-83-9	Bromomethane	0.14	0.14	0.099	0.035	0.035	0.026	**U**
75-00-3	Chloroethane	0.14	0.14	0.11	0.052	0.052	0.041	**U**
67-64-1	**Acetone**	**14**	6.8	1.8	**6.0**	2.9	0.74	
107-13-1	Acrylonitrile	0.68	0.68	0.30	0.31	0.31	0.14	**U**
75-35-4	1,1-Dichloroethene	0.14	0.14	0.10	0.034	0.034	0.026	**U**
75-09-2	Methylene Chloride	0.68	0.68	0.26	0.20	0.20	0.074	**U**
75-15-0	**Carbon Disulfide**	**5.7**	6.8	0.33	**1.8**	2.2	0.10	**J**
156-60-5	trans-1,2-Dichloroethene	0.14	0.14	0.080	0.034	0.034	0.020	**U**
75-34-3	1,1-Dichloroethane	0.14	0.14	0.084	0.034	0.034	0.021	**U**
1634-04-4	Methyl tert-Butyl Ether	0.14	0.14	0.095	0.038	0.038	0.026	**U**
78-93-3	**2-Butanone (MEK)**	**1.1**	6.8	0.30	**0.37**	2.3	0.10	**J**
156-59-2	cis-1,2-Dichloroethene	0.14	0.14	0.078	0.034	0.034	0.020	**U**
67-66-3	**Chloroform**	**41**	0.14	0.080	**8.3**	0.028	0.016	
107-06-2	**1,2-Dichloroethane**	**0.15**	0.14	0.084	**0.037**	0.034	0.021	
71-55-6	1,1,1-Trichloroethane	0.14	0.14	0.10	0.025	0.025	0.018	**U**
71-43-2	**Benzene**	**0.55**	0.14	0.094	**0.17**	0.043	0.029	

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-9-032310**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-018

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: SC00982

Date Collected: 3/23/10
Date Received: 3/26/10
Date Analyzed: 4/3/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -1.3 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.36

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	**Carbon Tetrachloride**	**0.50**	0.14	0.10	**0.079**	0.022	0.016	
78-87-5	**1,2-Dichloropropane**	**1.7**	0.14	0.099	**0.37**	0.029	0.021	
75-27-4	Bromodichloromethane	0.14	0.14	0.098	0.020	0.020	0.015	U
79-01-6	**Trichloroethene**	**13**	0.14	0.084	**2.5**	0.025	0.016	
10061-01-5	cis-1,3-Dichloropropene	0.68	0.68	0.22	0.15	0.15	0.048	U
108-10-1	**4-Methyl-2-pentanone**	**53**	0.68	0.26	**13**	0.17	0.063	
10061-02-6	trans-1,3-Dichloropropene	0.68	0.68	0.27	0.15	0.15	0.060	U
79-00-5	**1,1,2-Trichloroethane**	**0.092**	0.14	0.075	**0.017**	0.025	0.014	J
108-88-3	**Toluene**	**1.8**	0.68	0.26	**0.47**	0.18	0.069	
124-48-1	Dibromochloromethane	0.14	0.14	0.092	0.016	0.016	0.011	U
127-18-4	**Tetrachloroethene**	**0.27**	0.14	0.080	**0.040**	0.020	0.012	
108-90-7	**Chlorobenzene**	**0.086**	0.14	0.068	**0.019**	0.030	0.015	J
100-41-4	Ethylbenzene	0.68	0.68	0.26	0.16	0.16	0.060	U
179601-23-1	**m,p-Xylenes**	**0.61**	0.68	0.49	**0.14**	0.16	0.11	J
75-25-2	Bromoform	0.68	0.68	0.29	0.066	0.066	0.028	U
100-42-5	Styrene	0.68	0.68	0.26	0.16	0.16	0.061	U
95-47-6	o-Xylene	0.68	0.68	0.26	0.16	0.16	0.060	U
79-34-5	1,1,2,2-Tetrachloroethane	0.14	0.14	0.078	0.020	0.020	0.011	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **WAT-SG-9-032310** CAS Project ID: P1001084
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI** CAS Sample ID: P1001084-018

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: 3/23/10
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 3/26/10
Analyst: Chris Cornett Date Analyzed: 4/3/10
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes: **T**
Container ID: SC00982

Initial Pressure (psig): -1.3 Final Pressure (psig): 3.5

Canister Dilution Factor: 1.36

GC/MS Retention Time	Compound Identification	Concentration µg/m³	Data Qualifier
4.70	Propane	**15**	
5.40	Acetaldehyde + Isobutane	**6.4**	
8.59	n-Pentane	**4.8**	
26.27	Cymene Isomer	**4.4**	
27.25	Unidentified Compound	**13**	
	Epichlorohydrin	NF	

T = Analyte is a tentatively identified compound, result is estimated.
NF = Compound was searched for, but not found.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **Method Blank**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P100331-MB

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	Chloromethane	0.20	0.20	0.11	0.097	0.097	0.053	U
75-01-4	Vinyl Chloride	0.10	0.10	0.065	0.039	0.039	0.025	U
74-83-9	Bromomethane	0.10	0.10	0.073	0.026	0.026	0.019	U
75-00-3	Chloroethane	0.10	0.10	0.080	0.038	0.038	0.030	U
67-64-1	Acetone	5.0	5.0	1.3	2.1	2.1	0.55	U
107-13-1	Acrylonitrile	0.50	0.50	0.22	0.23	0.23	0.10	U
75-35-4	1,1-Dichloroethene	0.10	0.10	0.075	0.025	0.025	0.019	U
75-09-2	Methylene Chloride	0.50	0.50	0.19	0.14	0.14	0.055	U
75-15-0	Carbon Disulfide	5.0	5.0	0.24	1.6	1.6	0.077	U
156-60-5	trans-1,2-Dichloroethene	0.10	0.10	0.059	0.025	0.025	0.015	U
75-34-3	1,1-Dichloroethane	0.10	0.10	0.062	0.025	0.025	0.015	U
1634-04-4	Methyl tert-Butyl Ether	0.10	0.10	0.070	0.028	0.028	0.019	U
78-93-3	2-Butanone (MEK)	5.0	5.0	0.22	1.7	1.7	0.075	U
156-59-2	cis-1,2-Dichloroethene	0.10	0.10	0.057	0.025	0.025	0.014	U
67-66-3	Chloroform	0.10	0.10	0.059	0.020	0.020	0.012	U
107-06-2	1,2-Dichloroethane	0.10	0.10	0.062	0.025	0.025	0.015	U
71-55-6	1,1,1-Trichloroethane	0.10	0.10	0.074	0.018	0.018	0.014	U
71-43-2	Benzene	0.10	0.10	0.069	0.031	0.031	0.022	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: _____ Date: 4/8/10

Client: **CH2M Hill**
Client Sample ID: **Method Blank**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P100331-MB

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	0.10	0.10	0.075	0.016	0.016	0.012	U
78-87-5	1,2-Dichloropropane	0.10	0.10	0.073	0.022	0.022	0.016	U
75-27-4	Bromodichloromethane	0.10	0.10	0.072	0.015	0.015	0.011	U
79-01-6	Trichloroethene	0.10	0.10	0.062	0.019	0.019	0.012	U
10061-01-5	cis-1,3-Dichloropropene	0.50	0.50	0.16	0.11	0.11	0.035	U
108-10-1	4-Methyl-2-pentanone	0.50	0.50	0.19	0.12	0.12	0.046	U
10061-02-6	trans-1,3-Dichloropropene	0.50	0.50	0.20	0.11	0.11	0.044	U
79-00-5	1,1,2-Trichloroethane	0.10	0.10	0.055	0.018	0.018	0.010	U
108-88-3	Toluene	0.50	0.50	0.19	0.13	0.13	0.050	U
124-48-1	Dibromochloromethane	0.10	0.10	0.068	0.012	0.012	0.0080	U
127-18-4	Tetrachloroethene	0.10	0.10	0.059	0.015	0.015	0.0087	U
108-90-7	Chlorobenzene	0.10	0.10	0.050	0.022	0.022	0.011	U
100-41-4	Ethylbenzene	0.50	0.50	0.19	0.12	0.12	0.044	U
179601-23-1	m,p-Xylenes	0.50	0.50	0.36	0.12	0.12	0.083	U
75-25-2	Bromoform	0.50	0.50	0.21	0.048	0.048	0.020	U
100-42-5	Styrene	0.50	0.50	0.19	0.12	0.12	0.045	U
95-47-6	o-Xylene	0.50	0.50	0.19	0.12	0.12	0.044	U
79-34-5	1,1,2,2-Tetrachloroethane	0.10	0.10	0.057	0.015	0.015	0.0083	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **CH2M Hill**
Client Sample ID: **Method Blank** CAS Project ID: P1001084
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI** CAS Sample ID: P100331-MB

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Chris Cornett Date Analyzed: 3/31/10
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Canister Dilution Factor: 1.00

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
	Epichlorohydrin	NF	

NF = Compound was searched for, but not found.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **Method Blank**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P100402-MB

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 4/2/10
Volume(s) Analyzed: 1.00 Liter(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	Chloromethane	0.20	0.20	0.11	0.097	0.097	0.053	U
75-01-4	Vinyl Chloride	0.10	0.10	0.065	0.039	0.039	0.025	U
74-83-9	Bromomethane	0.10	0.10	0.073	0.026	0.026	0.019	U
75-00-3	Chloroethane	0.10	0.10	0.080	0.038	0.038	0.030	U
67-64-1	Acetone	5.0	5.0	1.3	2.1	2.1	0.55	U
107-13-1	Acrylonitrile	0.50	0.50	0.22	0.23	0.23	0.10	U
75-35-4	1,1-Dichloroethene	0.10	0.10	0.075	0.025	0.025	0.019	U
75-09-2	Methylene Chloride	0.50	0.50	0.19	0.14	0.14	0.055	U
75-15-0	Carbon Disulfide	5.0	5.0	0.24	1.6	1.6	0.077	U
156-60-5	trans-1,2-Dichloroethene	0.10	0.10	0.059	0.025	0.025	0.015	U
75-34-3	1,1-Dichloroethane	0.10	0.10	0.062	0.025	0.025	0.015	U
1634-04-4	Methyl tert-Butyl Ether	0.10	0.10	0.070	0.028	0.028	0.019	U
78-93-3	2-Butanone (MEK)	5.0	5.0	0.22	1.7	1.7	0.075	U
156-59-2	cis-1,2-Dichloroethene	0.10	0.10	0.057	0.025	0.025	0.014	U
67-66-3	Chloroform	0.10	0.10	0.059	0.020	0.020	0.012	U
107-06-2	1,2-Dichloroethane	0.10	0.10	0.062	0.025	0.025	0.015	U
71-55-6	1,1,1-Trichloroethane	0.10	0.10	0.074	0.018	0.018	0.014	U
71-43-2	Benzene	0.10	0.10	0.069	0.031	0.031	0.022	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **Method Blank**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P100402-MB

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 4/2/10
Volume(s) Analyzed: 1.00 Liter(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	0.10	0.10	0.075	0.016	0.016	0.012	U
78-87-5	1,2-Dichloropropane	0.10	0.10	0.073	0.022	0.022	0.016	U
75-27-4	Bromodichloromethane	0.10	0.10	0.072	0.015	0.015	0.011	U
79-01-6	Trichloroethene	0.10	0.10	0.062	0.019	0.019	0.012	U
10061-01-5	cis-1,3-Dichloropropene	0.50	0.50	0.16	0.11	0.11	0.035	U
108-10-1	4-Methyl-2-pentanone	0.50	0.50	0.19	0.12	0.12	0.046	U
10061-02-6	trans-1,3-Dichloropropene	0.50	0.50	0.20	0.11	0.11	0.044	U
79-00-5	1,1,2-Trichloroethane	0.10	0.10	0.055	0.018	0.018	0.010	U
108-88-3	Toluene	0.50	0.50	0.19	0.13	0.13	0.050	U
124-48-1	Dibromochloromethane	0.10	0.10	0.068	0.012	0.012	0.0080	U
127-18-4	Tetrachloroethene	0.10	0.10	0.059	0.015	0.015	0.0087	U
108-90-7	Chlorobenzene	0.10	0.10	0.050	0.022	0.022	0.011	U
100-41-4	Ethylbenzene	0.50	0.50	0.19	0.12	0.12	0.044	U
179601-23-1	m,p-Xylenes	0.50	0.50	0.36	0.12	0.12	0.083	U
75-25-2	Bromoform	0.50	0.50	0.21	0.048	0.048	0.020	U
100-42-5	Styrene	0.50	0.50	0.19	0.12	0.12	0.045	U
95-47-6	o-Xylene	0.50	0.50	0.19	0.12	0.12	0.044	U
79-34-5	1,1,2,2-Tetrachloroethane	0.10	0.10	0.057	0.015	0.015	0.0083	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: _____ Date: 4/8/10

Client: **CH2M Hill**
Client Sample ID: **Method Blank** CAS Project ID: P1001084
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI** CAS Sample ID: P100402-MB

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Chris Cornett Date Analyzed: 4/2/10
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Canister Dilution Factor: 1.00

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
	Epichlorohydrin	NF	

NF = Compound was searched for, but not found.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **Method Blank**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P100405-MB

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 4/5/10
Volume(s) Analyzed: 1.00 Liter(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
74-87-3	Chloromethane	0.20	0.20	0.11	0.097	0.097	0.053	U
75-01-4	Vinyl Chloride	0.10	0.10	0.065	0.039	0.039	0.025	U
74-83-9	Bromomethane	0.10	0.10	0.073	0.026	0.026	0.019	U
75-00-3	Chloroethane	0.10	0.10	0.080	0.038	0.038	0.030	U
67-64-1	Acetone	5.0	5.0	1.3	2.1	2.1	0.55	U
107-13-1	Acrylonitrile	0.50	0.50	0.22	0.23	0.23	0.10	U
75-35-4	1,1-Dichloroethene	0.10	0.10	0.075	0.025	0.025	0.019	U
75-09-2	Methylene Chloride	0.50	0.50	0.19	0.14	0.14	0.055	U
75-15-0	Carbon Disulfide	5.0	5.0	0.24	1.6	1.6	0.077	U
156-60-5	trans-1,2-Dichloroethene	0.10	0.10	0.059	0.025	0.025	0.015	U
75-34-3	1,1-Dichloroethane	0.10	0.10	0.062	0.025	0.025	0.015	U
1634-04-4	Methyl tert-Butyl Ether	0.10	0.10	0.070	0.028	0.028	0.019	U
78-93-3	2-Butanone (MEK)	5.0	5.0	0.22	1.7	1.7	0.075	U
156-59-2	cis-1,2-Dichloroethene	0.10	0.10	0.057	0.025	0.025	0.014	U
67-66-3	Chloroform	0.10	0.10	0.059	0.020	0.020	0.012	U
107-06-2	1,2-Dichloroethane	0.10	0.10	0.062	0.025	0.025	0.015	U
71-55-6	1,1,1-Trichloroethane	0.10	0.10	0.074	0.018	0.018	0.014	U
71-43-2	Benzene	0.10	0.10	0.069	0.031	0.031	0.022	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **CH2M Hill**
Client Sample ID: **Method Blank**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P100405-MB

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 4/5/10
Volume(s) Analyzed: 1.00 Liter(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
56-23-5	Carbon Tetrachloride	0.10	0.10	0.075	0.016	0.016	0.012	U
78-87-5	1,2-Dichloropropane	0.10	0.10	0.073	0.022	0.022	0.016	U
75-27-4	Bromodichloromethane	0.10	0.10	0.072	0.015	0.015	0.011	U
79-01-6	Trichloroethene	0.10	0.10	0.062	0.019	0.019	0.012	U
10061-01-5	cis-1,3-Dichloropropene	0.50	0.50	0.16	0.11	0.11	0.035	U
108-10-1	4-Methyl-2-pentanone	0.50	0.50	0.19	0.12	0.12	0.046	U
10061-02-6	trans-1,3-Dichloropropene	0.50	0.50	0.20	0.11	0.11	0.044	U
79-00-5	1,1,2-Trichloroethane	0.10	0.10	0.055	0.018	0.018	0.010	U
108-88-3	Toluene	0.50	0.50	0.19	0.13	0.13	0.050	U
124-48-1	Dibromochloromethane	0.10	0.10	0.068	0.012	0.012	0.0080	U
127-18-4	Tetrachloroethene	0.10	0.10	0.059	0.015	0.015	0.0087	U
108-90-7	Chlorobenzene	0.10	0.10	0.050	0.022	0.022	0.011	U
100-41-4	Ethylbenzene	0.50	0.50	0.19	0.12	0.12	0.044	U
179601-23-1	m,p-Xylenes	0.50	0.50	0.36	0.12	0.12	0.083	U
75-25-2	Bromoform	0.50	0.50	0.21	0.048	0.048	0.020	U
100-42-5	Styrene	0.50	0.50	0.19	0.12	0.12	0.045	U
95-47-6	o-Xylene	0.50	0.50	0.19	0.12	0.12	0.044	U
79-34-5	1,1,2,2-Tetrachloroethane	0.10	0.10	0.057	0.015	0.015	0.0083	U

U = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: _____ Date: 4/8/10

Client: **CH2M Hill**
Client Sample ID: **Method Blank** CAS Project ID: P1001084
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI** CAS Sample ID: P100405-MB

Tentatively Identified Compounds

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Chris Cornett Date Analyzed: 4/5/10
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Canister Dilution Factor: 1.00

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
	Epichlorohydrin	NF	

NF = Compound was searched for, but not found.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

SURROGATE SPIKE RECOVERY RESULTS

Client: **CH2M Hill**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister(s)
Test Notes:

Date(s) Collected: 3/23 - 3/24/10
Date(s) Received: 3/26/10
Date(s) Analyzed: 3/31 - 4/5/10

Client Sample ID	CAS Sample ID	1,2-Dichloroethane-d4 % Recovered	1,2-Dichloroethane-d4 Acceptance Limits	Toluene-d8 % Recovered	Toluene-d8 Acceptance Limits	Bromofluorobenzene % Recovered	Bromofluorobenzene Acceptance Limits	Data Qualifier
Method Blank	P100331-MB	**100**	70-130	**99**	70-130	**99**	70-130	
Method Blank	P100402-MB	**106**	70-130	**103**	70-130	**95**	70-130	
Method Blank	P100405-MB	**98**	70-130	**101**	70-130	**94**	70-130	
Lab Control Sample	P100331-LCS	**96**	70-130	**100**	70-130	**101**	70-130	
Lab Control Sample	P100402-LCS	**95**	70-130	**104**	70-130	**96**	70-130	
Lab Control Sample	P100405-LCS	**99**	70-130	**101**	70-130	**97**	70-130	
SGP-10-032410	P1001084-001	**96**	70-130	**101**	70-130	**102**	70-130	
SGP-10-032410	P1001084-001DUP	**97**	70-130	**100**	70-130	**100**	70-130	
SGP-9-032410	P1001084-002	**105**	70-130	**101**	70-130	**101**	70-130	
SGP-RP-032410	P1001084-003	**97**	70-130	**100**	70-130	**101**	70-130	
RP-IA-032410	P1001084-004	**99**	70-130	**100**	70-130	**101**	70-130	
SGP-SWMU1-032410	P1001084-005	**98**	70-130	**99**	70-130	**101**	70-130	
RP-CS-1-032410	P1001084-006	**98**	70-130	**100**	70-130	**102**	70-130	
SGP-DUP-032410	P1001084-007	**101**	70-130	**99**	70-130	**99**	70-130	
WAT-SG-B2-032310	P1001084-008	**100**	70-130	**98**	70-130	**101**	70-130	
WAT-SG-B4-032310	P1001084-009	**100**	70-130	**98**	70-130	**101**	70-130	
WAT-SG-FB-032310	P1001084-010	**100**	70-130	**100**	70-130	**102**	70-130	
WAT-IA-3-032310	P1001084-011	**101**	70-130	**98**	70-130	**101**	70-130	
WAT-IA-5-032310	P1001084-012	**102**	70-130	**97**	70-130	**101**	70-130	
WAT-IA-7-032310	P1001084-013	**100**	70-130	**98**	70-130	**102**	70-130	
WAT-IA-6-032310	P1001084-014	**98**	70-130	**98**	70-130	**101**	70-130	
WAT-SG-4-032310	P1001084-015	**100**	70-130	**97**	70-130	**102**	70-130	
WAT-SG-7a-032310	P1001084-016	**102**	70-130	**96**	70-130	**92**	70-130	
WAT-SG-DUP-032310	P1001084-017	**97**	70-130	**87**	70-130	**83**	70-130	
WAT-SG-9-032310	P1001084-018	**95**	70-130	**102**	70-130	**96**	70-130	

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

LABORATORY CONTROL SAMPLE SUMMARY

Client: **CH2M Hill**
Client Sample ID: **Lab Control Sample** CAS Project ID: P1001084
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI** CAS Sample ID: P100331-LCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Chris Cornett Date Analyzed: 3/31/10
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: NA Liter(s)
Test Notes:

CAS #	Compound	Spike Amount ng	**Result ng**	**% Recovery**	Project Acceptance Limits	**Data Qualifier**
74-87-3	Chloromethane	25.0	**27.8**	**111**	70-130	
75-01-4	Vinyl Chloride	25.3	**28.8**	**114**	70-130	
74-83-9	Bromomethane	25.8	**30.8**	**119**	70-130	
75-00-3	Chloroethane	25.5	**27.5**	**108**	70-130	
67-64-1	Acetone	132	**133**	**101**	70-130	
107-13-1	Acrylonitrile	25.8	**29.0**	**112**	70-130	
75-35-4	1,1-Dichloroethene	27.5	**31.0**	**113**	70-130	
75-09-2	Methylene Chloride	26.8	**28.2**	**105**	70-130	
75-15-0	Carbon Disulfide	26.0	**27.9**	**107**	70-130	
156-60-5	trans-1,2-Dichloroethene	25.5	**29.3**	**115**	70-130	
75-34-3	1,1-Dichloroethane	26.5	**28.2**	**106**	70-130	
1634-04-4	Methyl tert-Butyl Ether	26.3	**28.9**	**110**	70-130	
78-93-3	2-Butanone (MEK)	26.8	**31.3**	**117**	70-130	
156-59-2	cis-1,2-Dichloroethene	27.0	**29.9**	**111**	70-130	
67-66-3	Chloroform	27.5	**28.6**	**104**	70-130	
107-06-2	1,2-Dichloroethane	26.3	**28.2**	**107**	70-130	
71-55-6	1,1,1-Trichloroethane	26.0	**27.9**	**107**	70-130	
71-43-2	Benzene	25.8	**28.6**	**111**	70-130	

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

LABORATORY CONTROL SAMPLE SUMMARY

Client: **CH2M Hill**
Client Sample ID: **Lab Control Sample** CAS Project ID: P1001084
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI** CAS Sample ID: P100331-LCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Chris Cornett Date Analyzed: 3/31/10
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: NA Liter(s)
Test Notes:

CAS #	Compound	Spike Amount ng	**Result ng**	**% Recovery**	Project Acceptance Limits	**Data Qualifier**
56-23-5	Carbon Tetrachloride	26.3	**28.3**	**108**	70-130	
78-87-5	1,2-Dichloropropane	26.0	**28.2**	**108**	70-130	
75-27-4	Bromodichloromethane	26.3	**29.2**	**111**	70-130	
79-01-6	Trichloroethene	25.8	**28.8**	**112**	70-130	
10061-01-5	cis-1,3-Dichloropropene	24.5	**29.9**	**122**	70-130	
108-10-1	4-Methyl-2-pentanone	26.8	**29.8**	**111**	70-130	
10061-02-6	trans-1,3-Dichloropropene	27.0	**32.5**	**120**	70-130	
79-00-5	1,1,2-Trichloroethane	26.0	**29.8**	**115**	70-130	
108-88-3	Toluene	26.8	**28.9**	**108**	70-130	
124-48-1	Dibromochloromethane	28.3	**31.2**	**110**	70-130	
127-18-4	Tetrachloroethene	25.3	**26.9**	**106**	70-130	
108-90-7	Chlorobenzene	26.5	**28.2**	**106**	70-130	
100-41-4	Ethylbenzene	26.3	**28.8**	**110**	70-130	
179601-23-1	m,p-Xylenes	51.5	**56.4**	**110**	70-130	
75-25-2	Bromoform	26.5	**28.9**	**109**	70-130	
100-42-5	Styrene	26.3	**30.1**	**114**	70-130	
95-47-6	o-Xylene	26.0	**28.5**	**110**	70-130	
79-34-5	1,1,2,2-Tetrachloroethane	27.0	**30.8**	**114**	70-130	

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

LABORATORY CONTROL SAMPLE SUMMARY

Client: **CH2M Hill**
Client Sample ID: **Lab Control Sample** CAS Project ID: P1001084
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI** CAS Sample ID: P100402-LCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Chris Cornett Date Analyzed: 4/02/10
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: NA Liter(s)
Test Notes:

CAS #	Compound	Spike Amount ng	Result ng	% Recovery	Project Acceptance Limits	Data Qualifier
74-87-3	Chloromethane	25.0	**25.4**	**102**	70-130	
75-01-4	Vinyl Chloride	25.3	**26.4**	**104**	70-130	
74-83-9	Bromomethane	25.8	**29.1**	**113**	70-130	
75-00-3	Chloroethane	25.5	**25.7**	**101**	70-130	
67-64-1	Acetone	132	**127**	**96**	70-130	
107-13-1	Acrylonitrile	25.8	**26.9**	**104**	70-130	
75-35-4	1,1-Dichloroethene	27.5	**29.2**	**106**	70-130	
75-09-2	Methylene Chloride	26.8	**26.5**	**99**	70-130	
75-15-0	Carbon Disulfide	26.0	**26.3**	**101**	70-130	
156-60-5	trans-1,2-Dichloroethene	25.5	**27.4**	**107**	70-130	
75-34-3	1,1-Dichloroethane	26.5	**26.8**	**101**	70-130	
1634-04-4	Methyl tert-Butyl Ether	26.3	**27.1**	**103**	70-130	
78-93-3	2-Butanone (MEK)	26.8	**29.8**	**111**	70-130	
156-59-2	cis-1,2-Dichloroethene	27.0	**27.9**	**103**	70-130	
67-66-3	Chloroform	27.5	**26.7**	**97**	70-130	
107-06-2	1,2-Dichloroethane	26.3	**26.0**	**99**	70-130	
71-55-6	1,1,1-Trichloroethane	26.0	**26.3**	**101**	70-130	
71-43-2	Benzene	25.8	**26.8**	**104**	70-130	

Verified By: _____ Date: 4/5/10

COLUMBIA ANALYTICAL SERVICES, INC.

LABORATORY CONTROL SAMPLE SUMMARY

Client: **CH2M Hill**
Client Sample ID: **Lab Control Sample** CAS Project ID: P1001084
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI** CAS Sample ID: P100402-LCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Chris Cornett Date Analyzed: 4/02/10
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: NA Liter(s)
Test Notes:

CAS #	Compound	Spike Amount ng	Result ng	% Recovery	Project Acceptance Limits	Data Qualifier
56-23-5	Carbon Tetrachloride	26.3	**26.4**	**100**	70-130	
78-87-5	1,2-Dichloropropane	26.0	**26.4**	**102**	70-130	
75-27-4	Bromodichloromethane	26.3	**27.1**	**103**	70-130	
79-01-6	Trichloroethene	25.8	**26.9**	**104**	70-130	
10061-01-5	cis-1,3-Dichloropropene	24.5	**28.0**	**114**	70-130	
108-10-1	4-Methyl-2-pentanone	26.8	**27.8**	**104**	70-130	
10061-02-6	trans-1,3-Dichloropropene	27.0	**30.0**	**111**	70-130	
79-00-5	1,1,2-Trichloroethane	26.0	**27.9**	**107**	70-130	
108-88-3	Toluene	26.8	**28.5**	**106**	70-130	
124-48-1	Dibromochloromethane	28.3	**30.6**	**108**	70-130	
127-18-4	Tetrachloroethene	25.3	**26.7**	**106**	70-130	
108-90-7	Chlorobenzene	26.5	**28.2**	**106**	70-130	
100-41-4	Ethylbenzene	26.3	**28.6**	**109**	70-130	
179601-23-1	m,p-Xylenes	51.5	**56.3**	**109**	70-130	
75-25-2	Bromoform	26.5	**29.1**	**110**	70-130	
100-42-5	Styrene	26.3	**30.0**	**114**	70-130	
95-47-6	o-Xylene	26.0	**28.5**	**110**	70-130	
79-34-5	1,1,2,2-Tetrachloroethane	27.0	**30.7**	**114**	70-130	

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

LABORATORY CONTROL SAMPLE SUMMARY

Client: **CH2M Hill**
Client Sample ID: **Lab Control Sample** CAS Project ID: P1001084
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI** CAS Sample ID: P100405-LCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Chris Cornett Date Analyzed: 4/05/10
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: NA Liter(s)
Test Notes:

CAS #	Compound	Spike Amount ng	**Result ng**	**% Recovery**	Project Acceptance Limits	**Data Qualifier**
74-87-3	Chloromethane	25.0	**23.0**	**92**	70-130	
75-01-4	Vinyl Chloride	25.3	**24.2**	**96**	70-130	
74-83-9	Bromomethane	25.8	**28.0**	**109**	70-130	
75-00-3	Chloroethane	25.5	**25.4**	**100**	70-130	
67-64-1	Acetone	132	**125**	**95**	70-130	
107-13-1	Acrylonitrile	25.8	**27.0**	**105**	70-130	
75-35-4	1,1-Dichloroethene	27.5	**28.8**	**105**	70-130	
75-09-2	Methylene Chloride	26.8	**25.8**	**96**	70-130	
75-15-0	Carbon Disulfide	26.0	**25.3**	**97**	70-130	
156-60-5	trans-1,2-Dichloroethene	25.5	**27.2**	**107**	70-130	
75-34-3	1,1-Dichloroethane	26.5	**26.2**	**99**	70-130	
1634-04-4	Methyl tert-Butyl Ether	26.3	**26.5**	**101**	70-130	
78-93-3	2-Butanone (MEK)	26.8	**28.1**	**105**	70-130	
156-59-2	cis-1,2-Dichloroethene	27.0	**27.4**	**101**	70-130	
67-66-3	Chloroform	27.5	**26.3**	**96**	70-130	
107-06-2	1,2-Dichloroethane	26.3	**26.1**	**99**	70-130	
71-55-6	1,1,1-Trichloroethane	26.0	**26.4**	**102**	70-130	
71-43-2	Benzene	25.8	**25.7**	**100**	70-130	

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

LABORATORY CONTROL SAMPLE SUMMARY

Client: **CH2M Hill**
Client Sample ID: **Lab Control Sample** CAS Project ID: P1001084
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI** CAS Sample ID: P100405-LCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Chris Cornett Date Analyzed: 4/05/10
Sampling Media: 6.0 L Summa Canister Volume(s) Analyzed: NA Liter(s)
Test Notes:

CAS #	Compound	Spike Amount ng	Result ng	% Recovery	Project Acceptance Limits	Data Qualifier
56-23-5	Carbon Tetrachloride	26.3	**26.6**	**101**	70-130	
78-87-5	1,2-Dichloropropane	26.0	**25.4**	**98**	70-130	
75-27-4	Bromodichloromethane	26.3	**27.1**	**103**	70-130	
79-01-6	Trichloroethene	25.8	**26.1**	**101**	70-130	
10061-01-5	cis-1,3-Dichloropropene	24.5	**27.1**	**111**	70-130	
108-10-1	4-Methyl-2-pentanone	26.8	**27.4**	**102**	70-130	
10061-02-6	trans-1,3-Dichloropropene	27.0	**29.5**	**109**	70-130	
79-00-5	1,1,2-Trichloroethane	26.0	**27.4**	**105**	70-130	
108-88-3	Toluene	26.8	**26.6**	**99**	70-130	
124-48-1	Dibromochloromethane	28.3	**29.3**	**104**	70-130	
127-18-4	Tetrachloroethene	25.3	**25.5**	**101**	70-130	
108-90-7	Chlorobenzene	26.5	**26.4**	**100**	70-130	
100-41-4	Ethylbenzene	26.3	**26.8**	**102**	70-130	
179601-23-1	m,p-Xylenes	51.5	**52.9**	**103**	70-130	
75-25-2	Bromoform	26.5	**27.7**	**105**	70-130	
100-42-5	Styrene	26.3	**28.1**	**107**	70-130	
95-47-6	o-Xylene	26.0	**26.9**	**103**	70-130	
79-34-5	1,1,2,2-Tetrachloroethane	27.0	**28.2**	**104**	70-130	

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

LABORATORY DUPLICATE SUMMARY RESULTS

Client: **CH2M Hill**
Client Sample ID: **SGP-10-032410**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-001DUP

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01103

Date Collected: 3/24/10
Date Received: 3/26/10
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): 0.4 Final Pressure (psig): 3.7

Canister Dilution Factor: 1.22

Compound	Sample Result µg/m³	Sample Result ppbV	Duplicate Sample Result µg/m³	Duplicate Sample Result ppbV	Average µg/m³	% RPD	RPD Limit	Data Qualifier
Chloromethane	0.445	0.216	0.366	0.177	0.4055	**19**	25	
Vinyl Chloride	ND	ND	ND	ND	-	-	25	
Bromomethane	ND	ND	ND	ND	-	-	25	
Chloroethane	ND	ND	ND	ND	-	-	25	
Acetone	12.4	5.23	12.9	5.43	12.65	**4**	25	
Acrylonitrile	ND	ND	ND	ND	-	-	25	
1,1-Dichloroethene	ND	ND	ND	ND	-	-	25	
Methylene Chloride	ND	ND	ND	ND	-	-	25	
Carbon Disulfide	ND	ND	ND	ND	-	-	25	
trans-1,2-Dichloroethene	ND	ND	ND	ND	-	-	25	
1,1-Dichloroethane	ND	ND	ND	ND	-	-	25	
Methyl tert-Butyl Ether	ND	ND	ND	ND	-	-	25	
2-Butanone (MEK)	0.644	0.219	0.570	0.193	0.607	**12**	25	**J**
cis-1,2-Dichloroethene	ND	ND	ND	ND	-	-	25	
Chloroform	0.127	0.0260	0.133	0.0272	0.13	**5**	25	
1,2-Dichloroethane	ND	ND	ND	ND	-	-	25	
1,1,1-Trichloroethane	ND	ND	ND	ND	-	-	25	
Benzene	0.608	0.190	0.643	0.201	0.6255	**6**	25	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Verified By: _____ Date: 4/8/10

COLUMBIA ANALYTICAL SERVICES, INC.

LABORATORY DUPLICATE SUMMARY RESULTS

Client: **CH2M Hill**
Client Sample ID: **SGP-10-032410**
Client Project ID: **DOW Waterloo, NY / 386132.05.C1.FI**

CAS Project ID: P1001084
CAS Sample ID: P1001084-001DUP

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
Analyst: Chris Cornett
Sampling Media: 6.0 L Summa Canister
Test Notes:
Container ID: AC01103

Date Collected: 3/24/10
Date Received: 3/26/10
Date Analyzed: 3/31/10
Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): 0.4 Final Pressure (psig): 3.7

Canister Dilution Factor: 1.22

Compound	Sample Result µg/m³	Sample Result ppbV	Duplicate Sample Result µg/m³	Duplicate Sample Result ppbV	Average µg/m³	% RPD	RPD Limit	Data Qualifier
Carbon Tetrachloride	0.536	0.0852	0.544	0.0865	0.54	**1**	25	
1,2-Dichloropropane	ND	ND	ND	ND	-	-	25	
Bromodichloromethane	ND	ND	ND	ND	-	-	25	
Trichloroethene	ND	ND	ND	ND	-	-	25	
cis-1,3-Dichloropropene	ND	ND	ND	ND	-	-	25	
4-Methyl-2-pentanone	0.306	0.0748	0.310	0.0756	0.308	**1**	25	**J**
trans-1,3-Dichloropropene	ND	ND	ND	ND	-	-	25	
1,1,2-Trichloroethane	ND	ND	ND	ND	-	-	25	
Toluene	1.13	0.300	1.11	0.295	1.12	**2**	25	
Dibromochloromethane	ND	ND	ND	ND	-	-	25	
Tetrachloroethene	ND	ND	ND	ND	-	-	25	
Chlorobenzene	ND	ND	ND	ND	-	-	25	
Ethylbenzene	ND	ND	ND	ND	-	-	25	
m,p-Xylenes	ND	ND	ND	ND	-	-	25	
Bromoform	ND	ND	ND	ND	-	-	25	
Styrene	ND	ND	ND	ND	-	-	25	
o-Xylene	ND	ND	ND	ND	-	-	25	
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	-	-	25	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

Verified By: _____ Date: 4/8/10

Response Factor Report GCMS13

Method : J:\MS13\METHODS\R13032310.M (RTE Integrator)
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
Last Update : Wed Mar 24 10:25:57 2010
Response via : Initial Calibration

Calibration Files
0.1 =03231023.D 0.2 =03231024.D 0.5 =03231025.D 1.0 =03231026.D 5.0 =03231027.D
25 =03231028.D 50 =03231029.D 100 =03231030.D = =

		Compound	0.1	0.2	0.5	1.0	5.0	25	50	100	Avg	%RSD
1)	IR	Bromochloromethan	----------	----------	----------	ISTD	----------	----------	----------	----------		
2)	T	Propene	2.620	2.334	2.828	2.444	2.963	2.043	1.993	2.036	2.408	15.55
3)	T	Dichlorodifluorom	3.541	3.697	4.310	3.827	3.257	2.871	2.681	2.965	3.393	16.24
4)	T	Chloromethane	3.466	3.207	3.938	3.621	3.035	3.099	2.831	2.475	3.209	14.38
5)	T	1,2-Dichloro-1,1,	1.364	1.333	1.592	1.496	1.318	1.264	1.237	1.474	1.385	8.94
6)	T	Vinyl Chloride	1.971	1.992	2.567	2.397	2.150	2.154	2.113	2.558	2.238	10.66
7)	T	1,3-Butadiene	1.816	1.725	2.329	2.141	2.128	2.195	2.198	2.576	2.139	12.61
8)	T	Bromomethane	0.857	0.868	1.141	1.040	1.019	1.042	0.907	1.084	0.995	10.53
9)	T	Chloroethane	1.003	1.003	1.349	1.288	1.189	1.170	1.132	1.304	1.180	11.12
10)	T	Ethanol	1.586	1.531	1.824	1.682	1.596	1.704	1.590	1.756	1.658	6.01
11)	T	Acetonitrile		4.062	5.020	4.642	4.375	4.471	4.193	4.657	4.489	7.14
12)	T	Acrolein			1.156	1.028	1.047	1.168	1.128	1.297	1.137	8.52
13)	T	Acetone	1.678	1.491	1.707	1.601	1.401	1.320	1.254	1.392	1.481	11.32
14)	T	Trichlorofluorome	3.326	3.204	3.586	3.398	3.076	3.052	2.929	3.343	3.239	6.63
15)	T	2-Propanol (Isopr	5.978	5.966	7.522	6.928	4.889	5.942	4.753	5.150	5.891	16.48
16)	T	Acrylonitrile		2.212	3.169	2.935	2.862	2.937	2.781	3.162	2.865	11.26
17)	T	1,1-Dichloroethen	0.929	0.922	1.246	1.163	1.070	1.099	1.065	1.251	1.093	11.51
18)	T	2-Methyl-2-Propan		5.044	6.130	5.712	5.071	5.257	4.969	2.582	4.966	22.81
19)	T	Methylene Chlorid	1.340	1.242	1.404	1.198	1.145	1.180	1.143	1.309	1.245	7.75
20)	T	3-Chloro-1-propen		2.514	3.125	3.055	3.103	3.260	3.109	3.542	3.101	9.91
21)	T	Trichlorotrifluor	0.918	1.037	1.304	1.238	1.084	1.098	1.057	1.193	1.116	11.06
22)	T	Carbon Disulfide		4.234	5.223	4.614	4.376	4.359	4.223	4.884	4.559	8.21
23)	T	trans-1,2-Dichlor	1.988	1.996	2.899	2.734	2.593	2.670	2.530	2.893	2.538	14.22
24)	T	1,1-Dichloroethan	2.595	2.773	3.379	3.112	2.859	2.893	2.769	3.202	2.948	8.84
25)	T	Methyl tert-Butyl	4.361	4.057	5.006	4.591	4.328	4.447	4.283	4.912	4.498	7.18
26)	T	Vinyl Acetate			0.172	0.186	0.199	0.232	0.231	0.258	0.213	15.31
27)	T	2-Butanone (MEK)			0.802	0.802	0.786	0.835	0.809	0.800	0.806	2.02
28)	T	cis-1,2-Dichloroe	2.015	2.327	2.804	2.594	2.449	2.493	2.350	2.691	2.465	9.92
29)	T	Diisopropyl Ether	0.659	0.971	1.294	1.154	1.005	1.016	0.980	1.139	1.027	18.06

(#) Out of Range ### Number of calibration levels exceeded format ###

Method : J:\MS13\METHODS\R13032310.M (RTE Integrator)
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
Last Update : Wed Mar 24 10:25:57 2010
Response via : Initial Calibration

Calibration Files
0.1 =03231023.D 0.2 =03231024.D 0.5 =03231025.D 1.0 =03231026.D 5.0 =03231027.D
25 =03231028.D 50 =03231029.D 100 =03231030.D = =

		Compound	0.1	0.2	0.5	1.0	5.0	25	50	100	Avg	%RSD
30)	T	Ethyl Acetate		0.441	0.614	0.613	0.615	0.619	0.585	0.667	0.593	12.02
31)	T	n-Hexane		3.416	4.074	3.638	3.349	3.275	3.038	3.352	3.449	9.51
32)	T	Chloroform	2.511	2.275	2.744	2.527	2.351	2.384	2.295	2.671	2.470	7.02
33)	S	1,2-Dichloroethan	2.685	2.709	2.729	2.759	2.682	2.668	2.564	2.505	2.663	3.22
34)	T	Tetrahydrofuran (			1.321	1.015	0.831	0.848	0.765	0.883	0.944	21.47
35)	T	Ethyl tert-Butyl	1.419	1.576	1.881	1.776	1.652	1.718	1.644	1.914	1.698	9.55
36)	T	1,2-Dichloroethan	2.639	2.524	3.174	2.806	2.635	2.670	2.477	2.803	2.716	8.04
37)	IR	1,4-Difluorobenze	----------	----------	----------	ISTD	----------	----------	----------	----------		
38)	T	1,1,1-Trichloroet	0.524	0.480	0.566	0.512	0.485	0.489	0.458	0.523	0.505	6.69
39)	T	Isopropyl Acetate	0.187	0.179	0.232	0.217	0.207	0.210	0.197	0.224	0.206	8.76
40)	T	1-Butanol	0.265	0.281	0.411	0.409	0.405	0.427	0.399	0.447	0.380	17.93
41)	T	Benzene	1.026	0.962	1.174	1.039	0.953	0.964	0.923	1.064	1.013	8.00
42)	T	Carbon Tetrachlor	0.462	0.420	0.505	0.475	0.441	0.446	0.420	0.481	0.456	6.60
43)	T	Cyclohexane	0.383	0.368	0.434	0.389	0.360	0.366	0.344	0.396	0.380	7.23
44)	T	tert-Amyl Methyl	0.839	0.819	0.930	0.860	0.803	0.822	0.780	0.898	0.844	5.93
45)	T	1,2-Dichloropropa	0.343	0.294	0.348	0.310	0.297	0.304	0.287	0.327	0.314	7.36
46)	T	Bromodichlorometh	0.361	0.367	0.438	0.402	0.379	0.391	0.368	0.417	0.390	7.00
47)	T	Trichloroethene	0.252	0.253	0.305	0.278	0.246	0.254	0.242	0.277	0.263	8.12
48)	T	1,4-Dioxane		0.160	0.233	0.207	0.203	0.202	0.195	0.220	0.203	11.27
49)	T	2,2,4-Trimethylpe	1.790	1.623	2.027	1.881	1.707	1.704	1.586	1.751	1.759	8.10
50)	T	Methyl Methacryla	0.036	0.096	0.110	0.106	0.106	0.110	0.105	0.121	0.099	26.53
51)	T	n-Heptane	0.223	0.223	0.305	0.276	0.254	0.257	0.244	0.281	0.258	11.07
52)	T	cis-1,3-Dichlorop	0.316	0.355	0.423	0.427	0.418	0.444	0.423	0.484	0.411	12.77
53)	T	4-Methyl-2-pentan		0.266	0.373	0.377	0.354	0.364	0.342	0.385	0.351	11.51
54)	T	trans-1,3-Dichlor		0.344	0.427	0.433	0.415	0.451	0.433	0.499	0.429	10.74
55)	T	1,1,2-Trichloroet	0.182	0.183	0.259	0.239	0.218	0.225	0.215	0.247	0.221	12.66
56)	IR	Chlorobenzene-d5	----------	----------	----------	ISTD	----------	----------	----------	----------		
57)	S	Toluene-d8 (SS2)	2.072	2.060	2.070	2.054	2.045	2.066	2.078	2.073	2.065	0.54

(#) = Out of Range ### Number of calibration levels exceeded format ###

Method : J:\MS13\METHODS\R13032310.M (RTE Integrator)
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
Last Update : Wed Mar 24 10:25:57 2010
Response via : Initial Calibration

Calibration Files
0.1 =03231023.D 0.2 =03231024.D 0.5 =03231025.D 1.0 =03231026.D 5.0 =03231027.D
25 =03231028.D 50 =03231029.D 100 =03231030.D = =

		Compound	0.1	0.2	0.5	1.0	5.0	25	50	100	Avg	%RSD
58)	T	Toluene	2.154	2.007	2.244	2.086	1.905	1.956	1.865	2.139	2.044	6.49
59)	T	2-Hexanone	1.548	1.661	2.205	2.188	2.131	2.110	1.943	2.123	1.989	12.66
60)	T	Dibromochlorometh	0.540	0.504	0.614	0.583	0.537	0.577	0.557	0.647	0.570	8.03
61)	T	1,2-Dibromoethane	0.435	0.490	0.553	0.532	0.518	0.541	0.522	0.606	0.525	9.39
62)	T	n-Butyl Acetate	1.722	1.963	2.558	2.312	2.346	2.446	2.290	2.601	2.280	13.10
63)	T	n-Octane	0.756	0.655	0.861	0.727	0.706	0.701	0.652	0.727	0.723	9.13
64)	T	Tetrachloroethene	0.586	0.536	0.681	0.587	0.539	0.556	0.531	0.614	0.579	8.79
65)	T	Chlorobenzene	1.508	1.306	1.512	1.375	1.258	1.293	1.230	1.410	1.362	7.97
66)	T	Ethylbenzene	2.556	2.284	2.608	2.423	2.306	2.373	2.259	2.589	2.425	5.88
67)	T	m- & p-Xylenes	1.957	1.853	2.223	2.039	1.915	1.953	1.860	2.130	1.991	6.58
68)	T	Bromoform	0.414	0.405	0.536	0.491	0.478	0.534	0.521	0.616	0.499	13.83
69)	T	Styrene	1.313	1.179	1.573	1.478	1.407	1.466	1.393	1.607	1.427	9.68
70)	T	o-Xylene	2.042	1.851	2.212	2.063	1.968	1.985	1.892	2.178	2.024	6.27
71)	T	n-Nonane	1.764	1.764	2.169	2.058	1.928	1.865	1.689	1.793	1.879	8.75
72)	T	1,1,2,2-Tetrachlo	0.655	0.613	0.817	0.760	0.738	0.767	0.738	0.861	0.743	10.78
73)	S	Bromofluorobenzen	0.676	0.682	0.676	0.676	0.688	0.694	0.690	0.684	0.683	1.02
74)	T	Cumene	2.761	2.426	3.044	2.731	2.557	2.617	2.474	2.798	2.676	7.50
75)	T	alpha-Pinene	1.191	1.168	1.377	1.288	1.234	1.257	1.192	1.375	1.260	6.45
76)	T	n-Propylbenzene	2.978	2.815	3.431	3.183	3.015	3.053	2.893	3.264	3.079	6.59
77)	T	3-Ethyltoluene	2.335	2.290	2.790	2.571	2.406	2.519	2.339	2.657	2.488	7.11
78)	T	4-Ethyltoluene	2.493	2.328	2.747	2.587	2.408	2.425	2.354	2.664	2.501	6.06
79)	T	1,3,5-Trimethylbe	2.044	1.986	2.371	2.215	2.069	2.125	2.007	2.292	2.139	6.56
80)	T	alpha-Methylstyre	0.941	0.878	1.113	1.059	1.049	1.101	1.046	1.195	1.048	9.47
81)	T	2-Ethyltoluene	2.676	2.448	2.922	2.659	2.499	2.538	2.414	2.750	2.613	6.56
82)	T	1,2,4-Trimethylbe	2.120	1.978	2.486	2.340	2.142	2.212	2.077	2.370	2.216	7.68
83)	T	n-Decane	1.728	1.616	1.997	1.821	1.725	1.726	1.576	1.730	1.740	7.39
84)	T	Benzyl Chloride	1.106	1.308	1.772	1.742	1.804	1.979	1.917	2.219	1.731	20.84
85)	T	1,3-Dichlorobenze	1.124	1.020	1.232	1.170	1.064	1.113	1.056	1.220	1.125	6.88
86)	T	1,4-Dichlorobenze	1.011	1.087	1.296	1.184	1.124	1.180	1.122	1.289	1.161	8.39
87)	T	sec-Butylbenzene	2.643	2.680	3.187	2.935	2.751	2.834	2.661	2.994	2.836	6.76

(#) Out of Range ### Number of calibration levels exceeded format ###

Method : J:\MS13\METHODS\R13032310.M (RTE Integrator)
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
Last Update : Wed Mar 24 10:25:57 2010
Response via : Initial Calibration

Calibration Files
0.1 =03231023.D 0.2 =03231024.D 0.5 =03231025.D 1.0 =03231026.D 5.0 =03231027.D
25 =03231028.D 50 =03231029.D 100 =03231030.D = =

		Compound	0.1	0.2	0.5	1.0	5.0	25	50	100	Avg	%RSD
88)	T	4-Isopropyltoluen	2.428	2.561	3.044	2.744	2.597	2.662	2.500	2.796	2.666	7.32
89)	T	1,2,3-Trimethylbe	2.293	2.003	2.531	2.385	2.189	2.262	2.125	2.417	2.276	7.48
90)	T	1,2-Dichlorobenze	0.920	1.041	1.222	1.131	1.043	1.068	1.001	1.153	1.073	8.80
91)	T	d-Limonene	0.681	0.708	0.850	0.825	0.803	0.846	0.807	0.933	0.807	9.96
92)	T	1,2-Dibromo-3-Chl		0.217	0.335	0.330	0.344	0.385	0.377	0.444	0.347	20.03
93)	T	n-Undecane	1.583	1.547	2.028	1.883	1.840	1.856	1.690	1.831	1.782	9.12
94)	T	1,2,4-Trichlorobe	0.550	0.581	0.802	0.758	0.747	0.822	0.782	0.905	0.743	16.19
95)	T	Naphthalene	3.032	2.549	2.948	2.755	2.715	3.026	2.858	3.203	2.886	7.24
96)	T	n-Dodecane	1.896	1.751	2.237	2.155	2.116	2.192	1.992	2.145	2.060	8.11
97)	T	Hexachlorobutadie	0.541	0.471	0.560	0.534	0.502	0.533	0.512	0.594	0.531	7.04
98)	T	Cyclohexanone	1.069	1.060	1.416	1.303	1.267	1.282	1.204	1.349	1.244	10.17
99)	T	tert-Butylbenzene	1.971	2.004	2.331	2.194	2.035	2.053	1.934	2.206	2.091	6.58
100)	T	n-Butylbenzene	2.039	1.908	2.464	2.28	2.205	2.261	2.122	2.389	2.209	8.27

(#) Out of Range ### Number of calibration levels exceeded format ###

Evaluate Continuing Calibration Report

Data Path : J:\MS13\DATA\2010_03\31\
Data File : 03311001.D
Acq On : 31 Mar 2010 9:49
Operator : CC
Sample : 5ng TO-15 CCV STD
Misc : S20-03051001/S20-03241004
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Apr 01 13:02:15 2010
Quant Method : J:\MS13\METHODS\R13032310.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Wed Mar 24 10:25:57 2010
Response via : Initial Calibration

CC 4-1-10

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	Bromochloromethane (IS1)	1.000	1.000	0.0	85	-0.03
2	T	Propene	2.408	3.082	-28.0	89	0.01
3	T	Dichlorodifluoromethane (CF	3.393	3.551	-4.7	93	0.00
4	T	Chloromethane	3.209	3.248	-1.2	91	0.01
5	T	1,2-Dichloro-1,1,2,2-tetraf	1.385	1.437	-3.8	93	0.00
6	T	Vinyl Chloride	2.238	2.347	-4.9	93	0.00
7	T	1,3-Butadiene	2.139	2.324	-8.6	93	0.00
8	T	Bromomethane	0.995	0.998	-0.3	84	0.00
9	T	Chloroethane	1.180	1.280	-8.5	92	0.00
10	T	Ethanol	1.658	1.836	-10.7	98	-0.14
11	T	Acetonitrile	4.489	4.841	-7.8	95	-0.05
12	T	Acrolein	1.137	1.158	-1.8	94	-0.02
13	T	Acetone	1.481	1.577	-6.5	96	-0.06
14	T	Trichlorofluoromethane	3.239	3.426	-5.8	95	0.00
15	T	2-Propanol (Isopropanol)	5.891	5.626	4.5	98	-0.09
16	T	Acrylonitrile	2.865	3.115	-8.7	93	-0.04
17	T	1,1-Dichloroethene	1.093	1.204	-10.2	96	0.00
18	T	2-Methyl-2-Propanol (tert-B	4.966	5.528	-11.3	93	-0.07
19	T	Methylene Chloride	1.245	1.288	-3.5	96	-0.03
20	T	3-Chloro-1-propene (Allyl C	3.101	3.412	-10.0	94	-0.02
21	T	Trichlorotrifluoroethane	1.116	1.187	-6.4	94	0.00
22	T	Carbon Disulfide	4.559	4.816	-5.6	94	0.00
23	T	trans-1,2-Dichloroethene	2.538	2.892	-13.9	95	-0.02
24	T	1,1-Dichloroethane	2.948	3.117	-5.7	93	-0.03
25	T	Methyl tert-Butyl Ether	4.498	4.808	-6.9	95	-0.02
26	T	Vinyl Acetate	0.213	0.225	-5.6	96	-0.05
27	T	2-Butanone (MEK)	0.806	0.912	-13.2	99	-0.03
28	T	cis-1,2-Dichloroethene	2.465	2.642	-7.2	92	-0.02
29	T	Diisopropyl Ether	1.027	1.150	-12.0	98	-0.02
30	T	Ethyl Acetate	0.593	0.674	-13.7	94	-0.03
31	T	n-Hexane	3.449	3.719	-7.8	95	-0.01
32	T	Chloroform	2.470	2.593	-5.0	94	-0.05
33	S	1,2-Dichloroethane-d4(SS1)	2.663	2.676	-0.5	85	-0.03
34	T	Tetrahydrofuran (THF)	0.944	0.881	6.7	90	-0.02
35	T	Ethyl tert-Butyl Ether	1.698	1.838	-8.2	95	-0.02
36	T	1,2-Dichloroethane	2.716	2.880	-6.0	93	-0.02
37	IR	1,4-Difluorobenzene (IS2)	1.000	1.000	0.0	86	-0.02
38	T	1,1,1-Trichloroethane	0.505	0.520	-3.0	93	-0.02

Data Path : J:\MS13\DATA\2010_03\31\
Data File : 03311001.D
Acq On : 31 Mar 2010 9:49
Operator : CC
Sample : 5ng TO-15 CCV STD
Misc : S20-03051001/S20-03241004
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Apr 01 13:02:15 2010
Quant Method : J:\MS13\METHODS\R13032310.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Wed Mar 24 10:25:57 2010
Response via : Initial Calibration

CC 4-1-10

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
39	T	Isopropyl Acetate	0.206	0.224	-8.7	94	-0.03
40	T	1-Butanol	0.380	0.419	-10.3	89	-0.07
41	T	Benzene	1.013	1.045	-3.2	95	-0.02
42	T	Carbon Tetrachloride	0.456	0.478	-4.8	94	-0.02
43	T	Cyclohexane	0.380	0.399	-5.0	96	-0.02
44	T	tert-Amyl Methyl Ether	0.844	0.872	-3.3	94	-0.01
45	T	1,2-Dichloropropane	0.314	0.323	-2.9	94	-0.01
46	T	Bromodichloromethane	0.390	0.405	-3.8	92	-0.02
47	T	Trichloroethene	0.263	0.273	-3.8	96	-0.02
48	T	1,4-Dioxane	0.203	0.205	-1.0	87	-0.02
49	T	2,2,4-Trimethylpentane (Iso	1.759	1.833	-4.2	93	-0.02
50	T	Methyl Methacrylate	0.099	0.115	-16.2	94	-0.03
51	T	n-Heptane	0.258	0.282	-9.3	96	-0.02
52	T	cis-1,3-Dichloropropene	0.411	0.457	-11.2	95	0.00
53	T	4-Methyl-2-pentanone	0.351	0.373	-6.3	91	-0.02
54	T	trans-1,3-Dichloropropene	0.429	0.461	-7.5	96	-0.01
55	T	1,1,2-Trichloroethane	0.221	0.237	-7.2	94	-0.02
56	IR	Chlorobenzene-d5 (IS3)	1.000	1.000	0.0	87	0.00
57	S	Toluene-d8 (SS2)	2.065	2.037	1.4	87	0.00
58	T	Toluene	2.044	2.104	-2.9	96	-0.01
59	T	2-Hexanone	1.989	2.133	-7.2	87	-0.02
60	T	Dibromochloromethane	0.570	0.591	-3.7	96	-0.01
61	T	1,2-Dibromoethane	0.525	0.556	-5.9	93	-0.01
62	T	n-Butyl Acetate	2.280	2.399	-5.2	89	-0.01
63	T	n-Octane	0.723	0.742	-2.6	92	-0.01
64	T	Tetrachloroethene	0.579	0.585	-1.0	95	0.00
65	T	Chlorobenzene	1.362	1.374	-0.9	95	-0.01
66	T	Ethylbenzene	2.425	2.517	-3.8	95	-0.01
67	T	m- & p-Xylenes	1.991	2.070	-4.0	94	-0.02
68	T	Bromoform	0.499	0.530	-6.2	97	-0.01
69	T	Styrene	1.427	1.523	-6.7	94	-0.02
70	T	o-Xylene	2.024	2.105	-4.0	93	-0.01
71	T	n-Nonane	1.879	2.003	-6.6	90	0.00
72	T	1,1,2,2-Tetrachloroethane	0.743	0.786	-5.8	93	-0.02
73	S	Bromofluorobenzene (SS3)	0.683	0.681	0.3	86	0.00
74	T	Cumene	2.676	2.775	-3.7	94	-0.01
75	T	alpha-Pinene	1.260	1.317	-4.5	93	0.00
76	T	n-Propylbenzene	3.079	3.237	-5.1	93	-0.01

Data Path : J:\MS13\DATA\2010_03\31\
Data File : 03311001.D
Acq On : 31 Mar 2010 9:49
Operator : CC
Sample : 5ng TO-15 CCV STD
Misc : S20-03051001/S20-03241004
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Apr 01 13:02:15 2010
Quant Method : J:\MS13\METHODS\R13032310.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Wed Mar 24 10:25:57 2010
Response via : Initial Calibration

CC
4-1-10

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
77	T	3-Ethyltoluene	2.488	2.556	-2.7	92	-0.01
78	T	4-Ethyltoluene	2.501	2.623	-4.9	95	-0.01
79	T	1,3,5-Trimethylbenzene	2.139	2.235	-4.5	94	-0.01
80	T	alpha-Methylstyrene	1.048	1.134	-8.2	94	-0.01
81	T	2-Ethyltoluene	2.613	2.682	-2.6	93	-0.02
82	T	1,2,4-Trimethylbenzene	2.216	2.322	-4.8	94	-0.01
83	T	n-Decane	1.740	1.833	-5.3	92	-0.02
84	T	Benzyl Chloride	1.731	1.963	-13.4	95	-0.02
85	T	1,3-Dichlorobenzene	1.125	1.150	-2.2	94	-0.01
86	T	1,4-Dichlorobenzene	1.161	1.216	-4.7	94	-0.01
87	T	sec-Butylbenzene	2.836	2.975	-4.9	94	-0.01
88	T	4-Isopropyltoluene (p-Cymen	2.666	2.808	-5.3	94	-0.01
89	T	1,2,3-Trimethylbenzene	2.276	2.367	-4.0	94	-0.01
90	T	1,2-Dichlorobenzene	1.073	1.131	-5.4	94	-0.01
91	T	d-Limonene	0.807	0.872	-8.1	94	-0.01
92	T	1,2-Dibromo-3-Chloropropane	0.347	0.370	-6.6	94	0.00
93	T	n-Undecane	1.782	1.945	-9.1	92	0.00
94	T	1,2,4-Trichlorobenzene	0.743	0.796	-7.1	93	-0.01
95	T	Naphthalene	2.886	2.973	-3.0	95	0.00
96	T	n-Dodecane	2.060	2.251	-9.3	93	0.00
97	T	Hexachlorobutadiene	0.531	0.529	0.4	92	0.00
98	T	Cyclohexanone	1.244	1.031	17.1	71	-0.02
99	T	tert-Butylbenzene	2.091	2.208	-5.6	94	-0.01
100	T	n-Butylbenzene	2.209	2.341	-6.0	92	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data Path : J:\MS13\DATA\2010_04\02\
Data File : 04021004.D
Acq On : 2 Apr 2010 10:58
Operator : CC
Sample : 5ng TO-15 CCV STD
Misc : S20-04011006/S20-03241004
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Apr 02 11:57:02 2010
Quant Method : J:\MS13\METHODS\R13032310.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Wed Mar 24 10:25:57 2010
Response via : Initial Calibration

CC 4-2-10

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	Bromochloromethane (IS1)	1.000	1.000	0.0	103	-0.03
2	T	Propene	2.408	3.028	-25.7	105	0.00
3	T	Dichlorodifluoromethane (CF	3.393	3.618	-6.6	114	0.00
4	T	Chloromethane	3.209	3.156	1.7	107	0.00
5	T	1,2-Dichloro-1,1,2,2-tetraf	1.385	1.408	-1.7	109	0.00
6	T	Vinyl Chloride	2.238	2.255	-0.8	108	0.00
7	T	1,3-Butadiene	2.139	2.136	0.1	103	0.00
8	T	Bromomethane	0.995	1.067	-7.2	107	0.00
9	T	Chloroethane	1.180	1.250	-5.9	108	0.00
10	T	Ethanol	1.658	1.780	-7.4	114	-0.13
11	T	Acetonitrile	4.489	4.821	-7.4	113	-0.05
12	T	Acrolein	1.137	1.058	6.9	104	-0.02
13	T	Acetone	1.481	1.510	-2.0	111	-0.06
14	T	Trichlorofluoromethane	3.239	3.515	-8.5	117	-0.01
15	T	2-Propanol (Isopropanol)	5.891	5.490	6.8	115	-0.09
16	T	Acrylonitrile	2.865	3.107	-8.4	111	-0.05
17	T	1,1-Dichloroethene	1.093	1.167	-6.8	112	-0.01
18	T	2-Methyl-2-Propanol (tert-B	4.966	5.419	-9.1	110	-0.08
19	T	Methylene Chloride	1.245	1.249	-0.3	112	-0.03
20	T	3-Chloro-1-propene (Allyl C	3.101	3.317	-7.0	110	-0.02
21	T	Trichlorotrifluoroethane	1.116	1.205	-8.0	114	-0.01
22	T	Carbon Disulfide	4.559	4.688	-2.8	110	0.00
23	T	trans-1,2-Dichloroethene	2.538	2.821	-11.2	112	-0.03
24	T	1,1-Dichloroethane	2.948	3.067	-4.0	110	-0.03
25	T	Methyl tert-Butyl Ether	4.498	4.687	-4.2	111	-0.02
26	T	Vinyl Acetate	0.213	0.203	4.7	104	-0.05
27	T	2-Butanone (MEK)	0.806	0.826	-2.5	108	-0.03
28	T	cis-1,2-Dichloroethene	2.465	2.649	-7.5	111	-0.03
29	T	Diisopropyl Ether	1.027	1.123	-9.3	115	-0.02
30	T	Ethyl Acetate	0.593	0.637	-7.4	106	-0.03
31	T	n-Hexane	3.449	3.652	-5.9	112	-0.01
32	T	Chloroform	2.470	2.566	-3.9	112	-0.05
33	S	1,2-Dichloroethane-d4(SS1)	2.663	2.829	-6.2	108	-0.03
34	T	Tetrahydrofuran (THF)	0.944	0.845	10.5	104	-0.02
35	T	Ethyl tert-Butyl Ether	1.698	1.767	-4.1	110	-0.02
36	T	1,2-Dichloroethane	2.716	2.945	-8.4	115	-0.02
37	IR	1,4-Difluorobenzene (IS2)	1.000	1.000	0.0	103	-0.02
38	T	1,1,1-Trichloroethane	0.505	0.539	-6.7	115	-0.02

Data Path : J:\MS13\DATA\2010_04\02\
Data File : 04021004.D
Acq On : 2 Apr 2010 10:58
Operator : CC
Sample : 5ng TO-15 CCV STD
Misc : S20-04011006/S20-03241004
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Apr 02 11:57:02 2010
Quant Method : J:\MS13\METHODS\R13032310.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Wed Mar 24 10:25:57 2010
Response via : Initial Calibration

CC 4-2-10

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
39	T	Isopropyl Acetate	0.206	0.212	-2.9	106	-0.03
40	T	1-Butanol	0.380	0.398	-4.7	102	-0.07
41	T	Benzene	1.013	1.019	-0.6	111	-0.02
42	T	Carbon Tetrachloride	0.456	0.486	-6.6	114	-0.02
43	T	Cyclohexane	0.380	0.388	-2.1	111	-0.02
44	T	tert-Amyl Methyl Ether	0.844	0.840	0.5	108	-0.02
45	T	1,2-Dichloropropane	0.314	0.311	1.0	108	-0.02
46	T	Bromodichloromethane	0.390	0.409	-4.9	112	-0.02
47	T	Trichloroethene	0.263	0.265	-0.8	111	-0.02
48	T	1,4-Dioxane	0.203	0.207	-2.0	105	-0.02
49	T	2,2,4-Trimethylpentane (Iso	1.759	1.815	-3.2	110	-0.02
50	T	Methyl Methacrylate	0.099	0.109	-10.1	106	-0.03
51	T	n-Heptane	0.258	0.270	-4.7	110	-0.02
52	T	cis-1,3-Dichloropropene	0.411	0.445	-8.3	110	-0.01
53	T	4-Methyl-2-pentanone	0.351	0.364	-3.7	106	-0.02
54	T	trans-1,3-Dichloropropene	0.429	0.449	-4.7	112	-0.01
55	T	1,1,2-Trichloroethane	0.221	0.229	-3.6	108	-0.02
56	IR	Chlorobenzene-d5 (IS3)	1.000	1.000	0.0	98	0.00
57	S	Toluene-d8 (SS2)	2.065	2.131	-3.2	102	-0.01
58	T	Toluene	2.044	2.194	-7.3	112	-0.01
59	T	2-Hexanone	1.989	2.296	-15.4	105	-0.02
60	T	Dibromochloromethane	0.570	0.630	-10.5	115	-0.01
61	T	1,2-Dibromoethane	0.525	0.593	-13.0	112	-0.01
62	T	n-Butyl Acetate	2.280	2.546	-11.7	106	-0.02
63	T	n-Octane	0.723	0.784	-8.4	108	-0.01
64	T	Tetrachloroethene	0.579	0.615	-6.2	111	-0.01
65	T	Chlorobenzene	1.362	1.447	-6.2	112	-0.01
66	T	Ethylbenzene	2.425	2.624	-8.2	111	-0.01
67	T	m- & p-Xylenes	1.991	2.189	-9.9	111	-0.02
68	T	Bromoform	0.499	0.569	-14.0	116	-0.02
69	T	Styrene	1.427	1.584	-11.0	110	-0.02
70	T	o-Xylene	2.024	2.211	-9.2	110	-0.02
71	T	n-Nonane	1.879	2.200	-17.1	111	-0.01
72	T	1,1,2,2-Tetrachloroethane	0.743	0.821	-10.5	109	-0.02
73	S	Bromofluorobenzene (SS3)	0.683	0.654	4.2	93	0.00
74	T	Cumene	2.676	2.934	-9.6	112	-0.01
75	T	alpha-Pinene	1.260	1.390	-10.3	110	0.00
76	T	n-Propylbenzene	3.079	3.425	-11.2	111	-0.01

Data Path : J:\MS13\DATA\2010_04\02\
Data File : 04021004.D
Acq On : 2 Apr 2010 10:58
Operator : CC
Sample : 5ng TO-15 CCV STD
Misc : S20-04011006/S20-03241004
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Apr 02 11:57:02 2010
Quant Method : J:\MS13\METHODS\R13032310.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Wed Mar 24 10:25:57 2010
Response via : Initial Calibration

CC 4-2-10

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
77	T	3-Ethyltoluene	2.488	2.780	-11.7	113	-0.02
78	T	4-Ethyltoluene	2.501	2.750	-10.0	111	-0.01
79	T	1,3,5-Trimethylbenzene	2.139	2.404	-12.4	113	-0.01
80	T	alpha-Methylstyrene	1.048	1.184	-13.0	110	-0.02
81	T	2-Ethyltoluene	2.613	2.865	-9.6	112	-0.02
82	T	1,2,4-Trimethylbenzene	2.216	2.482	-12.0	113	-0.02
83	T	n-Decane	1.740	1.969	-13.2	111	-0.02
84	T	Benzyl Chloride	1.731	2.057	-18.8	111	-0.02
85	T	1,3-Dichlorobenzene	1.125	1.214	-7.9	111	-0.01
86	T	1,4-Dichlorobenzene	1.161	1.289	-11.0	112	-0.01
87	T	sec-Butylbenzene	2.836	3.147	-11.0	112	-0.01
88	T	4-Isopropyltoluene (p-Cymen	2.666	3.016	-13.1	113	-0.01
89	T	1,2,3-Trimethylbenzene	2.276	2.556	-12.3	114	-0.02
90	T	1,2-Dichlorobenzene	1.073	1.194	-11.3	112	-0.01
91	T	d-Limonene	0.807	0.897	-11.2	109	-0.01
92	T	1,2-Dibromo-3-Chloropropane	0.347	0.398	-14.7	113	0.00
93	T	n-Undecane	1.782	2.085	-17.0	111	-0.01
94	T	1,2,4-Trichlorobenzene	0.743	0.851	-14.5	111	-0.01
95	T	Naphthalene	2.886	3.124	-8.2	112	-0.01
96	T	n-Dodecane	2.060	2.375	-15.3	109	0.00
97	T	Hexachlorobutadiene	0.531	0.584	-10.0	114	0.00
98	T	Cyclohexanone	1.244	0.987	20.7	76	-0.02
99	T	tert-Butylbenzene	2.091	2.333	-11.6	112	-0.02
100	T	n-Butylbenzene	2.209	2.497	-13.0	110	-0.01

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data Path : J:\MS13\DATA\2010_04\05\
Data File : 04051001.D
Acq On : 5 Apr 2010 10:33
Operator : CC
Sample : 5ng TO-15 CCV STD
Misc : S20-04011006/S20-03241004
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Apr 05 12:23:02 2010
Quant Method : J:\MS13\METHODS\R13032310.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Wed Mar 24 10:25:57 2010
Response via : Initial Calibration

CC 4-7-10

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	Bromochloromethane (IS1)	1.000	1.000	0.0	127	-0.03
2	T	Propene	2.408	2.573	-6.9	110	0.00
3	T	Dichlorodifluoromethane (CF	3.393	3.298	2.8	128	0.00
4	T	Chloromethane	3.209	3.484	-8.6	146	0.00
5	T	1,2-Dichloro-1,1,2,2-tetraf	1.385	1.542	-11.3	148	0.00
6	T	Vinyl Chloride	2.238	2.591	-15.8	153	0.00
7	T	1,3-Butadiene	2.139	2.506	-17.2	149	0.00
8	T	Bromomethane	0.995	1.127	-13.3	140	0.00
9	T	Chloroethane	1.180	1.296	-9.8	138	0.00
10	T	Ethanol	1.658	1.683	-1.5	134	-0.14
11	T	Acetonitrile	4.489	4.332	3.5	126	-0.05
12	T	Acrolein	1.137	1.096	3.6	133	-0.03
13	T	Acetone	1.481	1.488	-0.5	135	-0.06
14	T	Trichlorofluoromethane	3.239	3.265	-0.8	135	0.00
15	T	2-Propanol (Isopropanol)	5.891	5.211	11.5	135	-0.10
16	T	Acrylonitrile	2.865	2.876	-0.4	128	-0.05
17	T	1,1-Dichloroethene	1.093	1.169	-7.0	139	-0.01
18	T	2-Methyl-2-Propanol (tert-B	4.966	5.210	-4.9	130	-0.08
19	T	Methylene Chloride	1.245	1.259	-1.1	139	-0.03
20	T	3-Chloro-1-propene (Allyl C	3.101	3.085	0.5	126	-0.03
21	T	Trichlorotrifluoroethane	1.116	1.161	-4.0	136	-0.01
22	T	Carbon Disulfide	4.559	4.668	-2.4	135	-0.01
23	T	trans-1,2-Dichloroethene	2.538	2.666	-5.0	130	-0.03
24	T	1,1-Dichloroethane	2.948	2.936	0.4	130	-0.03
25	T	Methyl tert-Butyl Ether	4.498	4.570	-1.6	134	-0.02
26	T	Vinyl Acetate	0.213	0.218	-2.3	139	-0.05
27	T	2-Butanone (MEK)	0.806	0.863	-7.1	139	-0.03
28	T	cis-1,2-Dichloroethene	2.465	2.496	-1.3	129	-0.03
29	T	Diisopropyl Ether	1.027	1.106	-7.7	140	-0.02
30	T	Ethyl Acetate	0.593	0.619	-4.4	128	-0.03
31	T	n-Hexane	3.449	3.321	3.7	126	-0.01
32	T	Chloroform	2.470	2.475	-0.2	134	-0.05
33	S	1,2-Dichloroethane-d4(SS1)	2.663	2.562	3.8	121	-0.03
34	T	Tetrahydrofuran (THF)	0.944	0.898	4.9	137	-0.02
35	T	Ethyl tert-Butyl Ether	1.698	1.779	-4.8	137	-0.02
36	T	1,2-Dichloroethane	2.716	2.618	3.6	126	-0.03
37	IR	1,4-Difluorobenzene (IS2)	1.000	1.000	0.0	127	-0.02
38	T	1,1,1-Trichloroethane	0.505	0.488	3.4	128	-0.02

Data Path : J:\MS13\DATA\2010_04\05\
Data File : 04051001.D
Acq On : 5 Apr 2010 10:33
Operator : CC
Sample : 5ng TO-15 CCV STD
Misc : S20-04011006/S20-03241004
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Apr 05 12:23:02 2010
Quant Method : J:\MS13\METHODS\R13032310.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Wed Mar 24 10:25:57 2010
Response via : Initial Calibration

CC 4-7-10

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
39	T	Isopropyl Acetate	0.206	0.209	-1.5	129	-0.03
40	T	1-Butanol	0.380	0.387	-1.8	122	-0.07
41	T	Benzene	1.013	1.005	0.8	134	-0.02
42	T	Carbon Tetrachloride	0.456	0.441	3.3	127	-0.02
43	T	Cyclohexane	0.380	0.378	0.5	133	-0.02
44	T	tert-Amyl Methyl Ether	0.844	0.837	0.8	133	-0.02
45	T	1,2-Dichloropropane	0.314	0.305	2.9	131	-0.02
46	T	Bromodichloromethane	0.390	0.393	-0.8	132	-0.02
47	T	Trichloroethene	0.263	0.261	0.8	135	-0.02
48	T	1,4-Dioxane	0.203	0.205	-1.0	128	-0.02
49	T	2,2,4-Trimethylpentane (Iso	1.759	1.675	4.8	125	-0.02
50	T	Methyl Methacrylate	0.099	0.112	-13.1	134	-0.03
51	T	n-Heptane	0.258	0.268	-3.9	134	-0.02
52	T	cis-1,3-Dichloropropene	0.411	0.444	-8.0	135	-0.01
53	T	4-Methyl-2-pentanone	0.351	0.342	2.6	123	-0.02
54	T	trans-1,3-Dichloropropene	0.429	0.442	-3.0	136	-0.01
55	T	1,1,2-Trichloroethane	0.221	0.230	-4.1	134	-0.02
56	IR	Chlorobenzene-d5 (IS3)	1.000	1.000	0.0	120	0.00
57	S	Toluene-d8 (SS2)	2.065	2.137	-3.5	125	0.00
58	T	Toluene	2.044	2.126	-4.0	134	-0.01
59	T	2-Hexanone	1.989	1.957	1.6	110	-0.02
60	T	Dibromochloromethane	0.570	0.604	-6.0	135	-0.01
61	T	1,2-Dibromoethane	0.525	0.577	-9.9	133	-0.01
62	T	n-Butyl Acetate	2.280	2.211	3.0	113	-0.01
63	T	n-Octane	0.723	0.729	-0.8	124	-0.01
64	T	Tetrachloroethene	0.579	0.597	-3.1	133	-0.01
65	T	Chlorobenzene	1.362	1.390	-2.1	132	-0.01
66	T	Ethylbenzene	2.425	2.558	-5.5	133	-0.01
67	T	m- & p-Xylenes	1.991	2.096	-5.3	131	-0.02
68	T	Bromoform	0.499	0.541	-8.4	135	-0.01
69	T	Styrene	1.427	1.539	-7.8	131	-0.02
70	T	o-Xylene	2.024	2.138	-5.6	130	-0.02
71	T	n-Nonane	1.879	1.877	0.1	117	0.00
72	T	1,1,2,2-Tetrachloroethane	0.743	0.806	-8.5	131	-0.02
73	S	Bromofluorobenzene (SS3)	0.683	0.649	5.0	113	0.00
74	T	Cumene	2.676	2.810	-5.0	132	-0.01
75	T	alpha-Pinene	1.260	1.335	-6.0	130	0.00
76	T	n-Propylbenzene	3.079	3.274	-6.3	130	-0.01

Evaluate Continuing Calibration Report

Data Path : J:\MS13\DATA\2010_04\05\
Data File : 04051001.D
Acq On : 5 Apr 2010 10:33
Operator : CC
Sample : 5ng TO-15 CCV STD
Misc : S20-04011006/S20-03241004
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Apr 05 12:23:02 2010
Quant Method : J:\MS13\METHODS\R13032310.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Wed Mar 24 10:25:57 2010
Response via : Initial Calibration

CC 4-7-10

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
77	T	3-Ethyltoluene	2.488	2.611	-4.9	130	-0.01
78	T	4-Ethyltoluene	2.501	2.655	-6.2	132	-0.01
79	T	1,3,5-Trimethylbenzene	2.139	2.275	-6.4	132	-0.01
80	T	alpha-Methylstyrene	1.048	1.143	-9.1	130	-0.01
81	T	2-Ethyltoluene	2.613	2.726	-4.3	131	-0.02
82	T	1,2,4-Trimethylbenzene	2.216	2.348	-6.0	131	-0.01
83	T	n-Decane	1.740	1.749	-0.5	121	-0.01
84	T	Benzyl Chloride	1.731	1.957	-13.1	130	-0.02
85	T	1,3-Dichlorobenzene	1.125	1.159	-3.0	130	-0.01
86	T	1,4-Dichlorobenzene	1.161	1.210	-4.2	129	-0.01
87	T	sec-Butylbenzene	2.836	3.005	-6.0	131	-0.01
88	T	4-Isopropyltoluene (p-Cymen	2.666	2.869	-7.6	132	-0.01
89	T	1,2,3-Trimethylbenzene	2.276	2.388	-4.9	131	-0.01
90	T	1,2-Dichlorobenzene	1.073	1.130	-5.3	130	-0.01
91	T	d-Limonene	0.807	0.868	-7.6	129	-0.01
92	T	1,2-Dibromo-3-Chloropropane	0.347	0.385	-11.0	134	0.00
93	T	n-Undecane	1.782	1.889	-6.0	123	0.00
94	T	1,2,4-Trichlorobenzene	0.743	0.800	-7.7	128	0.00
95	T	Naphthalene	2.886	2.945	-2.0	130	0.00
96	T	n-Dodecane	2.060	2.131	-3.4	121	0.00
97	T	Hexachlorobutadiene	0.531	0.543	-2.3	130	0.00
98	T	Cyclohexanone	1.244	0.735	40.9#	70	-0.02
99	T	tert-Butylbenzene	2.091	2.216	-6.0	130	-0.02
100	T	n-Butylbenzene	2.209	2.334	-5.7	127	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

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Data Quality Evaluation for the March 2010 Soil Vapor/Indoor Air Investigation, Waterloo, NY

PREPARED BY: CH2M HILL

DATE: April 21, 2010

Introduction

The objective of this Data Quality Evaluation (DQE) report is to assess the data quality of analytical results for subslab vapor,indoor air and ambient air samples collected from the former Hampshire Chemical Corp. (HCC) facility in Waterloo, New York. HCC is a wholly owned subsidiary of The Dow Chemical Company. CH2M HILL collected samples March 23-24, 2010. Guidance for this DQE report came from the *Quality Assurance Project Plan, RCRA Facility Investigation, Former Hampshire Chemical Corporation Facility, Waterloo, New York* (Waterloo QAPP, October 2009); *U.S. Environmental Protection Agency (USEPA) Contract Laboratory National Functional Guidelines (NFG) for Organic Data Review, October 1999;* individual method requirements; and, historical laboratory quality control limits.

This report is intended as a general data quality assessment designed to summarize data issues.

Analytical Data

This DQE report covers three subslab vapor samples, four indoor air samples, two ambient air, one field duplicate (FD) and one field blank (FB). The samples were reported as one sample delivery group (SDG), P1001084.

Samples were collected and delivered to Columbia Analytical Services (CAS) in Simi Valley, California. The samples were analyzed by the method listed in Table 1.

TABLE 1
Analytical Parameter
Soil Vapor/Indoor Air Investigation, Waterloo, NY

Parameter	Method	Laboratory
Volatile Organic Compounds (VOC)	TO-15	CAS

The SDG was assessed by reviewing the following: (1) the chain-of- custody documentation; (2) holding-time compliance; (3) initial and continuing calibration criteria; (4) method blanks and a FB; (5) laboratory control sample recoveries; (6) surrogate spike recoveries; (7) internal standard recoveries; (8) FD precision; and (9) the required quality control (QC) samples at the specified frequencies.

Data flags were assigned according to the Waterloo QAPP. Multiple flags are routinely applied to specific sample method/matrix/analyte combinations, but there will only be one final flag. A final flag is applied to the data and is the most conservative of the applied validation flags. The final flag also includes matrix and blank sample impacts.

The data flags are those listed in the Waterloo QAPP and are defined below:

- J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- R = The sample result was rejected due to serious deficiencies in the ability to analyze the sample and meet the QC criteria. The presence or absence of the analyte could not be verified.
- U = The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Findings

The overall summaries of the data validation are contained in the following sections and Table 2.

Holding Time

All holding time criteria were met.

Calibration

Initial and continuing calibration analyses were performed as required by the methods. All acceptance criteria were met.

Method Blanks

Method blanks were analyzed at the required frequency and were free of contamination.

Field Blanks (Ambient Blank)

One FB was collected and was free of contamination with the following exceptions:

Acetone and toluene were detected in the FB at concentrations less than the reporting limit (RL). The field blank detects suggest that the ambient air may contribute to detects in the samples. Data were not qualified for FB contaminations.

Canister Certifications

The samples were collected in Summa canisters which are certified "clean" per project instructions prior to shipment to the project site. The laboratory was not able to certify all

canisters clean to the method detection limit for all target analytes. Low-level detections in the samples associated with these canisters are possibly due to canister contamination. Detected results less than five times (10 times for acetone, methylene chloride and 2-butanone) the concentrations detected in the canister certification were flagged "U" in the associated samples.

Laboratory Control Samples

LCSs were analyzed as required and all accuracy and precision criteria were met.

Internal Standards

All acceptance criteria were met.

Surrogates

Surrogates were added to all samples and all acceptance criteria were met.

Field Duplicates

FDs were collected and analyzed as required and all precision criteria were met.

Tentatively Identified Compounds

Tentatively identified compounds were reported in the VOC analysis to determine the presence/absence of epichlorohydrin. The library search did not identify this analyte in the samples.

Quanitification

Acetone coeluted with a non-target analyte in sample WAT-SG-7a-032310, potentially causing the concentration to be biased high. The result was qualified as estimated and flagged "J" in the sample.

Chain of Custody

Required procedures were followed and were free of errors.

Overall Assessment

The goal of this assessment is to demonstrate that a sufficient number of representative samples were collected and the resulting analytical data can be used to support the decision making process. The following summary highlights the PARCC findings for the above-defined events:

Precision of the data was verified through the review of the field and laboratory data quality indicators that include FD RPDs. Precision was acceptable.

Accuracy of the data was verified through the review of the calibration data, LCS, internal standard and surrogate recoveries. Accuracy was acceptable.

Representativeness of the data was verified through the sample's collection, storage and preservation procedures, verification of holding-time compliance, evaluation of method/FB data and canister certifications . All data were reported from analyses within the USEPA-recommended holding time. The method/FB samples were generally free of contamination. The FB sample contained low level detections of acetone and toluene; however, the data was not qualified due to the FB contamination. Several analytes were qualified as not detected due to contamination in the canisters. Data users should consider the impact to any result that is qualified as estimated as it may contain a bias which could affect the decisionmaking process.

Comparability of the data was ensured through the use of standard USEPA analytical procedures and standard units for reporting. Results obtained are comparable to industry standards in that the collection and analytical techniques followed approved, documented procedures.

Completeness is a measure of the number of valid measurements obtained in relation to the total number of measurements planned. Completeness is expressed as the percentage of valid or usable measurements compared to planned measurements. Valid data are defined as all data that are not rejected for project use. All data were considered valid. The completeness goal of 95 percent was met for all analyte/method combinations.

Table 2
Qualified Data
Soil Vapor/Indoor Air Investigation, Waterloo, NY

Sample ID	Method	Analyte	Final Result	Units	Final Flag	Reason
WAT-IA-6-032310	TO15	2-Butanone	UG/M3	7.1	U	CanCert<RL
WAT-IA-6-032310	TO15	Acetone	UG/M3	24	U	CanCert<RL
WAT-IA-7-032310	TO15	2-Butanone	UG/M3	6.7	U	CanCert<RL
WAT-SG-7a-032310	TO15	Acetone	UG/M3	42	J	Coelution
WAT-SG-B2-032310	TO15	2-Butanone	UG/M3	6.3	U	CanCert<RL
WAT-SG-B2-032310	TO15	Acetone	UG/M3	8.9	U	CanCert<RL

Validation Reasons

CanCert<RL	The analyte was detected in the Summa canister at a concentration less than the reporting limit.
Coelution	Analyte coeluted with a nontarget analyte.

Appendix C
List of Chemicals in Buildings Evaluated

APPENDIX C

Chemical Inventory - Building 1 - April 2008

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp Facility, Waterloo, New York

Building 1 - Boiler Room

Quantity	ID	Units	Product Description
37	NA	50 lb bags	Solar salt for water softeners
1	NA	1 pint	Bostik - Never Seez Anti - seize & lubricating compound
1	NA	1 pint	Reactor seal pipe thread sealant
1	NA	16 oz	Top free excel cutting fluid by Winbro
1	NA	8 oz	WD - 40
2	NA	16 oz	Locite thread sealant with teflon
1	NA	18 oz can	ITW Dyman penetrating Oil & Moisture Remover
1	NA	NA	Nalco 1720 Oxygen scavenger
1	I-MT-102	NA	Brine tank
1	NA	NA	Nalco Tri - ACT ® 1820 Corrosion Inhibitor
1	NA	NA	Nex Guard 22310 Boiler water internal treatment

Aboveground Storage Tanks South of Building 1

Quantity	ID	Units	Product Description
1	16 - HT - 104 - 01	NA	Epichlorohydrin
1	1 - HT - 97 - 01	NA	HCl
1	NA	NA	Acrylinitrile

Aboveground Storage Tanks West of Buildings 1 and 2

Quantity	ID	Units	Product Description
1	2 - T - 534	NA	Ammonium bisulfate
1	2 - HT -11	Working Capacity - 1,800 gal	MIBK

Notes:
NA - Not available

APPENDIX C

Chemical Inventory - MPA Process Area - April 2008

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp Facility, Waterloo, New York

Dept 69 - MPA Process Area

Quantity	ID	Units	Product Description
1	2 - AST - 6		Tank
1	AST - 30, 35		Line labeled Thiomalic acid *
2	2A - PT-47	Gross 3900 lbs Tare 477 lbs	3-mercaptopropionic acid (99%)
5	NA	2,600 lbs	MPA Vac Dist
1	NA	NA	MIBK / MPA Water container
1	2 - HT - 78	NA	MPA crude
1	NA		Line near MIBK/MPA container labeled MIBK (from tote to acidification reactor)
1	NA	55 gal plastic drum	80% MPA
1	2-AT - 8	NA	MPA Blend Tank AST
1	2 - AST - 35	NA	MPA and Solvent MIBK
1	2-AST-30	NA	MPA and Solvent MIBK
1	2 - AST - 23	NA	MPA and Solvent MIBK
2	NA	2,600 lbs	MPA Cruel
1	NA	NA	Line labeled Sulfuric acid

Notes:
NA - Not available
* Thiomalic Acid (TMA) has not been produced since the late 1990s to early 2000s.

APPENDIX C

Chemical Inventory - Building 2 - April 2008

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp Facility, Waterloo, New York

Building 2 - Storage Area

Quantity	ID	Units	Product Description
1	NA	NA	Recycled HCl tank
1	2-T-44	NA	NaMPA Storage tank
1	2-AST-57	NA	Nitrile reactor
1	2-AST-55	NA	Hydro reactor
1	2-T-043	NA	Ammonia Scrubber
1	2-T-045	NA	Caustic Mix Tank
1	2-T-054	NA	Washed MIBK Tank
1	2-T-046	NA	Raffinate Tank
10	NA	20 kg bags	De - icing salt (Kwick melt safety salt, Sel Antiglance)
32	NA	2,600 lbs	VAC Dist MPA
1	2-HT-18	NA	Boiler Tank
1	NA	NA	Buffer solutions; 1.68 buffer; 4.0 buffer; 1.0 buffer

Lab Area

Quantity	ID	Units	Product Description
1	NA	5 gal container	NaSH + H2O container
1	NA	5 gal box container	0.1000 Normal NaOH by Anachemia
2	NA	6 gal box container	Sulfuric acid solution by GFS Chemicals Item # 1201
1	NA	4 Liters	Potassium iodate - iodide Item # 2269 by GFS Chemical
1	NA	1 gal glass container	10% H2SO4
1	NA	NA	DI water
1	NA	500 ml	Phenolphthalem
1	NA	NA	Potassium iodide KIO3 crystals

Notes:
NA - Not available

APPENDIX C

Chemical Inventory - Building 2-A - April 2008

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp Facility, Waterloo, New York

Building 2-A - Dept. 69 Thiodipropionate & MPA Derivative Production Unit

Quantity	ID	Units	Product Description
1	2A-HT-74	15,000 gal	Ditridecyl Thiodipropionate AST
1	2A-AST-40	NA	These are reactors that can contain any of the raw materials in the building
1	2A-AST-41	NA	These are reactors that can contain any of the raw materials in the building
1	2A-AST-42	NA	These are reactors that can contain any of the raw materials in the building
1	NA	3,500 gal	Exxal ® 8, Product #769724
27	NA	50lb bags	Pike Creek all purpose granulated salt
1	NA		Ammonium bisulfate AST
1	2A-AST-45		AST
1	2A-AST-46		AST
1	NA	55 gal drum	E-Pure MSA
1	NA	55 gal drum	DTBSP Filter drain
1	NA	55 gal drum	DTBSP Pan and Filter
1	HT 133	NA	Tank
1	A-HT-111	NA	Dilite ITA AST
1	2A-R-38	NA	Conc ITA
1	NA	NA	Line labeled Metacrylic acid
1	2A-R-42	NA	Sulfoethyl methyacrylate (SEM) AST
1	NA	55 gal drum	DPPD Inhibitor
1	2A - H - 44	NA	Small tank
1	2A - H - 47	NA	Small tank
1	2A - HT - 109		
1	2A - HT - 110		
1	2A - HT - 22		Ammonium bisulfate
1	NA	NA	Raceway water line

Notes:
NA - Not available

APPENDIX C

Chemical Inventory - Building 2-B - April 2008

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp Facility, Waterloo, New York

Building 2-B - Thiodipropionate Esters and SEM Process Area

Quantity	ID	Units	Product Description
1	2B HT 99	NA	Fatty Alcohol AST ALFOL - 18 Code 8098
1	2B WT - 1	NA	Fatty Alcohol AST ALFOL - 18
1	2B - T - 22	NA	S-19 Scrubber AST
1	2B - WT - 3	NA	TDPN Weight Tank AST
1	NA	10,500 lbs	Melt Tank AST
1	2B - T1	NA	Fatty Alcohol - Lauryl Alcohol - AST
1	2B - T2	Total Capacity - 7600 gal Working Capacity - 7300 gal	Tridecyl Alcohol Storage Tank
1	NA	55 gal	E-Pure MSA plastic drum
1	2B - T4	NA	TDPN AST (medium)
1	NA	NA	ALFOL 12 Code 2098 - Hook up connection outside building where trucks unload

Notes:
NA - Not available

APPENDIX C

Chemical Inventory - Building 3 - April 2008

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp Facility, Waterloo, New York

Building 3 - OPWP Team Dept 68 Area

Quantity	ID	Units	Product Description
1	3-HT-106	Total Capacity 1,500 gal	Sodium hydrosulfide
1	3-HT-106A	Total Capacity 1,000 gal	Sodium hydrosulfide
1	3-HT-66	Total Capacity 5,700 gal	Sodium hydrosulfide
1	3-HT 63	Total Capacity 5,700 gal	Sodium hydrosulfide
1	NA	NA	Line labeled alkali waste to ETP
1	NA	NA	Area next to Former Tank Area called Hazardous Waste Scrubber Solution. Lines say caustic Feed to ETP (Flow out). Flow in Caustic Feed to Dept 68. Line labeled NaSH filter 1B, NaSH Fill # 7A
4	NA	2600 lb totes	Ethanolamine solutions (UN2491), Monoethanolamine Cl/Fe free
1	3-HT-122	NA	AST tank labeled Corrosive toxic
11	NA	2,600 lb totes	Ammonium thioglycolate 71%
1	NA	2,600 lb totes	Glycerol thioglycolate 7010
6	NA	2,600 lb totes	Glycerol thioglycolate 80%
2	NA	2,600 lb totes	Diammonium Dithioglycolate 48% and DAD totes 40%
4	NA	2,600 lb totes	Glyceryl thioglycolate - NK
8	NA	2,600 lb totes	MEAT totes
2	NA	2,600 lb totes	Glyceryl thioglycolate - 75%
1	NA	2,600 lb totes	60% ATG
1	NA	2,600 lb totes	90% TG - Blend
1	NA	2,600 lb totes	98% TG - Blend
1	NA	2000 lbs tote	Thioset - M
1	3-HT-113	Total Capacity 12,480 gal	Monochloroacidic acid
1	3-HT-59	Total Capacity 4,590 gal	Sodium hydrosulfide
1	3-AV-11	NA	NaSH dilution tank
1	3-AV-12	NA	NaSH holding tank
1	3-T-35	NA	Scrubber
1	3-AST-48	NA	H2S Generator

APPENDIX C

Chemical Inventory - Building 3 - April 2008

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp Facility, Waterloo, New York

Lab Area

Quantity	ID	Units	Product Description
1	NA	NA	Buffer solutions: 1.68, 4.0, 7.0, 1.0
1	NA	500 ml bottle	Sulfite Form Liquid by Nalco
1	NA	1 liter	Titrating solution by Nalco
1	NA	1 liter	Hardness buffer by Nalco

Near Location #6

Quantity	ID	Units	Product Description
1	NA	1 gal	Clorox bleach
1	NA	NA	Phenolphthalien
1	NA	18 oz	State Fix "Terg-o-Cide in a can"
1	NA	12 oz	Krylon Industrial Touch Coat Acylic Enamel Aerosol
2	NA	21 oz	Trouble shooter by 3M
1	NA	1 gal	Sherwin Williams Industrial Enamel HS Industrial Marine Coatings in yellow

Outside Building 3 near Canal

Quantity	ID	Units	Product Description
1	3 -HT- 50	Total Capacity 10,000 gal	Sulfuric acid
1	3-HT-13-1	Total Capacity 10,000 gal	Sulfuric acid

Outside Building 3 between Bldg 3 and Machine Shop

Quantity	ID	Units	Product Description
1	3 -HT- 136	Total Capacity 9,290 gal	Sodium Hydroxide

Notes:
NA - Not available

APPENDIX C

Chemical Inventory - Building 4-A - April 2008

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp Facility, Waterloo, New York

Buildings 4A and 4B

Quantity	ID	Units	Product Description
1	4-HT-941	Total Capacity 5,200	Crude Thoglycolic Acid (TGA)
1	4-HT-951	Total Capacity 5,200	Crude TGA
1	NA	2,600 lb tote	1st Pass TGA Residue
1	AV - 11	NA	T-Acid Residue Holding Tank
1	AV - 8	NA	Could not see label; related to AV - 1

Building 4 - Dept 68 T-Acid & Derivative Production Unit

Quantity	ID	Units	Product Description
1	4-V-6	NA	Recycled MIBK AST
1	4-V-7	NA	Washed MIBK
5	NA	2,000 lb tote	Thioglycolic acid (TGA) 96-99% totes
4	NA	2,600 lb tote	DAD
9	NA	55 gal drums	Vac Dist TG (blue plastic drums)
9	NA	55 gal drums	TG concentrate
1	4-HT-7	NA	Regular T-Acid Extract
1	NA	5 gal container	Sulfuric acid
1	NA	55 gal drum	TG -Forerun
1	NA	5 gal container	TG NF
2	NA	330 gal	Ammonium hydroxide 26 BE
1	NA	2,600 lb tote	Glyceryl Thioglycolate
1	4-AST-7	NA	TGA 16 - 99% AST
1	HT-121	NA	T-Acid Extract Residue

APPENDIX C

Chemical Inventory - Building 4-A - April 2008

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp Facility, Waterloo, New York

Lab Area

Quantity	ID	Units	Product Description
1	NA	NA	Buffer solutions 1.68, 4.0, 1.0
1	NA	5 gal container	Potassium iodate - Iodide by GFS Chemicals
1	NA	NA	Potassium iodide (KI)
1	NA	NA	10% sulfuric acid solution

Outside Building 4 near Canal

Quantity	ID	Units	Product Description
2	NA	NA	Compressed nitrogen cylinders by Jackson Welding Supply Co.

Notes:
NA - Not available

APPENDIX C

Chemical Inventory - Tank Storage Area - April 2008

Soil Vapor Investigation - Buildings 1, 2, 3, 4, and Tank Storage Area

Former Hampshire Chemical Corp Facility, Waterloo, New York

Tank Storage Area

Quantity	ID	Units	Product Description
1	7-HT-105	Total Capacity 15,000 gal	Sodium hydrosulfide
28	NA	55 gal drums	Hydrogen peroxide
1	7-HT-128	Total Capacity 6,000 gal	Glycerin
1	7-HT-127	Total Capacity 6,000 gal	Glycerol monothioglycolate
1	7-HT-4	Total Capacity 5,000 gal	Ammonium thioglycolate
1	7-HT-5	Total Capacity 2,600 gal	I-MCH AST
4	NA	55 gal drums	Thioglycerol (TGNF)
4	NA	NA	Compressed Nitrogen cylinders by Jackson Welding Supply Co.

Outside Tank Storage Area

Quantity	ID	Units	Product Description
NA	NA	NA	MPA Fill Hopper Storage Area

Notes:
NA - Not available

Appendix D
NYSDOH E-Mail

La Fortune, Lisa/NJO

From: Justin H Deming [jhd01@health.state.ny.us]
Sent: Monday, March 09, 2009 12:02 PM
To: Lai, Shawntine Hsuan-Ting/NJO
Subject: NYS Matrices

Shante,

Below are the compounds which have been assigned to one of the NYS vapor intrusion matrices:

Volatile Chemical	Soil Vapor/Indoor Air Matrix
carbon tetrachloride	Matrix 1
1,1-dichloroethene	Matrix 2
cis- 1,2-dichloroethene	Matrix 2
tetrachloroethene	Matrix 2
1,1,1-trichloroethane	Matrix 2
trichloroethene	Matrix 1
vinyl chloride	Matrix 1

Also, we are not currently developing any additional air guidelines for table 3.1 on the guidance document. Please feel free to call if you have any additional questions.

Regards,
Justin

Justin Deming
Public Health Specialist
Bureau of Environmental Exposure Investigation New York State Department of Health
Phone 518.402.7870 - Fax 518.402.7859

Appendix E

Quality Assurance/Quality Control Results Table

APPENDIX E
Quality Analysis/Quality Control Results Table (All Results)
Former Hampshire Chemical Corp. Facility, Waterloo, New York

Area		*Bldg 4*		-
Location		*SG-7A*		*Field QC*
Sample Date	*CAS #*	*3/24/2010*	*3/24/2010*	*3/23/2010*
Sample Type		*Normal*	*Duplicate*	*Field Blank*
Sample Matrix		*Vapor*	*Vapor*	*Vapor*
TO-15 (ug/m3)				
1,1,1-Trichloroethane	71-55-6	0.13 U	0.13 U	0.1 U
1,1,2,2-Tetrachloroethane	79-34-5	0.13 U	0.13 U	0.1 U
1,1,2-Trichloroethane	79-00-5	0.13 U	0.13 U	0.1 U
1,1-Dichloroethane	75-34-3	**2.4**	**11**	0.1 U
1,1-Dichloroethene	75-35-4	**0.86**	**1.5**	0.1 U
1,2-Dichloroethane	107-06-2	**0.12 J**	**0.11 J**	0.1 U
1,2-Dichloroethene, cis-	156-59-2	**1.7**	**9.9**	0.1 U
1,2-Dichloroethene, trans-	156-60-5	**0.32**	**2.3**	0.1 U
1,2-Dichloropropane	78-87-5	**1.4**	**6**	0.1 U
1,3-Dichloropropene, cis-	10061-01-5	0.64 U	0.63 U	0.5 U
1,3-Dichloropropene, trans-	10061-02-6	0.64 U	0.63 U	0.5 U
Acetone	67-64-1	**42 J**	**75**	**1.6 J**
Acrylonitrile	107-13-1	**0.39 J**	0.63 U	0.5 U
Benzene	71-43-2	**1.1**	**2.2**	0.1 U
Bromodichloromethane	75-27-4	0.13 U	0.13 U	0.1 U
Bromoform	75-25-2	0.64 U	0.63 U	0.5 U
Bromomethane	74-83-9	**0.093 J**	**0.26**	0.1 U
Carbon Disulfide	75-15-0	**820**	**1000**	5 U
Carbon Tetrachloride	56-23-5	**0.62**	**0.53**	0.1 U
Chlorobenzene	108-90-7	0.13 U	0.13 U	0.1 U
Chloroethane	75-00-3	**0.39**	**0.49**	0.1 U
Chloroform	67-66-3	**99**	**190**	0.1 U
Chloromethane	74-87-3	**0.49**	**0.5**	0.2 U
Dibromochloromethane	124-48-1	0.13 U	0.13 U	0.1 U
Ethylbenzene	100-41-4	**12**	**60**	0.5 U
Methy Ethy Ketone (2-Butanone)	78-93-3	**2.8 J**	**3.7 J**	5 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	108-10-1	**260**	**930**	0.5 U
Methylene chloride	75-09-2	**11**	**82**	0.5 U
Styrene	100-42-5	**1.6**	**1.7**	0.5 U
tert-Butyl Methyl Ether		0.13 U	**0.13**	0.1 U
Tetrachloroethene	127-18-4	**0.8**	**2.8**	0.1 U
Toluene	108-88-3	**62**	**82**	**0.56**
Trichloroethene	79-01-6	**2.2**	**4.4**	0.1 U
Vinyl chloride	75-01-4	**0.096 J**	**0.83**	0.1 U
Xylene, m,p-	108-38-3/1	**99**	**600**	0.5 U
Xylene, o-	95-47-6	**23**	**120**	0.5 U
Epichlorohydrin	106-89-8	NF	NF	NF
Tentatively Identified Compounds				
Isobutane		**260 N**	-	-
n-Pentane		**140 N**	-	-

Notes:
Bold indicates detected concentration.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
N = Tentatively Identified Compound
NYSDEC requested indoor/outdoor air reporting limit of 1 ug/m3 or less for all compounds except TCE which should be 0.25 ug/m3 or less; this is not applicable to TICs, acetone or epichlorohydrin.
Other detects were identifed in the samples, but did not exceed the New York State Department of Health (NYSDOH) 2003 Study of VOCs 90th percentile in fuel oil heated homes.
WAT-SG-7a-032310 is parent of duplicate sample WAT-SG-DUP-032310
Although benzene and carbon tetrachloride did not exceed the respective NYSDOH 90th percentile levels, both compounds show cancer risk>10^-6.
Only indoor air sample results were compared against the NYSDOH 90th percentile levels.

APPENDIX E
Quality Analysis/Quality Control Results Table (Detected Compounds)
Former Hampshire Chemical Corp. Facility, Waterloo, New York

Area		*Bldg 4*		-
Location		*SG-7A*		*Field QC*
Sample Date	*CAS #*	*3/24/2010*	*3/24/2010*	*3/23/2010*
Sample Type		*Normal*	*Duplicate*	*Field Blank*
Sample Matrix		*Vapor*	*Vapor*	*Vapor*
TO-15 (ug/m3)				
1,1-Dichloroethane	75-34-3	**2.4**	**11**	0.1 U
1,1-Dichloroethene	75-35-4	**0.86**	**1.5**	0.1 U
1,2-Dichloroethane	107-06-2	**0.12 J**	**0.11 J**	0.1 U
1,2-Dichloroethene, cis-	156-59-2	**1.7**	**9.9**	0.1 U
1,2-Dichloroethene, trans-	156-60-5	**0.32**	**2.3**	0.1 U
1,2-Dichloropropane	78-87-5	**1.4**	**6**	0.1 U
Acetone	67-64-1	**42 J**	**75**	**1.6 J**
Acrylonitrile	107-13-1	**0.39 J**	0.63 U	0.5 U
Benzene	71-43-2	**1.1**	**2.2**	0.1 U
Bromomethane	74-83-9	**0.093 J**	**0.26**	0.1 U
Carbon Disulfide	75-15-0	**820**	**1000**	5 U
Carbon Tetrachloride	56-23-5	**0.62**	**0.53**	0.1 U
Chloroethane	75-00-3	**0.39**	**0.49**	0.1 U
Chloroform	67-66-3	**99**	**190**	0.1 U
Chloromethane	74-87-3	**0.49**	**0.5**	0.2 U
Ethylbenzene	100-41-4	**12**	**60**	0.5 U
Methy Ethy Ketone (2-Butanone)	78-93-3	**2.8 J**	**3.7 J**	5 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	108-10-1	**260**	**930**	0.5 U
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Styrene	100-42-5	**1.6**	**1.7**	0.5 U
tert-Butyl Methyl Ether		0.13 U	**0.13**	0.1 U
Tetrachloroethene	127-18-4	**0.8**	**2.8**	0.1 U
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Trichloroethene	79-01-6	**2.2**	**4.4**	0.1 U
Vinyl chloride	75-01-4	**0.096 J**	**0.83**	0.1 U
Xylene, m,p-	108-38-3/1	**99**	**600**	0.5 U
Xylene, o-	95-47-6	**23**	**120**	0.5 U
Tentatively Identified Compounds				
Isobutane		**260 N**	-	-
n-Pentane		**140 N**	-	-

Notes:
Bold indicates detected concentration.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
N = Tentatively Identified Compound
NYSDEC requested indoor/outdoor air reporting limit of 1 ug/m3 or less for all compounds except TCE which should be 0.25 ug/m3 or less; this is not applicable to TICs, acetone or epichlorohydrin.
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Although benzene and carbon tetrachloride did not exceed the respective NYSDOH 90th percentile levels, both compounds show cancer risk>10^-6.
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