Vapor Intrusion Interim Measures Quarterly Report No. 5

Chamberlain Manufacturing Corporation
Former Facility at
550 Esther Street
Waterloo Iowa
EPA Docket Nos.
RCRA-07-2010-002
CERCLA-07-2010-0005
October 29, 2012
Terracon Project No. 07107020

Prepared for:
Chamberlain Manufacturing Corporation
Elmhurst, Illinois

Prepared by:
Terracon Consultants, Inc.
Omaha, Nebraska

Terracon

October 29, 2012

United States Environmental Protection Agency
Region 7 - Air and Waste Management Division
11201 Renner Blvd
Lenexa, Kansas 66219

Attn: Mr. Bruce Morrison

Re: Vapor Intrusion Interim Measures Quarterly Report No. 5
Chamberlain Manufacturing Corporation
Former Facility at 550 Esther Street
Waterloo, Iowa
EPA Docket Nos. RCRA-07-2010-002 and CERCLA-07-2010-0005

Dear Mr. Morrison:

Terracon Consultants, Inc. (Terracon) is pleased to submit this Vapor Intrusion Interim Measures (VIIM) Quarterly Report for activities completed between July 1, 2012 and September 30, 2012 in conjunction with the site referenced above. The VIIM Quarterly Report presents a summary of activities related to the installation, operation, and monitoring of vapor mitigation systems in residential structures as requested by the EPA. This report also summarizes the analytical results of an August 2012 indoor air monitoring event.

Should you have any questions or require additional information, please do not hesitate to contact our office.

Sincerely,

Terracon Consultants, Inc.

Michael E. Hagemeister
Senior Principal

David M. Svingen, P.E.
Senior Principal

MEH/JRB/DMS

Distribution: Addressee (1 bound)

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ACRONYMS & ABBREVIATIONS

CERCLA ..... Comprehensive Environmental Response, Compensation, and Liability Act
City ..... City of Waterloo
COC ..... Chain of Custody
EPA ..... Environmental Protection Agency
Facility ..... Chamberlain Manufacturing facility
HASP ..... Health and Safety Plan
NELAC ..... National Environmental Laboratory Accreditation Conference
PCE ..... Tetrachloroethene (or Perchloroethene)
PID ..... Photoionization Detector
ppm ..... parts per million
QA ..... Quality Assurance
QAM ..... Quality Assurance Manual
QAPP ..... Quality Assurance Project Plan
QC ..... Quality Control
RCRA ..... Resource Conservation and Recovery Act
RSL ..... Regional Screening Level
SOP ..... Standard Operating Procedure
SOW ..... Statement of Work
TCE ..... Trichloroethene
TestAmerica ..... TestAmerica, Inc.
TSOP ..... Terracon Standard Operating Procedure
UAO ..... Unilateral Administrative Order
USEPA ..... United States Environmental Protection Agency
VIC ..... Vapor Intrusion Characterization
VIIM ..... Vapor Intrusion Interim Measures
VMS ..... Vapor Mitigation System
VOC ..... Volatile Organic Compound

VAPOR INTRUSION INTERIM MEASURES
QUARTERLY REPORT NO. 5
CHAMBERLAIN MANUFACTURING CORPORATION
FORMER FACILITY AT
550 ESTHER STREET
WATERLOO, IOWA

Terracon Project No. 07107020
October 29, 2012

1.0 INTRODUCTION

Terracon has developed this VIIM Quarterly Report to identify interim remedial measures completed in residential structures in which vapor concentrations related to shallow groundwater contamination from the former Chamberlain Manufacturing Facility (Facility) exceed indoor air screening levels for the period of July 1, 2012 through September 30, 2012. This VIIM Quarterly Report is submitted in accordance with the requirements of the UAO, Docket Nos. RCRA 07-2010-002 and CERCLA 07-2010-005 dated April 20, 2010 and Task IA of the SOW attached to the UAO. Capitalized terms not defined herein have the definitions set for the in the UAO or the SOW.

This VIIM Quarterly Report also provides a summary of indoor analytical results that have been obtained from the residences sampled during the period from July 1, 2012 through September 30, 2012. The residences sampled this period have not required the installation of vapor mitigation based on concentrations observed at these properties.

1.1 Site Conditions

The Facility is an irregularly shaped parcel containing approximately 22.8 acres and located at 550 Esther Street in Waterloo, Iowa. A Topographic Vicinity Map is included as Exhibit 1 in Appendix A. A Site Diagram is included as Exhibit 2.

The Facility manufactured metal washer wringers and projectile metal parts from approximately 1919 until 1996 when it was sold to Atlas Warehouse L.C. for use as a storage facility. The Facility was subsequently abandoned and is currently vacant. The City of Waterloo (City) acquired the Facility from Atlas Warehouse L.C in 2005 in an effort to facilitate redevelopment and has demolished a significant portion of the Facility.

The Facility is zoned Heavy Industrial (M-2) by the City. The Facility is adjoined by park land to the north and south, single family residential housing to the west, and Virden Creek followed by

a golf course to the east. Virden Creek is within approximately 100 feet of the Facility at its closest point. Gates Park adjoins the Facility to the north across Louise Street, to the east across Virden Creek, and to the south across the railroad tracks. Single family residences are located across East 4th Street to the west of the Facility. Single family residences are also located along the east side of East 4th between Anita and Louise Streets.

1.2 Previous Assessment Activities

Beginning in 2004, the City conducted an environmental assessment of the site using a USEPA Brownfields Grant. Results of assessment activities identified impacts to soil and groundwater at the site including a chlorinated solvent plume that extends offsite to the south and west. Site assessment activities were not completed due to funding restrictions of the Brownfields Grant program.

Subsequently, environmental assessment activities of onsite soil and groundwater conditions and the offsite chlorinated solvent plume were completed by Chamberlain. The lateral extent of the chlorinated solvent plume has been determined to extend south and west from the Facility into an area of residential development. USEPA's preliminary evaluation of the vapor intrusion to indoor air pathway resulting from the groundwater plume identified the potential for vapor intrusion into residential structures.

To further evaluate the vapor intrusion pathway, the USEPA conducted subslab vapor sampling of selected residences in November 2008. Due to problems with the sampling and analysis equipment, the sampling activities were repeated in April/May 2009. Subslab vapor samples were collected from ten homes located along and near East 4th Street and analyzed for VOCs. In addition, one indoor air sample was collected from one of the ten homes. The results of sampling activities identified PCE and TCE in excess of subslab vapor screening levels. The elevated concentrations were generally located within the 2200, 2300, and 2400 block of East 4th Street.

In accordance with the approved VIC Work Plan, Terracon initially conducted vapor intrusion characterization at 22 residences that responded with completed Sampling Request Forms and Access Agreements from both the property owner and current renter. Initial subslab, indoor air, and ambient air sampling was conducted between April 25, 2011 and May 3, 2011. Additional indoor air samples were collected from four residences on June 16, 2011 and from one residence on September 14, 2011. Based on the analytical results, the reported concentrations of indoor air samples in seven residences were greater than the indoor air screening level. Subslab and indoor air sample results were presented in the VIC Report dated July 5, 2011.

In accordance with the approved VIC Report, Terracon offered vapor sampling to 14 additional residences located on the west side of the 300 block of Boston Avenue and the east side of the 400 block of Boston Avenue. Terracon also reoffered vapor sampling to those residences that

did not respond to previous submittals and contacted residences that requested sampling through the USEPA or that had previously authorized sampling, but could not be reached to schedule an appointment. Supplemental subslab, indoor air, and ambient air sampling was conducted at nine residences between December 12, and December 14, 2011. Analytical results for subslab samples collected from two residences exceeded subslab screening levels and as such, additional indoor air samples were collected at these locations on March 23, 2012. Analytical results for supplemental sampling activities were submitted to the USEPA on April 19, 2012. During the second quarter 2012, indoor air samples were collected at Residences 48 and 73 and were reported in Terracon's July 19, 2012 VIIM Quarterly Report No. 4.

1.3 Project Objectives

The objective of this VIIM Quarterly Report is to present the information required by Section 4.0 of the approved VIIM Work Plan dated October 14, 2010, revised on August 1, 2011, and amended July 19, 2011. This information includes system design "as-builts," information on the expected operational life of the system, a recommendation for the frequency for monitoring and maintaining the system, criteria for determining its effectiveness, a schedule for system replacement in whole or in part (as appropriate), the frequency of system inspection by the Respondent, the results of post-installation system monitoring and any approved deviations from the approved VIIM Work Plan.

2.0 SCOPE OF SERVICES

2.1 Mitigation Determination

During the third quarter 2012, the VMS system inspections were conducted. In addition, indoor air samples were collected from eight residences this period. Based on sampling activities this period, no residences are proposed to have mitigation systems installed or decommissioned.

2.2 Site Access Protocol

Residences were contacted at least 48 hours in advance of system shut-down, sampling, or system inspection to arrange a time and date for proposed activities.

3.0 PROCEDURES FOR SYSTEM DESIGN, INSTALLATION AND COMMISSIONING

Vapor mitigation systems were not designed, installed, commissioned or decommissioned during the 3rd calendar quarter of 2012.

4.0 COMPLETED SYSTEM INSTALLATIONS

Interim mitigation systems were previously offered to, accepted by, and installed at eight Residences. Interim mitigation systems were subsequently shut off at three Residences. System installations were not completed during the 3rd calendar quarter of 2012.

5.0 COMPLETED SYSTEM INSPECTION AND REPAIR

In accordance with the approved VIIM Work Plan, system inspections are to occur on an annual basis following installation through the period of required operation. The purpose of the site inspection is to check each operating system for general condition using visual observation. The inspection includes checking for: proper operation of the blower, possible cracks or disconnections in visible piping, piping attachments, and checking manometer to confirm system vacuum. Systems at Residences 4, 22, 28, 45, and 46 were scheduled to be operational this period. As such, inspections were targeted at each of these residences in September 2012.
A Terracon field professional conducted inspections at Residences 28, 45, and 46 on September 20, 2012. On this date, systems at Residences 45 and 46 were in good repair for the above items and appeared to operating as intended. The system at Residence 28 was not operational and according to the homeowner had been shut down on Sept 15, 2012 at the breaker due to possible blower motor problems.

A Terracon field professional conducted an inspection at Residence 22 on September 26, 2012. On this date, the system at Residence 22 was in good repair for the above items and appeared to operating as intended.

On September 26, 2012, Terracon met with Crystal Heating and Plumbing (mitigation system installation contractor) at Residence 28 to assist with troubleshooting the system and make repairs. The blower motor of the system had failed so a new blower motor was installed. The system was restarted on September 26, 2012 and a system check was conducted. Following repair, the system at Residence 28 was in good repair for the above items and appeared to operating as intended.

The system at Residence 4 was also scheduled to be checked during this period. However, Ms. Mary Anderson (former homeowner) indicated that she had sold the home during our request for access. She indicated that she would locate and then provide the new owner contact information to Terracon. As of the date of this report, this new ownership information has not been provided.

6.0 INDOOR AIR MONITORING RESULTS

6.1 Sampling Activities

Indoor air sampling was conducted at Residences 20, 33, 38, 40, 47, 60, 73, and 76 on August 22 or 24 or September 21, 2012. None of the residences sampled during this period have mitigation systems. Instead, Residences 20, 33, 38, 40, 47, 60 and 76 were sampled as part of the semi-annual sampling program conducted in August 2012. Semi-annual indoor air monitoring was conducted in accordance with the approved VIC Report where sub-slab concentrations exceeded sub-slab screening levels, but indoor air concentrations were below indoor air screening levels. Residence 48 was scheduled to be sampled as part of the semi-annual sampling event but was eliminated this current period with USEPA concurrence at the homeowner's request. With USEPA concurrence, Residence 73 was sampled on September 21, 2012 as a follow-up due to a March 2012 event indoor air threshold exceedence for TCE.

Indoor air samples were collected using laboratory prepared six-liter Summa canisters and flow controllers. The flow controllers were pre-set by the laboratory to collect samples over a 24-hour period. Terracon requested that occupants close doors and windows and operate the heating, ventilating, and air conditioning (HVAC) system for the period beginning 24-hours prior to the start of sample collection to the end of sample collection.

Consistent with VIC activities and in accordance with the USEPA approval letter dated January 6, 2011, indoor air sampling was conducted in the basement and in the lowest occupied living area of each residence. A finished basement is considered to be an occupied living space. Terracon attempted to position sample containers in the same general location used for previous indoor air sampling.

Terracon field personnel connected the flow controller to the Summa canister by removing the brass cap on the canister and tightening the stainless steel Swagelok fitting on the flow controller to the threads on the canister. A wrench was used to firmly tighten the fitting.

Once sample containers were positioned, air sampling forms (project information, equipment identifiers, sample location, and start time) were filled out and attached to the canisters. A Soil Vapor/Indoor Air Sampling Information Form indicating pertinent project and sample collection information was completed for each indoor air sample. A COC was completed indicating the start time for the samples.

To open the canister, the valve was rotated counter-clockwise at least one full turn or otherwise opened. After the 24-hours, Terracon personnel returned to the Residence, closed the valve on the canister and recorded the time and vacuum remaining in the Summa canister on the Terracon sampling forms and on the COC. The canisters and flow controllers were then transported to the laboratory.

Indoor air monitoring activities are summarized in Table 6-1.

Table 6-1 Semi-Annual Indoor Air Monitoring

Residence No.	Sample Date	Basement Sample	1st Floor Sample
20	8/22/12	X	---[1]
33	8/22/12	X	X
38	8/22/12	X	X
40	8/22/12	X	X
47	8/22/12	X	X
60	8/22/12	X	X
73	9/21/12	X	---[1]
76	8/24/12	X	---[1]

[1] – Basement contains a finished family room; therefore, the basement is the lowest occupied level. Per the USEPA letter of January 6, 2011, sampling is not required on the first floor.

6.2 Air Monitoring Results

Indoor air samples were collected using six-liter Summa canisters. The Summa canisters were submitted for analysis of PCE, TCE, vinyl chloride, trans-1,2-dichloroethene (trans-DCE), cis-1,2-dichloroethene (cis-DCE), 1,1-dichloroethene, 1,1-dichloroethane, 1,1,1-trichloroethane (TCA), and 1,1,2- trichloroethane, using EPA Method TO-15.

Laboratory procedures were performed by TestAmerica, Knoxville, Tennessee. TestAmerica is NELAC accredited for the laboratory methods referenced above. The laboratory QAM is on file with the USEPA. A copy of the SOPs for the specified method was included as Appendix F of the VIC Work Plan. The TestAmerica data is reported in accordance with the QAM and SOP. Results of indoor air monitoring activities conducted over this current period are summarized in Table 1, Appendix B. Table 2, Appendix B provides a summary of the analytical results at Residence 73 from the initial sampling event to current. Copies of analytical reports for samples collected over this period are provided in Appendix C.

The analytical results for air samples collected at Residences 20, 33, 38, 40, 47, 60, and 76 had reported concentrations that were below applicable thresholds. Since sub-slab samples at these locations exceeded sub-slab screening levels, semi-annual monitoring will continue in

accordance with the approved VIC Report. In addition, Residence 48 will also be sampled during the first quarter 2013 provided that the resident allows access. The next scheduled monitoring event will occur during the first quarter 2013.

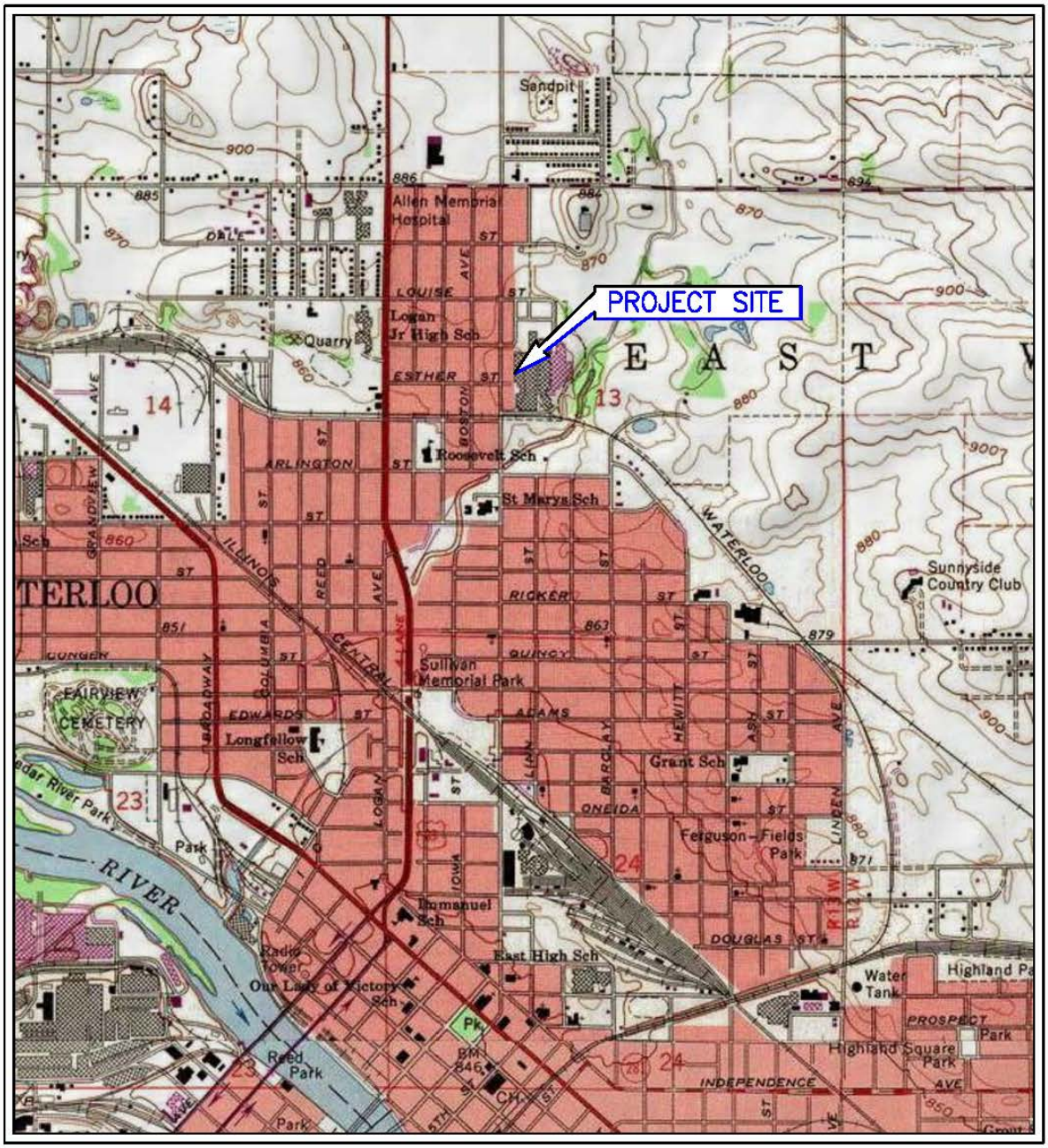
With respect to the September 21, 2012 results for Residence No. 73, each analyte was below the applicable indoor air threshold as shown on Table 2, Appendix B. However, TCE was reported at 0.59 ug/m^3 in the blind duplicate sample which is above the indoor air threshold of 0.43 ug/m^3. Issues with the blind duplicate results were not identified in the data validation process. Though an exceedence was reported in the blind duplicate, Terracon has proposed that Residence No. 73 be resampled in conjunction with the semi-annual monitoring events. This is supported by the fact that the actual sample was below the threshold and the apparent downward trends in the indoor air results that have been observed from March 2012 to the current. The next scheduled monitoring event will occur during the first quarter 2013.

Appendix A – Exhibits

Exhibit 1 – Topographic Vicinity Map

Exhibit 2 – Site Diagram

UNITED STATES – DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY



SCALE 1:24,000

1 .5 0 KILOMETERS 1 2
1000 0 METERS 1000 2000
1 .5 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000
FEET

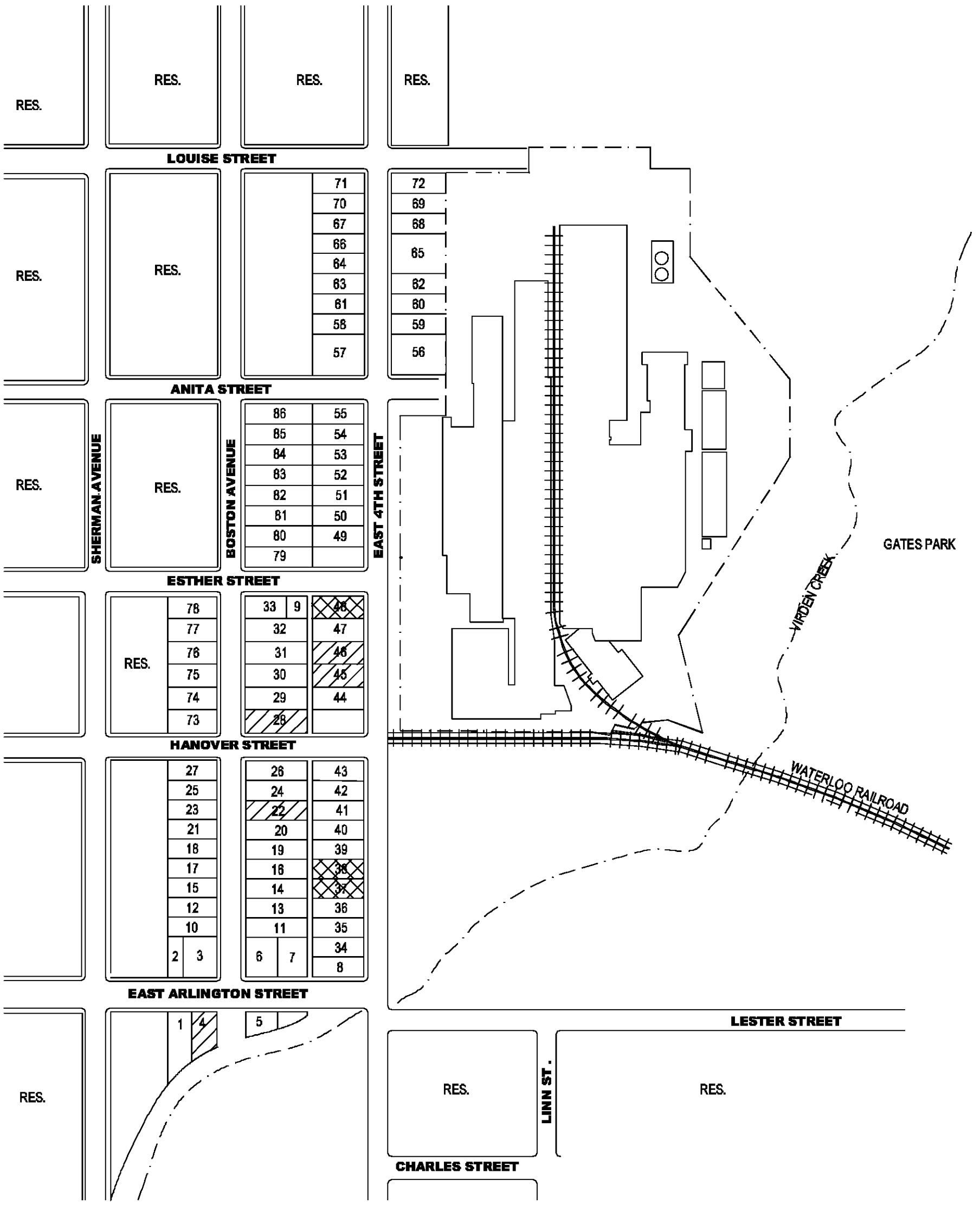
CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

N

WATERLOO NORTH, IOWA
QUADRANGLE
1972
7.5 MINUTE SERIES (TOPOGRAPHIC)

Project Mngr: MEH Drawn By: PAI Checked By: MEH Approved By: DMS	Project No. 07107020 Scale: AS SHOWN File No. 07107020C01 Date: 10/29/12	Terracon Consulting Engineers and Scientists 670 40th AVENUE BETTENDORF, IOWA 52722 PH. (563) 355-0702 FAX. (563) 355-4769	SITE LOCATION TOPOGRAPHIC MAP VIIM QUARATERLY REPORT NO. 5 FORMER CHAMBERLAIN MANUFACTURING FACILITY 550 ESTER STREET WATERLOO IOWA	EXHIBIT 1

P:\2010\07107020\PROJECT DOCUMENTS (Reports-Letters-Drafts To Clients)\Diagrams-Drawings-Figures\DWGS\07107020C01.dwg Layout: TOPO 10/29/2012 12:21 PM



REV.	DATE	BY	DESCRIPTION

Terracon
Consulting Engineers and Scientists
870 40th AVENUE BETTENDORF, IOWA 52722
PH. (563) 355-0702 FAX. (563) 355-4789

SITE PLAN

VIIM QUARTERLY REPORT NO. 5

FORMER CHAMBERLAIN MANUFACTURING FACILITY

550 ESTER STREET

WATERLOO IOWA

EXHIBIT 2

PROJECT MGR:	MEH
DRAWN BY:	PAI
APPVD. BY:	DMS
SCALE:	AS SHOWN
DATE:	10/29/12
PROJECT NO.	07107020
FILE NAME:	07107020C01
SHEET NO.:	2 OF 2

Appendix B –Tables

Table 1 – Indoor Air Analytical Results – 3rd Quarter 2012

Table 2 – Indoor Air Analytical Results – Residence No. 73

TABLE 1
INDOOR AIR ANALYTICAL RESULTS
3rd Quarter 2012
VAPOR INTRUSION INTERIM MEASURES QUARTERLY REPORT NO. 5
CHAMBERLAIN MANUFACTURING

	Sample ID	IA-20-B-5	IA-1-33-3	IA-B-33-3	IA-B-38-3	IA-1-38-3	IA-1-40-3	IA-B-40-3	IA-B-40-3 (Dup)	Reporting Limit	Analytical Method Detection Limit	Indoor Air Screening Level [2]
	Date	8/22/2012	8/22/2012	8/22/2012	8/22/2012	8/22/2012	8/22/2012	8/22/2012	8/22/2012			
Analyte	**Units**											
Tetrachloroethene	µg/m^3	<0.54	0.37 J	0.54 J	0.34 J	0.15 J	0.51 J	1.4	0.26 J	0.54	0.11	9.4 [3]
Trichloroethene	µg/m^3	0.090 J	0.24	0.23	<0.21	<0.21	0.17 J	0.20 J	0.14 J	0.21	0.075	0.43 [4]
Vinyl chloride	µg/m^3	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.2 [1]	0.074	0.165
trans-1,2-Dichloroethene	µg/m^3	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	0.32	0.079	63
cis-1,2-Dichloroethene	µg/m^3	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	0.32	0.095	63
1,1-Dichloroethene	µg/m^3	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	0.32	0.052	210
1,1-Dichloroethane	µg/m^3	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	0.32	0.04	1.5
1,1,1-Trichloroethane	µg/m^3	1.7	<0.44	<0.44	0.19 J	0.22 J	<0.44	<0.44	<0.44	0.44	0.065	5200
1,1,2-Trichloroethane	µg/m^3	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	0.44 [1]	0.11	0.15

	Sample ID	IA-1-47-2	IA-B-47-2	IA-1-60-2	IA-B-60-2	IA-B-73-3	IA-B-73-3 (dup)	IA-B-76	Reporting Limit	Analytical Method Detection Limit	Indoor Air Screening Level [2]
	Date	8/22/2012	8/22/2012	8/22/2012	8/22/2012	9/21/2012	9/21/2012	8/24/2012			
Analyte	**Units**										
Tetrachloroethene	µg/m^3	0.12 J	0.11 J	1.3	0.81	<0.54	0.17 J	0.17 J	0.54	0.11	9.4 [3]
Trichloroethene	µg/m^3	0.19 J	0.14 J	0.12 J	0.14 J	0.23	0.59	0.13 J	0.21	0.075	0.43 [4]
Vinyl chloride	µg/m^3	<0.2	<0.20	<0.2	<0.2	<0.2	<0.2	<0.2	0.2 [1]	0.074	0.165
trans-1,2-Dichloroethene	µg/m^3	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	0.32	0.079	63
cis-1,2-Dichloroethene	µg/m^3	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	0.32	0.095	63
1,1-Dichloroethene	µg/m^3	<0.32	<0.32	<0.32	<0.32	0.066 J	<0.32	<0.32	0.32	0.052	210
1,1-Dichloroethane	µg/m^3	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	0.32	0.04	1.5
1,1,1-Trichloroethane	µg/m^3	<0.44	<0.44	<0.44	<0.44	0.10 J	0.11 J	0.26 J	0.44	0.065	5200
1,1,2-Trichloroethane	µg/m^3	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	0.44 [1]	0.11	0.15

NOTES: µg/m3 - micrograms per cubic meter
ppm - parts per million
J - The contaminant is present at a concentration greater than the Analytical Method Detection Limit, but less than the Reporting Limit.
[1] - Indoor Air Screening Level is less than Reporting Limit. The USEPA has approved the use of the Reporting Limit as the screening level for this site due to the technical inability to accurately quantify the detection of these compounds at the current USEPA screening level.
[2] - Per USEPA approved VIC Work Plan
[3] - Revised Action Threshold for PCE per USEPA e-mail dated February 17, 2012
[4] - Revised per USEPA's letter dated October 27, 2011 and as an accommodation to USEPA without waiver of Chamberlain's concerns expressed in its email to USEPA dated November 14, 2011.

SAMPLE ID NOMENCLATURE: First 2 letters identify sample type: SS - Sub-Slab, IA - Indoor Air, AA - Ambient Air, and EB - Equipment Blank
The numeric value following the sample type identify the Residence ID Number

TABLE 2
INDOOR AIR ANALYTICAL RESULTS
RESIDENCE NO. 73
VAPOR INTRUSION INTERIM MEASURES QUARTERLY REPORT NO. 5
CHAMBERLAIN MANUFACTURING

		Sub-Slab	Indoor Air		Indoor Air	Indoor Air			Analytical Method Detection Limit	Sub-Slab Screening Level[2]	Indoor Air Screening Level[2]
	Sample ID	SS-73	IA-B-73	IA-B-73 Duplicate	IA-B-73-2	IA-B-73-3	IA-B-73 Duplicate	Reporting Limit			
	Date	12/14/2011	3/23/2012	3/23/2012	6/26/2012	9/21/2012	9/21/2012				
Analyte	**Units**										
Tetrachloroethene	µg/m^3	2.9	0.26	0.34	0.28	<0.54	0.17 J	0.54	0.11	94[3]	9.4[3]
Trichloroethene	µg/m^3	85	1.2	1.2	0.51	0.23	0.59	0.215	0.075	4.3[4]	0.43[4]
Vinyl chloride	µg/m^3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	0.204[1]	0.074	1.65	0.165
trans-1,2-Dichloroethene	µg/m^3	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	0.317	0.079	630	63
cis-1,2-Dichloroethene	µg/m^3	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	0.317	0.095	630	63
1,1-Dichloroethene	µg/m^3	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	0.317	0.052	2100	210
1,1-Dichloroethane	µg/m^3	0.080 J	<0.32	<0.32	<0.32	0.066 J	<0.32	0.324	0.040	15	1.5
1,1,1-Trichloroethane	µg/m^3	8.3	0.11	0.11	0.12	0.10 J	0.11 J	0.436	0.065	52000	5200
1,1,2-Trichloroethane	µg/m^3	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	0.36[1]	0.11	1.5	0.15

NOTES: µg/m3 - micrograms per cubic meter
ppm - parts per million
J - The contaminant is present at a concentration greater than the Analytical Method Detection Limit, but less than the Reporting Limit.
[1] - Indoor Air Screening Level is less than Reporting Limit. The USEPA has approved the use of the Reporting Limit as the screening level for this site due to the technical inability to accurately quantify the detection of these compounds at the current USEPA screening level.
[2] - Per USEPA approved VIC Work Plan
[3] - Revised Action Threshold for PCE per USEPA e-mail dated February 17, 2012
[4] - Revised per USEPA's letter dated October 27, 2011 and as an accommodation to USEPA without waiver of Chamberlain's concerns expressed in its email to USEPA dated November 14, 2011.

SAMPLE ID NOMENCLATURE: First 2 letters identify sample type: SS - Sub-Slab, IA - Indoor Air, AA - Ambient Air, and EB - Equipment Blank
The numeric value following the sample type identify the Residence ID Number

Appendix C – Analytical Reports

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: 800-750-2401

TestAmerica Job ID: CVH1474
Client Project/Site: Chamberlain Vapor Sampling
Client Project Description: Chamberlain - TO-15 Scans

For:
TERRACON - CEDAR FALLS
6612 Chancellor Drive Suite 102
Cedar Falls, IA 50613

Attn: Mike Hagemeister

Authorized for release by:
8/29/2012 4:29:43 PM

Brian C. Graettinger
Operations Manager
brian.graettinger@testamericainc.com

Job ID: CVH1474

Laboratory: TestAmerica Cedar Falls

Narrative

Analyzed by TestAmerica - Knoxville, TN.

Sample Summary

Client: TERRACON - CEDAR FALLS
Project/Site: Chamberlain Vapor Sampling

TestAmerica Job ID: CVH1474

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
CVH1474-01	IA-1-60-2	Air	08/22/12 09:18	08/22/12 14:45
CVH1474-02	IA-B-60-2	Air	08/22/12 09:20	08/22/12 14:45
CVH1474-03	IA-1-40-3	Air	08/22/12 11:26	08/22/12 14:45
CVH1474-04	IA-B-40-3	Air	08/22/12 11:28	08/22/12 14:45
CVH1474-05	IA-1-47-2	Air	08/22/12 10:43	08/22/12 14:45
CVH1474-06	IA-B-47-2	Air	08/22/12 10:53	08/22/12 14:45
CVH1474-07	IA-1-33-3	Air	08/22/12 11:06	08/22/12 14:45
CVH1474-08	IA-B-33-3	Air	08/22/12 11:10	08/22/12 14:45
CVH1474-09	IA-1-38-3	Air	08/22/12 13:08	08/22/12 14:45
CVH1474-10	IA-B-38-3	Air	08/22/12 13:11	08/22/12 14:45
CVH1474-11	IA-B-20-5	Air	08/22/12 13:21	08/22/12 14:45
CVH1474-12	Blind Duplicate	Air	08/22/12 11:29	08/22/12 14:45

Client: TERRACON - CEDAR FALLS
Project/Site: Chamberlain Vapor Sampling

TestAmerica Job ID: CVH1474

Client Sample ID: IA-1-60-2

Lab Sample ID: CVH1474-01

Date Collected: 08/22/12 09:18
Matrix: Air
Date Received: 08/22/12 14:45
Sample Container: Summa Canister

Method: EPA TO-15 - Air Sample Analysis - Subcontract

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyst	Analyzed	Dil Fac
Volatile Organic Compounds	See Attached Report.		0.10		mg		BCG	08/24/12 14:14	1.0

Client Sample ID: IA-B-60-2

Lab Sample ID: CVH1474-02

Date Collected: 08/22/12 09:20
Matrix: Air
Date Received: 08/22/12 14:45
Sample Container: Summa Canister

Method: EPA TO-15 - Air Sample Analysis - Subcontract

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyst	Analyzed	Dil Fac
Volatile Organic Compounds	See Attached Report.		0.10		mg		BCG	08/24/12 15:06	1.0

Client Sample ID: IA-1-40-3

Lab Sample ID: CVH1474-03

Date Collected: 08/22/12 11:26
Matrix: Air
Date Received: 08/22/12 14:45
Sample Container: Summa Canister

Method: EPA TO-15 - Air Sample Analysis - Subcontract

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyst	Analyzed	Dil Fac
Volatile Organic Compounds	See Attached Report.		0.10		mg		BCG	08/24/12 16:00	1.0

Client Sample ID: IA-B-40-3

Lab Sample ID: CVH1474-04

Date Collected: 08/22/12 11:28
Matrix: Air
Date Received: 08/22/12 14:45
Sample Container: Summa Canister

Method: EPA TO-15 - Air Sample Analysis - Subcontract

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyst	Analyzed	Dil Fac
Volatile Organic Compounds	See Attached Report.		0.10		mg		BCG	08/25/12 06:45	1.0

Client Sample ID: IA-1-47-2

Lab Sample ID: CVH1474-05

Date Collected: 08/22/12 10:43
Matrix: Air
Date Received: 08/22/12 14:45
Sample Container: Summa Canister

Method: EPA TO-15 - Air Sample Analysis - Subcontract

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyst	Analyzed	Dil Fac
Volatile Organic Compounds	See Attached Report.		0.10		mg		BCG	08/24/12 17:49	1.0

Client: TERRACON - CEDAR FALLS
Project/Site: Chamberlain Vapor Sampling

TestAmerica Job ID: CVH1474

Client Sample ID: IA-B-47-2 — **Lab Sample ID: CVH1474-06**
Date Collected: 08/22/12 10:53 — **Matrix: Air**
Date Received: 08/22/12 14:45
Sample Container: Summa Canister

Method: EPA TO-15 - Air Sample Analysis - Subcontract

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyst	Analyzed	Dil Fac
Volatile Organic Compounds	See Attached Report.		0.10		mg		BCG	08/24/12 18:44	1.0

Client Sample ID: IA-1-33-3 — **Lab Sample ID: CVH1474-07**
Date Collected: 08/22/12 11:06 — **Matrix: Air**
Date Received: 08/22/12 14:45
Sample Container: Summa Canister

Method: EPA TO-15 - Air Sample Analysis - Subcontract

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyst	Analyzed	Dil Fac
Volatile Organic Compounds	See Attached Report.		0.10		mg		BCG	08/24/12 19:46	1.0

Client Sample ID: IA-B-33-3 — **Lab Sample ID: CVH1474-08**
Date Collected: 08/22/12 11:10 — **Matrix: Air**
Date Received: 08/22/12 14:45
Sample Container: Summa Canister

Method: EPA TO-15 - Air Sample Analysis - Subcontract

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyst	Analyzed	Dil Fac
Volatile Organic Compounds	See Attached Report.		0.10		mg		BCG	08/24/12 20:40	1.0

Client Sample ID: IA-1-38-3 — **Lab Sample ID: CVH1474-09**
Date Collected: 08/22/12 13:08 — **Matrix: Air**
Date Received: 08/22/12 14:45
Sample Container: Summa Canister

Method: EPA TO-15 - Air Sample Analysis - Subcontract

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyst	Analyzed	Dil Fac
Volatile Organic Compounds	See Attached Report.		0.10		mg		BCG	08/24/12 21:32	1.0

Client Sample ID: IA-B-38-3 — **Lab Sample ID: CVH1474-10**
Date Collected: 08/22/12 13:11 — **Matrix: Air**
Date Received: 08/22/12 14:45
Sample Container: Summa Canister

Method: EPA TO-15 - Air Sample Analysis - Subcontract

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyst	Analyzed	Dil Fac
Volatile Organic Compounds	See Attached Report.		0.10		mg		BCG	08/24/12 22:25	1.0

Client: TERRACON - CEDAR FALLS
Project/Site: Chamberlain Vapor Sampling

TestAmerica Job ID: CVH1474

Client Sample ID: IA-B-20-5 — **Lab Sample ID: CVH1474-11**

Date Collected: 08/22/12 13:21 — **Matrix: Air**

Date Received: 08/22/12 14:45

Sample Container: Summa Canister

Method: EPA TO-15 - Air Sample Analysis - Subcontract

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyst	Analyzed	Dil Fac
Volatile Organic Compounds	See Attached Report.		0.10		mg		BCG	08/24/12 23:19	1.0

Client Sample ID: Blind Duplicate — **Lab Sample ID: CVH1474-12**

Date Collected: 08/22/12 11:29 — **Matrix: Air**

Date Received: 08/22/12 14:45

Sample Container: Summa Canister

Method: EPA TO-15 - Air Sample Analysis - Subcontract

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyst	Analyzed	Dil Fac
Volatile Organic Compounds	See Attached Report.		0.10		mg		BCG	08/25/12 00:13	1.0

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

PROJECT NO. CVH1474

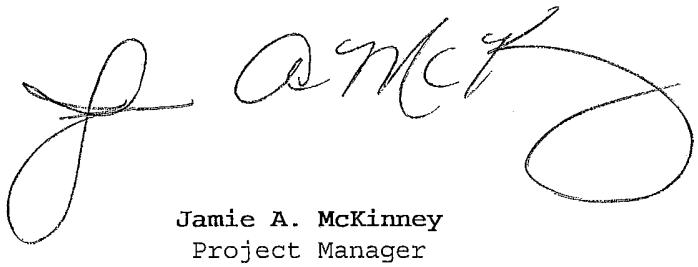
Terracon

Lot #: H2H230437

Brian Graettinger

TestAmerica Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613-0625

TESTAMERICA LABORATORIES, INC.



Jamie A. McKinney
Project Manager

August 29, 2012

ANALYTICAL METHODS SUMMARY

H2H230437

PARAMETER	ANALYTICAL METHOD
Volatile Organics by TO15	EPA-2 TO-15

References:

EPA-2 "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air", EPA-625/R-96/010b, January 1999.

SAMPLE SUMMARY

H2H230437

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
MV9W5	001	IA-1-60-2	08/22/12	09:18
MV9W7	002	IA-B-60-2	08/22/12	09:20
MV9W8	003	IA-1-40-3	08/22/12	11:26
MV9W9	004	IA-B-40-3	08/22/12	11:28
MV9XD	005	IA-1-47-2	08/22/12	10:43
MV9XF	006	IA-B-47-2	08/22/12	10:53
MV9XG	007	IA-1-33-3	08/22/12	11:06
MV9XH	008	IA-B-33-3	08/22/12	11:10
MV9XJ	009	IA-1-38-3	08/22/12	13:08
MV9XK	010	IA-B-38-3	08/22/12	13:11
MV9XL	011	IA-B-20-5	08/22/12	13:21
MV9XM	012	BLIND DUPLICATE	08/22/12	11:29

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

PROJECT NARRATIVE
H2H230437

The results reported herein are applicable to the samples submitted for analysis only. If you have any questions about this report, please call (865) 291-3000 to speak with the TestAmerica project manager listed on the cover page.

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The original chain of custody documentation is included with this report.

Sample Receipt

There were no problems with the condition of the samples received.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

EPA methods TO-14A and TO-15 specify the use of humidified "zero air" as the blank reagent for canister cleaning, instrument calibration and sample analysis. Ultra-high purity humidified nitrogen from a cryogenic reservoir is used in place of "zero air" by TestAmerica Knoxville.

Can Certification Comments:

The EPA method requires that all target analytes in the continuing calibration verification standard be within 30% difference from the initial calibration. The daily standard sample recovery for vinyl chloride was above QC limits on MJ 7/24/12. However, since the recovery was high, and vinyl chloride was not detected above the reporting limit in the associated samples, the validity of the data is unaffected.

CERTIFICATION SUMMARY

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Knoxville	ACLASS	DoD ELAP		ADE-1434
TestAmerica Knoxville	Arkansas	State Program	6	88-0688
TestAmerica Knoxville	California	State Program	9	2423
TestAmerica Knoxville	Colorado	State Program	8	N/A
TestAmerica Knoxville	Connecticut	State Program	1	PH-0223
TestAmerica Knoxville	Florida	NELAC	4	E87177
TestAmerica Knoxville	Georgia	State Program	4	906
TestAmerica Knoxville	Hawaii	State Program	9	N/A
TestAmerica Knoxville	Indiana	State Program	5	C-TN-02
TestAmerica Knoxville	Iowa	State Program	7	375
TestAmerica Knoxville	Kansas	NELAC	7	E-10349
TestAmerica Knoxville	Kentucky	State Program	4	90101
TestAmerica Knoxville	Louisiana	NELAC	6	LA110001
TestAmerica Knoxville	Louisiana	NELAC	6	83979
TestAmerica Knoxville	Maryland	State Program	3	277
TestAmerica Knoxville	Michigan	State Program	5	9933
TestAmerica Knoxville	Minnesota	NELAC	5	047-999-429
TestAmerica Knoxville	Nevada	State Program	9	TN00009
TestAmerica Knoxville	New Jersey	NELAC	2	TN001
TestAmerica Knoxville	New York	NELAC	2	10781
TestAmerica Knoxville	North Carolina	North Carolina DENR	4	64
TestAmerica Knoxville	North Carolina	North Carolina PHL	4	21705
TestAmerica Knoxville	Ohio	OVAP	5	CL0059
TestAmerica Knoxville	Oklahoma	State Program	6	9415
TestAmerica Knoxville	Pennsylvania	NELAC	3	68-00576
TestAmerica Knoxville	South Carolina	State Program	4	84001
TestAmerica Knoxville	Tennessee	State Program	4	2014
TestAmerica Knoxville	Texas	NELAC	6	T104704380-TX
TestAmerica Knoxville	USDA	USDA		P330-11-00035
TestAmerica Knoxville	Utah	NELAC	8	QUAN3
TestAmerica Knoxville	Virginia	State Program	3	165
TestAmerica Knoxville	Washington	State Program	10	C593
TestAmerica Knoxville	West Virginia	West Virginia DEP	3	345
TestAmerica Knoxville	West Virginia	West Virginia DHHR (DW)	3	9955C
TestAmerica Knoxville	Wisconsin	State Program	5	998044300

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

TestAmerica Cedar Falls

Client Sample ID: IA-1-60-2

GC/MS Volatiles

Lot-Sample #: H2H230437 - 001 **Work Order #** MV9W51AA **Matrix.....:** AIR

Date Sampled...:	08/22/2012	**Date Received..:**	08/23/2012
Prep Date.....:	08/24/2012	**Analysis Time....:**	08/24/2012
Prep Batch #.....:	2240073	**Analysis Time....:**	14:14
Dilution Factor.:	1	**Method.....:**	TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
1,1,1-Trichloroethane	ND	0.080	0.012	ND	0.44	0.065
Trichloroethene	**0.023 J**	**0.040**	**0.014**	**0.12 J**	**0.21**	**0.075**
1,1-Dichloroethene	ND	0.080	0.013	ND	0.32	0.052
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
Tetrachloroethene	**0.19**	**0.080**	**0.016**	**1.3**	**0.54**	**0.11**

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	94	60 - 140

Qualifiers

J Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

TestAmerica Cedar Falls

Client Sample ID: IA-B-60-2

GC/MS Volatiles

Lot-Sample #	H2H230437 - 002	**Work Order #**	MV9W71AA	**Matrix.....:**	AIR

Date Sampled...:	08/22/2012	**Date Received..:**	08/23/2012
Prep Date.....:	08/24/2012	**Analysis Time....:**	08/24/2012
Prep Batch #.....:	2240073	**Analysis Time....:**	15:06
Dilution Factor.:	1	**Method.....:**	TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
Tetrachloroethene	**0.12**	**0.080**	**0.016**	**0.81**	**0.54**	**0.11**
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
1,1-Dichloroethene	ND	0.080	0.013	ND	0.32	0.052
Trichloroethene	**0.027 J**	**0.040**	**0.014**	**0.14 J**	**0.21**	**0.075**
1,1,1-Trichloroethane	ND	0.080	0.012	ND	0.44	0.065
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	93	60 - 140

Qualifiers

J	Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

TestAmerica Cedar Falls

Client Sample ID: IA-1-40-3

GC/MS Volatiles

Lot-Sample #	H2H230437 - 003	**Work Order #**	MV9W81AA	**Matrix.....:**	AIR

Date Sampled...:	08/22/2012	**Date Received..:**	08/23/2012
Prep Date.....:	08/24/2012	**Analysis Time....:**	08/24/2012
Prep Batch #.....:	2240073	**Analysis Time....:**	16:00
Dilution Factor.:	1	**Method.....:**	TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
1,1,1-Trichloroethane	ND	0.080	0.012	ND	0.44	0.065
Trichloroethene	**0.031 J**	**0.040**	**0.014**	**0.17 J**	**0.21**	**0.075**
1,1-Dichloroethene	ND	0.080	0.013	ND	0.32	0.052
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
Tetrachloroethene	**0.076 J**	**0.080**	**0.016**	**0.51 J**	**0.54**	**0.11**

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	90	60 - 140

Qualifiers

J Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

TestAmerica Cedar Falls

Client Sample ID: IA-B-40-3

GC/MS Volatiles

Lot-Sample #	H2H230437 - 004	**Work Order #**	MV9W91AA	**Matrix.....:**	AIR

Date Sampled...:	08/22/2012	**Date Received..:**	08/23/2012
Prep Date.....:	08/24/2012	**Analysis Time....:**	08/25/2012
Prep Batch #.....:	2240073	**Analysis Time....:**	06:45
Dilution Factor.:	1	**Method.....:**	TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
Tetrachloroethene	**0.21**	**0.080**	**0.016**	**1.4**	**0.54**	**0.11**
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
1,1-Dichloroethene	ND	0.080	0.013	ND	0.32	0.052
Trichloroethene	**0.037 J**	**0.040**	**0.014**	**0.20 J**	**0.21**	**0.075**
1,1,1-Trichloroethane	ND	0.080	0.012	ND	0.44	0.065
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	91	60 - 140

Qualifiers

J Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

TestAmerica Cedar Falls

Client Sample ID: IA-1-47-2

GC/MS Volatiles

Lot-Sample #	H2H230437 - 005	**Work Order #**	MV9XD1AA	**Matrix.....:**	AIR

Date Sampled...:	08/22/2012	**Date Received..:**	08/23/2012
Prep Date.....:	08/24/2012	**Analysis Time....:**	08/24/2012
Prep Batch #.....:	2240073	**Analysis Time....:**	17:49
Dilution Factor.:	1	**Method.....:**	TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
1,1,1-Trichloroethane	ND	0.080	0.012	ND	0.44	0.065
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
Trichloroethene	**0.035 J**	**0.040**	**0.014**	**0.19 J**	**0.21**	**0.075**
1,1-Dichloroethene	ND	0.080	0.013	ND	0.32	0.052
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
Tetrachlorocthene	**0.018 J**	**0.080**	**0.016**	**0.12 J**	**0.54**	**0.11**

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	91	60 - 140

Qualifiers

J Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

TestAmerica Cedar Falls

Client Sample ID: IA-B-47-2

GC/MS Volatiles

Lot-Sample #	H2H230437 - 006	**Work Order #**	MV9XF1AA	**Matrix.....:**	AIR

Date Sampled...:	08/22/2012	**Date Received..:**	08/23/2012
Prep Date.....:	08/24/2012	**Analysis Time....:**	08/24/2012
Prep Batch #.....:	2240073	**Analysis Time....:**	18:44
Dilution Factor.:	1	**Method.....:**	TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
Tetrachloroethene	**0.017 J**	**0.080**	**0.016**	**0.11 J**	**0.54**	**0.11**
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
1,1-Dichloroethene	ND	0.080	0.013	ND	0.32	0.052
Trichloroethene	**0.025 J**	**0.040**	**0.014**	**0.14 J**	**0.21**	**0.075**
1,1,1-Trichloroethane	ND	0.080	0.012	ND	0.44	0.065
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	88	60 - 140

Qualifiers

J Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

TestAmerica Cedar Falls

Client Sample ID: IA-1-33-3

GC/MS Volatiles

Lot-Sample #	H2H230437 - 007	**Work Order #**	MV9XG1AA	**Matrix.....:**	AIR
Date Sampled...:	08/22/2012	**Date Received..:**	08/23/2012		
Prep Date.....:	08/24/2012	**Analysis Time....:**	08/24/2012		
Prep Batch #.....:	2240073	**Analysis Time....:**	19:46		
Dilution Factor.:	1	**Method.....:**	TO-15		

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11
1,1,1-Trichloroethane	ND	0.080	0.012	ND	0.44	0.065
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
Trichloroethene	**0.046**	**0.040**	**0.014**	**0.24**	**0.21**	**0.075**
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
1,1-Dichloroethene	ND	0.080	0.013	ND	0.32	0.052
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
Tetrachloroethene	**0.055 J**	**0.080**	**0.016**	**0.37 J**	**0.54**	**0.11**

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	88	60 - 140

Qualifiers

J Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

TestAmerica Cedar Falls

Client Sample ID: IA-B-33-3

GC/MS Volatiles

Lot-Sample #	H2H230437 - 008	**Work Order #**	MV9XH1AA	**Matrix.....:**	AIR

Date Sampled...:	08/22/2012	**Date Received..:**	08/23/2012
Prep Date.....:	08/24/2012	**Analysis Time....:**	08/24/2012
Prep Batch #.....:	2240073	**Analysis Time....:**	20:40
Dilution Factor.:	1	**Method.....:**	TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
Tetrachloroethene	**0.079 J**	**0.080**	**0.016**	**0.54 J**	**0.54**	**0.11**
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
1,1-Dichloroethene	ND	0.080	0.013	ND	0.32	0.052
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
Trichloroethene	**0.043**	**0.040**	**0.014**	**0.23**	**0.21**	**0.075**
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
1,1,1-Trichloroethane	ND	0.080	0.012	ND	0.44	0.065
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	90	60 - 140

Qualifiers

J Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

TestAmerica Cedar Falls

Client Sample ID: IA-1-38-3

GC/MS Volatiles

Lot-Sample #	H2H230437 - 009	**Work Order #**	MV9XJ1AA	**Matrix.....:**	AIR
Date Sampled...:	08/22/2012	**Date Received..:**	08/23/2012		
Prep Date.....:	08/24/2012	**Analysis Time....:**	08/24/2012		
Prep Batch #.....:	2240073	**Analysis Time....:**	21:32		
Dilution Factor.:	1	**Method.....:**	TO-15		

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11
1,1,1-Trichloroethane	**0.040 J**	**0.080**	**0.012**	**0.22 J**	**0.44**	**0.065**
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
Trichloroethene	ND	0.040	0.014	ND	0.21	0.075
1,1-Dichloroethene	ND	0.080	0.013	ND	0.32	0.052
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
Tetrachloroethene	**0.022 J**	**0.080**	**0.016**	**0.15 J**	**0.54**	**0.11**

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	87	60 - 140

Qualifiers

J Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

TestAmerica Cedar Falls

Client Sample ID: IA-B-38-3

GC/MS Volatiles

Lot-Sample #	H2H230437 - 010	**Work Order #**	MV9XK1AA	**Matrix.....:**	AIR
Date Sampled...:	08/22/2012	**Date Received..:**	08/23/2012		
Prep Date.....:	08/24/2012	**Analysis Time....:**	08/24/2012		
Prep Batch #.....:	2240073	**Analysis Time....:**	22:25		
Dilution Factor.:	1	**Method.....:**	TO-15		

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
Tetrachloroethene	**0.050 J**	**0.080**	**0.016**	**0.34 J**	**0.54**	**0.11**
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
1,1-Dichloroethene	ND	0.080	0.013	ND	0.32	0.052
Trichloroethene	ND	0.040	0.014	ND	0.21	0.075
1,1,1-Trichloroethane	**0.035 J**	**0.080**	**0.012**	**0.19 J**	**0.44**	**0.065**
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	94	60 - 140

Qualifiers

J Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

TestAmerica Cedar Falls

Client Sample ID: IA-B-20-5

GC/MS Volatiles

Lot-Sample #	H2H230437 - 011	**Work Order #**	MV9XL1AA	**Matrix.....:**	AIR

Date Sampled...:	08/22/2012	**Date Received..:**	08/23/2012
Prep Date.....:	08/24/2012	**Analysis Time....:**	08/24/2012
Prep Batch #.....:	2240073	**Analysis Time....:**	23:19
Dilution Factor.:	1	**Method.....:**	TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11
1,1,1-Trichloroethane	**0.30**	**0.080**	**0.012**	**1.7**	**0.44**	**0.065**
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
Trichloroethene	**0.017 J**	**0.040**	**0.014**	**0.090 J**	**0.21**	**0.075**
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
1,1-Dichloroethene	ND	0.080	0.013	ND	0.32	0.052
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
Tetrachloroethene	ND	0.080	0.016	ND	0.54	0.11

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	93	60 - 140

Qualifiers

J	Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

TestAmerica Cedar Falls

Client Sample ID: BLIND DUPLICATE

GC/MS Volatiles

Lot-Sample #	H2H230437 - 012	**Work Order #**	MV9XM1AA	**Matrix.....:**	AIR

Date Sampled...:	08/22/2012	**Date Received..:**	08/23/2012
Prep Date.....:	08/24/2012	**Analysis Time....:**	08/25/2012
Prep Batch #.....:	2240073	**Analysis Time....:**	00:13
Dilution Factor.:	1	**Method.....:**	TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
Tetrachloroethene	**0.039 J**	**0.080**	**0.016**	**0.26 J**	**0.54**	**0.11**
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
1,1-Dichloroethene	ND	0.080	0.013	ND	0.32	0.052
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
Trichloroethene	**0.027 J**	**0.040**	**0.014**	**0.14 J**	**0.21**	**0.075**
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
1,1,1-Trichloroethane	ND	0.080	0.012	ND	0.44	0.065
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	88	60 - 140

Qualifiers

J Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

TestAmerica Cedar Falls

Client Sample ID: INTRA-LAB BLANK

GC/MS Volatiles

Lot-Sample #	H2H270000 - 073B	**Work Order #**	MWA2W1AA	**Matrix.....:**	AIR
	08/22/2012	**Date Received..:**	08/23/2012		
Prep Date.....:	08/24/2012	**Analysis Time....:**	08/24/2012		
Prep Batch #.....:	2240073	**Analysis Time....:**	13:23		
Dilution Factor.:	1	**Method.....:**	TO-15		

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11
1,1,1-Trichloroethane	ND	0.080	0.012	ND	0.44	0.065
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
Trichloroethene	ND	0.040	0.014	ND	0.21	0.075
1,1-Dichloroethene	ND	0.080	0.013	ND	0.32	0.052
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
Tetrachloroethene	ND	0.080	0.016	ND	0.54	0.11

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	96	60 - 140

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

TestAmerica Cedar Falls

Client Sample ID: CHECK SAMPLE

GC/MS Volatiles

Lot-Sample # H2H270000 - 073C **Work Order #** MWA2W1AC **Matrix.....:** AIR

	08/22/2012	**Date Received..:**	08/23/2012
Prep Date.....:	08/24/2012	**Analysis Time....:**	08/24/2012
Prep Batch #.....:	2240073	**Analysis Time....:**	10:42
Dilution Factor.:	1	**Method.....:**	TO-15

PARAMETER	SPIKE AMOUNT (ppb(v/v))	MEASURED AMOUNT (ppb(v/v))	SPIKE AMOUNT (ug/m3)	MEASURED AMOUNT (ug/m3)	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloroethene	5.00	4.94	33.9	33.5	99	70 - 130
cis-1,2-Dichloroethene	5.00	4.71	19.8	18.7	94	70 - 130
trans-1,2-Dichloroethene	5.00	4.99	19.8	19.8	100	70 - 130
1,1-Dichloroethene	5.00	5.30	19.8	21.0	106	70 - 130
Trichloroethene	5.00	5.05	26.9	27.1	101	70 - 130
Vinyl chloride	5.00	4.31	12.8	11.0	86	70 - 130
1,1-Dichloroethane	5.00	3.78	20.2	15.3	76	70 - 130
1,1,1-Trichloroethane	5.00	4.26	27.3	23.3	85	70 - 130
1,1,2-Trichloroethane	5.00	4.00	27.3	21.8	80	70 - 130

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	96	60 - 140

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

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Test America Knoxville GC/MS Volatiles

Lot ID: H2H230437 **Batch #:** 9962
Matrix: Air **Can #:** 12149
MethCod: 7M
Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

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Lot ID: H2H230437 **Batch #:** 9972
Matrix: Air **Can #:** 93165
MethCod: 7M
Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

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Test America Knoxville GC/MS Volatiles

Lot ID: H2H230437 **Batch #:** 9978
Matrix: Air **Can #:** 12455
MethCod: 7M
Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

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Test America Knoxville GC/MS Volatiles

Lot ID: H2H230437 **Batch #:** 10012
Matrix: Air **Can #:** 6675
MethCod: 7M
Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

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Test America Knoxville GC/MS Volatiles

Lot ID: H2H230437 **Batch #:** 10019
Matrix: Air **Can #:** 1124
MethCod: 7M
Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

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Test America Knoxville GC/MS Volatiles

Lot ID: H2H230437 **Batch #:** 10026
Matrix: Air **Can #:** 05357
MethCod: 7M
Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

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Test America Knoxville GC/MS Volatiles

Lot ID: H2H230437 **Batch #:** 10027
Matrix: Air **Can #:** 3283N
MethCod: 7M
Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

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Test America Knoxville GC/MS Volatiles

Lot ID: H2H230437 **Batch #:** 10027
Matrix: Air **Can #:** 7505
MethCod: 7M
Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

TestAmerica Cedar Falls

Test America Knoxville GC/MS Volatiles

Lot ID: H2H230437 **Batch #:** 10028
Matrix: Air **Can #:** 7478
MethCod: 7M
Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

TestAmerica Cedar Falls

Test America Knoxville GC/MS Volatiles

Lot ID: H2H230437 **Batch #:** 10029
Matrix: Air **Can #:** 93104
MethCod: 7M
Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

TestAmerica Cedar Falls

Test America Knoxville GC/MS Volatiles

Lot ID: H2H230437 **Batch #:** 10031
Matrix: Air **Can #:** S1493
MethCod: 7M
Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

TestAmerica Cedar Falls

Test America Knoxville GC/MS Volatiles

Lot ID: H2H230437 **Batch #:** 10032
Matrix: Air **Can #:** 93170
MethCod: 7M
Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

TAL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

H21H230437

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information	**Project Manager:** Mike Hagemeister	**Sampled By:** Rob Bergman
Company: Terracon	Phone: 402-330-2202	1 of 2 COCs
Address: 16612 Chancellor Dr. Ste 102	Site Contact:	
City/State/Zip Cedar Falls, IA 50613	TAL Contact:	
Phone: 319-277-4016		
FAX:		
Project Name: Chamberlain Mfg.	**Analysis Turnaround Time**	
Site/location: Waterloo, IA	(Standard) (Specify)	
PO #	Rush (Specify)	

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
IA-I-60-2	8-21-12 8-22-12	0924	0918	-29.0	-2.5	K190	7478	X							X				
IA-B-60-2		0932	0920	-29.5	-2.5	K180	12149	X							X				
IA-I-40-3		0956	1126	-29.0	-2.0	1463	05357	X							X				
IA-B-40-3		1012	1128	-28.0	-2.5	K130	1124	X							X				
IA-I-47-2		1051	1043	-29.5	-2.5	K133	6675	X							X				
IA-B-47-2		1101	1053	-30.0	-2.0	K115	12455	X							X				

Sampled by : Rob Bergman

Temperature (Fahrenheit)	Interior	Ambient
Start		72°
Stop		80°

Pressure (inches of Hg)	Interior	Ambient
Start		
Stop		

2 Boxes Rec'd @ Ambient Temp with custody seals intact 8/23/12

2 Boxes FedEx #s 4208 2710 1478 4208 2710 1456

12 cans / 12 flows

Special Instructions/QC Requirements & Comments:

email results to dcclearyeterracon.com AND mehagemeisterceterracon.com

Canisters Shipped by: Dropped off @ TestAmerica	Date/Time:	Canisters Received by: 8/22/12 1945
Samples Relinquished by: Rob Bergman 1440	Date/Time: 8/22/12	Received by: 8/23/12 950
Relinquished by:	Date/Time:	Received by:

TAL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

H2H230437

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information
Company: Terracon
Address: 6612 Chancellor Dr. Ste 102
City/State/Zip Cedar Falls, IA 50613
Phone: 319-277-4016
FAX:
Project Name: Chamberlain Mfg.
Site/location: Waterloo, IA
PO #

Project Manager: Mike Hagemeister
Phone: 402-330-2202
Site Contact:
TAL Contact:

Sampled By: Rob Bergman

2 of 2 COCs

Analysis Turnaround Time
Standard (Specify) [circled]
Rush (Specify)

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, 'Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
IA-1-33-3	8-21-12 8-22-12	1125	1106	-27.0	-3.0	K151	93165	X							X				
IA-B-33-3		1132	1110	-28.5	-2.0	K233	7505	X							X				
IA-1-38-3		1309	1308	-29.5	-0.5	K186	93104	X							X				
IA-B-38-3		1325	1311	-30.0	-4.0	K200	3283N	X							X				
IA-B-20-5		1341	1321	-30.0+	-6.5	K401	S-1493	X							X				
Blind Duplicate		1019	1129	-28.5	-2.5	K372	11159	X							X				

Sampled by : Rob Bergman

Temperature (Fahrenheit)	Interior	Ambient
Start		72°
Stop		80°

Pressure (inches of Hg)	Interior	Ambient
Start		
Stop		

Special Instructions/QC Requirements & Comments:
email results to dccleary@terracon.com AND mehagemeister@terracon.com

Canisters Shipped by: Dropped off @ TestAmerica	Date/Time:	Canisters Received by: [signature] 8-22-12 1448
Samples Relinquished by: Rob Bergman 1440	Date/Time: 8/22/12	Received by: [signature] 8/23/12 950
Relinquished by:	Date/Time:	Received by:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

704 ENTERPRISE DRIVE • CEDAR FALLS, IA 50613
800-750-2401 • 319-277-2425 FAX

H2H230737

Sample Receipt and Temperature Log Form

Client: Terracon Project: Chamberlain, MFG

City: Cedar Falls, IA

Date: 8.22.12 Receiver's Initials: TO Time (Delivered): 1945

Temperature Record:

Cooler ID# (If Applicable)

_____

_____ **°C / On Ice**

Thermometer:

- ☐ IR - 111531565 'D'
- ☒ IR - 111531506 'E'
- ☐ IR - 61854108 'Front'
- ☐ 101681126

Courier:

- ☐ UPS
- ☐ FedEx
- ☐ FedEx Ground
- ☐ US Postal Service
- ☐ Spee-Dee
- ☐ TA Courier
- ☐ TA Field Services
- ☒ Client
- ☐ Other _____

☐ Temp Blank

☐ Temperature out of compliance

Custody seals present?
☐ Yes

Custody seals intact?
☐ Yes ☐ No

☐ Non-Conformance report started

Exceptions Noted

- ☐ Sample(s) not received in a cooler.
- ☐ Samples(s) received same day of sampling.
- ☐ Evidence of a chilling process
- ☐ No Temp. Blank. Inside temperature of cooler recorded.
- ☐ Temperature not taken:

_____

***Refer to SOP CF-SS-01 for Temperature Criteria**

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Lot Number: 42H230437

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **1a** Do not match COC ☐ **1b** Incomplete information ☐ **1c** Marking smeared ☐ **1d** Label torn ☐ **1e** No label ☐ **1f** COC not received ☐ **1g** Other:	
2. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C)	✓			☐ **2a** Temp Blank = _____ ☐ **2b** Cooler Temp = _____ ☐ **2c** Cooling initiated for recently collected samples, ice present.	
3. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **3a** Sample preservative =	
4. Were custody seals present/intact on cooler and/or containers?	✓			☐ **4a** Not present ☐ **4b** Not intact ☐ **4c** Other:	
5. Were all of the samples listed on the COC received?	✓			☐ **5a** Samples received-not on COC ☐ **5b** Samples not received-on COC	
6. Were all of the sample containers received intact?	✓			☐ **6a** Leaking ☐ **6b** Broken	
7. Were VOA samples received without headspace?			✓	☐ **7a** Headspace (VOA only)	
8. Were samples received in appropriate containers?	✓			☐ **8a** Improper container	
9. Did you check for residual chlorine, if necessary?			✓	☐ **9a** Could not be determined due to matrix interference	
10. Were samples received within holding time?	✓			☐ **10a** Holding time expired	
11. For rad samples, was sample activity info. provided?			✓	☐ Incomplete information	
12. For 1613B water samples is pH<9?			✓	If no, was pH adjusted to pH 7 - 9 with sulfuric acid? _____	
13. Are the shipping containers intact?	✓			☐ **13a** Leaking ☐ **13b** Other:	
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **14a** Not relinquished	
15. Are tests/parameters listed for each sample?	✓			☐ **15a** Incomplete information	
16. Is the matrix of the samples noted?	✓			☐ **15a** Incomplete information	
17. Is the date/time of sample collection noted?	✓			☐ **15a** Incomplete information	
18. Is the client and project name/# identified?	✓	✓		☐ **15a** Incomplete information	
19. Was the sampler identified on the COC?	✓			☐ **19a** Other	

Quote #: 87209 PM Instructions: NA

Sample Receiving Associate: [signature] Date: 4/23/12

QA026R23.doc, 022812

Test America - Knoxville ---- Air Canister Dilution Log

Lot Number: *H2H230437*

Initial Can Pressure							Subsequent Dilutions											
Analyst/Date	Tedlar Bag Time	Pbarr (in)	Sample ID	Can #	Pres. upon receipt (-in or + psig)	Adj. Initial Pres. (-in or + psig)	Analyst/Date	I / S	Pbarr (in)	Initial Pres. Pi (in)	Final Pres. Pf (psig)	First InCan Final Pres. Pf (psig)	Second In-can Final Pres. Pf (psig)	Third InCan Final Pres. Pf (psig)	Serial Dilution Can #	Vol (mL)	Final Pres. Pf (psig)	Comments
8/23/12	NA	28.93	MV9W5	7478	-3.8	–												10028
			MV9W7	12149	-3.0	–												9962
			MV9W8	05357	-2.3	–												10026
			MV9W9	1124	-3.2	–												10019
			MV9XD	6675	-3.1	–												10012
			MV9XF	12455	-1.9	–												9978
			MV9XG	93165	-4.3	–												9972
			MV9XH	7505	-3.7	–												10027
			MV9XJ	93104	-1.5	–												10029
			MV9XK	3283N	-4.1	–												10027
			MV9XL	S1493	-5.4	–												10031
			MV9XM	tag # 11159	-3.5	–												10032

can # 93170 – use can # 8/27/12

8/23/12

TAL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information	Project Manager: Mike Hagemeister	Sampled By: Rob Bergman	1 of 2 COCs
Company: Terracon	Phone: 402-330-2202		
Address: 6612 Chancellor Dr. Ste 102	Site Contact:		
City/State/Zip Cedar Falls, IA 50613	TAL Contact:		
Phone: 319-277-4016			
FAX:			
Project Name: Chamberlain Mfg.	Analysis Turnaround Time		
Site/location: Waterloo, IA	(Standard) (Specify)		
PO #	Rush (Specify)		

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
IA-1-60-2	8-21-12 8-22-12	0924	0918	-29.0	-2.5	K190	7478	X							X				
IA-B-60-2		0932	0920	-29.5	-2.5	K180	12149	X							X				
IA-1-40-3		0956	1126	-29.0	-2.0	1463	05357	X							X				
IA-B-40-3		1012	1128	-28.0	-2.5	K130	1124	X							X				
IA-1-47-2		1051	1043	-29.5	-2.5	K133	6675	X							X				
IA-B-47-2		1101	1053	-30.0	-2.0	K115	12455	X							X				

Sampled by : Rob Bergman

Temperature (Fahrenheit)	Interior	Ambient
Start		72°
Stop		80°

Pressure (inches of Hg)	Interior	Ambient
Start		
Stop		

Special Instructions/QC Requirements & Comments:
email results to dclearye terracon.com AND mehagemeister@terracon.com

Canisters Shipped by: Dropped off @ TestAmerica	Date/Time:	Canisters Received by: [illegible] 8/22/12 19:45
Samples Relinquished by: Rob Bergman 1440	Date/Time: 8/22/12	Received by:
Relinquished by:	Date/Time:	Received by:

TAL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information	Project Manager: Mike Hagemeister	Sampled By: Rob Bergman	2 of 2 COCs
Company: Terracon	Phone: 402-330-2202		
Address: 6612 Chancellor Dr. Ste 102	Site Contact:		
City/State/Zip Cedar Falls, IA 50613	TAL Contact:		
Phone: 319-277-4016			
FAX:			
Project Name: Chamberlain Mfg.	Analysis Turnaround Time		
Site/location: Waterloo, IA	Standard (Specify)		
PO #	Rush (Specify)		

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum In Field, "Hg (Start)	Canister Vacuum In Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
IA-I-33-3	8-21-12 8-22-12	1125	1106	-27.0	-3.0	K151	93165	X							X				
IA-B-33-3		1132	1110	-28.5	-2.0	K233	7505	X							X				
IA-I-38-3		1309	1308	-29.5	-0.5	K186	93104	X							X				
IA-B-38-3		1325	1311	-30.0	-4.0	K200	3283N	X							X				
IA-B-20-5		1341	1321	-30.0+	-6.5	K401	5-1493	X							X				
Blind Duplicate		1019	1129	-28.5	-2.5	K372	11159	X							X				

Sampled by : Rob Bergman

Temperature (Fahrenheit)	Interior	Ambient
Start		77°
Stop		80°

Pressure (inches of Hg)	Interior	Ambient
Start		
Stop		

Special Instructions/QC Requirements & Comments:

email results to dcleary@terracon.com AND mehagemeister@terracon.com

Canisters Shipped by: Dropped off @ TestAmerica	Date/Time:	Canisters Received by: [illegible] 8-22-12 1440
Samples Relinquished by: Rob Bergman 1440	Date/Time: 8/22/12	Received by:
Relinquished by:	Date/Time:	Received by:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

704 ENTERPRISE DRIVE • CEDAR FALLS, IA 50613
800-750-2401 • 319-277-2425 FAX

Sample Receipt and Temperature Log Form

Client: Terracon Project: Chamberlain, MFG

City: Cedar Falls, IA

Date: 8.22.12 Receiver's Initials: TO Time (Delivered): 1445

Temperature Record:

Cooler ID# (If Applicable)

_____

_____ °C / On Ice

Thermometer:

- ☐ IR - 111531565 'D'
- ☒ IR - 111531506 'E'
- ☐ IR - 61854108 'Front'
- ☐ 101681126

Courier:

- ☐ UPS
- ☐ FedEx
- ☐ FedEx Ground
- ☐ US Postal Service
- ☐ Spee-Dee
- ☐ TA Courier
- ☐ TA Field Services
- ☒ Client
- ☐ Other _____

☐ Temp Blank

☐ Temperature out of compliance

Custody seals present?
☐ Yes

Custody seals intact?
☐ Yes ☐ No

☐ Non-Conformance report started

Exceptions Noted

- ☐ Sample(s) not received in a cooler.
- ☐ Samples(s) received same day of sampling.
- ☐ Evidence of a chilling process
- ☐ No Temp. Blank. Inside temperature of cooler recorded.
- ☐ Temperature not taken:

_____

*Refer to SOP CF-SS-01 for Temperature Criteria

F:\DeimerlyC\QA Folder\QA Forms & Log Book pgs\Cooler Receipt rev17.doc

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: 800-750-2401

TestAmerica Job ID: CVH1667
Client Project/Site: Chamberlain Vapor Sampling
Client Project Description: Chamberlain - TO-15 Scans

For:
TERRACON - CEDAR FALLS
6612 Chancellor Drive Suite 102
Cedar Falls, IA 50613

Attn: Mike Hagemeister

Authorized for release by:
9/6/2012 3:20:02 PM

Brian C. Graettinger
Operations Manager
brian.graettinger@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Job ID: CVH1667

Laboratory: TestAmerica Cedar Falls

Narrative

Analyzed by TestAmerica - Knoxville, TN.

Sample Summary

Client: TERRACON - CEDAR FALLS
Project/Site: Chamberlain Vapor Sampling

TestAmerica Job ID: CVH1667

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
CVH1667-01	IA-B-76-2	Air	08/24/12 10:09	08/24/12 14:30

Client: TERRACON - CEDAR FALLS
Project/Site: Chamberlain Vapor Sampling

TestAmerica Job ID: CVH1667

Client Sample ID: IA-B-76-2
Date Collected: 08/24/12 10:09
Date Received: 08/24/12 14:30
Sample Container: Summa Canister

Lab Sample ID: CVH1667-01
Matrix: Air

Method: EPA TO-15 - Air Sample Analysis - Subcontract

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyst	Analyzed	Dil Fac
Volatile Organic Compounds	See Attached Report.		0.10		mg		BCG	08/28/12 14:53	1.0

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

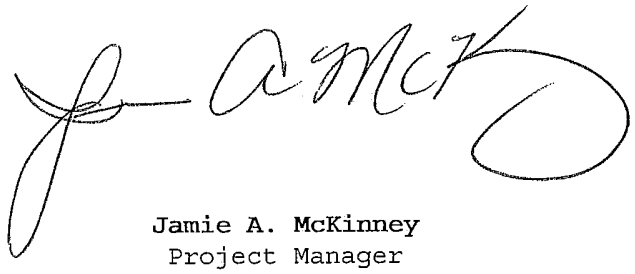
Terracon

Lot #: H2H270403

Brian Graettinger

TestAmerica Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613-0625

TESTAMERICA LABORATORIES, INC.



Jamie A. McKinney
Project Manager

September 5, 2012

ANALYTICAL METHODS SUMMARY

H2H270403

PARAMETER	ANALYTICAL METHOD
Volatile Organics by TO15	EPA-2 TO-15

References:

EPA-2 "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air", EPA-625/R-96/010b, January 1999.

SAMPLE SUMMARY

H2H270403

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
MWAT6	001	IA-B-76-2	08/24/12	10:09

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

PROJECT NARRATIVE
H2H270403

The results reported herein are applicable to the samples submitted for analysis only. If you have any questions about this report, please call (865) 291-3000 to speak with the TestAmerica project manager listed on the cover page.

This report shall not be reproduced except in full, without the written approval of the laboratory.

The original chain of custody documentation is included with this report.

Sample Receipt

The "Relinquished by" field on the chain of custody documentation did not contain a signature.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

EPA methods TO-14A and TO-15 specify the use of humidified "zero air" as the blank reagent for canister cleaning, instrument calibration and sample analysis. Ultra-high purity humidified nitrogen from a cryogenic reservoir is used in place of "zero air" by TestAmerica Knoxville.

CERTIFICATION SUMMARY

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Knoxville	ACLASS	DoD ELAP		ADE-1434
TestAmerica Knoxville	Arkansas	State Program	6	88-0688
TestAmerica Knoxville	California	State Program	9	2423
TestAmerica Knoxville	Colorado	State Program	8	N/A
TestAmerica Knoxville	Connecticut	State Program	1	PH-0223
TestAmerica Knoxville	Florida	NELAC	4	E87177
TestAmerica Knoxville	Georgia	State Program	4	906
TestAmerica Knoxville	Hawaii	State Program	9	N/A
TestAmerica Knoxville	Indiana	State Program	5	C-TN-02
TestAmerica Knoxville	Iowa	State Program	7	375
TestAmerica Knoxville	Kansas	NELAC	7	E-10349
TestAmerica Knoxville	Kentucky	State Program	4	90101
TestAmerica Knoxville	Louisiana	NELAC	6	LA110001
TestAmerica Knoxville	Louisiana	NELAC	6	83979
TestAmerica Knoxville	Maryland	State Program	3	277
TestAmerica Knoxville	Michigan	State Program	5	9933
TestAmerica Knoxville	Minnesota	NELAC	5	047-999-429
TestAmerica Knoxville	Nevada	State Program	9	TN00009
TestAmerica Knoxville	New Jersey	NELAC	2	TN001
TestAmerica Knoxville	New York	NELAC	2	10781
TestAmerica Knoxville	North Carolina	North Carolina DENR	4	64
TestAmerica Knoxville	North Carolina	North Carolina PHL	4	21705
TestAmerica Knoxville	Ohio	OVAP	5	CL0059
TestAmerica Knoxville	Oklahoma	State Program	6	9415
TestAmerica Knoxville	Pennsylvania	NELAC	3	68-00576
TestAmerica Knoxville	South Carolina	State Program	4	84001
TestAmerica Knoxville	Tennessee	State Program	4	2014
TestAmerica Knoxville	Texas	NELAC	6	T104704380-TX
TestAmerica Knoxville	USDA	USDA		P330-11-00035
TestAmerica Knoxville	Utah	NELAC	8	QUAN3
TestAmerica Knoxville	Virginia	State Program	3	165
TestAmerica Knoxville	Washington	State Program	10	C593
TestAmerica Knoxville	West Virginia	West Virginia DEP	3	345
TestAmerica Knoxville	West Virginia	West Virginia DHHR (DW)	3	9955C
TestAmerica Knoxville	Wisconsin	State Program	5	998044300

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

TestAmerica Cedar Falls

Client Sample ID: IA-B-76-2

GC/MS Volatiles

Lot-Sample #	H2H270403 - 001	**Work Order #**	MWAT61AA	**Matrix.....:**	AIR

Date Sampled...:	08/24/2012	**Date Received..:**	08/25/2012
Prep Date.....:	08/28/2012	**Analysis Time....:**	08/28/2012
Prep Batch #.....:	2241119	**Analysis Time....:**	14:53
Dilution Factor.:	1	**Method.....:**	TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
1,1,1-Trichloroethane	**0.048 J**	**0.080**	**0.012**	**0.26 J**	**0.44**	**0.065**
Trichloroethene	**0.024 J**	**0.040**	**0.014**	**0.13 J**	**0.21**	**0.075**
1,1-Dichloroethene	ND	0.080	0.013	ND	0.32	0.052
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
Tetrachloroethene	**0.025 J**	**0.080**	**0.016**	**0.17 J**	**0.54**	**0.11**

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	104	60 - 140

Qualifiers

J	Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

TestAmerica Cedar Falls

Client Sample ID: INTRA-LAB BLANK

GC/MS Volatiles

Lot-Sample #	H2H280000 - 119B	**Work Order #**	MWC031AA	**Matrix.....:**	AIR
	08/24/2012	**Date Received..:**	08/25/2012		
Prep Date.....:	08/28/2012	**Analysis Time....:**	08/28/2012		
Prep Batch #.....:	2241119	**Analysis Time....:**	13:53		
Dilution Factor.:	1	**Method.....:**	TO-15		

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
Tetrachloroethene	ND	0.080	0.016	ND	0.54	0.11
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
1,1-Dichloroethene	ND	0.080	0.013	ND	0.32	0.052
Trichloroethene	ND	0.040	0.014	ND	0.21	0.075
1,1,1-Trichloroethane	ND	0.080	0.012	ND	0.44	0.065
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	103	60 - 140

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

TestAmerica Cedar Falls

Client Sample ID: CHECK SAMPLE

GC/MS Volatiles

Lot-Sample # H2H280000 - 119C **Work Order #** MWC031AC **Matrix.....:** AIR

	08/24/2012	**Date Received..:**	08/25/2012
Prep Date.....:	08/28/2012	**Analysis Time....:**	08/28/2012
Prep Batch #.....:	2241119	**Analysis Time....:**	10:56
Dilution Factor.:	1	**Method.....:**	TO-15

PARAMETER	SPIKE AMOUNT (ppb(v/v))	MEASURED AMOUNT (ppb(v/v))	SPIKE AMOUNT (ug/m3)	MEASURED AMOUNT (ug/m3)	PERCENT RECOVERY	RECOVERY LIMITS
Vinyl chloride	5.00	5.68	12.8	14.5	114	70 - 130
1,1-Dichloroethane	5.00	5.32	20.2	21.5	106	70 - 130
1,1,1-Trichloroethane	5.00	6.19	27.3	33.8	124	70 - 130
Trichloroethene	5.00	5.43	26.9	29.2	109	70 - 130
1,1-Dichloroethene	5.00	5.22	19.8	20.7	104	70 - 130
trans-1,2-Dichloroethene	5.00	5.18	19.8	20.6	104	70 - 130
1,1,2-Trichloroethane	5.00	5.43	27.3	29.6	109	70 - 130
cis-1,2-Dichloroethene	5.00	5.26	19.8	20.9	105	70 - 130
Tetrachloroethene	5.00	5.40	33.9	36.6	108	70 - 130

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	102	60 - 140

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

Test America Knoxville GC/MS Volatiles

Lot ID: H2H270403 **Batch #:** 10013
Matrix: Air **Can #:** 6598
MethCod: 7m
Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

TAL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

H2H270403

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information	Project Manager: Mike Hagemeister	Sampled By: Rob Bergman	1 of 1 COCs
Company: Terracon	Phone: 402-330-2202		
Address: 6612 Chancellor Dr Suite 102	Site Contact:		
City/State/Zip Cedar Falls, IA 50613	TAL Contact:		
Phone: 319-277-4016			
FAX:			
Project Name: Chamberlain Mfg.	Analysis Turnaround Time		
Site/location: Waterloo, IA	Standard (Specify)		
PO #	Rush (Specify)		

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
IA-B-76-2	8-23-12 8-24-12	1000	1009	-30.0	-4.5	K292	6598	X							X				

Sampled by : Rob Bergman

Temperature (Fahrenheit)	Interior	Ambient
Start	80°	80°
Stop	78°	79°

Pressure (inches of Hg)	Interior	Ambient
Start	49.3%	43%
Stop	47.6%	44%

1 Box Red Ice Ambient Temp with custody seal intact 4/25/12

1 Box FedEx #4209 2710 1629

Special Instructions/QC Requirements & Comments:

email results to dccleary@terracon.com And mehagemeister@terracon.com

Canisters Shipped by: Dropped @ Test America	Date/Time:	Canisters Received by:
Samples Relinquished by: Rob Bergman	Date/Time: 8/24/12 1430	Received by: 8.24.12 1430
Relinquished by:	Date/Time:	Received by: 8/25/12 912

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Lot Number: H21127403

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **1a** Do not match COC ☐ **1b** Incomplete information ☐ **1c** Marking smeared ☐ **1d** Label torn ☐ **1e** No label ☐ **1f** COC not received ☐ **1g** Other:	14A
2. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C)	✓			☐ **2a** Temp Blank = _____ ☐ **2b** Cooler Temp = _____ ☐ **2c** Cooling initiated for recently collected samples, ice present.	
3. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **3a** Sample preservative =	
4. Were custody seals present/intact on cooler and/or containers?	✓			☐ **4a** Not present ☐ **4b** Not intact ☐ **4c** Other:	
5. Were all of the samples listed on the COC received?	✓			☐ **5a** Samples received-not on COC ☐ **5b** Samples not received-on COC	
6. Were all of the sample containers received intact?	✓			☐ **6a** Leaking ☐ **6b** Broken	
7. Were VOA samples received without headspace?			✓	☐ **7a** Headspace (VOA only)	
8. Were samples received in appropriate containers?	✓			☐ **8a** Improper container	
9. Did you check for residual chlorine, if necessary?			✓	☐ **9a** Could not be determined due to matrix interference	
10. Were samples received within holding time?	✓			☐ **10a** Holding time expired	
11. For rad samples, was sample activity info. provided?			✓	☐ Incomplete information	
12. For 1613B water samples is pH<9?			✓	If no, was pH adjusted to pH 7 - 9 with sulfuric acid? _____	
13. Are the shipping containers intact?	✓			☐ **13a** Leaking ☐ **13b** Other:	
14. Was COC relinquished? (Signed/Dated/Timed)		✓		☐ **14a** Not relinquished	
15. Are tests/parameters listed for each sample?	✓			☐ **15a** Incomplete information	
16. Is the matrix of the samples noted?	✓			☐ **15a** Incomplete information	
17. Is the date/time of sample collection noted?	✓			☐ **15a** Incomplete information	
18. Is the client and project name/# identified?	✓			☐ **15a** Incomplete information	
19. Was the sampler identified on the COC?	✓			☐ **19a** Other	

Quote #: 87209 PM Instructions: _____

Sample Receiving Associate: _____ Date: 8/25/12

QA026R23.doc, 022812

Test America - Knoxville ---- Air Canister Dilution Log

Lot Number: *H2H270403*

Initial Can Pressure							Subsequent Dilutions											
Analyst/Date	Tedlar Bag Time	Pbarr (in)	Sample ID	Can #	Pres. upon receipt (-in or + psig)	Adj. Initial Pres. (- in or + psig)	Analyst/Date	I / S	Pbarr (in)	Initial Pres. Pi (in)	Final Pres. Pf (psig)	First InCan Final Pres. Pf (psig)	Second In-can Final Pres. Pf (psig)	Third InCan Final Pres. Pf (psig)	Serial Dilution Can #	Vol (mL)	Final Pres. Pf (psig)	Comments
8/27/12	NA	28.9	MWAT6	6598 ✓	-3.3	-												10013

TAL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information	Project Manager: Mike Hagemeister	Sampled By: Rob Bergman
Company: Terracon	Phone: 402-330-2202	1 of 1 COCs
Address: 6612 Chancellor Dr. Suite 102	Site Contact:	
City/State/Zip: Cedar Falls, IA 50613	TAL Contact:	
Phone: 319-277-4016		
FAX:		
Project Name: Chamberlain Mfg.	Analysis Turnaround Time	
Site/location: Waterloo, IA	Standard (Specify)	
PO #	Rush (Specify)	

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
IA-B-76-2	8-23-12 8-24-12	1000	1009	-30.0	-4.5	K292	6598	X							X				

Sampled by : Rob Bergman

Temperature (Fahrenheit)	Interior	Ambient
Start	80°	80°
Stop	78°	79°

Pressure (inches of Hg)	Interior	Ambient
Start	49.3%	43%
Stop	47.6%	44%

Ref:
Dep:
Date: 24Aug12
Wgt: 8.45 LBS
DV:
Svcs: PRIORITY OVERNIGHT
TRCK: 4208 2710 1629

SHIPPING:	0.00
SPECIAL:	0.00
HANDLING:	0.00
0.00 TOTAL:	0.00

Special Instructions/QC Requirements & Comments:

email results to dcleary@terracon.com And mehagemeister@terracon.com

Canisters Shipped by: Dropped @ Test America	Date/Time:	Canisters Received by:
Samples Relinquished by: Rob Bergman	Date/Time: 8/24/12 1430	Received by: Trans. 8.24.12 1430
Relinquished by:	Date/Time:	Received by:

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: 800-750-2401

TestAmerica Job ID: CVI1484
Client Project/Site: Chamberlain Vapor Sampling
Client Project Description: Chamberlain - TO-15 Scans

For:
TERRACON - CEDAR FALLS
6612 Chancellor Drive Suite 102
Cedar Falls, IA 50613

Attn: Mike Hagemeister

Authorized for release by:
9/27/2012 11:52:54 AM

Brian C. Graettinger
Operations Manager
brian.graettinger@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Job ID: CVI1484

Laboratory: TestAmerica Cedar Falls

Narrative

Analyzed by TestAmerica - Knoxville, TN.

Sample Summary

Client: TERRACON - CEDAR FALLS
Project/Site: Chamberlain Vapor Sampling

TestAmerica Job ID: CVI1484

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
CVI1484-01	IA-B-73-3	Air	09/21/12 10:36	09/21/12 12:55
CVI1484-02	Duplicate (Blind)	Air	09/21/12 10:37	09/21/12 12:55

Client: TERRACON - CEDAR FALLS
Project/Site: Chamberlain Vapor Sampling

TestAmerica Job ID: CVI1484

Client Sample ID: IA-B-73-3 — **Lab Sample ID: CVI1484-01**

Date Collected: 09/21/12 10:36 — **Matrix: Air**

Date Received: 09/21/12 12:55

Sample Container: Summa Canister

Method: EPA TO-15 - Air Sample Analysis - Subcontract

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyst	Analyzed	Dil Fac
Volatile Organic Compounds	See Attached Report.		0.10		mg		BCG	09/24/12 21:34	1.0

Client Sample ID: Duplicate (Blind) — **Lab Sample ID: CVI1484-02**

Date Collected: 09/21/12 10:37 — **Matrix: Air**

Date Received: 09/21/12 12:55

Sample Container: Summa Canister

Method: EPA TO-15 - Air Sample Analysis - Subcontract

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyst	Analyzed	Dil Fac
Volatile Organic Compounds	See Attached Report.		0.10		mg		BCG	09/24/12 22:29	1.0

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

PROJECT NO. CVI1484

Terracon

Lot #: H2I240411

Brian Graettinger

TestAmerica Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613-0625

TESTAMERICA LABORATORIES, INC.

Jamie A. McKinney
Project Manager

September 26, 2012

ANALYTICAL METHODS SUMMARY

H2I240411

PARAMETER	ANALYTICAL METHOD
Volatile Organics by TO15	EPA-2 TO-15

References:

EPA-2 "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air", EPA-625/R-96/010b, January 1999.

SAMPLE SUMMARY

H2I240411

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
MWN13	001	IA-B-73-3	09/21/12	10:36
MWN14	002	DUPLICATE (BLIND)	09/21/12	10:37

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

PROJECT NARRATIVE
H2I240411

The results reported herein are applicable to the samples submitted for analysis only. If you have any questions about this report, please call (865) 291-3000 to speak with the TestAmerica project manager listed on the cover page.

This report shall not be reproduced except in full, without the written approval of the laboratory.

The original chain of custody documentation is included with this report.

Sample Receipt

There were no problems with the condition of the samples received.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

EPA methods TO-14A and TO-15 specify the use of humidified "zero air" as the blank reagent for canister cleaning, instrument calibration and sample analysis. Ultra-high purity humidified nitrogen from a cryogenic reservoir is used in place of "zero air" by TestAmerica Knoxville.

Can Certification Comments:

The EPA method requires that all target analytes in the continuing calibration verification standard be within 30% difference from the initial calibration. The daily standard and laboratory control sample recovery for 1,1,1-trichloroethane was above QC limits on MJ on 8/20/12. However, since all the recovery was high, and this analyte was not detected above the reporting limit in the associated samples, the validity of the data is unaffected.

CERTIFICATION SUMMARY

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Knoxville	ACLASS	DoD ELAP		ADE-1434
TestAmerica Knoxville	Arkansas	State Program	6	88-0688
TestAmerica Knoxville	California	State Program	9	2423
TestAmerica Knoxville	Colorado	State Program	8	N/A
TestAmerica Knoxville	Connecticut	State Program	1	PH-0223
TestAmerica Knoxville	Florida	NELAC	4	E87177
TestAmerica Knoxville	Georgia	State Program	4	906
TestAmerica Knoxville	Hawaii	State Program	9	N/A
TestAmerica Knoxville	Indiana	State Program	5	C-TN-02
TestAmerica Knoxville	Iowa	State Program	7	375
TestAmerica Knoxville	Kansas	NELAC	7	E-10349
TestAmerica Knoxville	Kentucky	State Program	4	90101
TestAmerica Knoxville	Louisiana	NELAC	6	LA110001
TestAmerica Knoxville	Louisiana	NELAC	6	83979
TestAmerica Knoxville	Maryland	State Program	3	277
TestAmerica Knoxville	Michigan	State Program	5	9933
TestAmerica Knoxville	Minnesota	NELAC	5	047-999-429
TestAmerica Knoxville	Nevada	State Program	9	TN00009
TestAmerica Knoxville	New Jersey	NELAC	2	TN001
TestAmerica Knoxville	New York	NELAC	2	10781
TestAmerica Knoxville	North Carolina	North Carolina DENR	4	64
TestAmerica Knoxville	North Carolina	North Carolina PHL	4	21705
TestAmerica Knoxville	Ohio	OVAP	5	CL0059
TestAmerica Knoxville	Oklahoma	State Program	6	9415
TestAmerica Knoxville	Pennsylvania	NELAC	3	68-00576
TestAmerica Knoxville	South Carolina	State Program	4	84001
TestAmerica Knoxville	Tennessee	State Program	4	2014
TestAmerica Knoxville	Texas	NELAC	6	T104704380-TX
TestAmerica Knoxville	USDA	USDA		P330-11-00035
TestAmerica Knoxville	Utah	NELAC	8	QUAN3
TestAmerica Knoxville	Virginia	State Program	3	165
TestAmerica Knoxville	Washington	State Program	10	C593
TestAmerica Knoxville	West Virginia	West Virginia DEP	3	345
TestAmerica Knoxville	West Virginia	West Virginia DHHR (DW)	3	9955C
TestAmerica Knoxville	Wisconsin	State Program	5	998044300

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

TestAmerica Cedar Falls

Client Sample ID: IA-B-73-3

GC/MS Volatiles

Lot-Sample #	H2I240411 - 001	**Work Order #**	MWN131AA	**Matrix.....:**	AIR
Date Sampled...:	09/21/2012	**Date Received..:**	09/24/2012		
Prep Date.....:	09/24/2012	**Analysis Time....:**	09/24/2012		
Prep Batch #.....:	2268124	**Analysis Time....:**	21:34		
Dilution Factor.:	1	**Method.....:**	TO-15		

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
1,1-Dichloroethene	**0.017 J**	**0.080**	**0.013**	**0.066 J**	**0.32**	**0.052**
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
Tetrachloroethene	ND	0.080	0.016	ND	0.54	0.11
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
1,1,1-Trichloroethane	**0.019 J**	**0.080**	**0.012**	**0.10 J**	**0.44**	**0.065**
Trichloroethene	**0.043**	**0.040**	**0.014**	**0.23**	**0.21**	**0.075**

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	102	60 - 140

Qualifiers

J Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

TestAmerica Cedar Falls

Client Sample ID: DUPLICATE (BLIND)

GC/MS Volatiles

Lot-Sample # H2I240411 - 002 **Work Order #** MWN141AA **Matrix.....:** AIR

Date Sampled...:	09/21/2012	**Date Received..:**	09/24/2012
Prep Date.....:	09/24/2012	**Analysis Time....:**	09/24/2012
Prep Batch #.....:	2268124	**Analysis Time....:**	22:29
Dilution Factor.:	1	**Method.....:**	TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
Trichloroethene	**0.11**	**0.040**	**0.014**	**0.59**	**0.21**	**0.075**
1,1,1-Trichloroethane	**0.020 J**	**0.080**	**0.012**	**0.11 J**	**0.44**	**0.065**
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
Tetrachloroethene	**0.025 J**	**0.080**	**0.016**	**0.17 J**	**0.54**	**0.11**
1,1-Dichloroethene	ND	0.080	0.013	ND	0.32	0.052
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	108	60 - 140

Qualifiers

J Estimated result. Result is less than RL.

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

TestAmerica Cedar Falls

Client Sample ID: INTRA-LAB BLANK

GC/MS Volatiles

Lot-Sample # H2I240000 - 124B **Work Order #** MWN6N1AA **Matrix.....:** AIR

	09/21/2012	**Date Received..:**	09/24/2012
Prep Date.....:	09/24/2012	**Analysis Time....:**	09/24/2012
Prep Batch #.....:	2268124	**Analysis Time....:**	12:44
Dilution Factor.:	1	**Method.....:**	TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	MDL (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)	MDL (ug/m3)
1,1-Dichloroethene	ND	0.080	0.013	ND	0.32	0.052
trans-1,2-Dichloroethene	ND	0.080	0.020	ND	0.32	0.079
cis-1,2-Dichloroethene	ND	0.080	0.024	ND	0.32	0.095
Tetrachloroethene	ND	0.080	0.016	ND	0.54	0.11
1,1,2-Trichloroethane	ND	0.080	0.021	ND	0.44	0.11
Vinyl chloride	ND	0.080	0.029	ND	0.20	0.074
1,1-Dichloroethane	ND	0.080	0.010	ND	0.32	0.040
1,1,1-Trichloroethane	ND	0.080	0.012	ND	0.44	0.065
Trichloroethene	ND	0.040	0.014	ND	0.21	0.075

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	103	60 - 140

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

TestAmerica Cedar Falls

Client Sample ID: CHECK SAMPLE

GC/MS Volatiles

Lot-Sample # H2I240000 - 124C **Work Order #** MWN6N1AC **Matrix.....:** AIR

	09/21/2012	**Date Received..:**	09/24/2012
Prep Date.....:	09/24/2012	**Analysis Time....:**	09/24/2012
Prep Batch #.....:	2268124	**Analysis Time....:**	10:48
Dilution Factor.:	1	**Method.....:**	TO-15

PARAMETER	SPIKE AMOUNT (ppb(v/v))	MEASURED AMOUNT (ppb(v/v))	SPIKE AMOUNT (ug/m3)	MEASURED AMOUNT (ug/m3)	PERCENT RECOVERY	RECOVERY LIMITS
Trichloroethene	5.00	3.76	26.9	20.2	75	70 - 130
1,1,1-Trichloroethane	5.00	5.05	27.3	27.6	101	70 - 130
1,1-Dichloroethane	5.00	4.61	20.2	18.7	92	70 - 130
Vinyl chloride	5.00	4.85	12.8	12.4	97	70 - 130
1,1,2-Trichloroethane	5.00	3.61	27.3	19.7	72	70 - 130
Tetrachloroethene	5.00	3.75	33.9	25.4	75	70 - 130
cis-1,2-Dichloroethene	5.00	4.35	19.8	17.3	87	70 - 130
trans-1,2-Dichloroethene	5.00	4.30	19.8	17.0	86	70 - 130
1,1-Dichloroethene	5.00	4.41	19.8	17.5	88	70 - 130

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	109	60 - 140

Result (ug/m3) = Result (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

Reporting Limit (ug/m3) = Reporting Limit (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

MDL (ug/m3) = MDL (ppb(v/v))[unrounded] * (Molecular Weight/24.45)

TO-14 _rev5MDL_DOD.rpt version 5.004 09/13/2011

TestAmerica Cedar Falls

Test America Knoxville GC/MS Volatiles

Lot ID: H2I240411 **Batch #:** 10039
Matrix: Air **Can #:** 1118
MethCod: 7M
Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

Test America Knoxville GC/MS Volatiles

Lot ID: H2I240411 **Batch #:** 10040
Matrix: Air **Can #:** 6515
MethCod: 7M
Method: EPA-2 TO-15

Parameter	Result	Reporting Limit	Units
cis-1,2-Dichloroethene	ND	0.080	ppb (v/v)
trans-1,2-Dichloroethene	ND	0.080	ppb (v/v)
Tetrachloroethene	ND	0.080	ppb (v/v)
Trichloroethene	ND	0.040	ppb (v/v)
Vinyl chloride	ND	0.080	ppb (v/v)
1,1-Dichloroethane	ND	0.080	ppb (v/v)
1,1-Dichloroethene	ND	0.080	ppb (v/v)
1,1,1-Trichloroethane	ND	0.080	ppb (v/v)
1,1,2-Trichloroethane	ND	0.080	ppb (v/v)

TAL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

172I240411

Canister Samples Chain of Custody Record

TestAmerica assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information	Project Manager: Mike Hagemeister	Sampled By: Rob Bergman	1 of 1 COCs
Company: Terracon	Phone: 402-330-2202		
Address: 6612 Chancellor Dr. Ste. 102	Site Contact:		
City/State/Zip Cedar Falls, IA 50613	TAL Contact:		
Phone: 319-277-4016			
FAX:			
Project Name: Chamberlain Mfg.	Analysis Turnaround Time		
Site/location: Waterloo, IA	Standard (Specify) 5 day		
PO # 07107020	Rush (Specify)		

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type: Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
IA-B-73-3	9-20-12 9-21-12	1003	1036	-30.0	-4.0	K470	6515	X						X				
Duplicate (Blind)	1	1009	1037	-29.0	-3.0	K303A	1118	X						X				

Sampled by : Rob Bergman

Temperature (Fahrenheit)	Interior	Ambient	
Start			
Stop			

CUSTODY SEALS INTACT
RECEIVED AT AMBIENT TEMP
BRD 9-24-12

Pressure (inches of Hg)	Interior	Ambient	
Start			
Stop			

1 BOX FED X# 4208 2710 3161
2 CANS / 2 FLOWS

Special Instructions/QC Requirements & Comments:

email results to dcleary@terracon.com and mehagemeister@terracon.com

Canisters Shipped by: Dropped @ TestAmerica	Date/Time: 9/21/12 1255	Canisters Received by: [signature] 9-21-12 12:15
Samples Relinquished by: Robert Bergman	Date/Time: 9/21/12 1255	Received by: [signature] 9-24-12 10:45
Relinquished by:	Date/Time:	Received by:

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Lot Number: 120-240411

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **1a** Do not match COC ☐ **1b** Incomplete information ☐ **1c** Marking smeared ☐ **1d** Label torn ☐ **1e** No label ☐ **1f** COC not received ☐ **1g** Other:	
2. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C)			✓	☐ **2a** Temp Blank = _____ ☐ **2b** Cooler Temp = _____ ☐ **2c** Cooling initiated for recently collected samples, ice present.	
3. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **3a** Sample preservative =	
4. Were custody seals present/intact on cooler and/or containers?	✓			☐ **4a** Not present ☐ **4b** Not intact ☐ **4c** Other:	
5. Were all of the samples listed on the COC received?	✓			☐ **5a** Samples received-not on COC ☐ **5b** Samples not received-on COC	
6. Were all of the sample containers received intact?	✓			☐ **6a** Leaking ☐ **6b** Broken	
7. Were VOA samples received without headspace?			✓	☐ **7a** Headspace (VOA only)	
8. Were samples received in appropriate containers?	✓			☐ **8a** Improper container	
9. Did you check for residual chlorine, if necessary?			✓	☐ **9a** Could not be determined due to matrix interference	
10. Were samples received within holding time?	✓			☐ **10a** Holding time expired	
11. For rad samples, was sample activity info. provided?			✓	☐ Incomplete information	
12. For 1613B water samples is pH<9?			✓	If no, was pH adjusted to pH 7 - 9 with sulfuric acid? _____	
13. Are the shipping containers intact?	✓			☐ **13a** Leaking ☐ **13b** Other:	
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **14a** Not relinquished	
15. Are tests/parameters listed for each sample?	✓			☐ **15a** Incomplete information	
16. Is the matrix of the samples noted?	✓			☐ **15a** Incomplete information	
17. Is the date/time of sample collection noted?	✓			☐ **15a** Incomplete information	
18. Is the client and project name/# identified?	✓			☐ **15a** Incomplete information	
19. Was the sampler identified on the COC?	✓			☐ **19a** Other	

Quote #: 87209 PM Instructions: NA

Sample Receiving Associate: [signature] Date: 9-24-12

QA026R23.doc, 022812

Test America - Knoxville ---- Air Canister Dilution Log

Lot Number: *H2I240411*

Initial Can Pressure							Subsequent Dilutions											
Analyst/Date	Tedlar Bag Time	Pbarr (in)	Sample ID	Can #	Pres. upon receipt (-in or + psig)	Adj. Initial Pres. (-in or + psig)	Analyst/Date	I / S	Pbarr (in)	Initial Pres. Pi (in)	Final Pres. Pf (psig)	First InCan Final Pres. Pf (psig)	Second In-can Final Pres. Pf (psig)	Third InCan Final Pres. Pf (psig)	Serial Dilution Can #	Vol (mL)	Final Pres. Pf (psig)	Comments
DDF 9-24-12	1DA	29.08	MWN13	6515	-3.7													10040
"	"	"	MWN14	~~6515~~ 1118	+1.7													10039

JB 9/24/12

5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

Canister Samples Chain of Custody Record

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THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information	Project Manager: Mike Hagemeister	Sampled By: Rob Bergman	1 of 1 COCs
Company: Terracon	Phone: 402-330-2202		
Address: 6612 Chancellor Dr. Ste. 102	Site Contact:		
City/State/Zip Cedar Falls, IA 50613	TAL Contact:		
Phone: 319-277-4016			
FAX:			
Project Name: Chamberlain Mfg.	Analysis Turnaround Time		
Site/location: Waterloo, IA	Standard (Specify) 5 day		
PO # 07107020	Rush (Specify)		

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type: Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
IA-B-73-3	9-20-12	1003	1036	-30.0	-4.0	K470	6515	X						X				
Duplicate (Blind)	9-21-12	1009	1037	-29.0	-3.0	K303A	1118	X						X				

Sampled by : Rob Bergman

Temperature (Fahrenheit)	Interior	Ambient	
Start			
Stop			

Pressure (inches of Hg)	Interior	Ambient	
Start			
Stop			

Special Instructions/QC Requirements & Comments:

email results to dclearyeterracon.com and mehagemeistereterracon.com

Canisters Shipped by: Dropped @ TestAmerica	Date/Time: 9/21/12 1255	Canisters Received by: Travis Clark	9.21.12 12:55
Samples Relinquished by: Roberto Bergman	Date/Time: 9/21/12 1255	Received by:	
Relinquished by:	Date/Time:	Received by:	

Ref:
Dep:
Date: 21Sep12
Wgt: 16.85 LBS
DV:
SHIPPING: 0.00
SPECIAL: 0.00
HANDLING: 0.00
0.00 TOTAL: 0.00
SVCS: STANDARD OVERNIGHT
TRCK: 4208 2710 3161