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17 February 2011
Project No. 02MCKK

Joseph Kwan
Corporate Director, Environmental Remediation
Northrop Grumman Corporation
1840 Century Park East
Los Angeles, California 90067

**Subject: Soil Gas Sampling and Vapor Intrusion Assessment Report
East 16th Street, East C Street, and 1507 East C Street
McCook, Nebraska**

Dear Mr. Kwan:

Orion Environmental Inc. (Orion), on behalf of Northrop Grumman Systems Corporation (Northrop Grumman), has prepared this letter report summarizing the results of an offsite soil vapor intrusion assessment at the subject locations. The assessment was conducted to evaluate the potential risk of vapor intrusion as an indoor air exposure pathway for chlorinated solvents in groundwater. Trichloroethene (TCE) was released at a former TRW facility located nearby on Airport Road.

The Nebraska Department of Environmental Quality (NDEQ) requested that Northrop Grumman conduct this work in an 8 October 2010 e-mail sent to Kurt Batsel of The Dextra Group, Inc (Dextra). The work was performed in accordance with Orion's 2 November 2010 work plan which was approved by the NDEQ in a 22 November 2010 e-mail to Dextra. This report summarizes the soil vapor intrusion assessment program including the field investigation, analytical and modeling results, and conclusions.

Executive Summary

In December 2010, a field program was conducted that included collection of 40 soil gas samples, 2 ambient air samples, and 3 groundwater samples within the City of McCook rights-of-way (beneath the streets) and around the perimeter of the residence at 1507 East C Street. The samples were submitted to a certified laboratory for volatile organic compound (VOC) analysis. Orion retained a certified toxicologist to review the laboratory results and evaluate the potential risk of vapor-phase migration from the subsurface to indoor air for the neighboring residences.

Tetrachloroethene (PCE) was detected in low concentrations in 22 of the 40 soil gas samples. PCE was not used at the former TRW facility and is not present in groundwater samples collected around the facility, and thus is not considered a site-related constituent. TCE was detected in 10 of the 40 samples, also in low concentrations. The highest concentrations were detected in soil gas samples adjacent to the former facility and TCE has historically been considered site-related. VOCs were not detected in the groundwater samples.

A screening-level risk assessment was conducted to evaluate the carcinogenic risks and non-carcinogenic hazards from the VOCs detected in the soil gas samples. All non-carcinogenic risks were below 1.0, which is acceptable for residential exposure conditions. The carcinogenic risks were less than the U.S. Environmental Protection Agency (EPA) de minimis (not significant) level of 1 in 1,000,000. The results indicated that the levels of man-made chemicals remaining in soil gas do not represent a significant health threat to residential receptors located in the vicinity of the facility.

Background

TRW Inc. (now Northrop Grumman) manufactured capacitors from the mid-1960's to 1984 at a facility located at the intersection of F Street and Airport Road in McCook, Nebraska (Figure 1). TCE was used as a solvent and a carrier for the epoxy coating on the capacitors. TRW ceased operations in 1984 and closed the facility in 1986.

TCE-impacted soil was discovered during investigation activities initiated upon facility closure. The onsite soil was remediated with NDEQ approval in 1991 and 1992. After extensive investigations, TRW began groundwater remediation activities in 1993. The current groundwater remediation system includes five active extraction wells and water treatment equipment at a Treatment Plant located on property owned by the City of McCook (Figure 2). This remediation system has resulted in a significant reduction in the plume size and a decrease in overall TCE concentrations. Northrop Grumman is continuing the groundwater cleanup program and is implementing program enhancements with the approval of the NDEQ.

Scope of Work

The objectives of the assessment were to (1) collect soil gas and groundwater samples for laboratory analysis and (2) evaluate the potential risk of vapor intrusion as an indoor air exposure pathway for chlorinated solvents in groundwater. To meet the objectives, the following scope of work was performed:

- ☐ Obtained work plan approval from the NDEQ
- ☐ Subcontracted with Milco Environmental Services, Inc. (Milco), of McCook, Nebraska, to conduct the field program
- ☐ Mobilized for the field program including (1) marking the sampling locations and contacting the Digger's Hotline, (2) obtaining permits from the City of McCook, and (3) modifying the site health and safety plan
- ☐ Installed temporary probes and collected soil gas samples from 5 and 15 feet below grade along East 16th Street, East C Street, and around the residence at 1507 East C Street
- ☐ Collected two ambient air samples
- ☐ Collected three grab groundwater samples around the residence at 1507 East C Street and one sample from a neighbor's private well
- ☐ Submitted the vapor and groundwater samples to a certified laboratory for VOC analysis
- ☐ Conducted a human health risk evaluation that included vapor intrusion risk modeling using the Johnson and Ettinger (J&E) model
- ☐ Evaluated the results and prepared a summary report of the field program, laboratory analyses, and human health risk evaluation.

Field Program

Orion and Milco coordinated with the NDEQ, City of McCook, and residents on East 16th and C Streets to establish the locations and schedule of soil gas and groundwater sampling activities. Before the field investigation began, the proposed locations were marked and Digger's Hotline of Nebraska was notified to locate existing underground utilities and obstructions. A temporary easement was obtained from the City of McCook for work in the streets (Attachment A).

Soil Gas Sampling

On 20, 21, and 22 December 2010, Milco drilled, installed temporary probes, and collected soil gas samples within the City of McCook rights-of-way (beneath the streets) and around the perimeter of the residence at 1507 East C Street at 20 locations including:

- 10 locations along East 16th Street
- 7 locations along East C Street
- 3 locations around the residence at 1507 East C Street.

Figure 2 shows the soil gas sampling locations. Soil gas samples were collected from each location at approximately 5 and 15 feet below ground surface. Based on previous investigations in the area that involved groundwater monitor well installation (Wells OW-1 and -2; Figure 2 and Attachment B), the upper 15 feet of the subsurface is a uniform clayey silt with no distinguishing permeable zones. Therefore, continuous coring before soil gas collection was not needed to characterize exact sample depths.

Soil gas samples were collected using a direct-push rig and the Geoprobe Post-Run Tubing system. Field procedures were conducted as described in the work plan and in general accordance with EPA Region 4 standard operating procedures for soil vapor sampling (EPA, 2007). Soil gas samples were collected using a low-flow sampling pump and a 6-liter SUMMA canister. Field quality assurance / quality control (QA/QC) procedures for sample collection are in Attachment C.

Ambient Air Sampling

Ambient (outdoor) air samples were collected to evaluate background VOC concentrations in ambient air near the locations of soil gas sampling activities. Two ambient air samples were collected upwind near the area of the field sampling crew. The ambient air samples were collected using 6-liter SUMMA canisters and flow controllers designed to collect a sample over approximately an 8-hour period corresponding to the working day.

Groundwater Sampling

On 21 and 22 December, Milco drilled and collected three grab groundwater samples adjacent to the soil vapor locations around the 1507 East C Street residence. Groundwater samples were collected using a direct-push rig and Geoprobe sampling equipment. Field QA/QC procedures for sampling collection and equipment decontamination are in Attachment C.

On 22 December, Milco collected a groundwater sample from a private well owned by John T. Herron at 1506 East C Street (Figure 3). This well is located approximately 130 feet south of the 1507 East C Street residence. Milco operated an existing jet pump in the well for about 1 hour and collected the sample from the pump discharge.

Analytical Program

Soil gas, ambient air, and groundwater samples were delivered to TestAmerica Laboratories, Inc. (TestAmerica), in North Canton, Ohio and Knoxville, Tennessee. These laboratories are certified for VOC analyses by the National Environmental Laboratory Accreditation Program. The gas samples were analyzed for VOCs using EPA Method TO-15, and the water samples were analyzed using EPA Method 601. The samples were tested for the following VOCs, which are included in Northrop Grumman's annual groundwater sampling program:

- | | |
|---|--|
| ☐ PCE | ☐ 1,1,2-Trichloroethane |
| ☐ TCE | ☐ 1,1-Dichloroethene |
| ☐ cis-1,2-Dichloroethene | ☐ Chloroform. |
| ☐ trans-1,2-Dichloroethene | |

Discussion of Results

PCE was detected in 22 of the 40 soil gas samples. The highest concentrations were encountered near the intersection of 16th and C Streets (Figure 3). The maximum PCE concentration of 6.5 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) was detected in the 5-foot sample from location SG-11 (Table 1). PCE was not used at the former TRW facility and is not present in groundwater samples collected around the facility.

TCE was detected in 10 of the 40 soil gas samples. TCE concentrations were highest in soil gas samples collected adjacent to the former TRW facility and were higher in the 15-foot samples compared to the 5-foot samples. The highest TCE concentration of 36 $\mu\text{g}/\text{m}^3$ was detected in the 15-foot sample from location SG-1 (Figure 3). TCE concentrations decreased with distance from the facility along 16th Street.

Chloroform was detected in 12 of the 40 gas samples. The highest chloroform concentration of 3.3 $\mu\text{g}/\text{m}^3$ was detected in the 15-foot sample from location SG-6 (Table 1). Chloroform is not considered a site-related constituent and is typically associated with potable water system leakage of chlorine disinfection by-products.

VOCs were not detected above laboratory reporting limits in the two ambient air samples, and the four groundwater samples collected adjacent to the 1507 East C Street residence (Table 1 and 2).

Figure 3 shows the sampling locations and summarizes the soil gas results for PCE and TCE. Tables 1 and 2 summarize the laboratory analytical results for soil gas and groundwater samples, respectively. Laboratory analytical reports and chain-of-custody forms for gas and groundwater samples are in Attachment D.

Vapor-Phase Transport Risk Evaluation

Orion retained Enviro-Tox Services, Inc. (Enviro-Tox), of Irvine, California, to review the laboratory results and evaluate the potential risk of VOC migration from the subsurface to indoor air for the nearby residences. As the State of Nebraska does not have specific guidance regarding vapor-phase migration of VOCs, EPA guidance was used in the risk evaluation. EPA recommends that the indoor air risk from TCE migration be evaluated using (1) the California EPA Department of Toxic Substances Control (DTSC) carcinogenic toxicity values and (2) the New York State Department of Health (NYSDOH) screening level for sub-slab soil gas of 5 $\mu\text{g}/\text{m}^3$ (NYSDOH, 2006).

In the risk evaluation, Enviro-Tox used site-specific and default exposure parameters consistent with California DTSC guidelines. A DTSC-modified Johnson and Ettinger (J&E) vapor transport model (SG-SCREEN, version 2.0) was used. The risk evaluation included the following major components:

- Data Evaluation – Review of soil vapor data, chemicals of concern, and selection of relevant data points and representative concentrations
- Methodology – Selection of site-specific assumptions, input parameters, and modeling procedures
- Risk Characterization – Calculation of potential carcinogenic risks and non-carcinogenic hazards using the J&E vapor transport model and comparison with acceptable risks.

The non-carcinogenic risks were compared to a hazard quotient of 1.0. The carcinogenic risks were compared to the de minimis (not significant) level of 1 in 1,000,000 recognized by the EPA (2004). Additionally, Enviro-Tox assessed the risk of TCE inhalation using the NYSDOH sub-slab soil gas screening level (2006).

Data Evaluation

Enviro-Tox reviewed the soil types encountered at nearby wells OW-1 and OW-2 and the laboratory analytical results for soil gas samples. Enviro-Tox decided not to average the data to obtain a “site-wide” VOC exposure point concentration, but to calculate the health risks for each sampling location. The potential vapor emissions and associated risks from PCE, TCE, and chloroform were estimated separately for each sampling point and each sampling depth of 5 and 15 feet.

Methodology

Enviro-Tox ran the modified J&E transport model to evaluate potential migration of VOC vapors into indoor residences. The estimated VOC flux and ambient concentrations were then used to calculate potential health risks and hazards that may result from exposure to

VOCs in indoor air. The model was run using soil physical parameters for clayey silt soils. Additional discussion of the model including assumptions is in the Enviro-Tox report (Attachment E).

Risk Characterization for Residential Exposure Conditions

The non-carcinogenic risks for each sample location and sample depth were estimated by adding the hazard quotient for each VOC, including TCE, PCE, and chloroform. The calculated total hazard quotients were below 1.0. Therefore, the potential exposure to chemical-affected indoor air will not cause chronic adverse health effects.

Using the same methodology, the total carcinogenic risks for each sample location and sample depth were estimated by adding the cancer risk estimated for each VOC. In all cases, the estimated cancer risks were lower than the maximum acceptable risk level of 1 in 1,000,000 established by the EPA for residential receptors. The following table shows the maximum estimated value for non-carcinogenic hazards and carcinogenic risks.

Sample Depth	Maximum Estimated Value	
	Non-Carcinogenic Hazard	Carcinogenic Risk
5 feet	1.2×10^{-4}	1.1×10^{-8}
15 feet	3.5×10^{-5}	8.5×10^{-9}
Acceptable Residential Risk	1.0	1.0×10^{-6}

The results indicated that the levels of man-made chemicals remaining in soil gas near the former TRW facility do not represent a significant health threat to residential receptors located in the vicinity of the facility. The residual VOCs detected in soil gas should dissipate through time as natural fate processes act to attenuate the remaining residual concentrations.

Enviro-Tox also compared the results of the 5-foot samples to the sub-slab TCE screening level of $5 \mu\text{g}/\text{m}^3$ developed by the NYSDOH (2006). Sample SG-1 at 5 feet slightly exceeded the screening level with a TCE concentration of $5.5 \mu\text{g}/\text{m}^3$ (Table 1). This sample location was adjacent to the former TRW facility. The closest residence is over 450 feet from location SG-1. Sample SG-2 was approximately 100 feet to the south and contained a 5-foot TCE concentration of $0.69 \mu\text{g}/\text{m}^3$, which is well under the NYSDOH screening level (Figure 3). Enviro-Tox concluded that the soil gas TCE concentrations do not pose a significant health risk.



Conclusions

The results of the soil vapor intrusion assessment indicate that the existing soil gas concentrations at residential locations on East 16th Street, East C Street, and 1507 East C Street do not pose a significant risk to human health through the indoor air migration pathway. This vapor intrusion assessment is considered complete and no further action is required.

If you have questions or comments regarding this letter report, please call Jeff Gwinn at 562/988-2755.

Very truly yours,

ORION ENVIRONMENTAL INC.

A handwritten signature in black ink, appearing to read "Jeffrey P. Gwinn".

Jeffrey P. Gwinn, P.E.
Vice President

Copy: Kurt Batsel – The Dextra Group, Inc.

Attachments: Table 1 – Soil Gas Analytical Results
Table 2 – Grab Groundwater Analytical Results
Figure 1 – Site Location Map
Figure 2 – Soil Gas Sampling Locations
Figure 3 – Soil Gas Sampling Results
Attachment A – City of McCook Temporary Easement
Attachment B – Boring Logs for Wells OW-1 and OW-2
Attachment C – Field QA/QC Procedures
Attachment D – Laboratory Analytical Reports and Chain-of-Custody Forms
Attachment E – Enviro-Tox Report, Screening Vapor Intrusion Risk Evaluation

References

Nebraska Department of Environmental Quality, 2010. E-mail from Jeff Gottula of NDEQ to Kurt Batsel of The Dextra Group, Inc., 8 October.

Nebraska Department of Environmental Quality, 2010. E-mail from Jeff Gottula of NDEQ to Kurt Batsel of The Dextra Group, Inc., 22 November.

New York State Department of Health, 2006. *Trichloroethene Air Criteria Document*, October.



Orion Environmental Inc., 2010. "Work Plan for Soil Gas Sampling along East 16th Street and East C Street and Optional Sub-Slab or Soil Gas Sampling at 1507 East C Street, McCook, Nebraska," prepared for Northrop Grumman Systems Corporation, 2 November.

U.S. Environmental Protection Agency, 2004. *User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings*, prepared by Environmental Quality Management, Inc., for Industrial Economics Incorporated, for submittal to EPA. 22 February.

U.S. Environmental Protection Agency, 2007. *SESDPRC-307-R1, Soil Gas Sampling*, 5 February

TABLE 1

SOIL GAS ANALYTICAL RESULTS
EAST 16th STREET, EAST C STREET, AND 1507 EAST C STREET
FORMER TRW FACILITY - MCCOOK, NEBRASKA

Sampling Location	Sample ID	Depth (feet)	Sample Date	Volatile Organic Compound ($\mu\text{g}/\text{m}^3$) ^(a)		
				PCE	TCE	Chloroform
SG-1	1A	5	12/20/10	0.70	5.5	ND<0.39 ^(b)
	1B	15	12/20/10	ND<0.54	36	ND<0.39
SG-2	2A	5	12/20/10	ND<0.54	0.69	ND<0.39
	2B	15	12/20/10	ND<0.54	6.4	0.56
SG-3	3A	5	12/20/10	ND<0.54	ND<0.21	ND<0.39
	3B	15	12/20/10	1.9	0.65	1.6
SG-4	4A	5	12/20/10	ND<0.54	ND<0.21	ND<0.39
	4B	15	12/20/10	0.55	0.45	1.3
SG-5	5A	5	12/20/10	0.54	ND<0.21	2.9
	5B	15	12/20/10	1.9	1.7	0.51
SG-6	6A	5	12/20/10	ND<0.54	ND<0.21	0.84
	6B	15	12/20/10	0.83	ND<0.21	3.3
SG-7	7A	5	12/21/10	ND<0.54	ND<0.21	ND<0.39
	7B	15	12/21/10	0.89	ND<0.21	1.6
SG-8	8A	5	12/21/10	ND<0.54	ND<0.21	0.47
	8B	15	12/21/10	1.2	ND<0.21	ND<0.39
SG-9	9A	5	12/21/10	0.64	ND<0.21	ND<0.39
	9B	15	12/21/10	0.94	ND<0.21	ND<0.39
SG-10	10A	5	12/21/10	ND<0.54	ND<0.21	ND<0.39
	10B	15	12/21/10	3.3	ND<0.21	ND<0.39
SG-11	11A	5	12/21/10	6.5	ND<0.21	ND<0.39
	11B	15	12/21/10	3.9	ND<0.21	ND<0.39
SG-12	12A	5	12/21/10	ND<0.54	ND<0.21	ND<0.39
	12B	15	12/21/10	1.6	0.78	ND<0.39
SG-13	13A	5	12/22/10	0.62	ND<0.21	ND<0.39
	13B	15	12/22/10	0.56	ND<0.21	ND<0.39
SG-14	14A	5	12/22/10	ND<0.54	0.65	ND<0.39
	14B	15	12/22/10	ND<0.60	ND<0.24	ND<0.43
SG-15	15A	5	12/22/10	ND<0.54	ND<0.21	ND<0.39
	15B	15	12/22/10	0.66	ND<0.25	ND<0.45
SG-16	16A	5	12/22/10	3.1	ND<0.21	1.1
	16B	15	12/22/10	ND<0.54	ND<0.21	ND<0.39
SG-17	17A	5	12/22/10	ND<0.54	ND<0.21	0.42
	17B	15	12/22/10	ND<0.54	ND<0.21	ND<0.39

TABLE 1

SOIL GAS ANALYTICAL RESULTS
EAST 16th STREET, EAST C STREET, AND 1507 EAST C STREET
FORMER TRW FACILITY - McCOOK, NEBRASKA

Sampling Location	Sample ID	Depth (feet)	Sample Date	Volatile Organic Compound ($\mu\text{g}/\text{m}^3$) ^(a)		
				PCE	TCE	Chloroform
NF	NEIMAN FRONT 5FT	5	12/21/10	0.67	ND<0.21	ND<0.39
	NEIMAN FRONT 15FT	15	12/22/10	5.1	ND<0.21	ND<0.39
NW	NEIMAN WEST 5FT	5	12/22/10	ND<0.54	ND<0.21	ND<0.39
	NEIMAN WEST 15FT	15	12/22/10	4.7	ND<0.21	ND<0.39
AN	AHRENS NORTH 5FT	5	12/22/10	1.0	0.51	ND<0.39
	AHRENS NORTH 15FT	15	12/22/10	ND<0.54	ND<0.21	0.41
AMBIENT 1	AMBIENT 1 12-21-10	NA ^(c)	12/21/10	ND<1.3	ND<0.51	ND<0.93
AMBIENT 2	AMBIENT 2 12-22-10	NA	12/22/10	ND<0.54	ND<0.21	ND<0.39

(a) Volatile organic compounds analyzed using EPA Method TO-15 and reported in micrograms per cubic meter (mg/m^3) including:

PCE = tetrachloroethene

TCE = trichloroethene

Other VOCs may have been detected in low concentrations; see laboratory reports for results.

(b) ND - Not detected at the reporting limit listed.

(c) NA - Not applicable.

TABLE 2
GROUNDWATER ANALYTICAL RESULTS
AROUND 1507 EAST C STREET
FORMER TRW FACILITY - McCOOK, NEBRASKA

Sample ID	Sample Date	Depth (feet)	PCE ^(a) (µg/l)	TCE ^(a) (µg/l)	cDCE ^(a) (µg/l)	tDCE ^(a) (µg/l)	VC ^(a) (µg/l)	1,1,1-TCA ^(a) (µg/l)	1,1-DCE ^(a) (µg/l)	Chloroform ^(a) (µg/l)
NEIMAN-FRONT	12/21/10	35	ND<1 ^(b)	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1
NEIMAN-WEST	12/22/10	37	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1
AHRENS-NORTH	12/22/10	46	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1
J1036-HERRON-122210	12/22/10	NA ^(c)	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1

(a) Analyzed using Environmental Protection Agency Method 601 and reported in micrograms per liter (µg/l).

PCE = Tetrachloroethene

TCE = Trichloroethene

cDCE = cis-1,2-Dichloroethene

tDCE = trans-1,2-Dichloroethene

VC = Vinyl chloride

1,1,1-TCA = 1,1,1-Trichloroethane

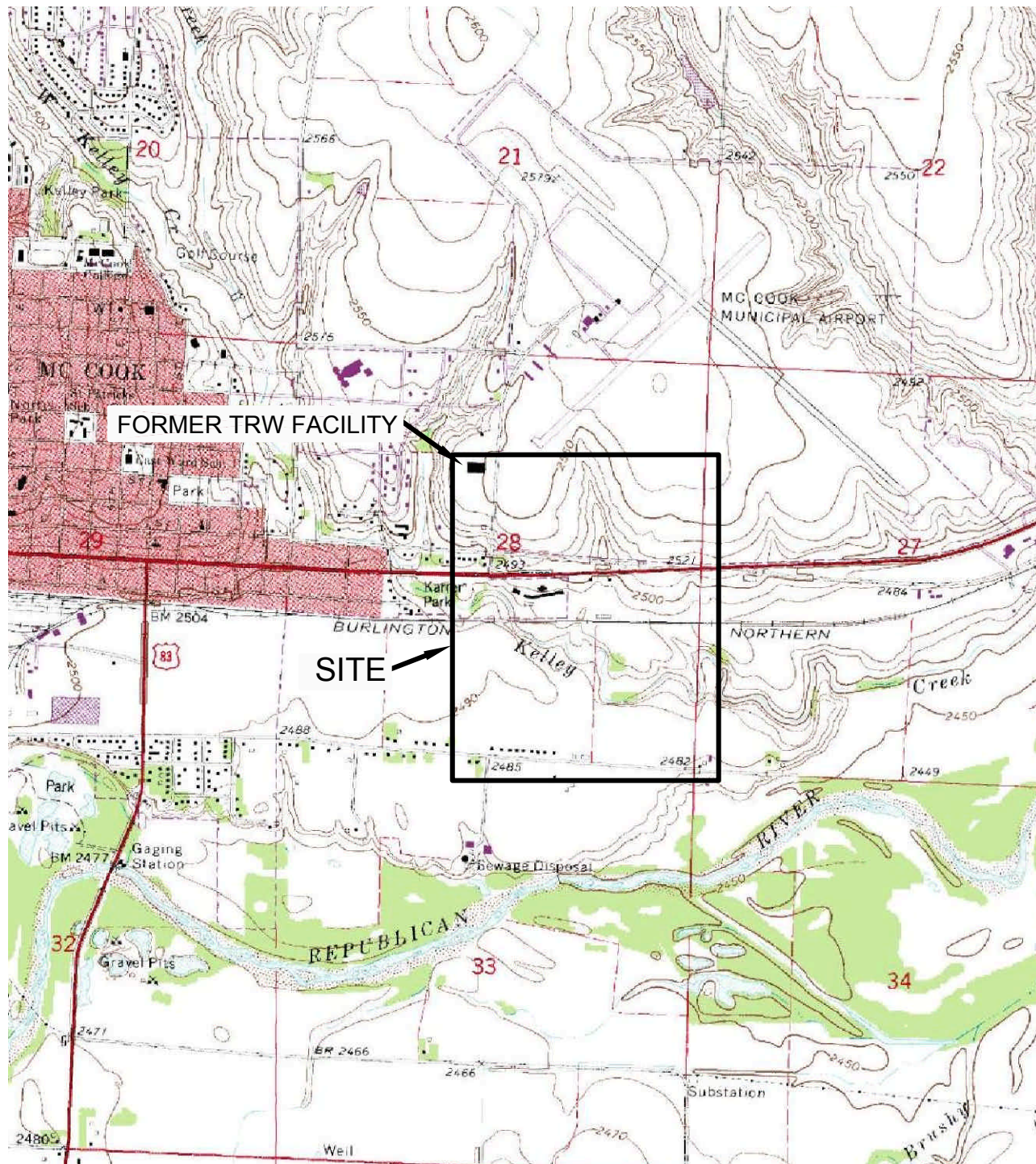
1,1-DCE = 1,1-Dichloroethene.

(b) ND - Not detected at the reporting limit listed.

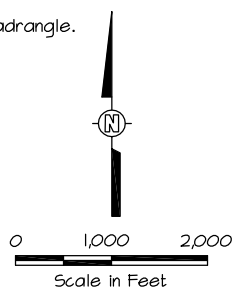
(c) NA - Not available.

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11/13/2004 6:56 AM

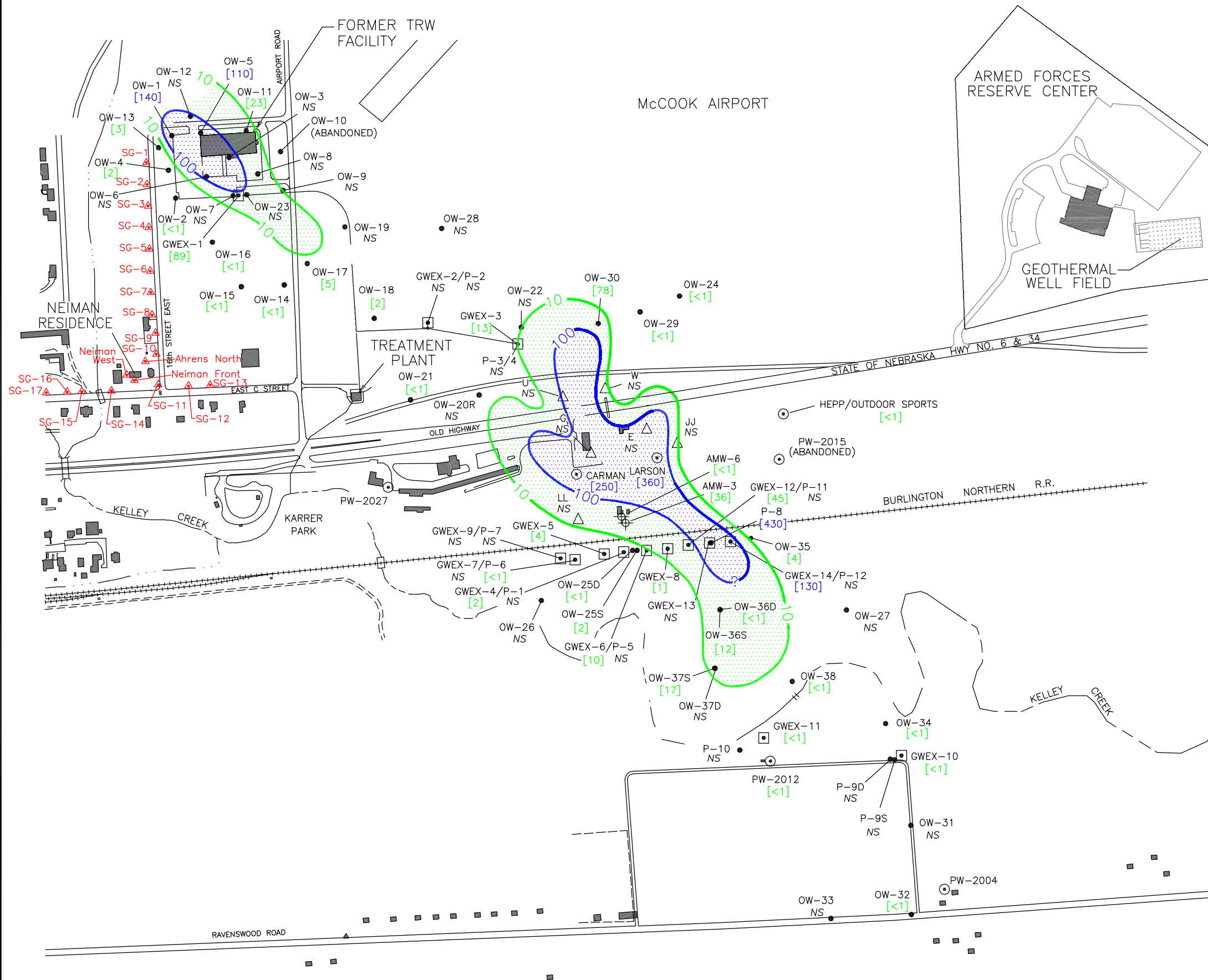


Reference
7.5-minute USGS topographic Map of McCook East, Nebraska quadrangle.
Date 1970, photorevised 1983
Scale = 1:24,000



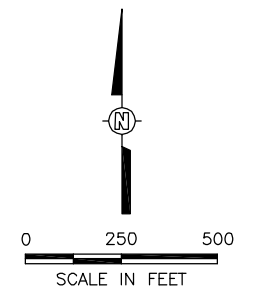
ORION ENVIRONMENTAL INC.			
NORTHROP GRUMMAN - McCOOK, NEBRASKA			
SITE LOCATION MAP			
PROJECT NO. 02MCKK	DRAWN BY MY	CHECKED BY JPG	APPROVED BY JPG
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1/21/2011 5:42PM 02MCKC20200.dwg



LEGEND:

- ▲ SG-1 SOIL GAS SAMPLING LOCATION
- GWEX-11 EXTRACTION WELL
- OW-19 OBSERVATION WELL (OW-) OR PIEZOMETER (P-)
- ⊙ PW-2015 PRIVATE WELL (APPROXIMATELY LOCATED)
- ⊕ AMW-3 INDICATES PILOT TEST MONITORING WELL (NOTE: TCE CONCENTRATION IS FOR OCTOBER 2010).
- △ JJ INDICATES GEOPROBE GRAB GROUNDWATER SAMPLE (COLLECTED IN DECEMBER 2009)
- [110] INDICATES TCE CONCENTRATION (µg/l) IN OBSERVATION WELL DURING OCTOBER 2010. VALUES FROM <1 TO 99 ARE SHOWN IN GREEN; AND FROM 100 TO 999 ARE SHOWN IN BLUE
- NS INDICATES NO SAMPLE WAS COLLECTED FROM THE WELL DURING OCTOBER 2010
- [<1] INDICATES TCE CONCENTRATION WAS BELOW THE LABORATORY DETECTION LIMIT OF 1 µg/l
- 100—? INDICATES CONTOUR OF EQUAL TCE CONCENTRATION (µg/l) IN OCTOBER 2010. QUERIED WHERE UNCERTAIN. THE 10 µg/l CONTOUR IS SHOWN IN GREEN; AND 100 µg/l CONTOUR SHOWN IN BLUE.



ORION ENVIRONMENTAL INC.			
FORMER TRW FACILITY - McCOOK, NEBRASKA			
SOIL GAS SAMPLING LOCATIONS			
PROJECT NO. 02MCKC	DRAWN BY MY	CHECKED BY AS	APPROVED BY JPG
FILE NO. 02MCKC20200.DWG	FIGURE 2		

REVISION	REVISIONS			
	NO.	BY	DATE	DESCRIPTION
0	1	MY	1/20/11	Soil Gas Report



LEGEND:

- ▲ SG-1 SOIL GAS SAMPLING LOCATION
- ▲ GRAB GROUNDWATER SAMPLE
- ◻ GWEX-11 EXTRACTION WELL
- OW-19 OBSERVATION WELL
- ⊙ PRIVATE WELL

[110] INDICATES TCE CONCENTRATION ($\mu\text{g/l}$) IN OBSERVATION WELL DURING OCTOBER 2010. VALUES FROM <1 TO 99 ARE SHOWN IN GREEN; AND FROM 100 TO 999 ARE SHOWN IN BLUE

NS INDICATES NO SAMPLE WAS COLLECTED FROM THE WELL DURING OCTOBER 2010

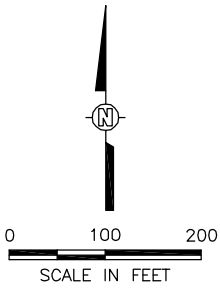
[<1] INDICATES TCE CONCENTRATION WAS BELOW THE LABORATORY DETECTION LIMIT OF 1 $\mu\text{g/l}$

Depth	PCE	TCE
5'	ND<0.54	0.65
15'	ND<0.6	ND<0.24

TRICHLOROETHENE ($\mu\text{g/m}^3$) AS ANALYZED USING EPA METHOD TO-15

TETRACHLOROETHENE ($\mu\text{g/m}^3$) AS ANALYZED USING EPA METHOD TO-15

ND NOT DETECTED AT THE REPORTING LIMIT LISTED



ORION ENVIRONMENTAL INC.			
FORMER TRW FACILITY - MCCOOK, NEBRASKA			
SOIL GAS SAMPLING RESULTS			
PROJECT NO.	DRAWN BY	CHECKED BY	APPROVED BY
02MCKC	MY	AS	JPG
FILE NO.	FIGURE 3		
02MCKC20100.DWG			

REVISION	NO.	BY	DATE	REVISIONS
0	1	MY	1/20/11	DESCRIPTION
	2			Soil Gas Report
	3			

ATTACHMENT A

CITY OF McCOOK TEMPORARY EASEMENT

M 200-P4-17
RECEIVED
DEC 14 2010

GRANT OF EASEMENT

BY: _____

COMES NOW the City of McCook, Nebraska, a Political Subdivision of the State of Nebraska, in consideration of \$0.00 per sampling location by Northrop Grumman Corporation, and does hereby grant and convey to Northrop Grumman Corporation and its successors and assigns, an exclusive easement to perform the following tasks.

- 1) Soil gas sampling along East 16th Street and East "C" Street. See attached Work Plan for additional details and location map. These tasks will be performed on the following described property in the City of McCook, Nebraska.

Site 1: Within the 66 foot right-of-way of East C Street from East 14th Street to 500 feet east of East 16th Street.

Site 2: Within the 60 foot right-of-way of East 16th Street from East "C" Street the North 1135 feet.

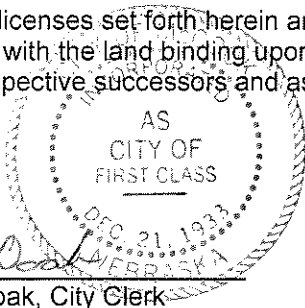
The term of this easement shall continue through February 28, 2011. Requests for additional extensions after February 28, 2011 shall be reviewed by the City; however, the consent of the City shall not be unreasonably withheld. (KS)

Northrop Grumman Corporation at the completion of the work plan shall take all reasonable efforts to (RD) return the disturbed areas to its former condition.

Northrop Grumman Corporation shall carry its own casualty and liability insurance covering its operators. The City shall not be liable for damage to the property of Northrop Grumman Corporation. Northrop Grumman Corporation agrees to indemnify and hold the City harmless against any claims, losses, damages, or expenses of third parties arising out of the activities described in the attached Work Plan. By acceptance of this easement and Work Plan, Northrop Grumman Corporation has accepted the terms of this agreement.

All easements and licenses set forth herein are intended to be and shall be construed as covenants (not conditions) running with the land binding upon, inuring to the benefit of and enforceable by the parties hereto and their respective successors and assigns

ATTEST:



By: Lea Ann Doak
Lea Ann Doak, City Clerk

THE CITY OF MCCOOK, NEBRASKA
A Political Subdivision of the State of Nebraska

By: Dennis Berry
Dennis Berry, Mayor

STATE OF NEBRASKA, COUNTY OF RED WILLOW

Before me, a notary public qualified for said county, personally came Dennis Berry, Mayor of McCook, Nebraska, known to me to be the Mayor and identical person who signed the foregoing instrument, and acknowledged the execution thereof to be his voluntary act and deed as Mayor.

Witness my hand and notarial seal on 12-08, 2010.

Kimberly A. McConville
Notary Public



cc sent to orion 12/16/10

ATTACHMENT B

**BORING LOGS FOR
WELLS OW-1 AND OW-2**



Sitex Corporation

TRW CAPACITORS PLANT - MCCOOK, NEBRASKA

OBSERVATION WELL LOG

Boring No. OW-1 Date 12-02-86 Driller Nebraska Testing

Logger J. L. Bognar Boring Solid Stem 6" Auger Total Depth 74' BGS

Location: 16'3" South and 20'7" East of Northwest telephone pole

Sample Depth in Feet (Below Ground Surface) Top - Bottom		Standard Penetrometer 1 2 3			Geologic/Soil/Stratum Description
4	- 5.5	4	4	5	<u>loess</u> - Brown, medium density, soft to firm, friable and unconsolidated, dry, homogeneous clayey silt. (Epoxy, red chips at 4" noted)
9	- 10.5	2	3	4	As Above - slightly moist
14	- 15.5	3	4	4	As Above
19	- 20.5	4	5	5	As Above - less clay content
24	- 25.5	5	7	6	As Above - with 1% CaCO ₃ nodules and 1% MnO ₂
29	- 30.5	3	7	6	As Above
34	- 35.5	2	6	10	As Above
39	- 40.5	5	6	9	As Above to 40'3" - Contact with sand unit - wet - possible perched water
44	- 45.5	11	16	25	<u>sand unit</u> - Buff, unconsolidated, friable, fine to medium grain homogeneous quartz sand - dry
49	- 50.5	16	24	28	As Above
59	- 60.5	17	19	22	As Above - Water contact at 60'3" BGS

**TRW CAPACITORS PLANT - MCCOOK, NEBRASKA****OBSERVATION WELL LOG**Boring No. OW-1 Date 12-02-86 Driller Nebraska TestingLogger J. L. Bognar Boring Solid Stem 6" Auger Total Depth 74' BGS

Location: Page 2

Sample Depth in Feet (Below Ground Surface) Top - Bottom	Standard Penetrometer			Geologic/Soil/Stratum Description
	1	2	3	
69 - 70.5	15	10	17	Multicolor - Brown, pinks, buff, overall brown tone, no consolidation, very poor sorting, fine grain to gravel - good aquifer - high porosity and permeability Drilled to 74' BGS for sump - no sample taken - no auger refusal Casing Information: Individual casing pieces lengths from bottom to top - 2'6", 10', 9'10", 9'7-7/8", 9'7-7/8", 9'6-5/8", 9'7¼", 9'10¼", 2'6-3/8" Total individually measured casing length is 73'2¼" Total length inside casing installed is 73'3½" Completion Information: Install casing, boring collapse outside casing to 61' BGS. Backfill gravel pack to 40'6" BGS. Add 2'6" of Bentonite pellets to 38' BGS - add 4 gallons of water, grout to 6" BGS. Cement to surface, install casing protection locking cover. See well diagram. <u>Note:</u> When gravel packing, displaced air had noticeable TCE odor and pegged H-Nu meter.
72.5 - 74				

TRW CAPACITORS PLANT - McCOOK, NEBRASKA
OBSERVATION WELL LOG

Boring No. OW-2 Date 12-03-86 Driller Nebraska Testing

Logger J. L. Bogner Boring Solid Stem 6" Auger Total Depth 72' BGS

Location: 5' North and 20' East of Southwestern most point of property

Sample Depth in Feet (Below Ground Surface) Top - Bottom	Standard Penetrometer			Geologic/Soil/Stratum Description
	1	2	3	
4 - 5.5	3	4	4	<u>loess</u> - Brown, medium density, soft to firm, friable and unconsolidated, dry, homogeneous clayey silt
9 - 10.5	2	1	2	As Above - slightly moist
14 - 15.5	4	4	5	As Above with 5% CaCO ₃ particles, dry
19 - 20.5	3	5	5	As Above, no CaCO ₃ , slightly moist
24 - 25.5	3	5	7	As Above
29 - 30.5	3	6	6	As Above
34 - 35.5	3	7	9	As Above - more moisture
39 - 40.5	3	4	8	<u>sand unit</u> - Buff with pink tint, friable, unconsolidated, fine to medium grain, slightly moist, homogeneous quartz sand with 5% CaCO ₃ nodules
44 - 45.5	8	11	13	As Above
49 - 50.5	14	26	26	As Above
59 - 60.5	9	23	35	As Above to 59'6" BGS, contact, lithology change, brown, unconsolidated, medium to coarse, poorly sorted immature quartz sand with 10% Feldspar, high porosity and permeability



Sitex Corporation

TRW CAPACITORS PLANT - McCOOK, NEBRASKA

OBSERVATION WELL LOG

Boring No. OW-2 Date 12-03-86 Driller Nebraska Testing

Logger J. L. Bognar Boring Solid Stem 6" Auger Total Depth 72' BGS

Location: Page 2

Sample Depth in Feet (Below Ground Surface) Top - Bottom	Standard Penetrometer			Geologic/Soil/Stratum Description
	1	2	3	
69 - 70.5	6	16	21	As Above - water at 62' BGS
70.5 - 72				Drilled to 72' BGS for sump, encountered the Pierre Shale - Black with iron streaks, very clayey shale, well indurated, very low to zero porosity and permeability - good aquitard. Casing Information: Individual casing pieces from bottom to top 2'6-1/8", 9'10-1/8", 9'10 1/2", 9'10", 9'10 1/2", 9'10-3/8", 9'10-3/8", 9'10-3/8", 2'4", = total cumulative length - 73'10-1/8" Total length casing installed - 73'11 1/2" Completion Information: Install casing - top at 2'4" above ground surface. Boring collapse outside casing to 62'2" BGS. Backfill gravel pack to 47'3" BGS. Add Bentonite pellets to 43'4" BGS (4 feet), add 4 gallons water - grout to 6" BGS. Cement to surface, install casing protection locking cover, see well diagram.

ATTACHMENT C

FIELD QA/QC PROCEDURES

ATTACHMENT C

FIELD QA/QC PROCEDURES

Soil Gas Sampling Procedures (Temporary Probes)

The following procedures were used to collect soil gas samples using the Geoprobe Post-Run Tubing (PRT) system. The PRT system was used with the 1.0-inch-diameter probe rod. The parts or accessories used in the PRT system were selected with the appropriate diameter probe rod in mind to match the components.

1. Placed O-ring on PRT expendable point holder and attached to initial section of probe rod.
2. Placed O-ring on expendable point and pressed into expendable point holder.
3. Added drive cap to probe rod and pushed PRT system into ground. Added additional probe rods, as needed, to push system to the desired sampling depth.
4. Attached pull cap to probe rod and pulled the rod back to disengage the expendable point and expose the soil interval for sampling. Removed the pull cap when this step was completed.
5. Secured the PRT adapter using electrical tape to a length of 1/8-inch-diameter polypropylene tubing sufficient to reach from the sampling interval to the surface.
6. Ran the tubing and adapter into the probe rod and, using steady downward pressure, turned the tubing counter-clockwise to dock the adapter into the top of the expendable point holder. Tugged gently on the tubing to make sure that the adapter docked firmly into the expendable point holder.
7. Capped the end of the tubing with a stainless steel Swagelok® cap if the sample could not be collected immediately.

Soil samples were not retrieved during probe installation. Water was not used during drilling. If dust prevention was necessary, the location was covered with a towel/cloth and the boring drilled through a pre-cut hole in the cloth.

Soil vapor was withdrawn from the probe using a low-flow pump (<200 cubic centimeters per minute) equipped with a flow regulator. The probe was purged to remove stagnant or ambient air from the sampling system and provide vapor samples that are representative of subsurface conditions. The pump was operated until the volume purged was approximately 3 volumes of the probe and tubing. A flow regulator was used to limit the extraction rate to minimize partitioning or short circuiting of soil gas flow paths.

After purging was completed, an evacuated stainless steel SUMMA canister (6-liter) was connected upstream of the pump. The canister was under absolute vacuum (29 inches of mercury). Pump operation continued while the valve on the SUMMA canister was slowly opened and the soil vapor sample was drawn into the canister. Duplicate vapor samples (1 for every 10 samples) were collected following the same sample collection procedures. New tubing was used for each location/depth. The sampling probes were decontaminated before and after each use. The sample canisters were purged and certified by a certified analytical laboratory to be free of volatile organic compounds at the required detection limits. Decontamination procedures are discussed below.

The vapor samples were transported to a certified analytical laboratory within approximately 48 hours after sampling. Standard chain-of-custody procedures were used during sample handling, transportation, and delivery. Vapor samples were analyzed in accordance with the analytical program described in the work plan.

Direct-Push (Geoprobe) Groundwater Sampling

A Geoprobe discrete groundwater sampler was used to collect the groundwater samples. The sampler was constructed with a stainless steel screen encased in a sealed stainless steel sleeve fitted with a cone-shaped tip. The sealed screen was hydraulically advanced to the desired sample depth using push rods and the rods were retracted to expose the screen. Before exposing the steel screen in the groundwater zone, a water-level sounder was lowered into the rods and screen to check for water leakage through the rods.

Groundwater samples were collected by lowering 1/4-inch-diameter polyethylene tubing fitted with an end check valve into the push rods and steel screen. A peristaltic pump was attached to the tubing to pump the water to the surface. If there was insufficient groundwater recharge into the screen to allow a continuous column of water to be pumped using a peristaltic pump, groundwater samples were collected by removing the tubing from the rods. The bottom check-valve was then removed from the tubing to fill sample containers.

Volatile organic sample vials were filled completely so that the water formed a convex meniscus at the top and capped so that no air space or bubbles existed in the vial. The vial was turned over and tapped gently to check for bubbles in the vial. If air bubbles were observed in the sample vial, the vial was discarded and the procedures repeated until no air bubbles appear. The preservatives necessary for the analyses performed were provided in the glass bottles by the analytical laboratory.

The collected water samples were placed in sealable plastic bags or polystyrene holders and packed on ice in a portable ice chest immediately after collection. Samples were delivered within 24 hours to the analytical laboratory. Additional QA/QC procedures, including the use of sample identification labels and chain-of-custody forms, were followed to track sample collection and delivery.

Geoprobe borings were backfilled the same day with cement/bentonite grout. In paved areas, borings were capped with concrete to match the surrounding pavement.

Chain-of-Custody Records

Chain-of-custody records were completed before samples were packaged for shipment. One copy of these records was placed in the project file. A second copy accompanied samples during transportation to the laboratory. The individual in the analytical laboratory who accepts responsibility for samples signed and dated the chain-of-custody record.

Equipment Decontamination Procedures

Field equipment was decontaminated between sampling events using the following procedures:

1. Rinsed with water using a brush to remove soil and mud.
2. Washed with non-phosphate detergent and water using a brush.
3. Double-rinsed with deionized or distilled water.
4. Air dried.

Additional decontamination procedures are presented below:

1. Personnel dressed in suitable personal protective equipment to reduce personal exposure.
2. Equipment that might be damaged by water (such as the battery portion of water level indicator or the pH and conductivity meters) was carefully wiped clean using a sponge and dried with new paper towels. Care was taken to prevent damage to the equipment.
3. Detergent waters and rinse waters were replaced periodically depending on level of contamination. Used detergent and rinse waters were contained in 55-gallon drums approved by the Department of Transportation (DOT) or holding tanks for storage.

Personal Decontamination Procedures

At a minimum, field personnel followed the following decontamination procedures:

1. Wore appropriate gloves.
2. Washed hands thoroughly with soap and water.
3. Avoided unnecessary contact with soil or groundwater.

The site health and safety plan (HSP) was reviewed for site-specific personal decontamination procedures.

Wastewater and Solid Waste Storage and Disposal

Small volumes of used wash and rinse solutions were collected during field work and transported to a central decontamination area. This wastewater was put in labeled 55-gallon DOT drums or holding tanks and stored in a secured area at the site. At the completion of the field investigation, the wastewater was treated by the existing groundwater treatment system.

Solid wastes such as used personal protective equipment, paper towels, trash bags, and any other solid debris was collected for disposal. Solid wastes were disposed of with the onsite trash.

Field Investigation Documentation Procedures

Field personnel followed documentation procedures developed for site investigation work. The procedures served to (1) provide a record of the activities performed in the field and (2) permit identification of samples and tracking of their status in the field, during shipment, and at the laboratory. All documentation was recorded with waterproof ink.

Health and Safety

Field personnel used a site-specific HSP with procedures that were followed by field personnel for equipment safety, medical surveillance, personal protection, air quality monitoring, exposure control, emergency response, and general work practices during field activities. Before beginning work at the site, a site safety meeting was conducted. Field personnel reviewed the HSP and sign the accompanying acknowledgment form before initiating field activities. Field personnel were required to comply with the HSP throughout performance of the field program.

ATTACHMENT D

**LABORATORY ANALYTICAL REPORTS AND
CHAIN-OF-CUSTODY FORMS**

H0L230539 Analytical Report.....	1
Sample Receipt Documentation	28
Total Number of Pages	33

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

REVISED

PROJECT NO. 56995J1036007

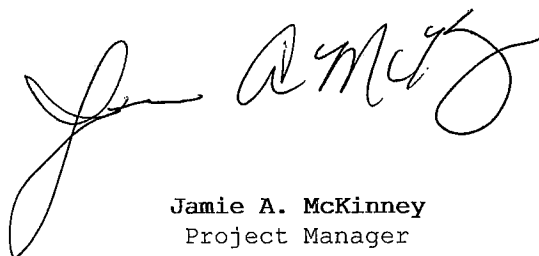
McCook

Lot #: H0L230539

Susan Scrocchi

Conestoga-Rovers & Associates,
2055 Niagara Falls Blvd.
Suite Three
Niagara Falls, NY 14304

TESTAMERICA LABORATORIES, INC.



Jamie A. McKinney
Project Manager

February 16, 2011

ANALYTICAL METHODS SUMMARY

H0L230539

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

H0L230539

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
MCRNE	001	13A	12/22/10	15:44
MCRNG	002	13B	12/22/10	15:49
MCRNH	003	14A	12/22/10	14:31
MCRNJ	004	14B	12/22/10	14:44
MCRNL	005	15A	12/22/10	14:50
MCRNM	006	15B	12/22/10	15:05
MCRNP	007	NEIMAN FRONT (5FT)	12/21/10	16:19
MCRNQ	008	NEIMAN WEST 5FT	12/22/10	09:56
MCRNR	009	AHRENS NORTH 5FT	12/22/10	12:19
MCRNV	010	NEIMAN FRONT 15FT	12/22/10	16:30
MCRNW	011	NEIMAN WEST 15FT	12/22/10	10:13
MCRNX	012	AHRENS NORTH 15FT	12/22/10	12:32
MCRN0	013	16A	12/22/10	15:15
MCRN1	014	16B	12/22/10	15:35
MCRN2	015	17A	12/22/10	15:50
MCRN4	016	17B	12/22/10	16:05
MCRPA	017	AMBIENT 1 12-21-10	12/21/10	16:00
MCRPD	018	AMBIENT 2 12-22-10	12/22/10	16:00

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

HOL230539

REVISED

This report has been revised. Results below the reporting limit have not been include in this report.

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 was included with the original report.

Sample Receipt

Custody seals were not present.

The collection date listed on the chain of custody documentation did not match the date listed on the sample container for samples 13A, 13B and Neiman Front 15ft.

Sample Neiman West 15ft was received labeled as Neiman East 15ft.

The canister ID listed on the chain of custody did not match the ID listed on the sample container for sample 17B.

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.

TestAmerica Knoxville maintains the following certifications, approvals and accreditations: Arkansas DEQ Lab #88-0688, California DHS ELAP Cert. #2423, Colorado DPHE, Connecticut DPH Lab #PH-0223, Florida DOH Lab #E87177, Georgia DNR Lab #906, Hawaii DOH, Illinois EPA Lab #200012, Indiana DOH Lab #C-TN-02, Iowa DNR Lab #375, Kansas DHE Cert. #E-10349, Kentucky DEP Lab #90101, Louisiana DEQ Cert. #03079, Louisiana DOHH, Maryland DOE Cert. #277, Michigan DEQ Lab #9933, Nevada DEP, New Jersey DEP Lab #TN001, New York DOH Lab #10781, North Carolina DPH Lab #21705, North Carolina DEHNR Cert. #64, Ohio EPA VAP Lab #CL0059, Oklahoma DEQ Lab #9415, Pennsylvania DEP Lab #68-00576, South Carolina DHEC Cert #84001001, Tennessee DOH Lab #02014, Texas CEQ, Utah DOH Lab # QUAN3, Virginia DGS Lab #00165, Washington DOE Lab #C1314, West Virginia DEP Cert. #345, West Virginia DHHR Cert #9955C, Wisconsin DNR Lab #998044300, Naval Facilities Engineering Service Center and USDA Soil Permit #S-46424. This list of approvals is subject to change and does not imply that laboratory certification is available for all parameters reported in this environmental sample data report.

PROJECT NARRATIVE

Sample 14B was reported with elevated reporting limits for all analytes due to the difficult sample matrix. A dilution was necessary prior to analysis, and the reporting limits were adjusted accordingly.

Samples 15B and Ambient 1 12-21-10 were reported with elevated reporting limits for all analytes due to the limited amount of sample received.

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 13A

GC/MS Volatiles

Lot-Sample # HOL230539 - 001 **Work Order #** MCRNE1AA **Matrix.....:** AIR
Date Sampled...: 12/22/2010 **Date Received...:** 12/23/2010
Prep Date.....: 01/06/2011 **Analysis Date...** 01/06/2011
Prep Batch #.....: 1007078
Dilution Factor..: 1 **Method.....:** TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	0.091	0.080	0.62	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	100	60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 13B

GC/MS Volatiles

Lot-Sample # H0L230539 - 002 Work Order # MCRNG1AA Matrix.....: AIR

Date Sampled...: 12/22/2010 Date Received...: 12/23/2010
 Prep Date.....: 01/05/2011 Analysis Date... 01/05/2011
 Prep Batch #....: 1005193
 Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	0.083	0.080	0.56	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

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

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 14A

GC/MS Volatiles

Lot-Sample # H0L230539 - 003 **Work Order #** MCRNH1AA **Matrix.....:** AIR
Date Sampled...: 12/22/2010 **Date Received...:** 12/23/2010
Prep Date.....: 01/05/2011 **Analysis Date...:** 01/06/2011
Prep Batch #.....: 1005193
Dilution Factor..: 1 **Method.....:** TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	0.12	0.040	0.65	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

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

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 14B

GC/MS Volatiles

Lot-Sample #	H0L230539 - 004	Work Order #	MCRNJ1AA	Matrix.....:	AIR
Date Sampled...:	12/22/2010	Date Received...:	12/23/2010		
Prep Date.....:	01/05/2011	Analysis Date...:	01/06/2011		
Prep Batch #.....:	1005193				
Dilution Factor..:	1.1	Method.....:	TO-15		

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.088	ND	0.60
1,1,2-Trichloroethane	ND	0.088	ND	0.48
Trichloroethene	ND	0.044	ND	0.24
Chloroform	ND	0.088	ND	0.43
1,1-Dichloroethene	ND	0.088	ND	0.35
cis-1,2-Dichloroethene	ND	0.088	ND	0.35
trans-1,2-Dichloroethene	ND	0.088	ND	0.35

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

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 15A

GC/MS Volatiles

Lot-Sample # H0L230539 - 005 Work Order # MCRNL1AA Matrix.....: AIR

Date Sampled...: 12/22/2010 Date Received...: 12/23/2010
 Prep Date.....: 01/05/2011 Analysis Date...: 01/05/2011
 Prep Batch #....: 1005193
 Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

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

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 15B

GC/MS Volatiles

Lot-Sample # H0L230539 - 006 Work Order # MCRNM1AA Matrix.....: AIR

Date Sampled...: 12/22/2010 Date Received...: 12/23/2010
 Prep Date.....: 01/05/2011 Analysis Date...: 01/05/2011
 Prep Batch #....: 1005193
 Dilution Factor.: 1.15 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	0.097	0.092	0.66	0.62
1,1,2-Trichloroethane	ND	0.092	ND	0.50
Trichloroethene	ND	0.046	ND	0.25
Chloroform	ND	0.092	ND	0.45
1,1-Dichloroethene	ND	0.092	ND	0.36
cis-1,2-Dichloroethene	ND	0.092	ND	0.36
trans-1,2-Dichloroethene	ND	0.092	ND	0.36

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

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.
Client Sample ID: NEIMAN FRONT (5FT)
GC/MS Volatiles

Lot-Sample # H0L230539 - 007	Work Order # MCRNP1AA	Matrix.....: AIR
Date Sampled...: 12/21/2010	Date Received...: 12/23/2010	
Prep Date.....: 01/05/2011	Analysis Date...: 01/05/2011	
Prep Batch #.....: 1005193		
Dilution Factor...: 1	Method.....: TO-15	

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	0.098	0.080	0.67	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

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

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.
Client Sample ID: NEIMAN WEST 5FT
GC/MS Volatiles

Lot-Sample # H0L230539 - 008 **Work Order #** MCRNQ1AA **Matrix.....:** AIR

Date Sampled...: 12/22/2010 **Date Received...:** 12/23/2010
Prep Date.....: 01/05/2011 **Analysis Date...:** 01/05/2011
Prep Batch #.....: 1005193
Dilution Factor.: 1 **Method.....:** TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

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

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.
Client Sample ID: AHRENS NORTH 5FT
GC/MS Volatiles

Lot-Sample # H0L230539 - 009 **Work Order #** MCRNR1AA **Matrix.....:** AIR

Date Sampled...: 12/22/2010 **Date Received...:** 12/23/2010
Prep Date.....: 01/05/2011 **Analysis Date...:** 01/05/2011
Prep Batch #.....: 1005193
Dilution Factor.: 1 **Method.....:** TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	0.15	0.080	1.0	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	0.094	0.040	0.51	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

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

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.
Client Sample ID: NEIMAN FRONT 15FT
GC/MS Volatiles

Lot-Sample # H0L230539 - 010	Work Order # MCRNV1AA	Matrix.....: AIR
Date Sampled...: 12/22/2010	Date Received...: 12/23/2010	
Prep Date.....: 01/05/2011	Analysis Date...: 01/05/2011	
Prep Batch #.....: 1005193		
Dilution Factor.: 1	Method.....: TO-15	

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	0.75	0.080	5.1	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32
		PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)	
SURROGATE				
4-Bromofluorobenzene		94		60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.
Client Sample ID: NEIMAN WEST 15FT
GC/MS Volatiles

Lot-Sample # HOL230539 - 011	Work Order # MCRNW1AA	Matrix.....: AIR
Date Sampled...: 12/22/2010	Date Received...: 12/23/2010	
Prep Date.....: 01/05/2011	Analysis Date...: 01/05/2011	
Prep Batch #....: 1005193		
Dilution Factor..: 1	Method.....: TO-15	

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	0.70	0.080	4.7	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	92	60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.
Client Sample ID: AHRENS NORTH 15FT
GC/MS Volatiles

Lot-Sample #	H0L230539 - 012	Work Order #	MCRNX1AA	Matrix.....:	AIR
Date Sampled...:	12/22/2010	Date Received...:	12/23/2010		
Prep Date.....:	01/05/2011	Analysis Date...:	01/05/2011		
Prep Batch #.....:	1005193				
Dilution Factor.:	1	Method.....:	TO-15		

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	0.085	0.080	0.41	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32
		PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)	
SURROGATE				
4-Bromofluorobenzene		93		60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 16A

GC/MS Volatiles

Lot-Sample # HOL230539 - 013 **Work Order #** MCRN01AA **Matrix.....:** AIR
Date Sampled...: 12/22/2010 **Date Received...:** 12/23/2010
Prep Date.....: 01/05/2011 **Analysis Date...** 01/05/2011
Prep Batch #.....: 1005193
Dilution Factor..: 1 **Method.....:** TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	0.46	0.080	3.1	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	0.23	0.080	1.1	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

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

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 16B

GC/MS Volatiles

Lot-Sample # H0L230539 - 014 Work Order # MCRN11AA Matrix.....: AIR

Date Sampled...: 12/22/2010 Date Received...: 12/23/2010
 Prep Date.....: 01/05/2011 Analysis Date... 01/05/2011
 Prep Batch #.....: 1005193
 Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

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

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 17A

GC/MS Volatiles

Lot-Sample #	H0L230539 - 015	Work Order #	MCRN21AA	Matrix.....:	AIR
Date Sampled...:	12/22/2010	Date Received...:	12/23/2010		
Prep Date.....:	01/06/2011	Analysis Date...:	01/06/2011		
Prep Batch #.....:	1007078				
Dilution Factor.:	1	Method.....:	TO-15		

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	0.085	0.080	0.42	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

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

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 17B

GC/MS Volatiles

Lot-Sample # HOL230539 - 016 Work Order # MCRN41AA Matrix.....: AIR

Date Sampled...: 12/22/2010 Date Received...: 12/23/2010
 Prep Date.....: 01/06/2011 Analysis Date...: 01/06/2011
 Prep Batch #....: 1007078
 Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

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

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.
Client Sample ID: AMBIENT 1 12-21-10
GC/MS Volatiles

Lot-Sample # H0L230539 - 017 **Work Order #** MCRPA1AA **Matrix.....:** AIR

Date Sampled...: 12/21/2010 **Date Received...:** 12/23/2010
Prep Date.....: 01/06/2011 **Analysis Date...** 01/07/2011
Prep Batch #....: 1007078
Dilution Factor..: 2.39 **Method.....:** TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.19	ND	1.3
1,1,2-Trichloroethane	ND	0.19	ND	1.0
Trichloroethene	ND	0.096	ND	0.51
Chloroform	ND	0.19	ND	0.93
1,1-Dichloroethene	ND	0.19	ND	0.76
cis-1,2-Dichloroethene	ND	0.19	ND	0.76
trans-1,2-Dichloroethene	ND	0.19	ND	0.76

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

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.
Client Sample ID: AMBIENT 2 12-22-10
GC/MS Volatiles

Lot-Sample # H0L230539 - 018	Work Order # MCRPD1AA	Matrix.....: AIR
Date Sampled...: 12/22/2010	Date Received...: 12/23/2010	
Prep Date.....: 01/06/2011	Analysis Date...: 01/07/2011	
Prep Batch #.....: 1007078		
Dilution Factor...: 1	Method.....: TO-15	

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

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

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.
Client Sample ID: INTRA-LAB BLANK
GC/MS Volatiles

Lot-Sample #	H1A050000 - 193B	Work Order #	MC25K1AA	Matrix.....:	AIR
	12/22/2010	Date Received..:	12/23/2010		
Prep Date.....:	01/05/2011	Analysis Date...	01/05/2011		
Prep Batch #.....:	1005193				
Dilution Factor.:	1	Method.....:	TO-15		

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

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

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.
Client Sample ID: CHECK SAMPLE
GC/MS Volatiles

Lot-Sample # H1A050000 - 193C **Work Order #** MC25K1AC **Matrix.....:** AIR

Prep Date.....: 12/22/2010 **Date Received...:** 12/23/2010
Prep Date.....: 01/05/2011 **Analysis Date...:** 01/05/2011
Prep Batch #.....: 1005193
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	3.67	34	25	73	70 - 130
1,1,2-Trichloroethane	5.00	3.55	27	19	71	70 - 130
Trichloroethene	5.00	4.28	27	23	86	70 - 130
Chloroform	5.00	5.30	24	26	106	70 - 130
1,1-Dichloroethene	5.00	5.27	20	21	105	70 - 130
cis-1,2-Dichloroethene	5.00	4.74	20	19	95	70 - 130
trans-1,2-Dichloroethene	5.00	4.93	20	20	99	70 - 130

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	100	60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.
Client Sample ID: INTRA-LAB BLANK
GC/MS Volatiles

Lot-Sample # H1A070000 - 078B	Work Order # MC4T31AA	Matrix.....: AIR
Prep Date.....: 12/22/2010	Date Received...: 12/23/2010	
Prep Date.....: 01/06/2011	Analysis Date...: 01/06/2011	
Prep Batch #.....: 1007078		
Dilution Factor.: 1	Method.....: TO-15	

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

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

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.
Client Sample ID: CHECK SAMPLE
GC/MS Volatiles

Lot-Sample # H1A070000 - 078C **Work Order #** MC4T31AC **Matrix.....:** AIR

Prep Date.....: 12/22/2010 **Date Received..:** 12/23/2010
Prep Date.....: 01/06/2011 **Analysis Date...** 01/06/2011
Prep Batch #.....: 1007078
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	4.75	34	32	95	70 - 130
1,1,2-Trichloroethane	5.00	5.19	27	28	104	70 - 130
Trichloroethene	5.00	4.92	27	26	98	70 - 130
Chloroform	5.00	4.97	24	24	99	70 - 130
1,1-Dichloroethene	5.00	4.85	20	19	97	70 - 130
cis-1,2-Dichloroethene	5.00	5.24	20	21	105	70 - 130
trans-1,2-Dichloroethene	5.00	5.32	20	21	106	70 - 130

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	100	60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

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

Canister Samples Chain of Custody Record

HVL 231539

TestAmerica

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

THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information				Project Manager:		Sampled By: ADD TW		5 of COCs			
Company:				Phone:							
Address:				Site Contact:							
City/State/Zip				TAL Contact:							
Phone:											
FAX:											
Project Name:				Analysis Turnaround Time							
Site/location:				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	
13a				12-22-10	1544			12342	N/A	12342	
13b				12-22-10	1549			6543	N/A	6543	
14a				12-22-10	1431			9205			
14b				12-22-10	1444			1406			
15a				12-22-10	1450			1531			
15b				12-22-10	1535			1317			
Sampled by:				Temperature (Fahrenheit)							
Angelica Nijamic-Rogers				Interior		Ambient				4 BOXES RETURNED AMBIENT	
Terry Williams				Start						UP5H'S 12667 17W01 4957 4958	
				Stop						12 667 17W01 4804 49160	
										12 667 17W01 4995 7795	
										12 667 17W01 4712 2710	
										NO CUSTODY SEALS	
										19 CANS & FLOW'S	
										TS 12/23/10	
Special Instructions/QC Requirements & Comments:											
Canisters Shipped by: 12-22-10 4:10P											
Samples Relinquished by: Received by: 12/23/10 10:30											
Relinquished by: Received by:											

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

Canister Samples Chain of Custody Record

HDL 221539

TestAmerica

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

THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information		Project Manager: <u>ADD/TW</u>		Sampled By:		of		COCs											
Company: <u>MILCO ENVIRONMENTAL</u>	Phone:	Site Contact:		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)		
Address:		TAL Contact:																	
City/State/Zip: <u>McCook NE</u>																			
Phone:																			
FAX:																			
Project Name: <u>Dorchard 6000000</u>		Analysis Turnaround Time																	
Site/location:		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											
<u>Neiman front (back) 5ft</u>		<u>12-22-10 0957</u>	<u>1017</u>	<u>1619</u>			<u>N/A</u>	<u>51491</u>											
<u>Neiman back 5ft</u>		<u>12-22-10 0957</u>	<u>0950</u>	<u>0950</u>			<u>N/A</u>	<u>7478</u>											
<u>Ahrens back 5ft</u>		<u>12-22-10 1214</u>	<u>1219</u>	<u>1219</u>			<u>N/A</u>	<u>6596</u>											
<u>Neiman front 15ft</u>		<u>12-22-10 1008</u>	<u>1013</u>	<u>1013</u>			<u>N/A</u>	<u>1489</u>											
<u>Neiman west 15ft</u>		<u>12-22-10 1008</u>	<u>1013</u>	<u>1013</u>			<u>N/A</u>	<u>1143</u>											
<u>Ahrens back 15ft</u>		<u>12-22-10 1027</u>	<u>1232</u>	<u>1232</u>			<u>N/A</u>	<u>1296</u>											
Sampled by:		Temperature (Fahrenheit)																	
<u>Angela Dijanic-Rogers</u>		Ambient																	
<u>Terry Williams</u>		Interior																	
		Start																	
		Stop																	
		Pressure (inches of Hg)																	
		Ambient																	
		Interior																	
		Start																	
		Stop																	
Special Instructions/QC Requirements & Comments:																			
Canisters Shipped by:		Date/Time:		Canisters Received by:															
Samples Relinquished by: <u>Angela Dijanic-Rogers</u>		Date/Time: <u>12-22-10 4:11P</u>		Received by: <u>W. Smith</u>		Date/Time: <u>12/23/10 10:30</u>													
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

402-230539

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

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

Client Contact Information				Project Manager:				Sampled By:				6 of COCs							
Company:				Phone:															
Address:				Site Contact:															
City/State/Zip				TAL Contact:															
Phone:																			
FAX:																			
Project Name:				Analysis Turnaround Time															
Site/location:				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)
16a	12-22-10	15:20	15:25				469	X											
16b	12-22-10	15:30	15:35				6592	P											
17a		15:46	15:50				6674	P											
17b		16:00	16:05				11225	P											
18a																			
18b																			
Sampled by:																			
Temperature (Fahrenheit)																			
Ambient																			
Interior																			
Start																			
Stop																			
Pressure (inches of Hg)																			
Ambient																			
Interior																			
Start																			
Stop																			
Special Instructions/QC Requirements & Comments:																			
Canisters Shipped by:				Date/Time:				Canisters Received by:											
Samples Relinquished by:				Date/Time:				Received by:											
Relinquished by:				Date/Time:				Received by:											

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Lot Number: 110224539

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:	1A - COC, LISTS COLLECTION DATA FOR THE FOLLOWING SAMPLES AS 12/22/10; TAGS SAY 12/24/10 13a 13b NEUMAN FRONT 15ft. COL LISTS ID AS NEUMAN WEST 15ft.; TAG SAYS NEUMAN EAST 15ft. COC LISTS JAN 10 AS 11245; JAN 10 IS 11295 4A
2. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C; NC, 1668, 1613B: 0-4 °C; VOST: 10 °C; MA: 2-6 °C)			☒	☐ 2a Temp Blank = ☐ 2b Cooler Temp =	
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?	☒				

Quote #: _____ PM Instructions: _____

Sample Receiving Associate: [Signature] Date: 12/23/10

QA026R21.doc, 090409

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

Lot Number: H0L230539

Initial Can Pressure										Subsequent Dilutions								
Analyst/Date	Tedlar Bag Time	Pbarr (in)	Sample ID	Can #	Pres. 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 In-can Final Pres. Pf (psig)	Second In-can Final Pres. Pf (psig)	Third In-can Final Pres. Pf (psig)	Serial Dilution Can #	Vol (mL)	Final Pres. Pf (psig)	Comments
W 12/21/10	NA	28.14	MCRNE	12342	-0.9	-												8972
			MCRNG	6593	-1.8													8977
			MCRNH	92095	-0.3													8972
			MCRNJ	1406	-0.3													8971
			MCRNL	1531	-0.9													8972
			MCRNM	1317	-1.1	+0.5												8971
			MCRNP	81491	-7.7	-												8973
			MCRNQ	7478	-8.7	+0.3												8972
			MCRNR	6596	+0.2	-												8971
			MCRNV	1489	-1.0	-												8973
			MCRNW	1143	+0.2													8971
			MCRNX	1296	0.0													↓
			MCRN0	1409	-0.6													8972
			MCRN1	6592	-13.8	+0.5												8971
			MCRN2	6674	-2.2	-												8971
			MCRN4	11295	-13.5	+0.5												8972
			MCRPA	6663	-22.7	+0.8												8981
			MCRPD	1362N	-11.6	+2.1												↓

H0L230530 Analytical Report.....	1
Sample Receipt Documentation	33
Total Number of Pages	39

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

REVISED

PROJECT NO. 56995J1036007

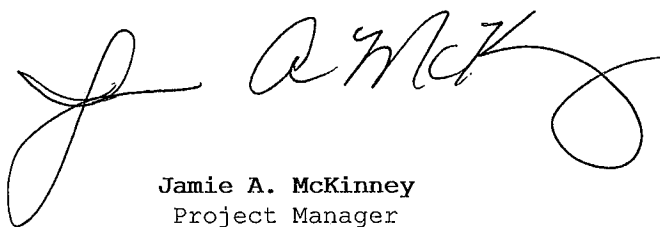
McCook

Lot #: H0L230530

Susan Scrocchi

Conestoga-Rovers & Associates,
2055 Niagara Falls Blvd.
Suite Three
Niagara Falls, NY 14304

TESTAMERICA LABORATORIES, INC.



Jamie A. McKinney
Project Manager

February 16, 2011

ANALYTICAL METHODS SUMMARY

H0L230530

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>
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

H0L230530

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
MCRJ8	001	1A	12/20/10	09:50
MCRKL	002	1B	12/20/10	13:55
MCRKT	003	2A	12/20/10	10:20
MCRK0	004	2B	12/20/10	10:50
MCRK2	005	3A	12/20/10	11:10
MCRK4	006	3B	12/20/10	11:25
MCRLA	007	4A	12/20/10	11:30
MCRLD	008	4B	12/20/10	11:46
MCRLF	009	5A	12/20/10	12:01
MCRLJ	010	5B	12/20/10	12:11
MCRLK	011	6A	12/20/10	12:17
MCRLI	012	6B	12/20/10	12:28
MCRLM	013	7A	12/21/10	12:38
MCRLN	014	7B	12/21/10	12:46
MCRLP	015	8A	12/21/10	13:06
MCRLQ	016	8B	12/21/10	13:21
MCRLR	017	9A	12/21/10	13:51
MCRLT	018	9B	12/21/10	13:57
MCRL0	019	10A	12/21/10	14:01
MCRL3	020	10B	12/21/10	14:18
MCRL4	021	11A	12/21/10	14:52
MCRL5	022	11B	12/21/10	15:06
MCRL6	023	12A	12/21/10	15:22
MCRL7	024	12B	12/21/10	15:30

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
HOL230530
REVISED

This report has been revised. Results below the reporting limit have not been include in this report.

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 was included with the original report.

Sample Receipt

Custody seals were not present.

The collection date listed on the chain of custody documentation did not match the date listed on the sample containers for the following samples: 3A, 3B, 4A, 4B, 5A, 5B, 6A and 6B.

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.

The surrogate recoveries for batch 1007230 were quantified using the daily calibration verification standard.

TestAmerica Knoxville maintains the following certifications, approvals and accreditations: Arkansas DEQ Lab #88-0688, California DHS ELAP Cert. #2423, Colorado DPHE, Connecticut DPH Lab #PH-0223, Florida DOH Lab #E87177, Georgia DNR Lab #906, Hawaii DOH, Illinois EPA Lab #200012, Indiana DOH Lab #C-TN-02, Iowa DNR Lab #375, Kansas DHE Cert. #E-10349, Kentucky DEP Lab #90101, Louisiana DEQ Cert. #03079, Louisiana DOHH, Maryland DOE Cert. #277, Michigan DEQ Lab #9933, Nevada DEP, New Jersey DEP Lab #TN001, New York DOH Lab #10781, North Carolina DPH Lab #21705, North Carolina DEHNR Cert. #64, Ohio EPA VAP Lab #CL0059, Oklahoma DEQ Lab #9415, Pennsylvania DEP Lab #68-00576, South Carolina DHEC Cert #84001001, Tennessee DOH Lab #02014, Texas CEQ, Utah DOH Lab # QUAN3, Virginia DGS Lab #00165, Washington DOE Lab #C1314, West Virginia DEP Cert. #345, West Virginia DHHR Cert #9955C, Wisconsin DNR Lab #998044300, Naval Facilities Engineering Service Center and USDA Soil Permit #S-46424. This list of approvals is subject to change and does not imply that laboratory certification is available for all parameters reported in this environmental sample data report.

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 1A

GC/MS Volatiles

Lot-Sample # HOL230530 - 001 **Work Order #** MCRJ81AA **Matrix.....:** AIR
Date Sampled...: 12/20/2010 **Date Received...:** 12/23/2010
Prep Date.....: 01/07/2011 **Analysis Date...** 01/07/2011
Prep Batch #.....: 1007230
Dilution Factor.: 1 **Method.....:** TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	0.10	0.080	0.70	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	1.0	0.040	5.5	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32
 SURROGATE	 	 PERCENT RECOVERY	 	 LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene		97		60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 1B

GC/MS Volatiles

Lot-Sample # HOL230530 - 002 **Work Order #** MCRKL1AA **Matrix.....:** AIR
Date Sampled...: 12/20/2010 **Date Received...:** 12/23/2010
Prep Date.....: 01/07/2011 **Analysis Date...** 01/07/2011
Prep Batch #.....: 1007230
Dilution Factor.: 1 **Method.....:** TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	6.7	0.040	36	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	98	60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 2A

GC/MS Volatiles

Lot-Sample # H0L230530 - 003 **Work Order #** MCRKT1AA **Matrix.....:** AIR
Date Sampled...: 12/20/2010 **Date Received...:** 12/23/2010
Prep Date.....: 01/07/2011 **Analysis Date...** 01/07/2011
Prep Batch #.....: 1007230
Dilution Factor..: 1 **Method.....:** TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	0.13	0.040	0.69	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

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

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 2B

GC/MS Volatiles

Lot-Sample # HOL230530 - 004 **Work Order #** MCRK01AA **Matrix.....:** AIR
Date Sampled...: 12/20/2010 **Date Received...:** 12/23/2010
Prep Date.....: 01/07/2011 **Analysis Date...** 01/07/2011
Prep Batch #.....: 1007230
Dilution Factor..: 1 **Method.....:** TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	1.2	0.040	6.4	0.21
Chloroform	0.11	0.080	0.56	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

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

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 3A

GC/MS Volatiles

Lot-Sample # HOL230530 - 005 Work Order # MCRK21AA Matrix.....: AIR

Date Sampled...: 12/20/2010 Date Received...: 12/23/2010
 Prep Date.....: 01/07/2011 Analysis Date... 01/07/2011
 Prep Batch #.....: 1007230
 Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	98	60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 3B

GC/MS Volatiles

Lot-Sample #	H0L230530 - 006	Work Order #	MCRK41AA	Matrix.....:	AIR
Date Sampled...:	12/20/2010	Date Received...:	12/23/2010		
Prep Date.....:	01/07/2011	Analysis Date...:	01/08/2011		
Prep Batch #.....:	1007230				
Dilution Factor...:	1	Method.....:	TO-15		

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	0.28	0.080	1.9	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	0.12	0.040	0.65	0.21
Chloroform	0.34	0.080	1.6	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

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

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 4A

GC/MS Volatiles

Lot-Sample # H0L230530 - 007 Work Order # MCRLA1AA Matrix.....: AIR

Date Sampled...: 12/20/2010 Date Received...: 12/23/2010
 Prep Date.....: 01/07/2011 Analysis Date...: 01/08/2011
 Prep Batch #....: 1007230
 Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32
SURROGATE		PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)	
4-Bromofluorobenzene		95	60 - 140	

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 4B

GC/MS Volatiles

Lot-Sample #	H0L230530 - 008	Work Order #	MCRLD1AA	Matrix.....:	AIR
Date Sampled...:	12/20/2010	Date Received...:	12/23/2010		
Prep Date.....:	01/07/2011	Analysis Date...:	01/08/2011		
Prep Batch #.....:	1007230				
Dilution Factor.:	1	Method.....:	TO-15		

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	0.082	0.080	0.55	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	0.083	0.040	0.45	0.21
Chloroform	0.27	0.080	1.3	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32
SURROGATE		PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)	
4-Bromofluorobenzene		94	60 - 140	

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 5A

GC/MS Volatiles

Lot-Sample # H0L230530 - 009 Work Order # MCRLF1AA Matrix.....: AIR

Date Sampled...: 12/20/2010 Date Received...: 12/23/2010
 Prep Date.....: 01/07/2011 Analysis Date...: 01/08/2011
 Prep Batch #....: 1007230
 Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	0.080	0.080	0.54	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	0.59	0.080	2.9	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	97	60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 5B

GC/MS Volatiles

Lot-Sample # H0L230530 - 010 **Work Order #** MCRLJ1AA **Matrix.....:** AIR
Date Sampled...: 12/20/2010 **Date Received...:** 12/23/2010
Prep Date.....: 01/07/2011 **Analysis Date...** 01/08/2011
Prep Batch #.....: 1007230
Dilution Factor.: 1 **Method.....:** TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	0.27	0.080	1.9	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	0.32	0.040	1.7	0.21
Chloroform	0.10	0.080	0.51	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32
SURROGATE		PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)	
4-Bromofluorobenzene		96	60 - 140	

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 6A

GC/MS Volatiles

Lot-Sample # H0L230530 - 011 Work Order # MCRLK1AA Matrix.....: AIR

Date Sampled...: 12/20/2010 Date Received...: 12/23/2010
 Prep Date.....: 01/10/2011 Analysis Date... 01/10/2011
 Prep Batch #.....: 1010210
 Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	0.17	0.080	0.84	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	112	60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 6B

GC/MS Volatiles

Lot-Sample # H0L230530 - 012 Work Order # MCRL1AA Matrix.....: AIR

Date Sampled...: 12/20/2010 Date Received...: 12/23/2010
 Prep Date.....: 01/10/2011 Analysis Date... 01/10/2011
 Prep Batch #....: 1010210
 Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	0.12	0.080	0.83	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	0.68	0.080	3.3	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	117	60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 7A

GC/MS Volatiles

Lot-Sample # H0L230530 - 013 **Work Order #** MCRLM1AA **Matrix.....:** AIR
Date Sampled...: 12/21/2010 **Date Received...:** 12/23/2010
Prep Date.....: 01/10/2011 **Analysis Date...** 01/10/2011
Prep Batch #.....: 1010210
Dilution Factor..: 1 **Method.....:** TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	118	60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 7B

GC/MS Volatiles

Lot-Sample # H0L230530 - 014 Work Order # MCRLN1AA Matrix.....: AIR

Date Sampled...: 12/21/2010 Date Received...: 12/23/2010
 Prep Date.....: 01/10/2011 Analysis Date...: 01/10/2011
 Prep Batch #....: 1010210
 Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	0.13	0.080	0.89	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	0.32	0.080	1.6	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	117	60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 8A

GC/MS Volatiles

Lot-Sample # H0L230530 - 015 Work Order # MCRLP1AA Matrix.....: AIR

Date Sampled...: 12/21/2010 Date Received...: 12/23/2010
 Prep Date.....: 01/10/2011 Analysis Date...: 01/10/2011
 Prep Batch #....: 1010210
 Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	0.097	0.080	0.47	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	118	60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 8B

GC/MS Volatiles

Lot-Sample # H0L230530 - 016 Work Order # MCRLQ1AA Matrix.....: AIR

Date Sampled...: 12/21/2010 Date Received...: 12/23/2010
 Prep Date.....: 01/10/2011 Analysis Date...: 01/10/2011
 Prep Batch #....: 1010210
 Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	0.18	0.080	1.2	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	121	60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 9A

GC/MS Volatiles

Lot-Sample # H0L230530 - 017 Work Order # MCRLR1AA Matrix.....: AIR

Date Sampled...: 12/21/2010 Date Received...: 12/23/2010
 Prep Date.....: 01/10/2011 Analysis Date...: 01/10/2011
 Prep Batch #....: 1010210
 Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	0.094	0.080	0.64	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	118	60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 9B

GC/MS Volatiles

Lot-Sample # H0L230530 - 018 Work Order # MCRLT1AA Matrix.....: AIR

Date Sampled...: 12/21/2010 Date Received...: 12/23/2010
 Prep Date.....: 01/10/2011 Analysis Date... 01/10/2011
 Prep Batch #.....: 1010210
 Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	0.14	0.080	0.94	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	118	60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 10A

GC/MS Volatiles

Lot-Sample #	H0L230530 - 019	Work Order #	MCRL01AA	Matrix.....:	AIR
Date Sampled...:	12/21/2010	Date Received...:	12/23/2010		
Prep Date.....:	01/10/2011	Analysis Date...:	01/10/2011		
Prep Batch #.....:	1010210				
Dilution Factor.:	1	Method.....:	TO-15		

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	123	60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 10B

GC/MS Volatiles

Lot-Sample # H0L230530 - 020 **Work Order #** MCRL31AA **Matrix.....:** AIR
Date Sampled...: 12/21/2010 **Date Received...:** 12/23/2010
Prep Date.....: 01/10/2011 **Analysis Date...:** 01/10/2011
Prep Batch #.....: 1010210
Dilution Factor.: 1 **Method.....:** TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	0.49	0.080	3.3	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	117	60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 11A

GC/MS Volatiles

Lot-Sample # H0L230530 - 021 Work Order # MCRL41AA Matrix.....: AIR

Date Sampled...: 12/21/2010 Date Received...: 12/23/2010
 Prep Date.....: 01/10/2011 Analysis Date...: 01/10/2011
 Prep Batch #....: 1010210
 Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	0.96	0.080	6.5	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	118	60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 11B

GC/MS Volatiles

Lot-Sample # H0L230530 - 022 Work Order # MCRL51AA Matrix.....: AIR

Date Sampled...: 12/21/2010 Date Received...: 12/23/2010
 Prep Date.....: 01/10/2011 Analysis Date... 01/11/2011
 Prep Batch #.....: 1010210
 Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	0.58	0.080	3.9	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	118	60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 12A

GC/MS Volatiles

Lot-Sample # H0L230530 - 023 Work Order # MCRL61AA Matrix.....: AIR

Date Sampled...: 12/21/2010 Date Received...: 12/23/2010
 Prep Date.....: 01/10/2011 Analysis Date...: 01/11/2011
 Prep Batch #....: 1010210
 Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	117	60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.

Client Sample ID: 12B

GC/MS Volatiles

Lot-Sample # H0L230530 - 024 Work Order # MCRL71AA Matrix.....: AIR

Date Sampled...: 12/21/2010 Date Received...: 12/23/2010
 Prep Date.....: 01/10/2011 Analysis Date...: 01/11/2011
 Prep Batch #....: 1010210
 Dilution Factor.: 1 Method.....: TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	0.24	0.080	1.6	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	0.15	0.040	0.78	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	118	60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.
Client Sample ID: INTRA-LAB BLANK
GC/MS Volatiles

Lot-Sample # H1A070000 - 230B	Work Order # MC5221AA	Matrix.....: AIR
Prep Date.....: 12/20/2010	Date Received...: 12/23/2010	
Prep Date.....: 01/07/2011	Analysis Date...: 01/07/2011	
Prep Batch #.....: 1007230		
Dilution Factor.: 1	Method.....: TO-15	

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

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

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.
Client Sample ID: CHECK SAMPLE
GC/MS Volatiles

Lot-Sample # H1A070000 - 230C **Work Order #** MC5221AC **Matrix.....:** AIR

Prep Date.....: 12/20/2010 **Date Received..:** 12/23/2010
Prep Date.....: 01/07/2011 **Analysis Date...** 01/07/2011
Prep Batch #.....: 1007230
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	4.42	34	30	88	70 - 130
1,1,2-Trichloroethane	5.00	4.05	27	22	81	70 - 130
Trichloroethene	5.00	4.41	27	24	88	70 - 130
Chloroform	5.00	5.08	24	25	102	70 - 130
1,1-Dichloroethene	5.00	5.88	20	23	118	70 - 130
cis-1,2-Dichloroethene	5.00	5.14	20	20	103	70 - 130
trans-1,2-Dichloroethene	5.00	5.42	20	21	108	70 - 130

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	100	60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.
Client Sample ID: INTRA-LAB BLANK
GC/MS Volatiles

Lot-Sample #	H1A100000 - 210B	Work Order #	MC7F71AA	Matrix.....:	AIR
	12/20/2010	Date Received..:	12/23/2010		
Prep Date.....:	01/10/2011	Analysis Date...	01/10/2011		
Prep Batch #.....:	1010210				
Dilution Factor.:	1	Method.....:	TO-15		

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Tetrachloroethene	ND	0.080	ND	0.54
1,1,2-Trichloroethane	ND	0.080	ND	0.44
Trichloroethene	ND	0.040	ND	0.21
Chloroform	ND	0.080	ND	0.39
1,1-Dichloroethene	ND	0.080	ND	0.32
cis-1,2-Dichloroethene	ND	0.080	ND	0.32
trans-1,2-Dichloroethene	ND	0.080	ND	0.32

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	111	60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

Conestoga-Rovers & Associates, Inc.
Client Sample ID: CHECK SAMPLE
GC/MS Volatiles

Lot-Sample # H1A100000 - 210C **Work Order #** MC7F71AC **Matrix.....:** AIR

Prep Date.....: 12/20/2010 **Date Received..:** 12/23/2010
Prep Date.....: 01/10/2011 **Analysis Date...** 01/10/2011
Prep Batch #.....: 1010210
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	4.16	34	28	83	70 - 130
1,1,2-Trichloroethane	5.00	3.82	27	21	76	70 - 130
Trichloroethene	5.00	5.56	27	30	111	70 - 130
Chloroform	5.00	5.32	24	26	106	70 - 130
1,1-Dichloroethene	5.00	6.28	20	25	126	70 - 130
cis-1,2-Dichloroethene	5.00	5.44	20	22	109	70 - 130
trans-1,2-Dichloroethene	5.00	5.65	20	22	113	70 - 130

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
4-Bromofluorobenzene	121	60 - 140

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

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

Canister Samples Chain of Custody Record

H02 230530

TestAmerica

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

THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information				Project Manager: Jeff Gwin		Sampled By: ADR/JW		1 of COCs											
Company: Northrop Grumman Corp				Phone:															
Address: 1840 Anthony Park East				Site Contact:															
City/State/Zip: Los Angeles CA 90067				TAL Contact:															
Phone: 502-928-2755/2759																			
FAX:																			
Project Name: M200-89-14				Analysis Turnaround Time															
Site/location: McCoell NE				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)
Vapor Sample 1a	12-20-10	0945	0950			N/A	1491	X									X		
1b	12-20-10	1000	1355			N/A	1355	X									X		
2a	12-20-10	1015	1020			N/A	1153	X									X		
2b	12-20-10	1045	1050			N/A	1500	X									X		
3a	12-20-10	1105	1110			N/A	7782	X									X		
3b	12-20-10	1116	1125			N/A	12935	X									X		
Sampled by: Angie Dujanic-Rogers Terry Williams				Temperature (Fahrenheit)				4 BOWLS RECEIVED AMBIENT											
				Interior	Ambient														
				Start															
				Stop															
				Pressure (Inches of Hg)				12667 17W 014917 1722											
				Interior	Ambient														
				Start															
				Stop															
Special Instructions/QC Requirements & Comments:				Canisters Shipped by:				12667 17W 014989 2382											
				Date/Time:															
				Date/Time:															
				Date/Time:															
Canisters Relinquished by:				Date/Time:		12-22-10 / 4:10 PM		Received by: [Signature]											
Relinquished by:				Date/Time:				Received by:											

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

Canister Samples Chain of Custody Record

HDL 230530

TestAmerica

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

THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information			Project Manager:		Sampled By: ADE/TW		2 of COCs												
Company: Northrop Grumman			Phone:																
Address: 1840			Site Contact:																
City/State/Zip			TAL Contact:																
Phone:																			
FAX:																			
Project Name:			Analysis Turnaround Time																
Site/location:			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)
4a	12-20-10	1125	1130			N/A	7474	X									X		
4b	12-20-10	1141	1146			N/A	1396	X									X		
5a	12-20-10	1157	1201			N/A	12268	X									X		
5b	12-20-10	1206	1211			N/A	93055	X									X		
6a	12-20-10	1215	1217			N/A	92019	X									X		
6b	12-20-10	1223	1228			N/A	6362	X									X		
Sampled by: Angie Djanic-Rogers Terry Williams																			
Special Instructions/QC Requirements & Comments:																			
Canisters Shipped by:																			
Canisters Relinquished by: <i>Angie Djanic-Rogers</i>																			
Relinquished by:																			
Canisters Received by:																			
Received by: <i>Michelle</i> 12/23/10 10:30																			

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HOL-2053D
Canister Samples Chain of Custody Record

TestAmerica

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

THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information		Project Manager:		Sampled By: ADR TW		3 of COCs													
Company:		Phone:																	
Address:		Site Contact:																	
City/State/Zip		TAL Contact:																	
Phone:																			
FAX:																			
Project Name:		Analysis Turnaround Time																	
Site/location:		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	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)	
7a	12-21-10	1234	1238			N/A	6116	X								X			
7b	12-21-10	1241	1246			N/A	12829	X								X			
8a	12-21-10	1301	1306			N/A	7510	X								X			
8b	12-21-10	1316	1321			N/A	1358N	X								X			
9a	12-21-10	1349	1350			N/A	1303N	X								X			
9b	12-21-10	1352	1359			N/A	7485	X								X			
Sampled by: Angela Dijanic-Rogers Terry Williams		Temperature (Fahrenheit)																	
		Interior		Ambient															
		Start																	
		Stop																	
		Pressure (inches of Hg)																	
		Interior		Ambient															
		Start																	
		Stop																	
Special Instructions/QC Requirements & Comments:																			
Canisters Shipped by:		Date/Time:		Canisters Received by:															
Samples Relinquished by:		Date/Time:		Received by:															
Relinquished by:		Date/Time:		Received by:															

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5815 Middlebrook Pike
Knoxville, TN 37921
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Canister Samples Chain of Custody Record

402-330530

TestAmerica

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THE LEADER IN ENVIRONMENTAL TESTING

Client Contact Information		Project Manager:		Sampled By: ADR/JTN		4 of COCs															
Company:		Phone:																			
Address:		Site Contact:																			
City/State/Zip		TAL Contact:																			
Phone:																					
FAX:																					
Project Name:		Analysis Turnaround Time																			
Site/location:		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)		
10a	12-21-10	1401				N/A	6654	X									X				
10b	12-21-10	1418				N/A	6675	X									X				
11a	12-21-10	1452				N/A	12404	X									X				
11b	12-21-10	1506				N/A	7511	X									X				
12a	12-21-10	1522				N/A	11287	X									X				
12b	12-21-10	1530				N/A	93271	X									X				
Sampled by: Angela D'Janic Rogers Terry Williams		Temperature (Fahrenheit)																			
		Interior		Ambient																	
		Start																			
		Stop																			
		Pressure (inches of Hg)																			
		Interior		Ambient																	
		Start																			
		Stop																			
Special Instructions/QC Requirements & Comments:																					
Canisters Shipped by:		Date/Time:		Canisters Received by:																	
Samples Relinquished by:		Date/Time:		Received by:																	
Relinquished by:		Date/Time:		Received by:																	

Lot Number: H01222530

Quote #: 87812 PM Instructions: N/A

Date: 2/23/10

OA026R21.doc, 090409

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

Lot Number: H0L230530

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 In-can Final Pres. Pf (psig)	Second In-can Final Pres. Pf (psig)	Third In-can Final Pres. Pf (psig)	Serial Dilution Can #	Vol (mL)	Final Pres. Pf (psig)	Comments	
CW 12/25/10	NA	29.14	MCRJ8	1491	-0.2	T											8973		
			MCRKL	1355	-0.2														
			MCRKT	1153	-0.7														
			MCRK0	1500	-1.7														
			MCRK2	7782	-1.3												8972		
			MCRK4	12735	-2.1												8973		
			MCRLA	7474	-0.6												8972		
			MCRLD	1396	-4.9												8971		
			MCRLF	12268	-1.1														
			MCRLJ	93055	-2.2												8972		
			MCRLK	92019	-0.3												8976		
			MCRLI	6362	-1.1												8977		
			MCRLM	6116	-0.7												8976		
			MCRLN	12829	-1.6												8977		
			MCRLP	7510	-1.2												8976		
			MCRLQ	1358N	-2.1												8977		
			MCRLR	1303N	-1.1														
			MCRLT	7485	-4.3												8976		
			MCRL0	6654	-0.9														
			MCRL3	6675	-1.9														

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

Lot Number: H0L230530

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 In-can Final Pres. Pf (psig)	Second In-can Final Pres. Pf (psig)	Third In-can Final Pres. Pf (psig)	Serial Dilution Can #	Vol (mL)	Final Pres. Pf (psig)	Comments
C 12/21/10	NA	28.14	MCRL4	12404	-1.1	-												876
			MCRL5	7511	-1.4	-												873
			MCRL6	11287	-0.8	↓												876
			MCRL7	93271	-1.8	+0.8												↓

ANALYTICAL REPORT

PROJECT NO. 56995

J1036 McCook SSOW 010

Lot #: A0L280417

Sue Scrocchi

Conestoga-Rovers & Associates,
2055 Niagara Falls Blvd.
Suite Three
Niagara Falls, NY 14304

TESTAMERICA LABORATORIES, INC.



Denise D. Heckler
Project Manager

denise.heckler@testamericainc.com

Approved for release.
Denise D. Heckler
Project Manager
1/10/2011 11:42 AM

January 07, 2011

TestAmerica Laboratories, Inc.

TestAmerica North Canton 4101 Shuffel Street NW, North Canton, OH 44720

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CASE NARRATIVE

A0L280417

The following report contains the analytical results for one water sample and one quality control sample submitted to TestAmerica North Canton by Conestoga-Rovers & Associates, Inc. from the J1036 McCook SSOW 010 Site, project number 56995. The samples were received December 23, 2010, according to documented sample acceptance procedures.

TestAmerica utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. A summary of QC data for these analyses is included at the back of the report.

TestAmerica North Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

All parameters were evaluated to the method detection limit and include qualified results where applicable.

Please refer to the Quality Control Elements Narrative following this case narrative for additional quality control information.

If you have any questions, please call the Project Manager, Denise D. Heckler, at 330-497-9396.

This report is sequentially paginated. The final page of the report is labeled as "END OF REPORT."

CASE NARRATIVE (continued)

SUPPLEMENTAL QC INFORMATION

SAMPLE RECEIVING

The temperature of the cooler upon sample receipt was 2.0°C.

GC VOLATILES

There were no client requested Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples in batch(es) 0364216. Therefore, the laboratory has included a Laboratory Control Sample Duplicate (LCSD) in the QC batch. The LCSD recoveries, together with the LCS recoveries, are used to determine the reproducibility (precision) of the analytical system.

The Method Blank associated with batch(es) 0364216 contained reportable amounts of Methylene Chloride. However, the analyte was not detected in samples(s) TRIP BLANK and no further corrective action was necessary.

QUALITY CONTROL ELEMENTS NARRATIVE

TestAmerica conducts a quality assurance/quality control (QA/QC) program designed to provide scientifically valid and legally defensible data. Toward this end, several types of quality control indicators are incorporated into the QA/QC program, which is described in detail in QA Policy, QA-003. These indicators are introduced into the sample testing process to provide a mechanism for the assessment of the analytical data. Program or agency specific requirements take precedence over the requirements listed in this narrative.

QC BATCH

Environmental samples are taken through the testing process in groups called QUALITY CONTROL BATCHES (QC batches). A QC batch contains up to twenty environmental samples of a similar matrix (water, soil) that are processed using the same reagents and standards. TestAmerica North Canton requires that each environmental sample be associated with a QC batch.

Several quality control samples are included in each QC batch and are processed identically to the twenty environmental samples.

For SW846/RCRA methods, QC samples include a METHOD BLANK (MB), a LABORATORY CONTROL SAMPLE (LCS) and, where appropriate, a MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) pair or a MATRIX SPIKE/SAMPLE DUPLICATE (MS/DU) pair. If there is insufficient sample to perform an MS/MSD or an MS/DU, then a LABORATORY CONTROL SAMPLE DUPLICATE (LCSD) is included in the QC batch.

For 600 series/CWA methods, QC samples include a METHOD BLANK (MB), a LABORATORY CONTROL SAMPLE (LCS) and, where appropriate, a MATRIX SPIKE (MS). An MS is prepared and analyzed at a 10% frequency for GC Methods and at a 5% frequency for GC/MS methods.

LABORATORY CONTROL SAMPLE

The Laboratory Control Sample is a QC sample that is created by adding known concentrations of a full or partial set of target analytes to a matrix similar to that of the environmental samples in the QC batch. Multi peak responders may not be included in the target spike list due to co-elution. The LCS analyte recovery results are used to monitor the analytical process and provide evidence that the laboratory is performing the method within acceptable guidelines. All control analytes indicated by a bold type in the LCS must meet acceptance criteria. Failure to meet the established recovery guidelines requires the reparation and reanalysis of all samples in the QC batch. Comparison of only the failed parameters from the first batch are evaluated. The only exception to the rework requirement is that if the LCS recoveries are biased high and the associated sample is ND (non-detected) for the parameter(s) of interest, the batch is acceptable.

At times, a Laboratory Control Sample Duplicate (LCSD) is also included in the QC batch. An LCSD is a QC sample that is created and handled identically to the LCS. Analyte recovery data from the LCSD is assessed in the same way as that of the LCS. The LCSD recoveries, together with the LCS recoveries, are used to determine the reproducibility (precision) of the analytical system. Precision data are expressed as relative percent differences (RPDs). If the RPD fails for an LCS/LCSD and yet the recoveries are within acceptance criteria, the batch is still acceptable.

METHOD BLANK

The Method Blank is a QC sample consisting of all the reagents used in analyzing the environmental samples contained in the QC batch. Method Blank results are used to determine if interference or contamination in the analytical system could lead to the reporting of false positive data or elevated analyte concentrations. All target analytes must be below the reporting limits (RL) or the associated sample(s) must be ND except under the following circumstances:

- Common organic contaminants may be present at concentrations up to 5 times the reporting limits. Common metals contaminants may be present at concentrations up to 2 times the reporting limit, or the reported blank concentration must be twenty fold less than the concentration reported in the associated environmental samples. (See common laboratory contaminants listed in the table.)

<u>Volatile (GC or GC/MS)</u>	<u>Semivolatile (GC/MS)</u>	<u>Metals ICP-MS</u>	<u>Metals ICP Trace</u>
Methylene Chloride, Acetone, 2-Butanone	Phthalate Esters	Copper, Iron, Zinc, Lead, Calcium, Magnesium, Potassium, Sodium, Barium, Chromium, Manganese	Copper, Iron, Zinc, Lead

QUALITY CONTROL ELEMENTS NARRATIVE (continued)

- Organic blanks will be accepted if compounds detected in the blank are present in the associated samples at levels 10 times the blank level. Inorganic blanks will be accepted if elements detected in the blank are present in the associated samples at 20 times the blank level.
- Blanks will be accepted if the compounds/elements detected are not present in any of the associated environmental samples.

Failure to meet these Method Blank criteria requires the reparation and reanalysis of all samples in the QC batch.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

A Matrix Spike and a Matrix Spike Duplicate are a pair of environmental samples to which known concentrations of a full or partial set of target analytes are added. The MS/MSD results are determined in the same manner as the results of the environmental sample used to prepare the MS/MSD. The analyte recoveries and the relative percent differences (RPDs) of the recoveries are calculated and used to evaluate the effect of the sample matrix on the analytical results. Due to the potential variability of the matrix of each sample, the MS/MSD results may not have an immediate bearing on any samples except the one spiked; therefore, the associated batch MS/MSD may not reflect the same compounds as the samples contained in the analytical report. When these MS/MSD results fail to meet acceptance criteria, the data is evaluated. If the LCS is within acceptance criteria, the batch is considered acceptable.

For certain methods, a Matrix Spike/Sample Duplicate (MS/DU) may be included in the QC batch in place of the MS/MSD. For the parameters (i.e. pH, ignitability) where it is not possible to prepare a spiked sample, a Sample Duplicate may be included in the QC batch. However, a Sample Duplicate is less likely to provide usable precision statistics depending on the likelihood of finding concentrations below the standard reporting limit. When the Sample Duplicate result fails to meet acceptance criteria, the data is evaluated.

For certain methods (600 series methods/CWA), a Matrix Spike is required in place of a Matrix Spike/Matrix Spike Duplicate (MS/MSD) or Matrix Spike/Sample Duplicate (MS/DU).

The acceptance criteria do not apply to samples that are diluted.

SURROGATE COMPOUNDS

In addition to these batch-related QC indicators, each organic environmental and QC sample is spiked with surrogate compounds. Surrogates are organic chemicals that behave similarly to the analytes of interest and that are rarely present in the environment. Surrogate recoveries are used to monitor the individual performance of a sample in the analytical system.

If surrogate recoveries are biased high in the LCS, LCSD, or the Method Blank, and the associated sample(s) are ND, the batch is acceptable. Otherwise, if the LCS, LCSD, or Method Blank surrogate(s) fail to meet recovery criteria, the entire sample batch is reprepared and reanalyzed. If the surrogate recoveries are outside criteria for environmental samples, the samples will be reprepared and reanalyzed unless there is objective evidence of matrix interference or if the sample dilution is greater than the threshold outlined in the associated method SOP.

The acceptance criteria do not apply to samples that are diluted. All other surrogate recoveries will be reported.

For the GC/MS BNA methods, the surrogate criterion is that two of the three surrogates for each fraction must meet acceptance criteria. The third surrogate must have a recovery of ten percent or greater.

For the Pesticide and PCB methods, the surrogate criterion is that one of two surrogate compounds must meet acceptance criteria. The second surrogate must have a recovery of 10% or greater.



TestAmerica Certifications and Approvals:

The laboratory is certified for the analytes listed on the documents below. These are available upon request.
California (#01144CA), Connecticut (#PH-0590), Florida (#E87225),
Illinois (#200004), Kansas (#E10336), Minnesota (#39-999-348), New Jersey (#OH001), New York (#10975), Nevada
(#OH-000482008A), OhioVAP (#CL0024), Pennsylvania (#008), West Virginia (#210), Wisconsin (#999518190), NAVY,
ARMY, USDA Soil Permit

EXECUTIVE SUMMARY - Detection Highlights

A0L280417

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
NO DETECTABLE PARAMETERS				

ANALYTICAL METHODS SUMMARY

A0L280417

PARAMETER	ANALYTICAL METHOD
Purgeable Halocarbons	CFR136A 601

References:

CFR136A "Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

METHOD / ANALYST SUMMARY

A0L280417

ANALYTICAL METHOD	ANALYST	ANALYST ID
CFR136A 601	Barbara A. Fausnight	001616

References:

CFR136A "Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

SAMPLE SUMMARY

A0L280417

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
MCTKL	001	J1036-HERRON-122210	12/22/10	13:30
MCTKQ	002	TRIP BLANK	12/22/10	

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.

Conestoga-Rovers & Associates, Inc.

Client Sample ID: J1036-HERRON-122210

GC Volatiles

Lot-Sample #....: A0L280417-001 Work Order #....: MCTKL1AA Matrix.....: WG
Date Sampled....: 12/22/10 13:30 Date Received...: 12/23/10
Prep Date.....: 12/31/10 Analysis Date...: 12/31/10
Prep Batch #....: 1003053
Dilution Factor: 1 Method.....: CFR136A 601

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Chloroform	ND	1.0	ug/L	0.45
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.40
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.34
1,1-Dichloroethene	ND	1.0	ug/L	0.36
Tetrachloroethene	ND	1.0	ug/L	0.44
1,1,1-Trichloroethane	ND	1.0	ug/L	0.46
Trichloroethene	ND	1.0	ug/L	0.39
Vinyl chloride	ND	1.0	ug/L	0.39
SURROGATE	PERCENT		RECOVERY	
	RECOVERY		LIMITS	
1,4-Dichlorobutane	102		(61 - 141)	

Conestoga-Rovers & Associates, Inc.

Client Sample ID: TRIP BLANK

GC Volatiles

Lot-Sample #....: A0L280417-002 Work Order #....: MCTKQ1AA Matrix.....: WQ
Date Sampled....: 12/22/10 Date Received...: 12/23/10
Prep Date.....: 12/29/10 Analysis Date...: 12/29/10
Prep Batch #....: 0364216
Dilution Factor: 1 Method.....: CFR136A 601

		REPORTING		
PARAMETER	RESULT	LIMIT	UNITS	MDL
Chloroform	ND	1.0	ug/L	0.45
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.40
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.34
1,1-Dichloroethene	ND	1.0	ug/L	0.36
Tetrachloroethene	ND	1.0	ug/L	0.44
1,1,1-Trichloroethane	ND	1.0	ug/L	0.46
Trichloroethene	ND	1.0	ug/L	0.39
Vinyl chloride	ND	1.0	ug/L	0.39
	PERCENT	RECOVERY		
SURROGATE	RECOVERY	LIMITS		
1,4-Dichlorobutane	90	(61 - 141)		

QUALITY CONTROL SECTION

METHOD BLANK REPORT

GC Volatiles

Client Lot #...: A0L280417
MB Lot-Sample #: A0L300000-216

Work Order #...: MCXJX1AA

Matrix.....: WATER

Analysis Date...: 12/29/10

Prep Date.....: 12/29/10

Prep Batch #...: 0364216

Dilution Factor: 1

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	METHOD
Chloroform	ND	1.0	ug/L	CFR136A 601
1,1-Dichloroethene	ND	1.0	ug/L	CFR136A 601
cis-1,2-Dichloroethene	ND	1.0	ug/L	CFR136A 601
trans-1,2-Dichloroethene	ND	1.0	ug/L	CFR136A 601
Tetrachloroethene	ND	1.0	ug/L	CFR136A 601
1,1,1-Trichloroethane	ND	1.0	ug/L	CFR136A 601
Trichloroethene	ND	1.0	ug/L	CFR136A 601
Vinyl chloride	ND	1.0	ug/L	CFR136A 601

SURROGATE	PERCENT	RECOVERY
	RECOVERY	LIMITS
1,4-Dichlorobutane	105	(61 - 141)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC Volatiles

Client Lot #...: A0L280417
MB Lot-Sample #: A1A030000-053

Work Order #...: MCX8N1AA

Matrix.....: WATER

Analysis Date...: 12/30/10

Prep Date.....: 12/30/10

Prep Batch #...: 1003053

Dilution Factor: 1

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	METHOD
Chloroform	ND	1.0	ug/L	CFR136A 601
1,1-Dichloroethene	ND	1.0	ug/L	CFR136A 601
cis-1,2-Dichloroethene	ND	1.0	ug/L	CFR136A 601
trans-1,2-Dichloroethene	ND	1.0	ug/L	CFR136A 601
Tetrachloroethene	ND	1.0	ug/L	CFR136A 601
1,1,1-Trichloroethane	ND	1.0	ug/L	CFR136A 601
Trichloroethene	ND	1.0	ug/L	CFR136A 601
Vinyl chloride	ND	1.0	ug/L	CFR136A 601

SURROGATE	PERCENT	RECOVERY
	RECOVERY	LIMITS
1,4-Dichlorobutane	103	(61 - 141)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Volatiles

Client Lot #...: A0L280417 Work Order #...: MCXJX1AC Matrix.....: WATER
 LCS Lot-Sample#: A0L300000-216
 Prep Date.....: 12/29/10 Analysis Date...: 12/29/10
 Prep Batch #...: 0364216
 Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>METHOD</u>
Chloroform	91	(72 - 129)	CFR136A 601
1,1-Dichloroethene	81	(71 - 137)	CFR136A 601
trans-1,2-Dichloroethene	80	(76 - 129)	CFR136A 601
Tetrachloroethene	86	(65 - 138)	CFR136A 601
1,1,1-Trichloroethane	83	(74 - 132)	CFR136A 601
Trichloroethene	83	(74 - 125)	CFR136A 601
Vinyl chloride	84	(55 - 163)	CFR136A 601

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
1,4-Dichlorobutane	108	(61 - 141)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC Volatiles

Client Lot #...: A0L280417 Work Order #...: MCXJX1AC Matrix.....: WATER
 LCS Lot-Sample#: A0L300000-216
 Prep Date.....: 12/29/10 Analysis Date...: 12/29/10
 Prep Batch #...: 0364216
 Dilution Factor: 1

<u>PARAMETER</u>	<u>SPIKE AMOUNT</u>	<u>MEASURED AMOUNT</u>	<u>UNITS</u>	<u>PERCENT RECOVERY</u>	<u>METHOD</u>
Chloroform	20	18	ug/L	91	CFR136A 601
1,1-Dichloroethene	20	16	ug/L	81	CFR136A 601
trans-1,2-Dichloroethene	20	16	ug/L	80	CFR136A 601
Tetrachloroethene	20	17	ug/L	86	CFR136A 601
1,1,1-Trichloroethane	20	17	ug/L	83	CFR136A 601
Trichloroethene	20	17	ug/L	83	CFR136A 601
Vinyl chloride	20	17	ug/L	84	CFR136A 601

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
1,4-Dichlorobutane	108	(61 - 141)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Volatiles

Client Lot #...: A0L280417 Work Order #...: MCX8N1AC Matrix.....: WATER
 LCS Lot-Sample#: A1A030000-053
 Prep Date.....: 12/30/10 Analysis Date...: 12/30/10
 Prep Batch #...: 1003053
 Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>METHOD</u>
Chloroform	100	(72 - 129)	CFR136A 601
1,1-Dichloroethene	105	(71 - 137)	CFR136A 601
trans-1,2-Dichloroethene	100	(76 - 129)	CFR136A 601
Tetrachloroethene	104	(65 - 138)	CFR136A 601
1,1,1-Trichloroethane	111	(74 - 132)	CFR136A 601
Trichloroethene	110	(74 - 125)	CFR136A 601
Vinyl chloride	111	(55 - 163)	CFR136A 601

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
1,4-Dichlorobutane	92	(61 - 141)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC Volatiles

Client Lot #...: A0L280417 Work Order #...: MCX8N1AC Matrix.....: WATER
 LCS Lot-Sample#: A1A030000-053
 Prep Date.....: 12/30/10 Analysis Date...: 12/30/10
 Prep Batch #...: 1003053
 Dilution Factor: 1

<u>PARAMETER</u>	<u>SPIKE AMOUNT</u>	<u>MEASURED AMOUNT</u>	<u>UNITS</u>	<u>PERCENT RECOVERY</u>	<u>METHOD</u>
Chloroform	40	40	ug/L	100	CFR136A 601
1,1-Dichloroethene	20	21	ug/L	105	CFR136A 601
trans-1,2-Dichloroethene	20	20	ug/L	100	CFR136A 601
Tetrachloroethene	20	21	ug/L	104	CFR136A 601
1,1,1-Trichloroethane	20	22	ug/L	111	CFR136A 601
Trichloroethene	20	22	ug/L	110	CFR136A 601
Vinyl chloride	20	22	ug/L	111	CFR136A 601

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
1,4-Dichlorobutane	92	(61 - 141)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC Volatiles

Lot-Sample #...: A0L280417 **Work Order #...**: MCTJC1AC **Matrix.....**: WATER
MS Lot-Sample #: A0L280413-001
Date Sampled...: 12/21/10 16:40 **Date Received...**: 12/23/10
Prep Date.....: 12/31/10 **Analysis Date...**: 12/31/10
Prep Batch #...: 1003053
Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>METHOD</u>
Chloroform	81	(61 - 140)	CFR136A 601
1,1-Dichloroethene	95	(56 - 139)	CFR136A 601
trans-1,2-Dichloroethene	92	(63 - 133)	CFR136A 601
Tetrachloroethene	83	(37 - 145)	CFR136A 601
1,1,1-Trichloroethane	95	(60 - 141)	CFR136A 601
Trichloroethene	100	(31 - 155)	CFR136A 601
Vinyl chloride	102	(43 - 154)	CFR136A 601

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
1,4-Dichlorobutane	83	(61 - 141)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE DATA REPORT

GC Volatiles

Lot-Sample #...: A0L280417 **Work Order #...**: MCTJC1AC **Matrix.....**: WATER
MS Lot-Sample #: A0L280413-001
Date Sampled...: 12/21/10 16:40 **Date Received...**: 12/23/10
Prep Date.....: 12/31/10 **Analysis Date...**: 12/31/10
Prep Batch #...: 1003053
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Chloroform	ND	40	32	ug/L	81	CFR136A 601
1,1-Dichloroethene	ND	20	19	ug/L	95	CFR136A 601
trans-1,2-Dichloroethene	ND	20	18	ug/L	92	CFR136A 601
Tetrachloroethene	ND	20	17	ug/L	83	CFR136A 601
1,1,1-Trichloroethane	ND	20	19	ug/L	95	CFR136A 601
Trichloroethene	ND	20	20	ug/L	100	CFR136A 601
Vinyl chloride	ND	20	20	ug/L	102	CFR136A 601

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,4-Dichlorobutane	83	(61 - 141)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

TestAmerica Cooler Receipt Form/Narrative
North Canton Facility

Lot Number: AOL280417

Client Orion Env Project Mc Cook By Derry Burns
Cooler Received on 12/23/10 Opened on 12/23/10 (Signature)
FedEx ☐ UPS ☒ DHL ☐ FAS ☐ Stetson ☐ Client Drop Off ☐ TestAmerica Courier ☐ Other _____
TestAmerica Cooler # _____ Multiple Coolers ☐ Foam Box ☐ Client Cooler ☒ Other _____
1. Were custody seals on the outside of the cooler(s)? Yes ☒ No ☐ Intact? Yes ☒ No ☐ NA ☐
If YES, Quantity _____ Quantity Unsalvageable _____
Were custody seals on the outside of cooler(s) signed and dated? Yes ☒ No ☐ NA ☐
Were custody seals on the bottle(s)? Yes ☐ No ☒
If YES, are there any exceptions? _____
2. Shippers' packing slip attached to the cooler(s)? Yes ☒ No ☐
3. Did custody papers accompany the sample(s)? Yes ☒ No ☐ Relinquished by client? Yes ☒ No ☐
4. Were the custody papers signed in the appropriate place? Yes ☒ No ☐
5. Packing material used: Bubble Wrap ☒ Foam ☒ None ☐ Other _____
6. Cooler temperature upon receipt 2.0 °C See back of form for multiple coolers/temps ☐
METHOD: IR ☒ Other ☐
COOLANT: Wet Ice ☒ Blue Ice ☐ Dry Ice ☐ Water ☐ None ☐
7. Did all bottles arrive in good condition (Unbroken)? Yes ☒ No ☐
8. Could all bottle labels be reconciled with the COC? Yes ☒ No ☐
9. Were sample(s) at the correct pH upon receipt? Yes ☐ No ☐ NA ☒
10. Were correct bottle(s) used for the test(s) indicated? Yes ☒ No ☐
11. Were air bubbles >6 mm in any VOA vials? Yes ☐ No ☒ NA ☐
12. Sufficient quantity received to perform indicated analyses? Yes ☒ No ☐
13. Was a trip blank present in the cooler(s)? Yes ☒ No ☐ Were VOAs on the COC? Yes ☒ No ☐
Contacted PM _____ Date _____ by _____ via Verbal ☐ Voice Mail ☐ Other ☐
Concerning _____

14. CHAIN OF CUSTODY

The following discrepancies occurred:

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in Sample Receiving to meet recommended pH level(s). Nitric Acid Lot# 100110-HNO₃; Sulfuric Acid Lot# 110410-H₂SO₄; Sodium Hydroxide Lot# 100108 -NaOH; Hydrochloric Acid Lot# 092006-HCl; Sodium Hydroxide and Zinc Acetate Lot# 100108-(CH₃COO)₂ZN/NaOH. What time was preservative added to sample(s)? _____

Client ID	pH	Date	Initials

TestAmerica Cooler Receipt Form/Narrative
North Canton Facility

[illegible][illegible]

Discrepancies Cont'd:

This image shows a single page of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. On the left side, there is a vertical margin line, creating a narrow left margin. The paper appears to be from a notebook or a standard ruled sheet. There is no handwriting or printed text on the page.

END OF REPORT

ANALYTICAL REPORT

PROJECT NO. 56995

J1036 McCook SSOW 010

Lot #: A0L280413

Sue Scrocchi

**Conestoga-Rovers & Associates,
2055 Niagara Falls Blvd.
Suite Three
Niagara Falls, NY 14304**

TESTAMERICA LABORATORIES, INC.



Denise D. Heckler
Project Manager
denise.heckler@testamericainc.com

Approved for release.
Denise D. Heckler
Project Manager
1/7/2011 11:44 AM

January 07, 2011

TestAmerica Laboratories, Inc.

TestAmerica North Canton 4101 Shuffel Street NW, North Canton, OH 44720

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CASE NARRATIVE

A0L280413

The following report contains the analytical results for three water samples submitted to TestAmerica North Canton by Conestoga-Rovers & Associates, Inc. from the J1036 McCook SSOW 010 Site, project number 56995. The samples were received December 23, 2010, according to documented sample acceptance procedures.

TestAmerica utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. A summary of QC data for these analyses is included at the back of the report.

TestAmerica North Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

All parameters were evaluated to the method detection limit and include qualified results where applicable.

Please refer to the Quality Control Elements Narrative following this case narrative for additional quality control information.

If you have any questions, please call the Project Manager, Denise D. Heckler, at 330-497-9396.

This report is sequentially paginated. The final page of the report is labeled as "END OF REPORT."

SUPPLEMENTAL QC INFORMATION

SAMPLE RECEIVING

The temperature of the cooler upon sample receipt was 2.0°C.

CASE NARRATIVE (continued)

GC VOLATILES

The analytical results met the requirements of the laboratory's QA/QC program.

QUALITY CONTROL ELEMENTS NARRATIVE

TestAmerica conducts a quality assurance/quality control (QA/QC) program designed to provide scientifically valid and legally defensible data. Toward this end, several types of quality control indicators are incorporated into the QA/QC program, which is described in detail in QA Policy, QA-003. These indicators are introduced into the sample testing process to provide a mechanism for the assessment of the analytical data. Program or agency specific requirements take precedence over the requirements listed in this narrative.

QC BATCH

Environmental samples are taken through the testing process in groups called QUALITY CONTROL BATCHES (QC batches). A QC batch contains up to twenty environmental samples of a similar matrix (water, soil) that are processed using the same reagents and standards. TestAmerica North Canton requires that each environmental sample be associated with a QC batch.

Several quality control samples are included in each QC batch and are processed identically to the twenty environmental samples.

For SW846/RCRA methods, QC samples include a METHOD BLANK (MB), a LABORATORY CONTROL SAMPLE (LCS) and, where appropriate, a MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) pair or a MATRIX SPIKE/SAMPLE DUPLICATE (MS/DU) pair. If there is insufficient sample to perform an MS/MSD or an MS/DU, then a LABORATORY CONTROL SAMPLE DUPLICATE (LCSD) is included in the QC batch.

For 600 series/CWA methods, QC samples include a METHOD BLANK (MB), a LABORATORY CONTROL SAMPLE (LCS) and, where appropriate, a MATRIX SPIKE (MS). An MS is prepared and analyzed at a 10% frequency for GC Methods and at a 5% frequency for GC/MS methods.

LABORATORY CONTROL SAMPLE

The Laboratory Control Sample is a QC sample that is created by adding known concentrations of a full or partial set of target analytes to a matrix similar to that of the environmental samples in the QC batch. Multi peak responders may not be included in the target spike list due to co-elution. The LCS analyte recovery results are used to monitor the analytical process and provide evidence that the laboratory is performing the method within acceptable guidelines. All control analytes indicated by a bold type in the LCS must meet acceptance criteria. Failure to meet the established recovery guidelines requires the reparation and reanalysis of all samples in the QC batch. Comparison of only the failed parameters from the first batch are evaluated. The only exception to the rework requirement is that if the LCS recoveries are biased high and the associated sample is ND (non-detected) for the parameter(s) of interest, the batch is acceptable.

At times, a Laboratory Control Sample Duplicate (LCSD) is also included in the QC batch. An LCSD is a QC sample that is created and handled identically to the LCS. Analyte recovery data from the LCSD is assessed in the same way as that of the LCS. The LCSD recoveries, together with the LCS recoveries, are used to determine the reproducibility (precision) of the analytical system. Precision data are expressed as relative percent differences (RPDs). If the RPD fails for an LCS/LCSD and yet the recoveries are within acceptance criteria, the batch is still acceptable.

METHOD BLANK

The Method Blank is a QC sample consisting of all the reagents used in analyzing the environmental samples contained in the QC batch. Method Blank results are used to determine if interference or contamination in the analytical system could lead to the reporting of false positive data or elevated analyte concentrations. All target analytes must be below the reporting limits (RL) or the associated sample(s) must be ND except under the following circumstances:

- Common organic contaminants may be present at concentrations up to 5 times the reporting limits. Common metals contaminants may be present at concentrations up to 2 times the reporting limit, or the reported blank concentration must be twenty fold less than the concentration reported in the associated environmental samples. (See common laboratory contaminants listed in the table.)

<u>Volatile (GC or GC/MS)</u>	<u>Semivolatile (GC/MS)</u>	<u>Metals ICP-MS</u>	<u>Metals ICP Trace</u>
Methylene Chloride, Acetone, 2-Butanone	Phthalate Esters	Copper, Iron, Zinc, Lead, Calcium, Magnesium, Potassium, Sodium, Barium, Chromium, Manganese	Copper, Iron, Zinc, Lead

QUALITY CONTROL ELEMENTS NARRATIVE (continued)

- Organic blanks will be accepted if compounds detected in the blank are present in the associated samples at levels 10 times the blank level. Inorganic blanks will be accepted if elements detected in the blank are present in the associated samples at 20 times the blank level.
- Blanks will be accepted if the compounds/elements detected are not present in any of the associated environmental samples.

Failure to meet these Method Blank criteria requires the reparation and reanalysis of all samples in the QC batch.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

A Matrix Spike and a Matrix Spike Duplicate are a pair of environmental samples to which known concentrations of a full or partial set of target analytes are added. The MS/MSD results are determined in the same manner as the results of the environmental sample used to prepare the MS/MSD. The analyte recoveries and the relative percent differences (RPDs) of the recoveries are calculated and used to evaluate the effect of the sample matrix on the analytical results. Due to the potential variability of the matrix of each sample, the MS/MSD results may not have an immediate bearing on any samples except the one spiked; therefore, the associated batch MS/MSD may not reflect the same compounds as the samples contained in the analytical report. When these MS/MSD results fail to meet acceptance criteria, the data is evaluated. If the LCS is within acceptance criteria, the batch is considered acceptable.

For certain methods, a Matrix Spike/Sample Duplicate (MS/DU) may be included in the QC batch in place of the MS/MSD. For the parameters (i.e. pH, ignitability) where it is not possible to prepare a spiked sample, a Sample Duplicate may be included in the QC batch. However, a Sample Duplicate is less likely to provide usable precision statistics depending on the likelihood of finding concentrations below the standard reporting limit. When the Sample Duplicate result fails to meet acceptance criteria, the data is evaluated.

For certain methods (600 series methods/CWA), a Matrix Spike is required in place of a Matrix Spike/Matrix Spike Duplicate (MS/MSD) or Matrix Spike/Sample Duplicate (MS/DU).

The acceptance criteria do not apply to samples that are diluted.

SURROGATE COMPOUNDS

In addition to these batch-related QC indicators, each organic environmental and QC sample is spiked with surrogate compounds. Surrogates are organic chemicals that behave similarly to the analytes of interest and that are rarely present in the environment. Surrogate recoveries are used to monitor the individual performance of a sample in the analytical system.

If surrogate recoveries are biased high in the LCS, LCSD, or the Method Blank, and the associated sample(s) are ND, the batch is acceptable. Otherwise, if the LCS, LCSD, or Method Blank surrogate(s) fail to meet recovery criteria, the entire sample batch is reprepared and reanalyzed. If the surrogate recoveries are outside criteria for environmental samples, the samples will be reprepared and reanalyzed unless there is objective evidence of matrix interference or if the sample dilution is greater than the threshold outlined in the associated method SOP.

The acceptance criteria do not apply to samples that are diluted. All other surrogate recoveries will be reported.

For the GC/MS BNA methods, the surrogate criterion is that two of the three surrogates for each fraction must meet acceptance criteria. The third surrogate must have a recovery of ten percent or greater.

For the Pesticide and PCB methods, the surrogate criterion is that one of two surrogate compounds must meet acceptance criteria. The second surrogate must have a recovery of 10% or greater.



TestAmerica Certifications and Approvals:

The laboratory is certified for the analytes listed on the documents below. These are available upon request.
California (#01144CA), Connecticut (#PH-0590), Florida (#E87225),
Illinois (#200004), Kansas (#E10336), Minnesota (#39-999-348), New Jersey (#OH001), New York (#10975), Nevada
(#OH-000482008A), OhioVAP (#CL0024), Pennsylvania (#008), West Virginia (#210), Wisconsin (#999518190), NAVY,
ARMY, USDA Soil Permit

EXECUTIVE SUMMARY - Detection Highlights

A0L280413

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
NO DETECTABLE PARAMETERS				

ANALYTICAL METHODS SUMMARY

A0L280413

PARAMETER	ANALYTICAL METHOD
Purgeable Halocarbons	CFR136A 601

References:

CFR136A "Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

METHOD / ANALYST SUMMARY

A0L280413

<u>ANALYTICAL METHOD</u>	<u>ANALYST</u>	<u>ANALYST ID</u>
CFR136A 601	Barbara A. Fausnight	001616

References:

CFR136A "Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

SAMPLE SUMMARY

A0L280413

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
MCTJC	001	NEIMAN - FRONT	12/21/10	16:40
MCTJF	002	NEIMAN - WEST	12/22/10	12:52
MCTJG	003	AHRENS NORTH	12/22/10	14:00

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.

Conestoga-Rovers & Associates, Inc.

Client Sample ID: NEIMAN-FRONT

GC Volatiles

Lot-Sample #....: A0L280413-001 Work Order #....: MCTJC1AA Matrix.....: WG
Date Sampled....: 12/21/10 16:40 Date Received...: 12/23/10
Prep Date.....: 12/31/10 Analysis Date...: 12/31/10
Prep Batch #....: 1003053
Dilution Factor: 1 Method.....: CFR136A 601

		REPORTING		
PARAMETER	RESULT	LIMIT	UNITS	MDL
Chloroform	ND	1.0	ug/L	0.45
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.40
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.34
1,1-Dichloroethene	ND	1.0	ug/L	0.36
Tetrachloroethene	ND	1.0	ug/L	0.44
1,1,1-Trichloroethane	ND	1.0	ug/L	0.46
Trichloroethene	ND	1.0	ug/L	0.39
Vinyl chloride	ND	1.0	ug/L	0.39
	PERCENT	RECOVERY		
SURROGATE	RECOVERY	LIMITS		
1,4-Dichlorobutane	98	(61 - 141)		

Conestoga-Rovers & Associates, Inc.

Client Sample ID: NEIMAN-WEST

GC Volatiles

Lot-Sample #....: A0L280413-002 Work Order #....: MCTJF1AA Matrix.....: WG
Date Sampled....: 12/22/10 12:52 Date Received...: 12/23/10
Prep Date.....: 12/31/10 Analysis Date...: 12/31/10
Prep Batch #....: 1003053
Dilution Factor: 1 Method.....: CFR136A 601

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Chloroform	ND	1.0	ug/L	0.45
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.40
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.34
1,1-Dichloroethene	ND	1.0	ug/L	0.36
Tetrachloroethene	ND	1.0	ug/L	0.44
1,1,1-Trichloroethane	ND	1.0	ug/L	0.46
Trichloroethene	ND	1.0	ug/L	0.39
Vinyl chloride	ND	1.0	ug/L	0.39
SURROGATE	PERCENT		RECOVERY	
	RECOVERY		LIMITS	
1,4-Dichlorobutane	101		(61 - 141)	

Conestoga-Rovers & Associates, Inc.

Client Sample ID: AHRENS NORTH

GC Volatiles

Lot-Sample #....: A0L280413-003 Work Order #....: MCTJG1AA Matrix.....: WG
Date Sampled....: 12/22/10 14:00 Date Received...: 12/23/10
Prep Date.....: 12/31/10 Analysis Date...: 12/31/10
Prep Batch #....: 1003053
Dilution Factor: 1 Method.....: CFR136A 601

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
1,1,1-Trichloroethane	ND	1.0	ug/L	0.46
Chloroform	ND	1.0	ug/L	0.45
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.40
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.34
1,1-Dichloroethene	ND	1.0	ug/L	0.36
Tetrachloroethene	ND	1.0	ug/L	0.44
Trichloroethene	ND	1.0	ug/L	0.39
Vinyl chloride	ND	1.0	ug/L	0.39
SURROGATE	PERCENT		RECOVERY	
	RECOVERY		LIMITS	
1,4-Dichlorobutane	99		(61 - 141)	

QUALITY CONTROL SECTION

METHOD BLANK REPORT

GC Volatiles

Client Lot #...: A0L280413
MB Lot-Sample #: A1A030000-053

Work Order #...: MCX8N1AA

Matrix.....: WATER

Analysis Date...: 12/30/10

Prep Date.....: 12/30/10

Prep Batch #...: 1003053

Dilution Factor: 1

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	METHOD
Chloroform	ND	1.0	ug/L	CFR136A 601
1,1-Dichloroethene	ND	1.0	ug/L	CFR136A 601
cis-1,2-Dichloroethene	ND	1.0	ug/L	CFR136A 601
trans-1,2-Dichloroethene	ND	1.0	ug/L	CFR136A 601
Tetrachloroethene	ND	1.0	ug/L	CFR136A 601
1,1,1-Trichloroethane	ND	1.0	ug/L	CFR136A 601
Trichloroethene	ND	1.0	ug/L	CFR136A 601
Vinyl chloride	ND	1.0	ug/L	CFR136A 601

SURROGATE	PERCENT	RECOVERY
	RECOVERY	LIMITS
1,4-Dichlorobutane	103	(61 - 141)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Volatiles

Client Lot #...: A0L280413 Work Order #...: MCX8N1AC Matrix.....: WATER
 LCS Lot-Sample#: A1A030000-053
 Prep Date.....: 12/30/10 Analysis Date...: 12/30/10
 Prep Batch #...: 1003053
 Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>METHOD</u>
Chloroform	100	(72 - 129)	CFR136A 601
1,1-Dichloroethene	105	(71 - 137)	CFR136A 601
trans-1,2-Dichloroethene	100	(76 - 129)	CFR136A 601
Tetrachloroethene	104	(65 - 138)	CFR136A 601
1,1,1-Trichloroethane	111	(74 - 132)	CFR136A 601
Trichloroethene	110	(74 - 125)	CFR136A 601
Vinyl chloride	111	(55 - 163)	CFR136A 601

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
1,4-Dichlorobutane	92	(61 - 141)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC Volatiles

Client Lot #...: A0L280413 Work Order #...: MCX8N1AC Matrix.....: WATER
 LCS Lot-Sample#: A1A030000-053
 Prep Date.....: 12/30/10 Analysis Date...: 12/30/10
 Prep Batch #...: 1003053
 Dilution Factor: 1

<u>PARAMETER</u>	<u>SPIKE AMOUNT</u>	<u>MEASURED AMOUNT</u>	<u>UNITS</u>	<u>PERCENT RECOVERY</u>	<u>METHOD</u>
Chloroform	40	40	ug/L	100	CFR136A 601
1,1-Dichloroethene	20	21	ug/L	105	CFR136A 601
trans-1,2-Dichloroethene	20	20	ug/L	100	CFR136A 601
Tetrachloroethene	20	21	ug/L	104	CFR136A 601
1,1,1-Trichloroethane	20	22	ug/L	111	CFR136A 601
Trichloroethene	20	22	ug/L	110	CFR136A 601
Vinyl chloride	20	22	ug/L	111	CFR136A 601

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
1,4-Dichlorobutane	92	(61 - 141)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC Volatiles

Lot-Sample #...: A0L280413 **Work Order #...**: MCTJC1AC **Matrix.....**: WG
MS Lot-Sample #: A0L280413-001
Date Sampled...: 12/21/10 16:40 **Date Received...**: 12/23/10
Prep Date.....: 12/31/10 **Analysis Date...**: 12/31/10
Prep Batch #...: 1003053
Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>METHOD</u>
Chloroform	81	(61 - 140)	CFR136A 601
1,1-Dichloroethene	95	(56 - 139)	CFR136A 601
trans-1,2-Dichloroethene	92	(63 - 133)	CFR136A 601
Tetrachloroethene	83	(37 - 145)	CFR136A 601
1,1,1-Trichloroethane	95	(60 - 141)	CFR136A 601
Trichloroethene	100	(31 - 155)	CFR136A 601
Vinyl chloride	102	(43 - 154)	CFR136A 601

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
1,4-Dichlorobutane	83	(61 - 141)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE DATA REPORT

GC Volatiles

Lot-Sample #...: A0L280413 **Work Order #...**: MCTJC1AC **Matrix.....**: WG
MS Lot-Sample #: A0L280413-001
Date Sampled...: 12/21/10 16:40 **Date Received...**: 12/23/10
Prep Date.....: 12/31/10 **Analysis Date...**: 12/31/10
Prep Batch #...: 1003053
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Chloroform	ND	40	32	ug/L	81	CFR136A 601
1,1-Dichloroethene	ND	20	19	ug/L	95	CFR136A 601
trans-1,2-Dichloroethene	ND	20	18	ug/L	92	CFR136A 601
Tetrachloroethene	ND	20	17	ug/L	83	CFR136A 601
1,1,1-Trichloroethane	ND	20	19	ug/L	95	CFR136A 601
Trichloroethene	ND	20	20	ug/L	100	CFR136A 601
Vinyl chloride	ND	20	20	ug/L	102	CFR136A 601

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,4-Dichlorobutane	83	(61 - 141)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.
 Bold print denotes control parameters

TestAmerica Cooler Receipt Form/Narrative
North Canton Facility

Lot Number: AOL280413

Client Northrup Grumman Project Mc Cook By Derry Burns
Cooler Received on 12/23/10 Opened on 12/23/10 (Signature)

FedEx ☐ UPS ☒ DHL ☐ FAS ☐ Stetson ☐ Client Drop Off ☐ TestAmerica Courier ☐ Other ☐
TestAmerica Cooler # _____ Multiple Coolers ☐ Foam Box ☐ Client Cooler ☒ Other ☐

1. Were custody seals on the outside of the cooler(s)? Yes ☒ No ☐ Intact? Yes ☒ No ☐ NA ☐
If YES, Quantity _____ Quantity Unsalvageable _____
Were custody seals on the outside of cooler(s) signed and dated? Yes ☒ No ☐ NA ☐
Were custody seals on the bottle(s)? Yes ☐ No ☒
If YES, are there any exceptions? _____
2. Shippers' packing slip attached to the cooler(s)? Yes ☒ No ☐
3. Did custody papers accompany the sample(s)? Yes ☒ No ☐ Relinquished by client? Yes ☒ No ☐
4. Were the custody papers signed in the appropriate place? Yes ☒ No ☐
5. Packing material used: Bubble Wrap ☒ Foam ☒ None ☐ Other _____
6. Cooler temperature upon receipt 2.0 °C See back of form for multiple coolers/temps ☐
METHOD: IR ☒ Other ☐
COOLANT: Wet Ice ☒ Blue Ice ☐ Dry Ice ☐ Water ☐ None ☐
7. Did all bottles arrive in good condition (Unbroken)? Yes ☒ No ☐
8. Could all bottle labels be reconciled with the COC? Yes ☒ No ☐
9. Were sample(s) at the correct pH upon receipt? Yes ☐ No ☐ NA ☒
10. Were correct bottle(s) used for the test(s) indicated? Yes ☒ No ☐
11. Were air bubbles >6 mm in any VOA vials? Yes ☐ No ☒ NA ☐
12. Sufficient quantity received to perform indicated analyses? Yes ☒ No ☐
13. Was a trip blank present in the cooler(s)? Yes ☐ No ☒ Were VOAs on the COC? Yes ☒ No ☐
Contacted PM _____ Date _____ by _____ via Verbal ☐ Voice Mail ☐ Other ☐
Concerning _____

14. CHAIN OF CUSTODY

The following discrepancies occurred:

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in Sample Receiving to meet recommended pH level(s). Nitric Acid Lot# 100110-HNO₃; Sulfuric Acid Lot# 110410-H₂SO₄; Sodium Hydroxide Lot# 100108 -NaOH; Hydrochloric Acid Lot# 092006-HCl; Sodium Hydroxide and Zinc Acetate Lot# 100108-(CH₃COO)₂ZN/NaOH. What time was preservative added to sample(s)? _____

Client ID	pH	Date	Initials

TestAmerica Cooler Receipt Form/Narrative North Canton Facility

[illegible]

Discrepancies Cont'd:

END OF REPORT

ATTACHMENT E

ENVIRO-TOX REPORT

SCREENING VAPOR INTRUSION RISK EVALUATION

Memorandum

To: *Mr. Jeffrey P. Gwinn / Orion Environmental Inc.*

From: *Heriberto Robles, Ph.D., D.A.B.T. / Enviro-Tox Services, Inc.*

Date: *February 16, 2011*

Subject: **Screening Vapor Intrusion Risk Evaluation,
Residences Located on East 16th Street and East C Street near
the Former TRW Facility in McCook, Nebraska**

Introduction

Enviro-Tox Services, Inc. (ETSI) was retained by Orion Environmental Inc. (Orion) to conduct a Screening-level Vapor Intrusion Risk Evaluation for residential buildings located on East 16th Street and East C Street near the former TRW facility in McCook, Nebraska (Figure 1). This memorandum summarizes the result of the evaluation.

Results of the evaluation indicate that the levels of man-made chemicals remaining in soil gas near the former TRW facility do not represent a significant health threat to residential receptors located in the vicinity of the facility. The residual volatile organic compounds (VOCs) detected in soil gas should dissipate through time as natural fate processes act to attenuate the remaining residual concentrations.

Background

TRW Inc. (now Northrop Grumman) manufactured capacitors at its McCook facility from the mid-1960's to 1984. The facility was located at the intersection of F Street and Airport Road in McCook, Nebraska (Figure 1). Trichloroethylene (TCE) was used as a solvent and a carrier for the epoxy coating on the capacitors. TRW ceased operations in 1984 and closed the facility in 1986.

TCE-impacted soil was discovered during investigation activities initiated upon facility closure. The onsite soil was remediated in 1991 and 1992. After extensive investigations, TRW began groundwater remediation activities in 1993. The current groundwater remediation system includes five active extraction wells and water treatment equipment at a Treatment Plant located on property owned by the City of McCook (Figure 1). This remediation system has resulted in a significant reduction in the plume size and a decrease in overall TCE concentrations. Northrop Grumman is continuing the groundwater cleanup program and is implementing program enhancements with the

supervision and approval of the Nebraska Department of Environmental Quality (NDEQ).

On December 20 through 22, 2010, Milco Environmental Services Inc, of McCook, Nebraska, installed temporary probes, and collected soil gas samples from 10 locations along East 16th Street, 7 locations along East C Street, and 3 locations around the perimeter of the residence at 1507 East C Street (Figure 1).

Soil gas samples were collected from each location at approximately 5 and 15 feet below ground surface (bgs). Based on previous investigations in the area, the upper 15 feet of the subsurface is a uniform silty clay with no distinguishing permeable zones. Therefore, continuous coring before soil gas collection was not needed to characterize sample depths.

A total of 40 soil gas samples were collected in evacuated SUMMA canisters using a low-flow sampling pump. Two ambient air samples were also collected. Field procedures for sample collection, shipping, and equipment decontamination are presented in Orion's *Soil Gas Sampling and Vapor Intrusion Assessment Report* (Orion, 2011). The samples were submitted to a laboratory and analyzed for VOCs using U.S. Environmental Protection Agency (USEPA) Method TO-15.

Tetrachloroethylene (PCE) was detected in 22 of the 40 soil gas samples. The highest concentrations were encountered near the intersection of 16th and C Streets. The maximum PCE concentration of 6.5 micrograms per cubic meter (ug/m^3) was detected at the 5-foot sample from location SG-11 (Table 1 and Figure 1). PCE was not used at the former TRW Facility and is not present in groundwater samples collected around the facility.

TCE was detected in 10 of the 40 soil gas samples. TCE concentrations were highest in soil gas samples collected adjacent to the former TRW Facility and were higher in the 15-foot samples compared to the 5-foot samples. The maximum TCE concentration of 36 ug/m^3 was detected in the 15-foot sample from location SG-1 (Table 1 and Figure 1). TCE concentrations decreased with distance from the Facility along 16th Street. Soil gas analytical results are presented in Table 1 and shown in Figure 1.

Chloroform was detected in 12 of the 40 soil gas samples. The maximum chloroform concentration of 3.3 ug/m^3 was detected in the 15-foot sample from location SG-6 (Table 1). Chloroform is not considered a site related constituent and is typically associated with potable water system leakage of chlorine disinfection byproducts.

Screening Risk Evaluation

Risk characterization involves estimating the magnitude of the potential adverse health effects that could occur as a result of chronic, long-term exposure to chemicals identified in soil gas at the site.

As mentioned above, the site has been extensively remediated and today only traces of a few VOCs remain in soil gas at depths between 5 and 15 feet bgs (Table 1). It is known that chemicals may migrate through environmental media from their source to a point where human receptors may be exposed. Therefore, ETSI used the risk assessment methods in the USEPA's vapor intrusion risk evaluation manual (USEPA 2002) to determine if the detected VOCs – given their residual concentrations, locations, soil physical characteristics, weather conditions, etc. – could potentially migrate up to the surface (where human receptors may be exposed).

The State of Nebraska does not have guidelines regarding vapor-phase migration of VOCs to indoor air, the USEPA recommends that the risk from TCE migration to indoor air be evaluated using (1) the California EPA Department of Toxic Substances Control (DTSC) toxicity values and (2) the New York State Department of Health (NYSDOH) screening level for sub-slab soil gas value of 5 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

Screening-level models were used to predict indoor air concentrations that may result from the chemical vapors in the soil gas under the residences. The estimated vapor flux and indoor air concentrations were then used to estimate potential health risks that may result from exposure. For purposes of this evaluation, ETSI assumed that the soil gas samples are representative of soil gas concentrations under a typical residence and that the exposed population is made up of adult and child residential receptors. The only exposure pathway that was considered to be complete was the volatilization of VOCs from soil gas and the subsequent emission to indoor air.

The potential migration of VOC vapors into indoor air was estimated using the Johnson and Ettinger model (1991), modified to incorporate DTSC's toxicity values (SG-SCREEN, DTSC Version 2.0-last modified 02/04/2009). A copy of the Johnson and Ettinger model used in the evaluation is included in Attachment A. The estimated VOC flux and ambient concentrations were then used to estimate potential health risks and hazards that may result from exposure to estimated VOC concentrations in indoor air. The Johnson and Ettinger model was run using default soil physical parameters for clayey-silty soils.

The indoor air chemical concentrations estimated to result from the volatilization of VOCs could be considered to represent a "worst-case" estimate. In the calculations it was assumed that single chemical compounds are volatilizing, traveling alone through the vadose zone and escaping to indoor air. In reality, all chemicals detected at the site are competing with each other for available soil-pore space. It is well known that chemical volatilization and migration is limited by the vapor saturation in the vadose zone.

Potential health risks and hazards associated with the estimated indoor VOC concentrations were estimated using equations and methods established by the USEPA. Current regulatory guidance requires risk assessments to be conservative in nature and to overestimate any potential risks. Therefore, actual risks associated with conditions

evaluated in this screening risk evaluation are likely to be lower than those described herein. The estimated incremental cancer risks and health hazards are summarized below.

Given the variable chemical composition and concentrations found in all the sampling points and at different depths (Table 1), the soil gas VOC data was not pooled and averaged to obtain a “site wide” VOC exposure point concentration. Instead, it was assumed that VOC vapors could migrate vertically and impact a residence located directly above the area where those VOCs were detected. For this risk evaluation, potential vapor emissions and associated health risks and hazards were estimated separately for each sampling point.

The Johnson and Ettinger model used in the evaluation contains a module for estimating potential doses as well as cancer risks and health hazards associated with a given chemical dose. For this assessment, separate model runs were conducted for VOCs detected at depths of 5 and 15 feet bgs. For each model run, a soil gas chemical concentration of one $\mu\text{g}/\text{m}^3$ was used as the subsurface soil gas chemical concentration. The estimated cancer risk per unit chemical concentration for each chemical and sample depth was used as the “risk per unit concentration” factor. The “risk per unit concentration” factors were then used to estimate potential cancer risks associated with chemicals detected at the site. “Hazard quotients per unit concentration” factors were also estimated for each VOC detected in soil gas samples. These “hazard quotients per unit concentration” factors were used to estimate hazard quotients associated with chemical concentrations at the various depths sampled. Cancer risk and hazard quotients per unit concentrations estimated for VOCs detected at depths of 5 and 15 feet bgs are presented in Tables 2 and 3, respectively. Spreadsheets used to calculate risk and hazard unit factors are included in Attachment A.

Cancer risks associated with each sampling location and sampling depth were obtained by multiplying the VOC concentration detected in the sample (or the laboratory reporting limit; Table 1) by the “cancer risk per unit concentration” factor for their corresponding sampling depths. The total cancer risk per sample location and sample depths were obtained by adding the cancer risk estimated for each VOC. Cancer risks estimated for VOCs detected at depths of 5 and 15 feet bgs are presented in Tables 4 and 5, respectively. In all cases, the estimated cancer risks are lower than the maximum acceptable risk level of one-in-a-million ($1\text{E}-06$) established by the USEPA for residential receptors.

Hazard quotients (HQs or noncancer hazards) associated with sampling location and sampling depths were obtained by multiplying the VOC concentration detected in the sample (or the laboratory reporting limit; Table 1) by the “hazard quotient per unit concentration” factor for their corresponding sampling depths. The hazard quotient per sample location and sample depths were obtained by adding the hazard quotient estimated for each VOC. As stated above, it was assumed that vapors in each sampling point would enter a single residence and would not mix with vapors released from other sampling points. In other words, single value “site-wide” health risk and hazard

estimates were not calculated. Instead, “single-point” health risk and hazards were calculated for each sampling point where VOCs were detected. Hazard quotients estimated for VOCs detected at depths of 5 and 15 feet bgs are presented in Tables 6 and 7, respectively.

According to the USEPA (1989), if the HQ for a combination of chemicals is less than unity (1.0), there is no concern for potential chronic adverse health effects from the chemical exposures. The HQs estimated are all well below 1.0. Therefore, it can be concluded that noncancer hazards from exposure to chemical-affected indoor air is not associated with a concern for potential chronic adverse health effects.

Additional Screening Evaluation for Trichloroethylene (TCE)

The NYSDOH, has developed an ambient air screening level for TCE (NYSDOH 2006). The screening level, called the “TCE air guideline,” was developed “after consideration of several factors, including recommended health-based air criteria, analytical methods for measuring TCE in air, background concentrations of TCE in air, and uncertainties/gaps in the toxicologic database on TCE” (NYSDOH 2006, page xiii). The TCE air guideline developed by the State of New York is 5 ug/m³.

The TCE air guideline value is not a toxicological value that can be used to estimate cancer risks or health hazards associated with exposures to TCE. Instead, the TCE air guideline is a TCE ambient concentration the State of New York considers to pose no significant health risk and therefore would be acceptable for unrestricted land use.

Sample SG-1 at 5 feet bgs slightly exceeded the screening level with a TCE concentration of 5.5 ug/m³ (Table 1). This sampling location was adjacent to the former TRW facility. The closest residence is over 450 feet from location SG-1. Sample SG-2 was approximately 100 feet from the residence and contained a TCE concentration of 0.69 ug/m³, which is well under the NYSDOH screening level. Thus, it can be concluded that soil gas TCE concentrations detected within the residential area would be considered to pose no significant health risk and would be considered acceptable if the site were to fall under the jurisdiction of the NYS DOH.

Conclusions and Recommendations

Using the methods of risk assessment as outlined in the USEPA’s vapor intrusion risk evaluation manual (USEPA 2002), the cancer risks and noncancer hazards estimated here are below the regulatory threshold values of 1E-06 and 1.0, respectively. No significant cancer risks or noncancer hazards are anticipated to occur as a result of residential exposures to estimated concentrations of VOCs in indoor air.

Results of the evaluation indicate that the levels of VOCs reportedly detected in soil gas do not represent a significant health threat to residential occupants adjacent to the former TRW Facility in McCook, Nebraska. Conclusions are based on reported soil gas

chemical concentrations, reported soil gas sampling and building locations and hypothetical residential exposure conditions.

It should be noted that this risk evaluation was based on site-specific soil gas data as well as conservative (health-protective) assumptions, estimates, models and parameters. Therefore, the results are not absolute estimates of health risks but are health-protective estimates. Incremental cancer risks estimated to result from exposure to VOCs in indoor air are below levels considered significant by the USEPA. Therefore, it can be concluded that exposure to chemical-affected indoor air is not considered to pose a significant cancer risk. Similarly, exposure to chemical-affected indoor air is not associated with a concern for non-cancer adverse health effects.

Attachments

Table 1 – Soil Gas Survey Analytical Results

Table 2 – Estimated Incremental Cancer Risks and Health Quotient per Unit
Concentration Factors for VOCs Detected at a Depth of 5 feet Below Ground
Surface

Table 3 – Estimated Incremental Cancer Risks and Health Quotient per Unit
Concentration Factors for VOCs Detected at a Depth of 15 feet Below Ground
Surface

Table 4 – Estimated Cancer Risks per Sampling Location for Soil Gas Samples Collected
at a Depth of 5 feet Below Ground Surface

Table 5 – Estimated Cancer Risks per Sampling Location for Soil Gas Samples Collected
at a Depth of 15 feet Below Ground Surface

Table 6 – Estimated Hazard Quotients per Sampling Location for Soil Gas Samples
Collected at a Depth of 5 feet Below Ground Surface

Table 7 – Estimated Hazard Quotients per Sampling Location for Soil Gas Samples
Collected at a Depth of 15 feet Below Ground Surface

Figure 1 – Soil Gas Sampling Locations Map (provided by Orion Environmental, Inc.)

Attachment A – Johnson and Ettinger Model (SG-SCREEN, DTSC Version 2.0-Last
Modified 02/04/2009).

References

Johnson, P. C. and R. A. Ettinger. 1991. Heuristic Model for Predicting the Intrusion Rate of Contaminant Vapors into Buildings. *Environmental Science and Technology* 25:1445-1452.

Orion Environmental Inc., 2011. Soil Gas Sampling and Vapor Intrusion Assessment Report. Former TRW Facility. McCook, Nebraska.

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Tables

Table 1
Soil Gas Analytical Results
Former Northrop Grumman Facility
McCook, Nebraska

Sampling Location	Sample ID	Depth (feet)	Volatile Organic Compound ($\mu\text{g}/\text{m}^3$) ^(a)		
			PCE ^(a)	TCE ^(a)	Chloroform ^(a)
SG-1	1A	5	0.70	5.5	0.39
SG-2	2A	5	0.54	0.69	0.39
SG-3	3A	5	0.54	0.21	0.39
SG-4	4A	5	0.54	0.21	0.39
SG-5	5A	5	0.54	0.21	2.9
SG-6	6A	5	0.54	0.21	0.84
SG-7	7A	5	0.54	0.21	0.39
SG-8	8A	5	0.54	0.21	0.47
SG-9	9A	5	0.64	0.21	0.39
SG-10	10A	5	0.54	0.21	0.39
SG-11	11A	5	6.5	0.21	0.39
SG-12	12A	5	0.540	0.21	0.39
SG-13	13A	5	0.62	0.21	0.39
SG-14	14A	5	0.54	0.65	0.39
SG-15	15A	5	0.54	0.21	0.39
SG-16	16A	5	3.1	0.21	1.1
SG-17	17A	5	0.54	0.21	0.42
NF	NEIMAN FRONT 5FT	5	0.67	0.21	0.39
NW	NEIMAN WEST 5FT	5	0.54	0.21	0.39
AN	AHRENS NORTH 5FT	5	1.0	0.51	0.39
SG-1	1B	15	0.54	36	0.39
SG-2	2B	15	0.54	6.4	0.56
SG-3	3B	15	1.9	0.65	1.6
SG-4	4B	15	0.55	0.45	1.3
SG-5	5B	15	1.9	1.7	0.51
SG-6	6B	15	0.83	0.21	3.3
SG-7	7B	15	0.89	0.21	1.6
SG-8	8B	15	1.2	0.21	0.39
SG-9	9B	15	0.94	0.21	0.39
SG-10	10B	15	3.3	0.21	0.39
SG-11	11B	15	3.9	0.21	0.39
SG-12	12B	15	1.6	0.78	0.39
SG-13	13B	15	0.56	0.21	0.39
SG-14	14B	15	0.60	0.24	0.43
SG-15	15B	15	0.66	0.25	0.45
SG-16	16B	15	0.54	0.21	0.39
SG-17	17B	15	0.54	0.21	0.39
NF	NEIMAN FRONT 15FT	15	5.1	0.21	0.39
NW	NEIMAN WEST 15FT	15	4.7	0.21	0.390
AN	AHRENS NORTH 15FT	15	0.54	0.21	0.41

Notes:

Values in red font are reporting limits for non-detected values

(a) Volatile organic compounds analyzed using EPA Method TO-15 including:

PCE = tetrachloroethene

TCE = trichloroethene

Other VOCs may have been detected in low concentrations; see laboratory reports for results.

(b) ND - Not detected at the reporting limit listed.

Table 2
 Estimated Incremental Cancer Risk and Hazard Quotient per Unit Concentration Factors
 for VOCs Detected at a Depth of 5 Feet Below Ground Surface
 Former Northrop Grumman Facility
 McCook, Nebraska

Chemical of Potential Concern (COPC)	CAS Number	Exposure to Indoor Air			
		Soil Gas Concentration (ug/m ³)	Indoor Chemical Air Concentration (ug/m ³)	Cancer Risk per Unit Concentration Factor (risk/ug/m ³)	Hazard Quotient per Unit Concentration Factor (HI/ug/m ³)
Chloroform	67663	1	8.38E-04	1.8E-09	2.7E-06
Tetrachloroethylene	127184	1	6.48E-04	1.6E-09	1.8E-05
Trichloroethylene	79016	1	6.94E-04	5.7E-10	1.1E-06

Notes:

ug/m³ = Micrograms per cubic meter
 NA = Not applicable or not available

Table 3
 Estimated Incremental Cancer Risk and Hazard Quotient per Unit Concentration Factors
 for VOCs Detected at a Depth of 15 Feet Below Ground Surface
 Former Northrop Grumman Facility
 McCook, Nebraska

Chemical of Potential Concern (COPC)	CAS Number	Exposure to Indoor Air			
		Soil Gas Concentration (ug/m ³)	Indoor Chemical Air Concentration (ug/m ³)	Cancer Risk per Unit Concentration Factor (risk/ug/m ³)	Hazard Quotient per Unit Concentration Factor (HI/ug/m ³)
Chloroform	67663	1	3.40E-04	7.4E-10	1.1E-06
Tetrachloroethylene	127184	1	2.46E-04	6.0E-10	6.7E-06
Trichloroethylene	79016	1	2.67E-04	2.2E-10	4.3E-07

Notes:

µg/L = micrograms per liter

NA = Not applicable or not available

Table 4
Estimated Cancer Risks per Sampling Location
for Soil Gas Samples Collected at a Depth of 5 feet Below Ground Surface
Former Northrop Grumman Facility
McCook, Nebraska

Sample Location	Volatile Organic Compound ($\mu\text{g}/\text{m}^3$)			Total Cancer Risk per Sample Location
	Chloroform	Tetrachloroethylene	Trichloroethylene	
Cancer Risk Transfer Factor ($\text{risk}/\mu\text{g}/\text{m}^3$)	1.8E-09	1.6E-09	5.7E-10	
SG-1	7.1E-10	1.1E-09	3.1E-09	4.9E-09
SG-2	7.1E-10	8.5E-10	3.9E-10	2.0E-09
SG-3	7.1E-10	8.5E-10	1.2E-10	1.7E-09
SG-4	7.1E-10	8.5E-10	1.2E-10	1.7E-09
SG-5	5.3E-09	8.5E-10	1.2E-10	6.3E-09
SG-6	1.5E-09	8.5E-10	1.2E-10	2.5E-09
SG-7	7.1E-10	8.5E-10	1.2E-10	1.7E-09
SG-8	8.6E-10	8.5E-10	1.2E-10	1.8E-09
SG-9	7.1E-10	1.0E-09	1.2E-10	1.8E-09
SG-10	7.1E-10	8.5E-10	1.2E-10	1.7E-09
SG-11	7.1E-10	1.0E-08	1.2E-10	1.1E-08
SG-12	7.1E-10	8.5E-10	1.2E-10	1.7E-09
SG-13	7.1E-10	9.7E-10	1.2E-10	1.8E-09
SG-14	7.1E-10	8.5E-10	3.7E-10	1.9E-09
SG-15	7.1E-10	8.5E-10	1.2E-10	1.7E-09
SG-16	2.0E-09	4.9E-09	1.2E-10	7.0E-09
SG-17	7.7E-10	8.5E-10	1.2E-10	1.7E-09
NF	7.1E-10	1.1E-09	1.2E-10	1.9E-09
NW	7.1E-10	8.5E-10	1.2E-10	1.7E-09
AN	7.1E-10	1.6E-09	2.9E-10	2.6E-09

Notes:

$\text{risk}/\mu\text{g}/\text{m}^3$ = Risk per microgram per cubic meter

$\mu\text{g}/\text{m}^3$ = Micrograms per cubic meter

Table 5
Estimated Cancer Risk per Sampling Location
for Soil Gas Samples Collected at a Depth of 15 feet Below Ground Surface
Former Northrop Grumman Facility
McCook, Nebraska

Sample Location	Volatile Organic Compound ($\mu\text{g}/\text{m}^3$)			Total Cancer Risk per Sample Location
	Chloroform	Tetrachloroethylene	Trichloroethylene	
Cancer Risk Transfer Factor (risk/$\mu\text{g}/\text{m}^3$)	7.4E-10	6.0E-10	2.2E-10	
SG-1	2.9E-10	3.2E-10	7.9E-09	8.5E-09
SG-2	4.2E-10	3.2E-10	1.4E-09	2.1E-09
SG-3	1.2E-09	1.1E-09	1.4E-10	2.5E-09
SG-4	9.6E-10	3.3E-10	9.9E-11	1.4E-09
SG-5	3.8E-10	1.1E-09	3.7E-10	1.9E-09
SG-6	2.4E-09	5.0E-10	4.6E-11	3.0E-09
SG-7	1.2E-09	5.3E-10	4.6E-11	1.8E-09
SG-8	2.9E-10	7.2E-10	4.6E-11	1.1E-09
SG-9	2.9E-10	5.6E-10	4.6E-11	9.0E-10
SG-10	2.9E-10	2.0E-09	4.6E-11	2.3E-09
SG-11	2.9E-10	2.3E-09	4.6E-11	2.7E-09
SG-12	2.9E-10	9.5E-10	1.7E-10	1.4E-09
SG-13	2.9E-10	3.3E-10	4.6E-11	6.7E-10
SG-14	3.2E-10	3.6E-10	5.3E-11	7.3E-10
SG-15	3.3E-10	3.9E-10	5.5E-11	7.8E-10
SG-16	2.9E-10	3.2E-10	4.6E-11	6.6E-10
SG-17	2.9E-10	3.2E-10	4.6E-11	6.6E-10
NF	2.9E-10	3.0E-09	4.6E-11	3.4E-09
NW	2.9E-10	2.8E-09	4.6E-11	3.1E-09
AN	3.0E-10	3.2E-10	4.6E-11	6.7E-10

Notes:

risk/ $\mu\text{g}/\text{m}^3$ = Risk per microgram per cubic meter

$\mu\text{g}/\text{m}^3$ = Micrograms per cubic meter

Table 6
Estimated Hazard Quotient per Sampling Location
for Soil Gas Samples Collected at a Depth of 5 feet Below Ground Surface
Former Northrop Grumman Facility
McCook, Nebraska

Sample Location	Volatile Organic Compound ($\mu\text{g}/\text{m}^3$)			Total Hazard Quotient per Sample Location
	Chloroform	Tetrachloroethylene	Trichloroethylene	
Hazard Index Transfer Factor ($\text{HI}/\mu\text{g}/\text{m}^3$)	2.7E-06	1.8E-05	1.1E-06	
SG-1	1.0E-06	1.2E-05	6.1E-06	2.0E-05
SG-2	1.0E-06	9.6E-06	7.6E-07	1.1E-05
SG-3	1.0E-06	9.6E-06	2.3E-07	1.1E-05
SG-4	1.0E-06	9.6E-06	2.3E-07	1.1E-05
SG-5	7.8E-06	9.6E-06	2.3E-07	1.8E-05
SG-6	2.3E-06	9.6E-06	2.3E-07	1.2E-05
SG-7	1.0E-06	9.6E-06	2.3E-07	1.1E-05
SG-8	1.3E-06	9.6E-06	2.3E-07	1.1E-05
SG-9	1.0E-06	1.1E-05	2.3E-07	1.3E-05
SG-10	1.0E-06	9.6E-06	2.3E-07	1.1E-05
SG-11	1.0E-06	1.2E-04	2.3E-07	1.2E-04
SG-12	1.0E-06	9.6E-06	2.3E-07	1.1E-05
SG-13	1.0E-06	1.1E-05	2.3E-07	1.2E-05
SG-14	1.0E-06	9.6E-06	7.2E-07	1.1E-05
SG-15	1.0E-06	9.6E-06	2.3E-07	1.1E-05
SG-16	2.9E-06	5.5E-05	2.3E-07	5.8E-05
SG-17	1.1E-06	9.6E-06	2.3E-07	1.1E-05
NF	1.0E-06	1.2E-05	2.3E-07	1.3E-05
NW	1.0E-06	9.6E-06	2.3E-07	1.1E-05
AN	1.0E-06	1.8E-05	5.7E-07	1.9E-05

Notes:

$\text{HI}/\mu\text{g}/\text{m}^3$ = Hazard index per microgram per cubic meter

$\mu\text{g}/\text{m}^3$ = Micrograms per cubic meter

Table 7
Estimated Hazard Quotient per Sampling Location
for Soil Gas Samples Collected at a Depth of 15 feet Below Ground Surface
Former Northrop Grumman Facility
McCook, Nebraska

Sample Location	Volatile Organic Compound ($\mu\text{g}/\text{m}^3$)			Total Hazard Quotient per Sample Location
	Chloroform	Tetrachloroethylene	Trichloroethylene	
Hazard Index Transfer Factor ($\text{HI}/\mu\text{g}/\text{m}^3$)	1.1E-06	6.7E-06	4.3E-07	
SG-1	4.2E-07	3.6E-06	1.5E-05	1.9E-05
SG-2	6.1E-07	3.6E-06	2.7E-06	7.0E-06
SG-3	1.7E-06	1.3E-05	2.8E-07	1.5E-05
SG-4	1.4E-06	3.7E-06	1.9E-07	5.3E-06
SG-5	5.5E-07	1.3E-05	7.3E-07	1.4E-05
SG-6	3.6E-06	5.6E-06	9.0E-08	9.3E-06
SG-7	1.7E-06	6.0E-06	9.0E-08	7.8E-06
SG-8	4.2E-07	8.1E-06	9.0E-08	8.6E-06
SG-9	4.2E-07	6.3E-06	9.0E-08	6.9E-06
SG-10	4.2E-07	2.2E-05	9.0E-08	2.3E-05
SG-11	4.2E-07	2.6E-05	9.0E-08	2.7E-05
SG-12	4.2E-07	1.1E-05	3.3E-07	1.2E-05
SG-13	4.2E-07	3.8E-06	9.0E-08	4.3E-06
SG-14	4.7E-07	4.0E-06	1.0E-07	4.6E-06
SG-15	4.9E-07	4.5E-06	1.1E-07	5.0E-06
SG-16	4.2E-07	3.6E-06	9.0E-08	4.2E-06
SG-17	4.2E-07	3.6E-06	9.0E-08	4.2E-06
NF	4.2E-07	3.4E-05	9.0E-08	3.5E-05
NW	4.2E-07	3.2E-05	9.0E-08	3.2E-05
AN	4.5E-07	3.6E-06	9.0E-08	4.2E-06

Notes:

$\text{HI}/\mu\text{g}/\text{m}^3$ = Hazard index per microgram per cubic meter

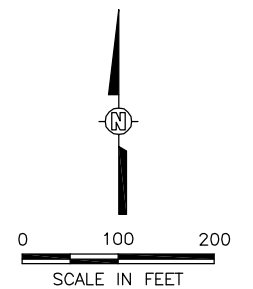
$\mu\text{g}/\text{m}^3$ = Micrograms per cubic meter

Figure



LEGEND:

- ▲ SG-1 SOIL GAS SAMPLING LOCATION
- ▲ GRAB GROUNDWATER SAMPLE
- ◻ GWEX-11 EXTRACTION WELL
- OW-19 OBSERVATION WELL
- ⊙ PRIVATE WELL
- [110] INDICATES TCE CONCENTRATION ($\mu\text{g/l}$) IN OBSERVATION WELL DURING OCTOBER 2010. VALUES FROM <1 TO 99 ARE SHOWN IN GREEN; AND FROM 100 TO 999 ARE SHOWN IN BLUE
- NS INDICATES NO SAMPLE WAS COLLECTED FROM THE WELL DURING OCTOBER 2010
- [<1] INDICATES TCE CONCENTRATION WAS BELOW THE LABORATORY DETECTION LIMIT OF 1 $\mu\text{g/l}$
- SG-14 TRICHLOROETHENE ($\mu\text{g/m}^3$) AS ANALYZED USING EPA METHOD TO-15
- SG-14 TETRACHLOROETHENE ($\mu\text{g/m}^3$) AS ANALYZED USING EPA METHOD TO-15
- ND NOT DETECTED AT THE REPORTING LIMIT LISTED



ORION ENVIRONMENTAL INC.			
FORMER TRW FACILITY - MCCOOK, NEBRASKA			
SOIL GAS SAMPLING RESULTS			
PROJECT NO.	DRAWN BY	CHECKED BY	APPROVED BY
02MCKC	MY	AS	JPG
FILE NO.	FIGURE 1		
02MCKC20100.DWG			

REVISION	REVISIONS		
NO.	BY	DATE	DESCRIPTION
0	MY	1/20/11	Soil Gas Report

Attachment A

**Johnson and Ettinger Model (SG-SCREEN, DTSC
Version 2.0-Last Modified 02/04/2009)**

DATA ENTRY SHEET

SG-SCREEN
A Version 2.0; 04/

Reset to
Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

Soil Gas Concentration Data					Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical		
67663	1.00E+00			Chloroform	1.8E-09	2.7E-06
127184	1.00E+00			Tetrachloroethylene	1.6E-09	1.8E-05
79016	1.00E+00			Trichloroethylene	5.7E-10	1.1E-06

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_s (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152.4	24	SCL		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SCL	1.63	0.384	0.146	5

MORE
↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm ² /s)	Diffusivity in water, D_w (cm ² /s)	Henry's law constant at reference temperature, H (atm·m ³ /mol)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Unit risk factor, URF (µg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)	Molecular weight, MW (g/mol)
1.04E-01	1.00E-05	3.66E-03	25	6,988	334.32	536.40	5.3E-06	3.0E-01	119.38
7.20E-02	8.20E-06	1.84E-02	25	8,288	394.40	620.20	5.9E-06	3.5E-02	165.83
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	2.0E-06	6.0E-01	131.39

END

INTERMEDIATE CALCULATIONS SHEET

Source- building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm ³ /cm ³)	Vadose zone effective total fluid saturation, S_{te} (cm ³ /cm ³)	Vadose zone soil intrinsic permeability, k_i (cm ²)	Vadose zone soil relative air permeability, k_{rg} (cm ²)	Vadose zone soil effective vapor permeability, k_v (cm ²)	Floor- wall seam perimeter, X_{crack} (cm)	Soil gas conc. (μg/m ³)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
137.4	0.238	0.259	2.09E-09	0.859	1.79E-09	4,000	1.00E+00	3.39E+04
137.4	0.238	0.259	2.09E-09	0.859	1.79E-09	4,000	1.00E+00	3.39E+04
137.4	0.238	0.259	2.09E-09	0.859	1.79E-09	4,000	1.00E+00	3.39E+04

Area of enclosed space below grade, A_B (cm ²)	Crack- to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D_v^{eff} (cm ² /s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	7,407	3.51E-03	1.44E-01	1.80E-04	5.92E-03	137.4
1.00E+06	5.00E-03	15	9,410	1.74E-02	7.14E-01	1.80E-04	4.10E-03	137.4
1.00E+06	5.00E-03	15	8,382	9.80E-03	4.02E-01	1.80E-04	4.50E-03	137.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack}^{eff} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)
15	1.00E+00	1.25	8.33E+01	5.92E-03	5.00E+03	1.67E+12	8.38E-04	8.38E-04
15	1.00E+00	1.25	8.33E+01	4.10E-03	5.00E+03	4.55E+17	6.48E-04	6.48E-04
15	1.00E+00	1.25	8.33E+01	4.50E-03	5.00E+03	1.24E+16	6.94E-04	6.94E-04

Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
5.3E-06	3.0E-01
5.9E-06	3.5E-02
2.0E-06	6.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)	Chemical
1.8E-09	2.7E-06	Chloroform
1.6E-09	1.8E-05	Tetrachloroethylene
5.7E-10	1.1E-06	Trichloroethylene

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

SG-SCREEN
A Version 2.0; 04/

Reset to
Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

Soil Gas Concentration Data				Chemical	Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)			
67663	1.00E+00			Chloroform	7.4E-10	1.1E-06
127184	1.00E+00			Tetrachloroethylene	6.0E-10	6.7E-06
79016	1.00E+00			Trichloroethylene	2.2E-10	4.3E-07

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_s (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	457.2	24	SCL		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SCL	1.63	0.384	0.146	5

MORE
↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm ² /s)	Diffusivity in water, D_w (cm ² /s)	Henry's law constant at reference temperature, H (atm-m ³ /mol)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Unit risk factor, URF (µg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)	Molecular weight, MW (g/mol)
1.04E-01	1.00E-05	3.66E-03	25	6,988	334.32	536.40	5.3E-06	3.0E-01	119.38
7.20E-02	8.20E-06	1.84E-02	25	8,288	394.40	620.20	5.9E-06	3.5E-02	165.83
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	2.0E-06	6.0E-01	131.39

END

INTERMEDIATE CALCULATIONS SHEET

Source- building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm ³ /cm ³)	Vadose zone effective total fluid saturation, S_{te} (cm ³ /cm ³)	Vadose zone soil intrinsic permeability, k_i (cm ²)	Vadose zone soil relative air permeability, k_{rg} (cm ²)	Vadose zone soil effective vapor permeability, k_v (cm ²)	Floor- wall seam perimeter, X_{crack} (cm)	Soil gas conc. (μg/m ³)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
442.2	0.238	0.259	2.09E-09	0.859	1.79E-09	4,000	1.00E+00	3.39E+04
442.2	0.238	0.259	2.09E-09	0.859	1.79E-09	4,000	1.00E+00	3.39E+04
442.2	0.238	0.259	2.09E-09	0.859	1.79E-09	4,000	1.00E+00	3.39E+04

Area of enclosed space below grade, A_B (cm ²)	Crack- to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D_v^{eff} (cm ² /s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	7,407	3.51E-03	1.44E-01	1.80E-04	5.92E-03	442.2
1.00E+06	5.00E-03	15	9,410	1.74E-02	7.14E-01	1.80E-04	4.10E-03	442.2
1.00E+06	5.00E-03	15	8,382	9.80E-03	4.02E-01	1.80E-04	4.50E-03	442.2

Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack}^{eff} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe')$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)
15	1.00E+00	1.25	8.33E+01	5.92E-03	5.00E+03	1.67E+12	3.40E-04	3.40E-04
15	1.00E+00	1.25	8.33E+01	4.10E-03	5.00E+03	4.55E+17	2.46E-04	2.46E-04
15	1.00E+00	1.25	8.33E+01	4.50E-03	5.00E+03	1.24E+16	2.67E-04	2.67E-04

Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
5.3E-06	3.0E-01
5.9E-06	3.5E-02
2.0E-06	6.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)	Chemical
7.4E-10	1.1E-06	Chloroform
6.0E-10	6.7E-06	Tetrachloroethylene
2.2E-10	4.3E-07	Trichloroethylene

MESSAGE SUMMARY BELOW:

END

VLOOKUP TABLES

SCS Soil Type	Soil Properties Lookup Table							Bulk Density		
	K _s (cm/h)	α _i (1/cm)	N (unitless)	M (unitless)	n (cm ³ /cm ³)	θ _r (cm ³ /cm ³)	Mean Grain Diameter (cm)	(g/cm ³)	θ _w (cm ³ /cm ³)	SCS Soil Name
C	0.61	0.01496	1.253	0.2019	0.459	0.098	0.0092	1.43	0.215	Clay
CL	0.34	0.01581	1.416	0.2938	0.442	0.079	0.016	1.48	0.168	Clay Loam
L	0.50	0.01112	1.472	0.3207	0.399	0.061	0.020	1.59	0.148	Loam
LS	4.38	0.03475	1.746	0.4273	0.390	0.049	0.040	1.62	0.076	Loamy Sand
S	26.78	0.03524	3.177	0.6852	0.375	0.053	0.044	1.66	0.054	Sand
SC	0.47	0.03342	1.208	0.1722	0.385	0.117	0.025	1.63	0.197	Sandy Clay
SCL	0.55	0.02109	1.330	0.2481	0.384	0.063	0.029	1.63	0.146	Sandy Clay Loam
SI	1.82	0.00658	1.679	0.4044	0.489	0.050	0.0046	1.35	0.167	Silt
SIC	0.40	0.01622	1.321	0.2430	0.481	0.111	0.0039	1.38	0.216	Silty Clay
SICL	0.46	0.00839	1.521	0.3425	0.482	0.090	0.0056	1.37	0.198	Silty Clay Loam
SIL	0.76	0.00506	1.663	0.3987	0.439	0.065	0.011	1.49	0.180	Silt Loam
SL	1.60	0.02667	1.449	0.3099	0.387	0.039	0.030	1.62	0.103	Sandy Loam

Chemical Properties Lookup Table												CalEPA Toxicity Criteria in bold (last updated 2/4/09 DTSC/HERD)		
CAS No.	Chemical	Organic carbon partition coefficient, K _{oc} (cm ³ /g)	Diffusivity in air, D _a (cm ² /s)	Diffusivity in water, D _w (cm ² /s)	Pure component water solubility, S (mg/L)	Henry's law constant, H' (unitless)	Henry's law constant at reference temperature, H (atm-m ³ /mol)	Henry's law constant reference temperature, T _R (°C)	Normal boiling point, T _B (°K)	Critical temperature, T _C (°K)	Enthalpy of vaporization at the normal boiling point, ΔH _{v,b} (cal/mol)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)	Molecular weight, MW (g/mol)
56235	Carbon tetrachloride	1.74E+02	7.80E-02	8.80E-06	7.93E+02	1.24E+00	3.03E-02	25	349.90	556.60	7,127	4.2E-05	4.0E-02	1.54E+02
57749	Chlordane	1.20E+05	1.18E-02	4.37E-06	5.60E-02	1.99E-03	4.85E-05	25	624.24	885.73	14,000	3.4E-04	7.0E-04	4.10E+02
58899	gamma-HCH (Lindane)	1.07E+03	1.42E-02	7.34E-06	7.30E+00	5.73E-04	1.40E-05	25	596.55	839.36	15,000	3.1E-04	1.1E-03	2.91E+02
60297	Ethyl ether	5.73E+00	7.82E-02	8.61E-06	5.68E+04	1.35E+00	3.29E-02	25	307.50	466.74	6,338	0.0E+00	7.0E-01	7.41E+01
60571	Dieldrin	2.14E+04	1.25E-02	4.74E-06	1.95E-01	6.18E-04	1.51E-05	25	613.32	842.25	17,000	4.6E-03	1.8E-04	3.81E+02
67641	Acetone	5.75E-01	1.24E-01	1.14E-05	1.00E+06	1.59E-03	3.87E-05	25	329.20	508.10	6,955	0.0E+00	3.1E+01	5.81E+01
67663	Chloroform	3.98E+01	1.04E-01	1.00E-05	7.92E+03	1.50E-01	3.66E-03	25	334.32	536.40	6,988	5.3E-06	3.0E-01	1.19E+02
67721	Hexachloroethane	1.78E+03	2.50E-03	6.80E-06	5.00E+01	1.59E-01	3.88E-03	25	458.00	695.00	9,510	1.1E-05	3.5E-03	2.37E+02
71432	Benzene	5.89E+01	8.80E-02	9.80E-06	1.79E+03	2.27E-01	5.54E-03	25	353.24	562.16	7,342	2.9E-05	3.0E-02	7.81E+01
71556	1,1,1-Trichloroethane	1.10E+02	7.80E-02	8.80E-06	1.33E+03	7.03E-01	1.72E-02	25	347.24	545.00	7,136	0.0E+00	5.0E+00	1.33E+02
72435	Methoxychlor	9.77E+04	1.56E-02	4.46E-06	1.00E-01	6.46E-04	1.58E-05	25	651.02	848.49	16,000	0.0E+00	1.8E-02	3.46E+02
72559	DDE	4.47E+06	1.44E-02	5.87E-06	1.20E-01	8.59E-04	2.09E-05	25	636.44	860.38	15,000	9.7E-05	0.0E+00	3.48E+02
74839	Methyl bromide	1.05E+01	7.28E-02	1.21E-05	1.52E+04	2.55E-01	6.22E-03	25	276.71	467.00	5,714	0.0E+00	5.0E-03	9.49E+01
74873	Methyl chloride (chloromethane)	2.12E+00	1.26E-01	6.50E-06	5.33E+03	3.61E-01	8.80E-03	25	249.00	416.25	5,115	1.8E-06	9.0E-02	5.05E+01
74908	Hydrogen cyanide	3.80E+00	1.93E-01	2.10E-05	1.00E+06	5.44E-03	1.33E-04	25	299.00	456.70	6,676	0.0E+00	3.0E-03	2.70E+01
74953	Methylene bromide	1.26E+01	4.30E-02	8.44E-06	1.19E+04	3.52E-02	8.59E-04	25	370.00	583.00	7,868	0.0E+00	3.5E-02	1.74E+02
75003	Chloroethane (ethyl chloride)	4.40E+00	2.71E-01	1.15E-05	5.68E+03	3.61E-01	8.80E-03	25	285.30	460.40	5,879	8.3E-07	1.0E+01	6.45E+01
75014	Vinyl chloride (chloroethene)	1.86E+01	1.06E-01	1.23E-05	8.80E+03	1.10E+00	2.69E-02	25	259.25	432.00	5,250	7.8E-05	1.0E-01	6.25E+01
75058	Acetonitrile	4.20E+00	1.28E-01	1.66E-05	1.00E+06	1.42E-03	3.45E-05	25	354.60	545.50	7,110	0.0E+00	6.0E-02	4.11E+01
75070	Acetaldehyde	1.06E+00	1.24E-01	1.41E-05	1.00E+06	3.23E-03	7.87E-05	25	293.10	466.00	6,157	2.7E-06	9.0E-03	4.41E+01
75092	Methylene chloride	1.17E+01	1.01E-01	1.17E-05	1.30E+04	8.96E-02	2.18E-03	25	313.00	510.00	6,706	1.0E-06	4.0E-01	8.49E+01
75150	Carbon disulfide	4.57E+01	1.04E-01	1.00E-05	1.19E+03	1.24E+00	3.02E-02	25	319.00	552.00	6,391	0.0E+00	7.0E-01	7.61E+01
75218	Ethylene oxide	1.33E+00	1.04E-01	1.45E-05	3.04E+05	2.27E-02	5.54E-04	25	283.60	469.00	6,104	8.8E-05	3.0E-02	4.41E+01
75252	Bromoform	8.71E+01	1.49E-02	1.03E-05	3.10E+03	2.41E-02	5.88E-04	25	422.35	696.00	9,479	1.1E-06	7.0E-02	2.53E+02
75274	Bromodichloromethane	5.50E+01	2.98E-02	1.06E-05	6.74E+03	6.54E-02	1.60E-03	25	363.15	585.85	7,800	3.7E-05	7.0E-02	1.64E+02
75296	2-Chloropropane	9.14E+00	8.88E-02	1.01E-05	3.73E+03	5.93E-01	1.45E-02	25	308.70	485.00	6,286	0.0E+00	1.0E-01	7.85E+01
75343	1,1-Dichloroethane	3.16E+01	7.42E-02	1.05E-05	5.06E+03	2.30E-01	5.61E-03	25	330.55	523.00	6,895	1.6E-06	7.0E-01	9.90E+01
75354	1,1-Dichloroethylene	5.89E+01	9.00E-02	1.04E-05	2.25E+03	1.07E+00	2.60E-02	25	304.75	576.05	6,247	0.0E+00	7.0E-02	9.69E+01
75456	Chlorodifluoromethane	4.79E+01	1.01E-01	1.28E-05	2.00E+00	1.10E+00	2.70E-02	25	232.40	369.30	4,836	0.0E+00	5.0E+01	8.65E+01
75694	Trichlorofluoromethane	4.97E+02	8.70E-02	9.70E-06	1.10E+03	3.97E+00	9.68E-02	25	296.70	471.00	5,999	0.0E+00	7.0E-01	1.37E+02
75718	Dichlorodifluoromethane	4.57E+02	6.65E-02	9.92E-06	2.80E+02	1.40E+01	3.42E-01	25	243.20	384.95	9,421	0.0E+00	2.0E-01	1.21E+02
76131	1,1,2-Trichloro-1,2,2-trifluoroeth	1.11E+04	7.80E-02	8.20E-06	1.70E+02	1.97E+01	4.80E-01	25	320.70	487.30	6,463	0.0E+00	3.0E+01	1.87E+02
76448	Heptachlor	1.41E+06	1.12E-02	5.69E-06	1.80E-01	6.05E+01	1.48E+00	25	603.69	846.31	13,000	1.2E-03	1.8E-03	3.73E+02
77474	Hexachlorocyclopentadiene	2.00E+05	1.61E-02	7.21E-06	1.80E+00	1.10E+00	2.69E-02	25	512.15	746.00	10,931	0.0E+00	2.0E-04	2.73E+02
78831	Isobutanol	2.59E+00	8.60E-02	9.30E-06	8.50E+04	4.83E-04	1.18E-05	25	381.04	547.78	10,936	0.0E+00	1.1E+00	7.41E+01
78875	1,2-Dichloropropane	4.37E+01	7.82E-02	8.73E-06	2.80E+03	1.15E-01	2.79E-03	25	369.52	572.00	7,590	1.0E-05	4.0E-03	1.13E+02
78933	Methylethylketone (2-butanone)	2.30E+00	8.08E-02	9.80E-06	2.23E+05	2.29E-03	5.58E-05	25	352.50	536.78	7,481	0.0E+00	5.0E+00	7.21E+01
79005	1,1,2-Trichloroethane	5.01E+01	7.80E-02	8.80E-06	4.42E+03	3.73E-02	9.11E-04	25	386.15	602.00	8,322	1.6E-05	1.4E-02	1.33E+02
79016	Trichloroethylene	1.66E+02	7.90E-02	9.10E-06	1.47E+03	4.21E-01	1.03E-02	25	360.36	544.20	7,505	2.0E-06	6.0E-01	1.31E+02
79209	Methyl acetate	3.26E+00	1.04E-01	1.00E-05	2.00E+03	4.84E-03	1.18E-04	25	329.80	506.70	7,260	0.0E+00	3.5E+00	7.41E+01
79345	1,1,2,2-Tetrachloroethane	9.33E+01	7.10E-02	7.90E-06	2.96E+03	1.41E-02	3.44E-04	25	419.60	661.15	8,996	5.8E-05	1.4E-02	1.68E+02
79469	2-Nitropropane	1.17E+01	9.23E-02	1.01E-05	1.70E+04	5.03E-03	1.23E-04	25	393.20	594.00	8,383	2.7E-03	2.0E-02	8.91E+01
80626	Methylmethacrylate	6.98E+00	7.70E-02	8.60E-06	1.50E+04	1.38E-02	3.36E-04	25	373.50	567.00	8,975	0.0E+00	7.0E-01	1.00E+02
83329	Acenaphthene	7.08E+03	4.21E-02	7.69E-06	3.57E+00	6.34E-03	1.55E-04	25	550.54	803.15	12,155	0.0E+00	2.1E-01	1.54E+02
86737	Fluorene	1.38E+04	3.63E-02	7.88E-06	1.98E+00	2.60E-03	6.34E-05	25	570.44	870.00	12,666	0.0E+00	1.4E-01	1.66E+02
87683	Hexachloro-1,3-butadiene	5.37E+04	5.61E-02	6.16E-06	3.20E+00	3.33E-01	8.13E-03	25	486.15	738.00	10,206	2.2E-05	3.5E-03	2.61E+02

VLOOKUP TABLES

88722	o-Nitrotoluene	3.24E+02	5.87E-02	8.67E-06	6.50E+02	5.11E-04	1.25E-05	25	495.00	720.00	12,239	0.0E+00	3.2E-03	1.37E+02
91203	Naphthalene	2.00E+03	5.90E-02	7.50E-06	3.10E+01	1.98E-02	4.82E-04	25	491.14	748.40	10,373	3.4E-05	3.0E-03	1.28E+02
91576	2-Methylnaphthalene	2.81E+03	5.22E-02	7.75E-06	2.46E+01	2.12E-02	5.17E-04	25	514.26	761.00	12,600	0.0E+00	1.4E-02	1.42E+02
92524	Biphenyl	4.38E+03	4.04E-02	8.15E-06	7.45E+00	1.23E-02	2.99E-04	25	529.10	789.00	10,890	0.0E+00	1.8E-01	1.54E+02
95476	o-Xylene	3.63E+02	8.70E-02	1.00E-05	1.78E+02	2.12E-01	5.18E-03	25	417.60	630.30	8,661	0.0E+00	1.0E-01	1.06E+02
95501	1,2-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	1.56E+02	7.77E-02	1.90E-03	25	453.57	705.00	9,700	0.0E+00	2.0E-01	1.47E+02
95578	2-Chlorophenol	3.88E+02	5.01E-02	9.46E-06	2.20E+04	1.60E-02	3.90E-04	25	447.53	675.00	9,572	0.0E+00	1.8E-02	1.29E+02
95636	1,2,4-Trimethylbenzene	1.35E+03	6.06E-02	7.92E-06	5.70E+01	2.52E-01	6.14E-03	25	442.30	649.17	9,369	0.0E+00	7.0E-03	1.20E+02
96184	1,2,3-Trichloropropane	2.20E+01	7.10E-02	7.90E-06	1.75E+03	1.67E-02	4.08E-04	25	430.00	652.00	9,171	2.0E-03	2.1E-02	1.47E+02
96333	Methyl acrylate	4.53E+00	9.76E-02	1.02E-05	6.00E+04	7.68E-03	1.87E-04	25	353.70	536.00	7,749	0.0E+00	1.1E-01	8.61E+01
97632	Ethylmethacrylate	2.95E+01	6.53E-02	8.37E-06	3.67E+03	3.44E-02	8.40E-04	25	390.00	571.00	10,957	0.0E+00	3.2E-01	1.14E+02
98066	tert-Butylbenzene	7.71E+02	5.65E-02	8.02E-06	2.95E+01	4.87E-01	1.19E-02	25	442.10	1220.00	8,980	0.0E+00	1.4E-01	1.34E+02
98828	Cumene	4.89E+02	6.50E-02	7.10E-06	6.13E+01	4.74E+01	1.16E+00	25	425.56	631.10	10,335	0.0E+00	4.0E-01	1.20E+02
98862	Acetophenone	5.77E+01	6.00E-02	8.73E-06	6.13E+03	4.38E-04	1.07E-05	25	475.00	709.50	11,732	0.0E+00	3.5E-01	1.20E+02
98953	Nitrobenzene	6.46E+01	7.60E-02	8.60E-06	2.09E+03	9.82E-04	2.39E-05	25	483.95	719.00	10,566	0.0E+00	2.0E-03	1.23E+02
100414	Ethylbenzene	3.63E+02	7.50E-02	7.80E-06	1.69E+02	3.22E-01	7.86E-03	25	409.34	617.20	8,501	2.5E-06	1.0E+00	1.06E+02
100425	Styrene	7.76E+02	7.10E-02	8.00E-06	3.10E+02	1.12E-01	2.74E-03	25	418.31	636.00	8,737	0.0E+00	9.0E-01	1.04E+02
100447	Benzylchloride	6.14E+01	7.50E-02	7.80E-06	5.25E+02	1.70E-02	4.14E-04	25	452.00	685.00	8,773	4.9E-05	1.0E-03	1.27E+02
100527	Benzaldehyde	4.59E+01	7.21E-02	9.07E-06	3.30E+03	9.73E-04	2.37E-05	25	452.00	695.00	11,658	0.0E+00	3.5E-01	1.06E+02
103651	n-Propylbenzene	5.62E+02	6.01E-02	7.83E-06	6.00E+01	1.07E-02	4.37E-01	25	432.20	630.00	9,123	0.0E+00	1.4E-01	1.20E+02
104518	n-Butylbenzene	1.11E+03	5.70E-02	8.12E-06	2.00E+00	5.38E-01	1.31E-02	25	456.46	660.50	9,290	0.0E+00	1.4E-01	1.34E+02
106423	p-Xylene	3.89E+02	7.69E-02	8.44E-06	1.85E+02	3.13E-01	7.64E-03	25	411.52	616.20	8,525	0.0E+00	1.0E-01	1.06E+02
106467	1,4-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	7.90E+01	9.82E-02	2.39E-03	25	447.21	684.75	9,271	1.1E-05	8.0E-01	1.47E+02
106934	1,2-Dibromoethane (ethylene di	2.50E+01	2.17E-02	1.19E-05	4.18E+03	3.04E-02	7.41E-04	25	404.60	583.00	8,310	7.1E-05	8.0E-04	1.88E+02
106990	1,3-Butadiene	1.91E+01	2.49E-01	1.08E-05	7.35E+02	3.01E+00	7.34E-02	25	268.60	425.00	5,370	1.7E-04	2.0E-03	5.41E+01
107028	Acrolein	2.76E+00	1.05E-01	1.22E-05	2.13E+05	4.99E-03	1.22E-04	25	325.60	506.00	6,731	0.0E+00	2.0E-05	5.61E+01
107062	1,2-Dichloroethane	1.74E+01	1.04E-01	9.90E-06	8.52E+03	4.00E-02	9.77E-04	25	356.65	561.00	7,643	2.1E-05	4.0E-01	9.90E+01
107131	Acrylonitrile	5.90E+00	1.22E-01	1.34E-05	7.40E+04	4.21E-03	1.03E-04	25	350.30	519.00	7,786	2.9E-04	2.0E-03	5.31E+01
108054	Vinyl acetate	5.25E+00	8.50E-02	9.20E-06	2.00E+04	2.09E-02	5.10E-04	25	345.65	519.13	7,800	0.0E+00	2.0E-01	8.61E+01
108101	Methylisobutylketone (4-methyl-	9.06E+00	7.50E-02	7.80E-06	1.90E+04	5.64E-03	1.38E-04	25	389.50	571.00	8,243	0.0E+00	3.0E+00	1.00E+02
108383	m-Xylene	4.07E+02	7.00E-02	7.80E-06	1.61E+02	3.00E-01	7.32E-03	25	412.27	617.05	8,523	0.0E+00	1.0E-01	1.06E+02
108678	1,3,5-Trimethylbenzene	1.35E+03	6.02E-02	8.67E-06	2.00E+00	2.41E-01	5.87E-03	25	437.89	637.25	9,321	0.0E+00	6.0E-03	1.20E+02
108872	Methylcyclohexane	7.85E+01	7.35E-02	8.52E-06	1.40E+01	4.22E+00	1.03E-01	25	373.90	572.20	7,474	0.0E+00	3.0E+00	9.82E+01
108883	Toluene	1.82E+02	8.70E-02	8.60E-06	5.26E+02	2.72E-01	6.62E-03	25	383.78	591.79	7,930	0.0E+00	3.0E-01	9.21E+01
108907	Chlorobenzene	2.19E+02	7.30E-02	8.70E-06	4.72E+02	1.51E-01	3.69E-03	25	404.87	632.40	8,410	0.0E+00	1.0E+00	1.13E+02
109693	1-Chlorobutane	1.72E+01	8.26E-02	1.00E-05	1.10E+03	6.93E-01	1.69E-02	25	351.60	542.00	7,263	0.0E+00	1.4E-01	9.26E+01
110009	Furan	1.86E+01	1.04E-01	1.22E-05	1.00E+04	2.21E-01	5.39E-03	25	304.60	490.20	6,477	0.0E+00	3.5E-03	6.81E+01
110543	Hexane	4.34E+01	2.00E-01	7.77E-06	1.24E+01	6.82E+01	1.66E+00	25	341.70	508.00	6,895	0.0E+00	7.0E-01	8.62E+01
111444	Bis(2-chloroethyl)ether	1.55E+01	6.92E-02	7.53E-06	1.72E+04	7.36E-04	1.80E-05	25	451.15	659.79	10,803	7.1E-04	0.0E+00	1.43E+02
115297	Endosulfan	2.14E+03	1.15E-02	4.55E-06	5.10E-01	4.58E-04	1.12E-05	25	674.43	942.94	14,000	0.0E+00	2.1E-02	4.07E+02
118741	Hexachlorobenzene	5.50E+04	5.42E-02	5.91E-06	5.00E-03	5.40E-02	1.32E-03	25	582.55	825.00	14,447	5.1E-04	2.8E-03	2.85E+02
120821	1,2,4-Trichlorobenzene	1.78E+03	3.00E-02	8.23E-06	4.88E+01	5.81E-02	1.42E-03	25	486.15	725.00	10,471	0.0E+00	4.0E-03	1.81E+02
123739	Crotonaldehyde (2-butenal)	4.82E+00	9.56E-02	1.07E-05	3.69E+04	7.99E-04	1.95E-05	25	375.20	568.00	9	5.4E-04	0.0E+00	7.01E+01
124481	Chlorodibromomethane	6.31E+01	1.96E-02	1.05E-05	2.60E+03	3.20E-02	7.81E-04	25	416.14	678.20	5,900	2.7E-05	7.0E-02	2.08E+02
126987	Methacrylonitrile	3.58E+01	1.12E-01	1.32E-05	2.54E+04	1.01E-02	2.46E-04	25	363.30	554.00	7,600	0.0E+00	7.0E-04	6.71E+01
126998	2-Chloro-1,3-butadiene (chlorop	6.73E+01	8.58E-02	1.03E-05	2.12E+03	4.91E-01	1.20E-02	25	332.40	525.00	8,075	0.0E+00	7.0E-03	8.85E+01
127184	Tetrachloroethylene	1.55E+02	7.20E-02	8.20E-06	2.00E+02	7.53E-01	1.84E-02	25	394.40	620.20	8,288	5.9E-06	3.5E-02	1.66E+02
129000	Pyrene	1.05E+05	2.72E-02	7.24E-06	1.35E+00	4.50E-04	1.10E-05	25	667.95	936	14,370	0.0E+00	1.1E-01	2.02E+02
132649	Dibenzofuran	5.15E+03	2.38E-02	6.00E-06	3.10E+00	5.15E-04	1.26E-05	25	560	824	66,400	0.0E+00	1.4E-02	1.68E+02
135988	sec-Butylbenzene	9.66E+02	5.70E-02	8.12E-06	3.94E+00	5.68E-01	1.39E-02	25	446.5	679	88,730	0.0E+00	1.4E-01	1.34E+02
141786	Ethylacetate	6.44E+00	7.32E-02	9.70E-06	8.03E+04	5.64E-03	1.38E-04	25	350.26	523.3	7633.66	0.0E+00	3.2E+00	8.81E+01
156592	cis-1,2-Dichloroethylene	3.55E+01	7.36E-02	1.13E-05	3.50E+03	1.67E-01	4.07E-03	25	333.65	544	7192	0.0E+00	3.5E-02	9.69E+01
156605	trans-1,2-Dichloroethylene	5.25E+01	7.07E-02	1.19E-05	6.30E+03	3.84E-01	9.36E-03	25	320.85	516.5	6717	0.0E+00	6.0E-02	9.69E+01
205992	Benzo(b)fluoranthene	1.23E+06	2.26E-02	5.56E-06	1.50E-03	4.54E-03	1.11E-04	25	715.9	969.27	17,000	1.1E-04	0.0E+00	2.52E+02
218019	Chrysene	3.98E+05	2.48E-02	6.21E-06	6.30E-03	3.87E-03	9.44E-05	25	714.15	979	16,455	1.1E-05	0.0E+00	2.28E+02
309002	Aldrin	2.45E+06	1.32E-02	4.86E-06	1.70E-02	6.95E-03	1.70E-04	25	603.01	839.37	15,000	4.9E-03	1.1E-04	3.65E+02
319846	alpha-HCH (alpha-BHC)	1.23E+03	1.42E-02	7.34E-06	2.00E+00	4.34E-04	1.06E-05	25	596.55	839.36	15,000	7.7E-04	0.0E+00	2.91E+02
541731	1,3-Dichlorobenzene	1.98E+03	6.92E-02	7.86E-06	1.34E+02	1.27E-01	3.09E-03	25	446	684	9230.18	0.0E+00	1.1E-01	1.47E+02
542756	1,3-Dichloropropene	4.57E+01	6.26E-02	1.00E-05	2.80E+03	7.24E-01	1.77E-02	25	381.15	587.38	7900	1.6E-05	2.0E-02	1.11E+02
630206	1,1,1,2-Tetrachloroethane	1.16E+02	7.10E-02	7.90E-06	1.10E+03	9.90E-02	2.41E-03	25	403.5	624	9768.282525	7.4E-06	1.1E-01	1.68E+02
1634044	MTBE	7.26E+00	1.02E-01	1.05E-05	5.10E+04	2.56E-02	6.23E-04	25	328.3	497.1	6677.66	2.6E-07	3.0E+00	8.82E+01
7439976	Mercury (elemental)	5.20E+01	3.07E-02	6.30E-06	2.00E+01	4.40E-01	1.07E-02	25	629.88	1750	14127	0.0E+00	3.0E-05	2.01E+02