

**Countywide Recycling & Disposal Facility
Ambient Air Monitoring
Monthly Report #24**

**Monitoring Events #112 through #116
Supplemental Isolation Break Monitoring Events #9 through #11**

May 20, 2009

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**Countywide Recycling & Disposal Facility
Ambient Air Monitoring
Monthly Report #24
May 20, 2009**

**To Fulfill the Requirements Set Forth in Order 5.A. of the Ohio EPA
Director's Findings and Orders Dated March 28, 2007**

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**Countywide Recycling & Disposal Facility
Ambient Air Monitoring
Monthly Report #24
May 20, 2009
Monitoring Events #112 through #116; and
Supplemental Isolation Break Monitoring Events #9 through #11**

1.0 INTRODUCTION

1.1 Current Activities

As described in Section 1.2 below, beginning on Monday May 21, 2007, ambient air sampling is being conducted every six days as mandated by Order 5.A. of the Ohio EPA Director's Findings and Orders dated March 28, 2007. This report summarizes the analytical results from the following Community Monitoring Events.

- Event #112: Monday March 23 to Tuesday March 24
- Event #113: Sunday March 29 to Monday March 30
- Event #114: Saturday April 4 to Sunday April 5
- Event #115: Friday April 10 to Saturday April 11
- Event #116: Thursday April 16 to Friday April 17

Coincident with excavation of the Isolation Break to separate the reaction areas from the rest of the landfill, supplemental monitoring for VOCs is being conducted in the period between the regularly scheduled every sixth-day community monitoring events. Although the samples are collected at the same community locations, the supplemental samples are collected for a period of 8-hours rather than 24-hours to correlate with monitoring being conducted on-site during the work day when active excavation is occurring. The following Supplemental Isolation Break Monitoring Events are included in this Monthly Report #24.

- Isolation Break Monitoring Event #9: Thursday April 2
- Isolation Break Monitoring Event #10: Wednesday April 8
- Isolation Break Monitoring Event #11: Tuesday April 14

The sampling and analysis has been conducted to be consistent with the Task Specific Quality Management Plan for the Site, as updated to incorporate modifications that have been made to the sampling apparatus and sampling protocol to minimize/eliminate sources of variability. There have been no additional modifications made to the system during the time period reflected in this Monthly Report.

1.2 Background

As specified by the Ohio EPA in Bryan Zima's March 28, 2007, letter to Jason Perdion of Baker & Hostetler, air samples were analyzed for the following groups of compounds:

- Volatile Organic Compounds (VOCs): EPA Method TO-15 modified with Tentatively Identified Compounds (TICs)
- Sulfur Compounds: EPA Method TO-15 modified
- Aldehydes and Ketones: EPA Method TO-11A
- Hydrogen Fluoride and Hydrogen Chloride: NIOSH Method 7903

Beginning in April 2009, all analyses were performed by TestAmerica Laboratories, Inc., (TestAmerica), 5815 Middlebrook Pike, Knoxville, TN 37921. Prior to this time, analyses for aldehydes (EPA Method TO-11A) and hydrogen fluoride/hydrogen chloride (NIOSH Method 7903) were performed by Integrated Analytical Laboratory (IAL), Randolph, NJ. VOC analyses were all performed by TestAmerica.

In order to identify conditions that may be of concern, results from the community monitoring are compared to conservative risk-based concentrations for chemicals in air in non-occupational settings. The most conservative (lowest) benchmark used for comparison is the USEPA Region 9 Preliminary Remediation Goals (PRGs), followed by the Agency for Toxic Substances and Disease Registry (ATSDR) Minimum Risk Levels (MRLs). The differences between these screening levels are briefly discussed below.

The USEPA Region 9 PRG is the concentration of a chemical in the ambient air that is estimated to be without significant risk to a person who would breathe that level of chemical continuously over many decades. The Region 9 PRGs are derived using conservative mathematical formulas and do not represent the level of a chemical in the air (or other environmental media) where health effects are likely to occur. Region 9 PRGs are generally accepted as conservative screening values, such that if the concentration of a chemical in the air is less than the corresponding PRG, most public health officials and regulators are confident that there is no risk to human health. On the other hand, an analytical result that exceeds the corresponding PRG does not mean that there is an unacceptable risk to public health.

The constituents that were detected in the Monitoring Events covered by this report are commonly found at low levels in ambient air. For some compounds such as benzene, the mathematically-derived Region 9 PRG of 0.25 ug/m³ is lower than the average background concentration of 1.96 ug/m³ in ambient air in Ohio (Ohio EPA, *Portsmouth Ohio Air Quality Study 2003*). Additionally, finding certain constituents in ambient air at levels above PRGs that are very close to analytical detection limits is not uncommon and may simply reflect fluctuations in background sources. It should be noted that not all of the compounds found in the air samples have corresponding PRGs.

Analytical results for VOCs are also compared to the ATSDR Acute and Chronic Minimum Risk Levels (MRLs), where available. A MRL is an estimate of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse health effects over a specified duration of exposure. PRGs and MRLs are useful screening levels that assist risk assessors in identifying those chemicals that may pose a health concern. Neither PRGs nor

MRLs represent levels of exposure that have been documented to cause actual health effects. Constituents that were detected below PRGs or MRLs will not be further summarized or discussed in this report unless those particular results help to explain other findings.

Ambient environmental/climate conditions are discussed in Section 2.0. Results of the monitoring are discussed in Section 3.0 and summarized in Section 4.0 of this report. Analytical results from the laboratory are provided in the Appendices.

2.0 AMBIENT CONDITIONS

The descriptions of ambient conditions are taken from the Daily Odor Monitoring Summary compiled by Countywide's consultant, Diversified Engineering.

Event #112: Monday March 23 to Tuesday March 24

March 23: Average temperature in degrees F: 39, Max. 53, Min. 26.

Winds were 3 mph with a max speed of 8 mph out of the NE.

Average relative humidity 42% with no precipitation recorded.

Complaints: Complaints occurred at 6:58am from Hennis Care Center in Bolivar; at 7:43am from near the elementary school in Bolivar and on I-77; at 9:14am at I-77N between mile markers 95 and 97; at 1:07pm and 1:27pm along the Tuscarawas River and also on lane to Residence; at 9:05pm from 12102 Sherman Church Avenue in Bolivar; and at 9:13pm from 9863 Sherman Church Avenue in Bolivar. Temporary cap maintenance; isolation break excavation; and deep trench excavation were potentially odor-causing activities noted on the Daily Odor Monitoring Summary.

March 24: Average temperature in degrees F: 44, Max. 62, Min. 28

Winds were 6 mph with max gusts of 17 mph out of the E.

Average relative humidity 24% with no precipitation recorded.

Complaints: Complaints occurred at 9:12am from I-77N between mile markers 95 and 96 and at 10:25am (time revised to 11:11 via email) from Sherman Church Avenue near Hudson Street in Bolivar. Deep trench excavation and isolation break excavation were potentially odor-causing activities noted on the Daily Odor Monitoring Summary.

Event #113: Sunday March 29 to Monday March 30

March 29: Average temperature in degrees F: 45, Max. 55, Min. 34.

Winds were 10 mph with max gusts of 33 mph out of the W.

Average relative humidity 76% with 0.30 inches of precipitation recorded.

Complaints: There were no odor complaints during this time.

March 30: Average temperature in degrees F: 42, Max. 52, Min. 33.

Winds were 12 mph with max gusts of 24 mph out of the NW.

Average relative humidity 64% with 0.02 inches of precipitation recorded.

Complaints: There were no odor complaints during this time.

Event #114: Saturday April 4 to Sunday April 5

April 4: Average temperature in degrees F: 44, Max. 55, Min. 35.

Winds were 11 mph with max gusts of 28 mph out of the NW.

Average relative humidity 56% with no precipitation recorded.

Complaints: There were no odor complaints during this time.
April 5: Average temperature in degrees F: 47, Max. 64, Min. 30
Winds were calm with max gusts of 16 mph out of SSE.
Average relative humidity 58% with 0.03 inches of precipitation recorded.
Complaints: There were no odor complaints during this time.

Event #115: Friday April 10 to Saturday April 11

April 10: Average temperature in degrees F: 46, Max. 51, Min. 42.
Winds were calm with max gusts of 17 mph out of the ENE.
Average relative humidity 80% with 0.25 inches of precipitation recorded.
Complaints: There were no odor complaints during this time.
April 11: Average temperature in degrees F: 46, Max. 54, Min. 37.
Winds were 9 mph with max gusts of 25 mph out of the NNE.
Average relative humidity 52% with no precipitation recorded.
Complaints: There were no odor complaints during this time.

Event #116: Thursday April 16 to Friday April 17

April 16: Average temperature in degrees F: 48, Max. 66, Min. 32.
Winds were calm with max gusts of 20 mph out of the NE.
Average relative humidity 74% with no precipitation recorded.
Complaints: There were no odor complaints during this time.
April 17: Average temperature in degrees F: 50, Max. 69, Min. 32.
Winds were calm with a max speed of 9 mph out of the NNW.
Average relative humidity 53% with no precipitation recorded.
Complaints: A complaint occurred at 9:30am (via email) from 2445 N. Orchard Road NE in Bolivar. Isolation break excavation and gas well drilling were potentially odor-causing activities noted on the Daily Odor Monitoring Summary.

Supplemental Isolation Break Monitoring Event #9:

Thursday April 2: Average temperature in degrees F: 52, Max. 73, Min. 33.
Winds were 3 mph with max gusts of 26 mph out of the SE.
Average relative humidity 58% with no precipitation recorded.

Supplemental Isolation Break Monitoring Event #10:

Wednesday April 8: Average temperature in degrees F: 43, Max. 53, Min. 33.
Winds were 7 mph with max gusts of 28 mph out of the WNW.
Average relative humidity 51% with no precipitation recorded.

Supplemental Isolation Break Monitoring Event #11:

Thursday April 14: Average temperature in degrees F: 46, Max. 52, Min. 41.
Winds were 7 mph with a max speed of 9 mph out of the SE.
Average relative humidity 86% with 0.42 inches of precipitation recorded.

Note: Odor complaints were noted roughly downwind of the landfill and associated with three sampling events during periods of relatively calm winds. This observation is consistent with migration of odors during periods of relatively lower atmospheric stability per our recent evaluation.

3.0 ANALYTICAL RESULTS

The laboratory analyzed the air samples for a large number of constituents. Only those results that indicated detections at levels that exceeded the respective Region 9 PRGs and/or ATSDR MRLs will be discussed in the body of this report (see Section 1.0). Other compounds may have been detected in a sample, but were quantified at concentrations below the respective PRG. Analytical results from the laboratory are provided in the Appendices.

The prevailing wind directions for the monitoring stations relative to the landfill are designated as:

- C: Crosswind
- D: Downwind
- U: Upwind
- V: Variable

Wind direction is indicated for the first and second days of the regularly scheduled monitoring event separated by /. The wind direction for the Supplemental Isolation Break Monitoring Events pertains to the single day on which the sampling was conducted.

3.1 Volatile Organic Compounds

Compounds detected by Method TO-15 modified (TO-15M) are summarized in Tables 1 through 8. TO-15M analyzes air samples collected in a SUMMA canister for the presence of an extensive list of volatile organic compounds. In addition to a “standard analyte” list, we have requested that the laboratory tentatively identify and estimate the concentration of numerous compounds that are not on the “standard” list. All of the TO-15M analyses presented in this monthly report were performed by Test America. Laboratory. Data reports are provided in the Appendices. The QA/QC packages from Test America are not included in the Appendices because of their large size but can be made available upon request.

Only VOCs that were detected at concentrations exceeding the respective Region 9 PRG (most conservative screening level) in one or more samples during a monitoring event are presented in the summary tables that follow. The results from the analytical laboratory can be found in the Appendix noted.

Event #112 Monday March 23 to Tuesday March 24

Analytical results are summarized in Table 1 and provided in Appendix A.

**Event #112: VOCs Detected Above PRGs
Concentrations in ug/m³**

Compound	Acute MRL	Chronic MRL	PRG	School	School Co-loc	Cell Tower	Camp Ground	Wetland
Prevailing wind direction				D/C		D/C	U/C	C/U
Benzene	29	10	0.25	0.95	0.94	0.48J	0.61J	0.68
Carbon tetrachloride	188	188	0.13	0.41J	0.44J	0.35J	0.49J	0.43J

Bold indicates result exceeded Region 9 PRG

Laboratory Data Qualifiers

B = Compound was detected in the blank

J = Estimated concentration below laboratory reporting limit

Event #113: Sunday March 29 to Monday March 30

Analytical results are summarized in Table 2 and provided in Appendix B.

**Event #113: VOCs Detected Above PRGs
Concentrations in ug/m³**

Compound	Acute MRL	Chronic MRL	PRG	School	Cell Tower	Camp ground	Camp Ground Co-loc	Wetland
Prevailing wind				C/C	C/C	C/C		D/C
Benzene	29	10	0.25	0.68	0.66	NS	NS	1.1
Carbon tetrachloride	188	188	0.13	0.41J	0.40J	NS	NS	0.41J

Bold indicates result exceeded Region 9 PRG

NS = Not Sampled (solenoid failed to open valve on Summa canister)

Laboratory Data Qualifiers:

B = Compound was detected in the blank

J = Estimated concentration below laboratory reporting limit

Event #114: Saturday April 4 to Sunday April 5

Analytical results are summarized in Table 3 and provided in Appendix C.

**Event #114: VOCs Detected Above PRGs
Concentrations in ug/m³**

Compound	Acute MRL	Chronic MRL	PRG	School	Cell Tower	Camp ground	Wetland	Wetland Co-loc
Prevailing wind				C/C	C/C	C/D	C/U	
Benzene	29	10	0.25	0.78	0.69	0.71	0.60J	0.63
Carbon tetrachloride	188	188	0.13	0.34J	0.35J	0.35J	0.32J	0.34J

Bold indicates result exceeded Region 9 PRG

Laboratory Data Qualifiers:

B = Compound was detected in the blank

J = Estimated concentration below laboratory reporting limit

Event #115: Friday April 10 to Saturday April 11

Analytical results are summarized in Table 4 and provided in Appendix D.

**Event #115: VOCs Detected Above PRGs
Concentrations in ug/m³**

Compound	Acute MRL	Chronic MRL	PRG	School	Cell Tower	Cell Tower Co-loc	Camp ground	Wetland
Prevailing wind				D/D	D/D		C/U	U/C
Benzene	29	10	0.25	0.69	0.87	0.76	0.56J	0.55J
Carbon tetrachloride	188	188	0.13	0.60J	0.57J	0.56J	0.64J	0.60J

Bold indicates result exceeded Region 9 PRG

Laboratory Data Qualifiers:

B = Compound was detected in the blank

J = Estimated concentration below laboratory reporting limit

Event #116: Thursday April 16 to Friday April 17

Analytical results are summarized in Table 5 and provided in Appendix E.

**Event #116: VOCs Detected Above PRGs
Concentrations in ug/m³**

Compound	Acute MRL	Chronic MRL	PRG	School	School Co-loc	Cell Tower	Camp ground	Wetland
Prevailing wind				D/C		D/C	U/C	C/D
Benzene	29	10	0.25	0.62J	0.19J	1.5	0.62J	0.66
Carbon tetrachloride	188	188	0.13	0.63J	0.44J	0.51J	0.67J	0.60J

Bold indicates result exceeded Region 9 PRG

Laboratory Data Qualifiers:

B = Compound was detected in the blank

J = Estimated concentration below laboratory reporting limit

Note: Consistent with the approved work plan for the supplemental isolation break monitoring, samples were analyzed only for BTEX compounds beginning in mid-January 2009.

Supplemental Isolation Break Monitoring Event #9: 8-hour Sample, Thursday April 2, 2009

Analytical results are summarized in Table 6 and provided in Appendix F.

**Isolation Break #9: VOCs Detected Above PRGs
Concentrations in ug/m³**

Compound	Acute MRL	Chronic MRL	PRG	School	Cell Tower	Camp ground	Wetland
Prevailing wind				C	C	C	U
Benzene	29	10	0.25	0.94	0.80	0.75	0.65

Bold indicates result exceeded Region 9 PRG

Laboratory Data Qualifiers:

B = Compound was detected in the blank

J = Estimated concentration below laboratory reporting limit

Supplemental Isolation Break Monitoring Event #10: 8-hour Sample, Wednesday April 8, 2009

Analytical results are summarized in Table 7 and provided in Appendix G.

**Isolation Break #10: VOCs Detected Above PRGs
Concentrations in ug/m³**

Compound	Acute MRL	Chronic MRL	PRG	School	Cell Tower	Camp ground	Wetland
Prevailing wind				C	C	C	D
Benzene	29	10	0.25	0.40J	0.41J	0.35J	0.39J

Bold indicates result exceeded Region 9 PRG

Laboratory Data Qualifiers:

B = Compound was detected in the blank

J = Estimated concentration below laboratory reporting limit

Supplemental Isolation Break Monitoring Event #11: 8-hour Sample, Tuesday April 14, 2009

Analytical results are summarized in Table 8 and provided in Appendix H.

**Isolation Break #11: VOCs Detected Above PRGs
Concentrations in ug/m³**

Compound	Acute MRL	Chronic MRL	PRG	School	Cell Tower	Camp ground	Wetland
Prevailing wind				C	C	C	U
Benzene	29	10	0.25	1.3	1.2	0.93	1.4

Bold indicates result exceeded Region 9 PRG

Laboratory Data Qualifiers:

B = Compound was detected in the blank

J = Estimated concentration below laboratory reporting limit

3.2 Sulfur Compounds

Carbon disulfide was the only sulfur compound detected during the seven rounds of sampling reviewed in this report for which Method TO-15M was performed. All detections of carbon disulfide were below the Region 9 PRG for this compound and are not further discussed in the text. Results for carbon disulfide are included on the TO-15M Summary Tables.

3.3 Aldehydes and Ketones

In order to obtain a continuous 24 hours of data, three separate gel collection tubes were sequentially exposed to ambient air for a period of approximately 8-hours each. Consequently there are three separate sample results for each location for each monitoring event. Analysis for aldehydes and ketones by TO-11A was performed by Integrated Analytical Laboratories for Monitoring Events #112 & 113. All subsequent samples were analyzed by TestAmerica.

Although Method TO-11A analyzes for a number of carbonyl compounds, formaldehyde and acetaldehyde are most frequently detected and are the aldehydes of greatest potential concern from a public health standpoint. The concentrations of formaldehyde and acetaldehyde found in ambient air frequently exceed the conservative Region 9 PRGs and are summarized in the following text tables.

In addition to formaldehyde and acetaldehyde, the following compounds were also occasionally detected in the samples summarized in this Monthly Report #24: benzaldehyde, propionaldehyde and butyraldehyde. No PRGs or ATSDR MRLs are available for the other aldehydes measured by Method TO-11A. Complete analytical results for Method TO-11A are included in the Appendices.

Event #112: Monday March 23 to Tuesday March 24

The laboratory report is in Appendix A.

**Event #112: Aldehydes
Concentrations in ug/m³**

Aldehyde	Acute MRL ¹	Chronic MRL ¹	PRG	School			Cell Tower			Campground			Wetland		
				1	2	3	1	2	3	1	2	3	1	2	3
Prevailing wind				D/C			D/C			U/C			C/U		
Formaldehyde	50	10	0.15	8.6	2.4	4.5	0.54	0.58	8.1	7.3	4.4	6.4	4.5	2.1	6.0
Acetaldehyde	NA	NA	0.87	21	3.8	15	ND	ND	12	19	8.5	22	13	3.7	18

1. ATSDR Minimal Risk Levels (MRL) (ATSDR Toxicological Profile for Formaldehyde, July 1999)-
Acute (0.04 ppm = 50 ug/m³); Chronic (0.008 ppm=10 ug/m³)

Bold indicates result exceeded Region 9 PRG

NA=Not Available

ND=Not Detected

Event #113: Sunday March 29 to Monday March 30

The laboratory report is in Appendix B.

**Event #113: Aldehydes
Concentrations in ug/m³**

Aldehyde	Acute MRL ¹	Chronic MRL ¹	PRG	School			Cell Tower			Campground**			Wetland		
				1	2*	3	1	2	3	1	2	3	1	2	3
Prevailing wind				C/C			C/C			C/C			D/C		
Formaldehyde	50	10	0.15	5.6	2.1	2.7	2.1	1.8	2.3	NS	NS	NS	5.4	3.2	3.7
Acetaldehyde	NA	NA	0.87	32	7.8*	11	1.0	1.0	5.6	NS	NS	NS	12	6.0	8.3

1. ATSDR Minimal Risk Levels (MRL) (ATSDR Toxicological Profile for Formaldehyde, July 1999)-
Acute (0.04 ppm = 50 ug/m³); Chronic (0.008 ppm=10 ug/m³)

Bold indicates result exceeded Region 9 PRG

* Breakthrough from front to back of tube for acetaldehyde.

** No samples were obtained from the Campground location due to failure monitoring equipment.

NA= Not Available

NS = Not Sampled

Event #114: Saturday April 4 to Sunday April 5

The laboratory report is in Appendix C. Note that all analyses from this point forward were performed by Test America rather than Integrated Analytical Laboratories.

**Event #114: Aldehydes
Concentrations in ug/m³**

Aldehyde	Acute MRL ¹	Chronic MRL ¹	PRG	School			Cell Tower			Campground			Wetland		
				1	2	3	1	2	3	1	2	3	1	2	3
Prevailing wind				C/C			C/C			C/D			C/C		
Formaldehyde	50	10	0.15	8.8	3.7	6.7	6.6	3.9	6.3	9.9	4.2	11.4	8.0	1.8	7.7
Acetaldehyde	NA	NA	0.87	33	7.8	25.2	20.2	8.1	20.4	20.8	6.1	24.9	23.6	6.5	22.1

1. ATSDR Minimal Risk Levels (MRL) (ATSDR Toxicological Profile for Formaldehyde, July 1999)-
Acute (0.04 ppm = 50 ug/m³); Chronic (0.008 ppm=10 ug/m³)

Bold indicates result exceeded Region 9 PRG

NA: Not Available

Event #115: Friday April 10 to Saturday April 11

The laboratory report is in Appendix D.

**Event #115: Aldehydes
Concentrations in ug/m³**

Aldehyde	Acute MRL ¹	Chronic MRL ¹	PRG	School			Cell Tower			Campground			Wetland		
				D/D			D/D			C/U			U/C		
Prevailing wind				1	2	3	1	2	3	1	2	3	1	2	3
Formaldehyde	50	10	0.15	6.9	3.1	4.5	1.2	1.1	1.1	9.9	6.3	9.5	5.5	3.3	5.0
Acetaldehyde	NA	NA	0.87	20.2	5.0	14.1	1.3	1.1	1.9	12.2	6.8	19.1	11.7	5.3	16.2

1. ATSDR Minimal Risk Levels (MRL) (ATSDR Toxicological Profile for Formaldehyde, July 1999)-
Acute (0.04 ppm = 50 ug/m³); Chronic (0.008 ppm=10 ug/m³)

Bold indicates result exceeded Region 9 PRG

NA= Not Available

Event #116: Thursday April 16 to Friday April 17

Analytical results are provided in Appendix E.

**Event #116: Aldehydes
Concentrations in ug/m³**

Aldehyde	Acute MRL ¹	Chronic MRL ¹	PRG	School			Cell Tower			Campground			Wetland		
				D/C			D/C			U/C			C/D		
Prevailing wind				1	2	3	1	2	3	1	2	3	1	2	3
Formaldehyde	50	10	0.15	15.7	2.5	8.2	10.8	4.6	8.7	13.7	5.5	12.8	12.4	3.0	11.2
Acetaldehyde	NA	NA	0.87	62.8	6.3	27.9	31.7	9.6	27	34.7	11	36.2	40.3	7.3	35.2

1. ATSDR Minimal Risk Levels (MRL) (ATSDR Toxicological Profile for Formaldehyde, July 1999)-
Acute (0.04 ppm = 50 ug/m³); Chronic (0.008 ppm=10 ug/m³)

Bold indicates result exceeded Region 9 PRG

NA= Not Available

3.4 Hydrogen Chloride and Hydrogen Fluoride

As with the aldehyde and ketone samples, three separate gel collection tubes were sequentially exposed to ambient air for a period of approximately 8-hours each. Consequently, there are three separate sample results for each location for each monitoring event. The concentrations of HF and HCl in the air are quantified based on the mass of fluoride and chloride ion captured on the gel inside the tubes and the volume of air that was passed through the tube. The sorbent tubes collected during Monitoring Events #112 & 113 were analyzed by Integrated Analytical Laboratories. All subsequent analyses have been performed by TestAmerica.

The highly conservative Region 9 PRG for HCl of 21 ug/m³ is for constant exposure over many years. There is currently no Region 9 PRG for HF. On rare occasions, one or more sample results for HCl have exceeded the Region 9 PRG. These are sometimes attributable to moisture in the sorbent tube (as noted by the analytical laboratory) or may be chance random occurrences.

The majority of samples collected from mid-March through mid-April had no detectable amounts of either HF or HCl. On only one occasion did the concentration of HCl exceed the conservative PRG as summarized in the table below.

Event #115: Friday April 10 to Saturday April 11: HCl was detected at a concentration of 34.2 ug/m³ in the third tube from the campground. The laboratory noted possible breakthrough from front to back of sorbent tube.

**Event #115: Hydrogen Fluoride and Hydrogen Chloride
Concentrations in ug/m³**

Compound	ATSDR MRL ¹⁾	PRG	School			Cell Tower			Campground			Wetland		
			1	2	3	1	2	3	1	2	3	1	2	3
Prevailing wind			D/D			D/D			C/U			U/C		
HF	17	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HCl	NA	21	ND	ND	ND	ND	ND	ND	ND	ND	34.2	ND	ND	ND

1) ATSDR intermediate MRL

NA: Not Available

ND: Not Detected

NR: No result available

The laboratory analytical results for HF and HCl are included in Appendices A through E of this Report #24.

3.5 Monitoring for PCDD/PCDF

In accordance with Revision 3 (November 10, 2008) of the *Plan for Sampling for Polychlorinated Dibenzo-p-Dioxins and Dibenzofurans in the Vicinity of Countywide Recycling & Disposal Facility* (Work Plan) and the Task Specific Quality Work Plan, Republic Services of Ohio II, LLC (Republic) conducted monitoring for the presence of polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) in the vicinity of the Countywide Site during December 2008. This monitoring was conducted to comply with Order 1 of Ohio EPA Director’s Final Findings and Orders (DFFOs) issued on February 7, 2008.

3.5.1 Monitoring Locations and Methodology

Republic collected samples for PCDD/PCDF analysis by U.S. EPA Compendium Method TO-9A [EPA/625/R-96/010b] which includes constituent-specific analysis for the chlorinated dioxins and furans. Samples were collected from the four established community monitoring locations created in accordance with Order 5.A of the March 2007 Orders plus one additional background location. These monitoring locations are:

- the Cell Tower on the southwest portion of the Countywide RDF facility;
- the KOA campground on Downing Street;
- a location in the publicly-owned wetland area between Dueber Avenue and the eastern slope of the landfill,
- the Bolivar School, and
- a new background location at from the Strasburg ball field – a location that is approximately 5 miles Southwest of the landfill (upwind), west of Interstate 77, and in a less industrialized area. The Strasburg location is intended to be sufficiently far away

and in the prevailing upwind direction relative to the landfill as to represent regional background conditions.

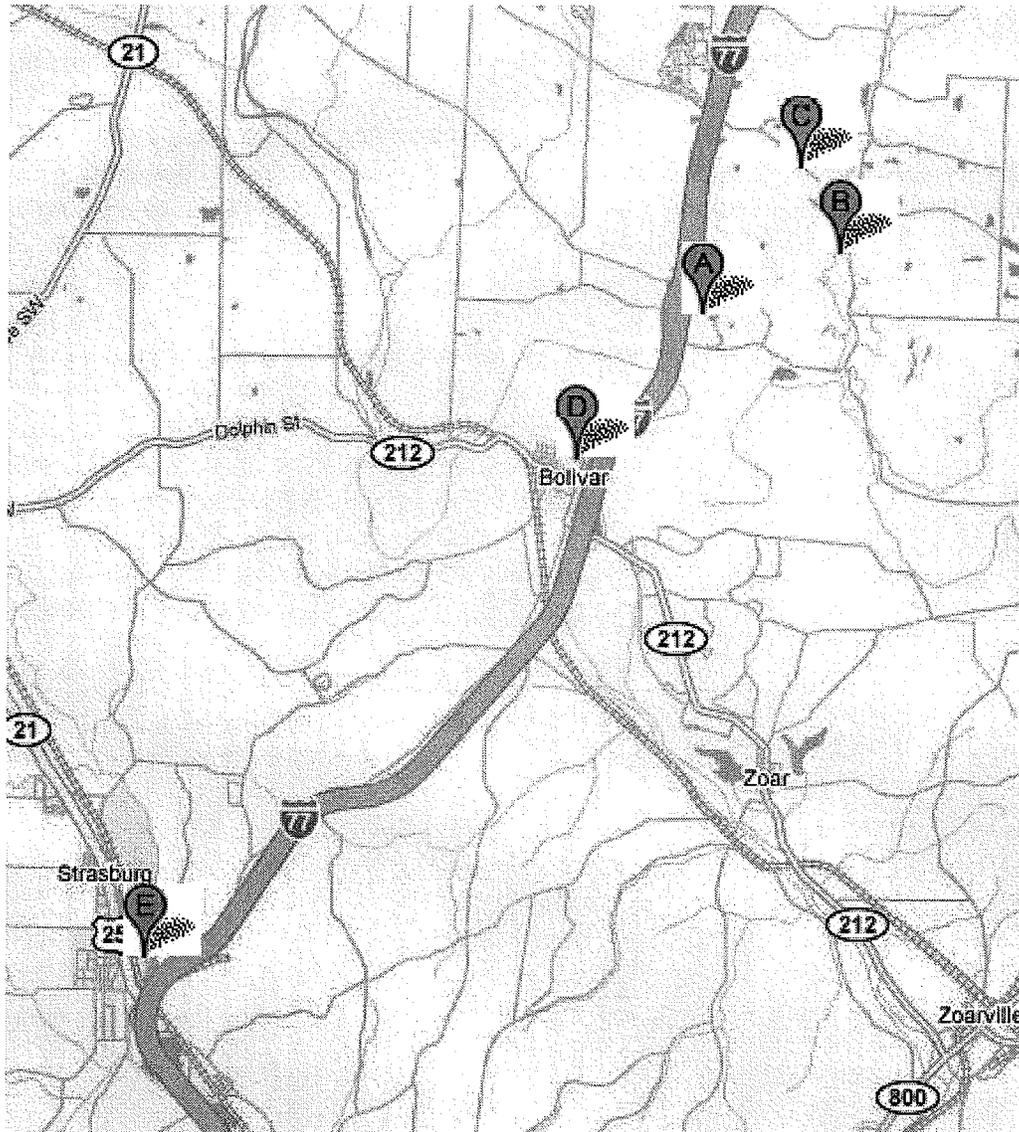
Samples were collected from December 15, 2008, to December 16, 2008 – a time when excavation of the Isolation Break was occurring. Republic collected air samples for PCDDs/PCDFs for a period of 24 consecutive hours to obtain proper sample volume and mass (at the prescribed flow rate) using high-volume sampling machines fitted with polyurethane foam (PUF) sorbent filters. In order to securely deploy the monitoring equipment to perform the PCDD/PCDF sampling, Republic set up the Cell Tower, Campground, Wetland, and School samplers in the same enclosures currently used for the community monitors. The new Strasburg Ball field location was secured with snow fence. 110v power was provided to all locations using a propane generator. The GPS coordinates and the approximate locations of the sampling are shown on Figure 1.

In order to serve as a check on the laboratory, a duplicate sample was collected from the Bolivar School location and submitted to a second laboratory (Columbia Analytical Services).

In order to avoid potential cross-contamination of the regularly scheduled community sampling, the PCDD/PCDF sampling began only after the community sampling was complete. Propane generators were used to provide power to the sampling apparatus.

The wind was out of the south southeast (SSE) to east southeast (ESE) making the Wetland sample the most upwind relative to the landfill location. However, the Strasburg Park was crosswind (and not downwind) of the landfill.

Figure 1. Map of Community Monitoring Locations



Map of Proposed Locations of the Dioxin Samplers

A.	Cell Tower	W 40.6701	N 81.43295
B.	Wetland	W 40.67773	N 81.41085
C.	Campground	W 40.68815	N 81.4174
D.	School	W 40.65273	N 81.4534
E.	Strasburg	W 40.5917	N 81.5229

3.5.2 Analytical Results

The results of the TO-9A analyses are summarized in Table 1 below. Analytical results from Test America are provided in Appendix I, and a report of the quality assurance and data validation performed by EarthTech/AECOM is provided in Appendix J.

Table 1. Summary of Dioxin/Furan Results by Site (December 15-16, 2008)

	Wetland Result (pg/m ³)	Cell Tower Result (pg/m ³)	Park Strasburg Result (pg/m ³)	School Result (pg/m ³)	Campground Result (pg/m ³)
2378-TCDF	0.006322	0.008947	0.017666	0.009673	0.021111
2378-TCDD	ND	ND	ND	ND	ND
12378-PeCDF	ND	0.005263	0.004365	0.005804	0.005218
23478-PeCDF	0.008898	0.00921	0.007066	0.008512	0.007353
12378-PeCDD	0.006322	#VALUE!	0.005612	0.005997	0.004507
123478-HxCDF	0.020606	0.017894	0.014756	0.013156	0.014469
123678-HxCDF	0.006557	0.006842	0.006443	0.006578	0.004744
234678-HxCDF	0.008196	0.007368	0.005612	0.004643	0.007353
123789-HxCDF	ND	ND	0.00291	ND	ND
123478-HxCDD	0.007259	ND	0.004988	0.004063	0.005218
123678-HxCDD	0.008196	0.007631	0.009353	0.003869	0.009725
123789-HxCDD	0.017796	0.017894	0.012886	0.012769	0.017553
1234678-HpCDF	0.032783	0.028946	0.039488	0.036759	0.030836
1234789-HpCDF	ND	ND	0.006443	0.003676	0.003558
1234678-HpCDD	0.126447	0.16052	0.137171	0.143165	0.149436
OCDF	0.053857	0.057892	0.114309	0.100602	0.054556
OCDD	0.491738	0.657869	0.685853	0.619091	0.545562
Total TEQ (see below)	0.0172	0.0141	0.0167	0.0156	0.0166

Key: ND=not detected

- 2,3,7,8-TCDF: 2,3,7,8-tetrachlorodibenzofuran
- 2,3,7,8-TCDD: 2,3,7,8-tetrachlorodibenzo-p-dioxin
- 1,2,3,7,8-PeCDF: 1,2,3,7,8-pentachlorodibenzofuran
- 2,3,4,7,8-PeCDF: 2,3,4,7,8-pentachlorodibenzofuran
- 1,2,3,7,8-PeCDD: 1,2,3,7,8-pentachlorodibenzo-p-dioxin
- 1,2,3,4,7,8-HxCDF: 1,2,3,4,7,8-hexachlorodibenzofuran
- 1,2,3,6,7,8-HxCDF: 1,2,3,6,7,8-hexachlorodibenzofuran
- 2,3,4,6,7,8-HxCDF: 2,3,4,6,7,8-hexachlorodibenzofuran
- 1,2,3,7,8,9-HxCDF: 1,2,3,7,8,9-hexachlorodibenzofuran
- 1,2,3,4,7,8-HxCDD: 1,2,3,4,7,8-hexachlorodibenzo-p-dioxin
- 1,2,3,6,7,8-HxCDD: 1,2,3,6,7,8-hexachlorodibenzo-p-dioxin
- 1,2,3,7,8,9-HxCDD: 1,2,3,7,8,9-hexachlorodibenzo-p-dioxin
- 1,2,3,4,6,7,8-HpCDF: 1,2,3,4,6,7,8-heptachlorodibenzofuran
- 1,2,3,4,7,8,9-HpCDF: 1,2,3,4,7,8,9-heptachlorodibenzofuran
- 1,2,3,4,6,7,8-HpCDD: 1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin
- OCDF: octachlorodibenzofuran
- OCDD: octachlorodibenzo-p-dioxin

These results were validated and considered usable. In accordance with data validation protocols, a maximum possible concentration was reported for those constituents that were also detected in the blank. Thus, the concentrations and related values should be considered upper bound values.

Republic conducted a risk analysis of the analytical findings in accordance with the U.S. EPA Toxic Equivalency Factors (TEFs) method (EPA/625/3-89/016), which relates all toxicity values of the various dioxin and furan congeners to the toxicity of 2,3,7,8-tetrachloro-p-dioxin (2,3,7,8-TCDD). The concentrations of any PCDD/PCDF congeners that are detected were converted to 2,3,7,8-TCDD equivalents and added together to obtain a total TCDD-risk-equivalent concentration for the purposes of evaluating potential risk.

The results are converted to toxic equivalent concentrations (TEQs) of 2,3,7,8-TCDD by multiplying the concentration by the US EPA TEF's. The resulting TEQs are summed for each sample to yield a total TCDD-risk equivalent concentration (TEQ) for each sample. These results are summarized in Tables 2-6.

Table 2. Summary of Data / Calculations for the Wetland Sample, December 2008

Wetland	pg detected in sample	m ³ of air sampled	Result (pg/m ³)	Toxicity Equivalent Factor (TEF)	Toxicity Equivalent Concentration (TEQ)
2378-TCDF	2.7	427.057	0.006322	0.1	0.000632
2378-TCDD	ND	427.057	ND	1	
12378-PeCDF	ND	427.057	ND	0.05	
23478-PeCDF	3.8	427.057	0.008898	0.5	0.004449
12378-PeCDD	2.7	427.057	0.006322	0.5	0.003161
123478-HxCDF	8.8	427.057	0.020606	0.1	0.002061
123678-HxCDF	2.8	427.057	0.006557	0.1	0.000656
234678-HxCDF	3.5	427.057	0.008196	0.1	0.00082
123789-HxCDF	ND	427.057	ND	0.1	
123478-HxCDD	3.1	427.057	0.007259	0.1	0.000726
123678-HxCDD	3.5	427.057	0.008196	0.1	0.00082
123789-HxCDD	7.6	427.057	0.017796	0.1	0.00178
1234678-HpCDF	14	427.057	0.032783	0.01	0.000328
1234789-HpCDF	ND	427.057	ND	0.01	
1234678-HpCDD	54	427.057	0.126447	0.01	0.001264
OCDF	23	427.057	0.053857	0.001	5.39E-05
OCDD	210	427.057	0.491738	0.001	0.000492
Total TEQ					0.017241
Bold Font = EMPC	Estimated Maximum Possible Concentration				

Key: ND=not detected
 2,3,7,8-TCDF: 2,3,7,8-tetrachlorodibenzofuran
 2,3,7,8-TCDD: 2,3,7,8-tetrachlorodibenzo-p-dioxin
 1,2,3,7,8-PeCDF: 1,2,3,7,8-pentachlorodibenzofuran
 2,3,4,7,8-PeCDF: 2,3,4,7,8-pentachlorodibenzofuran
 1,2,3,7,8-PeCDD: 1,2,3,7,8-pentachlorodibenzo-p-dioxin
 1,2,3,4,7,8-HxCDF: 1,2,3,4,7,8-hexachlorodibenzofuran
 1,2,3,6,7,8-HxCDF: 1,2,3,6,7,8-hexachlorodibenzofuran
 2,3,4,6,7,8-HxCDF: 2,3,4,6,7,8-hexachlorodibenzofuran
 1,2,3,7,8,9-HxCDF: 1,2,3,7,8,9-hexachlorodibenzofuran
 1,2,3,4,7,8-HxCDD: 1,2,3,4,7,8-hexachlorodibenzo-p-dioxin
 1,2,3,6,7,8-HxCDD: 1,2,3,6,7,8-hexachlorodibenzo-p-dioxin
 1,2,3,7,8,9-HxCDD: 1,2,3,7,8,9-hexachlorodibenzo-p-dioxin
 1,2,3,4,6,7,8-HpCDF: 1,2,3,4,6,7,8-heptachlorodibenzofuran
 1,2,3,4,7,8,9-HpCDF: 1,2,3,4,7,8,9-heptachlorodibenzofuran
 1,2,3,4,6,7,8-HpCDD: 1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin
 OCDF: octachlorodibenzofuran
 OCDD: octachlorodibenzo-p-dioxin

Table 3. Summary of Data and Calculations for the Cell Tower, December 2008

Cell Tower	pg detected in sample	m ³ of air sampled	Result (pg/m ³)	Toxicity Equivalent Factor (TEF)	Toxicity Equivalent Concentration (TEQ)
2378-TCDF	3.4	380.015	0.008947	0.1	0.000895
2378-TCDD	ND	380.015	ND	1	
12378-PeCDF	2.0	380.015	0.005263	0.05	0.000263
23478-PeCDF	3.5	380.015	0.00921	0.5	0.004605
12378-PeCDD	ND	380.015	ND	0.5	
123478-HxCDF	6.8	380.015	0.017894	0.1	0.001789
123678-HxCDF	2.6	380.015	0.006842	0.1	0.000684
234678-HxCDF	2.8	380.015	0.007368	0.1	0.000737
123789-HxCDF	ND	380.015	ND	0.1	
123478-HxCDD	ND	380.015	ND	0.1	
123678-HxCDD	2.9	380.015	0.007631	0.1	0.000763
123789-HxCDD	6.8	380.015	0.017894	0.1	0.001789
1234678-HpCDF	11	380.015	0.028946	0.01	0.000289
1234789-HpCDF	ND	380.015	ND	0.01	
1234678-HpCDD	61	380.015	0.16052	0.01	0.001605
OCDF	22	380.015	0.057892	0.001	5.79E-05
OCDD	250	380.015	0.657869	0.001	0.000658
Total TEQ					0.014136
Bold Font = EMPC	Estimated Maximum Possible Concentration				

Key: ND=not detected
 2,3,7,8-TCDF: 2,3,7,8-tetrachlorodibenzofuran
 2,3,7,8-TCDD: 2,3,7,8-tetrachlorodibenzo-p-dioxin
 1,2,3,7,8-PeCDF: 1,2,3,7,8-pentachlorodibenzofuran
 2,3,4,7,8-PeCDF: 2,3,4,7,8-pentachlorodibenzofuran
 1,2,3,7,8-PeCDD: 1,2,3,7,8-pentachlorodibenzo-p-dioxin
 1,2,3,4,7,8-HxCDF: 1,2,3,4,7,8-hexachlorodibenzofuran
 1,2,3,6,7,8-HxCDF: 1,2,3,6,7,8-hexachlorodibenzofuran
 2,3,4,6,7,8-HxCDF: 2,3,4,6,7,8-hexachlorodibenzofuran
 1,2,3,7,8,9-HxCDF: 1,2,3,7,8,9-hexachlorodibenzofuran
 1,2,3,4,7,8-HxCDD: 1,2,3,4,7,8-hexachlorodibenzo-p-dioxin
 1,2,3,6,7,8-HxCDD: 1,2,3,6,7,8-hexachlorodibenzo-p-dioxin
 1,2,3,7,8,9-HxCDD: 1,2,3,7,8,9-hexachlorodibenzo-p-dioxin
 1,2,3,4,6,7,8-HpCDF: 1,2,3,4,6,7,8-heptachlorodibenzofuran
 1,2,3,4,7,8,9-HpCDF: 1,2,3,4,7,8,9-heptachlorodibenzofuran
 1,2,3,4,6,7,8-HpCDD: 1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin
 OCDF: octachlorodibenzofuran
 OCDD: octachlorodibenzo-p-dioxin

Table 4. Summary of Data / Calculations for the Strasburg Park Sample, December 2008

Park-Strasburg	pg detected in sample	m ³ of air sampled	Result (pg/m ³)	Toxicity Equivalent Factor (TEF)	Toxicity Equivalent Concentration (TEQ)
2378-TCDF	8.5	481.153	0.017666	0.1	0.001767
2378-TCDD	ND	481.153	ND	1	
12378-PeCDF	2.1	481.153	0.004365	0.05	0.000218
23478-PeCDF	3.4	481.153	0.007066	0.5	0.003533
12378-PeCDD	2.7	481.153	0.005612	0.5	0.002806
123478-HxCDF	7.1	481.153	0.014756	0.1	0.001476
123678-HxCDF	3.1	481.153	0.006443	0.1	0.000644
234678-HxCDF	2.7	481.153	0.005612	0.1	0.000561
123789-HxCDF	1.4	481.153	0.00291	0.1	0.000291
123478-HxCDD	2.4	481.153	0.004988	0.1	0.000499
123678-HxCDD	4.5	481.153	0.009353	0.1	0.000935
123789-HxCDD	6.2	481.153	0.012886	0.1	0.001289
1234678-HpCDF	19	481.153	0.039488	0.01	0.000395
1234789-HpCDF	3.1	481.153	0.006443	0.01	6.44E-05
1234678-HpCDD	66	481.153	0.137171	0.01	0.001372
OCDF	55	481.153	0.114309	0.001	0.000114
OCDD	330	481.153	0.685853	0.001	0.000686
Total TEQ					0.01665
Bold Font = EMPC	Estimated Maximum Possible Concentration				

Key: ND=not detected
 2,3,7,8-TCDF: 2,3,7,8-tetrachlorodibenzofuran
 2,3,7,8-TCDD: 2,3,7,8-tetrachlorodibenzo-p-dioxin
 1,2,3,7,8-PeCDF: 1,2,3,7,8-pentachlorodibenzofuran
 2,3,4,7,8-PeCDF: 2,3,4,7,8-pentachlorodibenzofuran
 1,2,3,7,8-PeCDD: 1,2,3,7,8-pentachlorodibenzo-p-dioxin
 1,2,3,4,7,8-HxCDF: 1,2,3,4,7,8-hexachlorodibenzofuran
 1,2,3,6,7,8-HxCDF: 1,2,3,6,7,8-hexachlorodibenzofuran
 2,3,4,6,7,8-HxCDF: 2,3,4,6,7,8-hexachlorodibenzofuran
 1,2,3,7,8,9-HxCDF: 1,2,3,7,8,9-hexachlorodibenzofuran
 1,2,3,4,7,8-HxCDD: 1,2,3,4,7,8-hexachlorodibenzo-p-dioxin
 1,2,3,6,7,8-HxCDD: 1,2,3,6,7,8-hexachlorodibenzo-p-dioxin
 1,2,3,7,8,9-HxCDD: 1,2,3,7,8,9-hexachlorodibenzo-p-dioxin
 1,2,3,4,6,7,8-HpCDF: 1,2,3,4,6,7,8-heptachlorodibenzofuran
 1,2,3,4,7,8,9-HpCDF: 1,2,3,4,7,8,9-heptachlorodibenzofuran
 1,2,3,4,6,7,8-HpCDD: 1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin
 OCDF: octachlorodibenzofuran
 OCDD: octachlorodibenzo-p-dioxin

Table 5. Summary of Data / Calculations for the School Sample, December 2008

School	pg detected in sample	m ³ of air sampled	Result (pg/m ³)	Toxicity Equivalent Factor (TEF)	Toxicity Equivalent Concentration (TEQ)
2378-TCDF	5	516.887	0.009673	0.1	0.000967
2378TCDD	ND	516.887	ND	1	
12378-PeCDF	3.0	516.887	0.005804	0.05	0.00029
23478-PeCDF	4.4	516.887	0.008512	0.5	0.004256
12378-PeCDD	3.1	516.887	0.005997	0.5	0.002999
123478-HxCDF	6.8	516.887	0.013156	0.1	0.001316
123678-HxCDF	3.4	516.887	0.006578	0.1	0.000658
234678-HxCDF	2.4	516.887	0.004643	0.1	0.000464
123789-HxCDF	ND	516.887	ND	0.1	
123478-HxCDD	2.1	516.887	0.004063	0.1	0.000406
123678-HxCDD	2.0	516.887	0.003869	0.1	0.000387
123789-HxCDD	6.6	516.887	0.012769	0.1	0.001277
1234678-HpCDF	19	516.887	0.036759	0.01	0.000368
1234789-HpCDF	1.9	516.887	0.003676	0.01	3.68E-05
1234678-HpCDD	74	516.887	0.143165	0.01	0.001432
OCDF	52	516.887	0.100602	0.001	0.000101
OCDD	320	516.887	0.619091	0.001	0.000619
Total TEQ					0.015576
Bold Font = EMPC	Estimated Maximum Possible Concentration				

Key: ND=not detected
 2,3,7,8-TCDF: 2,3,7,8-tetrachlorodibenzofuran
 2,3,7,8-TCDD: 2,3,7,8-tetrachlorodibenzo-p-dioxin
 1,2,3,7,8-PeCDF: 1,2,3,7,8-pentachlorodibenzofuran
 2,3,4,7,8-PeCDF: 2,3,4,7,8-pentachlorodibenzofuran
 1,2,3,7,8-PeCDD: 1,2,3,7,8-pentachlorodibenzo-p-dioxin
 1,2,3,4,7,8-HxCDF: 1,2,3,4,7,8-hexachlorodibenzofuran
 1,2,3,6,7,8-HxCDF: 1,2,3,6,7,8-hexachlorodibenzofuran
 2,3,4,6,7,8-HxCDF: 2,3,4,6,7,8-hexachlorodibenzofuran
 1,2,3,7,8,9-HxCDF: 1,2,3,7,8,9-hexachlorodibenzofuran
 1,2,3,4,7,8-HxCDD: 1,2,3,4,7,8-hexachlorodibenzo-p-dioxin
 1,2,3,6,7,8-HxCDD: 1,2,3,6,7,8-hexachlorodibenzo-p-dioxin
 1,2,3,7,8,9-HxCDD: 1,2,3,7,8,9-hexachlorodibenzo-p-dioxin
 1,2,3,4,6,7,8-HpCDF: 1,2,3,4,6,7,8-heptachlorodibenzofuran
 1,2,3,4,7,8,9-HpCDF: 1,2,3,4,7,8,9-heptachlorodibenzofuran
 1,2,3,4,6,7,8-HpCDD: 1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin
 OCDF: octachlorodibenzofuran
 OCDD: octachlorodibenzo-p-dioxin

Table 6. Summary of Data / Calculations for the Campground Sample, 12/2008

Campground	pg detected in sample	m ³ of air sampled	Result (pg/m ³)	Toxicity Equivalent Factor (TEF)	Toxicity Equivalent Concentration (TEQ)
2378-TCDF	8.9	421.584	0.021111	0.1	0.002111
2378TCDD	ND	421.584	ND	1	
12378-PeCDF	2.2	421.584	0.005218	0.05	0.000261
23478-PeCDF	3.1	421.584	0.007353	0.5	0.003677
12378-PeCDD	1.9	421.584	0.004507	0.5	0.002253
123478-HxCDF	6.1	421.584	0.014469	0.1	0.001447
123678-HxCDF	2.0	421.584	0.004744	0.1	0.000474
234678-HxCDF	3.1	421.584	0.007353	0.1	0.000735
123789-HxCDF	ND	421.584	ND	0.1	
123478-HxCDD	2.2	421.584	0.005218	0.1	0.000522
123678-HxCDD	4.1	421.584	0.009725	0.1	0.000973
123789-HxCDD	7.4	421.584	0.017553	0.1	0.001755
1234678-HpCDF	13	421.584	0.030836	0.01	0.000308
1234789-HpCDF	1.5	421.584	0.003558	0.01	3.56E-05
1234678-HpCDD	63	421.584	0.149436	0.01	0.001494
OCDF	23	421.584	0.054556	0.001	5.46E-05
OCDD	230	421.584	0.545562	0.001	0.000546
Total TEQ					0.016647
Bold Font = EMPC	Estimated Maximum Possible Concentration				

Key: ND=not detected
 2,3,7,8-TCDF: 2,3,7,8-tetrachlorodibenzofuran
 2,3,7,8-TCDD: 2,3,7,8-tetrachlorodibenzo-p-dioxin
 1,2,3,7,8-PeCDF: 1,2,3,7,8-pentachlorodibenzofuran
 2,3,4,7,8-PeCDF: 2,3,4,7,8-pentachlorodibenzofuran
 1,2,3,7,8-PeCDD: 1,2,3,7,8-pentachlorodibenzo-p-dioxin
 1,2,3,4,7,8-HxCDF: 1,2,3,4,7,8-hexachlorodibenzofuran
 1,2,3,6,7,8-HxCDF: 1,2,3,6,7,8-hexachlorodibenzofuran
 2,3,4,6,7,8-HxCDF: 2,3,4,6,7,8-hexachlorodibenzofuran
 1,2,3,7,8,9-HxCDF: 1,2,3,7,8,9-hexachlorodibenzofuran
 1,2,3,4,7,8-HxCDD: 1,2,3,4,7,8-hexachlorodibenzo-p-dioxin
 1,2,3,6,7,8-HxCDD: 1,2,3,6,7,8-hexachlorodibenzo-p-dioxin
 1,2,3,7,8,9-HxCDD: 1,2,3,7,8,9-hexachlorodibenzo-p-dioxin
 1,2,3,4,6,7,8-HpCDF: 1,2,3,4,6,7,8-heptachlorodibenzofuran
 1,2,3,4,7,8,9-HpCDF: 1,2,3,4,7,8,9-heptachlorodibenzofuran
 1,2,3,4,6,7,8-HpCDD: 1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin
 OCDF: octachlorodibenzofuran
 OCDD: octachlorodibenzo-p-dioxin

3.5.3 Results Comparison by Site

The results for all locations are approximately the same. The highest TEQ is found at the Wetland location – the location that was the most upwind of the Countywide site on the day the sampling was conducted.

The TEQ was compared to the U.S. EPA Region 9 Region 9 Preliminary Remediation Goal (PRG, $4.5 \text{ E-}08 \text{ ug/m}^3 = 0.045 \text{ pg/m}^3$) for 2,3,7,8-TCDD as summarized in Table 7.

Table 7. Summary of 2,3,7,8-TCDD-Risk-Equivalent Concentration (TEQ)by Site Comparison to USEPA Region 9 PRG

Sampling Date	Sampling Location	USEPA Reg. 9 PRG (pg/m ³)*	TEQ (pg/m ³)*
11/18-11/19/2008	Wetland	0.045	0.0172
11/18-11/19/2008	Cell Tower	0.045	0.0141
11/18-11/19/2008	School	0.045	0.0156
11/19-11/20/2008	Campground	0.045	0.0166
11/18-11/19/2008	Strasburg	0.045	0.0167

*TEQ: Toxic Equivalent Concentration (to 2,3,7,8-TCDD)
TEQ's calculated using US EPA Toxic Equivalency Factors

The TEQ concentrations range from 0.0141 pg/m³ to 0.0172 pg/m³. All samples from all locations are below the very conservative Region 9 PRG for 2,3,7,8-TCDD even using the estimated maximum possible concentrations for dioxins.

The results were comparable to the November 2008 results. The November samples had a broader range of concentrations – both higher than the December concentrations as well as lower. The average concentration was lower in December even though the isolation break construction was occurring.

Table 8. Summary of 2,3,7,8-TCDD-Risk-Equivalent Concentration (TEQ)by Site and by Sample Date: Comparison to USEPA Region 9 PRG

Sampling Location	USEPA Reg. 9 PRG (pg/m ³)*	December TEQ (pg/m ³)*	November TEQ (pg/m ³)*
Wetland	0.045	0.0172	0.0411
Cell Tower	0.045	0.0141	0.0189
School	0.045	0.0156	0.00991
Campground	0.045	0.0166	0.00209
Strasburg	0.045	0.0167	0.0375
Average	0.045	0.0160	0.0219

*TEQ: Toxic Equivalent Concentration (to 2,3,7,8-TCDD)
TEQ's calculated using US EPA Toxic Equivalency Factors

3.5.5 Co-Located Sample Comparison.

The co-located sample results are summarized in Table 9.

Table 9. Summary of 2,3,7,8-TCDD-Risk-Equivalent Concentration (TEQ) by for Co-Located Samples: Comparison to USEPA Region 9 PRG

Sampling Location	USEPA Reg. 9 PRG (pg/m ³)	December TEQ (pg/m ³)*	November TEQ (pg/m ³)*
School TestAmerica	0.045	0.0156	0.00991
School Columbia	0.045	0.00804	0.0264

*TEQ: Toxic Equivalent Concentration (to 2,3,7,8-TCDD)
TEQ's calculated using US EPA Toxic Equivalency Factors

In December, the co-located (Columbia) sample had a lower TEQ than the TestAmerica sample but in November, the co-located (Columbia) sample had a higher TEQ than the TestAmerica sample. None of the samples exceeded the USEPA Region 9 PRG. Tables 10 and 11 present the results for the December co-located sample and the % RPD comparison. (Results for the co-located samples sent to Columbia Analytical Laboratories and the Data Validation Reports can be found in Appendix K.)

Table 10. Co-Located Sample Results, December 2008

D-COS121608	pg detected in sample	m ³ of air sampled	Result (pg/m ³)	Toxicity Equivalent Factor (TEF)	Toxicity Equivalent Concentration (TEQ)
2378-TCDF	ND	462.973	0.000175989	0.1	
2378TCDD	ND	462.973	0.000692887	1	
12378-PeCDF	ND	462.973	0.005467832	0.05	
23478-PeCDF	ND	462.973	0.010736431	0.5	
12378-PeCDD	ND	462.973	0.008345638	0.5	
123478-HxCDF	8.57	462.973	0.021472861	0.1	0.00185108
123678-HxCDF	3.24	462.973	0.01190969	0.1	0.000699825
234678-HxCDF	4.4	462.973	0.013747059	0.1	0.000950379
123789-HxCDF	ND	462.973	6.95101E-05	0.1	
123478-HxCDD	ND	462.973	0.012086786	0.1	
123678-HxCDD	ND	462.973	0.025678886	0.1	
123789-HxCDD	8.38	462.973	0.036526001	0.1	0.001810041
1234678-HpCDF	14.9	462.973	0.046930377	0.01	0.000321833
1234789-HpCDF	ND	462.973	0.008832651	0.01	
1234678-HpCDD	76	462.973	0.301062796	0.01	0.001641564
OCDF	ND	462.973	0.059105711	0.001	
OCDD	355	462.973	0.807999416	0.001	0.000766783
Total TEQ					0.008041506
Bold Font = EMPC	Estimated Maximum Possible Concentration				

Key: ND=not detected
 2,3,7,8-TCDF: 2,3,7,8-tetrachlorodibenzofuran
 2,3,7,8-TCDD: 2,3,7,8-tetrachlorodibenzo-p-dioxin
 1,2,3,7,8-PeCDF: 1,2,3,7,8-pentachlorodibenzofuran
 2,3,4,7,8-PeCDF: 2,3,4,7,8-pentachlorodibenzofuran
 1,2,3,7,8-PeCDD: 1,2,3,7,8-pentachlorodibenzo-p-dioxin
 1,2,3,4,7,8-HxCDF: 1,2,3,4,7,8-hexachlorodibenzofuran
 1,2,3,6,7,8-HxCDF: 1,2,3,6,7,8-hexachlorodibenzofuran
 2,3,4,6,7,8-HxCDF: 2,3,4,6,7,8-hexachlorodibenzofuran
 1,2,3,7,8,9-HxCDF: 1,2,3,7,8,9-hexachlorodibenzofuran
 1,2,3,4,7,8-HxCDD: 1,2,3,4,7,8-hexachlorodibenzo-p-dioxin
 1,2,3,6,7,8-HxCDD: 1,2,3,6,7,8-hexachlorodibenzo-p-dioxin
 1,2,3,7,8,9-HxCDD: 1,2,3,7,8,9-hexachlorodibenzo-p-dioxin
 1,2,3,4,6,7,8-HpCDF: 1,2,3,4,6,7,8-heptachlorodibenzofuran
 1,2,3,4,7,8,9-HpCDF: 1,2,3,4,7,8,9-heptachlorodibenzofuran
 1,2,3,4,6,7,8-HpCDD: 1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin
 OCDF: octachlorodibenzofuran
 OCDD: octachlorodibenzo-p-dioxin

Table 11. Relative Percent Difference (%RPD) Calculation for School and Co-Located School Samples, December 2008

Analyte	School Sample (pg)	EDL	Co-located School Sample (pg)	EDL	RPD	
2378-TCDF	5.0	0.95	ND	0.795		
2378TCDD	ND	2.3	ND	1.05		
12378-PeCDF	3.0	1.0	ND	0.817		
23478-PeCDF	4.4	0.99	ND	0.780		
12378-PeCDD	3.1	1.2	ND	1.33		
123478-HxCDF	6.8	0.78	8.57	1.16	23.0	
123678-HxCDF	3.4	0.74	3.24	1.10	4.8	
234678-HxCDF	2.4	0.82	4.4	1.25	58.8	NA Conc < 5xEDL
123789-HxCDF	ND	0.86	ND	1.46		
123478-HxCDD	2.1	1.1	ND	1.75		
123678-HxCDD	2.0	1.1	ND	1.84		
123789-HxCDD	6.6	1.0	8.38	1.70	23.8	NA Conc < 5xEDL
1234678-HpCDF	19	0.95	14.9	1.13	24.2	
1234789-HpCDF	1.9	1.1	ND	1.47		
1234678-HpCDD	74	1.5	76	1.93	2.7	
OCDF	52	2.2	ND	3.68		
OCDD	320	1.9	355	2.49	10.4	

Table 12. Co-Located Sample Results, November 2008

D-COS111808/DF-OS111808	pg detected in sample	m ³ of air sampled	Result (pg/m ³)	Toxicity Equivalent Factor (TEF)	Toxicity Equivalent Concentration (TEQ)
2378-TCDF	ND	451.733	0.000175989	0.1	
2378TCDD	ND	451.733	0.000692887	1	
12378-PeCDF	2.47	451.733	0.005467832	0.05	0.000273
23478-PeCDF	4.85	451.733	0.010736431	0.5	0.005368
12378-PeCDD	3.77	451.733	0.008345638	0.5	0.004173
123478-HxCDF	9.7	451.733	0.021472861	0.1	0.002147
123678-HxCDF	5.38	451.733	0.01190969	0.1	0.001191
234678-HxCDF	6.21	451.733	0.013747059	0.1	0.001375
123789-HxCDF	ND	451.733	6.95101E-05	0.1	
123478-HxCDD	5.46	451.733	0.012086786	0.1	0.001209
123678-HxCDD	11.6	451.733	0.025678886	0.1	0.002568
123789-HxCDD	16.5	451.733	0.036526001	0.1	0.003653
1234678-HpCDF	21.2	451.733	0.046930377	0.01	0.000469
1234789-HpCDF	3.99	451.733	0.008832651	0.01	8.83E-05
1234678-HpCDD	136	451.733	0.301062796	0.01	0.003011
OCDF	26.7	451.733	0.059105711	0.001	5.91E-05
OCDD	365	451.733	0.807999416	0.001	0.000808
Total TEQ					0.02639
Bold Font = EMPC		Estimated Maximum Possible Concentration			

Key: ND=not detected
 2,3,7,8-TCDF: 2,3,7,8-tetrachlorodibenzofuran
 2,3,7,8-TCDD: 2,3,7,8-tetrachlorodibenzo-p-dioxin
 1,2,3,7,8-PeCDF: 1,2,3,7,8-pentachlorodibenzofuran
 2,3,4,7,8-PeCDF: 2,3,4,7,8-pentachlorodibenzofuran
 1,2,3,7,8-PeCDD: 1,2,3,7,8-pentachlorodibenzo-p-dioxin
 1,2,3,4,7,8-HxCDF: 1,2,3,4,7,8-hexachlorodibenzofuran
 1,2,3,6,7,8-HxCDF: 1,2,3,6,7,8-hexachlorodibenzofuran
 2,3,4,6,7,8-HxCDF: 2,3,4,6,7,8-hexachlorodibenzofuran
 1,2,3,7,8,9-HxCDF: 1,2,3,7,8,9-hexachlorodibenzofuran
 1,2,3,4,7,8-HxCDD: 1,2,3,4,7,8-hexachlorodibenzo-p-dioxin
 1,2,3,6,7,8-HxCDD: 1,2,3,6,7,8-hexachlorodibenzo-p-dioxin
 1,2,3,7,8,9-HxCDD: 1,2,3,7,8,9-hexachlorodibenzo-p-dioxin
 1,2,3,4,6,7,8-HpCDF: 1,2,3,4,6,7,8-heptachlorodibenzofuran
 1,2,3,4,7,8,9-HpCDF: 1,2,3,4,7,8,9-heptachlorodibenzofuran
 1,2,3,4,6,7,8-HpCDD: 1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin
 OCDF: octachlorodibenzofuran
 OCDD: octachlorodibenzo-p-dioxin

Table 13. Relative Percent Difference (%RPD) Calculation for School and Co-Located School Samples, November 2008

Analyte	Parent Sample (School)	EDL	Co-located Sample (School)	EDL	RPD	Comment
2378-TCDF	5.2		ND			
2378TCDD	ND		ND			
12378-PeCDF	ND	2.0	2.47	0.648		
23478-PeCDF	ND	2.0	4.85	0.618		
12378-PeCDD	ND	2.4	3.77	0.829		
123478-HxCDF	7.3	1.3	9.7	0.498	28.2	
123678-HxCDF	ND	1.2	5.38	0.474		
234678-HxCDF	ND	1.4	6.21	0.539		
123789-HxCDF	ND	1.4	ND	0.628		
123478-HxCDD	ND	1.8	5.46	0.709		
123678-HxCDD	4.9	1.8	11.6	0.746	81.2	NA Conc < 5xEDL
123789-HxCDD	10	1.6	16.5	0.687	49.1	
1234678-HpCDF	18	1.7	21.2	0.783	16.3	
1234789-HpCDF	ND	2.0	3.99	1.02		
1234678-HpCDD	130	3.2	136	1.02	4.5	
OCDF	26	3.1	26.7	1.98	2.7	
OCDD	510	2.7	365	1.76	33.1	

With the exception of OCDD (%RPD = 33 %) associated with the November sampling event all other %RPDs were within the acceptance criteria of <30% RPD which indicates good overall precision.

4.0 SUMMARY

4.1 Volatile Organic Compounds

Benzene and carbon tetrachloride were present in all samples from the regularly scheduled every-six-day community monitoring events. No other VOCs were reported to be present at concentrations above the respective Region 9 PRGs.

The concentrations of benzene reported from the three (3) 8-hour Isolation Break sampling events conducted during the time period covered by this Monthly Report were comparable to the concentrations reported from the regularly scheduled 24-hour samples.

All of the reported benzene concentrations were within the range of background levels reported in the literature and by other investigators. As mentioned in previous Monthly Reports, there are numerous local and area sources of benzene and related compounds, including lawn mowing, emissions from the heavy equipment working on the nearby expansion area of the landfill, motor vehicles near the monitoring equipment, the Marathon refinery on the south side of Canton, and the landfill. The sources of carbon tetrachloride are not known, but the consistently low concentrations of this environmentally persistent compound across all monitoring locations indicate that like the benzene, it is not related to the landfill.

Note: For all of the compounds that were measured at concentrations (or estimated concentrations as designated by a "J" qualifier) above the Region 9 PRGs, the PRG value is either very near or in some cases below the reporting limit for the analytical laboratory. Consequently almost any quantifiable detection of the constituent will exceed the highly conservative Region 9 PRG. The ATSDR MRLs provide a more realistic basis of comparison since all of the MRLs are above the range of laboratory reporting limits for those compounds that have MRLs. Neither benzene nor carbon tetrachloride concentrations in any sample exceeded the acute or chronic ATSDR MRL.

4.2 Aldehydes (Carbonyl Compounds)

Formaldehyde and acetaldehyde were detected at all sampling locations. The Region 9 PRGs for formaldehyde (0.15 ug/m^3) and acetaldehyde (0.87 ug/m^3) are very close to the laboratory reporting limits for these compounds. Consequently, almost any measurable levels of formaldehyde and acetaldehyde will exceed the respective Region 9 PRG. Therefore, the ATSDR Acute (50 ug/m^3) and Chronic (10 ug/m^3) MRLs are more relevant guidelines for interpreting the analytical results.

The ATSDR acute MRL for formaldehyde (50 ug/m^3) was not exceeded in any sample covered in this report. The ATSDR chronic MRL (10 ug/m^3) for formaldehyde was exceeded in one or more samples during event #114 and #116. The 24 hour average was not exceeded during event #114, whereas the 24 hour average was slightly exceeded (10.7 ug/m^3) at the campground location during event #116. The campground location was upwind or crosswind during sampling event #116, suggesting a source other than the landfill for the slightly elevated formaldehyde concentration.

As noted in previous reports, the first and third sorbent tubes tend to capture the highest concentrations of aldehydes. The first sorbent tube is programmed to turn on at 3:00 PM and run until 11:00 PM; the second tube samples air from 11:00 PM to 7:00 AM; and the third tube samples air from 7:00 AM to 3:00 PM. Thus, it is very likely that the first and third tubes are drawing air samples during the evening and morning rush hours, respectively. Again, this suggests that increased motor vehicle traffic may explain increased levels of aldehydes.

4.3 Hydrogen Fluoride and Hydrogen Chloride

Hydrogen fluoride and hydrogen chloride were only rarely detected during the monitoring events covered by this Monthly Report #24. The concentrations of HCL detected during sampling event

#113 (Cell Tower-tube #3 -2.0 ug/m³; School-Tube #2 – 1.5 ug/m³) were well below the Region 9 PRG for HCL (21 ug/m³). The higher HCL concentration observed during sampling event #115 (Campground-tube #3 – 34.2 ug/m³) was likely due to breakthrough from front to back of sorbent tube (see lab report Appendix D). Additionally, the low concentrations detected were within the range of values reported over the course of this monitoring program.

Note: It should be recognized that NIOSH Method 7903 for inorganic acids was designed for industrial-not ambient environmental applications. The methodology appears to be sensitive to changes in ambient conditions, particularly moisture. HF and HCl were either not present or were only detected at very low levels in the majority of samples that have been collected since the initiation of this monitoring program in May 2007. Even those results that appear to be outside of the “typical range” for this program are extremely low concentrations that do not present a risk to public health.

4.4 PCDDs/PCDFs

The TEQ concentrations range from 0.0141 pg/m³ to 0.0172 pg/m³. All samples from all locations are below the very conservative Region 9 PRG for 2,3,7,8-TCDD even using the estimated maximum possible concentrations for dioxins. 2,3,7,8-TCDD, the most biologically active/toxic dioxin compound, was not detected in any sample from any location. The Strasburg location, which is intended to serve as an indicator of background dioxin levels, was in fact crosswind of the Countywide landfill on December 15-16, 2008. The location with the highest TEQ was the wetland – the location that was most upwind of the landfill on the sample dates.

TEQ values were lower (on average) in December even though excavation was occurring at the isolation break. The December results exhibited less variability among tested sites than the November results.

4.5 Laboratory Issues

No major laboratory issues have been identified as of the date of this report that would alter the conclusions based upon the monitoring results presented here. Results from the co-located (duplicate) TO-15 samples were similar for all locations and events.

4.6 Conclusions

No significant concentrations of any VOC, including benzene, have been reported in the months since alterations were made to the sampling apparatus. This is still the case for the monitoring events presented in this Monthly Report #24. In addition to the 24-hour monitoring events that are conducted on an every-six-day schedule, this report also presents the findings from three (3) supplementary 8-hour BTEX samples collected during excavation activities on April 2, April 8 and April 14.

Our specific conclusions are summarized below:

- The levels of benzene recorded at the community monitoring locations during late-March through mid-April were very low and well within Ohio background as reported by Ohio EPA (Portsmouth Ohio Air Quality Study, 2003).
- The concentrations of benzene detected during the Supplemental Isolation Break 8-hour Monitoring Events, April 2, April 8 and April 14, were consistent with the results from the regularly scheduled 24-hour Community Monitoring Events. These findings demonstrate that the intrusive excavation of the Isolation Break is not having an effect on the concentrations or specific VOCs present in ambient air in the surrounding community. Collection of these supplemental samples will be terminated at the conclusion of excavation activities in mid-April.
- Because there are numerous local and regional sources of VOCs, it is expected that many of these compounds will continue to be detected at low levels as the community monitoring program moves forward.
- Concentrations of formaldehyde and acetaldehyde from late-March through mid-April were similar to the previous month. Although the 24-hour average concentrations of formaldehyde slightly exceeded the ASTDR chronic MRL on one occasion, the average levels of formaldehyde recorded from all locations from late-March through mid-April were below the chronic MRL.
- Hydrogen fluoride and hydrogen chloride were only rarely detected. As stated in previous Monthly Reports, continued monitoring for these analytes has not provided relevant information. Sampling for hydrogen fluoride and hydrogen chloride should be eliminated.
- There are no clear trends with regard to the specific compounds or the concentrations of those compounds detected with respect to whether the monitoring location was upwind or downwind of the landfill during the monitoring event.
- The results presented in this Monthly Report #24 continue to support our conclusions that the occurrence of low levels of VOCs, aldehydes, and inorganic acids in the air of the community surrounding Countywide reflect local and regional sources; and that the levels of these constituents in the ambient air do not represent either an immediate or long-term threat to public health.
- The results of the PCDD/PCDF sampling conducted in December during the excavation of the Isolation Break (presented in this Monthly Report) indicate that very low levels of these compounds are present as part of regional background and are not related to the landfill.

**Countywide Recycling & Disposal Facility
Ambient Air Monitoring
Monthly Report #24**

May 20, 2009

EPA Method TO-15 SUMMARY TABLES

- Table 1. Event #112: Monday March 23 to Tuesday March 24**
- Table 2. Event #113: Sunday March 29 to Monday March 30**
- Table 3. Event #114: Saturday April 4 to Sunday April 5**
- Table 4. Event #115: Friday April 10 to Saturday April 11**
- Table 5. Event #116: Thursday April 16 to Friday April 17**
- Table 6. ISBM Event #9: Thursday April 2**
- Table 7. ISBM Event #10: Wednesday April 8**
- Table 8. ISBM Event #11: Tuesday April 14**

Countywide Recycling & Disposal Facility
EPA Method TO-15 Modified: Volatile Organic Compounds
Table 1: Event #112: March 23/24, 2009

Analyte	Monitoring Location							
				School	Cell Tower	Campground	Wetland	
	*Prevailing Wind Direction			Co-Located	D/C	D/C	U/C	C/U
All results in ug/m3								
Method TO-15 Modified	Acute MRL	Chronic MRL	PRG					
Acetone	61762	30881	3300	12	7.8J	6.8J	7.3J	9.6J
Benzene	29	10	0.25	0.95	0.94	0.48J	0.61J	0.68
Bromomethane	194	19	5.2	ND	ND	ND	ND	ND
tert-Butyl alcohol	NA	NA	NA	0.18J	0.21J	ND	ND	0.25J
Carbon disulfide	NA	934	730	ND	ND	ND	ND	ND
Carbon tetrachloride	188	188	0.13	0.41J	0.44J	0.35J	0.49J	0.43J
Chlorobenzene	NA	NA	62	ND	ND	ND	ND	ND
Chloroethane	39583	NA	2.3	ND	ND	ND	ND	ND
Chloroform	488	98	0.083	ND	ND	ND	ND	ND
Chloromethane	1033	103	95	1.1	0.79J	0.87J	1.0J	0.85J
Cyclohexane	NA	NA	6200	ND	ND	ND	ND	ND
Dichlorodifluoromethane	NA	NA	210	2.4	2.4	2.4	2.8	2.4
cis-1,2-Dichloroethene	NA	NA	37	ND	ND	ND	ND	ND
Ethylbenzene	43419	1303	1100	ND	0.42J	ND	ND	ND
4-Ethyltoluene	NA	NA	NA	ND	0.63J	ND	ND	ND
Heptane	NA	NA	NA	0.57J	0.42J	ND	ND	0.38J
Hexane	NA	2115	210	0.74J	0.74J	0.66J	0.75J	0.65J
Methyl ethyl ketone	NA	NA	5100	2.0J	1.4J	0.66J	0.78J	1.4
Methyl isobutyl ketone	NA	NA	3100	ND	ND	ND	ND	ND
Methylene chloride	2084	1042	4.1	0.75J	0.62J	1.2J	1.3J	0.63J
Styrene	8520	852	1100	ND	ND	ND	ND	ND
Tetrahydrofuran	NA	NA	0.99	ND	ND	ND	ND	ND
Toluene	3768	301	400	1.1	1.4	0.21J	0.22J	0.60J
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	NA	0.57J	0.54J	0.51J	0.61J	0.56J
Trichlorofluoromethane	NA	NA	730	1.3	1.2	1.3	1.4	1.2
1,2,4-Trimethylbenzene	NA	NA	6.2	ND	1.8	ND	ND	0.58J
1,3,5-Trimethylbenzene	NA	NA	6.2	ND	0.47J	ND	ND	ND
2,2,4-Trimethylpentane	NA	NA	NA	0.23J	0.25J	ND	ND	ND
Vinyl Chloride	1278	77	0.11	ND	ND	ND	ND	ND
m/p-Xylene	8687	8687	110	0.76	1.9	ND	ND	0.56J
o-Xylene	8687	8687	110	ND	0.73J	ND	ND	ND
Tentatively Identified Compounds								
NONE								
*Prevailing Wind Direction with respect to the landfill								
U: Upwind								
D: Downwind								
C: Crosswind								
V: Variable								
NS = No Sample								
ND = Not Detected								
NA = Not Available								
Y = TIC present								
Bold indicates result exceeds Region 9 PRG								
Shading indicates result exceeds ATSDR MRL								
Laboratory Data Qualifiers:								
B = Compound present in blank								
J = Estimated concentration below laboratory reporting limit								
D = Dilution								
E = Exceeds calibration range of instrument								
TICs: Compound has been tentatively identified but the estimated concentration is highly uncertain.								

Countywide Recycling & Disposal Facility
EPA Method TO-15 Modified: Volatile Organic Compounds
Table 2: Event #113: March 29/30, 2009

Analyte	Monitoring Location							
				School	Cell Tower	***Campground Co-Located		Wetland
	*Prevailing Wind Direction			C/C	C/C	C/C		D/C
All results in ug/m3								
Method TO-15 Modified	Acute MRL	Chronic MRL	PRG					
Acetone	61762	30881	3300	4.5J	6.2J	NS	NS	7.8J
Benzene	29	10	0.25	0.68	0.66	NS	NS	1.1
Bromomethane	194	19	5.2	ND	ND	NS	NS	ND
tert-Butyl alcohol	NA	NA	NA	0.14J	0.15J	NS	NS	0.21J
Carbon disulfide	NA	934	730	ND	ND	NS	NS	ND
Carbon tetrachloride	188	188	0.13	0.41J	0.40J	NS	NS	0.41J
Chlorobenzene	NA	NA	62	ND	ND	NS	NS	ND
Chloroethane	39583	NA	2.3	ND	ND	NS	NS	ND
Chloroform	488	98	0.083	ND	ND	NS	NS	ND
Chloromethane	1033	103	95	1.3	0.90J	NS	NS	1.2
Cyclohexane	NA	NA	6200	ND	ND	NS	NS	ND
Dichlorodifluoromethane	NA	NA	210	1.6	1.6	NS	NS	1.6
cis-1,2-Dichloroethene	NA	NA	37	ND	ND	NS	NS	ND
Ethylbenzene	43419	1303	1100	ND	ND	NS	NS	ND
4-Ethyltoluene	NA	NA	NA	ND	ND	NS	NS	ND
Heptane	NA	NA	NA	0.20J	0.32J	NS	NS	0.34J
Hexane	NA	2115	210	0.24J	0.38J	NS	NS	0.36J
Methyl ethyl ketone	NA	NA	5100	0.73J	0.73J	NS	NS	1.1J
Methyl isobutyl ketone	NA	NA	3100	ND	ND	NS	NS	ND
Methylene chloride	2084	1042	4.1	0.56J	0.68J	NS	NS	1.4J
Styrene	8520	852	1100	ND	ND	NS	NS	ND
Tetrachloroethene	1378	276	0.32	ND	ND	NS	NS	ND
Tetrahydrofuran	NA	NA	0.99	ND	ND	NS	NS	ND
Toluene	3768	301	400	0.48J	1.4	NS	NS	0.83
1,1,1-Trichloroethane	10800	NA	2300	ND	ND	NS	NS	ND
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	NA	0.50J	0.51J	NS	NS	0.52J
Trichlorofluoromethane	NA	NA	730	1.0J	1.0J	NS	NS	1.1
1,2,4-Trimethylbenzene	NA	NA	6.2	ND	ND	NS	NS	ND
1,3,5-Trimethylbenzene	NA	NA	6.2	ND	ND	NS	NS	ND
2,2,4-Trimethylpentane	NA	NA	NA	ND	ND	NS	NS	ND
Vinyl Chloride	1278	77	0.11	ND	ND	NS	NS	ND
m/p-Xylene	8687	8687	110	ND	ND	NS	NS	ND
o-Xylene	8687	8687	110	ND	ND	NS	NS	ND
Tentatively Identified Compounds								
NONE								
*Prevailing Wind Direction with respect to the landfill								
U: Upwind								
D: Downwind								
C: Crosswind								
V: Variable								
***Campground unit malfunctioned and thus no samples were obtained.								
NS = No Sample								
ND = Not Detected								
NA = Not Available								
Y = TIC present								
Bold indicates result exceeds Region 9 PRG								
Shading indicates result exceeds ATSDR MRL								
Laboratory Data Qualifiers:								
B = Compound present in blank								
J = Estimated concentration below laboratory reporting limit								
D = Dilution								
E = Exceeds calibration range of instrument								
TICs: Compound has been tentatively identified but the estimated concentration is highly uncertain.								

Countywide Recycling & Disposal Facility
EPA Method TO-15 Modified: Volatile Organic Compounds
Table 3: Event #114: April 4/5, 2009

Analyte	Monitoring Location							
				School	Cell Tower	Campground	Wetland	
	*Prevailing Wind Direction			C/C	C/C	C/D	Co-Located C/U	
All results in ug/m3								
Method TO-15 Modified	Acute MRL	Chronic MRL	PRG					
Acetone	61762	30881	3300	16	6.2J	10J	19	7.6J
Benzene	29	10	0.25	0.78	0.69	0.71	0.60J	0.63
Bromomethane	194	19	5.2	ND	ND	0.23J	ND	ND
tert-Butyl alcohol	NA	NA	NA	0.46J	0.13J	0.20J	0.27J	0.38J
Carbon disulfide	NA	934	730	0.10J	ND	ND	ND	ND
Carbon tetrachloride	188	188	0.13	0.34J	0.35J	0.35J	0.32J	0.34J
Chlorobenzene	NA	NA	62	ND	ND	ND	ND	ND
Chloroethane	39583	NA	2.3	ND	ND	ND	ND	ND
Chloroform	488	98	0.083	ND	ND	ND	ND	ND
Chloromethane	1033	103	95	0.73J	0.57J	0.68J	0.69J	0.76J
Cyclohexane	NA	NA	6200	ND	0.16J	ND	ND	ND
Dichlorodifluoromethane	NA	NA	210	1.9	1.9	1.8	1.9	1.9
cis-1,2-Dichloroethene	NA	NA	37	ND	ND	ND	ND	ND
Ethylbenzene	43419	1303	1100	ND	ND	ND	ND	ND
4-Ethyltoluene	NA	NA	NA	ND	ND	ND	ND	ND
Heptane	NA	NA	NA	0.68J	0.40J	0.54J	0.64J	0.44J
Hexane	NA	2115	210	0.78J	0.57J	0.50J	0.65J	0.50J
Methyl ethyl ketone	NA	NA	5100	2.5J	0.82J	1.2J	2.5J	1.0J
Methyl isobutyl ketone	NA	NA	3100	ND	ND	ND	ND	ND
Methylene chloride	2084	1042	4.1	1.7JB	0.78JB	0.73JB	1.8B	1.2JB
Styrene	8520	852	1100	ND	ND	ND	ND	ND
Tetrahydrofuran	NA	NA	0.99	ND	ND	ND	ND	ND
Toluene	3768	301	400	1.8	0.94	1.0	1.0	0.86
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	NA	0.42J	0.43J	0.38J	0.39J	0.40J
Trichlorofluoromethane	NA	NA	730	0.92J	0.93J	0.90J	0.92J	0.91J
1,2,4-Trimethylbenzene	NA	NA	6.2	ND	0.31J	ND	ND	ND
1,3,5-Trimethylbenzene	NA	NA	6.2	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	NA	NA	NA	0.21J	0.23J	ND	ND	ND
Vinyl Chloride	1278	77	0.11	ND	ND	ND	ND	ND
m/p-Xylene	8687	8687	110	0.76J	0.58J	0.59J	ND	ND
o-Xylene	8687	8687	110	0.28J	ND	ND	ND	ND
Tentatively Identified Compounds								
NONE								
*Prevailing Wind Direction with respect to the landfill								
U: Upwind								
D: Downwind								
C: Crosswind								
V: Variable								
NS = No Sample due to flooding								
ND = Not Detected								
NA = Not Available								
Y = TIC present								
Bold indicates result exceeds Region 9 PRG								
Shading indicates result exceeds ATSDR MRL								
Laboratory Data Qualifiers:								
B = Compound present in blank								
J = Estimated concentration below laboratory reporting limit								
D = Dilution								
E = Exceeds calibration range of instrument								
TICs: Compound has been tentatively identified but the estimated concentration is highly uncertain.								

Countywide Recycling & Disposal Facility

EPA Method TO-15 Modified: Volatile Organic Compounds

Table 4: Event #115: April 10/11, 2009

Analyte	Monitoring Location							
				School	Cell Tower	Campground	Wetland	
	*Prevailing Wind Direction			D/D	Co-Located D/D	C/U	U/C	
All results in ug/m3								
Method TO-15 Modified	Acute MRL	Chronic MRL	PRG					
Acetone	61762	30881	3300	12B	8.3JB	7.1JB	10JB	6.6JB
Benzene	29	10	0.25	0.69	0.87	0.76	0.56J	0.55J
Bromomethane	194	19	5.2	ND	ND	ND	ND	ND
tert-Butyl alcohol	NA	NA	NA	0.26J	0.12J	0.24J	0.16J	ND
Carbon disulfide	NA	934	730	ND	0.25J	ND	ND	ND
Carbon tetrachloride	188	188	0.13	0.60J	0.57J	0.56J	0.64J	0.60J
Chlorobenzene	NA	NA	62	ND	0.26J	ND	ND	ND
Chloroethane	39583	NA	2.3	ND	ND	ND	ND	ND
Chloroform	488	98	0.083	ND	ND	ND	ND	ND
Chloromethane	1033	103	95	1.6	1.7	1.6	1.6	1.5
Cyclohexane	NA	NA	6200	ND	0.17J	0.16J	ND	ND
1,4- Dichlorobenzene	12020	60	0.31	ND	ND	ND	ND	ND
Dichlorodifluoromethane	NA	NA	210	2.6	2.3	2.4	2.4	2.5
cis-1,2-Dichloroethene	NA	NA	37	ND	ND	ND	ND	ND
Ethylbenzene	43419	1303	1100	ND	ND	0.45J	ND	2.1
4-Ethyltoluene	NA	NA	NA	ND	ND	ND	0.36J	0.86J
Heptane	NA	NA	NA	0.60JB	0.43JB	0.46JB	0.49JB	0.40JB
Hexane	NA	2115	210	0.82J	0.57J	0.86J	0.38J	0.48J
Methyl ethyl ketone	NA	NA	5100	1.9JB	1.4JB	1.00JB	1.3JB	0.95JB
Methyl isobutyl ketone	NA	NA	3100	ND	ND	0.27J	ND	ND
Methylene chloride	2084	1042	4.1	1.0J	1.0J	1.8	0.74J	0.91J
Styrene	8520	852	1100	ND	ND	ND	ND	ND
Tetrahydrofuran	NA	NA	0.99	ND	0.22J	0.20J	ND	ND
Toluene	3768	301	400	0.59J	0.98	1.1	0.87	0.71J
Trichloroethene	10920	546	0.017	ND	ND	0.27J	ND	ND
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	NA	0.60J	0.57J	0.61J	0.66J	0.58J
Trichlorofluoromethane	NA	NA	730	1.4	1.4	1.3	1.4	1.3
1,2,4-Trimethylbenzene	NA	NA	6.2	0.70J	0.45J	0.35J	0.62J	3.2
1,3,5-Trimethylbenzene	NA	NA	6.2	ND	ND	ND	ND	1.3
2,2,4-Trimethylpentane	NA	NA	NA	ND	0.22J	2.9	ND	ND
Vinyl Chloride	1278	77	0.11	ND	ND	ND	ND	ND
m/p-Xylene	8687	8687	110	0.68J	0.91	1.4	1.0	7.4
o-Xylene	8687	8687	110	ND	0.32J	0.64J	0.34J	2.3
Tentatively Identified Compounds								
NONE								
*Prevailing Wind Direction with respect to the landfill								
U: Upwind								
D: Downwind								
C: Crosswind								
V: Variable								
NS = No Sample								
ND = Not Detected								
NA = Not Available								
Y = TIC present								
Bold indicates result exceeds Region 9 PRG								
Shading indicates result exceeds ATSDR MRL								
Laboratory Data Qualifiers:								
B = Compound present in blank								
J = Estimated concentration below laboratory reporting limit								
D = Dilution								
E = Exceeds calibration range of instrument								
TICs: Compound has been tentatively identified but the estimated concentration is highly uncertain.								

Countywide Recycling & Disposal Facility
EPA Method TO-15 Modified: Volatile Organic Compounds
Table 5: Event #116: April 16/17, 2009

Analyte	Monitoring Location							
				School	Cell Tower	Campground	Wetland	
	*Prevailing Wind Direction			Co-Located D/C	D/C	U/C	C/D	
All results in ug/m3								
Method TO-15 Modified	Acute MRL	Chronic MRL	PRG					
Acetone	61762	30881	3300	13	19B	4.1J	14	13
Benzene	29	10	0.25	0.62J	0.19J	1.5	0.62J	0.66
Bromomethane	194	19	5.2	ND	ND	ND	ND	ND
1,3-Butadiene	NA	NA	0.061	ND	ND	0.36J	ND	ND
tert-Butyl alcohol	NA	NA	NA	0.29J	0.20J	ND	0.32J	0.41J
Carbon disulfide	NA	934	730	ND	0.21J	0.17J	ND	ND
Carbon tetrachloride	188	188	0.13	0.63J	0.44J	0.51J	0.67J	0.60J
Chlorobenzene	NA	NA	62	ND	ND	ND	ND	ND
Chloroethane	39583	NA	2.3	ND	ND	0.53	ND	ND
Chloroform	488	98	0.083	ND	ND	ND	ND	ND
Chloromethane	1033	103	95	1.7	2.6	2.3	1.6	1.5
Cyclohexane	NA	NA	6200	0.90J	0.19J	0.28J	0.34J	0.18J
1,4-Dichlorobenzene	12020	60	0.31	ND	ND	ND	ND	ND
Dichlorodifluoromethane	NA	NA	210	2.6	2.5	2.6	2.6	2.6
cis-1,2-Dichloroethene	NA	NA	37	ND	0.40J	0.59J	ND	ND
Ethylbenzene	43419	1303	1100	ND	ND	ND	0.49J	0.33J
4-Ethyltoluene	NA	NA	NA	ND	ND	ND	ND	ND
Heptane	NA	NA	NA	0.33J	ND	0.63J	0.69J	0.72J
Hexane	NA	2115	210	1.1J	0.95J	1.0J	0.76J	0.89J
Methyl ethyl ketone	NA	NA	5100	1.5J	1.8JB	ND	2.3J	2.3J
Methyl isobutyl ketone	NA	NA	3100	ND	ND	ND	ND	ND
Methylene chloride	2084	1042	4.1	1.4J	25	1.5J	0.92J	0.99J
Styrene	8520	852	1100	ND	ND	ND	ND	ND
Tetrachloroethene	1356	271	0.32	ND	ND	2.3	ND	ND
Tetrahydrofuran	NA	NA	0.99	0.25J	ND	ND	ND	ND
Toluene	3768	301	400	0.40J	0.31J	1.0	1.6	1.2
Trichloroethene	10920	546	0.017	ND	ND	1.9	ND	ND
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	NA	0.66J	0.48J	0.60J	0.65J	0.59J
Trichlorofluoromethane	NA	NA	730	1.6	1.5	1.3	1.3	1.3
1,2,4-Trimethylbenzene	NA	NA	6.2	ND	ND	ND	ND	0.41J
1,3,5-Trimethylbenzene	NA	NA	6.2	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	NA	NA	NA	2.1J	2.1J	0.33J	1.6J	0.27J
Vinyl Chloride	1278	77	0.11	ND	ND	ND	ND	ND
m/p-Xylene	8687	8687	110	ND	ND	ND	1.7	0.96
o-Xylene	8687	8687	110	ND	ND	ND	0.57J	0.32J
Tentatively Identified Compounds								
Butane, 2-methyl-	N/A	N/A	N/A	Y	N	N	N	N
*Prevailing Wind Direction with respect to the landfill								
U: Upwind								
D: Downwind								
C: Crosswind								
V: Variable								
NS = Not Sampled (due to flooding)								
ND = Not Detected								
NA = Not Available								
Y = TIC Present in Sample								
N = TIC Not Present in Sample								
Bold indicates result exceeds Region 9 PRG								
Shading indicates result exceeds ATSDR MRL								
Laboratory Data Qualifiers:								
B = Compound present in blank								
J = Estimated concentration below laboratory reporting limit								
D = Dilution								
E = Exceeds calibration range of instrument								
TICs: Compound has been tentatively identified but the estimated concentration is highly uncertain.								

Countywide Recycling & Disposal Facility

EPA Method TO-15 Modified: Volatile Organic Compounds

Table 6: Special Event Isolation-Break 8 hour TO-15 sampling: April 2, 2009 Analyzed for BTEX ONLY

Analyte	Monitoring Location			
	School	Cell Tower	Campground	Wetland
	C	C	C	U
	*Prevailing Wind Direction			
	All results in ug/m3			
Method TO-15 Modified	Acute MRL	Chronic MRL	PRG	
Benzene	29	10	0.25	0.94 0.80 0.75 0.65
Ethylbenzene	43419	1303	1100	ND ND ND ND
Toluene	3768	301	400	0.99 0.99 ND ND
m/p-Xylene	8687	8687	110	ND 1.3 ND ND
o-Xylene	8687	8687	110	ND ND ND ND
*Prevailing Wind Direction with respect to the landfill				
U: Upwind				
D: Downwind				
C: Crosswind				
V: Variable				
ND = Not Detected				
NA = Not Available				
Y = TIC present				
Bold indicates result exceeds Region 9 PRG				
Shading indicates result exceeds ATSDR MRL				
Laboratory Data Qualifiers:				
B = Compound present in blank				
J = Estimated concentration below laboratory reporting limit				
D = Dilution				
E = Exceeds calibration range of instrument				
TICs: Compound has been tentatively identified but the estimated concentration is highly uncertain.				

Countywide Recycling & Disposal Facility

EPA Method TO-15 Modified: Volatile Organic Compounds

Table 7: Special Event Isolation-Break 8 hour TO-15 sampling: April 8, 2009 Analyzed for BTEX ONLY

Analyte	Monitoring Location			
	School	Cell Tower	Campground	Wetland
	C	C	C	D
	*Prevailing Wind Direction			
	All results in ug/m3			
Method TO-15 Modified	Acute MRL	Chronic MRL	PRG	
Benzene	29	10	0.25	0.40J 0.41J 0.35J 0.39J
Ethylbenzene	43419	1303	1100	ND ND ND ND
Toluene	3768	301	400	0.32J 0.23J 0.27J 0.42J
m/p-Xylene	8687	8687	110	ND ND ND ND
o-Xylene	8687	8687	110	ND ND ND ND
*Prevailing Wind Direction with respect to the landfill				
U: Upwind				
D: Downwind				
C: Crosswind				
V: Variable				
ND = Not Detected				
NA = Not Available				
Y = TIC present				
Bold indicates result exceeds Region 9 PRG				
Shading indicates result exceeds ATSDR MRL				
Laboratory Data Qualifiers:				
B = Compound present in blank				
J = Estimated concentration below laboratory reporting limit				
D = Dilution				
E = Exceeds calibration range of instrument				
TICs: Compound has been tentatively identified but the estimated concentration is highly uncertain.				

Countywide Recycling & Disposal Facility

EPA Method TO-15 Modified: Volatile Organic Compounds

Table 8: Special Event Isolation-Break 8 hour TO-15 sampling: April 14, 2009 Analyzed for BTEX ONLY

Analyte	Monitoring Location			
	School	Cell Tower	Campground	Wetland
	C	C	C	U
	*Prevailing Wind Direction			
	All results in ug/m3			
Method TO-15 Modified	Acute MRL	Chronic MRL	PRG	
Benzene	29	10	0.25	1.3 1.2 0.93 1.4
Ethylbenzene	43419	1303	1100	1.0 0.36J ND 0.62J
Toluene	3768	301	400	5.7 1.4 0.85 1.8
m/p-Xylene	8687	8687	110	1.6 1.00 ND 1.9
o-Xylene	8687	8687	110	0.56J 0.40J 0.27J 0.69J
*Prevailing Wind Direction with respect to the landfill				
U: Upwind				
D: Downwind				
C: Crosswind				
V: Variable				
ND = Not Detected				
NA = Not Available				
Y = TIC present				
Bold indicates result exceeds Region 9 PRG				
Shading indicates result exceeds ATSDR MRL				
Laboratory Data Qualifiers:				
B = Compound present in blank				
J = Estimated concentration below laboratory reporting limit				
D = Dilution				
E = Exceeds calibration range of instrument				
TICs: Compound has been tentatively identified but the estimated concentration is highly uncertain.				