Air Quality Monitoring Study for the City of Regina

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Ministry of Environment

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ACRONYMS

$\mu g/m^3$	Micro grams per cubic meter
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
CAAQS	Canadian Ambient Air Quality Standards
CRC	Co-op Refinery Complex
H_2S	Hydrogen Sulphide
MoE	Ministry of Environment
NAPS	National Air Pollution Surveillance
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
NO_X	Nitrogen Oxides
NPRI	National Pollutant Release Inventory
O_3	Ozone
$PM_{2.5}$	Particulate Matter with an aerodynamic diameter less than 2.5 microns
PM_{10}	Particulate Matter with an aerodynamic diameter less than 10 microns
ppb	Parts Per Billion
SAAQS	Saskatchewan Ambient Air Quality Standards
SAML	Saskatchewan Mobile Air Monitoring Laboratory
SO_2	Sulphur Dioxide
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds

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EXECUTIVE SUMMARY

The air monitoring results for Regina show that the city's air is of high quality. To continue the vigilance of checking the status and trend of the city's air, an air quality monitoring study was initiated in 2012; the first of its kind in Saskatchewan. The Ministry of Environment (the ministry) along with the Ministry of Health, the Regina Qu'Appelle Health Region and the City of Regina conducted an extensive air monitoring study in order to gain a better understanding of Regina's air quality in the city's residential neighborhoods. The purpose of the study was to: provide baseline data for comparative use in future monitoring studies; identify potential pollutants before they become a problem; and assist in determining if additional permanent monitoring stations should be needed.

Data was collected at 25 locations over a period of one year starting in July 2012 and ending in August 2013. Different monitoring methods were used to collect air pollutants such as nitrogen dioxide (NO_2), sulphur dioxide (SO_2), ozone (O_3), hydrogen sulphide (H_2S), fine particulate matter ($PM_{2.5}$), and volatile organic compounds (VOCs). Passive monitoring was employed to collect monthly measurements and continuous monitoring was used for instantaneous measurements. Over 850 passive monthly samples were taken at 18 sites, over 5500 hours of continuous data was collected using the Saskatchewan Mobile Air Monitoring Laboratory (SAML) at 5 locations, and one year of continuous data was monitored at two air stations. Passive monthly samples were taken for NO_2, SO_2, O_3, H_2S, and over 25 VOCs. The SAML was deployed on a scheduled rotation to continuously monitor for NO_2, SO_2, O_3, H_2S, $PM_{2.5}$, over 150 VOCs, and meteorological data. Likewise, continuous data was also collected for NO_2, SO_2, O_3, $PM_{2.5}$, and over 150 VOCs from the permanent National Air Pollution Surveillance (NAPS) station in the downtown as well as of SO_2 and H_2S from the Co-op Refinery Complex (CRC) station in the Glencairn area of the city.

The passive monitoring produced results in the form of an average concentration over the period of one month. The average monthly concentrations of NO_2, SO_2, O_3, and H_2S for the entire city were 5.6, 0.3, 24.0, and 0.5 ppb, respectively; and maximum monthly levels were 18.9, 0.8, 61.0, and 1.3 ppb, respectively. All measured NO_2, SO_2, O_3, and H_2S concentrations were well below the relevant Saskatchewan annual ambient air quality standards. Moreover, the average monthly concentration of total VOCs was 2.7 $\mu g/m^3$ with a maximum monthly concentration of 19.7 $\mu g/m^3$; however, there are no ambient air guidelines for total VOCs. Saskatchewan does not have guidelines for individual VOCs, therefore guidelines from Alberta[1] and Texas[2] were used. All 25 locations measured individual VOCs including benzene, toluene, ethylbenzene and xylenes, and all were below the relevant air quality guidelines.

The continuous monitoring produced results in the form of an average concentration over the period of one hour with the exception of the VOCs, which are reported as a 24-hour average. The average hourly concentrations of NO_2, SO_2, O_3, H_2S and $PM_{2.5}$ for the entire city were 7.9 ppb, 0.3 ppb, 23.0 ppb, 1.2 ppb and 8.8 $\mu g/m^3$, respectively. Maximum hourly concentrations were 50.5 ppb, 15.3 ppb, 58.0 ppb, 39.7 ppb and 93.3 $\mu g/m^3$, respectively. The average daily total VOC concentration was 53.9 $\mu g/m^3$ and the maximum daily concentrations was 283.9 $\mu g/m^3$. All measured NO_2, SO_2 and O_3 concentrations were below the relevant Saskatchewan ambient air quality standards (SAAQS). In contrast, H_2S and $PM_{2.5}$

[1] Alberta Environment and Sustainable Resource Development, Ambient Air Quality Objectives and Guidelines, August 2013, http://environment.gov.ab.ca/info/library/5726.pdf

[2] Texas Commission on Environmental Quality, March 2014 Effects Screening Levels http://www.tceq.state.tx.us/implementation/tox/

experienced events above the Saskatchewan ambient air quality standards. This was due to the city's wastewater treatment lagoon and smoke episode from forest fires. All 156 measured individual VOCs including benzene, toluene, ethylbenzene and xylenes were below air quality guidelines for Alberta and Texas.

The analysis of data shows that air quality in the City of Regina is good overall with slight variations in each area of the city. The potential pollutants of concern in the future will most likely be $PM_{2.5}$, O_3, and H_2S. Currently, the downtown air station serves as a good representation of the air quality in all areas of Regina. As the city continues to grow, another permanent air monitoring station may be required, in the northern or eastern quadrants of the city. The information gathered in this study can be used to identify potential monitoring locations. The results of this study will provide baseline data to compare with possible future monitoring surveys in the City of Regina. This study will also provide guidance for similar monitoring surveys in other cities in Saskatchewan.

1.0 INTRODUCTION

Air quality is vital to the environment and well-being of Saskatchewan residents. While the monitoring of Regina's air at the ministry's downtown station shows air being high quality, air quality information is not available in other areas of the city. In recent years, the city population has been increasing and residential, commercial and industrial areas are expanding. It was deemed important to know the state of air quality in the city and to quantify pollutants in different areas of Regina.

The Saskatchewan Ministry of Environment (the ministry), along with the Saskatchewan Ministry of Health, the Regina Qu'Appelle Health Region and the City of Regina, took initiative to gain a better understanding of Regina's air quality in the city's residential neighborhoods by conducting an air monitoring study from July 2012 to August 2013.

The current population of Regina is 205,000 and is expected to reach 300,000 by 2040[3]. The city covers an area of 118 square kilometers with economic activities related to agriculture, oil and gas production and telecommunications[4]. Major emission sources in and around the city include two types of sources, human caused[5] (e.g. industrial, commercial, agricultural, transportation and residential) and natural (e.g. fire smoke).

This study is the first of its kind in Saskatchewan. A survey of this magnitude has not been previously conducted in Regina. The purpose of the study was to:

- provide baseline data to compare with possible future monitoring studies;
- proactively identify potential pollutants of concern before they become a problem; and
- assist with determining where additional monitoring stations could be located.

[3] City of Regina, November 2013, Let's Learn About Regina, http://www.regina.ca/opencms/export/sites/regina.ca/residents/heritage-history/.media/pdf/learn_about_regina-2013.pdf
[4] City of Regina, 2014, Learn About Regina, http://www.regina.ca/residents/residents-regina-facts/about-regina/
[5] National Pollution Release Inventory, http://www.ec.gc.ca/inrp-npri/

2.0 SAMPLING LOCATIONS

Air quality samples were collected at 25 locations around Regina at the following sites (Figure 1):

1. Miller Comprehensive High School
2. Holy Rosary Community School
3. Saint Francis Community School
4. Archbishop M.C. O'Neill School
5. Michael A. Riffel High School
6. Saint Gregory Elementary School
7. Saint Michael Community School
8. MoE Warehouse at Park Street
9. Judge Bryant Elementary School
10. W.F. Ready Elementary School
11. Saint Gabriel Elementary School
12. University of Regina
13. Grant Road School
14. Dr. A.E. Perry Elementary School
15. Argyle Elementary School
16. Harbour Landing
17. Background Northwest (out of city)
18. Background Southeast (out of city)
19. Al Ritchie Arena
20. Jack Staples Arena
21. Litzenberger Park Rink
22. Optimist Park
23. Sandra Schmirler Leisure Center
24. CRC Glencairn Air Station
25. Regina NAPS Air Station

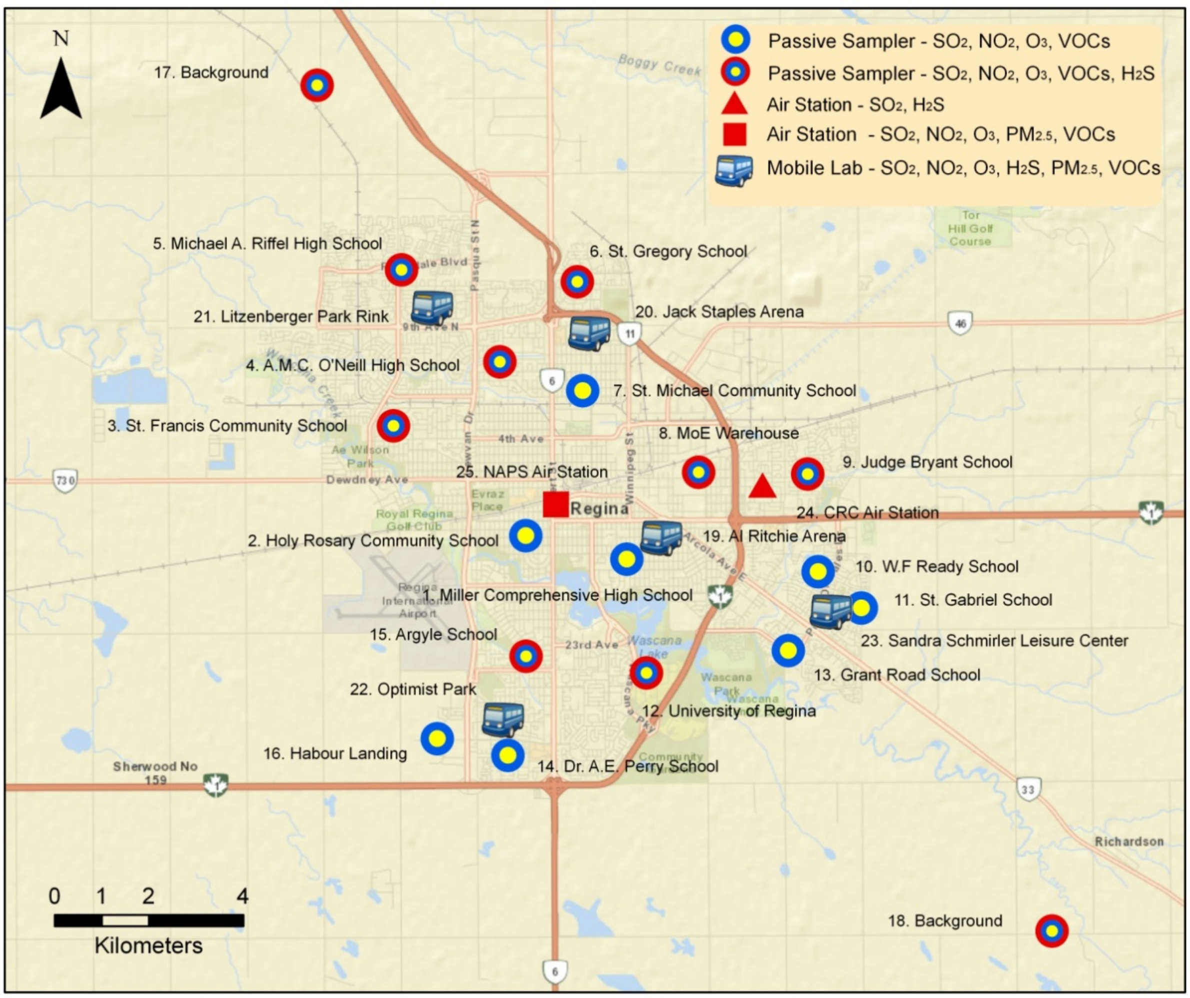

Figure 1: Air Monitoring Locations in the City of Regina

2.1 Site Selection Criteria

The city was divided into four sections based on the four quadrants (Albert Street and Victoria/Dewdney Avenues) and presented with facilities that report to the National Pollutant Release Inventory[6] (NPRI) (Figure 2). The facilities presented in Figure 2 can be classified according to NPRI into the following sectors.

Sector[6] (as per the National Pollutant Release Inventory)	SO_2 tonnes	NO_2 tonnes	VOC tonnes	H_2S tonnes	$PM_{2.5}$ tonnes
Chemicals	-	564	20	-	66
Iron and Steel	176	257	39	-	57
Mining	-	1,600	80	-	111
Oil & Gas Pipelines & Storage	-	38	179	-	1
Other (Except Manufacturing)	-	-	-	-	6
Other Manufacturing	-	2	347	-	21
Petroleum and Coal Products Refining and Manufacturing	2,180	1,114	2,974	29	98
Wastewater Treatment	-	-	-	150	-
2012 Total for the Regina Region	**2,356**	**3,575**	**3,639**	**179**	**360**

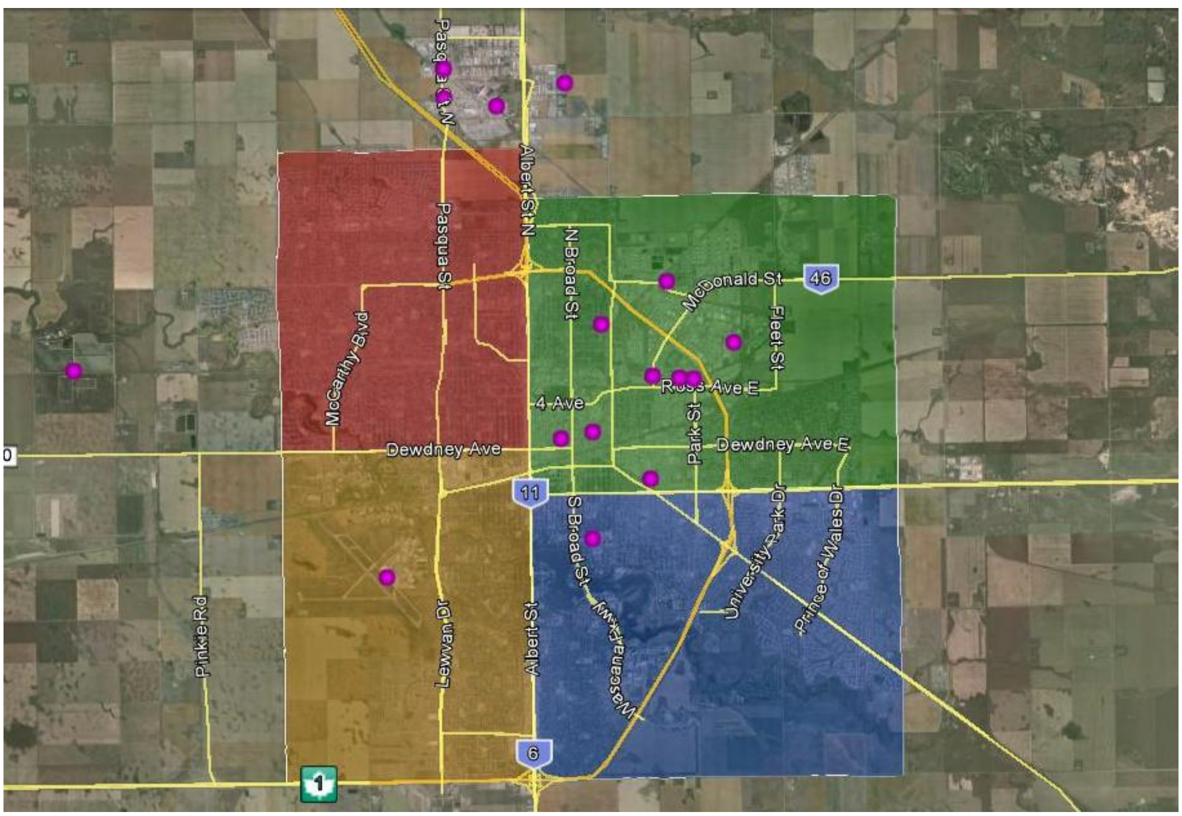

Figure 2: NPRI Facilities in the City of Regina

6 National Pollution Release Inventory, http://www.ec.gc.ca/inrp-npri/

Potential sampling locations were selected for both passive monitoring and continuous monitoring using the Saskatchewan Air Monitoring Laboratory (SAML).

Passive samplers were installed away from buildings, trees and other tall structures that affect wind conditions. The samplers were also installed where they cannot be tampered with (as they were left unattended for 30 day periods). Locations for the passive samplers are schoolyards where they can be installed on light posts out of the reach of the public. A benefit to installing the passive samplers in schoolyards is that the concentrations measured are representative of an area where children, an at risk group, spend a majority of their day. Being as most schools are in residential areas, it also provides a good estimate of what the average person would be exposed to in the neighborhood. To make the best use of the passive samplers they were installed in similar locations in each section of Regina to capture the entire area as efficiently as possible. Passive samplers were also placed outside the city limits both up and downwind of predominate wind directions. The purpose of these stations was to capture any air pollutants entering the city from locations outside the city limits and to provide background data.

To monitor continuously using the SAML required a location with an electrical power connection. Potential sampling locations were selected based on the availability of electricity, space for the SAML to be parked, and distance from high traffic areas as local vehicle traffic will affect sampling results. Hockey arenas met these requirements and four hockey arena parking lots were selected. The SAML is equipped with a data acquisition system that allows monitoring data to be reported hourly and be viewed remotely.

3.0 AIR POLLUTANTS

3.1 Nitrogen Oxides[7,8]

Nitrogen oxides, also known as oxides of nitrogen (NO_X), is a collective term for nitric oxide (NO) and nitrogen dioxide (NO_2). Nitric oxide is a colorless, flammable gas with a slight odour. Nitrogen dioxide is a reddish brown, non-flammable gas with a pungent irritating odour. NO_2 is of interest with respect to health and acid rain, whereas NO is more representative of vehicle emissions.

NO_X can cause increase respiratory aggravation, damage vegetation and reduce visibility. The primary concern with NO_X emissions is the contribution to formation of ground-level ozone, smog and acid rain. To a lesser extent, some NO_X compounds (e.g. N_2O) contribute to stratospheric ozone layer depletion and global warming.

NO_X emissions are mainly produced by fossil fuel combustion. High temperature conditions during combustion result in the formation of NO_X as a by-product. The major anthropogenic emission sources for NO_X are associated with fuel combustion, including both stationary sources, such as power plants, oil and gas industries and incinerators as well as mobile sources such as automobiles. Non-combustion sources such as nitric acid manufacture, welding processes and the use of explosives comprise the smaller emission sources. In major urban centres, motor vehicle emission is the major source of NO_X.

The Saskatchewan Ministry of Environment regulates ambient air concentration for nitrogen dioxide. The Saskatchewan Ambient Air Quality Standards (SAAQS) for nitrogen dioxide are:

- 0.2 ppm (212 ppb) averaged over a one-hour period; and
- 0.05 ppm (53 ppb) as an annual arithmetic average.

3.2 Sulphur Dioxide[7,9]

Sulphur dioxide (SO_2) is a colourless gas with a strong suffocating odour. It smells like burnt matches. At concentrations above 300 ppb, it can be detected by taste and odour. The health effects caused by exposure to high levels of SO_2 include breathing problems, respiratory illness, changes in lung function, and worsening respiratory and cardiovascular disease. People with asthma or chronic lung or heart disease are the most susceptible to the effects of SO_2. SO_2 also damages trees and crops as it is a pre-cursor to acid deposition.

SO_2, along with nitrogen oxides, are the main precursors of photochemical smog and acid rain, which contributes to the acidification of lakes and streams, accelerated corrosion of buildings, and reduced visibility. SO_2 in the air can form microscopic acid aerosols, which have serious health implications as well as contributing to climate change.

Anthropogenic SO_2 emission sources are primarily caused from combustion of sulphur containing fuels (e.g. gasoline, natural gas and coal) and processing of sulphur containing ores. The major emission sources for SO_2 include large industrial sources such as power plants, petroleum refineries, iron and steel mills, fertilizer plants, pulp and paper mills and smelters as well as small industries such as small oil and gas plants, battery and well flares.

The Saskatchewan Ambient Air Quality Standards (SAAQS) for sulphur dioxide are:

- 0.17 ppm (172 ppb) averaged over a one-hour period;
- 0.06 ppm (57 ppb) averaged over a 24-hour period; and
- 0.01 ppm (11 ppb) as an annual arithmetic average.

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[7] World Health Organization (WHO), March 2014, Fact sheet N°313 - Ambient (outdoor) air quality and health
[8] USEPA, May 1, 2014, http://www.epa.gov/airquality/nitrogenoxides/
[9] USEPA, May 1, 2014, http://www.epa.gov/airquality/sulfurdioxide/

3.3 Ozone[10,11]

Ozone (O_3) is a highly reactive pale blue gas that is slightly soluble in water. Most people can detect a sharp odour resembling chlorine bleach at about 10 ppb concentration. Ozone can be formed by electrical discharges and high energy electromagnetic radiation. In the indoor environments, ozone can be present as a result of electronic equipment such as ionic air purifiers, laser printers, photocopiers and arc welders.

In the ambient air, O_3 is a secondary pollutant, meaning it is not directly emitted from a source. Instead, ozone is produced from photochemical reactions between oxides of nitrogen (NO_X) and volatile organic compounds (VOC) in the presence of sunlight. Some research suggests that ground-level ozone could be from intrusion of ozone from the stratosphere, mixing from the upper troposphere, local photochemistry and the medium and long-range transport. This study suggested that high ozone events are most likely due to downward transport from the stratosphere.

Exposure to ozone has been linked to premature mortality and a range of morbidity health endpoints such as hospital admissions and asthma symptoms. Acute exposure to high concentrations of ozone can cause eye irritation and breathing difficulty. Ozone can significantly impact vegetation and decrease the productivity of some crops. Ozone can also damage other synthetic materials, cause cracks in rubber, accelerate fading of dyes and speed deterioration of some paints and coatings.

The Saskatchewan Ambient Air Quality Standard (SAAQS) for ozone is:

- 0.08 ppm (82 ppb) averaged over a one-hour period;

The Canadian Ambient Air Quality Standard (CAAQS) for ozone is:

- 63 ppb averaged over an eight-hour period (the achievement statistics is based on the Fourth highest measurement annually averaged over three consecutive years).

3.4 Hydrogen Sulphide[12]

Hydrogen sulphide (H_2S) is a colourless gas with a characteristic rotten egg odour. It is produced both naturally and through anthropogenic emission sources. H_2S occurs naturally in coal, crude oil, natural gas, oil, sulphur hot springs, volcanic gases, sloughs, swamps and lakes. The major anthropogenic emission sources include natural gas and petroleum production, wastewater treatment, pulp and paper mills, and tar and asphalt manufacturing. Decomposition of organic matter by bacteria under anaerobic conditions releases H_2S as well, forming the characteristic odour commonly associated with sewers, sewage lagoons and swamps.

Hydrogen sulphide is an acutely toxic gas at high levels. Exposure to hydrogen sulphide can irritate the eyes, nose, throat, and lungs and can cause serious health effects, including death.

The Saskatchewan Ambient Air Quality Standards (SAAQS) for hydrogen sulphide are:

- 10.8 ppb averaged over a one-hour period; and
- 3.6 ppb averaged over a 24-hour period;

3.5 Fine Particulate Matter[10,13]

Particulate matter is unique among air pollutants as it is identified by its size rather than by its composition. The major concern for particulate matter deals with small particles referred to as inhalable particulate, or PM_{10}. PM_{10} is defined as particles that have an aerodynamic diameter less than 10 microns (or 0.01 mm). PM_{10} is divided into two groups of particles based on size: fine particles and coarse particles. The fine particles are those particles with an aerodynamic diameter smaller than 2.5 microns

[10] World Health Organization (WHO), March 2014, Fact sheet N°313 - Ambient (outdoor) air quality and health
[11] USEPA, May 1, 2014, http://www.epa.gov/airquality/ozonepollution/
[12] Alberta Environment, 2003 Science and Standards Branch, Health Effects of Hydrogen Sulphide
[13] USEPA, May 1, 2014, http://www.epa.gov/air/particlepollution/

(0.0025 mm) and are identified as $PM_{2.5}$. In contrast, coarse particles are those with aerodynamic diameter greater than 2.5 microns and less than 10 microns.

Anthropogenic fine particles are generally emitted from activities such as industrial and residential combustion and from vehicle exhaust. Fine particles are also formed in the atmosphere when gases such as sulphur dioxide, nitrogen oxides and volatile organic compounds, emitted by combustion activities, are transformed by chemical reactions in the air. Natural sources of particulate emissions are forest fires within and outside of the province.

Adverse health effects from breathing air with a high $PM_{2.5}$ concentration include: increased respiratory symptoms and disease, chronic bronchitis and decreased lung function, particularly for individuals with asthma, and premature death. Particulate matter can clog stomatal openings of plants and interfere with photosynthesis functions, leading to growth stunting or mortality in some plant species.

The Canadian Ambient Air Quality Standards (CAAQS) for fine particulate matters ($PM_{2.5}$) is:

- 28 $\mu g/m^3$ averaged over a 24-hour period from midnight to midnight; the standard is based on the 98^{th} percentile annually, averaged over three consecutive years.
- 10 $\mu g/m^3$ averaged over one year.

3.6 Volatile Organic Compounds[14]

Volatile Organic Compound (VOCs) is the term used to describe a class of compounds that have a high vapor pressure at regular atmospheric conditions. The high vapor pressure allows these compounds to evaporate at low temperatures and combine with the surrounding air. VOCs are numerous, varied and ubiquitous. They include both man-made and naturally occurring chemical compounds. One of the most abundant VOCs found in ambient air is naturally-occurring methane gas, a known greenhouse gas. The processing and burning of hydrocarbons is also a major source of VOCs. Man-made sources include various solvents, paints and other chemicals.

There is no air quality guideline for total VOCs, but there are detailed guidelines in various jurisdictions such as Alberta[15], Ontario[16], and Texas[17] on individual VOC species.

[14] USEPA, May 1, 2014, http://www.epa.gov/iaq/voc2.html

[15] Alberta Environment and Sustainable Resource Development, Ambient Air Quality Objectives and Guidelines, August 2013, http://environment.gov.ab.ca/info/library/5726.pdf

[16] Ontario, April 29, 2014, Environmental Protection Act, Ontario Regulation 419/05 Air Pollution – Local Air Quality

[17] Texas Commission on Environmental Quality, March 2014 Effects Screening Levels http://www.tceq.state.tx.us/implementation/tox/

4.0 SAMPLING METHODOLOGY

Two monitoring methods were used to collect data. These methods include passive monitoring and continuous monitoring. The type of pollutant samples at each location are shown in Table 1.

Table 1: Monitoring methods, pollutants and locations in the City of Regina

	Passive Monitoring					Continous Monitoring							
Monitoring Locations	NO_2	SO_2	O_3	H_2S	VOC	NO	NO_2	NO_x	SO_2	O_3	H_2S	$PM_{2.5}$	VOC
Background Northwest (out of city)	x	x	x	x	x								
Background Southeast (out of city)	x	x	x	x	x								
Miller Comprehensive High School	x	x	x		x								
Holy Rosary Community School	x	x	x		x								
Saint Francis Community School	x	x	x	x	x								
Archbishop M.C. O'Neill School	x	x	x	x	x								
Michael A. Riffel High School	x	x	x	x	x								
Saint Gregory Elementary School	x	x	x	x	x								
Saint Michael Community School	x	x	x		x								
MoE Warehouse on Park Street	x	x	x	x	x								
Judge Bryant Elementary School	x	x	x	x	x								
W.F. Ready Elementary School	x	x	x		x								
Saint Gabriel Elementary School	x	x	x		x								
University of Regina	x	x	x	x	x								
Grand Road School	x	x	x		x								
Dr. A.E. Perry Elementary School	x	x	x		x								
Argyle Elementary School	x	x	x	x	x								
Harbour Landing	x	x	x		x								
Al Ritchie Arena						x	x	x	x	x	x	x	x
Jack Staples Arena						x	x	x	x	x	x	x	x
Litzenberger Park Rink						x	x	x	x	x	x	x	x
Optimist Park						x	x	x	x	x	x	x	x
Sandra Schmirler Leisure Center						x	x	x	x	x	x	x	x
CRC Glencairn Air Station									x		x		
Regina NAPS Station						x	x	x	x	x		x	x

Please note that the VOCs are listed under continuous monitoring, but they are collected over 24-hours and then sent to a laboratory for composition analysis.

4.1 Passive Air Quality Monitoring

Passive air samplers use a diffusive barrier that allows a small amount of air to pass through into the sampler over a set period of time where pollutants present in the air are captured in an absorbent material (Figure 3). For this study the samplers were mounted 4-5 meters above the ground on light or power poles to avoid tampering. The passive samplers are then sent to a laboratory for analysis where the sample captured in the absorbent material can be released and analyzed.

Figure 3: Passive Air Samplers

Passive air samplers are an economical method of identifying potential pollutants in the air over a period of time. The samples can be exposed for 24-hour or 30-day periods and are able to measure the average concentrations during this time. Since the measured concentrations are averaged over a period of time it is possible to miss single occurrences and occasional spikes in concentrations. Passive samplers work best in conjunction with other methods of continuous monitoring. In this study, passive air samplers were used to monitor for the following pollutants:

- Sulphur Dioxide (SO_2)
- Nitrogen Dioxide (NO_2)
- Ozone (O_3)
- Hydrogen Sulphide (H_2S)
- Benzene, Toluene, Ethylbenzene, and Xylene (BTEX)
- Volatile Organic Compounds (VOCs) for total and 23 individual compounds

4.2 Continuous Air Quality Monitoring

For continuous monitoring air is pumped through specialized instruments and using reference detection methods unique to each parameter a concentration can be determined. The benefit of continuous monitoring is that air can be measured instantly with great accuracy. Most of the equipment is capable of measuring one-minute average concentrations, but standard methods are used for reporting one-hour averages. Many of the Saskatchewan Ambient Air Quality Standards (SAAQS) are reported as one-hour averages. A photo of the equipment in the Regina NAPS station is shown in Figure 4.

Figure 4: Regina Station Continuous Air Monitoring Analyzers

Continuous monitoring is the best method available; however the equipment is costly and usually requires a dedicated building or enclosure to operate in. To overcome the logistics of moving the continuous monitoring instruments to different locations the Ministry of Environment has a mobile unit called the Saskatchewan Mobile Monitoring Laboratory (SAML), shown in Figure 5. The SAML has all of the equipment required for a permanent air monitoring station installed in a converted RV. This allows continuous sampling in locations where permanent stations do not exist.

Figure 5: Saskatchewan Air Monitoring Lab

The existing National Air Pollution Surveillance (NAPS) monitoring station, the Co-op Refinery Complex (CRC) air station in Glencairn neighborhood, and the Saskatchewan Air Monitoring Laboratory (SAML) were used to collect metrological data and air quality data for the following pollutants:

- Sulphur Dioxide (SO_2)
- Nitrogen Dioxides (NO_2)
- Ozone (O_3)
- Carbon Monoxide (CO)
- Hydrogen Sulphide (H_2S)
- Fine Particulate Matter ($PM_{2.5}$)
- Volatile Organic Compounds (VOCs) for total and 150 individual compounds

In addition to continuous monitoring, samples of the air can be taken for up to a 24-hour period using summa canisters (Figure 6). A summa canister is a stainless steel electropolished (or "summa" polished) passivated vessel used to collect a whole air sample. With the summa canister samples, air can be measured more accurately and a greater number of pollutants can be identified than with passive samplers. Specific laboratory procedures can be used to identify target groups of pollutants using gas chromatography (GC) and a detector and the detected volumes averaged over the sampling period.[18,19]

Figure 6: Summa Canister Sampler

[18] USEPA Method TO-14A, 1999. Determination Of Volatile Organic Compounds (VOCs) In Ambient Air Using Specially Prepared Canisters With Subsequent Analysis By Gas Chromatography, EPA/625/R-96/010b
[19] USEPA Method TO-15, 1999. Determination of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters And Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS), EPA/625/R-96/010b

4.3 Meteorological Monitoring

In addition to collecting and measuring air quality samples, meteorological data was collected. Accurate metrological data is important in ensuring the calculations used to determine the concentrations from the passives samplers are accurate. Also, if any elevated concentrations are detected, wind data can be used to create a back-trajectory model to identify potential sources.

Using historic meteorological data collected at the NAPS station in Regina, a wind rose was created showing the predominant wind directions in the city over the past 10 years from 2004-2013 (Figure 7). The wind rose clearly shows that the majority of the time the wind direction is from southeast or northwest. The other predominant wind direction is from south or north. This information was used to aid in the selection of background sites in outskirts of the city and monitoring sites in the city.

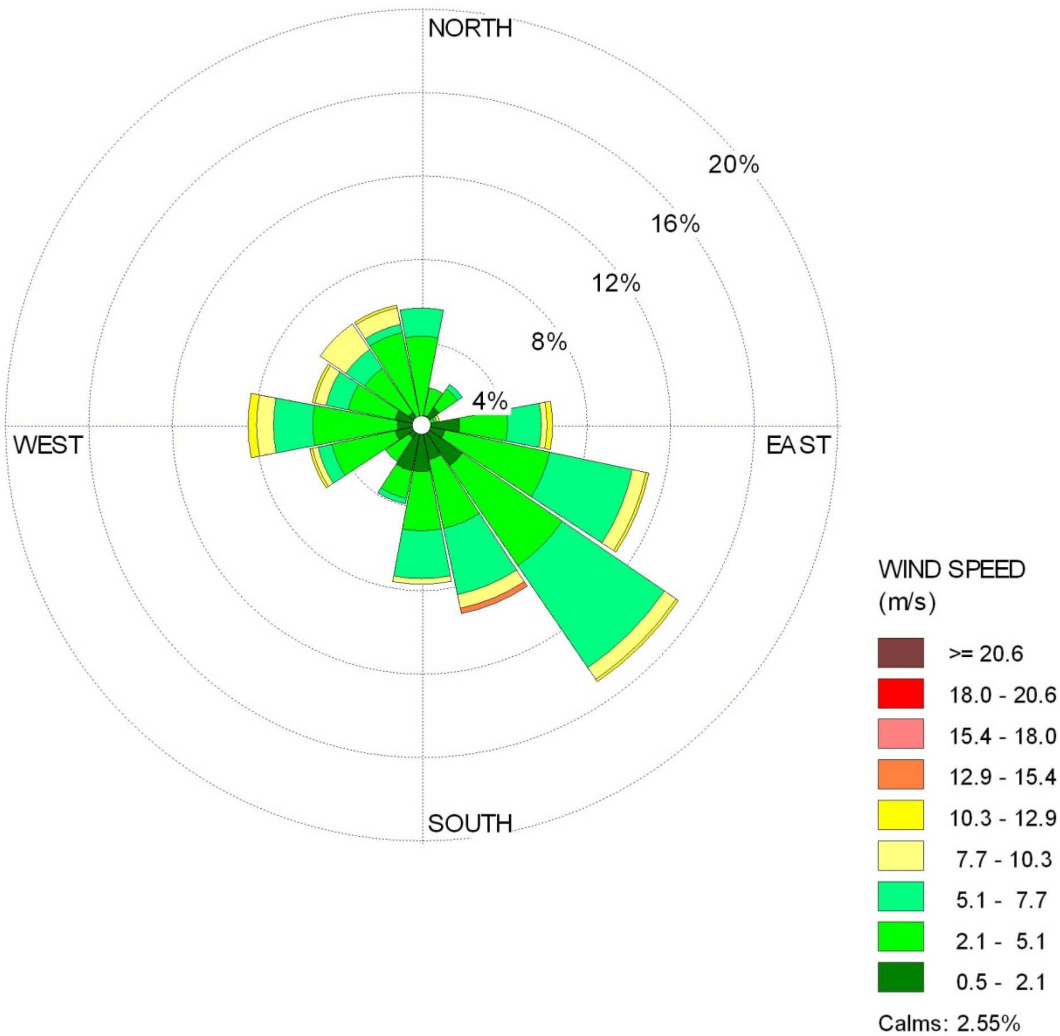

Figure 7: Ten-Year Historical Windrose

5.0 MONITORING RESULTS AND DISCUSSION

A summary of the monitoring is presented in Table 2 which identifies the number of passive samples collected and the number of sampling hours undertaken by the SAML, and number of sampling hours at air stations for each pollutant in the city from July 2012 to August 2013. Passive samples were not collected for NO_2, SO_2, O_3 and H_2S during March and April 2013 due to supplier shortage of passive samplers. A different passive sampling technology was used for NO_2, SO_2, O_3 and H_2S when the monitoring resumed in May 2013. Also, no VOC passive samples were collected for April 2013. As H_2S is not a requirement of the NAPS program, the Regina NAPS station does not monitor for H_2S. N/A is listed for $PM_{2.5}$ as there are currently no passive monitoring techniques available for monitoring $PM_{2.5}$ (Table 2).

Table 2: Samples Collected from July 2012 to August 2013

Pollutant	Passive Monitoring	Continuous Monitoring	
	Number of Samples Collected	Number of Hours Monitored with the SAML	Number of Hours Monitored at Air Stations
SO_2	160	5567	19753*
NO_2	181	4733	9903
O_3	188	5360	9393
H_2S	95	5567	9692*
Total VOCs	229	216	950
$PM_{2.5}$	N/A	5568	9769

* Combined measurements at NAPS Regina Station and CRC Glencairn Station

5.1 Passive Monitoring

5.1.1 Nitrogen Dioxide

All 18 locations were monitored for Nitrogen Dioxide (NO_2) and compared to the annual Saskatchewan Ambient Air Quality Standard of 32 ppb as shown in Figures 8 and 10. All the locations were below the standard Locations closest to major roads measured the highest concentrations as the primary source of NO_2 in an urban area is from vehicular emissions. The maximum monthly concentration of 19 ppb was measured at the Holy Rosary location in December 2012. It is common to see higher concentrations of NO_2 in the winter months due to inversions caused by cold air keeping contaminants near ground level and the increase in vehicular emissions. The location with the highest average concentration was at the former ministry warehouse. The warehouse is located in an industrial area where there is increased traffic from semi-trucks and diesel vehicles. The vehicular emissions likely contributed to the higher NO_2 concentrations at the warehouse.

Air pollution levels tend to be correlated to the season. As cold air is more prevalent in the atmosphere during the winter months, pollutants can often be trapped closer to ground level, making for reduced visibility and occasional poor air quality. The collected data shows that NO_2 levels were higher from November to February compared to other months of the year (Figure 9).

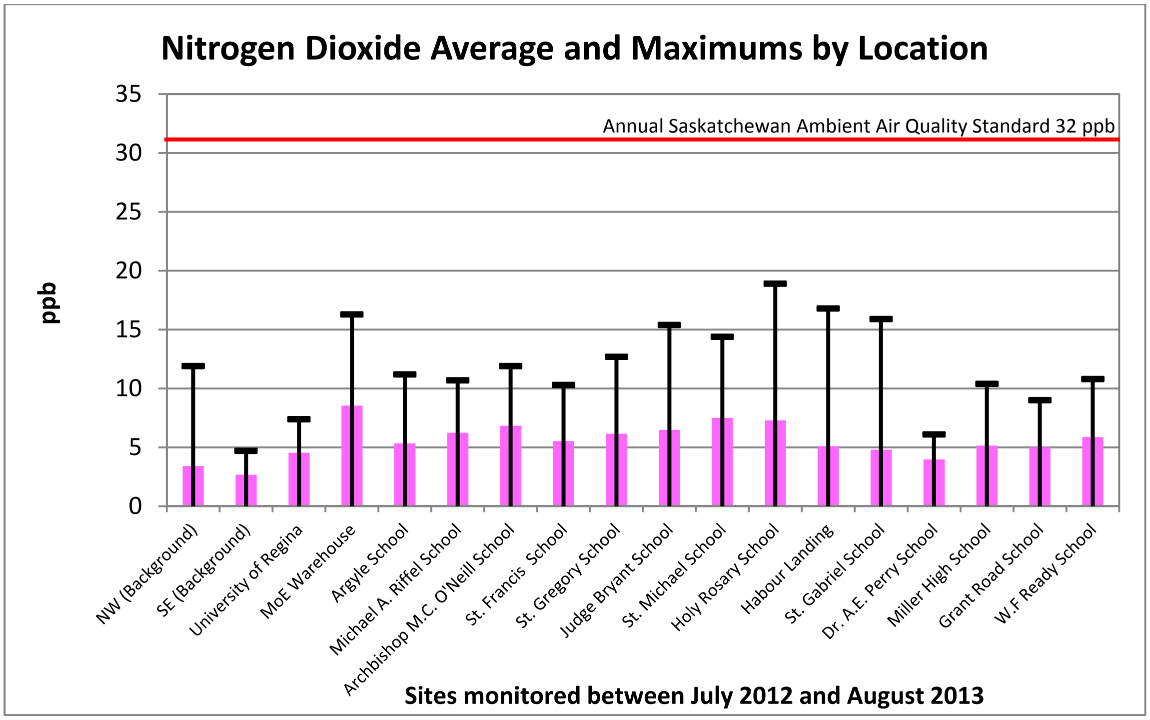

Figure 8: Passive Nitrogen Dioxide Average and Maximums by Location

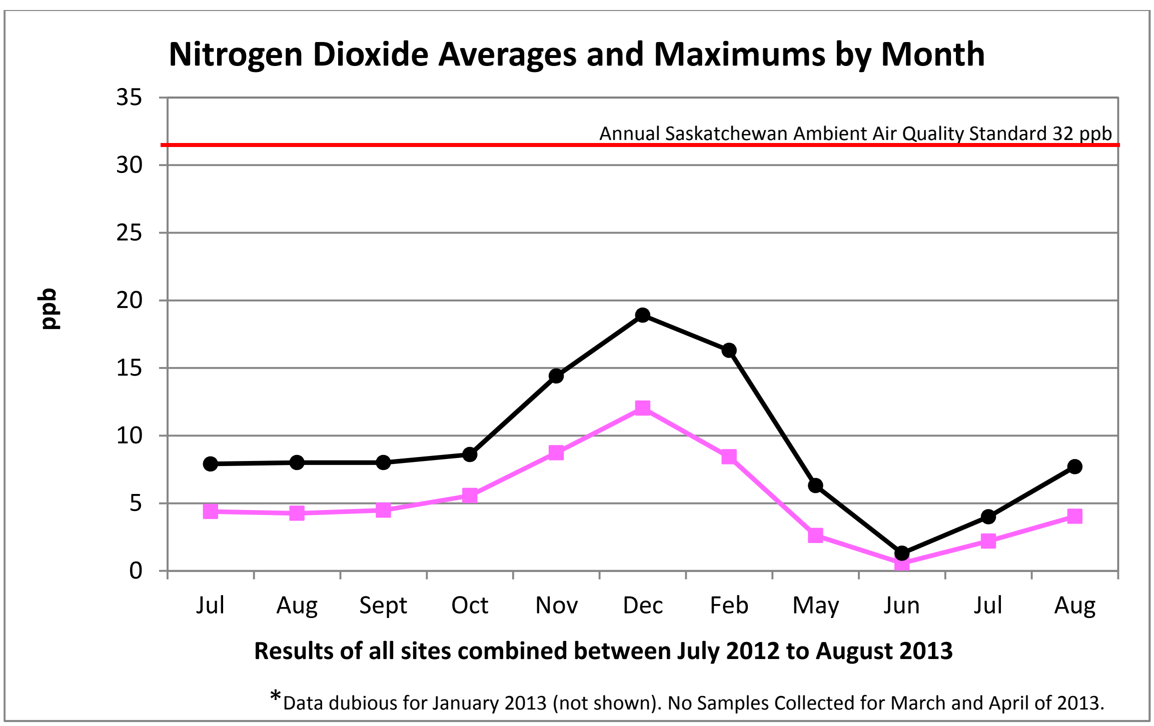

Figure 9: Passive Nitrogen Dioxide Averages and Maximums by Month

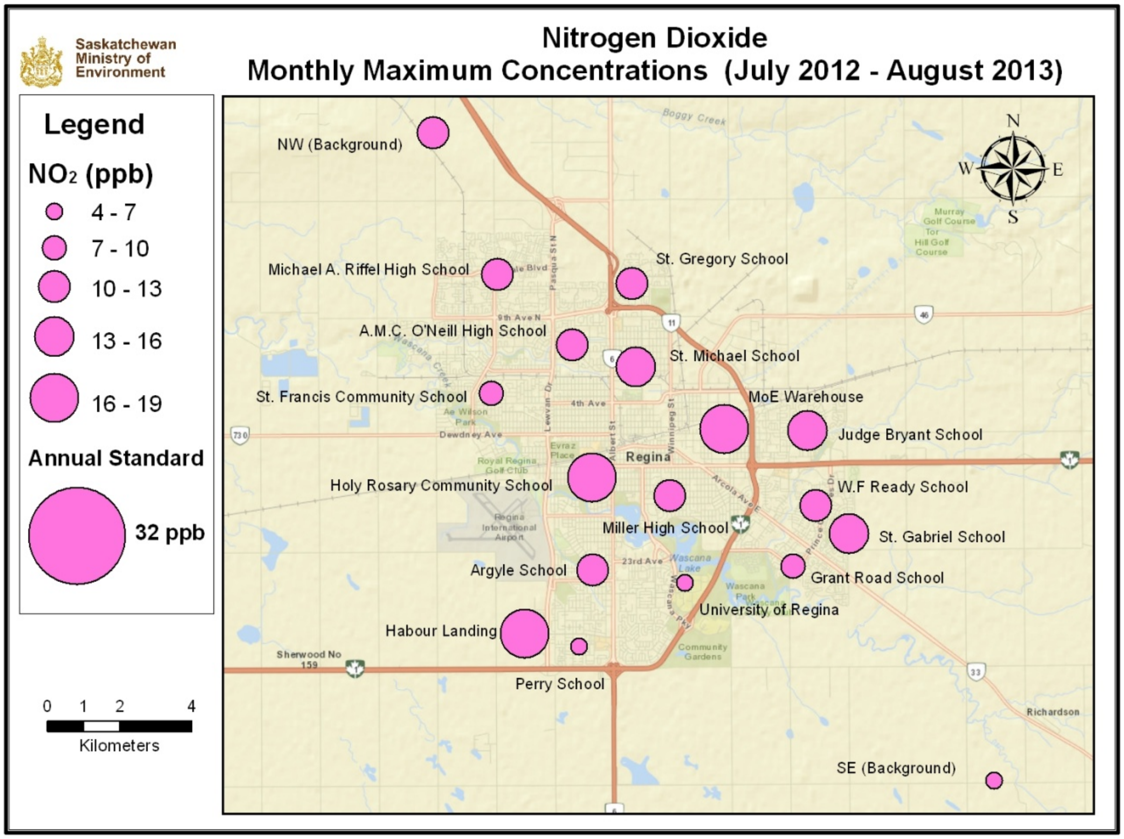

Figure 10: Passive Nitrogen Dioxide Maximum Concentrations by Location

5.1.2 Sulphur Dioxide

All 18 locations were monitored for Sulphur Dioxide (SO_2) and compared to the annual Saskatchewan Ambient Air Quality Standard of 11 ppb as shown in Figures 11 and 13. All locations were well below the standard. Average concentrations were almost identical at all locations including the background sites (Figure 11). These low concentrations are likely background levels and are of no concern. The maximum monthly concentration was measured at St. Gabriel School in December 2012. Similar to NO_2, the SO_2 maximum concentration was measured in the winter and caused by inversions and the increase in vehicular emissions (Figure 12).

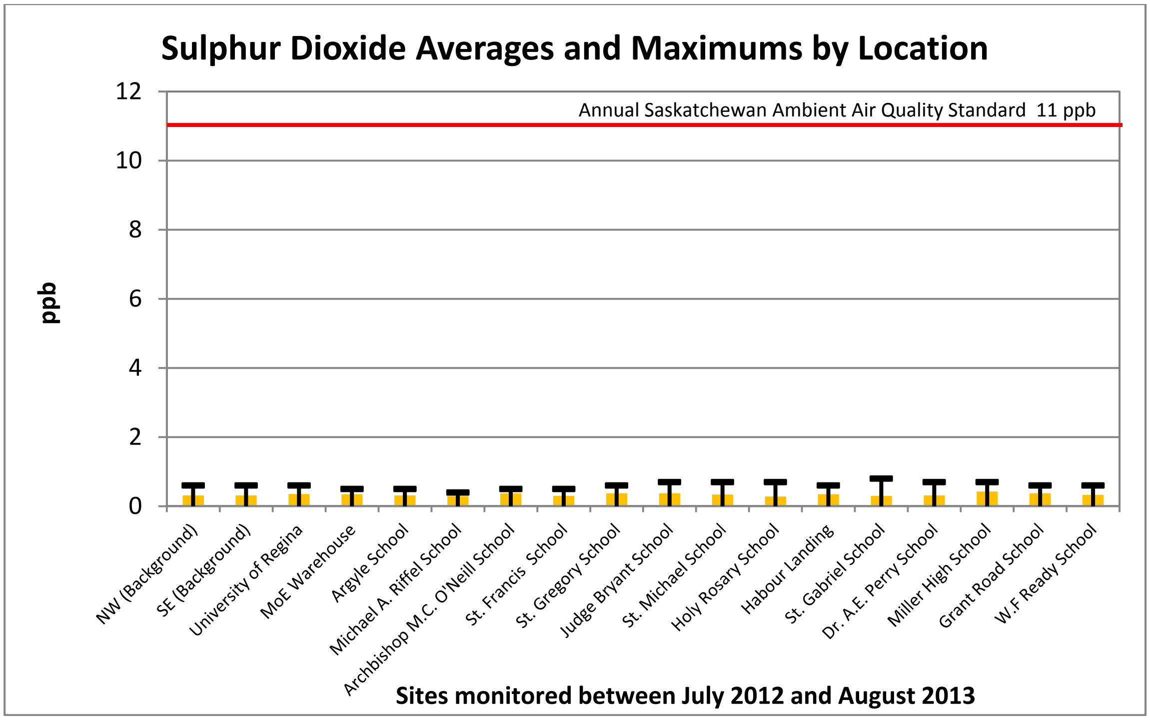

Figure 11: Passive Sulphur Dioxide Averages and Maximums by Location

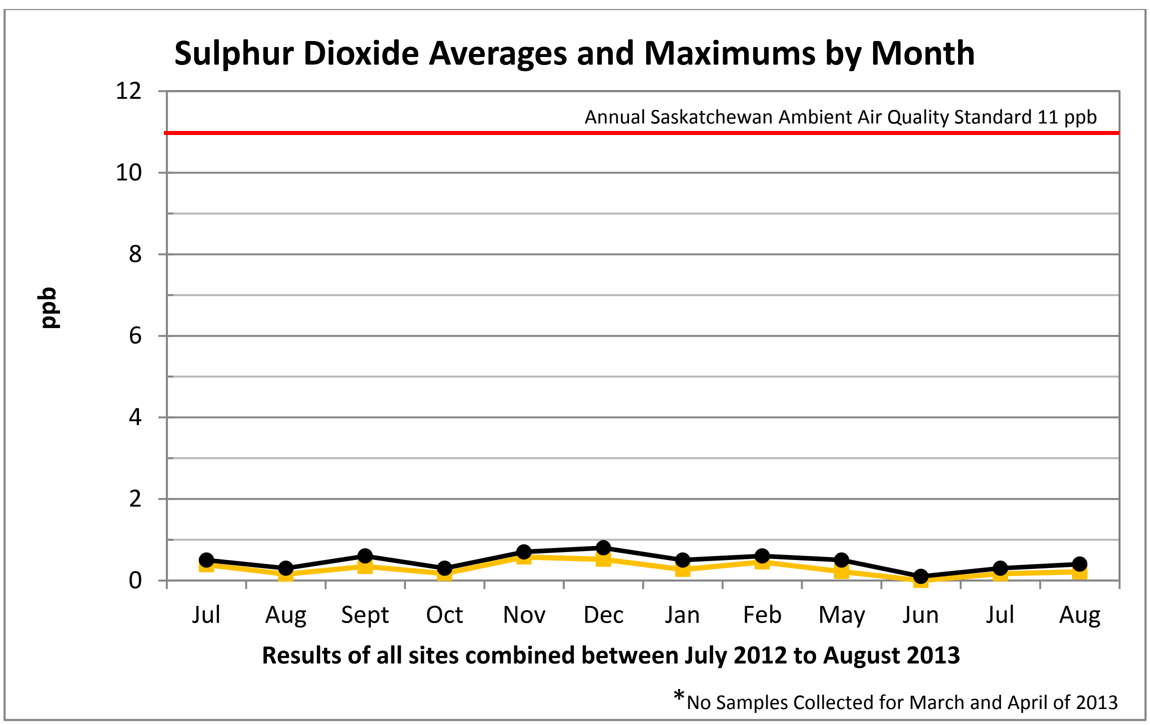

Figure 12: Passive Sulphur Dioxide Averages and Maximums by Month

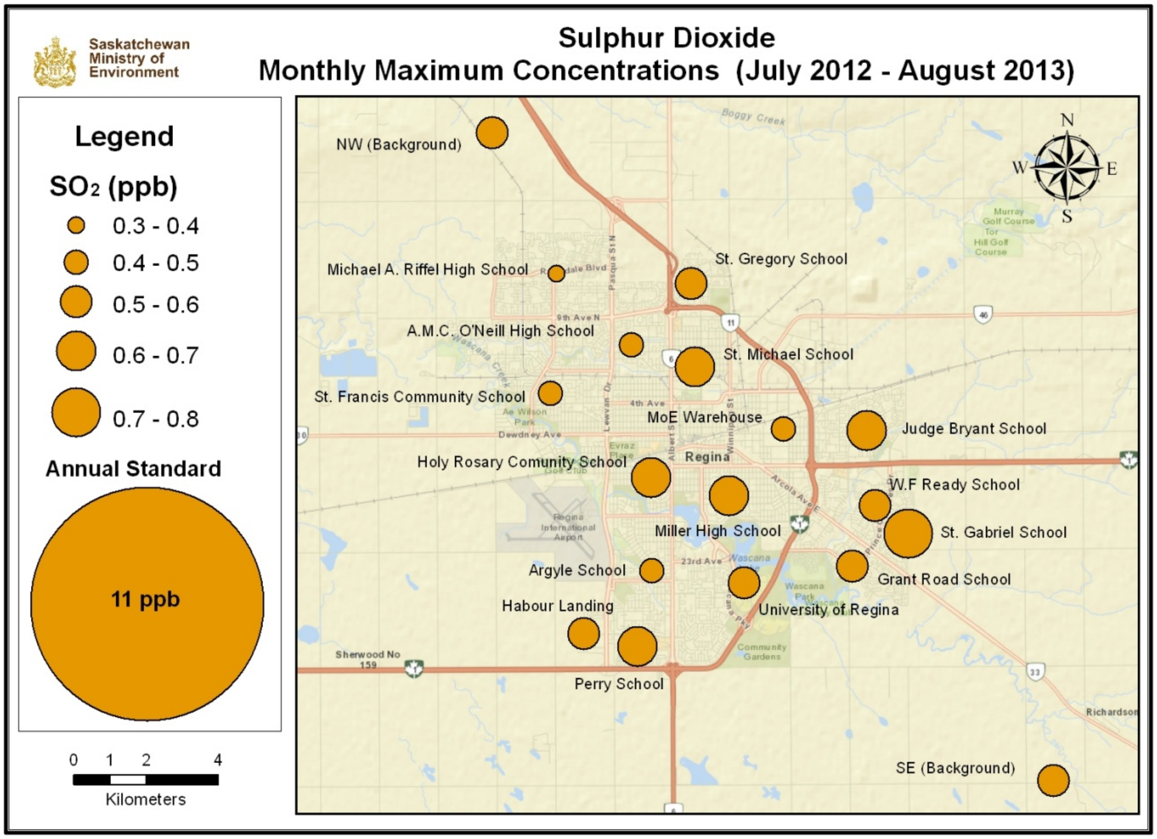

Figure 13: Passive Sulphur Dioxide Maximum Concentrations by Location

5.1.3 Ozone

All 18 locations were monitored for Ozone (O_3) and compared to the one-hour Saskatchewan Ambient Air Quality Standard (SAAQS) of 82 ppb as shown in Figures 14 and 16. All locations were below the standard. Similar average concentrations of O_3 at all monitoring locations indicate that the source of O_3 is likely background level. The maximum monthly concentration was measured at the NW background (upwind) site in May 2013. The higher levels of nitrogen oxide in the city cause the background O_3 to be used up in atmospheric chemical reaction under sunlight resulting in lower O_3 concentrations in the city. This phenomenon is known as O_3 scavenging. O_3 concentrations were observed higher in spring and summer months when the sunlight is at its maximum strength (Figure 15).

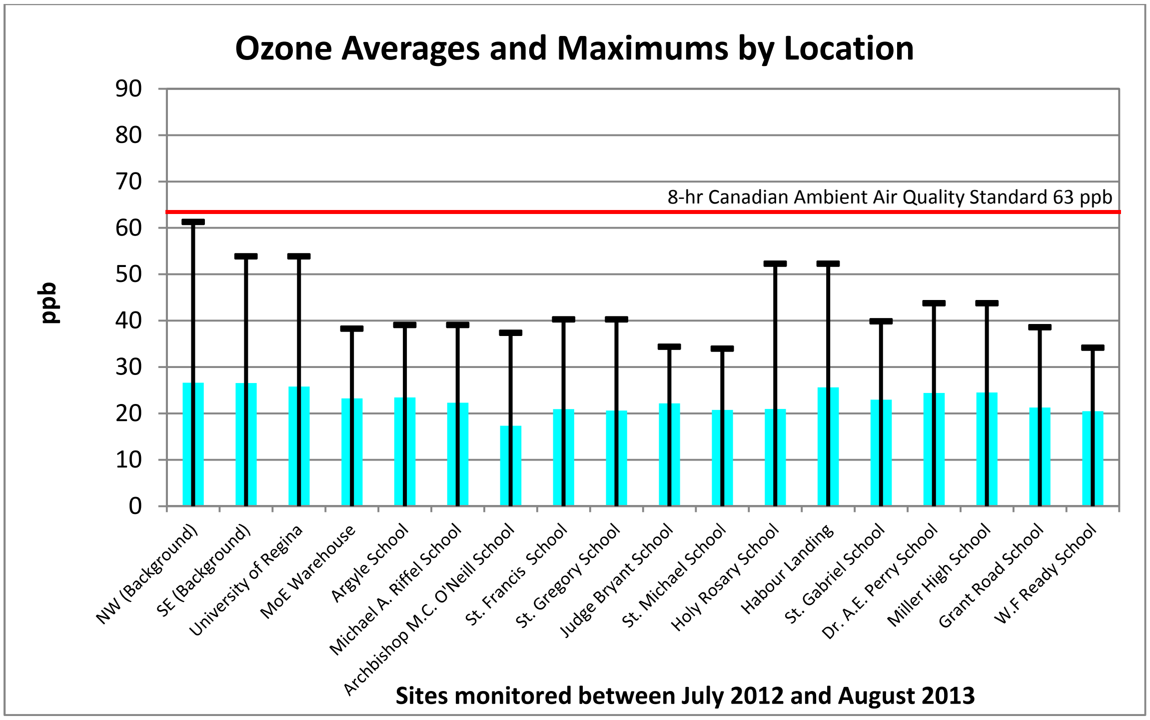

Figure 14: Passive Ozone Averages and Maximums by Location

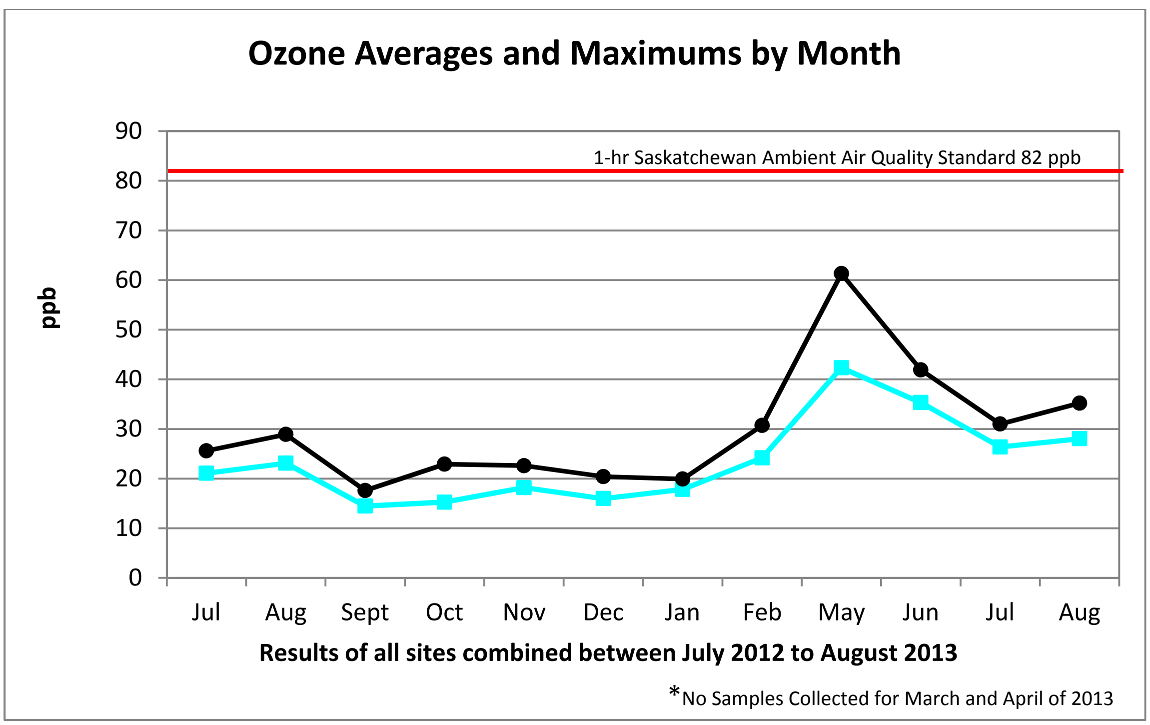

Figure 15: Passive Ozone Averages and Maximums by Month

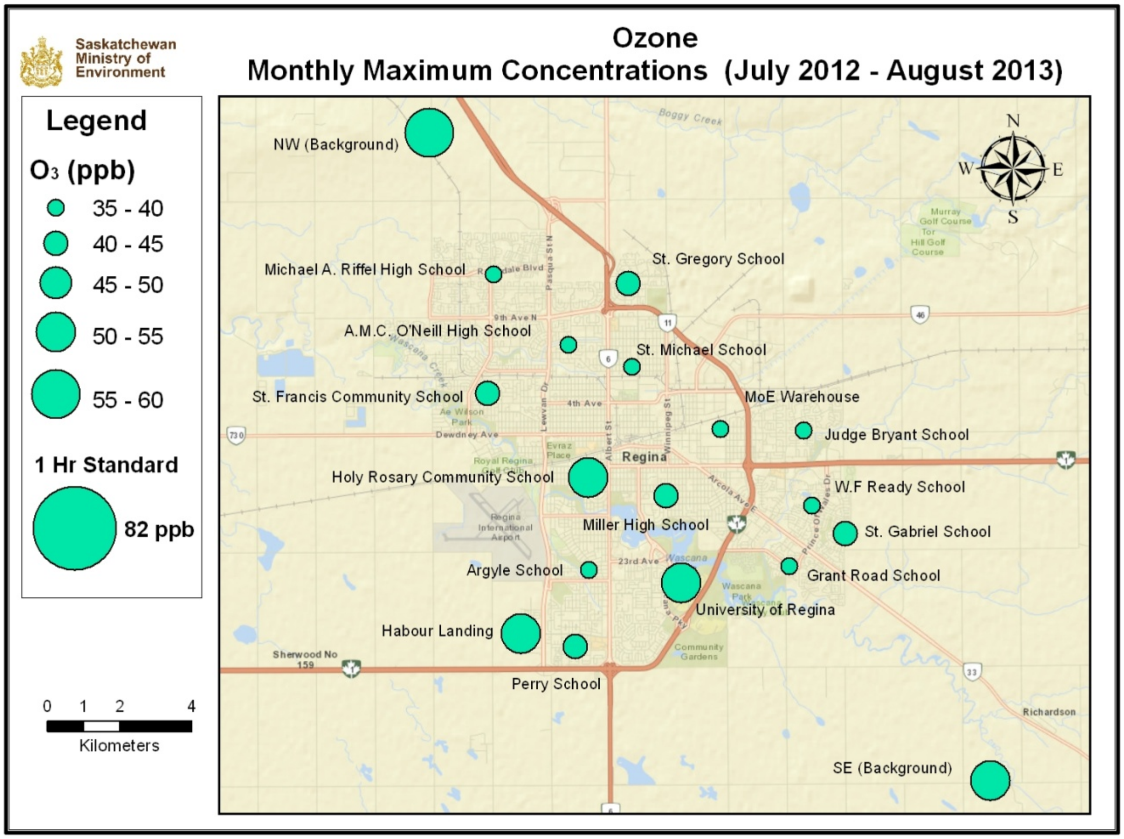

Figure 16: Passive Ozone Maximum Concentrations by Location

5.1.4 Hydrogen Sulphide

Ten locations were monitored for Hydrogen Sulphide (H_2S) and compared to the 24-hour Saskatchewan Ambient Air Quality Standard of 3.6 ppb as shown in Figures 17 and 19.. All locations were below the standard, however, H_2S occurrences usually last for short periods of time. The maximum monthly concentration was measured at St. Francis Community School in July 2012. During that time the city was experiencing frequent H_2S exceedances due to issues with the City of Regina's wastewater lagoons located just west of the city. This explains the higher H_2S concentrations at all sites in July and August 2012 on the western part of the city. Average concentrations were generally quite low and similar at all locations for the duration of the study (Figures 18).

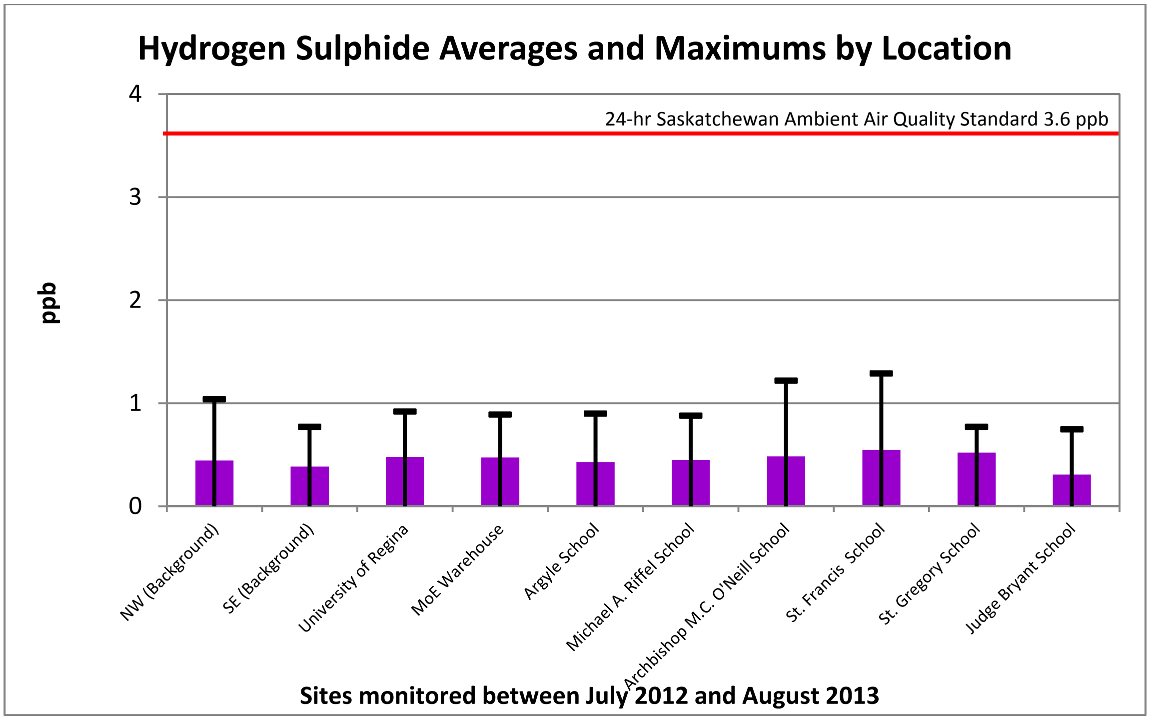

Figure 17: Passive Hydrogen Sulphide Averages and Maximums by Location

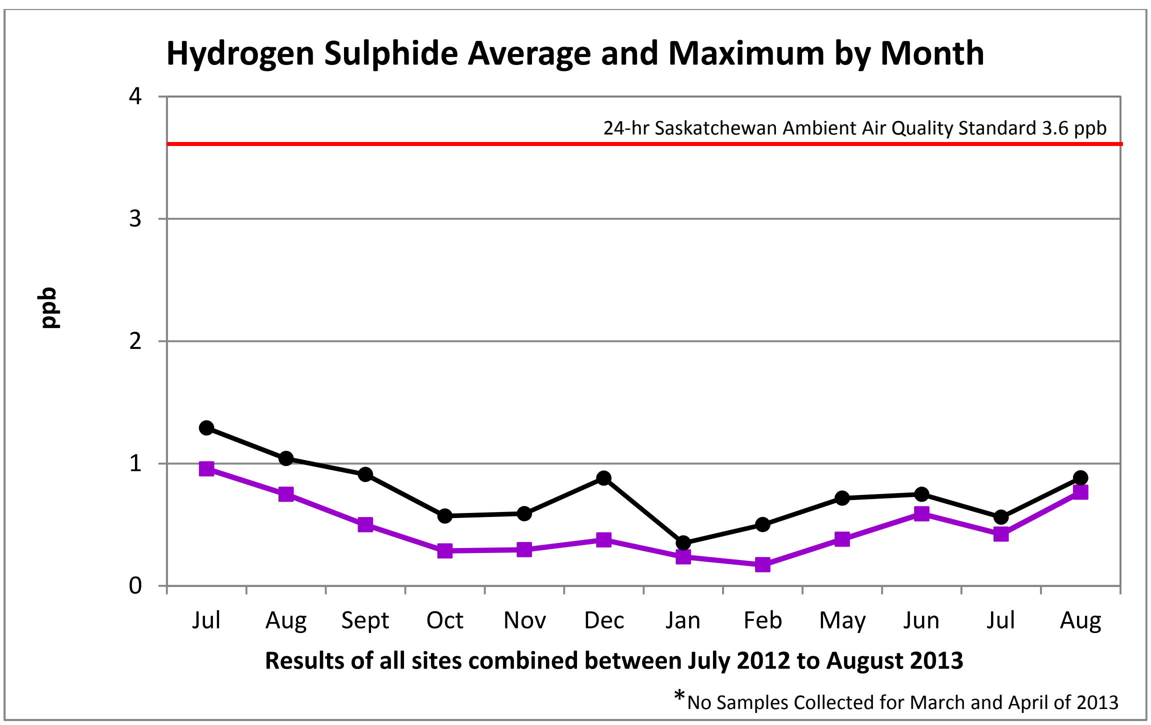

Figure 18: Passive Hydrogen Sulphide Averages and Maximums by Month

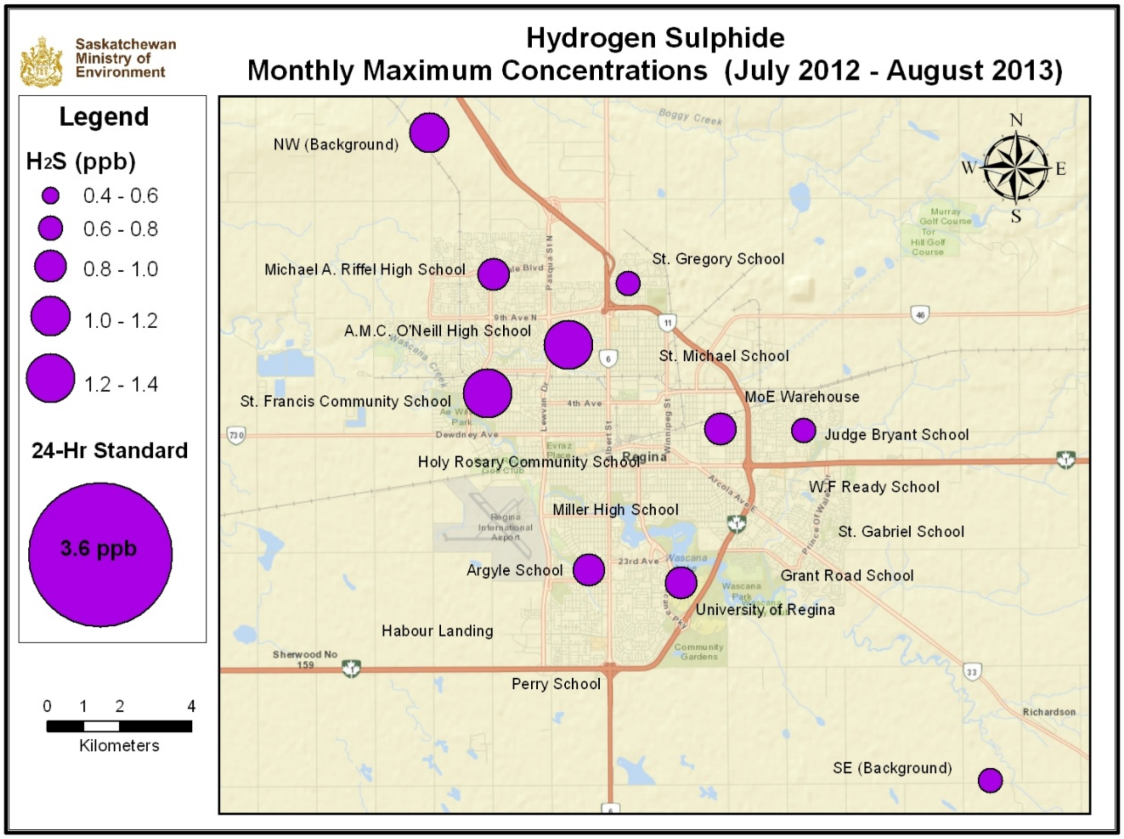

Figure 19: Passive Hydrogen Sulphide Maximum Concentrations by Location

5.1.5 Total Volatile Organic Compounds

All 18 locations were monitored for Volatile Organic Compounds (VOCs) as shown in Figures 20 and 26. The sampling equipment measured 26 unique VOCs, and for simplicity, the sum of all the VOCs is being reported. The primary contributors were benzene, toluene, ethyl-benzene and xylene, also known as BTEXs. These individual BTEX compounds were broken down and compared to the Texas Commission on Environmental Quality (TCEQ) Effects Screening Levels[20] as there are currently no annual guidelines in Canada for BTEX (Figures 21-24 and Figures 27-30). All BTEX compounds were below the relevant Texas Effects Screening Levels. The highest maximum and average concentrations were measured at the former Ministry of Environment warehouse. Similar to NO_2, the cause was likely due to the high number of large diesel vehicles idling nearby. The site is located in a more industrial area compared to the other monitoring locations in residential areas. Other sites, St. Gregory School, Judge Bryant School and St. Michael Community School, which are located on the northeast part of Regina experienced higher maximum BTEX concentrations. These may be caused by the industrial activity in the north end of the city. Temporal variations in total VOCs are presented in Figure 25. There is no ambient air quality guideline in place for total VOCs to compare against.

[20] Texas Commission on Environmental Quality, March 2014 Effects Screening Levels http://www.tceq.state.tx.us/implementation/tox/

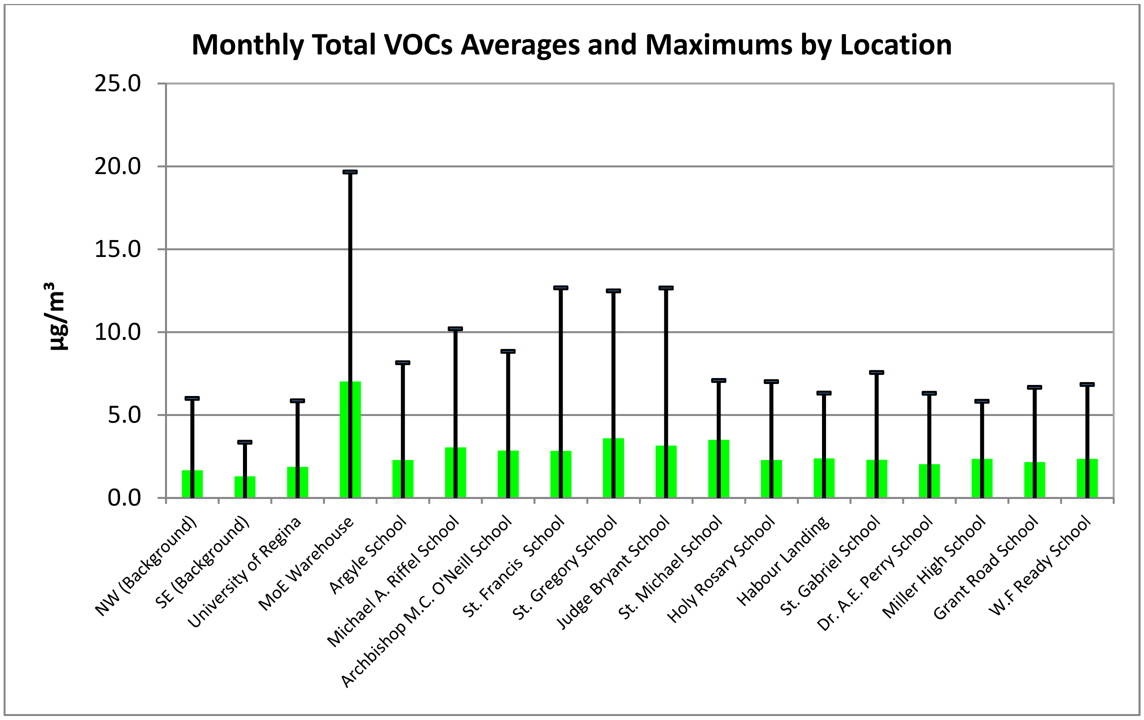

Figure 20: Passive Total Volatile Organic Compounds Averages and Maximums by Location

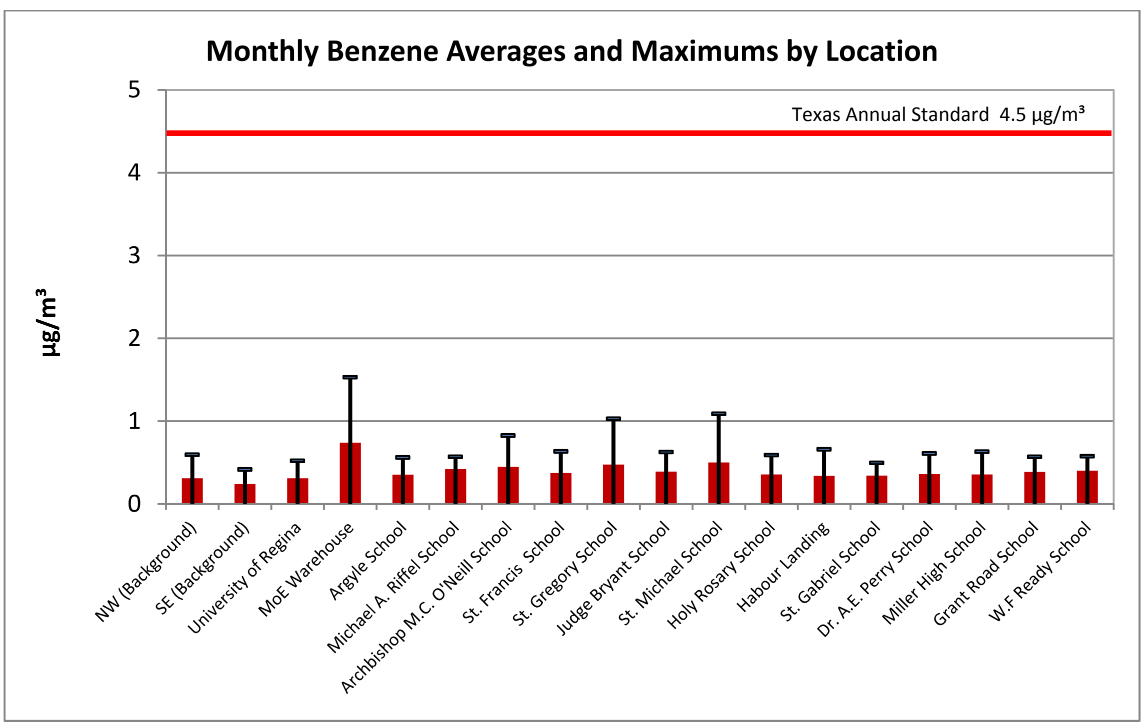

Figure 21: Passive Benzene Averages and Maximums by Location

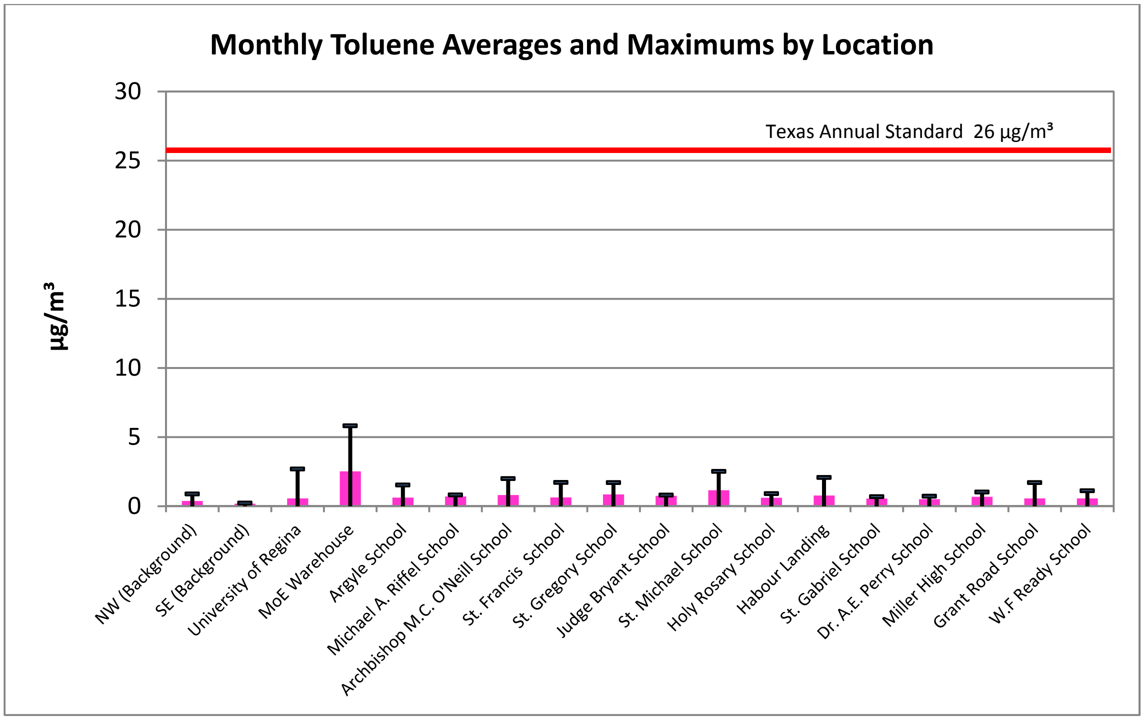

Figure 22: Passive Toluene Averages and Maximums by Location

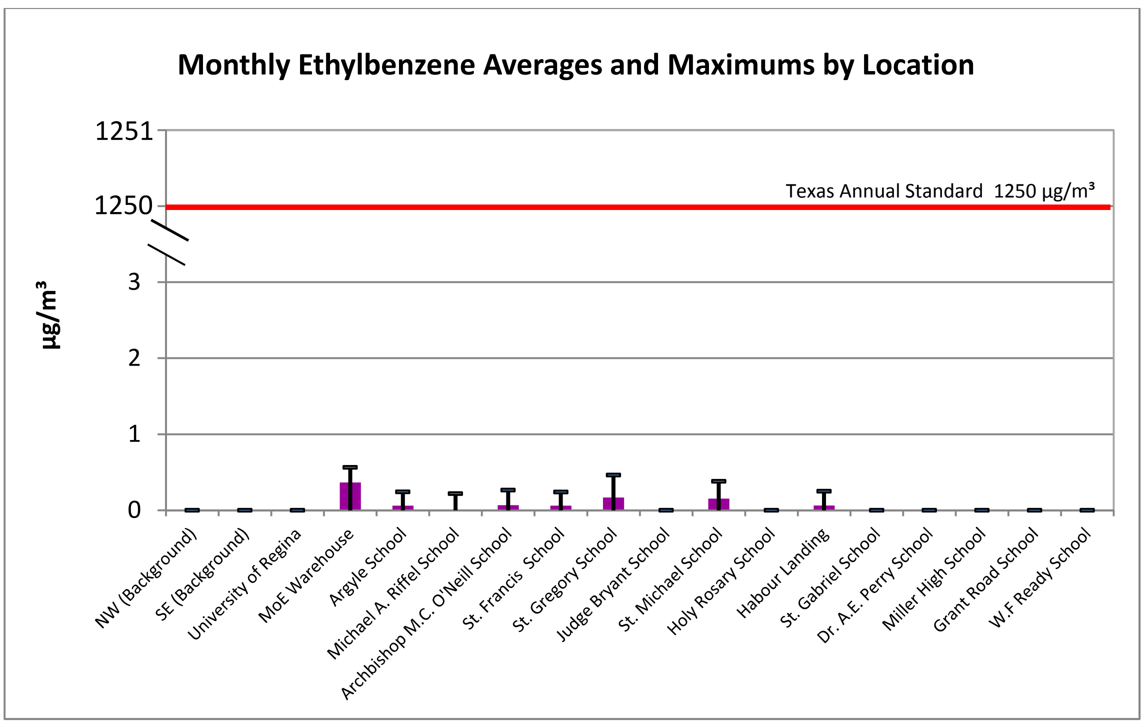

Figure 23: Passive Ethylbenzene Averages and Maximums by Location

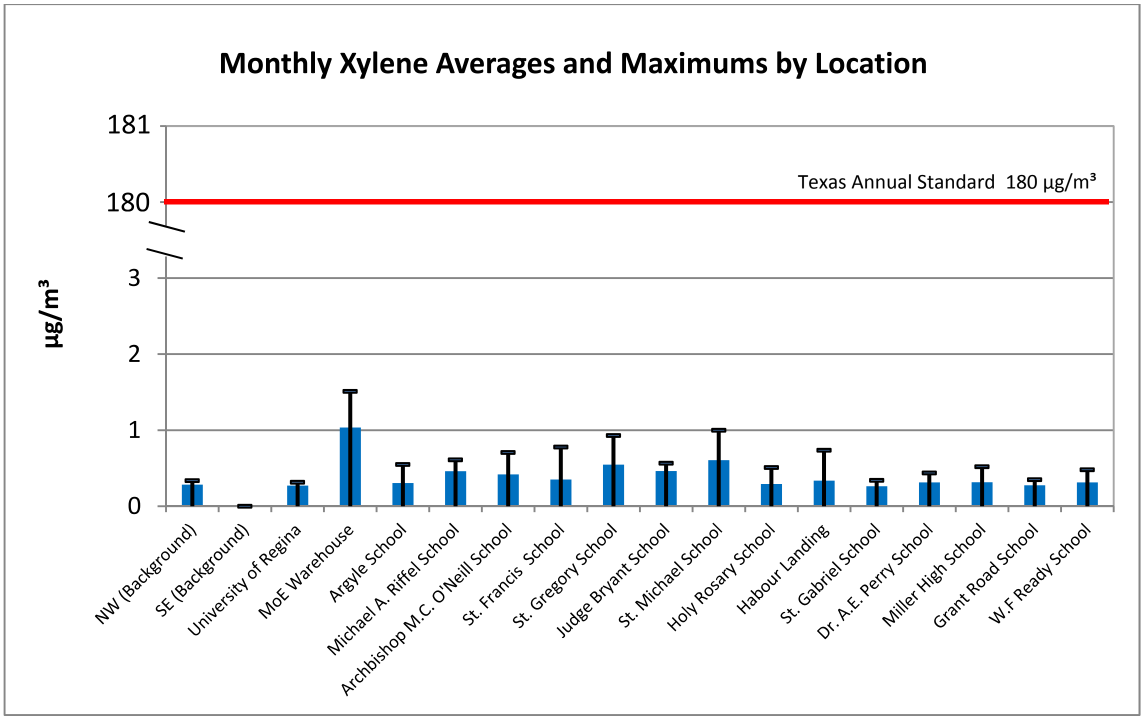

Figure 24: Passive Xylene Averages and Maximums by Location

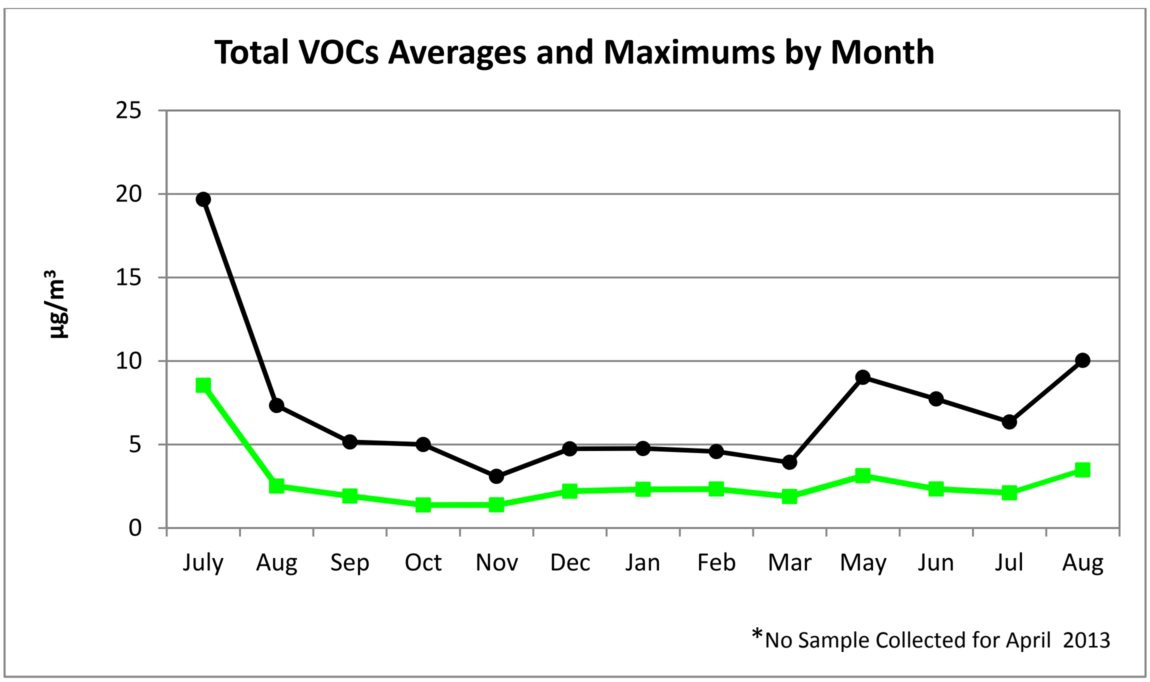

Figure 25: Passive Total Volatile Organic Compounds Averages and Maximums by Month

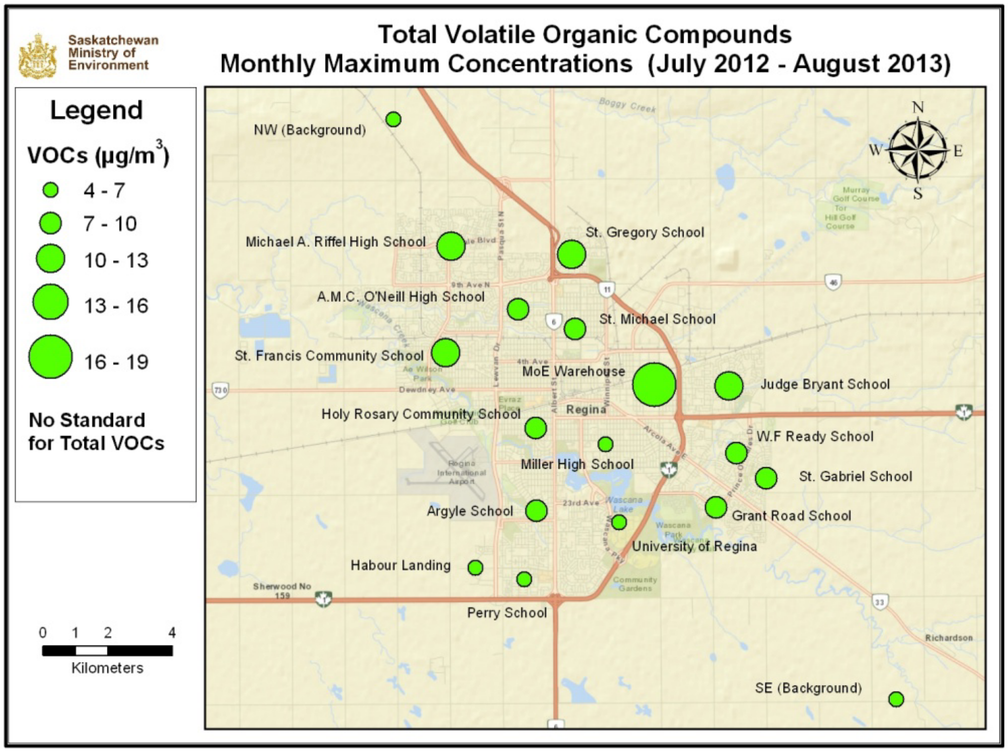

Figure 26: Passive Total Volatile Organic Compounds Maximum Concentrations by Location

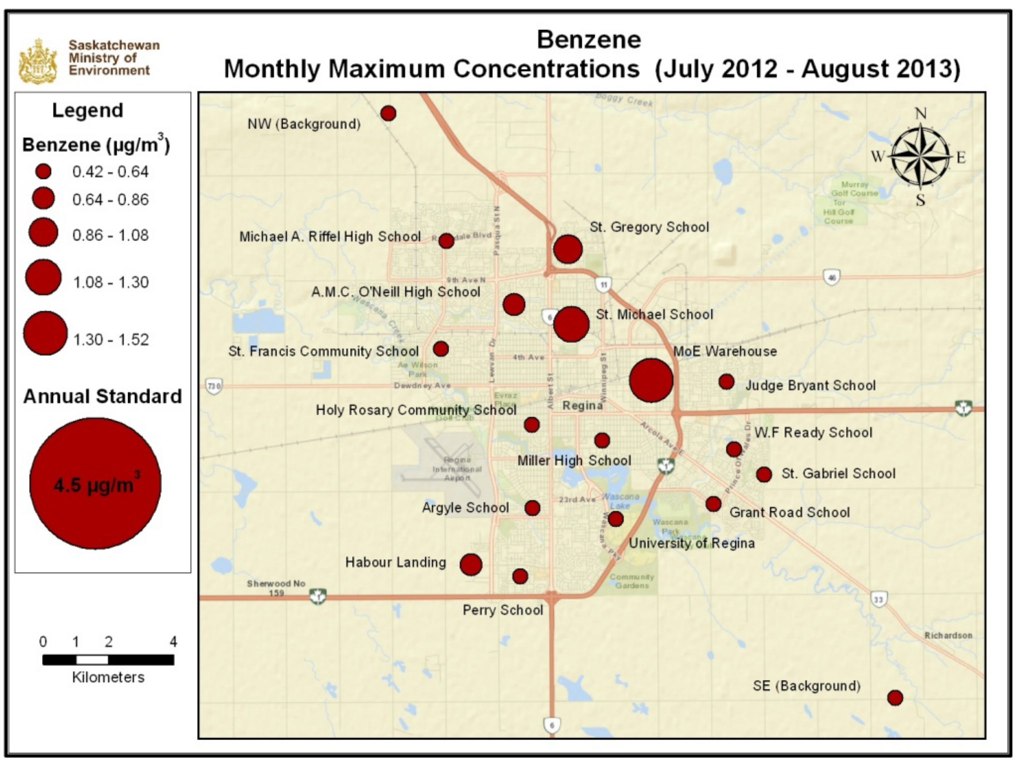

Figure 27: Passive Benzene Maximum Concentrations by Location

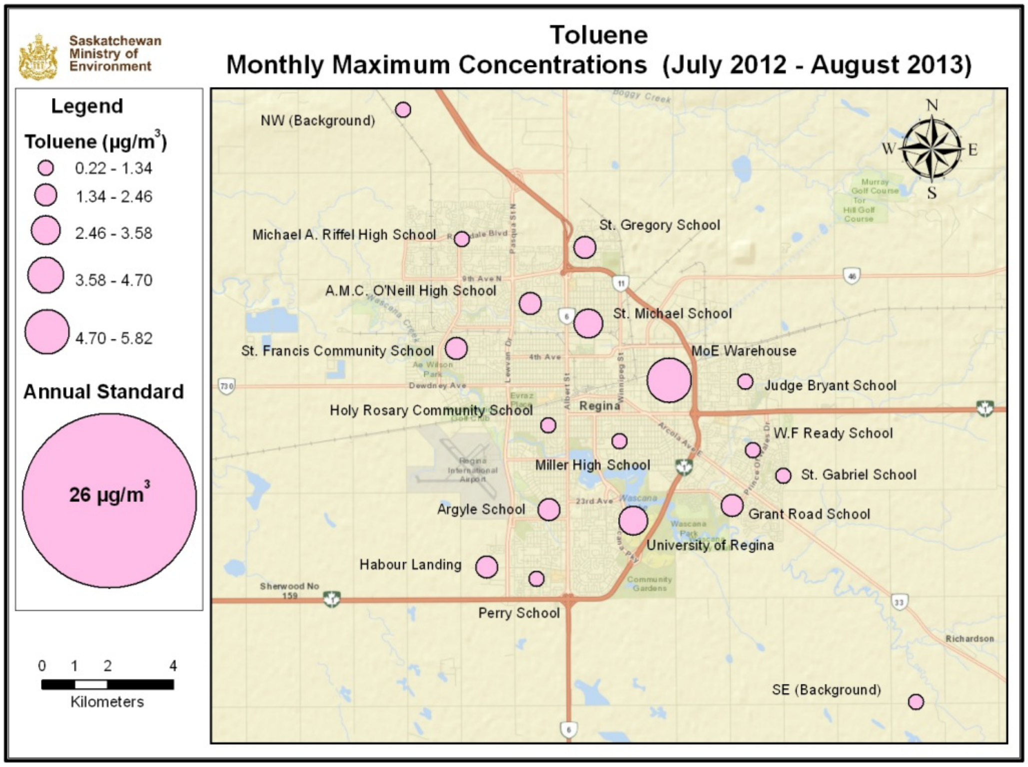

Figure 28: Passive Toluene Maximum Concentrations by Location

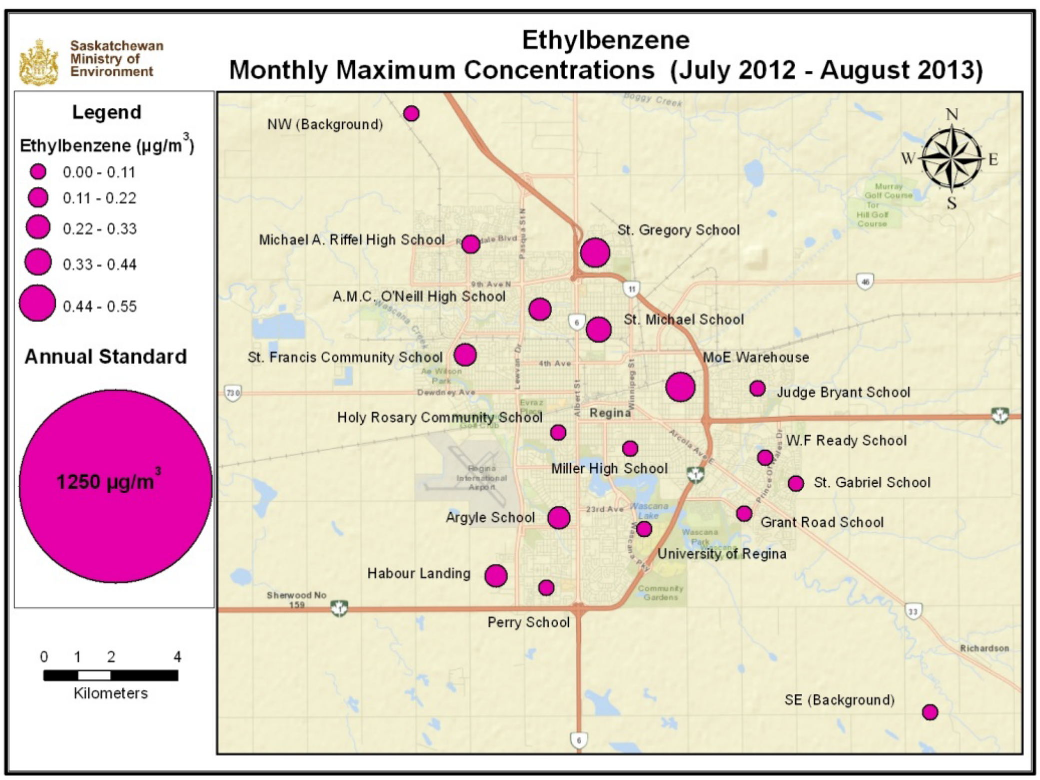

Figure 29: Passive Ethylbenze Maximum Concentrations by Location

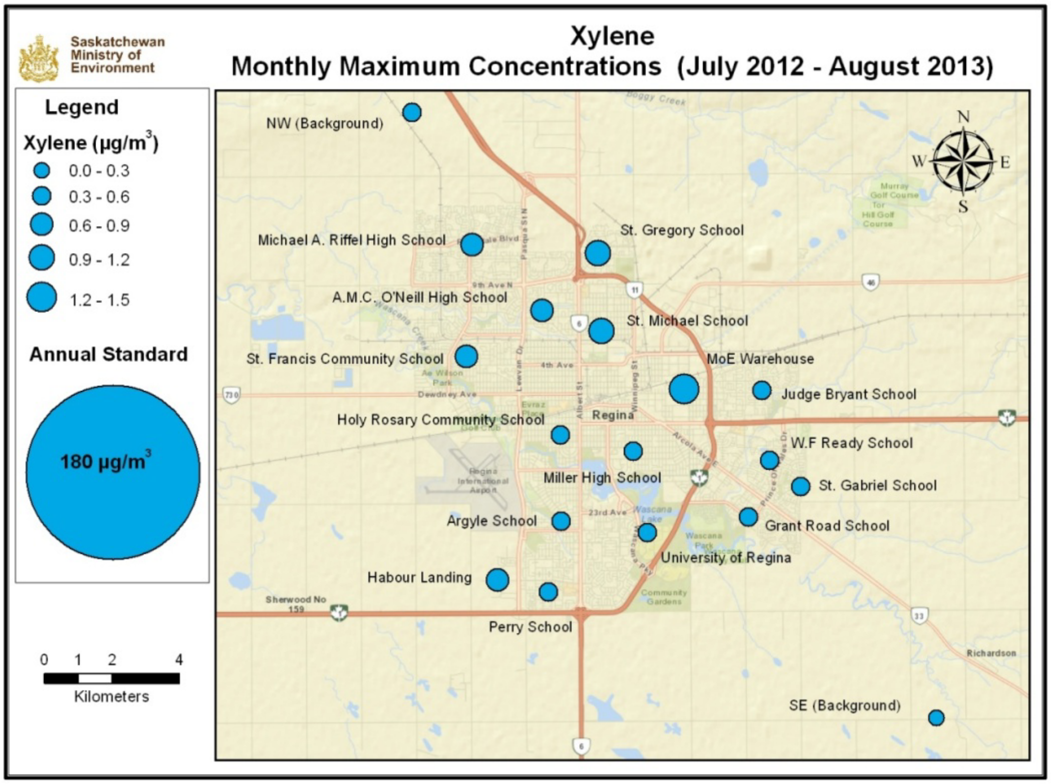

Figure 30: Passive Xylene Maximum Concentrations by Location

5.2 Continuous Monitoring

5.2.1 Nitrogen Dioxide

Average concentrations at all locations were low compared to ambient air quality standards (Figure 31) and typical of what would be expected when compared to other urban centres in Canada (Section 5.3 Comparing Regions). The maximum hourly concentration was measured at the Regina NAPS station, which was likely caused by a nearby idling vehicle or machinery in the area. It is common to see spikes in the NO_2 concentrations during rush hour traffic, especially in the winter months. The average concentrations at each continuous location corresponded well to the passive data collected and show very similar results.

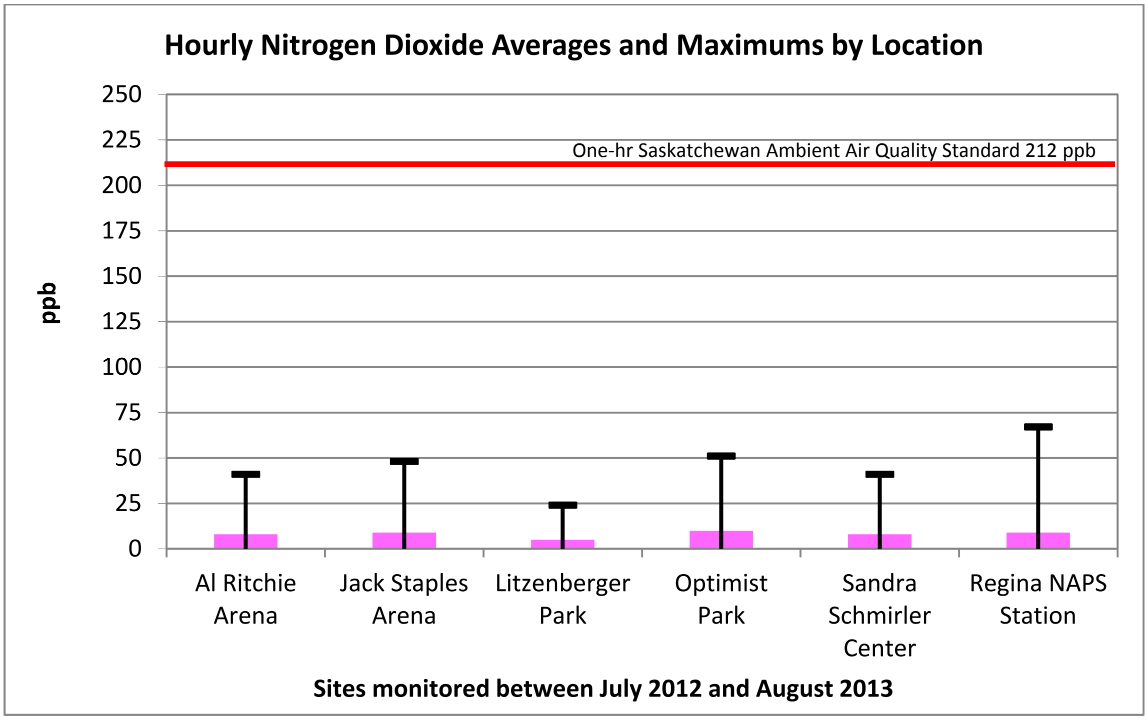

Figure 31: Continuous Nitrogen Dioxide Averages and Maximums by Location

5.2.2 Sulphur Dioxide

In addition to the sites originally selected in the study, data from the CRC Glencairn station was also included in the results. Average concentrations at all locations were very low and approaching the monitoring equipment's detection limit. The maximum one-hour concentration ranged from 3 to 19 ppb, well below the one-hour standard of 172 ppb (Figure 32).

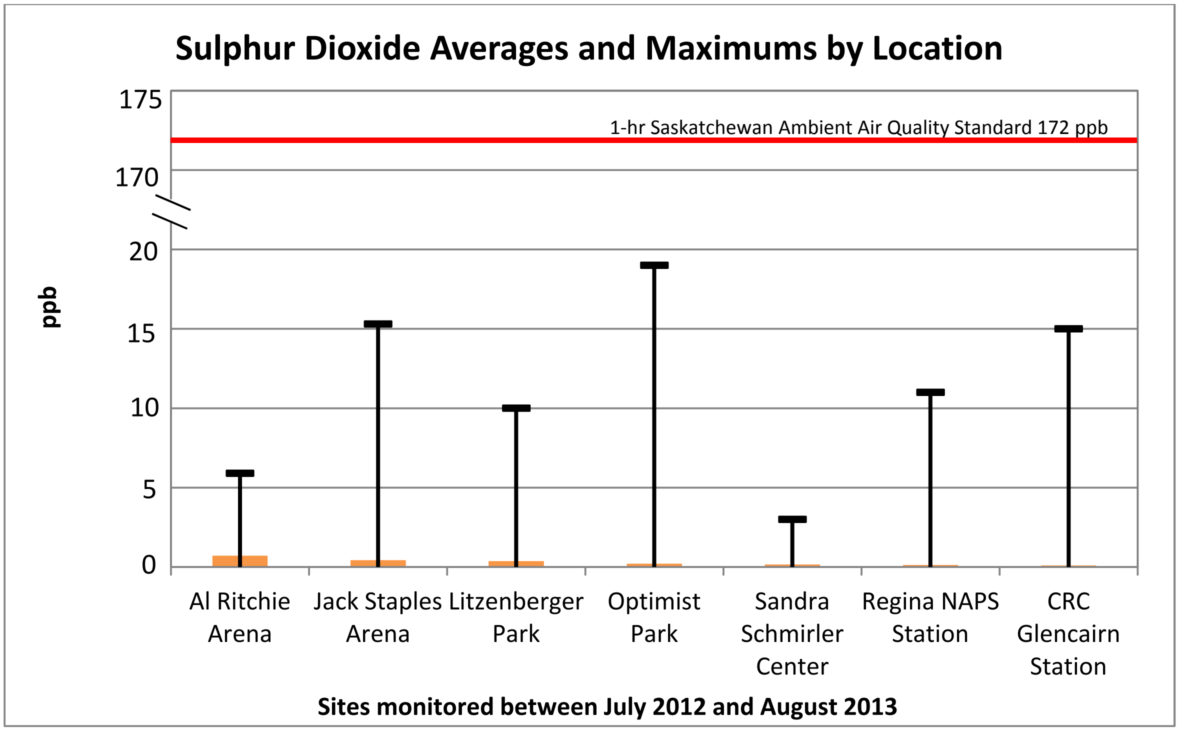

Figure 32: Continuous Sulphur Dioxide Averages and Maximums by Location

5.2.3 Ozone

On average O_3 concentrations were low at all monitoring locations and below the one-hour SAAQ of 82 pbb (Figure 33). The maximum one-hour concentration of 58 ppb was recorded at the Regina NAPS station on March 10, 2013. It is common to see the highest levels of O_3 in the spring and early part of the summer. This is due to seasonal variation as air pollution levels tends to be correlated to the season. High ground level O_3 can contribute to photochemical smog in the presence of VOCs and nitogen oxides.

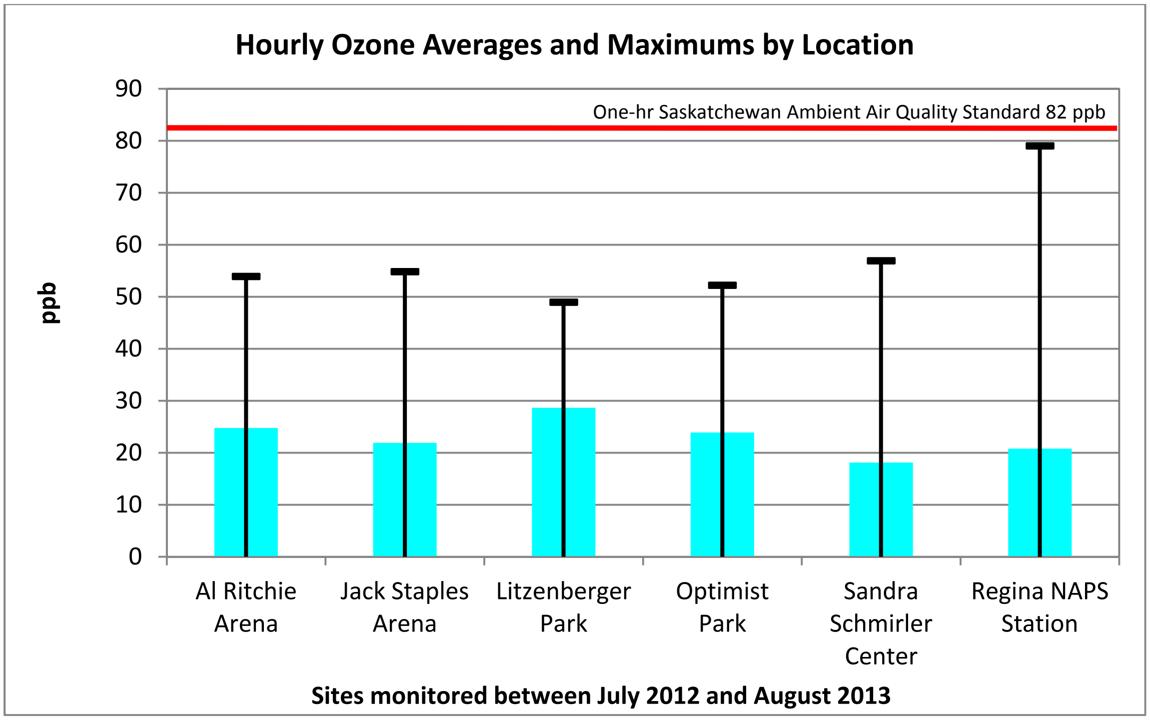

Figure 33: Continuous Ozone Averages and Maximums by Location

5.2.4 Hydrogen Sulphide

In addition to the original monitoring sites, data from the CRC Glencairn site was included (Figure 34). The Regina NAPS station does not have the capability to monitor for H_2S. Throughout the monitoring period H_2S exceedances were experienced at all monitoring locations except the Sandra Schmirler Center (Table 3). All one-hour H_2S exceedances occurred in the months of July and August 2012. The source of the H_2S during the time was the City of Regina's wastewater lagoons located west of the city. The city issued a wastewater treatment plant odour update on September 12, 2012[21] on its website stating that "the odour is caused by an aging wastewater treatment plant, low oxygen levels in the lagoons and warm temperatures".[21] Subsequently, the city took actions to eliminate the odour. During the peak of the wastewater lagoon issue the SAML was monitoring at the Al Ritchie location. As a result 22 exceedances of the one-hour standard occurred. The following table shows the number of exceendances for all locations.

Table 3: Hourly Exceedances of Hydrogen Sulphide

Location	Number of Exceedances This is the number of times readings were above the guideline
Al Ritchie Arena	22
Jack Staples Arena	9
Litzenberger Park Arena	1
Optimist Arena	3
Sandra Schmirler Center	0
CRC Glencairn Station	3

[21] City of Regina, September 12, 2012, Wastewater treatment plant odour update, http://www.regina.ca/press/news-and-announcements/wastewater-treatment-plant-odour-update/

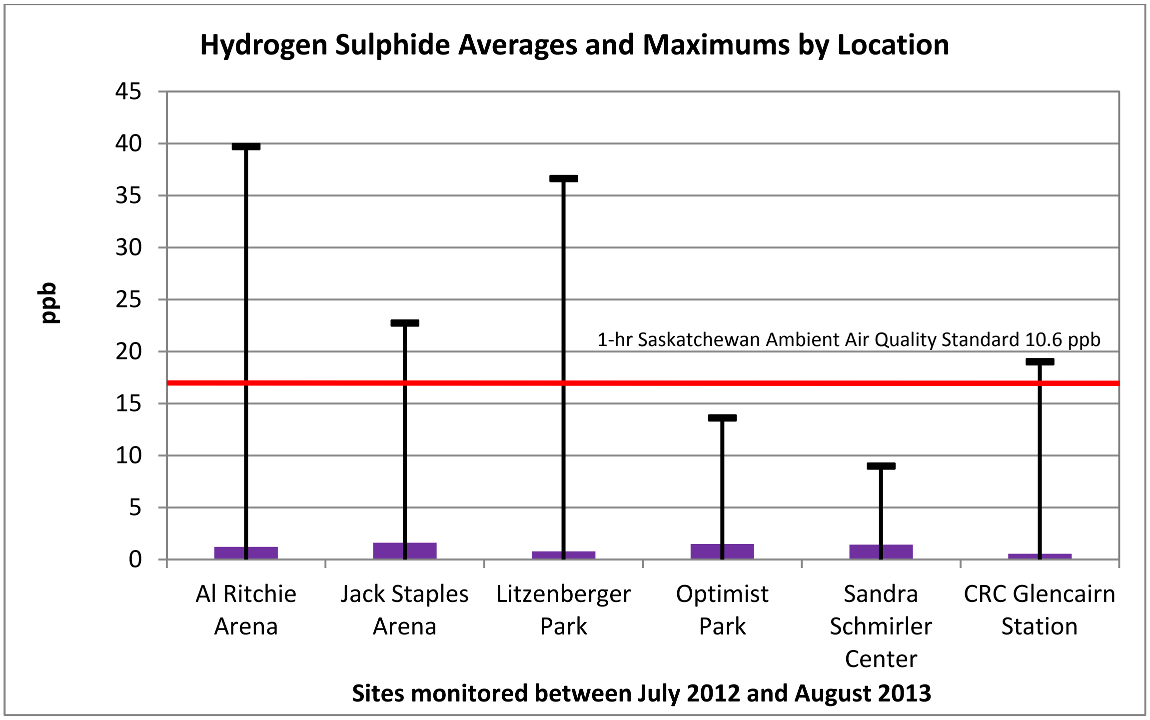

Figure 34: Continuous Hydrogen Sulphide Averages and Maximums by Location

5.2.5 Fine Particulate Matter

On average the fine particulate matter ($PM_{2.5}$) concentrations were well below the CAAQS of 28 μg/m^3 for a 24-hour period (Figure 35). During this study, there were a few occurrences due to fire smoke that caused increased levels of $PM_{2.5}$. While monitoring at the Al Ritchie location $PM_{2.5}$ exceeded the 24-hour CAAQS on both July 12 and 13th of 2012 due to smoke from a northern forest fire. These exceedances were also recorded at the Regina NAPS station during the same period. In Saskatchewan high levels of $PM_{2.5}$ due to fire smoke, stubble burning and blowing dust are the main contributors to occasional poor air quality and reduced visibility from particulate matter.

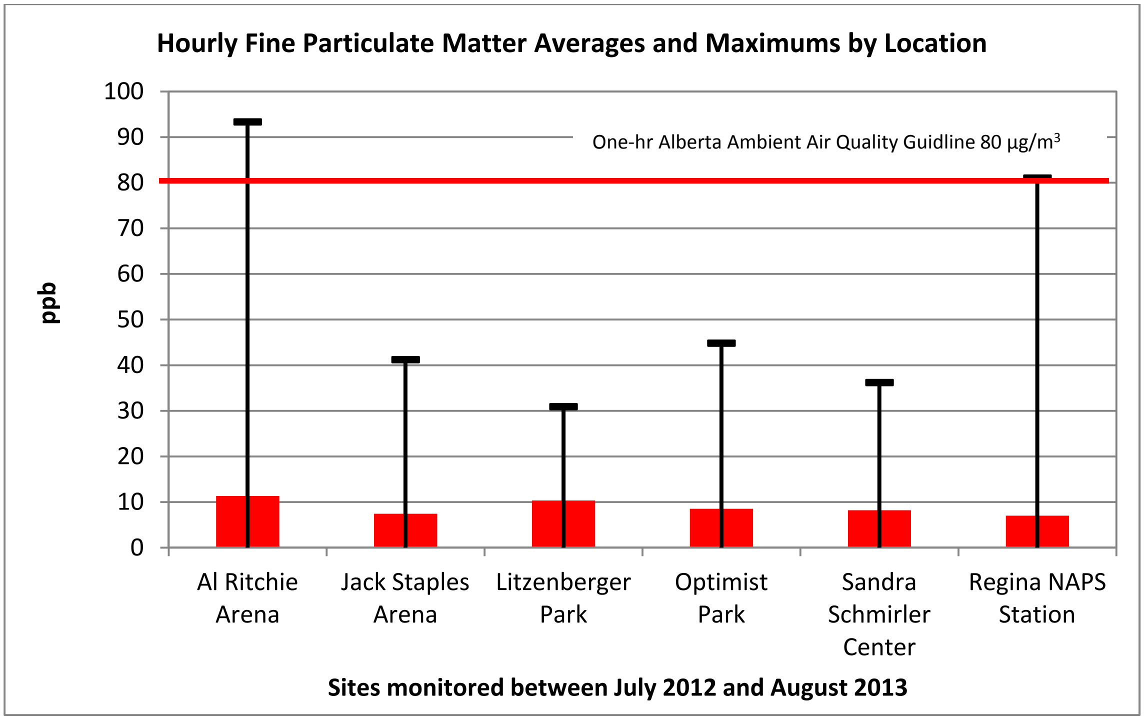

Figure 35: Continuous Fine Particulate Matter Averages and Maximums by Location

5.2.6 Total Volatile Organic Compounds

Results from over 150 different VOC compounds were combined into one total VOC value (Figure 36). Combining all compounds into one total VOC value allows for a more simplified picture of the VOCs at each site without being overwhelmed by the number of different pollutants. Similar to the passive monitoring results, a large portion of the VOCs making up the total value were BTEX compounds. The VOCs were further broken down into individual BTEX compounds and compared against the relevant Alberta[22] and Texas[23] guidelines (Figures 37-40). The Regina NAPS station measured the highest VOCs, both total and individual BTEX compounds. This was likely due to the increased amount of traffic in the downtown core. Other sources of VOCs are likely from dry cleaning facilities, which use distinct chemicals in the cleaning process. It is possible that some of the VOCs measured can be attributed to the solvents and chemicals used in the construction process of a multi-story office building nearby the Regina NAPS station. The highest total VOCs average at the Regina NAPS station was measured on September 6, 2012 and was primarily composed of ethane, a chemical commonly used in solvents. In comparison with the Alberta[22] and Texas[23] guidelines all individual VOCs were below these guidelines.

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[22] Alberta Environment and Sustainable Resource Development, Ambient Air Quality Objectives and Guidelines, August 2013, http://environment.gov.ab.ca/info/library/5726.pdf

[23] Texas Commission on Environmental Quality, March 2014 Effects Screening Levels http://www.tceq.state.tx.us/implementation/tox/

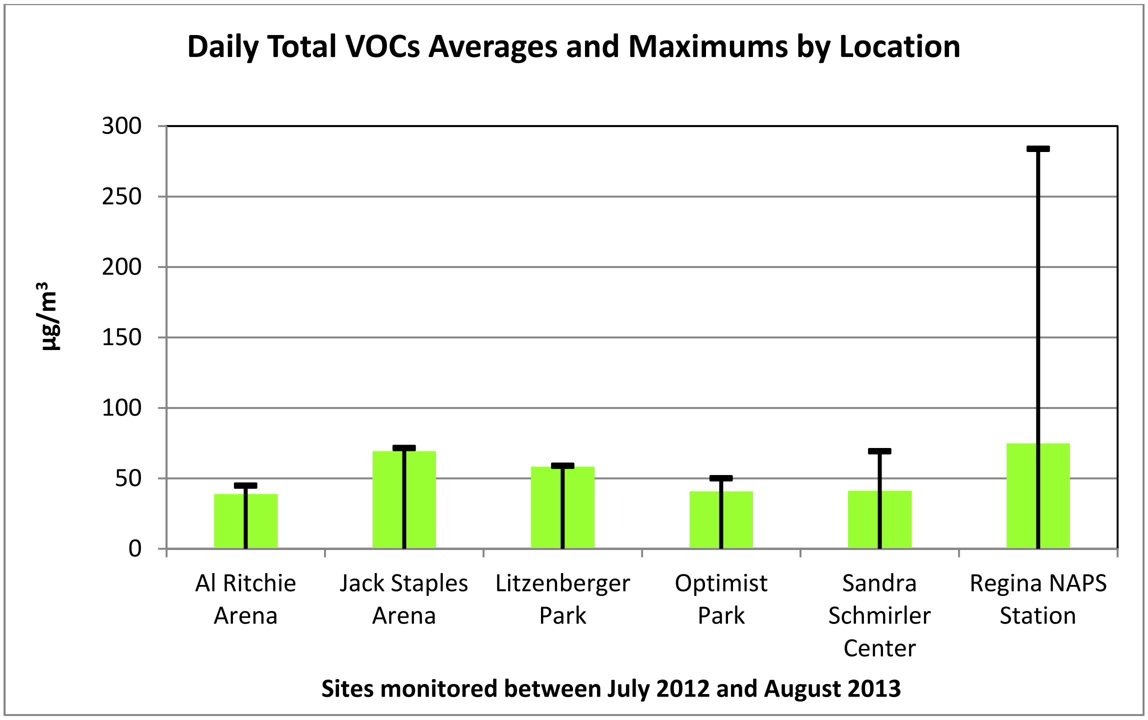

Figure 36: Continuous Total Volatile Organic Compounds Averages and Maximums by Location

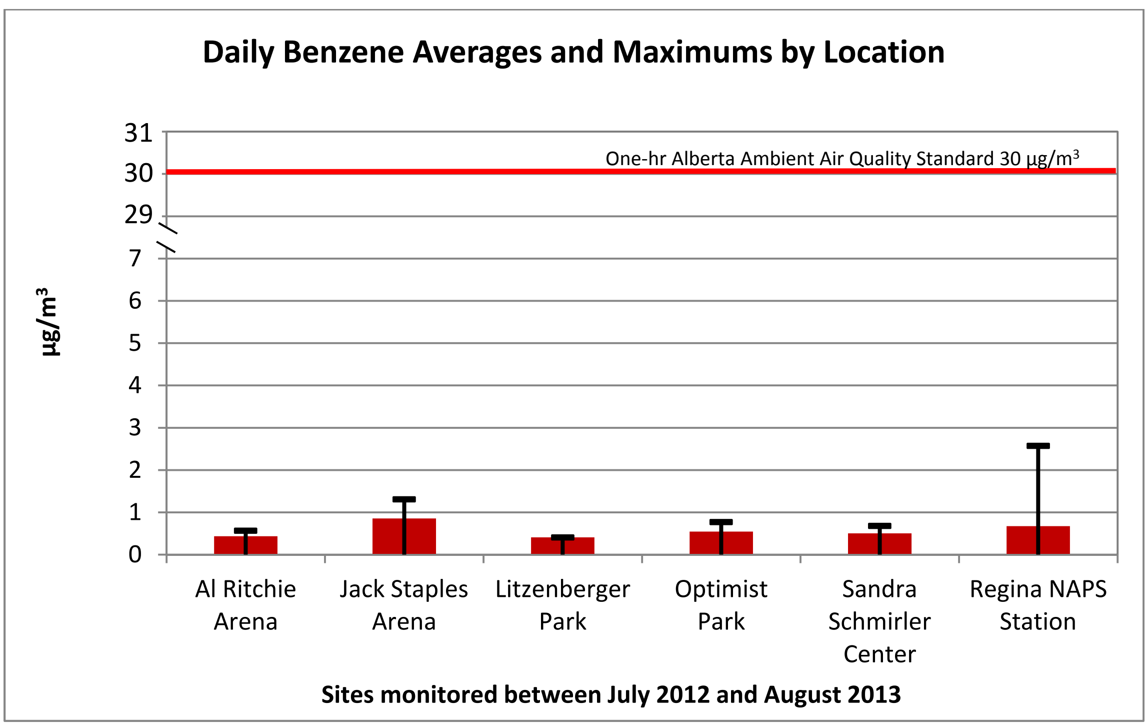

Figure 37: Continuous Benzene Averages and Maximums by Location

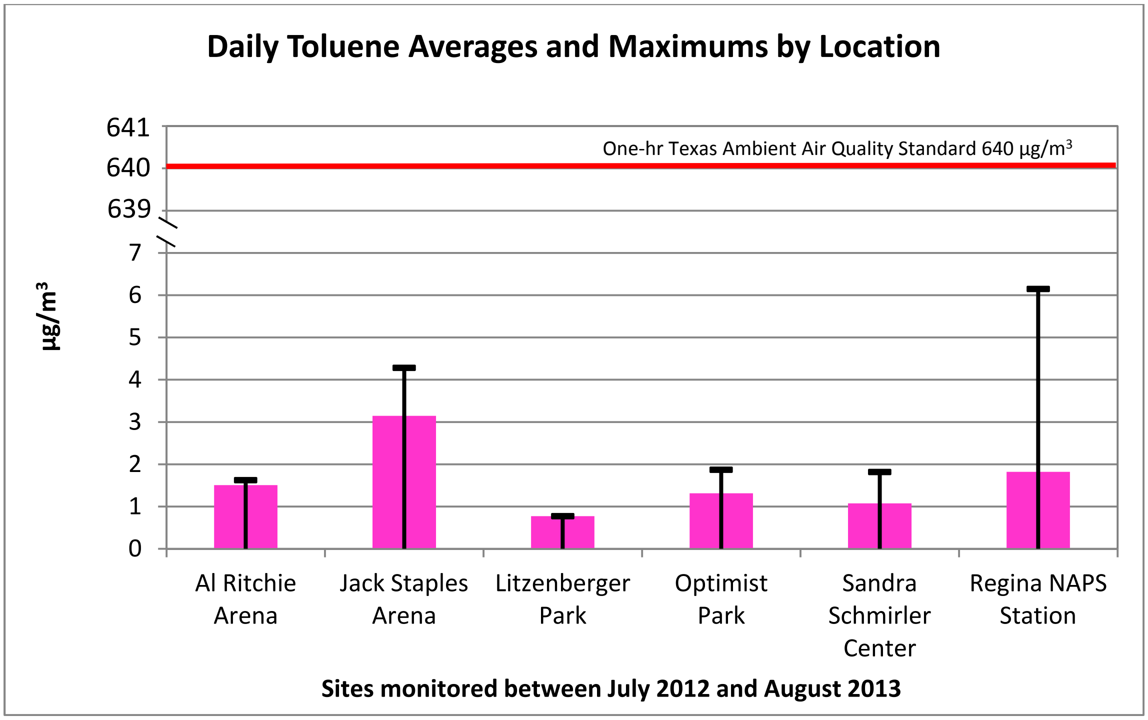

Figure 38: Continuous Toluene Averages and Maximums by Location

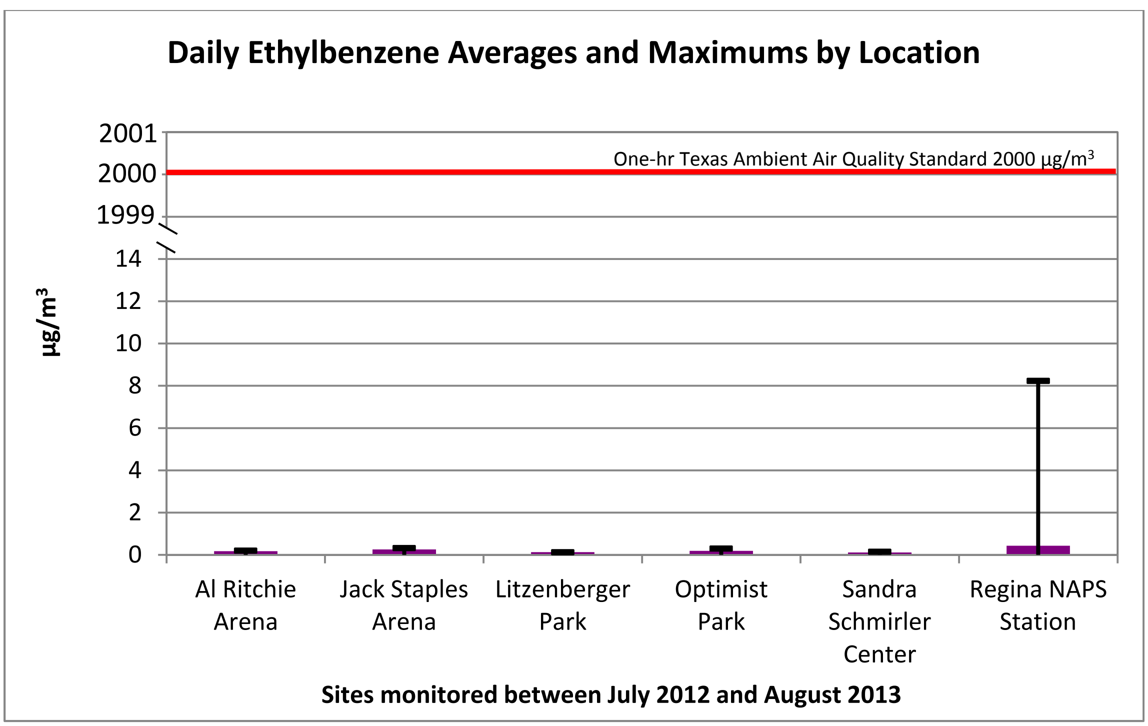

Figure 39: Continuous Ethylbenzene Averages and Maximums by Location

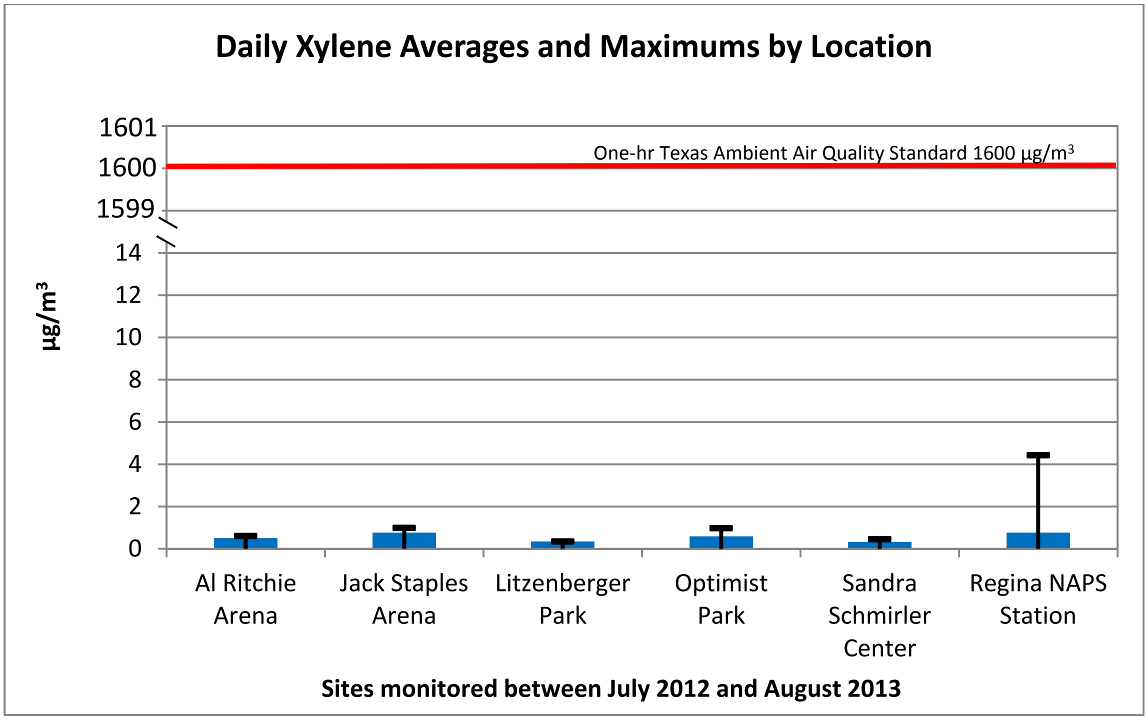

Figure 40: Continuous Xylene Averages and Maximums by Location

5.3 Comparing Regions

An additional comparison was performed to identify how Regina compared to other major urban cities in Canada for 2012[24]. A comparison for nitrogen dioxide shows Regina is the middle range of the cities compared (Figure 41), which includes; Whitehourse, St. John's, Victoria, Winnipeg, Sarnia, Québec City, Fort McMurray, Saskatoon, Halifax, Montréal, Calgary, Edmonton, Toronto, and Vancouver. The annual averages of NO_2 in 2012 ranged from 6 ppb to 18 ppb, with Regina's average of 9 ppb showing to be well below the annual standard of 53 ppb.

In comparing sulphur dioxide, Winnipeg, Toronto, Fort McMurray and Saskatoon had averages below Regina (Figure 42). The annual averages of SO_2 in 2012 ranged from <0.5 ppb to 4 ppb, with Regina's average of 1 ppb showing to be well below the annual standard of 11 ppb.

The comparison of ozone showed only Vancouver, Halifax, and Montréal to have averages below Regina (Figure 43). The coastal cities tend to have lower ozone due to their lower elevation and constant air movement from the oceans. There is no annual standard to compare O_3 readings with, however the annual averages ranged from 14 ppb to 30 ppb, with Regina's average at 21 ppb.

The final comparison was with fine particulate matter ($PM_{2.5}$) and a comparison is more difficult due to the monitoring differences between each jurisdiction, but a comparison of the averages reported through the NAPS showed St. John's, Vancouver, Whitehorse, Saskatoon and Winnipeg had averages less than Regina (Figure 44). There is no annual standard to compare $PM_{2.5}$ readings with, however the annual ranges varied from 3.5 µg/m³ to 10.2 µg/m³, with Regina's average at 6.1 µg/m³.

[24] Environment Canada, National Air Pollution Surveillance Network http://www.ec.gc.ca/natchem/default.asp?lang=en&n=EE0E2169-1

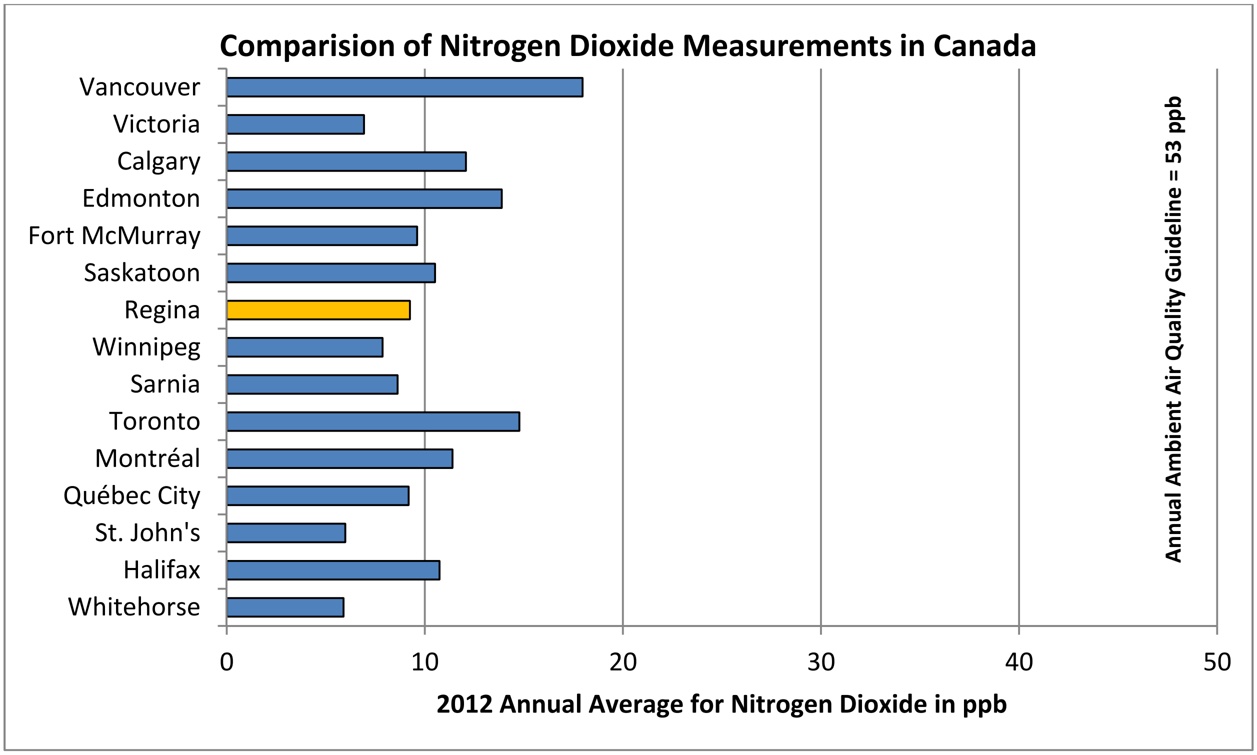

Figure 41: Comparison of nitrogen dioxide measurements in Canada

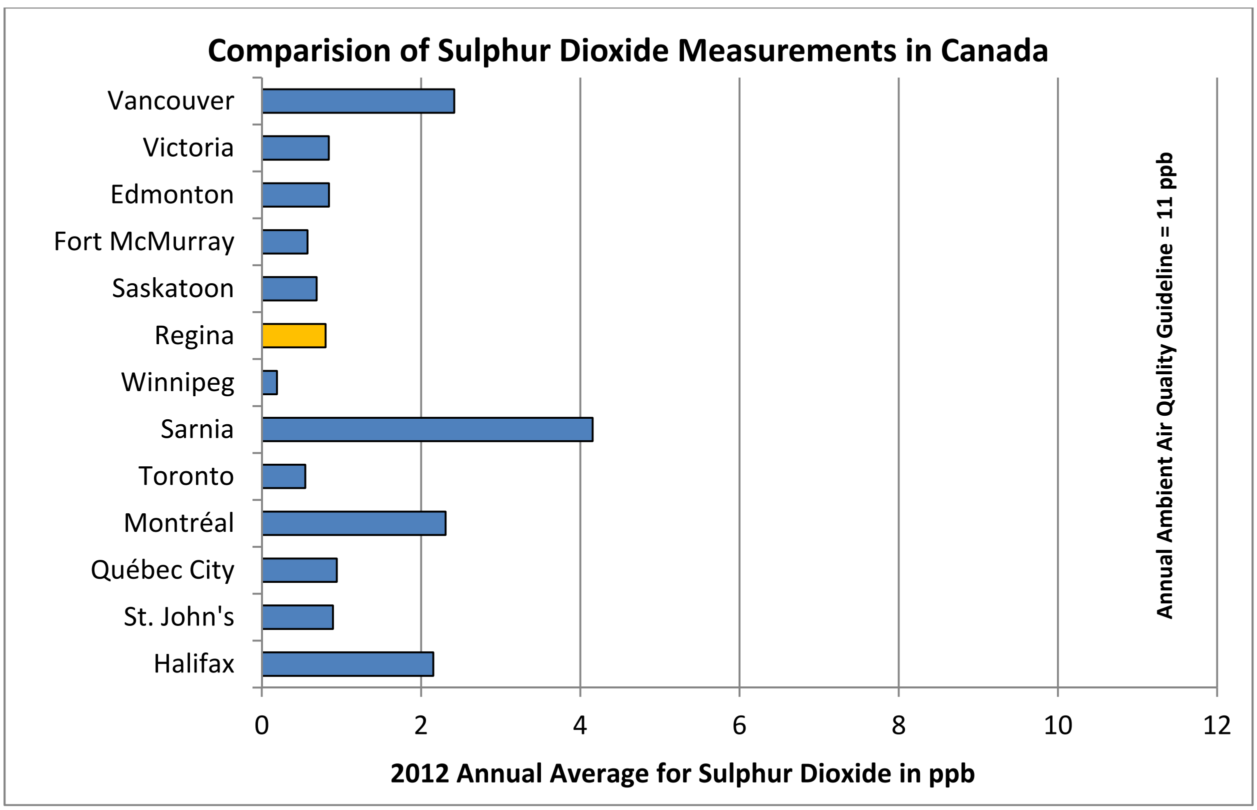

Figure 42: Comparison of sulphur dioxide measurements in Canada

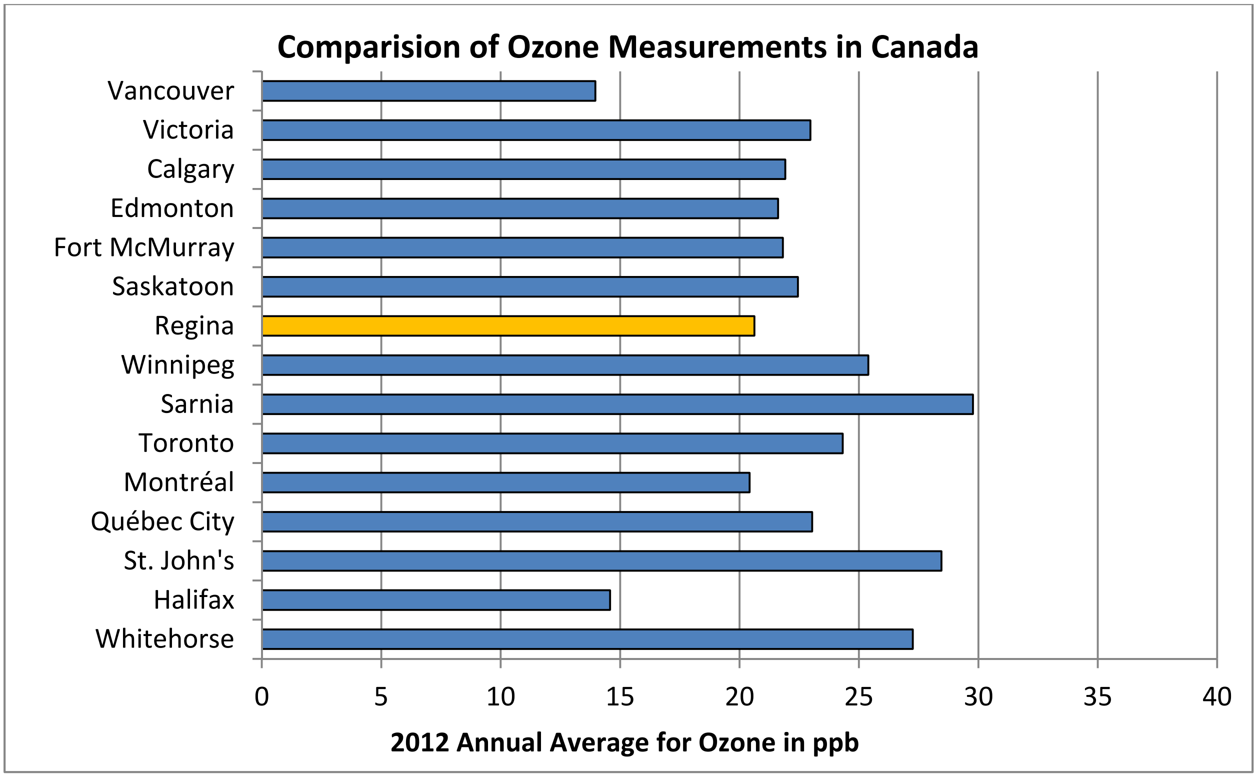

Figure 43: Comparison of ozone measurements in Canada

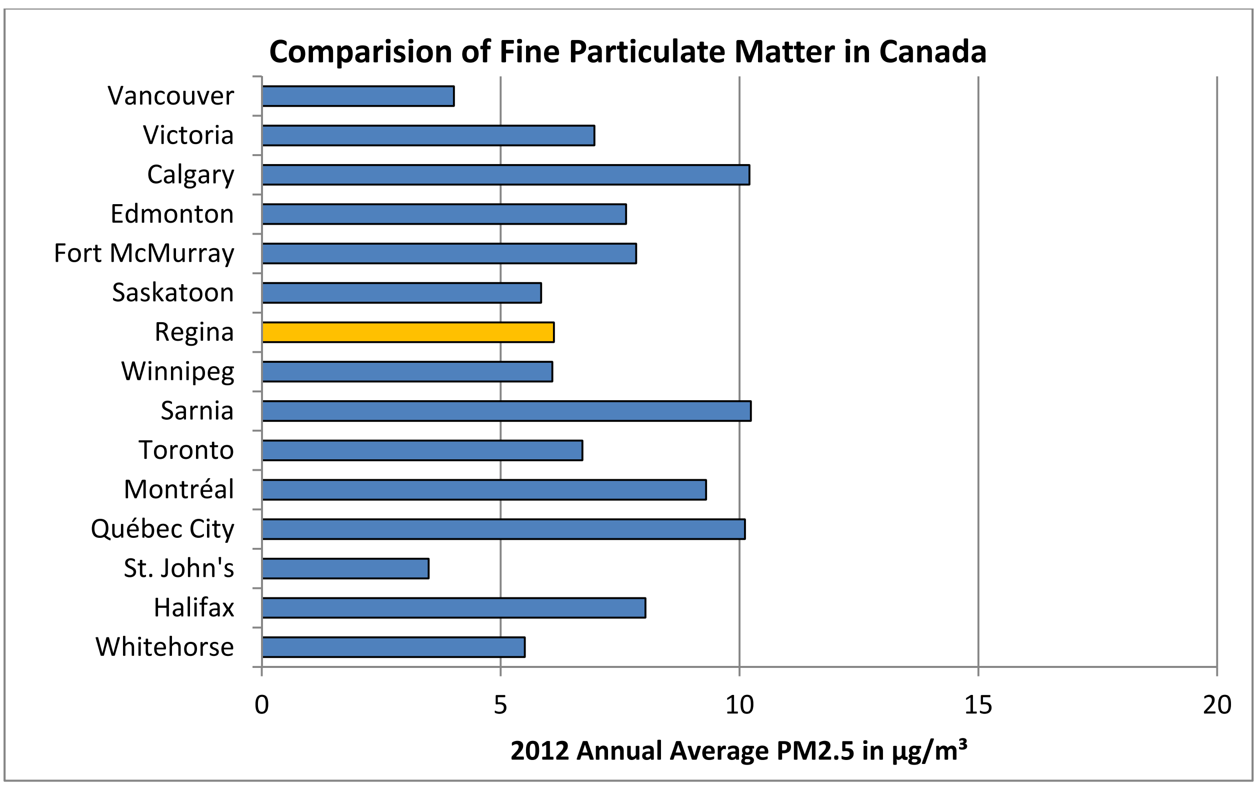

Figure 44: Comparison of fine particulate matter measurements in Canada

6.0 CONCLUSIONS

The results of an air quality monitoring study undertaken in Regina shows that the city's air is considered quite good on several monitoring factors. The first of its kind in Saskatchewan, the study was initiated in 2012 to gain a better understanding of the status and trends of the air quality in the city, with a focus towards the residential neighbourhoods. The Ministry of Environment along with the Ministry of Health, Regina Qu'Appelle Health Region and the City of Regina conducted the one-year study. Data was collected at 25 locations from July 2012 to August 2013 and was used to make spatial and temporal comparisons.

The passive monitoring method produced results in the form of an average concentration over the period of one month. The average monthly concentrations of NO_2, SO_2, O_3, and H_2S for the entire city were 5.6, 0.3, 24.0, and 0.5 ppb, respectively and maximum monthly levels were 18.9, 0.8, 61.0, and 1.3 ppb, respectively. NO_2, SO_2, O_3, and H_2S concentrations were below Saskatchewan annual ambient air quality standards. Moreover, the average monthly concentration of total VOCs was 2.7 $\mu g/m^3$ with a maximum monthly concentration of 19.7 $\mu g/m^3$. All 25 measured individual VOCs including benzene, toluene, ethylbenzene and xylenes were below the comparable Screening Effects Levels for Texas[25].

The continuous monitoring method produced results in the form of an average concentration over the period of one hour with the exception of the VOCs, which are reported as a 24-hour average. The average hourly concentrations of NO_2, SO_2, O_3, H_2S and $PM_{2.5}$ for the entire city were 7.9 ppb, 0.3 ppb, 23.0 ppb, 1.2 ppb and 8.8 $\mu g/m^3$, respectively; the maximum hourly concentrations were 50.5 ppb, 15.3 ppb, 58.0 ppb, 39.7 ppb and 93.3 $\mu g/m^3$, respectively. The average daily total VOC concentration was 53.9 $\mu g/m^3$ and the maximum daily concentrations was 283.9 $\mu g/m^3$. All measured NO_2, SO_2, and O_3 concentrations were below Saskatchewan ambient air quality standards (SAAQS). In contrast, H_2S and $PM_{2.5}$ experienced events where the Saskatchewan ambient air quality standards were exceeded (above the applicable standard). This was due to odour events from the city's wastewater treatment lagoon and a smoke episode from forest fires. There is no Saskatchewan ambient air quality guideline for total or individual VOCs, but all 156 measured individual VOCs including benzene, toluene, ethylbenzene and xylenes were below the comparable air quality guidelines for Alberta[26] and Texas[25].

The analysis of data shows that the overall air quality in the City of Regina did not vary from one area of the city to the next. Data collected from all locations in the city compared closely to the permanent NAPS station in downtown Regina. For example, SO_2 levels were very low in all parts of the city and were below SAAQS.

NO_2 levels in the city varied slightly from location to location due to the proximity to major roads. Temporally, NO_2 levels in the city varied from month to month related to the season. The primary source of NO_2 is the burning of fossil fuels. The monitoring locations in areas with more traffic showed the highest average and maximum concentrations. All NO_2 measurements were well bellows the SAAQS.

All O_3 monitoring locations recorded similar results including the background locations outside the city limits. This indicates that the O_3 is a regional pollutant, transported from distant sources. Temporally, O_3

[25] Texas Commission on Environmental Quality, March 2014 Effects Screening Levels http://www.tceq.state.tx.us/implementation/tox/

[26] Alberta Environment and Sustainable Resource Development, Ambient Air Quality Objectives and Guidelines, August 2013, http://environment.gov.ab.ca/info/library/5726.pdf

concentrations peak in the spring and early summer. All locations did not exceed the SAAQS and the average concentrations for the entire city were comparable to other jurisdictions.

Several H_2S exceedences were recorded at different monitoring locations in the city. Exceedances over the hourly SAAQS of 10.8 ppb were recorded at all monitoring locations except the Sandra Schmirler Center location. Issues at the City of Regina's wastewater treatment lagoons in July and August of 2012 caused the spikes in H_2S. The high levels of H_2S were usually present in the early morning and late evening when the wind speed dropped and the temperature cooled causing the air to become stagnate and stay close to the ground. The predominant wind direction during the summer months was blowing from the northwest, which caused the H_2S to be blown into the city.

$PM_{2.5}$ levels were very similar at all monitoring locations. Unlike the other parameters, $PM_{2.5}$ is compared to a 24-hour SAAQS. On only one occasion was the SAAQS exceeded and the cause of the exceedance was smoke, transported from forest fires burning in northern Saskatchewan and Alberta. During the smoke-event the SAML was monitoring at the Al Ritchie location and high $PM_{2.5}$ concentrations were captured there. Likewise, during the smoke-event high $PM_{2.5}$ concentrations were measured at the Regina NAPS station. With the exception of the smoke-event, the $PM_{2.5}$ levels were in the normal range and below the standard for all parts of the city.

VOCs can be difficult to monitor because of the vast number of VOCs and sources. Equipment to monitor in real time is expensive and usually only target a few VOCs. By collecting 24-hour samples with canisters and using passive monitors a wide range of VOCs were tested. All VOCs were below the comparable guidelines from Alberta and Texas. The passive monitoring showed a slightly higher concentration in total VOCs in the northern part of the city, which could possibly be due to the area's close proximity to industrial facilities. The highest total VOC concentration recorded from the canister analysis was from the Regina NAPS station on September 6, 2012. On that date the individual compound of the VOCs was primarily ethane, a chemical commonly used in solvents. The source of this solvent was attributed to a nearby building under construction.

The analysis of monitoring results indicates that the potential pollutants of concern in the future will most likely be $PM_{2.5}$, O_3, and H_2S. The results from this study will provide baseline data to compare with possible future monitoring surveys in the City of Regina. If the study is revisited in the future, the historical data will provide a more meaningful comparison. Currently, the downtown NAPS station serves as a good representation of the air quality in all areas of Regina. As the city continues to grow, other air monitoring stations may be required, in the northern or eastern part of the city. This study will also provide guidance for similar monitoring surveys in other cities in Saskatchewan.

APPENDICES

APPENDIX A: Passive Monitoring Results

Table A-1: Nitrogen Dioxide Passive Results

Nitrogen Dioxide Passive Results (ppb)													
Location	**Jul-12**	**Aug-12**	**Sep-12**	**Oct-12**	**Nov-12**	**Dec-12**	**Feb-13**	**May-13**	**Jun-13**	**Jul-13**	**Aug-13**	**Mean**	**Max**
NW (Background)	2.7	2.9	2.5	3.0	7.4	11.9	0.5	1.2	0.3	0.8	2.6	**3.4**	**11.9**
SE (Background)	2.0	1.6	1.8	3.6	4.4	4.7	3.9	1.4	0.3	*NA	1.2	**2.7**	**4.7**
University of Regina	4.6	4.8	4.1	6.3	6.6	7.4	6.6	2.3	0.7	2.1	3.4	**4.5**	**7.4**
MoE Warehouse	7.9	8.0	8.0	8.6	10.6	15.0	16.3	6.3	1.3	4.0	6.9	**8.5**	**16.3**
Argyle School	4.3	4.4	4.0	5.7	9.0	11.2	9.4	2.9	0.3	2.0	4.5	**5.3**	**11.2**
Michael A. Riffel High School	*NA	5.1	4.5	6.0	8.5	10.7	10.2	2.0	*NA	2.1	6.1	**6.2**	**10.7**
Archbishop M.C. O'Neil High School	5.2	2.6	4.9	5.7	8.8	11.9	9.0	*NA	*NA	*NA	*NA	**6.8**	**11.9**
St. Francis School	4.9	4.2	4.1	5.4	7.5	10.3	8.1	2.6	*NA	2.1	*NA	**5.5**	**10.3**
Saint Gregory School	2.5	4.9	5.0	6.1	8.1	12.7	10.5	2.6	*NA	2.5	5.7	**6.1**	**12.7**
Judge Bryant School	*NA	5.6	6.5	6.0	10.7	15.4	10.8	2.8	0.7	2.8	1.1	**6.5**	**15.4**
St. Michael Comunity School	6.5	5.8	6.3	6.8	14.4	12.6	10.8	2.0	1.0	*NA	7.7	**7.5**	**14.4**
Holy Rosary School	4.8	5.5	4.7	5.4	11.3	18.9	8.3	3.7	*NA	1.9	*NA	**7.3**	**18.9**
Habour Landing	3.3	3.5	3.5	4.6	7.2	16.8	6.2	3.7	0.8	2.0	3.1	**5.1**	**16.8**
St. Gabriel School	3.2	3.0	3.8	4.5	*NA	15.9	*NA	*NA	0.3	1.6	3.3	**4.8**	**15.9**
Perry School	5.0	3.5	3.6	4.4	6.1	*NA	*NA	2.1	<0.1	2.6	2.8	**4.0**	**6.1**
Miller High School	4.8	4.2	6.0	5.7	8.3	10.4	7.2	2.3	0.4	2.3	3.5	**5.1**	**10.4**
Grant Road School	4.6	3.2	2.5	5.1	*NA	8.4	7.7	2.4	*NA	2.0	*NA	**5.0**	**9.0**
W.F Ready School	3.8	3.7	4.8	7.3	10.8	10.2	9.4	1.7	0.2	*NA	4.5	**5.9**	**10.8**
Mean	**4.4**	**4.3**	**4.5**	**5.6**	**8.7**	**12.0**	**8.4**	**2.6**	**0.6**	**2.2**	**4.0**	**5.6**	**11.9**
Max	**7.9**	**8.0**	**8.0**	**8.6**	**14.4**	**18.9**	**16.3**	**6.3**	**1.3**	**4.0**	**7.7**	**8.5**	**18.9**

*Damged or missing sampler

Data dubious for January 2013 (not shown)

No Samples collected for March and April 2013

Table A-2: Sulphur Dioxide Passive Results

Sulphur Dioxide Passive Results (ppb)														
Location	**Jul-12**	**Aug-12**	**Sep-12**	**Oct-12**	**Nov-12**	**Dec-12**	**Jan-13**	**Feb-13**	**May-13**	**Jun-13**	**Jul-13**	**Aug-13**	**Mean**	**Max**
NW (Background)	0.4	0.2	0.3	0.1	0.4	0.6	0.3	0.4	0.1	<0.1	<0.1	0.1	**0.3**	**0.6**
SE (Background)	0.2	0.1	0.2	0.2	0.6	0.5	0.2	0.5	<0.1	<0.1	*NA	<0.1	**0.3**	**0.6**
University of Regina	0.5	0.1	0.3	0.2	0.6	0.5	0.1	0.5	<0.1	<0.1	<0.1	<0.1	**0.4**	**0.6**
MoE Warehouse	0.4	0.2	0.4	0.3	0.5	0.4	0.4	0.4	<0.1	0.1	<0.1	0.1	**0.3**	**0.5**
Argyle School	0.4	0.1	0.3	0.2	0.5	0.5	0.3	0.4	<0.1	<0.1	0.1	0.2	**0.3**	**0.5**
Michael A. Riffel High School	*NA	0.2	0.4	0.1	0.4	0.4	0.3	0.4	0.2	*NA	0.2	0.4	**0.3**	**0.4**
Archbishop M.C. O'Neil High School	0.5	0.1	0.4	0.1	0.5	0.5	0.5	0.4	*NA	*NA	*NA	*NA	**0.4**	**0.5**
St. Francis School	0.3	0.2	0.4	0.1	0.5	0.5	0.2	0.5	<0.1	0.1	0.2	*NA	**0.3**	**0.5**
Saint Gregory School	0.4	0.2	0.3	0.2	0.6	0.6	0.5	0.5	0.5	0.1	0.2	0.2	**0.4**	**0.6**
Judge Bryant School	*NA	0.3	0.5	0.1	0.7	0.6	0.1	0.5	<0.1	<0.1	0.2	0.2	**0.4**	**0.7**
St. Michael Comunity School	0.5	0.2	0.3	0.1	0.7	0.2	0.2	0.5	*NA	*NA	*NA	0.3	**0.3**	**0.7**
Holy Rosary School	0.3	0.1	0.3	0.1	0.7	0.3	0.2	0.5	0.2	*NA	0.1	*NA	**0.3**	**0.7**
Habour Landing	0.3	0.2	0.3	0.2	0.6	0.6	0.1	0.5	<0.1	<0.1	0.3	<0.1	**0.3**	**0.6**
St. Gabriel School	0.4	0.2	0.3	0.2	*NA	0.8	0.1	*NA	*NA	*NA	0.1	<0.1	**0.3**	**0.8**
Perry School	0.5	0.1	0.3	0.2	0.7	*NA	0.3	*NA	<0.1	<0.1	0.1	<0.1	**0.3**	**0.7**
Miller High School	0.3	0.2	0.6	0.2	0.7	0.7	0.4	0.6	0.1	<0.1	<0.1	0.1	**0.4**	**0.7**
Grant Road School	0.4	0.1	0.3	0.2	0.5	0.6	0.4	0.5	<0.1	*NA	<0.1	*NA	**0.4**	**0.6**
W.F Ready School	0.4	0.0	0.3	0.3	0.6	0.5	0.3	0.2	<0.1	<0.1	*NA	0.3	**0.3**	**0.6**
Mean	**0.4**	**0.2**	**0.3**	**0.2**	**0.6**	**0.5**	**0.3**	**0.5**	**0.2**	**0.1**	**0.2**	**0.2**	**0.3**	**0.6**
Max	**0.5**	**0.3**	**0.6**	**0.3**	**0.7**	**0.8**	**0.5**	**0.6**	**0.5**	**0.1**	**0.3**	**0.4**	**0.5**	**0.8**

*Damged or missing sampler

No Samples collected for March and April 2013

Table A-3: Ozone Passive Results

Ozone Passive Results (ppb)														
Location	**Jul-12**	**Aug-12**	**Sep-12**	**Oct-12**	**Nov-12**	**Dec-12**	**Jan-13**	**Feb-13**	**May-13**	**Jun-13**	**Jul-13**	**Aug-13**	**Mean**	**Max**
NW (Background)	20.1	23.9	17.6	16.8	20.6	13.2	19.2	28.7	61.3	40.6	31.0	*NA	**26.6**	**61.3**
SE (Background)	20.5	20.6	15.6	22.9	22.6	17.0	19.4	30.7	52.6	41.9	24.1	30.9	**26.6**	**52.6**
University of Regina	18.6	23.2	14.2	21.2	16.9	20.4	18.1	20.7	53.9	41.8	29.3	31.3	**25.8**	**53.9**
MoE Warehouse	21.5	20.6	15.5	13.1	16.8	16.1	18.2	22.5	34.8	38.2	26.2	35.2	**23.2**	**38.2**
Argyle School	24.3	23.6	15.6	13.8	21.2	16.3	17.7	24.2	38.3	32.2	25.6	28.6	**23.5**	**38.3**
Michael A. Riffel High School	*NA	20.9	13.1	15.6	15.3	15.7	16.3	22.6	39.1	34.0	27.7	25.2	**22.3**	**39.1**
Archbishop M.C. O'Neil High School	19.8	21.9	12.6	13.8	15.3	16.1	17.0	22.2	*NA	*NA	*NA	*NA	**17.3**	**22.2**
St. Francis School	21.9	25.1	13.2	14.7	15.6	15.0	17.1	22.9	37.4	*NA	26.4	*NA	**20.9**	**37.4**
Saint Gregory School	19.1	20.5	12.6	16.4	15.6	15.9	17.0	22.8	40.3	*NA	25.9	24.2	**20.9**	**40.3**
Judge Bryant School	*NA	28.9	14.8	11.1	17.6	15.2	17.8	23.2	34.4	32.8	23.0	24.9	**22.2**	**34.4**
St. Michael Comunity School	19.8	22.5	14.3	17.4	21.9	12.6	17.5	23.8	*NA	32.7	24.9	24.6	**21.1**	**32.7**
Holy Rosary School	20.2	22.8	14.1	12.1	17.5	15.0	17.7	23.6	34.0	28.8	21.7	23.9	**21.0**	**34.0**
Habour Landing	23.0	22.1	14.6	13.4	19.0	18.9	18.8	26.8	52.3	37.8	30.2	30.7	**25.6**	**52.3**
St. Gabriel School	22.8	25.6	16.9	15.4	*NA	16.1	19.9	*NA	*NA	38.1	29.0	33.6	**24.2**	**38.1**
Perry School	25.6	24.1	14.2	13.3	20.2	*NA	19.3	*NA	39.9	33.6	27.0	27.0	**24.4**	**39.9**
Miller High School	19.5	28.3	16.6	14.7	18.8	17.2	17.9	24.2	43.8	36.5	27.4	29.2	**24.5**	**43.8**
Grant Road School	19.7	20.0	12.6	14.8	17.4	15.3	16.6	24.9	38.6	28.6	22.6	24.1	**21.3**	**38.6**
W.F Ready School	20.8	21.1	12.0	14.0	16.8	15.4	15.3	23.1	34.2	32.1	*NA	27.0	**21.1**	**34.2**
Mean	**21.1**	**23.1**	**14.5**	**15.3**	**18.2**	**16.0**	**17.8**	**24.2**	**42.3**	**35.3**	**26.4**	**28.0**	**23.5**	**42.3**
Max	**25.6**	**28.9**	**17.6**	**22.9**	**22.6**	**20.4**	**19.9**	**30.7**	**61.3**	**41.9**	**31.0**	**35.2**	**29.8**	**61.3**

*Damged or missing sampler

No Samples collected for March and April 2013

Table A-4: Hydrogen Sulphide Passive Results

Hydrogen Sulphide Passive Results (ppb)														
Location	**Jul-12**	**Aug-12**	**Sep-12**	**Oct-12**	**Nov-12**	**Dec-12**	**Jan-13**	**Feb-13**	**May-13**	**Jun-13**	**Jul-13**	**Aug-13**	**Mean**	**Max**
NW (Background)	1.0	1.0	0.6	0.2	0.3	0.4	0.3	0.0	0.3	0.4	0.2	0.7	**0.4**	**1.0**
SE (Background)	0.8	0.5	0.2	0.2	0.2	0.3	0.1	0.1	0.7	0.5	0.4	0.8	**0.4**	**0.8**
University of Regina	0.9	0.7	0.4	0.3	0.2	0.2	*NA	0.1	0.5	0.7	0.5	0.8	**0.5**	**0.9**
MoE Warehouse	0.9	0.7	0.5	0.2	0.3	0.3	0.3	0.1	0.4	0.6	0.6	0.9	**0.5**	**0.9**
Argyle School	0.9	0.8	0.4	0.2	0.2	0.2	0.4	0.2	0.3	0.7	0.3	0.7	**0.4**	**0.9**
Michael A. Riffel High School	*NA	0.7	0.5	0.3	0.5	0.9	0.2	0.2	0.3	*NA	0.4	0.7	**0.5**	**0.9**
Archbishop M.C. O'Neil High School	1.2	0.7	0.6	0.4	0.3	0.3	0.3	0.1	*NA	*NA	*NA	*NA	**0.5**	**1.2**
St. Francis School	1.3	1.0	0.9	0.4	0.2	0.3	0.3	0.2	0.3	*NA	0.6	*NA	**0.5**	**1.3**
Saint Gregory School	0.7	0.7	0.4	0.6	0.6	0.8	0.2	0.5	0.3	*NA	0.4	0.9	**0.6**	**0.9**
Judge Bryant School	*NA	*NA	0.5	0.2	0.2	0.2	0.1	0.2	0.3	0.7	0.5	<0.03	**0.3**	**0.7**
St. Michael Comunity School														
Holy Rosary School														
Habour Landing														
St. Gabriel School														
Perry School														
Miller High School														
Grant Road School														
W.F Ready School														
Mean	**1.0**	**0.7**	**0.5**	**0.3**	**0.3**	**0.4**	**0.2**	**0.2**	**0.4**	**0.6**	**0.4**	**0.8**	**0.5**	**1.0**
Max	**1.3**	**1.0**	**0.9**	**0.6**	**0.6**	**0.9**	**0.4**	**0.5**	**0.7**	**0.7**	**0.6**	**0.9**	**0.8**	**1.3**

*Damged or missing sampler

No Samples collected for March and April 2013

Table A-5: July 2012 Volatile Organic Compound Passive Results

July 2012 Volatile Organic Compound Passive Results (µg/m³)																		
Sample I.D.	NW (Background)	SE (Background)	U of R	MOE Warehouse	Argyle school	Riffel High	O'Neil High	St. Francis	St. Gregory	Judge Bryant	St. Michael	Holy Rosary	Harbour landing	St. Grabriel	Dr. Perry	Miller High	Grand Rd	W.F. Ready
Dichloromethane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Hexane	3.86	2.35	3.41	8.81	4.76	5.47	4.53	7.60	7.49	<0.2	6.34	4.62	4.48	4.51	5.21	3.94	3.43	4.21
Chloroform	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichloroethane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzene	0.60	0.38	0.52	1.53	0.56	0.83	0.64	1.03	1.01	<0.2	1.09	0.59	0.42	0.50	0.61	0.63	0.57	0.58
Trichloroethylene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	0.89	0.23	0.80	5.82	1.54	2.00	1.73	1.71	1.71	<0.2	2.53	0.92	1.50	0.70	0.74	1.03	0.79	1.13
Tetrachloroethylene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	<0.2	<0.2	<0.2	0.56	0.24	0.26	0.24	0.46	0.46	<0.2	0.38	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
(m+p)-Xylene	0.34	<0.2	0.32	1.51	0.40	0.71	0.60	0.93	0.91	<0.2	1.03	0.44	0.29	0.29	0.34	0.44	0.41	0.35
o-Xylene	<0.2	<0.2	<0.2	0.50	<0.2	0.24	0.21	0.30	0.30	<0.2	0.34	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Styrene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cumene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
a-Pinene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.30	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1,2,2-Tetrchloroethane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
n-Decane	0.32	0.41	0.82	0.39	0.38	0.45	0.38	0.41	0.39	<0.2	0.51	0.31	0.33	0.33	0.37	0.28	0.33	0.42
1,3,5-Trimethylbenzene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,4-Trimethylbenzene	<0.2	<0.2	<0.2	0.27	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.24	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Pentachloroethane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
d-Limonene	<0.2	<0.2	<0.2	0.26	0.28	0.25	0.23	0.23	0.22	<0.2	0.22	0.21	<0.2	<0.2	0.30	<0.2	0.31	<0.2
p-Cymene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3-Dichlorobenzene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,4-Dichlorobenzene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Hexachloroethane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,4-Trichlorobenzene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Table A-6: August 2012 Volatile Organic Compound Passive Results

August 2012 Volatile Organic Compound Passive Results (µg/m³)																		
Sample I.D.	NW (Background)	SE (Background)	U of R	MOE Warehouse	Argyle school	Riffel High	O'Neil High	St. Francis	St. Gregory	Judge Bryant	St. Michael	Holy Rosary	Harbour landing	St. Grabriel	Dr. Perry	Miller High	Grand Rd	W.F. Ready
Dichloromethane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Hexane	0.49	0.37	0.56	1.82	0.51	0.63	0.62	0.50	1.02	0.65	0.81	0.46	0.42	0.45	0.38	0.52	0.53	0.57
Chloroform	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichloroethane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzene	0.27	<0.2	0.30	0.83	0.30	0.36	0.44	0.32	0.47	0.34	0.52	0.32	0.23	0.24	0.25	0.32	0.31	0.33
Trichloroethylene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	0.38	<0.2	2.70	2.65	1.13	0.83	1.02	0.66	0.98	0.81	1.27	0.65	0.50	0.35	0.57	0.69	1.71	0.59
Tetrachloroethylene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	<0.2	<0.2	<0.2	0.32	<0.2	<0.2	<0.2	<0.2	0.21	<0.2	0.23	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
(m+p)-Xylene	0.28	<0.2	0.28	0.93	0.34	0.48	0.47	0.37	0.63	0.44	0.69	0.35	<0.2	<0.2	0.22	0.32	0.29	0.30
o-Xylene	<0.2	<0.2	<0.2	0.30	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.21	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Styrene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cumene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
a-Pinene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.24	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1,2,2-Tetrchloroethane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
n-Decane	<0.2	<0.2	<0.2	<0.2	<0.2	0.25	0.27	<0.2	0.22	<0.2	0.33	0.24	<0.2	<0.2	0.22	<0.2	<0.2	0.26
1,3,5-Trimethylbenzene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,4-Trimethylbenzene	<0.2	<0.2	<0.2	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Pentachloroethane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
d-Limonene	<0.2	<0.2	<0.2	0.29	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p-Cymene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3-Dichlorobenzene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,4-Dichlorobenzene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Hexachloroethane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,4-Trichlorobenzene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Table A-7: September 2012 Volatile Organic Compound Passive Results

September 2012 Volatile Organic Compound Passive Results (μg/m^3)																		
Sample I.D.	NW (Background)	SE (Background)	U of R	MOE Warehouse	Argyle school	Riffel High	O'Neil High	St. Francis	St. Gregory	Judge Bryant	St. Michael	Holy Rosary	Harbour landing	St. Grabriel	Dr. Perry	Miller High	Grand Rd	W.F. Ready
Dichloromethane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Hexane	0.27	0.26	0.32	1.18	0.30	0.44	0.36	0.33	0.70	0.27	0.26	0.32	1.18	0.30	0.44	0.36	0.33	0.70
Chloroform	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichloroethane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzene	<0.2	<0.2	0.22	0.66	0.25	0.35	0.25	0.26	0.41	<0.2	<0.2	0.22	0.66	0.25	0.35	0.25	0.26	0.41
Trichloroethylene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	0.27	<0.2	0.40	2.09	0.48	0.72	0.66	0.52	0.85	0.27	<0.2	0.40	2.09	0.48	0.72	0.66	0.52	0.85
Tetrachloroethylene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	<0.2	<0.2	<0.2	0.25	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.25	<0.2	<0.2	<0.2	<0.2	<0.2
(m+p)-Xylene	<0.2	<0.2	0.25	0.74	0.23	0.42	0.32	0.25	0.48	<0.2	<0.2	0.25	0.74	0.23	0.42	0.32	0.25	0.48
o-Xylene	<0.2	<0.2	<0.2	0.23	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.23	<0.2	<0.2	<0.2	<0.2	<0.2
Styrene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cumene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
a-Pinene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1,2,2-Tetrchloroethane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
n-Decane	0.29	0.33	<0.2	<0.2	<0.2	0.37	0.22	<0.2	0.27	0.29	0.33	<0.2	<0.2	<0.2	0.37	0.22	<0.2	0.27
1,3,5-Trimethylbenzene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,4-Trimethylbenzene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Pentachloroethane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
d-Limonene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p-Cymene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3-Dichlorobenzene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,4-Dichlorobenzene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Hexachloroethane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,4-Trichlorobenzene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Table A-8: October 2012 Volatile Organic Compound Passive Results

October 2012 Volatile Organic Compound Passive Results (µg/m^3)																		
Sample I.D.	NW (Background)	SE (Background)	U of R	MOE Warehouse	Argyle school	Riffel High	O'Neil High	St. Francis	St. Gregory	Judge Bryant	St. Michael	Holy Rosary	Harbour landing	St. Grabriel	Dr. Perry	Miller High	Grand Rd	W.F. Ready
Dichloromethane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Hexane	<0.2	0.22	0.23	0.48	0.24	0.23	0.25	0.21	0.31	0.37	0.31	0.22	0.22	0.29	0.24	0.27	0.23	0.35
Chloroform	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2-Dichloroethane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzene	<0.2	<0.2	<0.2	0.36	<0.2	0.27	0.24	0.20	0.21	0.28	0.28	<0.2	<0.2	0.20	0.20	0.23	0.20	0.25
Trichloroethylene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	0.21	<0.2	0.22	2.36	0.30	0.54	0.51	0.37	0.49	0.57	0.79	0.33	0.63	0.30	0.24	0.40	0.28	0.36
Tetrachloroethylene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	<0.2	<0.2	<0.2	0.33	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
(m+p)-Xylene	<0.2	<0.2	<0.2	1.18	0.22	0.45	0.45	0.28	0.43	0.45	0.66	0.25	<0.2	0.22	<0.2	0.27	0.21	0.28
o-Xylene	<0.2	<0.2	<0.2	0.30	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Styrene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cumene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
a-Pinene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,1,2,2-Tetrchloroethane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
n-Decane	0.21	<0.2	<0.2	<0.2	<0.2	0.37	0.40	0.39	0.37	<0.2	0.53	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3,5-Trimethylbenzene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,4-Trimethylbenzene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Pentachloroethane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
d-Limonene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p-Cymene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,3-Dichlorobenzene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,4-Dichlorobenzene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Hexachloroethane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,4-Trichlorobenzene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Table A-9: November 2012 Volatile Organic Compound Passive Results

November 2012 Volatile Organic Compound Passive Results (µg/m³)																		
Sample I.D.	NW (Background)	SE (Background)	U of R	MOE Warehouse	Argyle school	Riffel High	O'Neil High	St. Francis	St. Gregory	Judge Bryant	St. Michael	Holy Rosary	Harbour landing	St. Grabriel	Dr. Perry	Miller High	Grand Rd	W.F. Ready
Dichloromethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Hexane	0.37	0.43	0.42	0.48	0.41	0.46	0.41	0.37	0.41	0.45	0.39	0.38	0.47	0.57	0.30	0.29	0.26	0.35
Chloroform	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Benzene	0.24	0.22	0.26	0.38	0.28	0.39	0.31	0.29	0.28	0.34	0.33	0.28	0.27	0.33	< 0.2	0.21	< 0.2	0.22
Trichloroethylene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	0.45	< 0.2	< 0.2	< 0.2	< 0.2
Toluene	0.30	< 0.2	0.26	1.22	0.37	0.57	0.53	0.43	0.49	0.49	0.79	0.40	0.34	0.82	0.26	0.33	0.25	0.34
Tetrachloroethylene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Ethylbenzene	< 0.2	< 0.2	< 0.2	0.20	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
(m+p)-Xylene	< 0.2	< 0.2	< 0.2	0.60	0.23	0.35	0.32	0.25	0.35	0.34	0.56	0.23	< 0.2	0.33	< 0.2	0.20	< 0.2	0.22
o-Xylene	< 0.2	< 0.2	< 0.2	0.20	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Styrene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Cumene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
a-Pinene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,1,2,2-Tetrchloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
n-Decane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,3,5-Trimethylbenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2,4-Trimethylbenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Pentachloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
d-Limonene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
p-Cymene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,3-Dichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,4-Dichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Hexachloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2,4-Trichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Naphthalene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2

Table A-10: December 2012 Volatile Organic Compound Passive Results

December 2012 Volatile Organic Compound Passive Results (µg/m³)																		
Sample I.D.	NW (Background)	SE (Background)	U of R	MOE Warehouse	Argyle school	Riffel High	O'Neil High	St. Francis	St. Gregory	Judge Bryant	St. Michael	Holy Rosary	Harbour landing	St. Grabriel	Dr. Perry	Miller High	Grand Rd	W.F. Ready
Dichloromethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Hexane	0.57	0.45	0.46	0.69	0.50	0.51	0.52	0.46	0.62	0.59	0.60	0.50	0.47	0.49	0.50	0.48	0.44	0.48
Chloroform	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Benzene	0.46	0.30	0.41	0.66	0.47	0.52	0.52	0.45	0.50	0.53	0.59	0.47	0.37	0.42	0.45	0.44	0.45	0.42
Trichloroethylene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Toluene	0.53	0.27	0.38	1.65	0.55	0.91	0.82	0.57	0.84	0.80	1.24	0.58	0.52	0.68	0.48	0.60	0.53	0.57
Tetrachloroethylene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Ethylbenzene	< 0.2	< 0.2	< 0.2	0.30	< 0.2	0.20	< 0.2	< 0.2	0.21	< 0.2	0.29	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
(m+p)-Xylene	0.29	< 0.2	< 0.2	0.91	0.35	0.58	0.49	0.35	0.62	0.54	0.87	0.35	0.22	0.28	0.26	0.35	0.34	0.34
o-Xylene	< 0.2	< 0.2	< 0.2	0.32	< 0.2	0.21	< 0.2	< 0.2	0.22	< 0.2	0.27	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Styrene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Cumene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
a-Pinene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,1,2,2-Tetrchloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
n-Decane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,3,5-Trimethylbenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2,4-Trimethylbenzene	< 0.2	< 0.2	< 0.2	0.21	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Pentachloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
d-Limonene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
p-Cymene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,3-Dichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,4-Dichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Hexachloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2,4-Trichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Naphthalene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2

Table A-11: January 2013 Volatile Organic Compound Passive Results

January 2013 Volatile Organic Compound Passive Results (µg/m³)																		
Sample I.D.	NW (Background)	SE (Background)	U of R	MOE Warehouse	Argyle school	Riffel High	O'Neil High	St. Francis	St. Gregory	Judge Bryant	St. Michael	Holy Rosary	Harbour landing	St. Grabriel	Dr. Perry	Miller High	Grand Rd	W.F. Ready
Dichloromethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Hexane	0.60	0.58	0.55	0.82	0.56	0.60	0.62	0.56	0.74	0.53	0.62	0.50	0.42	0.45	0.46	0.46	0.52	0.44
Chloroform	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Benzene	0.44	0.36	0.43	0.67	0.48	0.54	0.53	0.47	0.54	0.53	0.65	0.53	0.46	0.48	0.47	0.48	0.52	0.54
Trichloroethylene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Toluene	0.44	0.25	0.35	1.56	0.48	0.76	0.71	0.53	0.83	0.80	1.31	0.61	0.48	0.59	0.43	0.54	0.48	0.55
Tetrachloroethylene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Ethylbenzene	< 0.2	< 0.2	< 0.2	0.34	< 0.2	0.22	< 0.2	< 0.2	0.24	<0.2	0.21	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
(m+p)-Xylene	0.29	< 0.2	< 0.2	0.82	0.31	0.50	0.43	0.32	0.55	0.54	0.70	0.23	0.22	0.25	0.22	0.29	0.30	0.32
o-Xylene	< 0.2	< 0.2	< 0.2	0.29	< 0.2	0.21	< 0.2	< 0.2	0.22	<0.2	0.27	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Styrene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Cumene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
a-Pinene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,1,2,2-Tetrchloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
n-Decane	< 0.2	0.23	0.25	0.26	< 0.2	< 0.2	0.21	0.21	0.22	<0.2	0.23	0.22	0.21	0.26	0.20	< 0.2	< 0.2	< 0.2
1,3,5-Trimethylbenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2,4-Trimethylbenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Pentachloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
d-Limonene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
p-Cymene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,3-Dichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,4-Dichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Hexachloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2,4-Trichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Naphthalene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2

Table A-12: February 2013 Volatile Organic Compound Passive Results

February 2013 Volatile Organic Compound Passive Results ($\mu g/m^3$)																		
Sample I.D.	NW (Background)	SE (Background)	U of R	MOE Warehouse	Argyle school	Riffel High	O'Neil High	St. Francis	St. Gregory	Judge Bryant	St. Michael	Holy Rosary	Harbour landing	St. Grabriel	Dr. Perry	Miller High	Grand Rd	W.F. Ready
Dichloromethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Hexane	0.63	0.70	0.65	0.95	0.63	0.69	0.71	0.66	0.86	0.86	0.88	0.75	0.68	0.74	0.70	0.72	0.70	0.81
Chloroform	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Benzene	0.42	0.42	0.45	0.67	0.49	0.57	0.54	0.49	0.57	0.63	0.65	0.53	0.46	0.48	0.47	0.48	0.52	0.54
Trichloroethylene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Toluene	0.35	0.23	0.32	1.48	0.41	0.66	0.64	0.48	0.80	0.73	1.37	0.64	0.45	0.49	0.37	0.49	0.42	0.52
Tetrachloroethylene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Ethylbenzene	< 0.2	< 0.2	< 0.2	0.24	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
(m+p)-Xylene	< 0.2	< 0.2	< 0.2	0.73	0.21	0.41	0.36	0.26	0.49	0.46	0.57	0.31	< 0.2	0.21	< 0.2	0.23	0.22	0.27
o-Xylene	< 0.2	< 0.2	< 0.2	0.25	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Styrene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Cumene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
a-Pinene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,1,2,2-Tetrchloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
n-Decane	< 0.2	0.23	0.25	0.26	< 0.2	< 0.2	0.21	0.21	0.31	0.22	0.28	0.23	0.26	0.24	0.20	< 0.2	< 0.2	0.25
1,3,5-Trimethylbenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2,4-Trimethylbenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Pentachloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
d-Limonene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
p-Cymene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,3-Dichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,4-Dichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Hexachloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2,4-Trichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Naphthalene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2

Table A-13: March 2013 Volatile Organic Compound Passive Results

March 2013 Volatile Organic Compound Passive Results ($\mu g/m^3$)																		
Sample I.D.	NW (Background)	SE (Background)	U of R	MOE Warehouse	Argyle school	Riffel High	O'Neil High	St. Francis	St. Gregory	Judge Bryant	St. Michael	Holy Rosary	Harbour landing	St. Grabriel	Dr. Perry	Miller High	Grand Rd	W.F. Ready
Dichloromethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Hexane	0.50	0.57	0.58	0.85	0.59	0.59	0.57	0.55	0.74	0.75	0.66	0.59	0.58	0.67	0.56	0.62	0.61	0.63
Chloroform	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Benzene	0.36	0.32	0.39	0.56	0.37	0.48	0.41	0.39	0.42	0.46	0.49	0.37	0.33	0.40	0.34	0.38	0.41	0.39
Trichloroethylene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Toluene	0.27	< 0.2	0.25	1.32	0.33	0.56	0.54	0.41	0.51	0.55	1.34	0.37	0.40	0.39	0.29	0.39	0.32	0.38
Tetrachloroethylene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Ethylbenzene	< 0.2	< 0.2	< 0.2	0.23	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
(m+p)-Xylene	< 0.2	< 0.2	< 0.2	0.73	< 0.2	0.37	0.34	0.25	0.41	0.38	0.51	0.22	< 0.2	< 0.2	< 0.2	0.22	0.22	0.21
o-Xylene	< 0.2	< 0.2	< 0.2	0.25	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Styrene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Cumene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
a-Pinene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,1,2,2-Tetrchloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
n-Decane	< 0.2	0.25	< 0.2	< 0.2	0.24	< 0.2	0.21	0.22	< 0.2	0.21	0.22	0.25	< 0.2	0.25	0.22	0.24	< 0.2	0.21
1,3,5-Trimethylbenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2,4-Trimethylbenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Pentachloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
d-Limonene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
p-Cymene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,3-Dichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,4-Dichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Hexachloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2,4-Trichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Naphthalene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2

Table A-14: May 2013 Volatile Organic Compound Passive Results

May 2013 Volatile Organic Compound Passive Results (µg/m³)																		
Sample I.D.	NW (Background)	SE (Background)	U of R	MOE Warehouse	Argyle school	Riffel High	O'Neil High	St. Francis	St. Gregory	Judge Bryant	St. Michael	Holy Rosary	Harbour landing	St. Grabriel	Dr. Perry	Miller High	Grand Rd	W.F. Ready
Dichloromethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Hexane	0.54	0.36	0.50	1.20	0.55	0.46	0.46	0.44	0.64	0.67	0.59	0.56	0.54	0.61	0.38	0.72	0.51	0.60
Chloroform	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Benzene	0.45	0.30	0.32	0.91	0.43	0.52	0.44	0.33	0.45	0.35	0.61	0.32	0.42	0.27	0.22	0.29	0.32	0.56
Trichloroethylene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Toluene	0.38	0.21	0.37	3.16	0.50	0.63	0.65	0.48	0.78	0.74	1.39	0.61	0.87	0.75	0.46	0.93	0.42	0.45
Tetrachloroethylene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Ethylbenzene	< 0.2	< 0.2	< 0.2	0.41	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
(m+p)-Xylene	0.21	< 0.2	< 0.2	1.41	0.21	0.43	0.30	0.28	0.45	0.28	0.61	0.20	< 0.2	0.23	< 0.2	0.27	0.24	0.25
o-Xylene	< 0.2	< 0.2	< 0.2	0.47	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Styrene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Cumene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
a-Pinene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,1,2,2-Tetrchloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
n-Decane	0.62	1.98	0.62	0.99	0.79	0.50	0.51	0.44	0.95	1.01	1.48	0.46	2.18	1.20	1.04	0.63	1.61	0.88
1,3,5-Trimethylbenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2,4-Trimethylbenzene	< 0.2	< 0.2	< 0.2	0.27	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Pentachloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
d-Limonene	< 0.2	< 0.2	< 0.2	0.20	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
p-Cymene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,3-Dichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,4-Dichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Hexachloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2,4-Trichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Naphthalene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2

Table A-15: June 2013 Volatile Organic Compound Passive Results

June 2013 Volatile Organic Compound Passive Results ($\mu g/m^3$)																		
Sample I.D.	NW (Background)	SE (Background)	U of R	MOE Warehouse	Argyle school	Riffel High	O'Neil High	St. Francis	St. Gregory	Judge Bryant	St. Michael	Holy Rosary	Harbour landing	St. Grabriel	Dr. Perry	Miller High	Grand Rd	W.F. Ready
Dichloromethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Hexane	< 0.2	< 0.2	0.25	1.05	0.30	0.37		0.32	0.82	0.29	0.42	0.44	0.23	0.30	0.35	0.31	0.25	0.26
Chloroform	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Benzene	< 0.2	0.32	0.22	0.69	0.30	0.34		0.31	0.48	0.35	0.36	0.39	0.24	0.32	0.30	0.28	0.25	0.36
Trichloroethylene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Toluene	0.31	0.26	0.39	3.19	0.56	0.86		0.67	0.97	1.01	0.62	0.88	0.80	0.71	0.72	0.89	0.47	0.42
Tetrachloroethylene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Ethylbenzene	< 0.2	< 0.2	< 0.2	0.39	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
(m+p)-Xylene	< 0.2	< 0.2	0.21	1.33	0.34	0.56		0.32	0.60	0.57	0.37	0.29	0.23	0.25	0.33	0.37	0.33	0.32
o-Xylene	< 0.2	< 0.2	< 0.2	0.45	< 0.2	< 0.2		< 0.2	0.20	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Styrene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Cumene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
a-Pinene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,1,2,2-Tetrchloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
n-Decane	0.45	0.38	0.34	0.38	0.36	0.89		0.36	0.37	0.42	0.23	0.37	0.40	0.31	0.32	0.53	0.36	0.37
1,3,5-Trimethylbenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2,4-Trimethylbenzene	< 0.2	< 0.2	< 0.2	0.25	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Pentachloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
d-Limonene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
p-Cymene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,3-Dichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,4-Dichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Hexachloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2,4-Trichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Naphthalene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2

Table A-16: July 2013 Volatile Organic Compound Passive Results

July 2013 Volatile Organic Compound Passive Results (µg/m³)																		
Sample I.D.	NW (Background)	SE (Background)	U of R	MOE Warehouse	Argyle school	Riffel High	O'Neil High	St. Francis	St. Gregory	Judge Bryant	St. Michael	Holy Rosary	Harbour landing	St. Grabriel	Dr. Perry	Miller High	Grand Rd	W.F. Ready
Dichloromethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2
Hexane	0.21	0.23	0.23	0.59	0.26	0.34		0.25	0.38	0.45	0.29	0.35	0.29	0.27	0.32		0.27	0.31
Chloroform	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2
1,2-Dichloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2
Benzene	0.26	0.27	0.31	0.68	0.40	0.36		0.35	0.44	0.54	0.42	0.30	0.36	0.35	0.40		0.45	0.38
Trichloroethylene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2
Toluene	0.26	0.24	0.36	2.87	0.50	0.60		0.50	0.81	1.29	0.53	0.77	0.40	0.43	0.71		0.48	0.46
Tetrachloroethylene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2
Ethylbenzene	< 0.2	< 0.2	< 0.2	0.34	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2
(m+p)-Xylene	< 0.2	< 0.2	< 0.2	1.11	0.26	0.36		0.25	0.46	0.53	0.27	< 0.2	< 0.2	< 0.2	0.30		0.28	0.25
o-Xylene	< 0.2	< 0.2	< 0.2	0.34	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2
Styrene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2
Cumene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2
a-Pinene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2
1,1,2,2-Tetrchloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2
n-Decane	0.45	0.49	0.33	0.41	0.40	0.45		0.21	0.37	0.44	0.42	0.48	0.21	0.38	0.41		0.45	0.51
1,3,5-Trimethylbenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2
1,2,4-Trimethylbenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2
Pentachloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2
d-Limonene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2
p-Cymene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2
1,3-Dichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2
1,4-Dichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2
Hexachloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2
1,2,4-Trichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2
Naphthalene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2

Table A-17: August 2013 Volatile Organic Compound Passive Results

August 2013 Volatile Organic Compound Passive Results (µg/m³)																	
Sample I.D.	NW (Background)	SE (Background)	U of R	MOE Warehouse	Argyle school	Riffel High	O'Neil High	St. Francis	St. Gregory	Judge Bryant	St. Michael	Holy Rosary	Harbour landing	St. Grabriel	Dr. Perry	Miller High	Grand Rd	W.F. Ready
Dichloromethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2
Hexane	0.30	0.24	0.28	1.77	0.38	0.48		0.73	0.47	0.43	0.79	0.41	0.49	0.34	0.34	0.46		0.39
Chloroform	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2
1,2-Dichloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2
Benzene	0.25	< 0.2	0.21	1.05	0.29	0.35		0.39	0.41	0.35	0.53	0.32	0.24	0.25	0.26	0.31		0.29
Trichloroethylene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2
Toluene	0.34	0.27	0.49	3.42	0.85	0.78		0.90	0.98	0.84	1.78	0.79	0.99	0.53	0.52	1.20		0.67
Tetrachloroethylene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2
Ethylbenzene	< 0.2	< 0.2	< 0.2	0.43	< 0.2	< 0.2		0.24	0.22	< 0.2	0.31	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2
(m+p)-Xylene	0.29	< 0.2	0.29	1.47	0.55	0.61		0.78	0.70	0.56	1.00	0.51	0.32	0.30	0.31	0.52		0.47
o-Xylene	< 0.2	< 0.2	< 0.2	0.49	< 0.2	0.22		0.26	0.24	< 0.2	0.33	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2
Styrene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2
Cumene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2
a-Pinene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2
1,1,2,2-Tetrchloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2
n-Decane	0.74	1.09	0.68	1.40	0.81	0.71		1.40	1.12	0.76	1.04	0.72	0.80	0.99	0.70	1.43		0.59
1,3,5-Trimethylbenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2
1,2,4-Trimethylbenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2
Pentachloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2
d-Limonene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2
p-Cymene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2
1,3-Dichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2
1,4-Dichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2
Hexachloroethane	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2
1,2,4-Trichlorobenzene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2
Naphthalene	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2

APPENDIX B: Continuous Monitoring Results

Table B-1: Continuous Monitoring Results

Continuous Monitoring Results (July 2012 through August 2013)																					
Pollutant	Al Richie Arena			Jack Staples Arena			Litzenburger Park			Sandra Schmirler Center			Optimist Arena			CRC Glenncarin			Regina NAPS Station		
	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max
NO_2 (ppb)	0.0	7.6	40.7	1.0	9.2	48.0	0.0	1.8	28.4	0.0	7.7	41.0	0.0	9.5	50.5				0.0	8.9	67.0
SO_2 (ppb)	0.0	0.7	5.9	0.0	0.4	15.3	0.0	0.4	10.0	0.0	0.2	8.9	0.0	1.5	13.6	0.0	0.1	15.0	0.0	0.1	11.0
O_3 (ppb)	1.0	24.8	53.9	0.0	21.9	54.8	3.4	28.6	48.9	0.0	18.1	56.9	0.7	23.9	52.2				0.0	20.8	58.0
H_2S (ppb)	0.0	1.2	39.7	0.0	1.6	22.7	0.8	2.0	36.6	0.3	1.4	9.0	0.0	1.5	13.6	0.0	0.5	19.0			
$PM_{2.5}$ ($\mu g/m^3$)	0.0	11.0	93.0	0.3	7.5	41.2	1.8	10.4	30.9	0.8	8.2	36.2	0.6	8.5	44.8				0.0	7.0	81.0

Table B-2: Summa Canister Results of VOCs

Summa Canister Results of VOCs (July 2012 through August 2013)																		
Pollutant ($\mu g/m^3$)	Al Ritchie Arena			Jack Staples Arena			Litzenberger Park			Sandra Schmirler Center			Optimist Arena			Regina NAPS Station		
	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max
Ethane	3.33	5.42	7.67	3.34	4.78	6.23	3.11	3.11	3.11	2.96	5.99	11.92	2.96	3.87	5.11	1.62	14.30	124.97
Ethylene	0.87	1.20	1.75	0.79	3.51	6.23	1.77	1.77	1.77	0.76	1.27	2.05	0.76	1.39	2.44	0.14	1.72	6.23
Acetylene	0.36	0.70	1.31	0.39	3.50	6.62	1.63	1.63	1.63	0.50	0.83	1.45	0.45	0.98	1.95	0.14	1.52	11.36
Propylene	0.23	0.26	0.31	0.25	0.40	0.55	0.24	0.24	0.24	0.24	0.37	0.58	0.24	0.37	0.57	0.06	0.39	1.59
Propane	2.44	3.63	5.67	3.71	6.12	8.53	9.14	9.14	9.14	2.29	5.68	11.77	2.57	3.05	3.61	0.91	11.36	71.98
1-Propyne	0.04	0.05	0.05	0.04	0.11	0.18	0.03	0.03	0.03	0.03	0.06	0.10	0.03	0.07	0.11	0.01	0.07	0.43
Isobutane	0.97	1.35	1.93	3.73	4.67	5.60	2.67	2.67	2.67	0.94	1.46	2.39	0.94	2.00	2.98	0.14	3.19	13.77
1-Butene/Isobutene	0.19	0.20	0.21	0.23	0.34	0.44	0.18	0.18	0.18	0.15	0.21	0.30	0.15	0.29	0.40	0.08	0.28	0.84
1,3-Butadiene	0.03	0.05	0.06	0.03	0.09	0.14	0.04	0.04	0.04	0.04	0.07	0.12	0.04	0.07	0.13	0.00	0.08	0.43
Butane	1.08	1.99	2.93	3.87	4.33	4.79	5.30	5.30	5.30	1.73	3.19	6.00	1.73	2.44	3.03	0.30	5.89	37.78
trans-2-Butene	0.03	0.05	0.06	0.07	0.13	0.19	0.04	0.04	0.04	0.04	0.05	0.07	0.04	0.11	0.18	0.00	0.08	0.38
2,2-Dimethylpropane	0.01	0.01	0.01	0.02	0.02	0.03	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.03	0.09
1-Butyne	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
cis-2-Butene	0.03	0.04	0.04	0.06	0.10	0.15	0.03	0.03	0.03	0.03	0.04	0.05	0.03	0.08	0.13	0.00	0.06	0.33
Isopentane	1.16	2.31	3.87	2.97	3.78	4.60	5.39	5.39	5.39	1.70	2.29	2.75	2.41	3.33	4.44	0.14	4.96	55.51
1-Pentene	0.04	0.04	0.05	0.05	0.07	0.09	0.04	0.04	0.04	0.03	0.04	0.05	0.03	0.06	0.08	0.02	0.06	0.18
2-Methyl-1-Pentene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-Methyl-1-butene	0.04	0.05	0.06	0.06	0.10	0.14	0.04	0.04	0.04	0.04	0.04	0.05	0.04	0.08	0.10	0.01	0.08	0.40
3-Methyl-1-butene	0.01	0.01	0.02	0.02	0.03	0.04	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.03	0.00	0.02	0.08
Pentane	0.87	1.67	2.56	2.59	2.76	2.93	5.03	5.03	5.03	1.00	1.47	2.29	1.11	1.84	2.55	0.14	6.27	144.06
Isoprene	0.13	0.52	0.83	0.45	0.49	0.53	0.37	0.37	0.37	0.02	0.06	0.10	0.02	0.48	0.80	0.01	0.30	1.07
trans-2-Pentene	0.04	0.06	0.09	0.07	0.12	0.17	0.04	0.04	0.04	0.05	0.06	0.06	0.05	0.12	0.17	0.00	0.10	0.62
cis-2-Pentene	0.02	0.03	0.04	0.04	0.06	0.09	0.02	0.02	0.02	0.02	0.03	0.03	0.02	0.05	0.07	0.00	0.05	0.29
2-Methyl-2-butene	0.04	0.07	0.11	0.07	0.13	0.19	0.05	0.05	0.05	0.05	0.07	0.08	0.05	0.12	0.16	0.00	0.12	0.89
2,2-Dimethylbutane	0.03	0.03	0.03	0.05	0.06	0.08	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.06	0.01	0.04	0.08
Cyclopentene	0.01	0.01	0.02	0.01	0.02	0.03	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.00	0.02	0.11
4-Methyl-1-pentene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
3-Methyl-1-pentene	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.03
Cyclopentane	0.07	0.10	0.12	0.27	0.28	0.29	0.15	0.15	0.15	0.08	0.11	0.14	0.08	0.14	0.18	0.01	0.20	0.81
2,3-Dimethylbutane	0.05	0.06	0.09	0.10	0.13	0.17	0.07	0.07	0.07	0.07	0.07	0.08	0.07	0.10	0.12	0.01	0.11	0.41

Pollutant ($\mu g/m^3$)	Al Ritchie Arena			Jack Staples Arena			Litzenberger Park			Sandra Schmirler Center			Optimist Arena			Regina NAPS Station		
	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max
trans-4-Methyl-2-pentene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
2-Methylpentane	0.24	0.42	0.61	0.68	0.80	0.92	0.59	0.59	0.59	0.35	0.47	0.60	0.35	0.58	0.71	0.04	0.73	2.69
cis-4-Methyl-2-pentene	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.10
3-Methylpentane	0.19	0.31	0.43	0.55	0.58	0.61	0.40	0.40	0.40	0.22	0.31	0.45	0.22	0.41	0.51	0.03	0.48	1.65
1-Hexene	0.03	0.04	0.05	0.03	0.06	0.08	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.05	0.07	0.01	0.05	0.21
Hexane	0.26	0.46	0.68	0.80	0.89	0.99	0.83	0.83	0.83	0.29	0.54	0.92	0.29	0.60	0.75	0.04	0.75	3.06
trans-2-Hexene	0.00	0.01	0.03	0.00	0.02	0.03	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.03	0.03	0.00	0.02	0.23
2-methyl-2-Pentene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-Ethyl-1-Butene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
trans-3-Methyl-2-pentene	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.12
cis-2-Hexene	0.00	0.01	0.03	0.00	0.01	0.03	0.00	0.00	0.00	0.01	0.02	0.02	0.00	0.00	0.01	0.00	0.02	0.26
cis-3-Methyl-2-pentene	0.00	0.01	0.03	0.00	0.01	0.03	0.01	0.01	0.01	0.01	0.02	0.02	0.00	0.00	0.01	0.00	0.02	0.26
2,2-Dimethylpentane	0.01	0.02	0.02	0.03	0.03	0.04	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.00	0.02	0.04
Methylcyclopentane	0.17	0.28	0.36	0.50	0.50	0.50	0.38	0.38	0.38	0.21	0.29	0.42	0.21	0.36	0.46	0.02	0.46	1.79
2,4-Dimethylpentane	0.05	0.06	0.07	0.07	0.09	0.12	0.05	0.05	0.05	0.04	0.04	0.05	0.04	0.07	0.11	0.00	0.08	0.41
2,2,3-Trimethylbutane	0.01	0.02	0.02	0.04	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.01	0.04
1-Methylcyclopentene	0.01	0.02	0.03	0.01	0.02	0.03	0.01	0.01	0.01	0.01	0.02	0.03	0.01	0.02	0.03	0.00	0.03	0.34
Benzene	0.30	0.44	0.57	0.40	0.86	1.31	0.41	0.41	0.41	0.36	0.50	0.68	0.36	0.55	0.77	0.14	0.67	2.57
Cyclohexane	0.09	0.11	0.13	0.22	0.23	0.23	0.14	0.14	0.14	0.09	0.12	0.14	0.09	0.14	0.17	0.02	0.18	0.64
2-Methylhexane	0.12	0.19	0.23	0.19	0.26	0.33	0.14	0.14	0.14	0.13	0.16	0.19	0.13	0.20	0.26	0.01	0.27	1.46
2,3-Dimethylpentane	0.11	0.13	0.15	0.15	0.20	0.25	0.10	0.10	0.10	0.08	0.09	0.11	0.08	0.14	0.21	0.01	0.17	0.82
Cyclohexene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3-Methylhexane	0.14	0.22	0.27	0.24	0.32	0.40	0.17	0.17	0.17	0.14	0.18	0.22	0.14	0.22	0.29	0.01	0.32	1.55
1-Heptene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02
trans-3-Heptene	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.07
cis-3-Heptene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heptane	0.11	0.17	0.21	0.22	0.26	0.29	0.25	0.25	0.25	0.12	0.17	0.23	0.12	0.17	0.21	0.03	0.32	1.31
trans-2-Heptene	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.01	0.07
cis-2-Heptene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,2,4-Trimethylpentane	0.34	0.48	0.62	0.45	0.72	1.00	0.30	0.30	0.30	0.14	0.16	0.17	0.17	0.54	0.79	0.01	0.45	1.53

Pollutant (μg/m³)	Al Ritchie Arena			Jack Staples Arena			Litzenberger Park			Sandra Schmirler Center			Optimist Arena			Regina NAPS Station		
	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max
2,2-Dimethylhexane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Methylcyclohexane	0.06	0.09	0.12	0.14	0.15	0.15	0.12	0.12	0.12	0.08	0.12	0.15	0.11	0.12	0.13	0.02	0.20	0.70
2,5-Dimethylhexane	0.02	0.02	0.04	0.00	0.02	0.04	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.03	0.00	0.04	0.26
2,4-Dimethylhexane	0.02	0.03	0.03	0.03	0.04	0.04	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.04	0.00	0.05	0.28
2,3,4-Trimethylpentane	0.03	0.03	0.03	0.03	0.05	0.06	0.02	0.02	0.02	0.01	0.02	0.02	0.01	0.03	0.05	0.00	0.11	1.68
Toluene	1.37	1.51	1.63	2.01	3.15	4.28	0.77	0.77	0.77	0.48	1.08	1.82	0.48	1.32	1.87	0.07	1.82	6.15
2-Methylheptane	0.04	0.06	0.08	0.06	0.08	0.09	0.06	0.06	0.06	0.04	0.05	0.08	0.04	0.06	0.08	0.01	0.10	0.68
1-Methylcyclohexene	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.07
4-Methylheptane	0.01	0.02	0.03	0.02	0.03	0.03	0.02	0.02	0.02	0.01	0.02	0.03	0.01	0.02	0.03	0.00	0.04	0.24
3-Methylheptane	0.04	0.05	0.08	0.05	0.07	0.08	0.04	0.04	0.04	0.03	0.04	0.06	0.04	0.06	0.08	0.00	0.09	0.66
cis-1,3-Dimethylcyclohexane	0.02	0.03	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.02	0.03	0.04	0.03	0.04	0.05	0.01	0.07	0.29
trans-1,4-Dimethylcyclohexane	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.00	0.02	0.10
2,2,5-Trimethylhexane	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.06	1.03
1-Octene	0.01	0.02	0.02	0.03	0.03	0.03	0.02	0.02	0.02	0.01	0.01	0.02	0.01	0.01	0.02	0.00	0.02	0.10
Octane	0.06	0.07	0.09	0.10	0.10	0.11	0.07	0.07	0.07	0.04	0.05	0.07	0.04	0.07	0.09	0.02	0.12	0.51
trans-1,2-Dimethylcyclohexane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
trans-2-Octene	0.01	0.02	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.03	0.03	0.00	0.05	0.26
cis-1,4/t-1,3-Dimethylcyclohexane	0.01	0.01	0.02	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.00	0.03	0.14
cis-2-Octene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cis-1,2-Dimethylcyclohexane	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.00	0.02	0.06
Ethylbenzene	0.15	0.17	0.21	0.19	0.26	0.32	0.13	0.13	0.13	0.08	0.11	0.15	0.08	0.19	0.30	0.01	0.44	8.23
2,5-Dimethylheptane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
m and p-Xylene	0.43	0.51	0.61	0.53	0.76	1.00	0.35	0.35	0.35	0.22	0.33	0.46	0.22	0.60	0.98	0.02	0.77	4.43
4-Methyloctane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3-Methyloctane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Styrene	0.04	0.06	0.08	0.11	0.14	0.17	0.08	0.08	0.08	0.01	0.03	0.05	0.01	0.01	0.01	0.00	0.06	0.17
o-Xylene	0.15	0.17	0.19	0.00	0.16	0.32	0.12	0.12	0.12	0.07	0.11	0.16	0.07	0.20	0.32	0.00	0.25	1.44
1-Nonene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
Nonane	0.05	0.14	0.19	0.22	0.24	0.26	0.13	0.13	0.13	0.03	0.04	0.05	0.03	0.13	0.19	0.01	0.24	0.93
iso-Propylbenzene	0.01	0.03	0.04	0.03	0.03	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.00	0.05	0.62
3,6-Dimethyloctane	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.01	0.02	0.00	0.02	0.07
n-Propylbenzene	0.04	0.04	0.04	0.04	0.05	0.07	0.03	0.03	0.03	0.02	0.02	0.03	0.02	0.05	0.08	0.00	0.07	0.32
3-Ethyltoluene	0.11	0.11	0.11	0.12	0.16	0.20	0.08	0.08	0.08	0.04	0.08	0.12	0.04	0.15	0.25	0.01	0.20	1.16
4-Ethyltoluene	0.06	0.06	0.06	0.06	0.09	0.11	0.04	0.04	0.04	0.02	0.04	0.05	0.02	0.08	0.14	0.00	0.10	0.54
1,3,5-Trimethylbenzene	0.05	0.07	0.08	0.08	0.10	0.12	0.05	0.05	0.05	0.02	0.04	0.06	0.02	0.08	0.14	0.00	0.10	0.55

Pollutant ($\mu g/m^3$)	Al Ritchie Arena			Jack Staples Arena			Litzenberger Park			Sandra Schmirler Center			Optimist Arena			Regina NAPS Station		
	Min	**Mean**	**Max**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Max**
2-Ethyltoluene	0.04	0.05	0.05	0.05	0.07	0.08	0.04	0.04	0.04	0.02	0.03	0.04	0.02	0.06	0.10	0.00	0.08	0.38
1-Decene	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
tert-Butylbenzene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,2,4-Trimethylbenzene	0.16	0.20	0.22	0.22	0.30	0.37	0.15	0.15	0.15	0.05	0.12	0.19	0.05	0.24	0.43	0.01	0.32	1.84
Decane	0.08	0.29	0.41	0.48	0.49	0.51	0.30	0.30	0.30	0.04	0.06	0.08	0.04	0.25	0.36	0.01	0.47	2.03
iso-Butylbenzene	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.03
sec-Butylbenzene	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.06
1,2,3-Trimethylbenzene	0.04	0.06	0.07	0.07	0.09	0.11	0.04	0.04	0.04	0.01	0.03	0.05	0.01	0.06	0.10	0.00	0.08	0.36
p-Cymene	0.02	0.04	0.05	0.07	0.08	0.10	0.03	0.03	0.03	0.01	0.02	0.02	0.01	0.03	0.05	0.01	0.04	0.10
Indane	0.03	0.03	0.04	0.04	0.05	0.06	0.02	0.02	0.02	0.01	0.02	0.04	0.01	0.04	0.06	0.00	0.04	0.31
1-Undecene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.01	0.11
1,3-Diethylbenzene	0.01	0.01	0.02	0.02	0.02	0.03	0.01	0.01	0.01	0.00	0.01	0.02	0.00	0.02	0.03	0.00	0.02	0.13
1,4-Diethylbenzene	0.04	0.06	0.08	0.08	0.09	0.10	0.04	0.04	0.04	0.01	0.03	0.05	0.01	0.06	0.10	0.01	0.08	0.46
n-Butylbenzene	0.01	0.02	0.02	0.02	0.02	0.03	0.01	0.01	0.01	0.00	0.01	0.02	0.00	0.02	0.03	0.00	0.03	0.14
1,2-Diethylbenzene	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.03
Undecane	0.10	0.52	0.80	0.91	0.97	1.02	0.37	0.37	0.37	0.04	0.08	0.10	0.04	0.39	0.59	0.01	0.50	1.80
Naphthalene	0.17	1.01	1.45	1.56	1.71	1.86	0.37	0.37	0.37	0.03	0.19	0.33	0.03	0.97	1.51	0.00	0.62	1.86
Dodecane	0.09	0.40	0.59	0.57	0.63	0.69	0.19	0.19	0.19	0.03	0.06	0.09	0.03	0.31	0.46	0.02	0.24	0.76
Hexylbenzene	0.01	0.03	0.04	0.04	0.04	0.05	0.01	0.01	0.01	0.00	0.01	0.02	0.00	0.03	0.04	0.00	0.02	0.05
MTBE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
a-Pinene	0.14	0.44	0.59	0.82	0.88	0.94	0.33	0.33	0.33	0.01	0.05	0.09	0.01	0.37	0.56	0.01	0.27	0.94
b-Pinene	0.02	0.05	0.07	0.09	0.11	0.13	0.05	0.05	0.05	0.00	0.02	0.05	0.00	0.04	0.06	0.00	0.04	0.13
d-Limonene	0.03	0.21	0.30	0.43	0.60	0.77	0.11	0.11	0.11	0.00	0.06	0.14	0.00	0.26	0.45	0.00	0.22	1.28
Camphene	0.02	0.04	0.04	0.05	0.05	0.05	0.02	0.02	0.02	0.02	0.03	0.05	0.02	0.03	0.05	0.00	0.04	0.10
Freon22	0.62	0.74	0.80	0.81	1.07	1.33	0.75	0.75	0.75	0.71	0.72	0.74	0.71	0.83	0.93	0.62	0.78	1.33
Chloromethane	0.98	1.02	1.07	1.13	1.15	1.16	1.06	1.06	1.06	0.95	1.03	1.09	1.07	1.08	1.09	0.94	1.04	1.16
Freon114	0.10	0.10	0.10	0.10	0.10	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.10	0.11	0.11	0.10	0.11	0.12
Freon113	0.52	0.54	0.57	0.55	0.55	0.55	0.60	0.60	0.60	0.58	0.59	0.60	0.56	0.57	0.60	0.52	0.58	0.63
Vinylchloride	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chloroethane	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.03
Freon11	1.27	1.51	1.65	1.70	1.70	1.70	1.54	1.54	1.54	1.57	1.62	1.65	1.48	1.60	1.68	1.27	1.56	1.80
Freon12	2.39	2.75	3.00	2.96	3.10	3.24	3.00	3.00	3.00	2.59	2.71	2.83	2.83	2.88	2.93	2.39	2.79	3.24
Ethylbromide	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
1,1-Dichloroethylene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bromomethane	0.05	0.06	0.07	0.05	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.05	0.05	0.06	0.08	0.04	0.05	0.11

Pollutant (µg/m³)	Al Ritchie Arena			Jack Staples Arena			Litzenberger Park			Sandra Schmirler Center			Optimist Arena			Regina NAPS Station		
	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max
Dichloromethane	0.18	0.23	0.26	0.38	0.43	0.48	0.20	0.20	0.20	0.22	0.25	0.30	0.21	0.24	0.28	0.17	0.30	0.80
trans-1,2-Dichloroethylene	0.01	0.03	0.04	0.01	0.02	0.02	0.02	0.02	0.02	0.00	0.00	0.01	0.00	0.01	0.03	0.00	0.01	0.04
1,1-Dichloroethane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cis-1,2-Dichloroethylene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bromochloromethane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chloroform	0.08	0.10	0.12	0.10	0.12	0.13	0.12	0.12	0.12	0.08	0.08	0.08	0.08	0.13	0.15	0.06	0.10	0.15
1,2-Dichloroethane	0.05	0.07	0.08	0.09	0.09	0.10	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.07	0.04	0.08	0.47
1,1,1-Trichloroethane	0.03	0.03	0.03	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04
Carbontetrachloride	0.46	0.52	0.56	0.58	0.59	0.60	0.53	0.53	0.53	0.52	0.53	0.55	0.49	0.53	0.57	0.46	0.52	0.60
Dibromomethane	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.03
1,2-Dichloropropane	0.01	0.01	0.01	0.00	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.03
Bromodichloromethane	0.01	0.01	0.01	0.01	0.02	0.03	0.02	0.02	0.02	0.00	0.00	0.01	0.00	0.01	0.02	0.00	0.01	0.03
Trichloroethylene	0.02	0.03	0.03	0.03	0.24	0.46	0.02	0.02	0.02	0.01	0.02	0.04	0.01	0.02	0.03	0.00	0.03	0.46
cis-1,3-Dichloropropene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
trans-1,3-Dichloropropene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,1,2-Trichloroethane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Bromotrichloromethane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dibromochloromethane	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.02
EDB	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tetrachloroethylene	0.49	0.89	1.29	0.35	5.68	11.01	6.40	6.40	6.40	0.04	3.36	9.96	0.04	0.69	1.54	0.01	2.08	11.01
Chlorobenzene	0.01	0.02	0.02	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.00	0.01	0.03
Benzylchloride	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Bromoform	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02
1,4-Dichlorobutane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,1,2,2-Tetrachloroethane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,3-Dichlorobenzene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
1,4-Dichlorobenzene	0.02	0.04	0.06	0.04	0.04	0.05	0.05	0.05	0.05	0.01	0.01	0.02	0.01	0.03	0.04	0.01	0.03	0.08
1,2-Dichlorobenzene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01
1,2,4-Trichlorobenzene	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.01	0.02
Hexachlorobutadiene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01