Canada

U.S. Department of Transportation
Federal Highway Administration

Ontario

MDOT
Michigan Department of Transportation

Canada-United States-Ontario-Michigan Border Transportation Partnership

Human Health Risk Assessment

Technical and Environmentally Preferred Alternative

31 March 2009

Canada-United States-Ontario-Michigan
Border Transportation Partnership

Human Health Risk Assessment for The Detroit River International Study

Prepared by:

SENES Consultants Limited

URS

MARCH 2009

PREFACE

The Detroit River International Crossing (DRIC) Environmental Assessment study was conducted by a partnership of the federal, state and provincial governments in Canada and the United States in accordance with the requirements of the Canadian Environmental Assessment Act (CEAA), the Ontario Environmental Assessment Act (OEAA), and the U.S. National Environmental Policy Act (NEPA). In 2005, the Canadian and U.S. Study Teams identified 15 potential river crossing locations and associated plaza and access road alternatives. The results of the assessment of these alternatives led to the identification of an Area of Continued Analysis (ACA). Within the ACA, practical alternatives were developed for the crossings, plazas and access road alternatives.

Through the analysis of the practical alternatives, and in conjunction with ongoing consultation efforts, a new alternative was developed that combined beneficial features of the original alternatives. The new alternative was identified as The Parkway in August 2007 and included 7 kilometres of below grade freeway, an optimized service road system, a green corridor with 10 tunnelled sections totalling 1.5 km in length, a grade separated recreational trail system, and extensive green areas.

Upon completion of the analysis of the practical alternatives, the alternatives were evaluated. The Partnership announced the results of the evaluation for the access road component in May 2008. Referred to as The Windsor-Essex Parkway, the Technically and Environmentally Preferred Alternative (TEPA) access road consisted of the major components of the Parkway with some refinements made to reflect additional community consultation and analysis. These refinements included an additional tunnel in the Spring Garden area, more green space and a refined trail network. The components of the Parkway for the international bridge crossing (Crossing X-10B) and Canadian plaza (Plaza B1) were announced in June 2008.

The remainder of 2008 focused on detailed analysis and identification of impacts and appropriate mitigation measures for the TEPA, along with further refinements. These measures were also documented in a draft version of the Ontario Environmental Assessment Report, which was made available to the public, agencies, municipalities, First Nations, and other interested parties for review in November 2008. This report summarizes the work undertaken in this regard specific to Human Health Risk Assessment. The risk assessment was focused on the operation of the Windsor-Essex Parkway and was carried out under the Federal EA process to address the requirement for evaluating human health. Additionally, input from the public indicated that their major concerns were related to potential health effects associated with the operation of the Parkway.

Additional reports and details are available at the study website (www.partnershipborderstudy.com)

EXECUTIVE SUMMARY

This document provides an overview of the human health risk assessment completed for the Technical and Environmentally Preferred Alternative (TEPA) as part of the Detroit River International Crossing (DRIC) Environmental Assessment. The risk assessment was focused on the operation of the Windsor Essex Parkway since the risk assessment was considered to be an extension of the AQIA to examine potential health effects associated with air quality. In addition, this assessment was carried out in response to the requirement of the federal (CEAA) process requirement to address human health effects. The preparation of a human health risk assessment is not a requirement of the Ontario EA process; however, the DRIC study team submitted the risk assessment to the Ministry of the Environment as part of the EA package for completeness.

Transboundary pollution is the driver of air quality in Windsor as has been recognized by the Ministry of the Environment (MOE) in their publication "*Preliminary Air Quality Assessment Related to Traffic Congestion at Windsor's Ambassador Bridge, 2004*", "*Transboundary Air Pollution in Ontario, 2005",* and the annual Air Quality in Ontario publications. The Preliminary Air Quality Assessment Related to Traffic Congestion at Windsor's Ambassador Bridge states:

"Transboundary air pollutants from the United States account for up to 50 per cent of smog in Southwestern Ontario. In Windsor, this value may be as high as 90 per cent."

Existing and Proposed Road Network

There are two existing road crossings of the Detroit River between Windsor and Detroit: the Ambassador Bridge and the Detroit-Windsor Tunnel. The Ambassador Bridge was opened in 1929 and connects the local road network in West Windsor with the U.S. interstate system in southwest Detroit, while the Detroit-Windsor Tunnel was opened in 1930 and connects downtown Windsor with downtown Detroit. The Ambassador Bridge and Detroit-Windsor Tunnel represent two of the busiest border crossings in North America. The existing terminus of Highway 401 is located approximately 11 km from the Ambassador Bridge. Vehicles destined for the Ambassador Bridge are currently directed onto the 4-lane Highway 3/Talbot Road, followed by the 6-lane Huron Church Road. There are 17 signalized intersections on Huron Church Road and Highway 3/Talbot Road between Highway 401 and the Ambassador Bridge.

The Windsor-Essex Parkway, which is the proposed roadway, consists generally of a six-lane urban freeway connecting the existing Highway 401 with the new inspection plaza, a four-lane service road connecting existing Highway 3 to existing Huron Church Road, and a landscaped parkland buffer to the right-of-way to provide a multi-use recreational trail system. Between the existing terminus of Highway 401 and the E.C. Row Expressway, The Windsor-Essex Parkway will be predominately below grade, and will include 11 tunnel sections totalling 1.8 km in length. The service road, with one- and two-way segments, will provide local communities with connections and

access to the freeway, and will replace the function of the existing Highway 3/Huron Church Road corridor. As noted above, The Windsor Essex Parkway will be built in the same general corridor as Highway 3 and a section of Huron Church Road up to the E.C. Row Expressway. At E.C. Row, the traffic will have the choice of going along the existing Huron Church Road to the Ambassador Bridge and current border crossing station, or of going along the Parkway until it connects with the new inspection station. This station is a bridge crossing north of the Brighton Beach Power Generation Station and is directly connected to the plaza located at the southern end of Sandwich Street, in the Brighton Beach Area.

Difference Between a Risk Assessment and a Health Study

Human health risk assessments are used to determine if a particular chemical poses a significant risk to human health. If it was possible to prevent humans from being exposed to chemicals then there would be no need to conduct a risk assessment. Since this is an impossible exercise, and exposure to many naturally occurring substances also pose health risks, risk assessments become an important tool in evaluating these risks.

Risk assessment helps scientists and regulators identify serious health hazards and determine ways to reduce exposure so that there is no significant health risk to the public. The term "human health risk assessment" is often misinterpreted because people think that a risk assessment will provide information as to whether an exposure to a chemical causes a current health problem or symptom that they are experiencing. Risk assessments do not provide this information; studies that look for these types of linkages are generally epidemiological studies. These studies generally include a survey of health problems in a community and provide a comparison of these health problems to other cities, communities or populations as a whole.

While both of these types of studies are important, health risk assessments and epidemiological studies have different objectives. Most epidemiologic studies examine whether past chemical exposures may be responsible for documented health problems in a specific group of people whereas human health risk assessments evaluate whether current or future chemical exposures will pose health risks to a broad population such as a city or a community. The scientific methods used in a human health risk assessment cannot be used to link individual illnesses to past exposures to chemicals; additionally, health risk assessments and epidemiological studies cannot prove that a specific chemical caused an individual's illness.

Regulatory bodies use risk assessments to determine drinking water guidelines, site clean-up criteria, and the safe use of pesticides, to name a few. Human health risk assessment uses both sound science and professional judgment and is a constantly developing process.

Health Canada has been carrying out a number of health studies in Windsor and Sarnia. One such health study in the Windsor area was related to mortality and cancer incidence for the period 1979-1999. The results suggest a potential risk for diseases associated with long-term air pollution exposure such as bronchitis,

emphysema, lung cancer and lung cancer incidence and mortality from circulatory diseases. These diseases were attributed to transborder air pollution but are preliminary in nature and further studies are underway to assess chronic cardiorespiratory outcomes in relation to air and traffic pollution.

Human Health Risk Assessment Process

The primary objective of this human health risk assessment was to help interpret the potential for overall adverse effect of the proposed Windsor-Essex Parkway as compared to the "No Build" scenario (i.e. the roadway in its current configuration), including potential adverse effects to people in the immediate area surrounding the proposed roadway. The human health risk assessment used the predicted concentrations for the Parkway that were provided in the Air Quality Impact Assessment. The Plaza and Crossing were not assessed in the human health risk assessment since it is located in an industrial area and because these areas are part of a federal undertaking. The anticipated timeline for this project is to begin construction in late 2009, with a target completion in the year 2013. Three horizon years (2015, 2025 and 2035) were evaluated in the risk assessment, which correspond to the horizon years used for the traffic modeling completed as part of the DRIC study. A 30-year planning horizon is considered standard for transportation planning studies, due to the uncertainty associated with traffic projections beyond 30 years.

The methods followed in this risk assessment concur with procedures outlined by regulatory agencies such as the Ontario Ministry of the Environment (MOE), Environment Canada, Health Canada, the Canadian Council of Ministers of the Environment (CCME) and the United States Environmental Protection Agency (U.S. EPA).

Potential chemicals considered in the Air Quality Impact Assessment and the risk assessment were gaseous air pollutants (carbon monoxide (CO), carbon dioxide (CO_2), ozone, nitrogen oxides (NO_2), and sulphur dioxide (SO_2)), fine particulate matter ($PM_{2.5}$, PM_{10}), volatile organic compounds (VOC) such as acrolein, acetaldehyde, benzene, toluene, xylenes propylene, formaldehyde and 1,3-butadiene, polycyclic aromatic hydrocarbons (PAHs) such as benzo(a)pyrene, naphthalene, acenaphthylene, acenaphthene,fluorine, phenanthrene, anthracene, fluoranthene, pyrene, benzo[*a*]anthracene, chrysene, benzo[*b,k*]fluoranthene, ideno[1,2,3-*c,d*]pyrene, dibenz[*a,h*]anthracene and benzo[*g,h,i*]perylene are associated with combustion of diesel fuels and chemicals associated with the degradation of breaks and tires such as asbestos and metals. A number of these chemicals were not considered further because they were associated with greenhouse effects, there was a lack of evidence linking health effects to exposures, emission factors were extremely low, there were low potential risks or there was no available information to quantify chemicals. The final list of chemicals of concern (COC) evaluated in both the Air Quality Impact Assessment and the human health risk assessment were gaseous air pollutants (nitrogen oxides (NO_2), and sulphur dioxide (SO_2)), fine particulate matter ($PM_{2.5}$), and volatile organic compounds (VOC) such as acrolein, acetaldehyde, benzene, formaldehyde and 1,3-butadiene. These chemicals are generally the list of chemicals considered in traffic related studies.

Human health risk assessment is divided into four different steps as provided in the various regulatory frameworks. They are:

- the problem formulation stage, in which the various COC, receptors, exposure pathways, and scenarios are identified;
- the exposure assessment, where predicted exposures are calculated for the various receptors and COC;
- the hazard assessment, in which exposure limits for the COC are determined; and
- the risk characterization stage, where the exposure and hazard assessment steps are integrated.

These steps were followed in the risk assessment.

Since the Parkway for the Detroit River International Crossing is currently in the design stage, it is not possible to directly measure emissions associated with the proposed roadway, their potential effect on the ground level air concentrations or possible health outcomes in the community. Therefore, various mathematical models for the prediction of emission rates were used (see Air Quality Impact Assessment Document) to determine the exposure to various human receptors considered to be representative of the community. The risk assessment included exposure through inhalation and ingestion of chemicals associated with vehicle emissions through direct deposition to vegetation, as well as deposition to soils and uptake by vegetation.

How the Analysis was Performed

The Human Health Risk Assessment involved a comparative evaluation between the technically and environmentally preferred alternative for the Detroit River International crossing, referred to as the Parkway, and the existing roadway conditions, known as the Future “No Build” scenario, as outlined in the Air Quality Impact Assessment. Background air quality (ambient air quality) was also considered within the assessment. The values for background air quality were obtained from monitoring stations within Windsor.

The possibility of short-term (1 hour, 8 hour, 24 hour) and long-term (annual) adverse human health outcomes were assessed based on exposures at the maximum concentration that would occur in different communities along the roadway. The use of the maximum predicted concentrations in each community covered the range of air concentrations that potentially could occur from vehicular traffic along the roadway. Cautious assumptions of exposure were used in the assessment to ensure that risks were not underestimated and this most likely resulted in an over-estimate of exposure. One example of a cautious assumption is that it was assumed that residents were exposed to vehicle emissions 24 hours a day, 7 days a week while outdoors over their entire lifetime of 75 years. Traffic congestion along the roadway due to incidents such as collisions, and unusual events such as 9/11, were not included in the traffic analysis due to the difficulty in predicting their frequency of

occurrence and therefore such incidents were not considered within the risk assessment.

The HHRA results were expressed as deterministic hazard quotients and cancer risk levels for long-term exposures, as well as hazard quotient values for both short-term and long-term exposures to gaseous air pollutants. In general, regulatory agencies such as Health Canada, the MOE and the U.S. EPA concur that a hazard quotient value below one (1) (for assessing gaseous air pollutants since the calculations are performed with the inclusion of background concentrations), a hazard quotient of 0.2 (for pathways assessment examining direct and indirect exposure from air pathways) and an incremental cancer risk level of one in a million (1×10^{-6}) are not considered significant and are legislated by the MOE. The use of an incremental risk limit of 1×10^{-6} as set out by the MOE is more stringent than the $1x10^{-5}$ incremental risk limit that is acceptable to Health Canada and the U.S. EPA.

Predicted Human Health Risks

Evaluation of Receptors along the Parkway

The short-term and long-term health risk associated with exposure to the gaseous air pollutants (SO_2 and NO_2) was assessed based on using a hazard quotient value of 1 since background exposures were taken into account. The results of the assessment showed that background concentrations which fluctuate on a daily basis make up more than 80% to 100% of the total exposures depending on the fluctuations. The results showed that:

- the emissions of sulphur dioxide (SO_2) arising from vehicles traveling along the roadway for the Future "No Build" and Parkway scenarios were indistinguishable from background levels. Therefore, short-term risks arising from exposure to SO_2 were no different than exposures to background and the Parkway does not result in any increased risk in comparison to the Future "No Build" scenario.

- In general, the short-term and long-term risks associated with exposure to NO_2 for the Parkway were lower than those for the Future "No Build" scenario posing less risk to residents in communities surrounding the Windsor-Essex Parkway. The Air Quality Impact Assessment attributes the lower NO_2 concentrations to less stopping and starting and idling on The Windsor-Essex Parkway.

There are no health based thresholds for Total Particulate Matter; the World Health organization has concluded that fine particulate matter ($PM_{2.5}$) is more hazardous to health than are coarser particles. Fine particulate matter ($PM_{2.5}$) background concentrations in the Windsor area are relatively high and are above health-based threshold values. The exposure to $PM_{2.5}$ from predicted background concentrations accounts for a significant portion of the hazard quotient for both the Future "No Build" and Parkway scenarios. In general, the Parkway scenario results in lower hazard quotients than the Future "No Build" scenario. Thus, the results of the risk assessment associated with $PM_{2.5}$ demonstrate that, in general, risks are lower for

the Parkway than the Future "No Build" scenario posing less risk to residents in surrounding communities.

The incremental cancer risk values (predicted exposure dose x chronic toxicity reference value) for long-term exposure to carcinogenic VOCs were above the regulatory risk level of one-in-a-million (1×10^{-6}). However, the incremental risks for the Parkway were insignificant as compared to the risks associated with background exposure.

Hazard quotients for the non-carcinogenic effects of VOCs (predicted exposure dose ÷ chronic toxicity reference value) for background, Future "No Build" and the Parkway scenarios were below 0.2 for benzene and 1,3-butadiene. Hazard quotients for acrolein, acetaldehyde and formaldehyde were all above 0.2 for background, Future "No Build" and the Parkway scenarios. However, the hazard quotients for the Parkway were no different than those associated with background exposure.

Evaluation of Receptors within the Greenspaces, within the Right-of Way

The receptor locations that were selected for this analysis represent tunnel locations along the Windsor Essex Parkway, with greenspaces overhead. Results have only been calculated for the maximum exposure year of 2035. As expected, the concentrations within these green spaces are higher than concentrations in the residential receptor locations due to the proximity to traffic; however, background concentrations still account for a substantial fraction of the predicted concentrations.

The results show that background dominates the risk and hazard quotients; however, at some locations such as the Bethlehem/Labelle and the Villa Borghese greenspaces, the traffic contributions are larger than in other locations.

Evaluation of Receptors on Segment of Huron Church Road to the Ambassador Bridge

Traffic is expected to be reduced at both the Ambassador Plaza and the Windsor-Detroit Tunnel with the new crossing in place when compared to the "No Build" scenario. In general, with construction of the Parkway, traffic along the Windsor Essex Parkway in the Huron Church corridor is expected to increase by 30-50% relative to traffic along this corridor in the "No Build" scenario, and traffic north of EC Row along Huron Church is expected to decrease by approximately 10-20% relative to the "No Build" scenario. Concentrations of chemicals north of EC Row along the Huron Church Road are therefore expected to be lower relative to the "No Build" scenario.

The results indicate the background (regardless of its fluctuation) is responsible for the majority of the risks and hazard quotient values in this road scenario. Additionally, receptor locations along Huron Church Road to the Ambassador Bridge are anticipated to experience lower risks for the Parkway Scenario than the "No Build" scenario, due to the lower traffic volumes.

Chemical Interactions

When dealing with multiple chemicals there is a potential for interaction with each other. An evaluation of chemical interactions was carried out within the risk assessment. The results of this evaluation indicated that the Parkway does not represent a greater risk from the consideration of chemical interactions over the Future "No Build" scenario.

Conclusions

Based on the risk assessment, the following key conclusion can be drawn:

- There is little difference between the predicted total concentrations of gaseous air pollutants, fine particulate matter, and Volatile Organic Compounds for the Future "No Build" and Parkway scenarios. Thus, in general the Parkway does not result in an increased health risk over the Future "No Build" scenario. Background accounts for greater than 80% of the exposure and risks in both scenarios.

An evaluation of the uncertainties in various measurements and methods used in the risk assessment indicated that the risks have been over-estimated as a result of the assumptions made about exposure (which were generally cautious). In the uncertainty assessment, it was discussed that some chemicals could not be fully evaluated due to a lack of information for a quantitative assessment. The lack of analysis of these chemicals does not significantly affect the predicted health risks. The results of this uncertainty analysis support the overall conclusion of the assessment that in general the Parkway does not result in an increased health risk over the Future "No Build" or background scenarios.

Human Health Risk Assessment

Technically and Environmentally Preferred Alternative

Table of Contents

List of Figures

List of Tables

LIST OF ACRONYMS

Acronym	Description
ATSDR	Agency for Toxic Substances and Disease Registry
AQIA	Air Quality Impact Assessment
AQWP	Air Quality Work Plan
CO	Carbon Monoxide
COC	Chemical of Concern
COPC	Chemical of Potential Concern
COPD	Chronic Obstructive Pulmonary Disease
HEAST	Health Effects Assessment Summary Tables
HHRA	Human Health Risk Assessment
HQ	Hazard Quotient
IRIS	Integrated Risk Information System
LOAEL	Lowest Observable Adverse Effects Level
MOE	Ontario Ministry of the Environment
NOAEL	No Observable Adverse Effects Level
NO_x	Nitrogen Oxides
$PM_{2.5}$	Particulate Matter with a 2.5 μm diameter
PM_{10}	Particulate Matter with a 10 μm diameter
PQRA	Preliminary Quantitative Risk Assessment
RfC	Reference Concentration
RfD	Reference Dose
SF_o	Oral Slope Factor
SO_2	Sulphur Dioxide
SPM	Suspended Particulate Matter
SSRA	Site-Specific Risk Assessment
TEPA	Technically and Environmentally Preferred Alternative
TF	Transfer Factor
UR_i	Inhalation Unit Risk
U.S. EPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
WHO	World Health Organization

GLOSSARY

Terms	Description
Airshed	A body of air bounded by topographical and/or meteorological features in which a chemical, once emitted, is contained.
Ambient air	Any unconfined portion of the atmosphere: open air, surrounding air.
Assessment endpoint	A quantitative or quantifiable expression of the environmental value considered to be at risk in a risk assessment.
Atmospheric dispersion	The dispersion into the atmosphere of matter and gases that can be carried by air currents.
Background concentration	Representative amount of chemicals in the air, water or soil to which people are routinely exposed (generally mean or 90th percentile concentration).
Benchmark	A standard by which something can be measured or judged.
Bioavailability	Degree of ability to be absorbed and ready to interact in organism metabolism.
Biota	The animal and plant life of a region.
Burden of Illness	The short and long-term, physical, emotional, social, financial, familial and societal effects associated with a particular illness or condition.
Carcinogen	An agent that has the potential to cause cancer.
Cautious	As used in the term cautious estimates, this is considered a pessimistic or an overestimate of the level, effect or hazard, as the case may be.
Chronic effect	An adverse effect on a human or animal in which symptoms recur frequently or develop slowly over a long period of time.
Chronic exposure	Multiple exposures occurring over an extended period of time or over a significant fraction of a human's lifetime (Usually seven years to a lifetime)
Chronic toxicity	The capacity of a substance to cause long-term poisonous health effects in humans.
Contaminant	A substance that has the potential to alter the natural composition of air, water or soil.
Contaminant migration	The movement of contaminants from one location to another.
Contamination	Elements that are present at levels above those normally found (i.e., above background).
Deterministic	Referring to events that have no random or probabilistic aspects but proceed in a fixed predictable fashion (i.e., a single point estimate).
Dose	The amount of a substance to which a person is exposed over some time period. Dose is a measurement of exposure.
Environmental Assessment	An environmental analysis to determine whether a site / facility would significantly affect the environment and thus require a more detailed environmental impact statement.
Environmental Impact	A change in environmental conditions resulting from an action or development, which may be negative, positive, or neutral.
Exposure	The amount of a pollutant (chemical) present in a given environment that represents a potential health threat to living organisms.

Terms	Description
Exposure Assessment	Identifying the pathways by which toxicants may reach individuals, estimating how much of a chemical an individual is likely to be exposed to, and estimating the number likely to be exposed.
Exposure Concentration	The concentration of a chemical or other pollutant representing a health threat in a given environment.
Exposure Pathway	The path from sources of pollutants via, soil, water, or food to man and other species or settings.
Hazard	Potential for radiation, a chemical or other pollutant to cause human illness or injury. Hazard identification of a given substances is an informed judgment based on verifiable toxicity data from animal models or human studies.
Hazard Assessment	Evaluating the effects of a chemical or determining a margin of safety for an organism by comparing the concentration which causes toxic effects with an estimate of exposure to the organism.
Hazard Quotient	The ratio of estimated site-specific exposure to a single chemical from a site over a specified period to the estimated daily exposure level, at which no adverse health effects are likely to occur.
Incremental	Small increase.
Measurement endpoint	A quantitative summary of the results of a toxicity test, a biological monitoring study, or other activity intended to reveal the effects of a substance.
Modeling	Using mathematical principles, information is arranged in a computer program to model conditions in the environment and to predict the outcome of certain operations.
Morbidity	Occurrence of a disease or condition that alters health and quality of life.
Mortality	Death.
No Observed Adverse Effects Level (NOAEL)	The highest tested dose of a substance that has been reported to have no harmful effects on people or animals.
Order of magnitude	A range of values between a specified lower value and an upper value ten times as large.
Pathway	The physical course a chemical or pollutant takes from its source to the exposed organism.
Pathways analysis	A method of estimating the transfer of chemicals (e.g. radionuclides released in water) and subsequently accumulated up the food chain to fish, vegetation, mammals and humans and the resulting dose to humans.
Preliminary Assessment	The process of collecting and reviewing available information about a known or suspected waste site or release.
Receptor	A human exposed to a chemical released to the environment.
Risk	A measure of the probability that damage to life, health, property, and/or the environment will occur as a result of a given hazard.
Risk Assessment	Qualitative and quantitative evaluation of the risk posed to human health and/or the environment by the actual or potential presence and/or use of specific pollutants.

Terms	Description
Risk Characterization	The last phase of the risk assessment process that estimates the potential for adverse health or ecological effects to occur from exposure to a stressor and evaluates the uncertainty involved.
Screening	A preliminary stage of the assessment process for quick evaluation of relatively simple and routine activities, or for determining the level of effort required for evaluating more complex projects.
Uncertainty	A quantitative expression of error.
Uptake	The process/act by which a chemical enters a biological organism (e.g. inhalation, ingestion by humans).

1. Introduction

Transboundary pollution is the driver of air quality in Windsor as has been recognized by the Ministry of the Environment (MOE) in their publication "*Preliminary Air Quality Assessment Related to Traffic Congestion at Windsor's Ambassador Bridge, 2004*", "*Transboundary Air Pollution in Ontario, 2005",* and the annual Air Quality in Ontario publications. The Preliminary Air Quality Assessment Related to Traffic Congestion at Windsor's Ambassador Bridge states:

"Transboundary air pollutants from the United States account for up to 50 per cent of smog in Southwestern Ontario. In Windsor, this value may be as high as 90 per cent."

It is within this framework that an Environmental Assessment was carried out to evaluate transportation effects associated with the development of a new roadway and border crossing in Windsor known as The Windsor-Essex Parkway, or the technically and environmentally preferred alternative (TEPA). Thus, this report provides a discussion of the human health risk assessment as an extension of the Air Quality Impact Assessment, as part of supporting documentation addressing air quality issues relating to the operational phase of the roadway. It draws on information provided in the air quality modelling exercise completed and documented in the Air Quality Impact Assessment (AQIA). The risk assessment was focused on the operation of the Windsor Essex Parkway since it was considered to be an extension of the AQIA to examine potential health effects associated with air quality. In addition, this assessment was carried out in response to the requirement of the federal (CEAA) process requirement to address human health effects. The preparation of a human health risk assessment is not a requirement of the Ontario EA process; however, the DRIC study team submitted the risk assessment to the Ministry of the Environment as part of the EA package for completeness.

Numerous public meetings were held over the last four years. From these meetings it was determined that the main concern of the public was related to the operation of the road and so the risk assessment focused on the operation of the roadway. The evaluation of construction effects has not been examined because the Ontario Ministry of Transportation has built many roads in the past and is therefore aware of the potential risks associated with road construction. The Ministry has procedures in place to mitigate any potential effects. Nonetheless, construction effects will be re-examined in the future when the design plans are finalized.

The Plaza and Crossing of the proposed parkway development are located near industrial areas and are part of the federal jurisdiction; they were not evaluated in the risk assessment. In addition, the analysis completed for the traffic operations that was used in the Air Quality Impact Assessment (AQIA) was based on a free-flow condition from the access road into the plaza, with no queues extending out of the plaza to the access road. The Canadian international customs plaza has been designed to accommodate projected border traffic to beyond the 2035 horizon year, and is much larger than the existing plazas at either the Ambassador Bridge or the

Detroit-Windsor Tunnel. The design of the plaza has been completed through consultation with the Canada Border Services Agency (CBSA), with consideration of anticipated processing times, border processing improvements such as the NEXUS and FAST systems, anticipated staffing levels of the plaza, and the need for both primary and secondary inspection areas. While it is recognized that rare delays at the plaza could occur as a result of events such as 9/11, these incidents were not included in the traffic analysis due to the difficulty in predicting their frequency of occurrence. Thus, for all the reasons stated above, the Plaza and Crossing were not considered in the risk assessment.

1.1. Existing and Proposed Road Network

There are two existing road crossings of the Detroit River between Windsor and Detroit as shown in Figure 1.1. The Ambassador Bridge was opened in 1929 and connects the local road network in West Windsor with the U.S. interstate system in southwest Detroit. The Detroit-Windsor Tunnel was opened in 1930 and connects downtown Windsor with downtown Detroit. The tunnel has a height clearance of 4.0 m, and a 330-degree bend in the tunnel which restricts the types of commercial vehicles that can use the tunnel. The Ambassador Bridge and Detroit-Windsor Tunnel represent two of the busiest border crossings in North America. The existing terminus of Highway 401 is located approximately 11 km from the Ambassador Bridge. Vehicles destined for the Ambassador Bridge are currently directed onto the 4-lane Highway 3/Talbot Road, followed by the 6-lane Huron Church Road. There are 17 signalized intersections on Huron Church Road and Highway 3/Talbot Road between Highway 401 and the Ambassador Bridge.

Following the Public Information Open House (PIOH) in December 2006 as part of the current study, the DRIC study team identified a variety of illustrative alternatives for a new access road, plaza and crossing to connect existing Highway 401 to the U.S. interstate system. A total of 13 potential plaza locations and 15 potential crossing alternatives were identified, along with a wide variety of access road alternatives located throughout the Windsor-Essex region. Following a multi-stage evaluation of these alternatives, it was determined that the preferred route for the new access road should remain in the existing Huron Church Road and Highway 3/Talbot Road corridor. The new corridor would divert from Huron Church Road at the E.C. Row Expressway, and would subsequently follow the E.C. Row Expressway corridor to the new international plaza. Six practical access road alternatives were generated and subsequently evaluated within this corridor. The results of that analysis identified the Windsor-Essex Parkway (the Parkway) as the recommended alternative for the access road to a new international plaza and crossing.

In summary, the Windsor-Essex Parkway as shown in Figure 1.2 consists generally of a six-lane urban freeway connecting the existing Highway 401 with the new inspection plaza, a four-lane service road connecting existing Highway 3 to existing Huron Church Road, and a landscaped parkland buffer to the right-of-way to provide a multi-use recreational trail system. Between the existing terminus of Highway 401 and the E.C. Row Expressway, The Windsor-Essex Parkway will be predominately below grade, and will include 11 tunnel sections totalling 1.8 km in length as shown in

Figure 1.3. The service road, with one- and two-way segments, will provide local communities with connections and access to the freeway, and will replace the function of the existing Highway 3/Huron Church Road corridor. As noted above, The Windsor Essex Parkway will be built in the same general corridor as Highway 3 and a section of Huron Church Road up to the E.C. Row Expressway. At E.C. Row, the traffic will have the choice of going along the existing Huron Church Road to the Ambassador Bridge and current border crossing station or of going along the Parkway until it connects with the new inspection station. This station is a bridge crossing north of the Brighton Beach Power Generation Station and is directly connected to the plaza located at the southern end of Sandwich Street, in the Brighton Beach Area.

FIGURE 1.1 EXISTING ROAD NETWORK

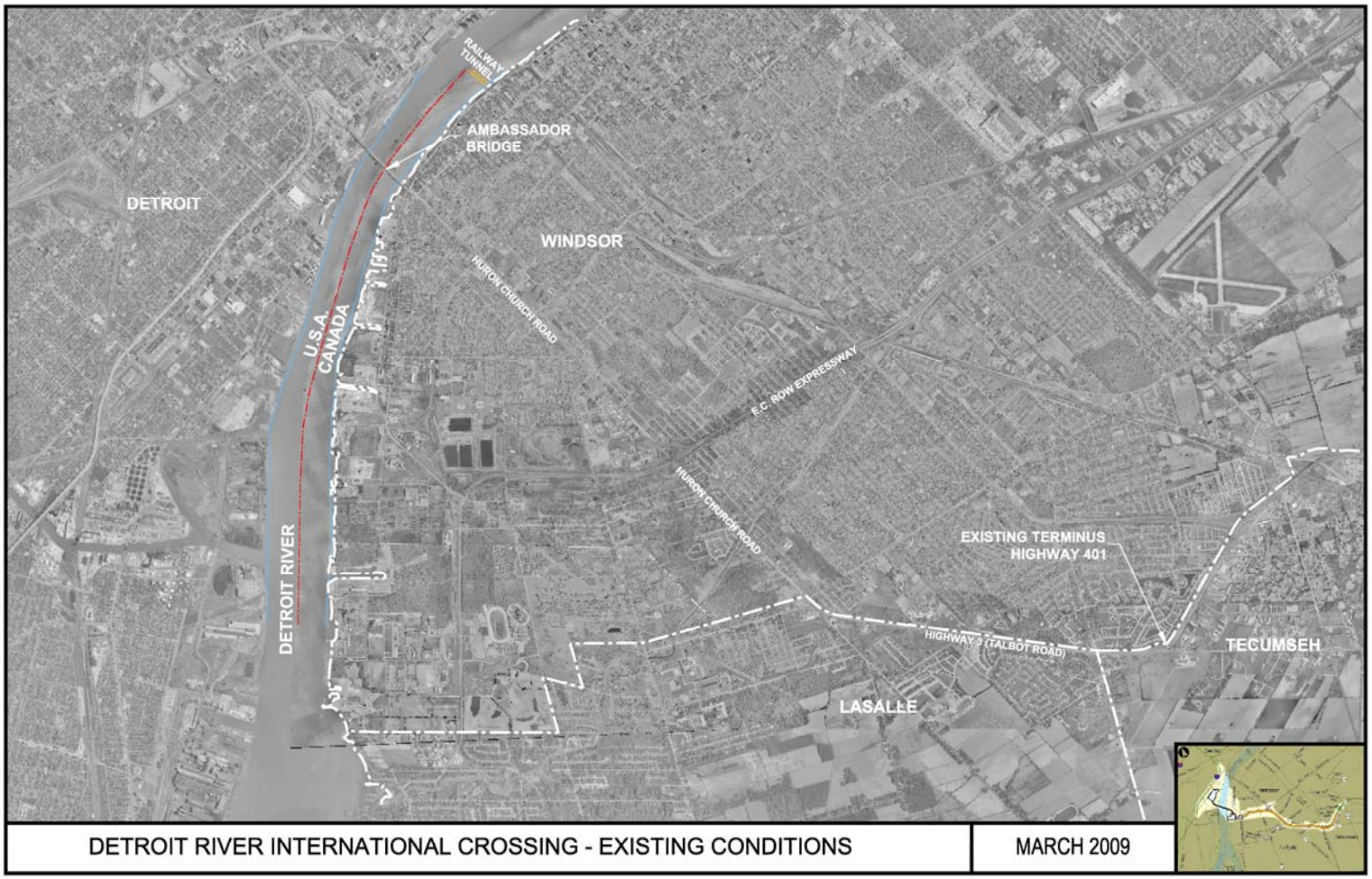


FIGURE 1.2 KEY PLAN OF THE AREA OF CONTINUED ANALYSIS

FIGURE 1.3 THE WINDSOR-ESSEX PARKWAY TUNNEL CONFIGURATIONS

I.D.	Location of Tunnel	Tunnel Length (M)	Roof Area (Sq M)
①	Spring Garden	200	9,000
②	Ramp N-E and Labelle Street	240	10,810
④	Grand Marais Road West	120	9,550
⑤	Pulford Street	120	9,705
⑥	Reddock St	120	15,320

I.D.	Location of Tunnel	Tunnel Length (M)	Roof Area (Sq M)
⑦	Cabana Road West	120	8,300
⑧	Huron Church Line	240	14,400
⑪	St. Clair College	120	7,225
⑫	Cousineau Road	120	7,225
⑬	Hearthwood Place	220	19,250
⑮	Oliver Estates Area	240	13,200

Structures ③ ⑨ ⑩ ⑭ ⑯ ⑰ ⑱ are proposed as roadway overpasses

1.2. Time Horizons Selected for the Assessment

The anticipated timeline for this project is to begin construction in late 2009, with a target completion in the year 2013.

The planning horizons used for the Human Health Risk Assessment (HHRA) were the years 2015, 2025 and 2035, which correspond to the horizon years used for the traffic modelling completed as part of the DRIC study. The traffic projections developed for the three horizon years were utilized as input into the AQIA with the results of the AQIA in turn utilized in the Human Health Risk Assessment. The details of the traffic modelling study are documented in the Travel Demand Forecasts Working Paper (September 2005), available on the website at www.partnershipborderstudy.com.

A 30-year planning horizon was established at the outset of this study in January 2005, corresponding to the ultimate horizon year of 2035. A 30-year planning horizon is considered standard for transportation planning studies, due to the uncertainty associated with traffic projections beyond 30 years. Traffic models and projections are impacted by a variety of factors that are difficult to predict well into the future, such as local and regional land use patterns, economic conditions, international trade agreements, and technological advances. The 2015 and 2025 horizon years were established as interim horizon years at the 10 and 20 year intervals from the start of the study. In the HHRA, the three horizon years were used in the determination of impacts to human health, with the risk assessment discussing the horizon year 2035 since it generally represents the maximum exposures year. Analyses for other horizon years are presented in the Appendix B.

1.3. Summary of Traffic Analysis

The Travel Demand Forecasts Working Paper (September 2005) documents the current and future deficiencies in the roadway network serving the international border crossings at Windsor-Detroit that are anticipated within the 30-year timeframe of the DRIC study. The report presents preliminary commercial vehicle and passenger car demand estimates for crossings of the Detroit River, along with the border infrastructure needs associated with the projected demand. A 2004 Base Year of travel demand was developed based on an update of the previous 2000 travel data to reflect current origin-destination patterns, and temporal characteristics. Again, as in accordance with general industry practices, forecasts were prepared for the 2015, 2025 and ultimate 2035 horizon years.

The results of the travel demand forecasts indicate that delays at border processing and lack of roadway capacity along Huron Church Road will result in congestion and delays at the Ambassador Bridge border crossing within the 30 -year planning horizon. Even with improvements of to access facilities, the bridge crossing itself is expected to reach capacity within 10 to -15 years. Similarly, delays at border processing and lack of capacity at the connections to the plazas at the Detroit-Windsor Tunnel will result in congestion and delays at the Detroit-Windsor Tunnel.

The analysis completed for the traffic operations analysis was based on a free-flow condition from the access road into the plaza, with no queues extending out of the plaza to the access road. The proposed Canadian international customs plaza has been designed to accommodate projected border traffic to beyond the 2035 horizon year, and is much larger than the existing plazas at either the Ambassador Bridge or the Detroit-Windsor Tunnel. The design of the plaza has been completed through consultation with the Canada Border Services Agency (CBSA), with consideration to anticipated processing times, border processing improvements such as the NEXUS and FAST systems, anticipated staffing levels of the plaza, and the need for both primary and secondary inspection areas. An operations analysis of the plaza was completed by the CBSA using the CAN-SIM software program, revealing acceptable plaza operations. Both the Canadian and U.S. governments are committed to building the new plazas and border crossing to meet future travel demands, as well as providing the necessary staffing to meet processing demands. While it is recognized that rare delays at the plaza could occur as a result of events such as 9/11, these incidents were not included in the traffic analysis due to the difficulty in predicting their frequency of occurrence.

1.4. Differences Between a Risk Assessment and a Health Study

Human health risk assessments are used to determine if a particular chemical poses a significant risk to human health. If it were possible to prevent humans from being exposed to chemicals then there would be no need to conduct a risk assessment. Since this is an impossible exercise, and exposure to many naturally occurring substances also pose health risks, risk assessments become an important tool in evaluating these risks.

Risk assessment helps scientists and regulators identify serious health hazards and determine ways to reduce exposure so that there is no significant health risk to the public. The term “human health risk assessment” is often misinterpreted because people think that a risk assessment will provide information as to whether an exposure to a chemical causes a current health problem or symptom that they are experiencing. Risk assessments do not provide this information; studies that look for these types of linkages are generally epidemiological studies. These studies generally include a survey of health problems in a community and provide a comparison of these health problems to other cities, communities or populations as a whole.

While both of these types of studies are important, health risk assessments and epidemiological studies have different objectives. Most epidemiologic studies examine whether past chemical exposures may be responsible for documented health problems in a specific group of people whereas human health risk assessments evaluate whether current or future chemical exposures will pose health risks to a broad population such as a city or a community. The scientific methods used in a human health risk assessment cannot be used to link individual illnesses to past exposures to chemicals; additionally, health risk assessments and

epidemiological studies cannot prove that a specific chemical caused an individual's illness.

Regulatory bodies use risk assessments to determine drinking water guidelines, site clean-up criteria, and the safe use of pesticides, to name a few. Human health risk assessment uses both sound science and professional judgment and is a constantly developing process.

Health Canada has been carrying out a number of health studies in Windsor and Sarnia. One such health study in the Windsor area was related to mortality and cancer incidence for the period 1979-1999 (Band et al. 2006). The results suggest a potential risk for diseases associated with long-term air pollution exposure such as bronchitis, emphysema, lung cancer and lung cancer incidence and mortality from circulatory diseases. These diseases were attributed to transborder air pollution but are preliminary in nature and further studies are underway to assess chronic cardiorespiratory outcomes in relation to air and traffic pollution.

1.5. Study Objectives

The methods followed in this risk assessment are consistent with procedures outlined by regulatory agencies such as Ontario Ministry of the Environment, Environment Canada, Health Canada, the Canadian Council of Ministers of the Environment (CCME) and the United States Environmental Protection Agency (U.S. EPA).

This report outlines the methodology used to conduct the Human Health Risk Assessment (HHRA). The primary objective of this HHRA is to determine whether the chemical concentrations emitted from vehicles on the proposed Windsor-Essex Parkway have the potential for unacceptable health effects to people located in the immediate area in comparison to the Future "No Build" scenario (i.e., the roadway in its existing condition, carrying additional traffic).

Since the focus of this report is to determine the relative risks of the proposed Parkway when compared to the Future "No Build" for the operation phase, the uncertainties associated with the air quality model and associated assumptions made in the HHRA will be consistent between the two scenarios. The HHRA relies on the results of the AQIA, which predicted concentrations associated with the Future "No Build" and Parkway scenarios. The Plaza and Crossing were not assessed in the human health risk assessment since they are located in an industrial area, they will be designed for free-flow of traffic, and are also under the Federal jurisdiction.

The scenarios that were evaluated in the assessment included the Future "No Build" scenario, which is essentially the existing roadway of Highway 3/Talbot Road and Huron Church and E.C. Row with additional traffic volumes in 2015, 2025 and 2035, and The Parkway scenario, which is the new roadway within the existing road corridor from the 401 to the Plaza was also evaluated for the years 2015, 2025 and 2035. In addition, while the Huron Church to Ambassador Bridge portion of the roadway is outside the area of analysis for the Environmental Assessment, this scenario was also evaluated for the maximum horizon year of 2035. Background air quality

(ambient air quality) was also considered within the assessment. The values for background air quality were obtained from monitoring stations within Windsor.

Potential chemicals considered in the Air Quality Impact Assessment and the risk assessment were gaseous air pollutants (carbon monoxide (CO), carbon dioxide (CO_2), ozone, nitrogen oxides (NO_2), and sulphur dioxide (SO_2)), fine particulate matter ($PM_{2.5}$, PM_{10}), volatile organic compounds (VOC) such as acrolein, acetaldehyde, benzene, toluene, xylenes propylene, formaldehyde and 1,3-butadiene, polycyclic aromatic hydrocarbons (PAHs) such as benzo(a)pyrene, naphthalene, acenaphthylene, acenaphthene,fluorine, phenanthrene, anthracene, fluoranthene, pyrene, benzo[*a*]anthracene, chrysene, benzo[*b,k*]fluoranthene, ideno[1,2,3-*c,d*]pyrene, dibenz[*a,h*]anthracene and benzo[*g,h,i*]perylene are associated with combustion of diesel fuels and chemicals associated with the degradation of breaks and tires such as asbestos and metals. A number of these chemicals were not considered further because they were associated with greenhouse effects, there was a lack of evidence linking health effects to exposures, emission factors were extremely low, there were low potential risks or there was no available information to quantify chemicals. The final list of chemicals of concern (COC) evaluated in both the Air Quality Impact Assessment and the human health risk assessment were gaseous air pollutants (nitrogen oxides (NO_2), and sulphur dioxide (SO_2)), fine particulate matter ($PM_{2.5}$), and volatile organic compounds (VOC) such as acrolein, acetaldehyde, benzene, formaldehyde and 1,3-butadiene. These chemicals are generally the list of chemicals considered in traffic related studies and they represent the greatest potential for impacts due to tailpipe or roadway surfaces. More details on the selection of the COC are provided in Section 2.1.

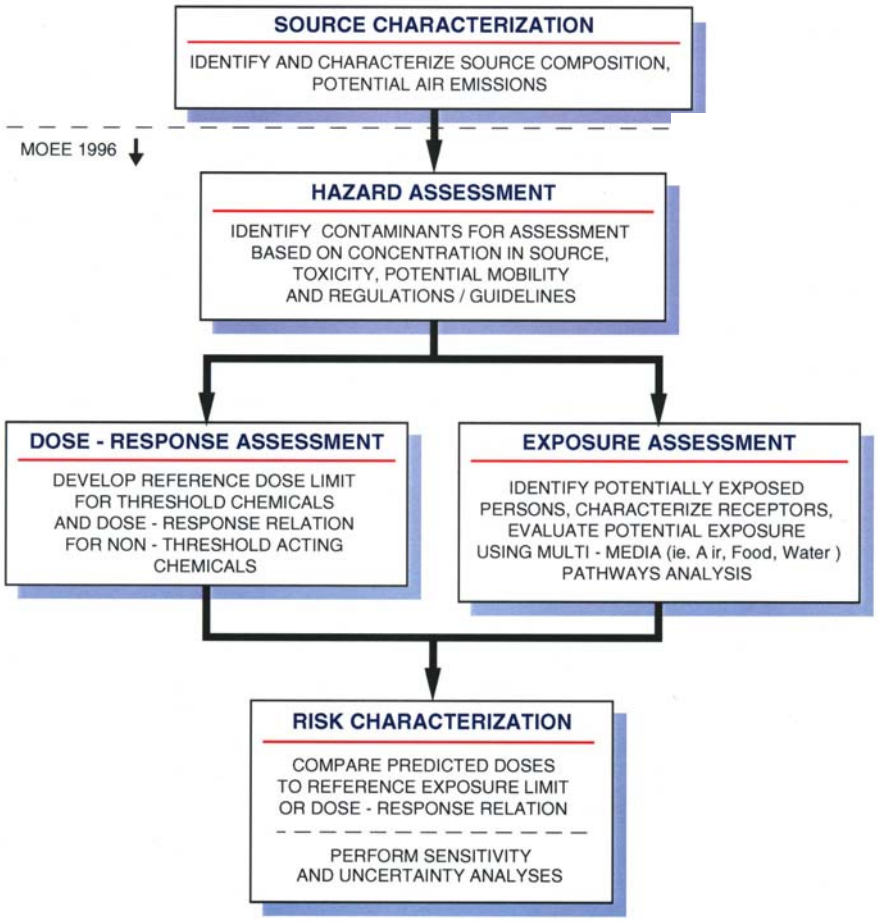
The human health risk assessment is divided into four different steps (see Figure 1.4) as provided in the various regulatory frameworks. They are:

- the problem formulation stage, in which the various COC, receptors, exposure pathways, and scenarios are identified;
- the exposure assessment, where predicted exposures are calculated for the various receptors and COC;
- the hazard assessment, in which exposure limits for the COC are determined; and,
- the risk characterization stage, where the exposure and hazard assessment steps are integrated.

Since the Parkway is currently in the design stage, it is not possible to directly measure emissions associated with the proposed roadway, their potential effect on the ground level air concentrations or possible health outcomes in the community. Therefore, the risk assessment relied on various mathematical models to predict emission rates and air concentrations provided in the Air Quality Impact Assessment (AQIA). Mathematical models were also used to predict exposure and potential risks to various human receptors considered to be representative of the community. These

procedures include consideration of exposure through inhalation and ingestion of chemicals associated with vehicle emissions through direct deposition to vegetation, as well as deposition to soils and uptake by vegetation. Transportation modelling was done by IBI and is provided in The Traffic Operations Analysis supporting document. This information was used in the AQIA to determine the predicted air concentrations of the COC.

FIGURE 1.4 HUMAN HEALTH RISK ASSESSMENT PROCESS



The possibility of short-term (1 hour, 8 hour, 24 hour) and long-term (annual) adverse human health outcomes were assessed based on exposures at the maximum predicted concentrations that would occur in different communities along the Windsor-Essex Parkway. The use of the maximum predicted concentrations in each community covered the range of air concentrations that potentially could occur from vehicular traffic along the roadway. Cautious assumptions of exposure were used in the assessment to ensure that risks were not underestimated and this most likely resulted in an over-estimate of exposure. Traffic congestion along the roadway due to incidents such as collisions, and unusual events such as 9/11, were not included in the traffic analysis due to the difficulty in predicting their frequency of occurrence and therefore such incidents were not considered within the risk assessment.

One example of a cautious assumption is that it was assumed that residents were exposed to vehicle emissions 24 hours a day, 7 days a week over their entire lifetime while outdoors. As indicated in the overall discussion of the Windsor-Essex Parkway, there will be greenspaces across various sections of the road to provide connectivity between communities on different sides of the Parkway. Individuals using these areas will be subject to short-term exposures (in the order of 1 to 2 hours) and thus their exposures are captured under the residential exposure. Nonetheless, a summary of the risks to these receptors within the right-of-way (i.e., users of the greenspaces) for the year 2035 are presented in Appendix B8.

The human health risk assessment results were expressed as deterministic hazard quotients and cancer risk levels for long-term exposures, as well as hazard quotient values for both short-term and long-term exposures to gaseous air pollutants. In general, regulatory agencies concur that a hazard quotient value below one (1) (for assessing gaseous air pollutants the calculations are performed with the inclusion of background concentrations), a hazard quotient of 0.2 (for pathways assessment examining direct and indirect exposure from air pathways) or cancer risk levels of one in a million (1×10^{-6}) are not significant. The hazard quotient and incremental risk limits are those set by the Ontario Ministry of the Environment. The use of an incremental risk limit of 1×10^{-6} as set out by the Ontario Ministry of the Environment is more stringent than the 1×10^{-5} incremental risk limit that is acceptable to Health Canada and the U.S. EPA.

2. Problem Formulation

The primary objective of this focussed human health risk assessment (HHRA) is to determine whether the chemical concentrations emitted from vehicles on the proposed Windsor-Essex Parkway have the potential for unacceptable health effects to people located in the immediate area in comparison to the Future "No Build" scenario (i.e., the roadway as it currently exists, carrying additional traffic).

The basis of the evaluation of the human health risk assessment involved information from the Air Quality Impact Assessment reports together with input from the air quality specialists for the project since the human health assessment was considered to be an extension of the AQIA.

The approach undertaken for the air quality modelling for this project is consistent with other transportation projects. The preferred air dispersion model for transportation projects in Canada and the US is the CAL3QHCR model which is capable of calculating idling at intersections as well as emissions from traffic during free-flow traffic conditions. Inputs of to this U.S. EPA model include hourly traffic volumes specific to road segments and vehicle type, tail pipe emission factors, road dust emission factors, meteorology specific to Windsor, road geometries and configurations, signal light timing and predicted ambient conditions. Each change in road geometry or traffic volume through a road segment requires the development of a "link" in the model input file. Over 700 links for each alternative were used to model the DRIC project.

Pollutant concentrations reported in the AQIA report are maximum predicted concentrations (i.e., the worst pollutant levels). It is important to note that the maximums are not usual and are predicted to occur only once per year. Where no specific air quality monitoring receptors are identified, these maximum concentrations represent the maximum concentrations at any of the receptors assessed and are not indicative of the typical concentrations at each individual receptor, nor are they indicative of the maximum concentrations at all receptors. All other receptors will be exposed to lower concentrations under all meteorological conditions.

The scenarios that were evaluated in the assessment included the Future "No Build" scenario, which is essentially the existing roadway of Highway 3/Talbot Road and Huron Church and E.C. Row with additional traffic volumes in 2015, 2025 and 2035, and The Parkway scenario, which is the new roadway within the existing road corridor from the 401 to the Plaza was also evaluated for the years 2015, 2025 and 2035. In addition, while the Huron Church to Ambassador Bridge portion of the roadway is outside the area of analysis for the Environmental Assessment, this scenario was also evaluated for the maximum horizon year of 2035.

2.1. Identification and Selection of Chemicals of Concern

The list of chemicals of concern (COC) selected for the current comparative risk assessment is based on a review of all potential chemicals associated with vehicle emissions and was discussed in the AQIA and Air Quality Work Plan (AQWP). The initial list was developed by selecting chemicals associated with vehicle tailpipe emissions and vehicular movements on roads. The U.S. AP-42 document (U.S. EPA 1996b) was consulted during the selection of COC. This document indicated that gaseous pollutants such as CO, CO_2, CH_4, NO_x fine particulate matter (PM_{10} and $PM_{2.5}$) and SO_2 are associated with combustion of diesel and gasoline. In addition, PAHs such as benzo(a)pyrene, naphthalene, acenaphthylene, acenaphthene,fluorine, phenanthrene, anthracene, fluoranthene, pyrene, benzo[*a*]anthracene, chrysene, benzo[*b,k*]fluoranthene, ideno[1,2,3-*c,d*]pyrene, dibenz[*a,h*]anthracene and benzo[*g,h,i*]perylene are associated with combustion of diesel fuels. Volatile organic compounds (VOCs) such as benzene, acrolein, acetaldehyde, formaldehyde, 1,3-butadiene, toluene, xylenes and propylene were also listed. In addition to these chemicals, about 5% of front brakes from older vehicles have asbestos and 30% of drum brakes have asbestos and therefore asbestos was also considered in the original list of chemicals. Vehicles moving along the road also emit PM_{10} and $PM_{2.5}$ from the disintegration of tires and break linings. Ozone, which is associated with NO_x formation, emitted from vehicle emissions was also considered in the selection of COC.

A number of chemicals in this list were not considered further for the following reasons:

- PAHs: PAHs are emitted from diesel transport trucks, which do and will continue to frequent the area for moving goods into and out of Canada. The emission factor values for Mobile 6C modelling associated with transportation sources suggest that naphthalene makes up the largest fraction of PAH compounds for all vehicle types, while other sources suggest naphthalene is the most abundant PAH found in gasoline fuels. Since no emission factors are available to evaluate the concentrations of PAHs for Mobile 6C modelling, naphthalene was used as a surrogate, with emission factors on the same order of magnitude as 1,3-butadiene. Based on 1,3-butadiene, the predicted incremental increase over background concentrations for naphthalene associated with vehicle emissions was less than 10% indicating that changes in naphthalene concentrations (as well as other PAHs) would not be distinguished from background measurements. Average background concentrations of naphthalene in Windsor are approximately 1 µg/m^3, with a maximum concentration of naphthalene of 0.05 µg/m^3 as a result of tailpipe emissions. Using a toxicity reference value of 3 µg/m^3 for inhalation exposure resulting in nasal effects as provided by the U.S. EPA IRIS database (2009 last updated 1998), the hazard quotient related to traffic effects is calculated as 0.02, which is an order of magnitude below the reference hazard quotient value of 0.2. Additionally, the hazard

quotient related to background exposure of naphthalene is 0.3. The traffic related effects of naphthalene are therefore indistinguishable from effects related to background exposure. Since there were no emission factors relating to benzo(a)pyrene, which is a carcinogenic PAH, benzo(a)pyrene concentrations were estimated by scaling the benzene CAL3QHCR model results. Scaling factors were calculated using two methods. In the first method a ratio was developed from estimated on-road mobile source contributions in US urban counties (ToxProbe Inc. 2002, *Diesel Exhaust in Toronto*, Table 4.1.3.1). In the second method, a ratio was developed from Toronto average on-road contributions (ToxProbe Inc. 2002, *Diesel Exhaust in Toronto*, Table 4.1.3.3). The ToxProbe Inc. (2002) report prepared for Toronto Public Health includes estimates of on-road mobile sources contributions in US urban counties and Toronto average on-road contributions. The benzene to benzo(a)pyrene scaling factor from US urban counties contributions was calculated to be 1.3×10^{-5}; the scaling factor from Toronto average on-road contributions was calculated to be 2.8×10^{-5}. The average of these two ratios is 2.05×10^{-5}. Applying this factor to the maximum benzene concentration of 0.24 µg/m^3 at receptor location 58 (Bellwood Estates) along the Huron Church corridor results in a benzo(a)pyrene concentration of 4.9×10^{-6} µg/m^3 as compared to a background concentration of 2.4×10^{-4} µg/m^3. Thus, the predicted concentration of benzo(a)pyrene is approximately 50 times lower than background. If the unit inhalation risk of 0.087 (µg/m^3)$^{-1}$, based on the WHO (2000) value for increased ling cancer risk, is used to determine the potential risk from benzo(a)pyrene associated with vehicle emissions, the risk level is 4.3×10^{-7}, which is below an acceptable risk level of 1×10^{-6}. PAHs were therefore dropped from the final list of COC.

- Toluene, xylenes and propylene: Toluene, xylenes and propylene were not considered further as COC since the emission rates associated with these compounds were lower than those for benzene. The AQIA predicted a total VOC concentration of approximately 3 µg/m^3 on an annual basis for the Year 2035. If it was assumed that toluene, xylenes and propylene consisted of this concentration and the most conservative toxicity reference concentration of 100 µg/m^3 associated with impaired motor coordination for xylenes (IRIS updated 2003) was used then the cumulative hazard quotient associated with these VOCs is 0.03 which is below a value of 0.2 and thus toluene, xylenes and propylene are not considered further.

- Ozone: In the presence of sunlight, compounds emitted from vehicle exhaust are known to produce ozone. As such, ozone was considered a COPC. However, the average wind speed in Windsor is 4.36 m/s, and so in an hour the pollutant travels on average 16 km. Even when considering a conservative wind speed of 1.5 m/s, the ozone would travel 5 km in an hour. This is well beyond the study area for the DRIC project. Additionally, both $PM_{2.5}$ and NO_x (ozone precursors) were assessed as COC and beyond a few hundred metres their maximum impacts are not detectable relative to ambient conditions. As such, ozone was dropped from the final list of COC.

- CO: Although the carbon monoxide concentrations were modelled in the AQIA, the results showed that the background concentration of CO overwhelms the contribution from tailpipe emissions, and so the incremental increase over background concentrations was negligible. As such, CO was not selected as a COC for the HHRA.

- CO_2: Carbon dioxide is the primary greenhouse gas emission from vehicles. Although impacts from the Windsor-Essex Parkway were assessed on a global basis in the AQIA, it was not modelled at local sensitive receptors because it is typically evaluated in terms of overall impact to global warming. Additionally, it is not considered to be associated with effects on human receptors and so it has not been considered as a COC for the HHRA.

- CH_4: Methane was originally considered as a COPC because it is a greenhouse gas primarily associated with fugitive emissions. Methane emissions from vehicles are negligible in comparison to CO_2 emissions (EC 2008) and, as such, methane was omitted from the final list of COC.

- PM_{10}: Particular matter less than or equal to 10 microns (µm) in diameter (PM_{10}) is generally associated with the breakdown of tires as they move along roadways. The emphasis on particulate matter has been moving to the finer fractions of PM over the last 30 years as health studies and monitoring equipment have advanced to be able to detect differences in the particulate matter fractions. In the last five to ten years health impact studies have been focusing on the impacts of $PM_{2.5}$ and finer fractions. The US EPA has revoked their PM_{10} standard due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution. In addition, the Canadian Federal government has not developed a PM_{10} Canada Wide Standard due to insufficient knowledge on the appropriateness of the standard. The federal government also recognizes that initiatives to reduce $PM_{2.5}$ will also likely reduce PM_{10} concentrations. In keeping with the both the U.S. and Canadian governments position on PM_{10}, the HHRA focused on the potential effects associated with $PM_{2.5}$ exposure.

- Asbestos: While asbestos is present in older brakes, there is not enough information available to quantify the concentration of asbestos associated with breakdown of brake linings. This adds to some uncertainty in the assessment and will be addressed in the uncertainty section. Exposure to degradation of brakes has been captured under exposure to $PM_{2.5}$.

- Metals: Metals are associated with the disintegration of brakes and tires or fuel additives such as methylcyclopentadienyl manganese tricarbonyl (MMT). The major metal associated with the breakdown of brakes is iron, which is not considered to be toxic to human health. Other metals such as antimony, barium, cadmium, copper, chromium, lead, nickel and zinc are also reported to be associated with the breakdown of brake linings. Zinc is also associated with the breakdown of tires due to the presence of zinc oxides in the rubber. There is not enough information available to quantify

the concentration of metals associated with breakdown of brake linings and tires. This adds to some uncertainty in the assessment and will be addressed in the uncertainty section. Exposure to degradation of brakes has been captured under exposure to $PM_{2.5}$. In terms of MMT, a science policy review in 2009 conducted by the International Council on Clean Transportation (ICCT) indicated that oil manufacturers in Canada have voluntarily removed MMT from the gasoline supply. In the U.S., MMT accounts for less that 1% of the fuel consumed (ICCT 2009). Therefore manganese associated with fuel additives was not considered further.

The final list of COC includes gaseous air pollutants, particulate matter, and certain volatile organic compounds. Table 2.1 provides a list of the COC that are evaluated in this assessment. These chemicals have all been modelled in the AQIA. As described previously, the predicted short–term (1 hour, 8 hour and 24 hour) and long-term air concentrations (annual averages) of these chemicals are estimated by modelling at the maximum concentration location at various areas along the proposed roadway.

TABLE 2.1 CHEMICALS OF CONCERN SELECTED FOR THIS ASSESSMENT

Gaseous Air Pollutants
Nitrogen oxides (as NO_2)
Sulphur dioxide (SO_2)
Volatile Organic Compounds
Benzene
1,3-butadiene
Formaldehyde
Acetaldehyde
Acrolein
Particulate Matter
Fine particulate matter ($PM_{2.5}$)

2.2. Receptor Selection

Over 2400 receptors in the Windsor Airshed were examined in the Air Quality Impact Assessment modelling. The first two rows of receptors were placed at 50 m intervals from each side of the existing road, followed by 100m intervals up to 500 m away. Figure 2.1 illustrates the receptor locations relative to the Windsor-Essex Parkway. Another grid with 500m x 500 m spacing was then overlaid to cover the rest of the modelling domain, which was essentially all of west Windsor and the surrounding communities. These receptor locations were also selected with input from the communities to represent locations where sensitive receptors were located or areas of concern for the public such as the ballpark location, daycares and homes for the aged.

Although the current Huron Church access road to the Ambassador Bridge is outside the area of analysis for the EA, calculations for the human receptors along this section of roadway have been completed and the results are presented in Appendix B.7 for the horizon year 2035.

For this risk assessment, 15 different neighbourhoods/communities along the proposed roadway were selected, with either one or two different locations within each neighbourhood (for a total of 21 different receptor locations). These receptor locations were selected following input with the Air Quality modellers and represent residential receptors with maximum concentrations in different neighbourhoods along the Parkway, thereby representing locations which pose the greatest exposure for human receptors. Any other residential receptors along the roadway would experience lower concentrations and hence lower exposure. The receptor locations were also selected to encompass sensitive receptors such as the LaSalle Home for the Aged and the Ballpark. In addition, by calculating exposures at residential receptor locations over a 75 year lifetime, the exposures at other sensitive receptor locations, such as daycares, are captured since the exposure at daycares would be over a shorter time period than 75 years. The selected neighbourhood receptors are summarized below, with the receptor location numbers shown in brackets and in Figure 2.2: Details on the distance of these receptors to the roadway are presented in Appendix E.

- Ball Field (2479);
- Bellwood Estates (58, 403);
- Grand Marais Roads (74, 186);
- Heritage Estates (910);
- Home for Aged LaSalle (944, 945);
- Huron Estates (295, 410);
- Kendleton Court (781);
- Oliver Estates (858, 1997);
- Reddock (423);
- Residential (2478);
- Southwood Lakes (867);
- Spring Garden (1513, 1644);
- St. Clair College (2480);
- Villa Borghese (828); and
- Villa Paradiso Crescent (848).

FIGURE 2.1 RECEPTOR LOCATIONS ALONG THE WINDSOR ESSEX PARKWAY

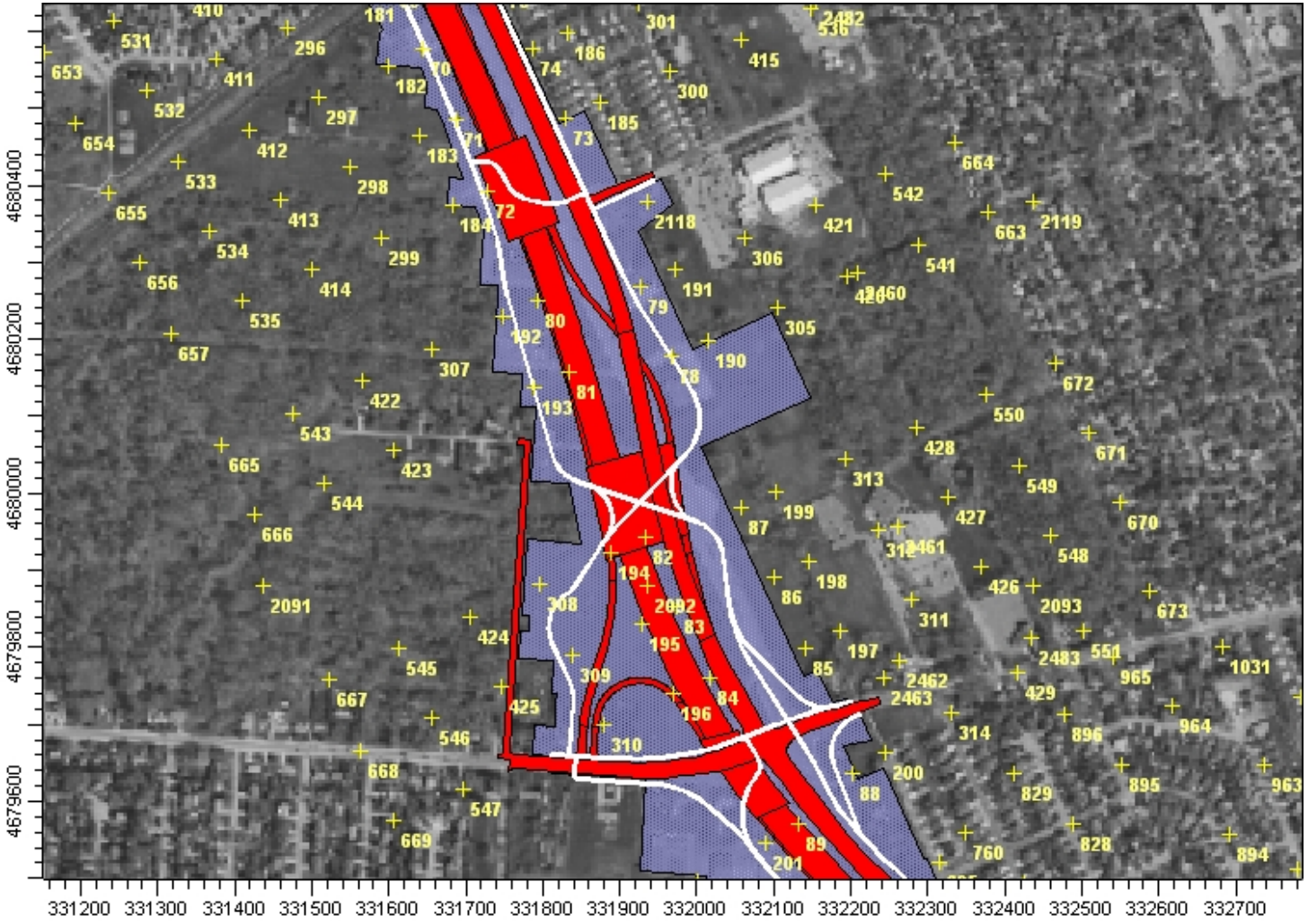
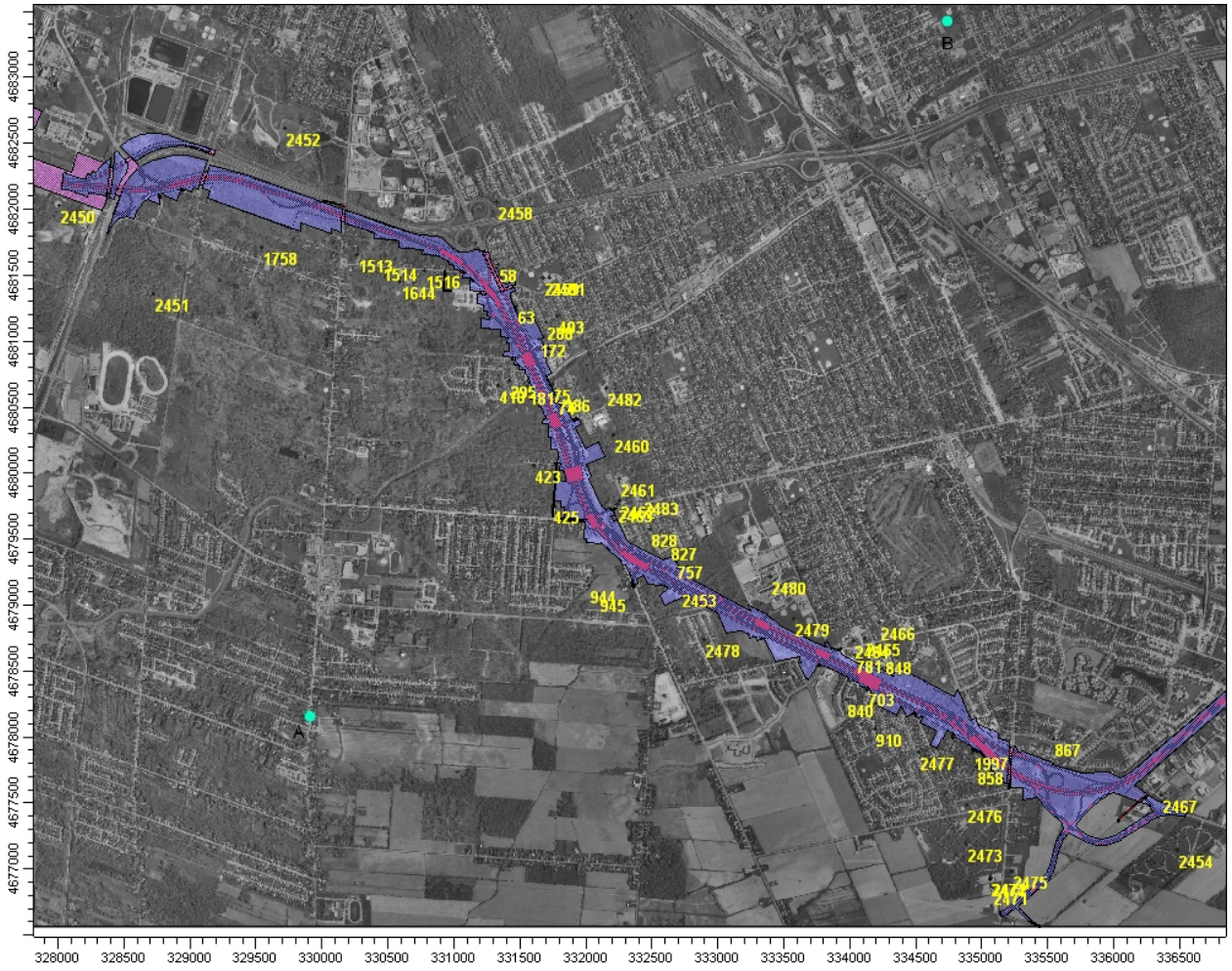


FIGURE 2.2 RECEPTOR LOCATIONS SELECTED FOR EVALUATION



2.2.1. Human Receptor Characterization

Five types of resident receptors have been selected for this assessment (adult, teen, child, toddler and infant). Their assumed exposure characteristics are shown in Tables 2.2 and 2.3. The characteristics of the receptors were obtained from Health Canada (2004a) and are considered to be cautious and represent a range of exposures. For the soil ingestion rates, values obtained from the Ontario Ministry of the Environment (2008) were used since they are higher and therefore more conservative than the values used by Health Canada (2004a). Sensitive receptors, such as the elderly, have been included by way of including LaSalle Home for the Aged as a receptor location. However, there are no special characteristics of these individuals that are different from those of the adult resident. The sensitivity of this receptor has been captured in the use of toxicity reference values which are selected to protect the most sensitive of receptors. In addition, the use of the residential receptor captures the exposure at sensitive receptor locations, such as daycares, since the residential receptor will be exposed for a longer period of time than the receptor at the daycare. The Ballpark was also selected as a sensitive receptor location.

The maximum predicted concentrations used for evaluation of the health effects to the residential receptors are lower than concentrations within the right-of-way of the Parkway. As discussed in Section 2, the maximum predicted concentrations are not usual and are predicted to occur only once per year. Although other types of receptors may be present within the right-of-way (i.e., recreational users of the greenspaces and trails), the residential receptor is continuously present on a long-term basis (i.e., 365 days of the year over a 75 year lifetime) and therefore represents the most exposed receptor. As such, the long-term exposure of the resident encompasses the short-term exposure within the right-of-way. Nonetheless, a separate analysis was carried out for receptors within the right-of-way of the Parkway for the year 2035, the results of which are presented in Appendix B.8.

For evaluating the risks from exposure to COC with carcinogenic effects (benzene for oral and inhalation exposure, 1,3 butadiene, formaldehyde and acetaldehyde for inhalation exposure only), a composite receptor (defined as an individual present at the same location from birth to an adult of 75 years) was used to take into account a lifetime of exposure. The risks to the adult receptor are also provided.

All resident receptors have been assumed to drink water obtained from the City of Windsor's potable water system. Mapping received from utility companies and municipalities indicate that the vast majority of the water in the study area is supplied by Windsor Utilities Commission watermains. MOE records indicate that there may be a few wells within approximately 250 m of the corridor, but these are in locations that are now serviced by watermains. Salt and sand are applied to Ontario roads during winter months, a certain amount of which will eventually be washed off the roadways (or the bridge) and reach local water ways directly or through storm sewers. Currently, there are no systems in place to collect road runoff from Talbot Road or Huron Church Road and thus water from these roadways infiltrates into the

surrounding aquifers. Parts of the proposed Parkway will be below grade. The minimum distance between the bottom of the pavement structure and the top of water-bearing granular materials, identified in the Subsurface Conditions Baseline Report as the Lower Granular Deposits, or the bedrock is expected to be at least 15 m. The Lower Granular Deposits and the bedrock are anticipated to be hydraulically connected and form an aquifer beneath the project area. The soil materials between the underside of the pavement structure and top of the aquifer consist of the Clayey Silt to Silty Clay Deposits. These deposits are of very low permeability, on the order of $1.6x10^{-10}$ to $2.3x10^{-9}$ metres per second, and form an aquitard or aquiclude that significantly inhibits vertical flow of water. In addition, in the Highway 3/Huron Church Road corridor, storm drainage from the Parkway will be conveyed through a closed drainage system (i.e. curb and gutter to storm sewers). Stormwater management ponds will be located at various points along the proposed Parkway. Water from these ponds will then feed via Turkey Creek into the Detroit River downstream of the intake for the municipal drinking water intake and thus there will be no influence on drinking water sources from the Parkway. Although roadway run-off could impact the underlying bedrock aquifer in the study area, the proposed roadway is separated from this aquifer by a layer of low permeability clayey silt and silty clay (aquitard) that, depending on the final roadway elevation, will be some 15 to 30 m thick below the roadway. There is therefore little potential for contamination of this aquifer by roadway run-off. The assumption that the drinking water pathway is incomplete is supported by this information.

Section 3 provides maximum predicted soil concentrations after 75 years of deposition of VOCs; with the exception of formaldehyde, these concentrations are so low that they will not be measurable. The use of 75 years of deposition provides the maximum concentrations of COCs built up in the soil and is a conservative estimate of the soil concentrations. The use of this value rather than the concentrations after the horizon years (i.e., after 2035) ensures that exposures and associated risks will not be underestimated.

It was assumed that the resident has a backyard garden and that 7.5% of their annual vegetable consumption is from that garden. This is a conservative estimate of the value adopted by the MOE in Ontario (MOE 2001). The different exposure pathways (water, soil, vegetation, etc.) will be discussed in more detail in Section 3.1. The exposure durations in Table 2.3 have been chosen to provide a cautious estimate of exposure to air emissions from the proposed roadway.

As discussed above, the use of a resident receptor at the maximum concentration location covers other potential exposures in the area of the proposed roadway. The resident receptor used in this assessment to characterize potential risks associated with the proposed roadway is assumed to be exposed for 75 years at the maximum concentration possible while outdoors, 24 hours each day of the year. An exposure duration of 75 years was selected to represent a lifetime of exposure for residents of all age groups (Health Canada 2004a).

TABLE 2.2 ASSUMED CHARACTERISTICS OF THE HUMAN RECEPTORS

Receptor	Inhalation	Ingestion of Water	Ingestion of Vegetation	Ingestion of Soil
Resident Receptor	Assumed to inhale air from the proposed roadway	Assumed to drink from water source that will not be impacted by the proposed roadway	Assumed to obtain 7.5% of vegetation from the residence	Assumed to ingest some soil from the residence

TABLE 2.3 SUMMARY OF RECEPTOR CHARACTERISTICS FOR ALL LIFE STAGES OF HUMAN RECEPTORS [a]

Parameter	Symbol	Units	Infant	Toddler	Child	Teen	Adult	Original Source
Soil Ingestion Rate	$R_{ing-soil}$	(mg/d)	30	200	50	50	50	MOE (2008)
Vegetation Ingestion Rate	$R_{ing-veg}$	(g/d)	155	172	259	347	325	Richardson 1997
Body Weight	B_w	(kg)	8.2	16.5	32.9	59.7	70.7	Richardson 1997
Fraction of soil and air from residence	F_{soil}	(-)	1	1	1	1	1	Assumed
Fraction of vegetation from residence	F_{veg}	(-)	0.075	0.075	0.075	0.075	0.075	MOE 2001
Exposure Frequency	EF	(days/yr)	365.25	365.25	365.25	365.25	365.25	Assumed
Exposure Duration	ED	(yr)	0.5	3.5	7	8	56	Assumed
Averaging Time – Carcinogen	AT_C	(days)	27393.75	27393.75	27393.75	27393.75	27393.75	Assumed 75 years
Averaging Time – Non Carcinogen	AT_{NC}	(days)	182.63	1278.38	2556.75	2922	20454	Assumed same as ED

Note:
a - Values obtained from Health Canada (2004a) with the exception of the soil ingestion rate, as cited in Original Source

3. Exposure Assessment

The primary objective of the exposure assessment is to predict, using a series of cautious assumptions (see Section 2.2), the potential exposure for the selected receptors to COC via the pathways identified in the following section (Section 3.1).

A detailed discussion of the air dispersion modelling is provided in the AQIA. A detailed discussion of the pathways model used to determine the exposures of humans to COC is provided in Appendix A. An example calculation for one COC is provided (Appendix C) to illustrate how these equations are used to develop the exposures at the receptor location. Similar calculations are performed for all the COC for each human receptor. Only chemical- and receptor-specific parameters are changed.

3.1. Exposure Pathways

The potential pathways of exposure (Figure 3.1) for the resident are assumed to be the inhalation of particulate matter and gaseous particles outdoors, the ingestion of soil and dust outdoors and the ingestion of locally grown vegetation. As discussed previously in Section 2.2.1., drinking water is obtained from a source that is not impacted by the proposed roadway.

Specific assumptions for the receptor exposure pathways are outlined in Table 2.2. The pathways are described in more detail below.

The various pathways evaluated were as follows:

- Inhalation of Air: The emissions from the vehicles on the roadway will result in the direct exposure of the human population as the plume impinges down onto the ground level. Human receptors will therefore inhale both gaseous and particle-borne chemicals while outdoors. Although the construction and maintenance activities and general road use will generate particulates which will migrate to the indoor environment and thereby add to the inhalation and ingestion routes of exposure, the assessment considers that a resident will be exposed 24 hours a day, 7 days a week, 365 days per year in the outdoor environment. This is a conservative estimate of exposure. There are some literature sources indicating that indoor air concentrations of VOCs can be potentially higher in indoor air than outdoor air, but only when there are indoor sources of VOCs. In addition, a study by Stocco *et al.* (2008) in the Windsor area indicated that indoor concentrations of some VOC such as 1,3-butadiene and benzene are higher in indoor air in comparison to outdoor air, but this was attributed to an attached garage and not to traffic-related sources. In addition, by the laws of conservation of mass the indoor air concentrations cannot be higher than the outdoor air concentrations unless

there is an additional source. As such, indoor air exposure is not evaluated in this assessment.

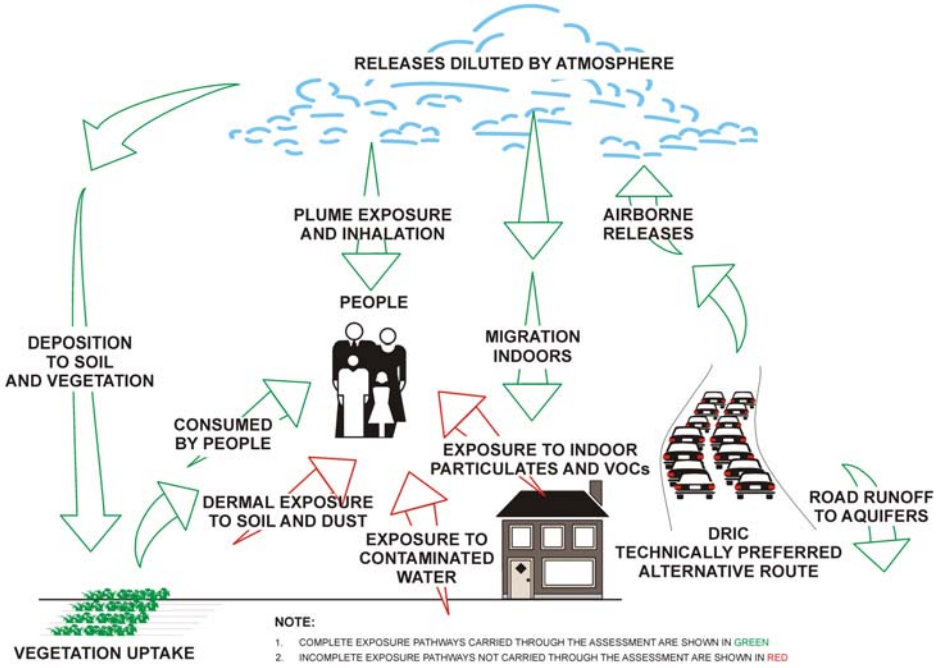
- Inhalation of Soils and Dusts: Human exposure may occur through inhalation of soils and dusts outdoors as the gaseous and particle-borne chemicals emitted from the vehicles on the roadway are deposited onto soils and surfaces. The rate of this deposition is a function of the local meteorological conditions such as wind speed and precipitation rates. These have been discussed in more detail in the Air Quality Impact Assessment.

- Ingestion of Soil: Chemicals emitted from the vehicles on the roadway can be deposited on soil and can be ingested by human receptors outdoors during playing and gardening activities. The toddler receptor is generally the most exposed receptor since they ingest the largest amount of soil.

- Ingestion of Locally Grown Vegetation: As chemicals emitted from the vehicles on the roadway are deposited from air-borne emissions, they may contact leaves and fruit of locally grown (backyard gardens) vegetation, where they may remain on the surface or may be absorbed into the plant. Based on information collected in Ontario (MOE 2001), approximately 7.5 % of the vegetable intake of an Ontario resident is from backyard gardens. Deposition of chemicals onto the soil may also result in accumulation in plants via root uptake. Humans are exposed to these chemicals by eating the produce from their backyard gardens.

- Dermal Exposure to Soils and Dusts: Dermal exposure by receptors may occur through direct dermal contact with air-borne chemicals and/or soil and dust on which chemicals have been deposited. With the exception of formaldehyde, the predicted soil concentrations are so small that the dermal exposure pathway will be insignificant. As shown in the dose calculations in Appendix B of this HHRA, the dominant exposure pathway for all COC is consumption of backyard produce rather than dermal exposure. In many cases the differences between the ingestion of soil and backyard produce are orders of magnitude which supports the exclusion of the dermal exposure pathway and, as such, this pathway is not assessed further

FIGURE 3.1 POTENTIAL PATHWAYS OF EXPOSURE FOR HUMAN RECEPTORS



3.2. Background and Predicted Concentrations Associated With the Parkway

Air dispersion modelling of emissions from vehicles traveling on the roadway was carried out as described in the AQIA. The predicted short-term and long-term air concentrations were conservatively estimated for three different horizons in time (2015, 2025 and 2035). This timeline has been discussed in the Environmental Assessment as well as Section 1.2 of this report, and was selected based on a thirty year horizon which is common industry practice for transportation projects. Construction is scheduled for completion in 2013. Horizons of 10, 20 and 30 years into the future were selected, using 2005 as the base year. These concentrations were then used within the human health risk assessment.

The representative background air concentrations are considered to be the 90th percentile air concentrations in the Windsor area (Table 3.1), which were developed in the AQIA. A detailed discussion on the background air concentrations is provided in the AQIA and is summarized here.

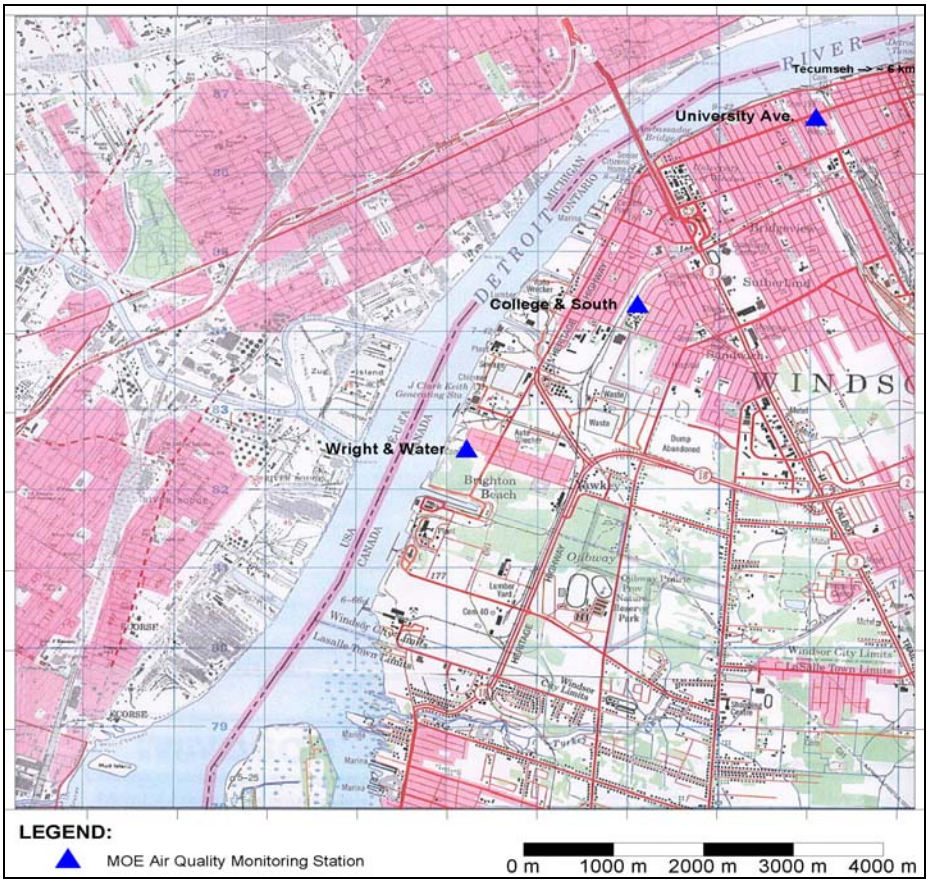
Background concentrations were developed based on monitoring data in the Windsor area. Air quality monitoring stations with published data that were located in the vicinity of the Parkway study area and had the most complete set of data were selected for use in this study. The following stations were used:

- 467 University Avenue (Station #060204 C);
- College/South St. (Station #060211R);
- Wright/Water St. (Station #060212I); and
- Tecumseh, 9725 Riverside Drive East (Station #012009) (note: removed from the network in 2002).

The location of these ambient air monitoring stations are illustrated in Figure 3.2. It should be noted that the stations shown in Figure 3.2 are representative of overall air quality conditions in the City of Windsor. They do not reflect particular local conditions, such as the present heavy traffic conditions on Huron Church Road.

The most recent available data (for 1999 to 2003) were used in the evaluation. For each chemical, statistical analyses including the mean, maximum and 90th percentile as well as the measured concentrations for different averaging times (e.g. one-hour, 24-hour, etc.) are presented in tabular format in the report. Where applicable, numbers of exceedances (when the measured concentrations exceed the ambient air quality criteria (AAQC) for a certain averaging time) are also presented. With the exception of the annual monitoring data for VOCs and PAHs, which is collected by Environment Canada, all other data for conventional pollutants are from the MOE ambient monitoring stations in the vicinity of the Parkway Study area.

FIGURE 3.2 LOCATION OF LOCAL AMBIENT AIR QUALITY MONITORING STATIONS



The background concentration is the ambient concentration of a chemical that would occur without the inclusion of the transportation element. The MOE typically requires the assessment to be completed using a 90th percentile background concentration which is reflective of a background concentration that would actually be lower 90% of the time (or, that would be higher 10% of the time). While the use of the 90th percentile background may under-predict the absolute maximum concentrations reported, it tends to over-predict the actual concentrations (and the number of exceedances) because the background is artificially elevated. This phenomenon is illustrated in Figure 3.2 for $PM_{2.5}$, where the 90th percentile background concentration of 21 µg/m^3 (based on data reported from the MOE's air quality stations in Windsor) overestimates the actual background concentrations for a significant portion of the year. The use of the 90th percentile also doesn't account for day-to-day variability, which is typically several µg/m^3 but can be as high as 30 µg/m^3. Nonetheless, the 90th percentile background concentrations as shown in Table 3.1 are used in the AQIA and in this HHRA and any further reference to 'background' is related to these 90th percentile values. Since hourly background concentrations were not available for the majority of the COC, the 24 hour values were used in the report for all exposure periods. Although these values could have been adjusted to hourly values using the MOE conversion, this was decided against since it would have only increased the background levels, which can mask the impacts of traffic. Additionally, since this is a comparative risk assessment, changing the background levels would not change the results of the HHRA between the "No Build" and Parkway scenarios. It is difficult to estimate how background levels will change between the three horizon years evaluated in this assessment, therefore the background was fixed for all three years. This adds some uncertainty to the assessment and will be discussed in the uncertainty section (see Section 5.6).

TABLE 3.1 SUMMARY OF 90TH PERCENTILE BACKGROUND CONCENTRATIONS USED IN THE RISK ASSESSMENT

COC	90th Percentile Background Concentration (µg/m^3)
NO_2	70
SO_2	32
$PM_{2.5}$	21
Acrolein	0.15
Benzene	2.3
Acetaldehyde	2.3
Formaldehyde	4.3
1,3-Butadiene	0.16

FIGURE 3.3 COMPARISON OF PREDICTED TO ACTUAL BACKGROUND CONCENTRATIONS OF $PM_{2.5}$ IN WINDSOR

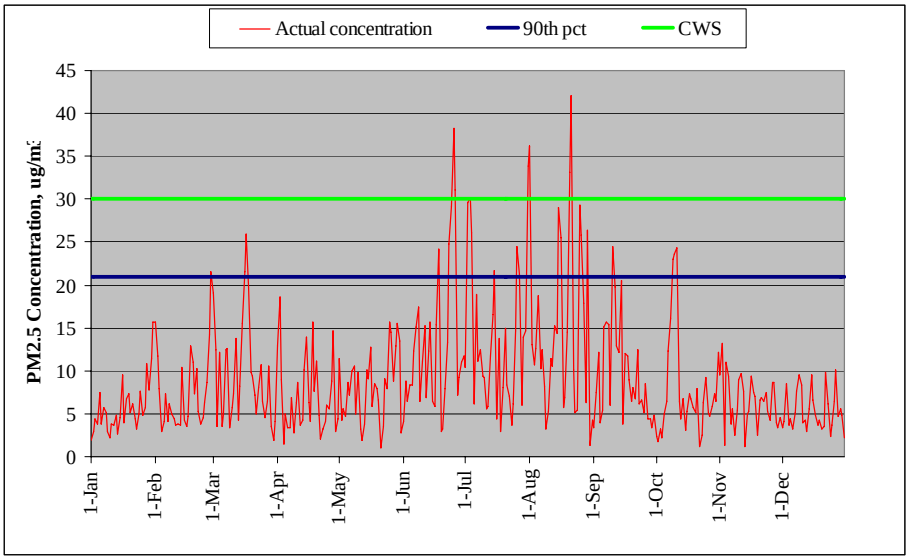


Figure 3.4 illustrates the addition of the Parkway to the background for PM_{10} taking into consideration the variable (i.e., daily) background for receptors close to the Parkway and Figure 3.5 illustrates the addition of the Parkway for receptors further away from the Parkway. While this example illustrates PM_{10}, a similar pattern also applies for all the other COC.

The burgundy colour in the figure is the background and the turquoise colour is the background combined with the model results. As can be seen in the figures, background concentrations predominate and traffic related concentrations are very small. At a receptor closer to the road, the traffic increment is more obvious than for the receptor located further away. Thus, the background concentration in Windsor from transboundary pollution dominates and traffic adds relatively small increments and no road configuration will change this conclusion.

FIGURE 3.4 PM_{10} CONCENTRATION PROFILES WITHIN 50M OF THE ROADWAY

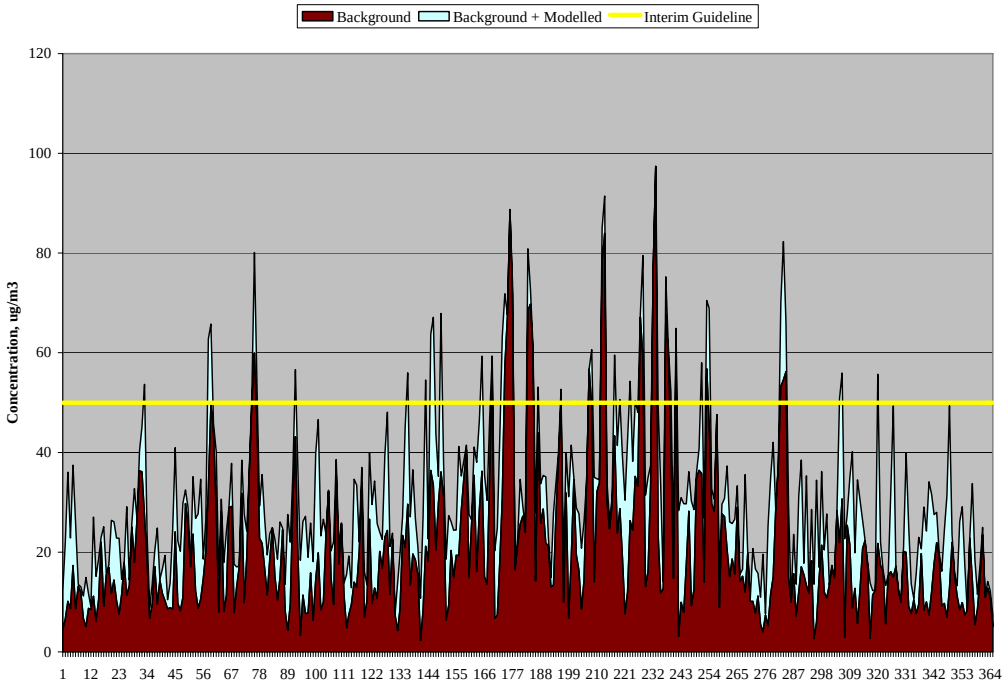


FIGURE 3.5 PM_{10} CONCENTRATION PROFILES WITHIN 350M OF THE ROADWAY

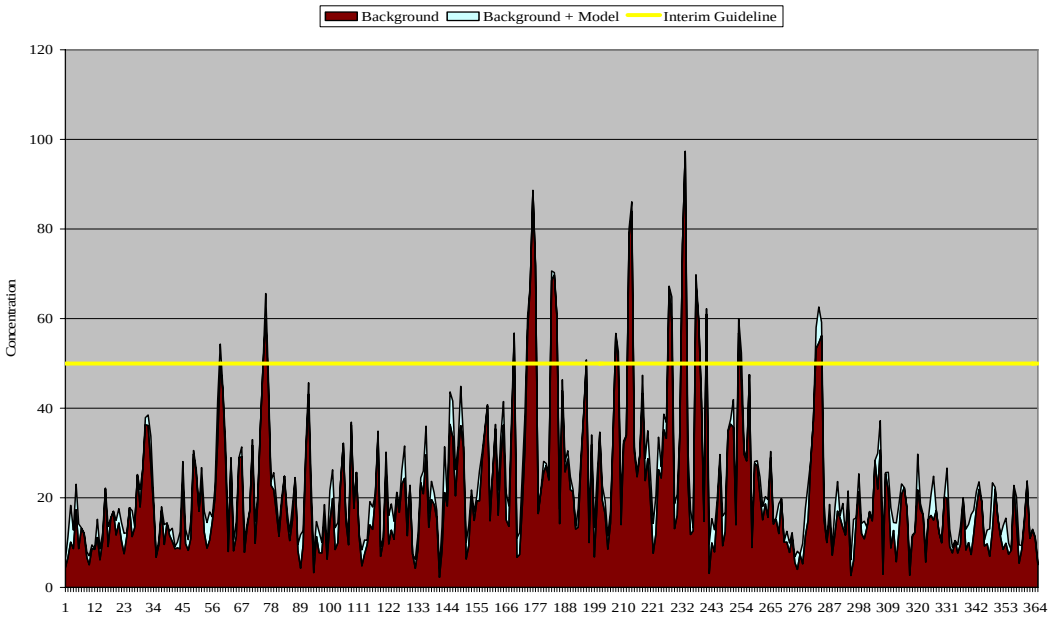


Table 3.2 provides the maximum predicted concentrations of gaseous air pollutants (NO_x, SO_2 and $PM_{2.5}$) from vehicles on the roadway for the maximum concentration year (generally 2035) for both the Future "No Build" and Parkway scenarios. These predicted concentrations include background. As seen from a comparison of Tables 3.1 and 3.2, background concentrations account for a substantial portion of the maximum predicted concentrations. As discussed in Section 1, approximately 90% of the background concentration is associated with transboundary pollution. NO_x concentrations will be reduced in areas along the proposed Parkway; however, no appreciable changes in concentration are observed for SO_2 and $PM_{2.5}$ for the Future "No Build" or Parkway scenarios. Appendix B provides a summary of the other concentrations for the other two horizon years (2015 and 2025). Appendix E provides and analysis of the change in $PM_{2.5}$ concentrations from 2015 to 2035.

Table 3.3 provides the maximum predicted air concentrations for VOCs for the Year 2035. These concentrations include background. Again, as seen from a comparison of Tables 3.1 and 3.3, background concentrations account for a substantial portion of the maximum predicted air concentrations. As discussed in Section 1, about 90% of the background concentration is associated with transboundary pollution. As such, there is very little difference in the VOC concentrations between the Future "No Build" (the roadway in its existing configuration with additional traffic) and the Parkway scenarios. Appendix B provides a summary of VOC concentrations for the other two horizon years (2015 and 2025). Appendix E provides and analysis of the change in benzene concentrations from 2015 to 2035.

Table 3.4 provides the maximum predicted incremental soil concentrations resulting from emissions from vehicles for both the Future "No Build" and Parkway scenarios for the Year 2035. These concentrations are determined from deposition over a 75 year time period. As seen from the Table, there is very little difference in the concentrations between the two scenarios due to the fact that background concentrations of VOCs in air dominate the maximum predicted air concentrations. With the exception of formaldehyde, the concentrations of the other VOCs are so small that they would not be measured. The predicted soil concentrations for formaldehyde are orders of magnitude greater than the soil concentrations predicted for the other VOCs because of its low volatility in relation to the other VOCs considered in the assessment. Formaldehyde is significantly less volatile, with a Henry's Law constant that is 5 orders of magnitude lower than that for 1,3-butadiene. The soil loss constant for formaldehyde is therefore 6 orders of magnitude lower than that for 1,3-butadiene, resulting in a higher predicted soil concentration. It should be noted that for formaldehyde, the traffic sources add very little to the background soil concentrations. Nonetheless, the predicted soil concentrations due to vehicular traffic emissions are well below background soil concentrations. Appendix B provides a summary of the soil concentrations for the other two horizon years (2015 and 2025).

TABLE 3.2 MAXIMUM PREDICTED AIR CONCENTRATIONS (INCLUDING BACKGROUND) FOR GASEOUS AIR POLLUTANTS EMITTED FROM VEHICLES FOR BOTH THE FUTURE "NO BUILD" AND PARKWAY SCENARIOS IN 2035

Receptor Locations	NO_x 1 hr (µg/m³)		NO_x Annual (µg/m³)		SO_2 1 hr (µg/m³)		SO_2 24 hr (µg/m³)		$PM_{2.5}$ 24 hr (µg/m³)	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field - 2479	148.9	83.5	81.6	73.1	32.2	32.3	32.1	32.1	23.6	23.0
Bellwood Estates - 58	225.1	129.0	107.1	80.2	32.9	33.1	32.2	32.2	25.4	23.6
Bellwood Estates - 403	112.8	100.6	80.1	73.3	32.3	32.4	32.1	32.1	22.2	22.7
Grand Marais Roads - 74	197.1	115.1	103.2	76.8	32.7	32.9	32.2	32.2	25.3	23.1
Grand Marais Roads - 186	156.9	103.0	91.4	74.4	32.5	32.6	32.1	32.1	23.7	22.5
Heritage Estates - 910	108.7	80.0	73.8	71.4	32.2	32.2	32.0	32.0	21.7	21.7
Home for Aged LaSalle - 944	147.9	84.6	77.4	71.4	32.3	32.4	32.0	32.0	21.7	21.5
Home for Aged LaSalle - 945	160.5	85.2	79.1	71.3	32.3	32.4	32.0	32.0	21.7	21.6
Huron Estates - 295	121.1	98.0	81.8	73.2	32.4	32.5	32.1	32.1	22.5	22.3
Huron Estates - 410	109.8	89.5	78.7	72.3	32.3	32.4	32.1	32.1	22.2	21.9
Kendleton Court - 781	186.0	87.5	88.2	74.1	32.3	32.4	32.1	32.1	23.2	23.4
Oliver Estates - 858	155.4	91.4	78.6	73.9	32.2	32.5	32.0	32.0	21.8	23.0
Oliver Estates - 1997	178.9	100.6	80.5	74.5	32.3	32.7	32.1	32.1	22.3	23.4
Reddock - 423	142.3	88.0	79.6	72.3	32.3	32.4	32.0	32.0	22.3	22.0
Residential - 2478	117.5	87.3	74.6	71.6	32.3	32.4	32.0	32.0	21.8	21.7
Southwood Lakes - 867	110.6	80.1	76.2	72.2	32.2	32.3	32.0	32.0	21.7	21.8
Spring Garden - 1513	98.4	100.2	75.3	74.2	32.4	32.7	32.1	32.1	21.5	22.5
Spring Garden - 1644	98.4	90.7	75.5	73.4	32.4	32.4	32.1	32.1	21.7	22.0
St. Clair College - 2480	99.3	78.3	76.8	71.6	32.1	32.2	32.0	32.0	22.3	22.0
Villa Borghese - 828	171.8	83.3	87.7	72.5	32.2	32.3	32.1	32.1	22.5	22.0
Villa Paradiso Cres. - 848	119.9	81.8	77.1	72.7	32.2	32.3	32.0	32.0	22.4	22.7
Background	70		70		32		32		21	

TABLE 3.3 MAXIMUM PREDICTED AIR CONCENTRATIONS (INCLUDING BACKGROUND) FOR VOLATILE ORGANIC COMPOUNDS EMITTED FROM VEHICLES FOR BOTH THE FUTURE "NO BUILD" AND PARKWAY SCENARIOS IN 2035

Receptor Location	Benzene (µg/m³)		1,3-Butadiene (µg/m³)		Formaldehyde (µg/m³)		Acetaldehyde (µg/m³)		Acrolein (µg/m³)	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field - 2479	2.372	2.384	0.169	0.169	4.376	4.371	2.365	2.364	0.154	0.154
Bellwood Estates - 58	2.551	2.562	0.193	0.190	4.521	4.453	2.423	2.398	0.163	0.158
Bellwood Estates - 403	2.379	2.391	0.169	0.170	4.367	4.367	2.362	2.362	0.153	0.153
Grand Marais Roads - 74	2.499	2.501	0.186	0.183	4.490	4.436	2.410	2.390	0.161	0.157
Grand Marais Roads - 186	2.438	2.437	0.178	0.176	4.429	4.397	2.386	2.374	0.157	0.155
Heritage Estates - 910	2.343	2.353	0.164	0.165	4.339	4.343	2.351	2.353	0.151	0.152
Home for Aged LaSalle - 944	2.354	2.361	0.166	0.166	4.348	4.349	2.354	2.355	0.152	0.152
Home for Aged LaSalle - 945	2.357	2.363	0.166	0.166	4.353	4.351	2.356	2.356	0.152	0.151
Huron Estates - 295	2.391	2.396	0.170	0.170	4.373	4.377	2.365	2.366	0.154	0.154
Huron Estates - 410	2.373	2.378	0.168	0.168	4.358	4.358	2.359	2.359	0.153	0.152
Kendleton Court - 781	2.382	2.402	0.170	0.172	4.379	4.393	2.367	2.372	0.154	0.155
Oliver Estates - 858	2.361	2.413	0.166	0.173	4.345	4.388	2.353	2.371	0.152	0.154
Oliver Estates - 1997	2.375	2.425	0.168	0.175	4.360	4.401	2.359	2.375	0.153	0.155
Reddock - 423	2.363	2.382	0.167	0.169	4.356	4.363	2.358	2.361	0.153	0.153
Residential - 2478	2.346	2.362	0.164	0.166	4.345	4.347	2.353	2.354	0.152	0.152
Southwood Lakes - 867	2.361	2.391	0.166	0.169	4.345	4.360	2.354	2.360	0.152	0.152
Spring Garden - 1513	2.388	2.422	0.169	0.173	4.354	4.379	2.358	2.367	0.152	0.154
Spring Garden - 1644	2.376	2.403	0.168	0.171	4.353	4.369	2.357	2.363	0.152	0.153
St. Clair College - 2480	2.350	2.356	0.165	0.165	4.347	4.345	2.354	2.354	0.152	0.152
Villa Borghese - 828	2.372	2.386	0.168	0.169	4.362	4.356	2.360	2.358	0.153	0.153
Villa Paradiso Cres. - 848	2.355	2.376	0.166	0.168	4.351	4.366	2.356	2.362	0.152	0.153
Background	2.32		0.16		4.31		2.34		0.15	

3.3. Exposure Estimates

The predicted exposures for the receptors were obtained from the pathways modelling (see Appendix A) and are summarized in this section for the horizon year 2035 (see Appendix B for all horizon years). The composite receptor is used to calculate the exposures to COC for carcinogenic effects (risk calculation) and represents the exposure of an individual living his/her entire lifetime (from infant to adult) in one residential location. In other words, a composite receptor encompasses all life stages by summing the individual exposures for the different life stages. This represents a conservative estimate of exposure since statistics associated with population mobility indicate much shorter residency times (U.S. EPA, 1997).

3.3.1. Inhalation

The assessment of potential effects due to inhalation is evaluated based on air concentrations. For assessment of non-carcinogenic effects, since the receptor is assumed to be exposed 24 hours per day, 7 days per week, and 365 days per year, the inhalation exposure concentrations are the same as the air concentrations provided in Table 3.2. The inhalation exposures for the five receptors are therefore identical to one another and are summarized in Table 3.5. The exposures to benzene, 1,3-butadiene, formaldehyde and acetaldehyde were calculated after weight-adjusting the air concentrations for the exposure duration and averaging time since they are considered to be carcinogenic via inhalation:

$$ExposureConcentration_{inhalation,C} = \frac{ExposureFrequency \times ExposureDuration}{AveragingTime} \times C_{air} \quad (3\text{-}1)$$

Where C_{air} is the maximum predicted air concentration obtained from the Air Quality Modelling.

The exposure frequency is receptor-specific (based on the given lifestage), while the exposure frequencies and averaging times are the same for all life stages considered in this assessment (Table 2.3). Hence, the inhalation exposure concentrations for carcinogenic effects for the five different lifestages are unique. However, in evaluating the cancer risks to the composite receptor, since the exposure is a sum of the individual lifestages, the value of the following equation reduces to 1:

$$\frac{ExposureFrequency \times ExposureDuration}{AveragingTime}$$

As such, the dose for evaluation of cancer risk to the composite receptor is equal to the predicted concentration in air. The inhalation exposure concentrations for the adult and composite receptors are summarized in Table 3.6.

In calculating the inhalation exposures, only the air concentration is necessary since the hazard quotient or risk value is determined by a comparison to a Reference Air

Concentration or a unit risk in terms of air concentration. Thus the inhalation rate and body weight are not used in the evaluation.

3.3.2. Ingestion

The predicted total dose from ingestion includes the pathways of soil, dust and backyard produce. As discussed in Section 3.1, the dermal pathway is insignificant and was not considered in the assessment. The predicted concentration of COC in each of these environmental media is ultimately based on the estimated concentration of COC in emissions from the vehicles along the roadway. The transfer of COC to soil and vegetation results in predictions of COC concentrations in these environmental media, and the ingestion doses to human receptors were calculated as described in Appendix A.2. A summary of the total ingestion dose (mg/kg-d) for the resident at the various locations along the roadway for the Year 2035 is given in Table 3.7 for the toddler (non-carcinogenic effects) and Table 3.8 for the composite and adult receptors (carcinogenic effects). The dose calculation for ingestion takes into account receptor-specific characteristics (such as body weight and soil ingestion rate), and so the ingestion dose is different for all receptors, for carcinogenic and non-carcinogenic effects.

As seen from the table, the doses due to the ingestion pathway are similar between the Future "No Build" and the Parkway scenarios because background air concentrations dominate the predicted air concentrations and subsequently the soil and backyard garden produce concentrations. The doses for all receptors for all horizon years are presented in Appendix B. From Appendix B it can be seen that the ingestion of backyard produce is the dominant exposure pathway for ingestion and in many cases is several orders of magnitude higher than the doses due to the soil ingestion pathway.

TABLE 3.4 MAXIMUM PREDICTED SOIL CONCENTRATIONS (mg/kg) FOR VOLATILE ORGANIC COMPOUNDS EMITTED FROM VEHICLES FOR BOTH THE FUTURE "NO BUILD" AND PARKWAY SCENARIOS IN 2035

Receptor Location	Benzene		1,3-Butadiene		Formaldehyde		Acetaldehyde		Acrolein	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field - 2479	0.00352	0.00353	0.0000134	0.0000134	73.2	73.1	0.00197	0.00197	0.000228	0.000228
Bellwood Estates - 58	0.00378	0.00380	0.0000153	0.0000150	75.6	74.5	0.00202	0.00200	0.000242	0.000234
Bellwood Estates - 403	0.00353	0.00354	0.0000134	0.0000134	73.0	73.0	0.00197	0.00197	0.000227	0.000227
Grand Marais Roads - 74	0.00370	0.00371	0.0000147	0.0000145	75.1	74.2	0.00201	0.00199	0.000239	0.000233
Grand Marais Roads - 186	0.00361	0.00361	0.0000141	0.0000139	74.1	73.5	0.00199	0.00198	0.000233	0.000230
Heritage Estates - 910	0.00347	0.00349	0.0000130	0.0000130	72.6	72.6	0.00196	0.00196	0.000224	0.000225
Home for Aged LaSalle - 944	0.00349	0.00350	0.0000131	0.0000131	72.7	72.7	0.00196	0.00196	0.000225	0.000225
Home for Aged LaSalle - 945	0.00349	0.00350	0.0000131	0.0000131	72.8	72.8	0.00196	0.00196	0.000225	0.000224
Huron Estates - 295	0.00354	0.00355	0.0000134	0.0000134	73.1	73.2	0.00197	0.00197	0.000228	0.000228
Huron Estates - 410	0.00352	0.00352	0.0000133	0.0000133	72.9	72.9	0.00196	0.00196	0.000227	0.000225
Kendleton Court - 781	0.00353	0.00356	0.0000134	0.0000136	73.2	73.5	0.00197	0.00197	0.000228	0.000230
Oliver Estates - 858	0.00350	0.00358	0.0000131	0.0000137	72.7	73.4	0.00196	0.00197	0.000225	0.000228
Oliver Estates - 1997	0.00352	0.00359	0.0000133	0.0000138	72.9	73.6	0.00196	0.00198	0.000227	0.000230
Reddock - 423	0.00350	0.00353	0.0000132	0.0000134	72.8	73.0	0.00196	0.00196	0.000227	0.000227
Residential - 2478	0.00348	0.00350	0.0000130	0.0000131	72.7	72.7	0.00196	0.00196	0.000225	0.000225
Southwood Lakes - 867	0.00350	0.00354	0.0000131	0.0000134	72.7	72.9	0.00196	0.00196	0.000225	0.000225
Spring Garden - 1513	0.00354	0.00359	0.0000134	0.0000137	72.8	73.2	0.00196	0.00197	0.000225	0.000228
Spring Garden - 1644	0.00352	0.00356	0.0000133	0.0000135	72.8	73.1	0.00196	0.00197	0.000225	0.000227
St. Clair College - 2480	0.00348	0.00349	0.0000130	0.0000130	72.7	72.7	0.00196	0.00196	0.000225	0.000225
Villa Borghese - 828	0.00352	0.00354	0.0000133	0.0000134	72.9	72.8	0.00196	0.00196	0.000227	0.000227
Villa Paradiso Cres. - 848	0.00349	0.00352	0.0000131	0.0000133	72.8	73.0	0.00196	0.00197	0.000225	0.000227

TABLE 3.5 INHALATION EXPOSURE CONCENTRATIONS (mg/m^3, INCLUDING BACKGROUND) FOR ALL RECEPTORS EXPOSED TO VOLATILE ORGANIC COMPOUNDS FOR BOTH THE FUTURE "NO BUILD" AND PARKWAY SCENARIOS FOR 2035

Receptor Location	Benzene		1,3-Butadiene		Formaldehyde		Acetaldehyde		Acrolein	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field - 2479	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Bellwood Estates - 58	$2.6x10^{-3}$	$2.6x10^{-3}$	$1.9x10^{-4}$	$1.9x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.6x10^{-4}$	$1.6x10^{-4}$
Bellwood Estates - 403	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Grand Marais Roads - 74	$2.5x10^{-3}$	$2.5x10^{-3}$	$1.9x10^{-4}$	$1.8x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.6x10^{-4}$	$1.6x10^{-4}$
Grand Marais Roads - 186	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-4}$	$1.8x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.6x10^{-4}$	$1.6x10^{-4}$
Heritage Estates - 910	$2.3x10^{-3}$	$2.4x10^{-3}$	$1.6x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Home for Aged LaSalle - 944	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Home for Aged LaSalle - 945	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Huron Estates - 295	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Huron Estates - 410	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Kendleton Court - 781	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.6x10^{-4}$
Oliver Estates - 858	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Oliver Estates - 1997	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.8x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.6x10^{-4}$
Reddock - 423	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Residential - 2478	$2.3x10^{-3}$	$2.4x10^{-3}$	$1.6x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Southwood Lakes - 867	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Spring Garden - 1513	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Spring Garden - 1644	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
St. Clair College - 2480	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Villa Borghese - 828	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Villa Paradiso Cres. - 848	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$

Note: NA – not applicable; formaldehyde does not have an inhalation TRV for non-carcinogenic effects and so exposure concentrations are not calculated

TABLE 3.6 INHALATION EXPOSURE CONCENTRATIONS (mg/m^3, INCLUDING BACKGROUND) FOR CARCINOGENIC EFFECTS FOR ADULT AND COMPOSITE RECEPTORS EXPOSED TO VOLATILE ORGANIC COMPOUNDS FOR THE FUTURE "NO BUILD" AND PARKWAY SCENARIOS FOR 2035

Receptor Location	Benzene				1,3-Butadiene				Formaldehyde				Acetaldehyde			
	No Build		Parkway		No Build		Parkway		No Build		Parkway		No Build		Parkway	
	Adult	Comp.	Adult	Comp.	Adult	Comp.	Adult	Comp.	Adult	Comp.	Adult	Comp.	Adult	Comp.	Adult	Comp.
Ball Field - 2479	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Bellwood Estates - 58	$1.9x10^{-3}$	$2.6x10^{-3}$	$1.9x10^{-3}$	$2.6x10^{-3}$	$1.4x10^{-4}$	$1.9x10^{-4}$	$1.4x10^{-4}$	$1.9x10^{-4}$	$3.4x10^{-3}$	$4.5x10^{-3}$	$3.3x10^{-3}$	$4.5x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Bellwood Estates - 403	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Grand Marais Roads - 74	$1.9x10^{-3}$	$2.5x10^{-3}$	$1.9x10^{-3}$	$2.5x10^{-3}$	$1.4x10^{-4}$	$1.9x10^{-4}$	$1.4x10^{-4}$	$1.8x10^{-4}$	$3.4x10^{-3}$	$4.5x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Grand Marais Roads - 186	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.3x10^{-4}$	$1.8x10^{-4}$	$1.3x10^{-4}$	$1.8x10^{-4}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Heritage Estates - 910	$1.7x10^{-3}$	$2.3x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.2x10^{-4}$	$1.6x10^{-4}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Home for Aged LaSalle - 944	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Home for Aged LaSalle - 945	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$3.2x10^{-3}$	$4.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Huron Estates - 295	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Huron Estates - 410	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Kendleton Court - 781	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Oliver Estates - 858	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Oliver Estates - 1997	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.3x10^{-4}$	$1.8x10^{-4}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Reddock - 423	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Residential - 2478	$1.8x10^{-3}$	$2.3x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.2x10^{-4}$	$1.6x10^{-4}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Southwood Lakes - 867	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Spring Garden - 1513	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Spring Garden - 1644	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$
St. Clair College - 2480	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Villa Borghese - 828	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Villa Paradiso Cres. - 848	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$3.2x10^{-3}$	$4.4x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$

Note: acrolein is not included as it is not carcinogenic via inhalation; 'Comp.' refers to composite receptor

TABLE 3.7 INGESTION DOSE (mg/kg-d) FOR NON-CARCINOGENIC EFFECTS FOR A TODDLER RECEPTOR EXPOSED TO VOLATILE ORGANIC COMPOUNDS FOR BOTH THE FUTURE "NO BUILD AND" PARKWAY SCENARIOS FOR 2035

Receptor Location	Benzene		1,3-Butadiene		Formaldehyde		Acetaldehyde		Acrolein	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field - 2479	$6.3x10^{-5}$	$6.4x10^{-5}$	NA	NA	4.9	4.9	$8.0x10^{-4}$	$8.0x10^{-4}$	$7.0x10^{-5}$	$7.0x10^{-5}$
Bellwood Estates - 58	$6.8x10^{-5}$	$6.8x10^{-5}$	NA	NA	5.1	5.0	$8.2x10^{-4}$	$8.1x10^{-4}$	$7.4x10^{-5}$	$7.2x10^{-5}$
Bellwood Estates - 403	$6.3x10^{-5}$	$6.4x10^{-5}$	NA	NA	4.9	4.9	$8.0x10^{-4}$	$8.0x10^{-4}$	$6.9x10^{-5}$	$6.9x10^{-5}$
Grand Marais Roads - 74	$6.7x10^{-5}$	$6.7x10^{-5}$	NA	NA	5.1	5.0	$8.1x10^{-4}$	$8.1x10^{-4}$	$7.3x10^{-5}$	$7.1x10^{-5}$
Grand Marais Roads - 186	$6.5x10^{-5}$	$6.5x10^{-5}$	NA	NA	5.0	5.0	$8.0x10^{-4}$	$8.0x10^{-4}$	$7.1x10^{-5}$	$7.0x10^{-5}$
Heritage Estates - 910	$6.2x10^{-5}$	$6.3x10^{-5}$	NA	NA	4.9	4.9	$7.9x10^{-4}$	$7.9x10^{-4}$	$6.9x10^{-5}$	$6.9x10^{-5}$
Home for Aged LaSalle - 944	$6.3x10^{-5}$	$6.3x10^{-5}$	NA	NA	4.9	4.9	$7.9x10^{-4}$	$7.9x10^{-4}$	$6.9x10^{-5}$	$6.9x10^{-5}$
Home for Aged LaSalle - 945	$6.3x10^{-5}$	$6.3x10^{-5}$	NA	NA	4.9	4.9	$7.9x10^{-4}$	$7.9x10^{-4}$	$6.9x10^{-5}$	$6.9x10^{-5}$
Huron Estates - 295	$6.4x10^{-5}$	$6.4x10^{-5}$	NA	NA	4.9	4.9	$8.0x10^{-4}$	$8.0x10^{-4}$	$7.0x10^{-5}$	$7.0x10^{-5}$
Huron Estates - 410	$6.3x10^{-5}$	$6.3x10^{-5}$	NA	NA	4.9	4.9	$8.0x10^{-4}$	$8.0x10^{-4}$	$6.9x10^{-5}$	$6.9x10^{-5}$
Kendleton Court - 781	$6.3x10^{-5}$	$6.4x10^{-5}$	NA	NA	4.9	5.0	$8.0x10^{-4}$	$8.0x10^{-4}$	$7.0x10^{-5}$	$7.0x10^{-5}$
Oliver Estates - 858	$6.3x10^{-5}$	$6.4x10^{-5}$	NA	NA	4.9	4.9	$7.9x10^{-4}$	$8.0x10^{-4}$	$6.9x10^{-5}$	$7.0x10^{-5}$
Oliver Estates - 1997	$6.3x10^{-5}$	$6.5x10^{-5}$	NA	NA	4.9	5.0	$8.0x10^{-4}$	$8.0x10^{-4}$	$6.9x10^{-5}$	$7.0x10^{-5}$
Reddock - 423	$6.3x10^{-5}$	$6.3x10^{-5}$	NA	NA	4.9	4.9	$8.0x10^{-4}$	$8.0x10^{-4}$	$6.9x10^{-5}$	$6.9x10^{-5}$
Residential - 2478	$6.3x10^{-5}$	$6.3x10^{-5}$	NA	NA	4.9	4.9	$7.9x10^{-4}$	$7.9x10^{-4}$	$6.9x10^{-5}$	$6.9x10^{-5}$
Southwood Lakes - 867	$6.3x10^{-5}$	$6.4x10^{-5}$	NA	NA	4.9	4.9	$7.9x10^{-4}$	$8.0x10^{-4}$	$6.9x10^{-5}$	$6.9x10^{-5}$
Spring Garden - 1513	$6.4x10^{-5}$	$6.5x10^{-5}$	NA	NA	4.9	4.9	$8.0x10^{-4}$	$8.0x10^{-4}$	$6.9x10^{-5}$	$7.0x10^{-5}$
Spring Garden - 1644	$6.3x10^{-5}$	$6.4x10^{-5}$	NA	NA	4.9	4.9	$7.9x10^{-4}$	$8.0x10^{-4}$	$6.9x10^{-5}$	$6.9x10^{-5}$
St. Clair College - 2480	$6.3x10^{-5}$	$6.3x10^{-5}$	NA	NA	4.9	4.9	$7.9x10^{-4}$	$7.9x10^{-4}$	$6.9x10^{-5}$	$6.9x10^{-5}$
Villa Borghese - 828	$6.3x10^{-5}$	$6.4x10^{-5}$	NA	NA	4.9	4.9	$8.0x10^{-4}$	$8.0x10^{-4}$	$6.9x10^{-5}$	$6.9x10^{-5}$
Villa Paradiso Cres. - 848	$6.3x10^{-5}$	$6.3x10^{-5}$	NA	NA	4.9	4.9	$7.9x10^{-4}$	$8.0x10^{-4}$	$6.9x10^{-5}$	$6.9x10^{-5}$

Note: NA –not applicable; 1,3 butadiene does not have an oral reference dose for non-carcinogenic effects and so dose is not calculated.

TABLE 3.8 INGESTION DOSE (mg/kg-d) FOR CARCINOGENIC EFFECTS FOR THE COMPOSITE AND ADULT RECEPTORS EXPOSED TO VOLATILE ORGANIC COMPOUNDS FOR BOTH THE FUTURE "NO BUILD" AND PARKWAY SCENARIOS FOR 2035

Receptor Location	Benzene			
	COMPOSITE RECEPTOR		ADULT RECEPTOR	
	No Build	Parkway	No Build	Parkway
Ball Field – 2479	$3.3x10^{-5}$	$3.3x10^{-5}$	$2.1x10^{-5}$	$2.1x10^{-5}$
Bellwood Estates - 58	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.2x10^{-5}$	$2.2x10^{-5}$
Bellwood Estates - 403	$3.3x10^{-5}$	$3.3x10^{-5}$	$2.1x10^{-5}$	$2.1x10^{-5}$
Grand Marais Roads - 74	$3.4x10^{-5}$	$3.5x10^{-5}$	$2.2x10^{-5}$	$2.2x10^{-5}$
Grand Marais Roads - 186	$3.4x10^{-5}$	$3.4x10^{-5}$	$2.1x10^{-5}$	$2.1x10^{-5}$
Heritage Estates - 910	$3.2x10^{-5}$	$3.2x10^{-5}$	$2.1x10^{-5}$	$2.1x10^{-5}$
Home for Aged LaSalle - 944	$3.2x10^{-5}$	$3.3x10^{-5}$	$2.1x10^{-5}$	$2.1x10^{-5}$
Home for Aged LaSalle - 945	$3.3x10^{-5}$	$3.3x10^{-5}$	$2.1x10^{-5}$	$2.1x10^{-5}$
Huron Estates - 295	$3.3x10^{-5}$	$3.3x10^{-5}$	$2.1x10^{-5}$	$2.1x10^{-5}$
Huron Estates - 410	$3.3x10^{-5}$	$3.3x10^{-5}$	$2.1x10^{-5}$	$2.1x10^{-5}$
Kendleton Court - 781	$3.3x10^{-5}$	$3.3x10^{-5}$	$2.1x10^{-5}$	$2.1x10^{-5}$
Oliver Estates - 858	$3.3x10^{-5}$	$3.3x10^{-5}$	$2.1x10^{-5}$	$2.1x10^{-5}$
Oliver Estates - 1997	$3.3x10^{-5}$	$3.3x10^{-5}$	$2.1x10^{-5}$	$2.1x10^{-5}$
Reddock - 423	$3.3x10^{-5}$	$3.3x10^{-5}$	$2.1x10^{-5}$	$2.1x10^{-5}$
Residential - 2478	$3.2x10^{-5}$	$3.3x10^{-5}$	$2.1x10^{-5}$	$2.1x10^{-5}$
Southwood Lakes - 867	$3.3x10^{-5}$	$3.3x10^{-5}$	$2.1x10^{-5}$	$2.1x10^{-5}$
Spring Garden - 1513	$3.3x10^{-5}$	$3.3x10^{-5}$	$2.1x10^{-5}$	$2.1x10^{-5}$
Spring Garden - 1644	$3.3x10^{-5}$	$3.3x10^{-5}$	$2.1x10^{-5}$	$2.1x10^{-5}$
St. Clair College - 2480	$3.2x10^{-5}$	$3.3x10^{-5}$	$2.1x10^{-5}$	$2.1x10^{-5}$
Villa Borghese - 828	$3.3x10^{-5}$	$3.3x10^{-5}$	$2.1x10^{-5}$	$2.1x10^{-5}$
Villa Paradiso Cres. - 848	$3.2x10^{-5}$	$3.3x10^{-5}$	$2.1x10^{-5}$	$2.1x10^{-5}$

4. Hazard Assessment

The hazard assessment involves the identification of the potentially toxic effects of compounds, and the determination of the appropriate exposure limits for the various chemicals. The toxicity reference value (TRV) is defined as the amount of chemical exposure that can occur without any adverse health effects (for threshold or non-cancer causing compounds), or that is associated with an acceptable level of risk (non-threshold or cancer causing compounds).In the hazard assessment, data is generally obtained on:

- Slope Factor (SF) or Unit Risk (UR) - (for carcinogens) comprises a plausible upper bound estimate of the probability of a response per unit intake of a chemical over a lifetime. It is used to evaluate the probability of a cancer developing due to a lifetime of exposure. For carcinogens, no threshold is assumed to exist (i.e., every dose presents some risk); or

- Reference Dose (RfD) or Reference Concentration (RfC) - (for non-carcinogens) comprises an estimate of the daily exposure level for a chemical for the entire population, including sensitive populations such as elderly, children and pregnant women, that is not anticipated to present an adverse effect during a lifetime.

The specific values used to assess potential adverse health effects have been selected from sources that are well documented and reviewed and are generally acceptable to the regulatory agencies. The following sources were reviewed for relevant information:

1. Health Canada – Tolerable daily intakes (TDIs) (Health Canada 2004b);

2. U.S. EPA - Toxicity values from the on-line database IRIS (Integrated Risk Information System) (U.S. EPA 2008);

3. U.S. Risk Assessment Information System (RAIS); and

4. World Health Organization (WHO).

Although state-specific environmental commissions (i.e., Texas Commission on Environmental Quality) exist which may provide estimates of toxicity for the COC, they were not generally reviewed for use in this assessment except in the case of 1,3-butadiene. If data could be found from the above-listed sources, which are reputable regulatory agencies, then these data were generally used.

When data were available from more than one information source then the information was reviewed and a determination was made on the most appropriate TRV. In general, the most recent evaluation of the toxicity data was selected as the preferred value. IRIS was the main reference used for the VOCs since the IRIS

database was quite often the only source of toxicity information. The following paragraphs detail the selection of the TRVs. Tables 4.1 and 4.2 provide a summary of the TRVs used in this assessment. As seen from Table 4.1, some VOC associated with vehicular emissions have both carcinogenic and non-carcinogenic properties.

4.1. Volatile Organic Compounds

Formaldehyde

The U.S. EPA provide an oral RfD of 0.2 mg/kg-d for formaldehyde which is based on a 2 year rat bioassay study in which a reduction in weight gain was seen in rats that were administered formaldehyde in drinking water (IRIS 2008, updated 1990). This RfD has been derived from a NOAEL of 15 mg/kg-d, using an uncertainty factor of 100 to account for inter- and intra-species variation. This same value is cited in the RAIS database. The RAIS and IRIS databases do not list an inhalation RfC for formaldehyde. Health Canada (2004b) does not provide any toxicity reference values for exposure to formaldehyde.

The WHO (2006) cite that the International Agency for Research on Cancer classify formaldehyde as a probable human carcinogen via inhalation, but not by ingestion. In a 2004 press release, IARC definitively classified formaldehyde as a human carcinogen based on new evidence that formaldehyde causes nasopharyngeal cancer in humans. Although the WHO does not provide any inhalation unit risk for formaldehyde, IRIS lists an inhalation unit risk of 0.013 $(mg/m^3)^{-1}$. This value is based on a study in which mice and rats were exposed to formaldehyde via inhalation over a period of 24 months (IRIS 2008, updated 1991). Squamos cell carcinomas were seen in the nasal cavities of the female rats.

Although the IRIS TRVs for formaldehyde have not been updated since the 1990s, they were used in the assessment for lack of other available data.

Benzene

The IRIS database (2008, updated 2003) provides an oral RfD and inhalation RfC of 0.004 mg/kg-d and 0.03 mg/m^3, respectively, both of which were derived from a human occupational inhalation exposure study (Rothman et al. 1996) in which a decreased lymphocyte count was noted as the toxicological endpoint. Route-to-route extrapolation of the results of benchmark dose (BMD) data from this study yielded a benchmark concentration of 8.2 mg/m^3, which was then converted to a BMDL of 1.2 mg/kg-d. The final RfD was calculated from this BMDL using an uncertainty factor of 300 to account for effect-level extrapolation, intraspecies variation and subchronic-to-chronic extrapolation of the data. The RfC was derived from the benchmark concentration of 8.2 mg/m^3, again using an uncertainty factor of 300. Health Canada (2004b) does not provide any TRVs for non-carcinogenic effects for benzene.

Benzene is carcinogenic to humans via inhalation and ingestion exposure. The IRIS database (2008, updated 2000) provides a range of 1.5×10^{-2} to 5.5×10^{-2} $(mg/kg\text{-}d)^{-1}$ for the oral slope factor for benzene. These values were derived from the inhalation

unit risk, also provided as a range from 2.2 x 10^{-3} to 7.8 x 10^{-3} $(mg/m^3)^{-1}$, for leukemia in humans. The IRIS values were obtained from occupational exposure, based primarily on studies of Plioform rubber workers by Rinsky *et al.* (1981,1987), as well as studies by Paustenbach *et al*. (1993) and Crump (1994). Health Canada also provides an inhalation unit risk of 3.3 x 10^{-3} $(mg/m^3)^{-1}$ which is based on human occupational studies related to mortality from acute myelogenous leukemia based on the study by Rinsky *et al*. (1987). Health Canada developed a tumourigenic concentration value (TC_{05}) of 15 $\mu g/m^3$ using a linear quadratic absolute risk model.

The WHO (2000) provide an inhalation unit risk of 6 x 10^{-3} $(mg/m^3)^{-1}$. This was based by an analysis by Crump (1994) who calculated unit risks for a lifetime of exposure from 4.4 x 10^{-3} to 7.5 x 10^{-3} $(mg/m^3)^{-1}$. The geometric mean of these values is 6 x 10^{-3} $(mg/m^3)^{-1}$.

The California Department of Health Services (CDHS 1984) derives a potency factor for inhalation exposure to benzene. Human epidemiological data as well as animal data on Zymbal gland carcinomas in rats were used to develop the cancer potency factors (Maltoni *et al.* 1983). A unit risk value of 2.9 x 10^{-5} $(\mu g/m^3)^{-1}$, which is equivalent to 2.9 x 10^{-2} $(mg/m^3)^{-1}$, was derived for estimating risks due to benzene exposure via inhalation. RIVM (2001) evaluated the dose-response relationship related to benzene exposure by looking at other European jurisdictions such as the EU and WHO. RIVM developed a unit risk value of 5.0 x 10^{-6} $(\mu g/m^3)^{-1}$, which is equivalent to 5.0 x 10^{-3} $(mg/m^3)^{-1}$, based on epidemiological studies (Rinsky *et al*. 1981, Wong and Raabe 1995).

Health Canada (2004b) provides an oral slope factor of 0.31 $(mg/kg\text{-}d)^{-1}$, based on the Canadian Drinking Water Guideline value which was developed from a study in which rats were administered benzene in drinking water. Oral cavity squamous cell carcinomas were observed in the rats and a drinking water unit risk of 0.029 $(mg/L)^{-1}$ was derived. The oral slope factor was derived by assuming a water ingestion rate of 1.5 L/day and a body weight of 70 kg.

The IRIS values are used in this assessment for evaluation of non-carcinogenic effects from benzene exposure. Many of the studies for carcinogenicity are based on the Piloform rubber workers (Rinsky *et al.*(1981,1987). Different ranges of risk values are provided based on these studies; the Health Canada values are used for evaluation of carcinogenic effects since they are within the range of the derived risk levels. The use of a risk value within the range of risk levels may not be the most conservative approach, but since this assessment is comparing the risks from the future "No Build" scenario to the risks for the Parkway scenario, the same comparison points are being used. A discussion of the use of a different TRV for benzene will be provided in the Uncertainty Section. In addition, the oral slope factor for benzene provided by Health Canada is based on a drinking water study and not extrapolation from the inhalation pathway (as was done by the U.S. EPA).

Acetaldehyde

Health Canada, the WHO, the IRIS database and the RAIS database do not provide any oral TRVs for acetaldehyde exposure. As such, formaldehyde was used as a surrogate for ingestion exposure and so the RfD used for acetaldehyde in this assessment is 0.2 mg/kg-d. This was considered appropriate given the structural similarity between the two compounds. The only source for an inhalation RfC for acetaldehyde is IRIS (2008, last updated 1991), which lists a value of 0.009 mg/m^3 for degeneration of olfactory epithelium in rats in a short-term inhalation study. This value was derived from a NOAEL of 8.7 mg/m^3, using an uncertainty factor of 1000 to account for sensitive human populations, interspecies uncertainty and subchronic to chronic extrapolation.

For carcinogenic effects of acetaldehyde, IRIS is the only source for toxicity information. The database (2008, updated 1991) lists acetaldehyde as a probable human carcinogen via inhalation based on sufficient evidence of carcinogenicity in animals. An inhalation unit risk of 2.2×10^{-3} $(mg/m^3)^{-1}$ has been derived using linearized multistage-variable extraction, based on increased incidence of nasal tumours in male and female rats and laryngeal tumours in male and female hamsters after inhalation exposure. No oral slope factor is provided.

Although the values have not been updated since 1991, the IRIS TRVs are used in this assessment for lack of other available information.

Acrolein

Neither Health Canada nor the WHO provide any TRVs for exposure to acrolein. The RAIS database provides values, but these are quoted as being from the IRIS database. The U.S. EPA IRIS database (2008, updated 2003) is the only source for the TRVs, and, as such, these values are used in this HHRA. The oral RfD is 5×10^{-4} mg/kg-d, based on a chronic oral gavage study in which acrolein was administered to rats in drinking water. A decreased survival rate was taken as the toxicological endpoint, and a NOAEL of 0.05 mg/kg-day was adopted. An uncertainty factor of 100 was applied to take into account interspecies and intraspecies variation. An inhalation RfC of 2×10^{-5} mg/m^3 is provided which is based on formation of nasal lesions in rats in a subchronic inhalation study. A human equivalent LOAEL of 0.02 mg/m^3 was derived and converted to an RfC using an uncertainty factor of 1000 to account for interspecies and intraspecies variation, use of a LOAEL, and subchronic to chronic extrapolation.

IRIS states the data is inadequate for an assessment of the human carcinogenic potential of acrolein. IARC does not provide any information one way or another related to the classification of the carcinogenicity of acrolein. As such, acrolein is not evaluated for carcinogenic effects in this assessment via either exposure route.

1,3 – Butadiene

The RAIS database provides toxicity values for 1,3-butadiene, but these are cited as being from IRIS. The IRIS database (2008, updated 2002) provides no oral reference dose for 1,3-butadiene, but does provide an inhalation reference concentration of 2×10^{-3} mg/m^3. This value is for ovarian atrophy in mice in a 2-year inhalation study by the National Toxicology Program (NTP). A human equivalent $BMCL_{10}$ (benchmark dose predicted to affect 10% of the population) of 1.98 mg/m^3 was used as the point of departure, using an uncertainty factor of 1000 to account for interspecies extrapolation, intraspecies variability, incompleteness of the database, and for extrapolation to a level below the 10% effect level. In the priority substances list report by Health Canada/Environment Canada (HC/EC 1999), a benchmark concentration predicted to affect 5% of the population (BMC_{05}) of 0.57 mg/m^3 was derived on the basis of data for the incidence of ovarian atrophy of all severities (i.e., female reproductive toxicity) in mice (same NTP study). However, if only those animals that had moderate or marked ovarian atrophy were included, the resulting BMC_{05} would be 9.6 mg/m^3. If the highest exposure group is excluded, the BMC_{05} becomes 3.1 mg/m^3. No one value is reported as a suggested TRV. The Texas Commission on Environmental Quality (TCEQ) has developed a Texas-specific toxicological threshold value of 3.3×10^{-2} mg/m^3 (TCEQ 2007a, 2007b), based on data from the previously-mentioned NTP study for ovarian atrophy. This was derived using a much lower total uncertainty factor of 30. Although the value from the TCEQ is from a more recent report, the use of the U.S. EPA value represents a more conservative estimate of the potential effects to the human receptors. Additionally, the U.S. EPA value is more conservative than any of the BMC_{05} values reported by Health Canada/Environment Canada. As such, an RfC of 2×10^{-3} mg/m^3 is used in this assessment.

In 1992, IARC classified 1,3-butadiene as probably carcinogenic to humans. In a 2007 report for the WHO (Grosse *et al.*), it is classified as a carcinogen on the basis of sufficient evidence in humans of an increased risk for leukemia. The WHO (2000) discusses the health effects of 1,3-butadiene exposure, but provides no guideline values. Health Canada/Environment Canada (E/HC 1999) reviews TC_{01} and TC_{05} values (tumorigenic concentration associated with a 1%and 5% increase in the incidence of mortality due to cancer, respectively). The TC_{01} value that they derived from their model with the best fit was 1.7 mg/m^3. The IRIS database (2008, updated 2002) lists an inhalation unit risk of 3×10^{-5} (µg/m^3)$^{-1}$, which is equivalent to 0.03 (mg/m^3)$^{-1}$ (i.e. 3×10^{-5} m^3/µg multiplied by 1000µg/mg). This value is based on linear extrapolation from human data on the increased incidence of leukemia associated with occupational exposure. The TCEQ (2007a, 2007b) provides an inhalation unit risk of 1.6×10^{-4} (mg/m^3)$^{-1}$ for Texans, derived from the same occupational study. This value is supported by the MOE (2008). Although the value from the TCEQ is from a more recent report, the use of the U.S. EPA value of 0.03 (mg/m^3)$^{-1}$ represents a more conservative estimate and is used in this assessment.

No oral slope factor is provided for 1,3-butadiene as the U.S. EPA states that the chemical is a gas at room temperature and pressure, making oral exposure unlikely.

TABLE 4.1 TOXICITY REFERENCE VALUES FOR VOCS

COC	Oral		Inhalation		Source
	SF	RfD	UR_i	RfC	
	$(mg/kg\text{-}d)^{-1}$	(mg/kg-d)	$(mg/m^3)^{-1}$	(mg/m^3)	
Benzene	0.31	0.004	0.0033	0.03	Carcinogenic – b, Non-carcinogenic - a
1,3-butadiene			0.03	0.002	a
Formaldehyde		0.2	0.013		a
Acetaldehyde		0.2 [c]	0.0022	0.009	a
Acrolein		0.0005		2×10^{-5}	a

Note: a) IRIS, U.S. EPA (2008)
b) Health Canada (2004b)
c) Using toxicity data for formaldehyde as a surrogate

4.2. Gaseous Air Pollutants

In general, the adverse effects of exposure to gaseous air pollutants are associated with irritation of the tissues of the eyes and upper and lower respiratory systems. Exposures to the gaseous air pollutants (e.g. SO_2, NO_2) are assessed using air quality guidelines (AQG) values obtained from the World Health Organization (WHO) that are designed to offer guidance in reducing the health impacts of air pollution. The NO_2 guidelines are health-based values with no safety factors built in and are not targets, while the SO_2 values are only targets. However, since no other values are presently available to evaluate the health effects relating to NO_2 and SO_2 exposure, and since the WHO values are the most current values available, they were used as TRVs in the assessment. Risk assessments carried out by others that consider SO_2 exposure also use the guideline values provided by the WHO. Table 4.2 provides a summary of the values used as TRVs for gaseous air pollutants.

NO_x

For NO_2, the WHO short-term guideline is based on human and animal studies which indicate that adverse effects are not observed at concentrations below 200 µg/m^3 (WHO 2005). Studies on bronchial responsiveness in asthmatics show an increased responsiveness at concentrations above 200 µg/m^3 and laboratory studies show a direct effect on pulmonary function in asthmatics at concentrations in the order of 560 µg/m^3. The use of the 200 µg/m^3 is protective of sensitive individuals and has no built in safety factors. The annual guideline of 40 µg/m^3 is set to protect the public from gaseous effects of NO_2. This is based on the fact that no abatement methods are designed to reduce NO_2. Epidemiological evidence in children with asthma indicates that bronchitic symptoms increase with increasing NO_2 concentrations. There are also studies which indicate that there is some evidence of effects of respiratory symptoms in infants below 40 µg/m^3 (WHO 2005). However, there are other confounding variables which make it difficult to determine whether the effects are due only to NO_2, or whether they are due to a mixture of air pollutants. Thus, the WHO indicates that there is insufficient health-based evidence at present to warrant changing the annual NO_2 annual guideline from the current value of 40 µg/m^3. Thus

the WHO guidelines for NO_2 are based on the protection of sensitive individuals and are therefore health-based values.

SO_2

The short-term (1 hour) value from the WHO for SO_2 is based on asthmatics that showed changes in pulmonary function as well as respiratory symptoms after short-term exposure while exercising. The one hour exposure for SO_2 has been scaled from the 10 minute exposure level of 500 µg/m^3 as provided by the WHO (2005). The scaling factor is based on an equation provided by the Ontario Ministry of the Environment (2005) which is entitled Air dispersion Modelling Guideline for Ontario. The equation is $C_0 = C_1 \times F$ where $F = (t_1/t_0)^n$ where C_0 is the concentration at averaging time t_0 and C_1 is the averaging time at C_1 and n is a power exponent in this case 0.42. Thus, the 1 hour exposure value for SO_2 of 350 µg/m^3 is health-based. The 24 hour guideline for SO_2 has been updated in 2005 by the WHO; the new guideline is approximately six times lower than the 2000 guideline value and is based on epidemiological studies from 2003 onwards. These studies indicated that there was a major decrease in childhood respiratory disease and all-age mortality when the sulphur content in fuels was substantially reduced. Several studies by Wong *et al.* (2002), Pope *et al.* (2002) and Burnett *el al.* (2004) indicate that there is no threshold for health effects for 24 hour exposure to SO_2 concentrations in the range of 5 to 40 µg/m^3. The guideline has therefore been set at 20 µg/m^3. The WHO acknowledges the difficulty in achieving the new guideline value in the short-term, and has suggested a stepped approach using a tier I interim value of 125 µg/m^3 shown in Table 4.2. The tier II interim value of 50 µg/m^3 is an intermediate goal based on a reduction of motor vehicle emissions, industrial emissions and/or emissions from power plant production. The WHO suggests that this is a reasonable and feasible goal for some developing countries and would lead to significant health improvements. In this assessment the tier I interim value of 125 µg/m^3 was used. Since this is a comparative risk assessment, the use of the tier II value would not have changed the conclusions drawn from the assessment for the two scenarios. It should be noted that these recommended guideline values for sulphur dioxide are not linked with guidelines for particles. WHO further noted in their *Air Quality Guidelines Global Update* (2005) that an annual guideline for SO_2 is not necessary since compliance with the 24 hour level will ensure low levels for the annual average. Therefore, no annual health-based guideline is provided.

TABLE 4.2 THRESHOLD CONCENTRATIONS USED AS TOXICITY REFERENCE VALUES FOR GASEOUS AIR POLLUTANTS

COC	Duration	Threshold Concentration (µg/m³)	Jurisdiction
$PM_{2.5}$	-	15	CEPA/FPAC WGAQOG (1996)
	-	7.5	CARB (2008)
NO_2	1 hour	200	WHO (2005)
	Annual	40	WHO (2005)
SO_2	1 hour	350	Derived from WHO (2005) and MOE(2005)
	24 hour (Tier I Interim)	125*	WHO (2000, 2005)

Note: * Although the WHO has set the guideline at 20 µg/m³, it is acknowledged that there will be difficulty in achieving this guideline. As such, a stepped approach has been suggested, using a tier I interim guideline value of 125 µg/m³ and a tier II interim value of 50 µg/m³. A value of 125 µg/m³ has been used in the assessment and is not a health-based guideline.

Particulate Matter

Overview

Particulate matter (PM) describes all airborne solid and liquid particles of microscopic size, with the exception of pure water. The suspended portion of PM generally consists of particles less than 40 to 50 microns (µm) in diameter. These particles include a broad range of chemical species, such as elemental and organic carbon compounds, sulphates, nitrates and trace metals. Recently there has been a large focus on fine particles less than 2.5 µm since these particles penetrate deeper into the airways. The World Health organization (WHO) has concluded that fine particulate matter ($PM_{2.5}$) are more hazardous to health than are larger particles since the larger particles get filtered out by the fine hairs in the nostrils.

There is a growing body of scientific studies linking air pollutants to health effects. Recent assessments of the available health data are implying a stronger link between PM and short-term and long-term adverse health impacts. In addition, the effects are estimated to occur at levels that are lower than previously believed. This has motivated some regulators to re-assess the potential impact of particulate matter pollution on public health (CARB, 2008).

Many studies over the past few years have indicated that PM in the air aggravates symptoms of asthma, chronic pneumonia and cardiovascular problems in those people who already suffer from compromised respiratory systems. In 2004 the WHO provided a summary of the effects related to PM exposure. A summary of health effects related to PM exposure is provided in the following table.

TABLE 4.3 IMPORTANT HEALTH EFFECTS ASSOCIATED WITH EXPOSURE TO FINE PARTICULATE MATTER

Effects Related to Short-term Exposure	Effects Related to Long-term Exposure
Lung inflammatory reactions	Increase in lower respiratory symptoms
Respiratory symptoms	Reduction in lung function in children
Adverse effects on the cardiovascular system	Increase in chronic obstructive pulmonary disease
Increase in medication usage	Reduction in lung function in adults
Increase in hospital admissions	Reduction in life expectancy, owing mainly to cardiopulmonary mortality and probably to lung cancer
Increase in mortality	

Source: WHO (2004)

The U.S. EPA in 2004 completed a comprehensive review of epidemiological studies on the human health effects associated with particulate matter inhalation. The document, *Air Quality Criteria for Particulate Matter* (U.S. EPA 2004), provides a synthesis of the available information summarizing epidemiological and toxicological studies prior to 2004 and combines it with the previous reviews conducted by the U.S. EPA (1996a). Some of the relevant conclusions include:

- A large majority of relevant mortality studies show a statistically positive correlation with concentration of PM_{10}. Based on several multi-city studies in the U.S., Canada and Europe, statistically significant associations have been developed for cardiovascular and respiratory mortality with effect estimates ranging from 1.0 to 3.5 % (per 50 µg/m^3 PM_{10} increment);

- A growing body of epidemiologic evidence confirms that short- and long-term exposure to $PM_{2.5}$ is associated with various mortality or morbidity endpoint effects. Cardiovascular and respiratory mortality risks show positive correlations; however, the respiratory risks are not statistically significant. For multi-city studies, there is a 1 to 3.5 % increased risk of mortality per 25 µg/m^3 $PM_{2.5}$ increment;

- There are positive statistical associations with hospitalization for cardiovascular and respiratory diseases with exposure to both PM_{10} and $PM_{2.5}$; and

- Evidence suggests that not only $PM_{2.5}$ but coarse thoracic particles (e.g., $PM_{10-2.5}$) may contribute in exacerbating various respiratory conditions (e.g., asthma). Furthermore, there is new evidence suggesting a likely increase in the occurrence of chronic bronchitis associated with particulate matter exposure, especially long-term particulate matter exposure.

There are several scientific methods and procedures to establish a "cause and effect" relationship between air pollutants and human morbidity/mortality. Three types of scientific inquiry that have been used frequently in the past are:

- epidemiological studies;
- mechanistic studies; and
- exposure studies.

This section provides a brief overview of some recent studies with particular emphasis on epidemiologic studies. It does not attempt to describe all of the studies available, but only to highlight what may be considered important recent additions to the already large body of knowledge. This information has not been used to quantify exposure to fine PM.

Epidemiological Studies

Epidemiological studies are based on associations between air pollution concentrations and the overall health of populations. A positive association between the two parameters infers a common relationship between them. There are two types of studies, *"time-based series"* and *"cohort"* studies, each having different study design criteria and strengths/weaknesses of their conclusions. These studies have been made possible with the improved sophistication of epidemiologic methods, enabling the identification of subtle features in environment-related health outcomes despite the strength of masking effects such as cigarette smoking and body mass index.

Over the past two decades, epidemiological studies have provided the strongest evidence of a cause and effect relationship. The strength of evidence comes from several large-scale studies that have demonstrated a relationship between PM exposure and adverse health effects. These studies have demonstrated consistent findings after intensive re-analysis of the original data and procedures. In addition, new information on the study cohorts has not only confirmed the original findings, but has also demonstrated that the effects continue into later years of life.

There are several thousands of epidemiological studies that now show some association between air pollutants and overall health. Generally, there are more studies available that link adverse health effects with short-term exposures. These studies tend to be time-based series analysis. Cohort studies, on the other hand, tend to show relationships between long-term exposures and the occurrence of chronic diseases.

Short-term Effects

One important large-scale study is the National Mortality and Morbidity Air Pollution Study (NMMAPS) that evaluated data from 90 large U.S. cities and showed an association between PM exposure and cardiopulmonary mortality (Dominici *et al.* 2003). In the short-term (within 1 to 2 days after air pollution exposure) the cardiopulmonary mortality increased by 0.21% for each 10 $\mu g/m^3$ increase in PM_{10}. This was important because it showed that the PM concentrations that North

Americans breathe on an almost daily basis have a measurable impact on our daily mortality total.

Dominici *et al.* (2006) re-examined the risks of cardiovascular and respiratory effects, based on hospital admissions associated with short-term exposure to $PM_{2.5}$. The results of the study indicated a short-term increase in hospital admission rates associated with $PM_{2.5}$ for all of the health outcomes (i.e., cerebrovascular disease, peripheral vascular disease, ischemic heart disease, heart rhythm, heart failure, respiratory tract infection, and chronic obstructive pulmonary disease) except injuries. The largest association was for heart failure, which had a 1.28 % increase in risk per 10 $\mu g/m^3$ increase in same-day $PM_{2.5}$ concentration.

Pope and Dockery's (2006) summary comments on the results of short-term risks of air pollutants are very useful for putting these results into perspective:

"It seems unlikely *that relatively small elevations in exposure to particulate air pollution over short periods of only 1 or a few days could be responsible for very large increases in death. In fact, these studies of mortality and short-term daily changes in PM are observing small effects. For example, assume that a short-term elevation of $PM_{2.5}$ of 10 $\mu g/m^3$ results in an ~1% increase in mortality. Based on the year 2000 average death rate for the United States (8.54 deaths/1000 per year), a 50-ug/m^3 short-term increase in $PM_{2.5}$ would result in an average of only 1.2 deaths per day in a population of 1 million (compared with an expected rate of ~23.5/day). That is, on any given day, the number of people dying because of PM exposure in a population is small.*

It is remarkable that these studies of mortality and short-term changes in PM are capable of observing such small effects. Uncertainties in estimating such small effects legitimately create some doubts or concerns regarding the validity or accuracy of these estimates. Nevertheless, associations between daily changes in PM concentrations and daily mortality counts continue to be observed in many different cities and, more importantly, in large multi-city studies, which have much less opportunity for selection or publication bias. The estimated size of these associations is influenced by the methods used to control for potential confounding by long-term time trends, seasonality, weather, and other time-dependent covariates. However, numerous researchers using various methods, including alternative time series analytic approaches and case-crossover designs, continue to fairly consistently observe adverse mortality associations with short-term elevations in ambient PM."

Although there is a link between high pollution episodes and mortality within one to two days following such an episode (Dominici *et al.* 2003, 2006), there is a growing body of evidence that indicates long-term chronic outcomes are occurring at lower pollution levels.

Long-term Effects

The American Cancer Society (ACS) and the Harvard Six Cities studies are both landmark cohort studies that have shown a link between $PM_{2.5}$ and mortality. These two studies represent the most important findings, suggesting that relatively low PM levels are associated with long-term adverse health effects in populations. The key findings are summarized below.

- In the last five years, two very important early studies have been re-evaluated with current methods. The original findings of the studies have been confirmed with some additions to the overall study conclusions. These re-evaluations have served to strengthen the validity of findings (Dockery *et al.*, 1993, Krewski *et al.*, 2000).

- The re-analysis of the American Cancer Society data indicated that long-term *all-cause*, *cardiopulmonary*, and *lung cancer mortality* were increased by 4%, 6%, and 8%, respectively, for each 10 $\mu g/m^3$ increase in fine particulate matter (Pope *et al.* 2002).

- Additional follow-up studies for the ACS and Six Cities cohorts have been completed in the past 2 years. Notably the cities considered in the study have experienced lower PM levels since the original study. Health impacts have also lessened and it is assumed that there is a relationship to PM levels. The authors note that *"These findings suggest that mortality effects of long-term air pollution may be at least partially reversible over periods of a decade"* (Laden *et al.* 2006).

The above noted studies are important because they use a large statistical pool of high quality health and air pollution data. It is also important to note that the studies here have identified mortality as the endpoint.

Several other morbidity endpoints such as asthma, bronchitis, wheeziness, ear/nose/throat infections, cardiac arrhythmia, thrombosis and atherosclerotic lesion formation have also been identified. Thus, particulate matter may not cause only death, but may also cause several types of health impairment, decreasing the quality of life in general. By extension, although the mortality impact may be measured in increments of only a few percent, morbidity effects may be more widely and deeply distributed in the population.

A somewhat different result was found in the recent reanalysis of the Harvard Six Cities cohort by Laden *et al.* (2006). This reanalysis extended the follow-up of mortality incidence for an additional eight years. It is notable that $PM_{2.5}$ was estimated from PM_{10} and visibility data, which may not be a good measure of individual exposure. The association of $PM_{2.5}$ with all-cause, cardiovascular, and lung cancer mortality were consistent with the original study. As for the ACS study, the authors noted that "*these findings suggest that mortality effects of long-term air pollution may be at least partially reversible over periods of a decade*".

Laden *et al.* (2006) extended this further. This reanalysis indicated that the city-specific adjusted all-cause mortality rate ratios decreased with decreasing $PM_{2.5}$ concentration. Furthermore, cardiovascular mortality, as well as lung cancer mortality, was positively associated with average $PM_{2.5}$ concentration. Although respiratory mortality was also positively associated with average $PM_{2.5}$ concentration, the association was not statistically significant. The study found that for each reduction of 10 $\mu g/m^3$ of $PM_{2.5}$ there was a decrease of 0.73 in the relative risk level for death associated with respiratory and cardiovascular health, but not for death associated with lung cancer since the latency period for lung cancer mortality is greater. The authors concluded that the reduced mortality risk for the study population was associated with reduction in $PM_{2.5}$ concentrations.

In a study of daily mortality rates in twenty U.S. cities, Samet *et al*. (2000) determined that a 10 $\mu g/m^3$ increase in PM_{10} resulted in an incremental increase in the mortality rate of 0.5% for all causes of death. The authors also estimated that the relative rate of death from cardiovascular and respiratory causes was approximately 0.68% per 10 $\mu g/m^3$ increase in PM_{10}. A slightly higher increase in daily mortality of 0.7% per 10 $\mu g/m^3$ increase in PM_{10} has been suggested by Levy *et al.* (2000). Levy *et al.* (1999, 2002) estimated the impacts of power plants in the Boston and Chicago areas. The impacts of the known emissions of fine particles and secondary-pollutant-forming gases from the plants were estimated by dispersion modelling. In the Chicago area, the authors found the population-weighted (i.e., exposure-weighted) annual average impact from nine plants to be 0.3 $\mu g/m^3$ (total of primary and secondary PM). Given that the size of the population exposed at this level was 33 million, the incremental exposure estimated due to the plants was 320 premature deaths per year.

Recent studies have demonstrated that the human health effects associated with fine particulate matter may have been previously underestimated. One such study was conducted by Jerrett *et al.* (2005), where a subpopulation of approximately 23,000 southern Californians was followed between 1982 and 2000. Of the subpopulation, a total of 5,856 deaths were accounted for during this period. In addition, 44 individual confounders including lifestyle, diet, demographics, occupation and education, were taken into account. The results indicate that the relative risk calculated for $PM_{2.5}$ exposure was approximately 3 times greater than previous models reported in literature. Furthermore, the study found a stronger association between air pollution and ischemic heart disease than with more general measures of cardiopulmonary deaths or all-cause mortality. In terms of the relative risk levels, the study indicates that all-cause mortality had a relative risk of 1.17 for an increase of 10 $\mu g/m^3$ $PM_{2.5}$. The relative risk for mortality resulting from ischemic heart disease and lung cancer deaths was elevated, ranging from 1.24 to 1.6 for an increase of 10 $\mu g/m^3$ $PM_{2.5}$, depending on the model used. For cancers, as was expected the relative risks for lung cancers were higher than for digestive cancers or other cancers. However, attempts to replicate these results in other cities have not yet been successful.

Some studies have also focused on morbidity issues relating to exposure to PM. For example, Zanobetti *et al*. (2000a) examined the effect of prior admission for respiratory disease on whether or not a patient turned up at an emergency hospital facility during a high pollution event. They determined that the risk associated with

PM_{10} for hospitalization of elderly patients (>65 years old) with cardiovascular disease was approximately twice as high as the risk for patients with concurrent respiratory infections. The evidence for pre-existing heart disease modifies the risk of chronic obstructive pulmonary disease (COPD) admissions on high pollution days. The study also found that evidence of a previous heart failure increased the risk for admission on high PM days. Hospital visits also increased for elderly patients with acute respiratory infections when the PM concentrations were high. However, while the study found that greater PM concentrations exacerbated existing respiratory conditions, it did not find that high PM concentrations were the cause of these conditions.

Zanobetti *et al.* (2000b) also performed a multi-city analysis of the relationship between levels of PM_{10} and hospital admissions for heart and lung disease. They found that for each increase of 10 $\mu g/m^3$ of PM_{10}, COPD hospitalization rates increased by 2.5 %, pneumonia rates increased by 1.95 % and cardiovascular disease rates increased by 1.27 %. The authors were not able to determine whether the public health impacts were dominated by a few high pollution days or whether such impacts persist at concentrations generally observed in urban areas on most days.

Since the Windsor Essex Parkway is a long-term structure, the epidemiological evidence related to long-term exposures are the most relevant to consider in this assessment. This means that for every 10 $\mu g/m^3$ increase in $PM_{2.5}$ concentration there will be a corresponding 2.5 % increase in COPD (chronic obstructive pulmonary disease), 1.95% increase in pneumonia, 1.27% increase in cardiovascular disease, 6% increase in cardiopulmonary mortality and 8% increase in lung cancer mortality.

Threshold Values Selected in this Assessment

The emphasis on particulate matter has been moving to the finer fractions of PM over the last 30 years as health studies and monitoring equipment have advanced to be able to detect differences in the particulate matter fractions. In the last five to ten years health impact studies have been focussing on the impacts of particles less than 2.5 µm in diameter ($PM_{2.5}$). The US EPA has revoked their PM_{10} standard due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution. In addition, the Canadian Federal government has not developed a PM_{10} Canada Wide Standard due to insufficient knowledge on the appropriateness of the standard. The federal government also recognizes that initiatives to reduce $PM_{2.5}$ will also likely reduce PM_{10} concentrations. In keeping with the both the U.S. and Canadian governments position on PM_{10}, the Human Health Risk assessment focused on the potential effects associated with $PM_{2.5}$ exposure.

The WHO Working Group (2005) state that although clearly defined thresholds in exposure-response relationships for both long-term and short-term health effects are not available, adverse health effects from fine PM exposure are occurring at the levels of exposure currently experienced in urban areas in Europe. Since the conclusions were based on multi-city studies in the U.S., Canada and Europe, it suggests that health impacts also occur at fine PM levels commonly observed in

Canada. The WHO state that there is little evidence to suggest that there is a threshold value for $PM_{2.5}$ below which adverse health effects are not anticipated since adverse health effects have been observed at $PM_{2.5}$ concentrations of 3 to 5 µg/m^3.

The California Environmental Protection Agency Air Resources Board does not have the same view. In a recent report (CARB 2008), a threshold level for $PM_{2.5}$ exposure of 7 µg/m^3 was suggested, since this was the lowest observed concentration in an American Cancer Society study carried out by Pope *et al.* (2002).This large cohort study provided evidence that exposure to $PM_{2.5}$ as low as 7 µg/m^3 can be associated with premature death. The report was endorsed by a number of scientific advisors including Dr. Jonathan Levy, Dr. Barst Ostro and Dr. Arden Pope all well known scientists in the fine particulate area. In addition, the information in the document was peer reviewed by 12 experts including scientists such ad Dr. Doug Dockery, Dr. Kaz Ito, Dr. Morton Lippmann, Dr. Daniel Krewski and others.

The Canadian Environmental Protection Act/Federal Provincial Advisory Committee Working Group on Air Quality Objectives and Guidelines (CEPA/FPAC WGAQOG) also suggest a threshold value for $PM_{2.5}$, recommending a 24 hour average $PM_{2.5}$ health reference level of 15 µg/m^3. Below this value, statistically significant health effects cannot be determined.

Because of the diverse thoughts on the effects of $PM_{2.5}$, as discussed above, two threshold values are used as the health-based levels in this assessment for evaluation of potential health effects between the "No Build" and Parkway scenarios. The use of the CARB value of 7 µg/m^3 is supported by the experts who endorsed and reviewed the document, and they indicate that this level is sufficient due to the lack of long-term data available at low ambient concentrations of $PM_{2.5}$. This threshold was also considered in this assessment as a health-based limit. To highlight the diverse thoughts on $PM_{2.5}$, and to show the resultant effects on estimated health effects, the CEPA/FPAC WGAQOG value of 15 µg/m^3 was also used in the assessment.

5. Risk Characterization

The final step in the risk assessment process is the characterization of health risks or impacts. In this step the predicted exposures were compared to the TRVs for a given chemical in order to determine the risks associated with the various chemicals of concern. For this assessment, potential adverse effects and risks are calculated using deterministic (point estimate) risk estimates.

Hazard quotient (HQ) values for short-term (1-h, 8-h or 24-h) or long-term (annual) exposure to gaseous air pollutants were calculated by dividing the predicted concentration at the location of the maximum concentration by the appropriate TRV as shown in the following equation:

$$HQ = \frac{PredictedAirConcentration\left(\mu g / m^3\right)}{TRV\left(\mu g / m^3\right)} \quad \text{(5-1a)}$$

No inhalation rates or body weights are necessary in these calculations. A hazard quotient value for gaseous air pollutants below 1 implies that the health effects associated with the gaseous air pollutant are not significant. A value of 1 is used since all background exposures are captured in the predicted concentrations.

For non-carcinogenic effects related to exposure to VOCs carried through the pathways assessment, a hazard quotient (HQ) is calculated by dividing the predicted dose by the appropriate TRV as shown in equation 5-1b. For non-carcinogenic effects for VOC, the dose and TRV (reference dose) for ingestion exposure are in units of mg/kg-d, while for inhalation exposure the dose and TRV are in units of mg/m^3. As explained in Section 3.3.1 the inhalation exposure concentration is equal to the air concentration for all receptors. The TRVs are provided in Section 4.

$$HQ = \frac{Dose_{NC}}{TRV} \quad \text{(5-1b)}$$

Different magnitudes of hazard quotients have been used to screen for potential health effects. When all pathways are considered, a hazard quotient less than one (1) represents an insignificant impact to the receptor, as the predicted exposure does not exceed the applicable benchmark. The MOE allocates 20% of the Reference Dose (hazard quotient) for each exposure pathway. A hazard quotient of 0.2 was used to assess the resident exposures, even though the inhalation and ingestion pathways were considered. This represents a cautious assumption since background concentrations are not available for many components in the pathways assessment

In the case of the cancer-causing VOC carried through the pathways assessment, the risk level is calculated by multiplying the predicted dose for carcinogenic effects by the appropriate cancer slope factor (SF_o) or inhalation unit risk (UR_i) for ingestion or inhalation exposure, respectively. This is shown in the following equations:

$$Risk_{ingestion} = Dose_{ingestion,C}\left(\frac{mg}{kg \cdot d}\right) \times SF_o\left(\frac{mg}{kg \cdot d}\right)^{-1} \quad (5\text{-}2)$$

$$Risk_{inhalation} = Dose_{inhalation,C}\left(\frac{mg}{m^3}\right) \times UR_i\left(\frac{mg}{m^3}\right)^{-1} \quad (5\text{-}3)$$

For this assessment, an assumed incremental lifetime risk level of 1 x 10^{-6} was used as the reference risk level. At this level, health impacts are considered to be insignificant. Some agencies (such as Health Canada) use reference lifetime risks of 1 x 10^{-5} that have achieved wide acceptance for use in many industrial and commercial applications. The selection of an appropriate risk level can be weighed, as is the case with the U.S. EPA, against the size of populations exposed and what is reasonably achievable. Discussions around the U.S. EPA's Clean Air Act proposal for hazardous air pollutants include a risk range of 10^{-6} to 10^{-4} with a risk of 10^{-4} deemed to be safe (U.S. EPA 1990). Thus, a risk level of 1 x 10^{-6} represents a cautious value.

5.1. Potential Short- and Long-term Health Risks Arising from Gaseous Air Pollutants

The health effects associated with gaseous air pollutants emitted from vehicles along the roadway for the Future "No Build" and Parkway Scenarios were assessed using hazard quotient values. The most sensitive end points for gaseous air pollutants are generally associated with short-term exposure. For NO_x, 1 hr exposures were evaluated since health-based values are only available for this exposure time period. For SO_2, short-term exposures and risks were evaluated for both 1 hr and 24 hr exposures due to the availability of information. Long-term health risks associated with NO_x emitted from vehicles along the roadway for the Future "No Build" and Parkway Scenarios were estimated using maximum predicted air concentrations, including background levels, along the roadway.

5.1.1. Potential Health Risks Associated with Exposure to the Gaseous Air Pollutants

The results of the assessment for hazard quotients associated with exposure to predicted NO_x concentrations (including background concentrations) at various locations along the roadway for the Future "No Build" and Parkway are presented in Table 5.1 for the year 2035. It should be noted that the predicted concentrations are calculated for the situation considering that the maximum emissions occur simultaneously with the worst-case meteorological conditions, therefore, the predicted concentrations are considered to be conservative over-estimates and generally occur only once per year. The hazard quotients associated with the other horizon years (2015 and 2025) are provided in Appendix B.

As previously described in the AQIA, NO_x is typically considered as the summation of two oxides of nitrogen, namely nitrous oxide (NO) and nitrogen dioxide (NO_2). Of these two compounds NO_2 is the pollutant of concern. In most combustion processes up to 10% of the total NO_x is emitted as NO while the remaining 90% is NO_2. However in the presence of ozone (O_3), the emitted NO will react with the ambient O_3 to produce NO_2. Similarly, in the presence of ultraviolet radiation, the NO_2 will break down into NO and O, with the O reacting with O_2 to reform O_3, making it again available to react with NO. This continual cycle occurs until equilibrium is reached in the atmosphere.

For the purposes of this risk assessment, it has been assumed that 100% of the NO_x emitted is in the form of NO_2. This method provides a very conservative estimate of the NO_2 concentration since it does not take into account equilibrium that exists between NO_2 and NO.

As seen from Table 5.1, background exposure to NO_x both in the short-term and long-term accounts for a significant portion of the hazard quotient (i.e., HQ of 0.35 for the 1 hr exposure and a value of 1.8 for the annual exposure). In fact for the maximum exposure location which occurs at Bellwood Estates at Receptor location 58 for the annual exposures, the Parkway (i.e. transportation effects) only accounts for 11% of the hazard quotient, the other 89% of the hazard quotient is associated with background concentrations of which 90% comes from transboundary sources. For short-term exposure (1 hr) to NO_x, all hazard quotients are below 1 with the exception of Receptor location 58 in the Bellwood Estates where the hazard quotient marginally exceeds 1 (i.e., HQ=1.1) for the Future "No Build" scenario (i.e. the roadway in its current configuration). The hazard quotients associated with emissions from the Parkway are lower than those predicted for the future "No Build" scenario, indicating that the health risks from exposure to NO_x will be lower for residents in the various communities if the Windsor Essex Parkway is built. For long-term exposure (annual) to NO_x, all hazard quotient values are above 1 even for background exposure. For the Parkway, all hazard quotients are lower than for the Future "No Build" Scenario and are essentially equal to the HQ associated with background concentrations (i.e., HQ=1.8). The exception is Bellwood Estates where the hazard quotient value is 2.0. Similar results are obtained for the other horizon years 2015 and 2025 (see Appendix B). The results of the risk assessment associated with NO_x demonstrate that the risks are lower for emissions associated with the Parkway than the emissions associated with the Future "No Build" scenario (i.e. the roadway in its current configuration). The AQIA states that the reductions in NO_x for the Parkway scenario are due to less stop and go traffic along the Parkway

TABLE 5.1 HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO NO_X (INCLUDING BACKGROUND) FOR 2035

Receptor Location	Receptor ID	NO_x 1 hr		NO_x Annual	
		No Build	Parkway	No Build	Parkway
Ball Field	2479	0.74	0.42	**2.0**	**1.8**
Bellwood Estates	58	**1.1**	0.64	**2.7**	**2.0**
	403	0.56	0.50	**2.0**	**1.8**
Grand Marais Roads	74	0.99	0.58	**2.6**	**1.9**
	186	0.78	0.52	**2.3**	**1.9**
Heritage Estates	910	0.54	0.40	**1.8**	**1.8**
Home for Aged LaSalle	944	0.74	0.42	**1.9**	**1.8**
	945	0.80	0.43	**2.0**	**1.8**
Huron Estates	295	0.61	0.49	**2.0**	**1.8**
	410	0.55	0.45	**2.0**	**1.8**
Kendleton Court	781	0.93	0.44	**2.2**	**1.9**
Oliver Estates	858	0.78	0.46	**2.0**	**1.8**
	1997	0.89	0.50	**2.0**	**1.9**
Reddock	423	0.71	0.44	**2.0**	**1.8**
Residential	2478	0.59	0.44	**1.9**	**1.8**
Southwood Lakes	867	0.55	0.40	**1.9**	**1.8**
Spring Garden	1513	0.49	0.50	**1.9**	**1.9**
	1644	0.49	0.45	**1.9**	**1.8**
St. Clair College	2480	0.50	0.39	**1.9**	**1.8**
Villa Borghese	828	0.86	0.42	**2.2**	**1.8**
Villa Paradiso Cres.	848	0.60	0.41	**1.9**	**1.8**
Background value		*0.35*		*1.8*	

Note: All health-based criteria obtained from WHO.
Values in **bold** exceed a hazard quotient value of 1.

Table 5.2 presents the hazard quotients for exposure to SO_2 for various locations along the roadway. As seen from Table 5.2, background exposure to SO_2, both in the short-term (1 hr) and long-term (24 hr), accounts for all of the hazard quotient values for both the Future "No Build" and the Parkway scenarios (i.e., a HQ value of 0.09 for the 1 hr exposure and 0.26 for annual exposure). All hazard quotient values are below a value of 1. For the 24 hour exposure, the interim WHO value of 125 µg/m^3 was used in the calculation of the hazard quotients. This is not a health-based value. No annual TRV is available for SO_2; however, since no short-term adverse effects were predicted, no adverse health effects will occur as a result of long-term exposure to SO_2. Similar results are obtained for the other horizon years 2015 and 2025 (see Appendix B). In addition, Appendix E provides the Hazard quotients associated with WHO guideline values of 20 µg/m^3 and 50 µg/m^3 for the three horizon years. The results of the risk assessment associated with exposure to SO_2 demonstrate that there is no difference in the health risks between the Future "No Build" (i.e. the roadway in its current configuration) and the Parkway scenarios.

TABLE 5.2 HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO SO_2 (INCLUDING BACKGROUND) FOR 2035

Receptor Location	Receptor ID	SO_2 1 hr		SO_2 24 hr	
		No Build	Parkway	No Build	Parkway
Ball Field	2479	0.09	0.09	0.26	0.26
Bellwood Estates	58	0.09	0.09	0.26	0.26
	403	0.09	0.09	0.26	0.26
Grand Marais Roads	74	0.09	0.09	0.26	0.26
	186	0.09	0.09	0.26	0.26
Heritage Estates	910	0.09	0.09	0.26	0.26
Home for Aged LaSalle	944	0.09	0.09	0.26	0.26
	945	0.09	0.09	0.26	0.26
Huron Estates	295	0.09	0.09	0.26	0.26
	410	0.09	0.09	0.26	0.26
Kendleton Court	781	0.09	0.09	0.26	0.26
Oliver Estates	858	0.09	0.09	0.26	0.26
	1997	0.09	0.09	0.26	0.26
Reddock	423	0.09	0.09	0.26	0.26
Residential	2478	0.09	0.09	0.26	0.26
Southwood Lakes	867	0.09	0.09	0.26	0.26
Spring Garden	1513	0.09	0.09	0.26	0.26
	1644	0.09	0.09	0.26	0.26
St. Clair College	2480	0.09	0.09	0.26	0.26
Villa Borghese	828	0.09	0.09	0.26	0.26
Villa Paradiso Cres.	848	0.09	0.09	0.26	0.26
Background value		*0.09*		*0.26*	

Note: All criteria obtained from WHO. The 1 hr criterion is health-based whereas the 24-hr criteria is an interim value and is not health-based.
Values in **bold** exceed a hazard quotient value of 1.

5.2. Particulate Matter

$PM_{2.5}$ emissions from road-based transportation sources are comprised of two contributing fractions. The first is tailpipe emissions resulting from fuel combustion. The second fraction, which contributes the greatest to the emissions, is from road dust that is generated from the re-suspension of surface material and debris, tire and brake wear, and roadway abrasion. The results for the assessment of exposure to $PM_{2.5}$ in the Year 2035 are provided in Table 5.3. Results for two different threshold values are provided in order to illustrate the diverse thoughts on health effects related to $PM_{2.5}$ exposure. Appendix E provides an evaluation of the incremental changes in $PM_{2.5}$ concentrations from 2015 to 2035 for both the Future "No Build" and the Parkway scenarios. The evaluation demonstrated that for both scenarios, the predicted $PM_{2.5}$ concentrations increase between 2015 and 2035, mainly due to the increased road dust as the road dust associated with increased traffic overrides any gains in control technologies of tailpipe emissions.

As seen from Table 5.3, based on the hazard quotient values which exceed a value of 1, background concentrations of $PM_{2.5}$ in the area exceed the health-based threshold value of 7 µg/m^3 (CARB, 2008) (i.e. HQ value of 3.0). The concentrations also exceed The Canadian Environmental Protection Act/Federal Provincial Advisory Committee Working Group on Air Quality Objectives and Guidelines (CEPA/FPAC WGAQOG, 1996) 24 hour average $PM_{2.5}$ health reference level of 15 µg/m^3. The epidemiological evidence of adverse health effects related to particulate matter indicates that these effects may occur in a susceptible subset of the general population such as individuals with pre-existing respiratory or cardiovascular conditions (see Section 4). Thus, risks of adverse health effects might be anticipated in susceptible populations with these background concentrations of $PM_{2.5}$.

TABLE 5.3 HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO FINE PARTICULATE MATTER ($PM_{2.5}$) (INCLUDING BACKGROUND) FOR 2035

Receptor Location	Receptor ID	TRV= 15 µg/m^3		TRV=7 µg/m^3	
		No Build	Parkway	No Build	Parkway
Ball Field	2479	**1.6**	**1.5**	**3.4**	**3.3**
Bellwood Estates	58	**1.7**	**1.6**	**3.6**	**3.4**
	403	**1.5**	**1.5**	**3.2**	**3.2**
Grand Marais Roads	74	**1.7**	**1.5**	**3.6**	**3.3**
	186	**1.6**	**1.5**	**3.4**	**3.2**
Heritage Estates	910	**1.4**	**1.4**	**3.1**	**3.1**
Home for Aged LaSalle	944	**1.4**	**1.4**	**3.1**	**3.1**
	945	**1.4**	**1.4**	**3.1**	**3.1**
Huron Estates	295	**1.5**	**1.5**	**3.2**	**3.2**
	410	**1.5**	**1.5**	**3.2**	**3.1**
Kendleton Court	781	**1.5**	**1.6**	**3.3**	**3.3**
Oliver Estates	858	**1.5**	**1.5**	**3.1**	**3.3**
	1997	**1.5**	**1.6**	**3.2**	**3.3**
Reddock	423	**1.5**	**1.5**	**3.2**	**3.1**
Residential	2478	**1.5**	**1.4**	**3.1**	**3.1**
Southwood Lakes	867	**1.4**	**1.5**	**3.1**	**3.1**
Spring Garden	1513	**1.4**	**1.5**	**3.1**	**3.2**
	1644	**1.4**	**1.5**	**3.1**	**3.1**
St. Clair College	2480	**1.5**	**1.5**	**3.2**	**3.1**
Villa Borghese	828	**1.5**	**1.5**	**3.2**	**3.1**
Villa Paradiso Cres.	848	**1.5**	**1.5**	**3.2**	**3.2**
Background value		*1.4*		*3.0*	

Note: Values in **bold** exceed a hazard quotient value of 1.

Table 5.3 also shows that background exposure to $PM_{2.5}$ accounts for a significant portion of the hazard quotient for both the Future "No Build" and Parkway scenarios. Appendix E provides an evaluation of the variation in background with respect to traffic related impacts. Background accounts for greater than 80% to essentially 100% of the $PM_{2.5}$ concentrations depending on its fluctuations. In fact, the increase in PM concentration from the 90th percentile background concentration of 21 µg/m^3 to the maximum predicted concentration (Bellwood Estates, Receptor Number 58) is

approximately 4.4 µg/m^3 for the Future "No Build" scenario and 2.6 µg/m^3 for the Parkway. Thus, the Parkway accounts for about 13% of the hazard quotient and background accounts for the other 87% of the hazard quotient. For the Future "No Build" scenario (i.e. the roadway in its current configuration), the $PM_{2.5}$ associated with vehicular movement accounts for 20% of the hazard quotient at this receptor location with 80% being the contribution from background. Thus at this location, the Parkway results in a lower risk.

While the predicted concentrations due to emissions from vehicles along the Parkway will contribute incrementally to the ambient fine particulate ($PM_{2.5}$) in the Windsor area, the epidemiological studies indicate that for long-term exposures, an increase of 10 µg/m^3 of fine particulate matter ($PM_{2.5}$) is associated with a corresponding 2.5% increase in COPD, 1.95% increase in pneumonia, 1.27% increase in cardiovascular disease, 6% increase in cardiopulmonary mortality and 8% increase in lung cancer mortality. This means that for chronic obstructive pulmonary disease (COPD, the largest % increase for a health effect other than mortality), approximately 3 in a million people will experience COPD if the long-term concentration of PM increases by 10 µg/m^3. For mortality due to lung cancer, approximately 50 people in 100,000 people will die from lung cancer. When compared to the death rate in Canada of approximately 761 deaths per 100,000 people per year, an increase in $PM_{2.5}$ of 10 µg/m^3 per day would increase the death per year by 4 (i.e. approximately 0.001 deaths per day). In Windsor where the population is under a quarter of a million people (approximately 210,000), an increase of 10 µg/m^3 will result in only a slight change in the death rate or the heart failure rate. Thus, an even smaller increase of $PM_{2.5}$, such as 4.4 µg/m^3 for the Future "No Build" scenario or 2.6 µg/m^3 for the Parkway scenario, would not result in any measurable change in the mortality rates in Windsor.

With the exception of the two receptor locations in the Oliver Estates neighbourhood, the Parkway scenario results in the same risk or a lower risk from exposure to $PM_{2.5}$ than the Future "No Build" scenario. Similar results are also obtained for the other horizon years 2015 and 2025 (see Appendix B). This has been attributed to increased traffic flow resulting from decreased 'stop and go' and idling. The results of the risk assessment associated with $PM_{2.5}$ demonstrate that the overall risks are lower for the Parkway than for the Future "No Build" scenario.

5.3. Potential Long-Term Human Health Risks Associated with Exposure to COC Other than Gaseous Air Pollutants

Calculation of long-term health risks for the VOCs identified in Section 2.1 is described in detail in Section 5. Briefly, the hazard quotients are calculated by dividing the predicted exposure by either the non-carcinogenic reference dose or reference concentration for ingestion and inhalation exposure, respectively. The lifetime cancer risks are calculated by multiplying the predicted exposure by the carcinogenic oral slope factor for ingestion exposure or by the carcinogenic inhalation

unit risk for inhalation exposure. For lifetime cancer risks, the calculations were carried out for a composite receptor to take into account exposure to VOC in vehicle emissions over a lifetime (i.e., from infant to adult). For comparison, the risks to the adult receptor are shown as well.

TABLE 5.4 HAZARD QUOTIENTS FOR THE NON-CARCINOGENIC ENDPOINT ASSOCIATED WITH EXPOSURE TO BENZENE (INCLUDING BACKGROUND) FOR 2035

Receptor Location	Future "No Build"					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
Ball Field - 2479	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Bellwood Estates - 58	0.12	0.10	0.10	0.09	0.09	0.12	0.10	0.10	0.09	0.09
Bellwood Estates - 403	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Grand Marais Roads - 74	0.11	0.10	0.10	0.09	0.09	0.11	0.10	0.10	0.09	0.09
Grand Marais Roads - 186	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Heritage Estates - 910	0.11	0.09	0.09	0.09	0.08	0.11	0.09	0.09	0.09	0.09
Home for Aged LaSalle - 944	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
Home for Aged LaSalle - 945	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
Huron Estates - 295	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Huron Estates - 410	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Kendleton Court – 781	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Oliver Estates - 858	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Oliver Estates - 1997	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Reddock - 423	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Residential - 2478	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
Southwood Lakes - 867	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Spring Garden - 1513	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Spring Garden - 1644	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
St. Clair College - 2480	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
Villa Borghese - 828	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Villa Paradiso Cres. - 848	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
*Background Value**	0.11	0.09	0.09	0.09	0.09					

Note: Values in **bold** exceed a hazard quotient value of 0.2.

* Background Hazard quotients are the same for both the Future "No Build" and Parkway scenarios.

Benzene

Table 5.4 presents the hazard quotients associated with non-carcinogenic effects from exposure to benzene for both the Future "No Build" and Parkway scenarios for the Year 2035. Benzene has both non-carcinogenic and carcinogenic endpoints and both are evaluated in this assessment. Appendix E provides an evaluation of the incremental changes in benzene concentrations from 2015 to 2035 for both the Future "No Build" and the Parkway scenarios. The evaluation demonstrated that for both scenarios, the predicted benzene concentrations decrease between 2015 and 2035, mainly due to changes in tail pipe emission factors due to advances in vehicle technology for benzene over the 20 year time period. For the "No Build" scenario, the average change in benzene concentrations over the receptor locations is about 15% which is reflected in the change of emission factors. For the Parkway scenario, the change is not as large (only about 3%), this is mainly due to the counteracting 30% increase in traffic along the Parkway. Appendix E also provides an evaluation of the variation in background with respect to traffic related impacts. Background accounts for greater than 80% to essentially 100% of the benzene concentrations depending on its fluctuations.

Appendix B presents the hazard quotients for the other horizon years (2015 and 2025) associated with the non-carcinogenic endpoint for benzene exposure. As seen from Table 5.4, hazard quotients are provided for all life stages, which are essentially the same for both the Future "No Build" and Parkway scenarios since background accounts for all of the exposure for the teen and the adult. For some receptor locations such as Bellwood Estates at Receptor location 58, traffic related exposures account for about 11 % of the exposure for the toddler for both the Future "No Build" and Parkway scenarios. All hazard quotients are below a value of 0.2 indicating that there are no risks associated with the non-carcinogenic effects of benzene for either of the two scenarios.

Benzene is also considered to be a carcinogen (i.e., a cancer causing chemical) and, as such, was evaluated for its carcinogenic effects as well. Table 5.5 presents the results for the incremental cancer risks associated with ingestion and inhalation exposure to benzene for the Year 2035. Appendix B presents the incremental risks for the other horizon years (2015 and 2025). Background exposure accounts for the majority of these risks, since the background concentration of benzene is 2.3 $\mu g/m^3$ and the predicted benzene concentrations for the Future "No Build" and Parkway scenarios range from 2.3 to 2.6 $\mu g/m^3$. In general, background accounts for the entire risk from exposure to benzene, except at some receptor locations where traffic related exposures for both the Future "No Build" and the Parkway scenarios accounts for only 8% of the risk in comparison to the 90^{th} percentile background. Since, all incremental risks (calculated including background concentrations) associated with the Parkway as well as background are above a risk value of 1×10^{-6} there is a potential health risk associated with background exposures to benzene. However, there is no difference in risks from benzene exposure between the Parkway and Future "No Build" scenarios, indicating the Parkway will not result in any increased incremental risk due to benzene exposure.

TABLE 5.5 INCREMENTAL LIFETIME CANCER RISKS FOR THE CARCINOGENIC ENDPOINT ASSOCIATED WITH EXPOSURE TO BENZENE (INCLUDING BACKGROUND) FOR 2035

Receptor Location	Future No Build		Parkway	
	Adult	Composite	Adult	Composite
Ball Field - 2479	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Bellwood Estates - 58	**$1.3x10^{-5}$**	**$1.9x10^{-5}$**	**$1.3x10^{-5}$**	**$1.9x10^{-5}$**
Bellwood Estates - 403	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Grand Marais Roads - 74	**$1.3x10^{-5}$**	**$1.9x10^{-5}$**	**$1.3x10^{-5}$**	**$1.9x10^{-5}$**
Grand Marais Roads - 186	**$1.3x10^{-5}$**	**$1.8x10^{-5}$**	**$1.3x10^{-5}$**	**$1.8x10^{-5}$**
Heritage Estates - 910	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Home for Aged LaSalle - 944	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Home for Aged LaSalle - 945	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Huron Estates - 295	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Huron Estates - 410	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Kendleton Court - 781	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Oliver Estates - 858	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.3x10^{-5}$**	**$1.8x10^{-5}$**
Oliver Estates - 1997	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.3x10^{-5}$**	**$1.8x10^{-5}$**
Reddock - 423	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Residential - 2478	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Southwood Lakes - 867	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Spring Garden - 1513	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.3x10^{-5}$**	**$1.8x10^{-5}$**
Spring Garden - 1644	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
St. Clair College - 2480	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Villa Borghese - 828	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Villa Paradiso Cres. - 848	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
*Background Value**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**		

Note: Values in **bold** exceed an incremental risk level of 1×10^{-6}
* Background risk values are the same for both the Future "No Build" and Parkway scenarios.

1,3-butadiene

Table 5.6 presents the hazard quotients associated with the non-carcinogenic endpoint from exposure to 1,3-butadiene for the Future "No Build" and Parkway scenarios for the Year 2035. Only the inhalation pathway for non-carcinogenic endpoints was evaluated as this was the only TRV available. Appendix B presents the hazard quotients for the other horizon years (2015 and 2025).

As seen from Table 5.6, hazard quotients associated with the non-carcinogenic endpoint of 1,3-butadiene are provided for all life stages, which are essentially the same for both the Future "No Build" (i.e. the roadway in its current configuration) and Parkway scenarios since 90th percentile background exposure accounts for the majority of the exposure (from 75% to 100 % of the hazard quotient). This implies that the health risks are the same for both scenarios. It should be noted that all hazard quotients are below a value of 0.2 indicating that there are no risks associated with the non-carcinogenic effects of 1,3-butadiene.

1,3-butadiene is also considered to be a carcinogen (i.e., a cancer causing chemical) via inhalation and, as such, was evaluated for its carcinogenic effects as well. Table 5.7 presents the results for the incremental cancer risks associated with inhalation exposure to 1,3-butadiene for the Year 2035. Appendix B presents the incremental risks for the other horizon years (2015 and 2025). Background exposure (90^{th} percentile) accounts for the majority of the 1,3-butadiene risks (i.e. 80% to 97% of the risk) since the 90^{th} percentile background concentration of 1,3-butadiene is 0.16 $\mu g/m^3$ and the concentrations (including background) for the Future "No Build" and Parkway scenarios range from 0.17 to 0.19 $\mu g/m^3$. As seen in Table 5.7, the background risk as well as all incremental risks (which are calculated including background concentration) are above a risk value of 1×10^{-6} indicating that there is a potential health risk associated with background exposures of 1,3-butadiene. However, since the risks are the same between the Parkway and Future "No Build" scenarios, the Parkway will not result in any increased incremental cancer risk due to 1,3-butadiene exposure.

TABLE 5.6 HAZARD QUOTIENTS FOR THE NON-CARCINOGENIC ENDPOINT ASSOCIATED WITH EXPOSURE TO 1,3-BUTADIENE (INCLUDING BACKGROUND) FOR 2035

Receptor Location	Future No Build					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
Ball Field - 2479	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Bellwood Estates - 58	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Bellwood Estates - 403	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09
Grand Marais Roads - 74	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Grand Marais Roads - 186	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Heritage Estates - 910	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Home for Aged LaSalle - 944	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Home for Aged LaSalle - 945	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Huron Estates - 295	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Huron Estates - 410	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Kendleton Court - 781	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Oliver Estates - 858	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09
Oliver Estates - 1997	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09
Reddock - 423	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Residential - 2478	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Southwood Lakes - 867	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Spring Garden - 1513	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09
Spring Garden - 1644	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09
St. Clair College - 2480	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Villa Borghese - 828	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Villa Paradiso Cres. - 848	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Background Value	0.08	0.08	0.08	0.08	0.08					

Note: Values in **bold** exceed a hazard quotient value of 0.2.

* Background Hazard quotients are the same for both the Future "No Build" and Parkway scenarios.

TABLE 5.7 INCREMENTAL LIFETIME CANCER RISKS FOR THE CARCINOGENIC ENDPOINT ASSOCIATED WITH EXPOSURE TO 1,3-BUTADIENE (INCLUDING BACKGROUND) FOR 2035

Receptor Location	Future "No Build"		Parkway	
	Adult	Composite	Adult	Composite
Ball Field - 2479	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
Bellwood Estates - 58	**$4.3x10^{-6}$**	**$5.8x10^{-6}$**	**$4.3x10^{-6}$**	**$5.7x10^{-6}$**
Bellwood Estates - 403	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
Grand Marais Roads - 74	**$4.2x10^{-6}$**	**$5.6x10^{-6}$**	**$4.1x10^{-6}$**	**$5.5x10^{-6}$**
Grand Marais Roads - 186	**$4.0x10^{-6}$**	**$5.3x10^{-6}$**	**$3.9x10^{-6}$**	**$5.3x10^{-6}$**
Heritage Estates - 910	**$3.7x10^{-6}$**	**$4.9x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Home for Aged LaSalle - 944	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Home for Aged LaSalle - 945	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Huron Estates - 295	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
Huron Estates - 410	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**
Kendleton Court - 781	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Oliver Estates - 858	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Oliver Estates - 1997	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**	**$3.9x10^{-6}$**	**$5.3x10^{-6}$**
Reddock - 423	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
Residential - 2478	**$3.7x10^{-6}$**	**$4.9x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Southwood Lakes - 867	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
Spring Garden - 1513	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Spring Garden - 1644	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
St. Clair College - 2480	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Villa Borghese - 828	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
Villa Paradiso Cres. - 848	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**
Background Value	**$3.6x10^{-6}$**	**$4.8x10^{-6}$**		

Note: Values in **bold** exceed an incremental risk level of 1 x 10^{-6}

* Background risk values are the same for both the Future "No Build" and Parkway scenarios.

Formaldehyde

Table 5.8 presents the hazard quotients for the non-carcinogenic endpoint associated with exposure to formaldehyde for both the Future "No Build" and Parkway scenarios for the Year 2035. Formaldehyde has both non-carcinogenic and carcinogenic endpoints and both are evaluated in this assessment. Appendix B presents the hazard quotients for the other horizon years (2015 and 2025). As seen from Table 5.8, hazard quotients are provided for all life stages, which are essentially the same for both the Future "No Build" and Parkway scenarios since the 90th percentile background concentration accounts for the majority of the exposure (i.e. 95% to 99% of the hazard quotient for the toddler). This indicates that the health risks are the same for both scenarios. However, it should be noted that all hazard quotients are well above a value of 0.2, suggesting that there may be potential risks associated with the non-carcinogenic effects of formaldehyde.

TABLE 5.8 HAZARD QUOTIENTS FOR NON-CARCINOGENIC ENDPOINT ASSOCIATED WITH EXPOSURE TO FORMALDEHYDE (INCLUDING BACKGROUND) FOR 2035

Receptor Location	Future No Build					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
Ball Field - 2479	**44.7**	**24.7**	**18.6**	**13.8**	**10.9**	**44.7**	**24.6**	**18.6**	**13.7**	**10.9**
Bellwood Estates - 58	**46.2**	**25.5**	**19.2**	**14.2**	**11.2**	**45.5**	**25.1**	**19.0**	**14.0**	**11.1**
Bellwood Estates - 403	**44.6**	**24.6**	**18.6**	**13.7**	**10.9**	**44.6**	**24.6**	**18.6**	**13.7**	**10.9**
Grand Marais Roads - 74	**45.9**	**25.3**	**19.1**	**14.1**	**11.2**	**45.3**	**25.0**	**18.9**	**13.9**	**11.0**
Grand Marais Roads - 186	**45.3**	**25.0**	**18.9**	**13.9**	**11.0**	**44.9**	**24.8**	**18.7**	**13.8**	**10.9**
Heritage Estates - 910	**44.4**	**24.5**	**18.5**	**13.6**	**10.8**	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**
Home for Aged LaSalle - 944	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**
Home for Aged LaSalle - 945	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**
Huron Estates - 295	**44.7**	**24.7**	**18.6**	**13.7**	**10.9**	**44.7**	**24.7**	**18.6**	**13.8**	**10.9**
Huron Estates - 410	**44.5**	**24.6**	**18.6**	**13.7**	**10.8**	**44.5**	**24.6**	**18.6**	**13.7**	**10.8**
Kendleton Court - 781	**44.8**	**24.7**	**18.6**	**13.8**	**10.9**	**44.9**	**24.8**	**18.7**	**13.8**	**10.9**
Oliver Estates - 858	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**	**44.9**	**24.7**	**18.7**	**13.8**	**10.9**
Oliver Estates - 1997	**44.6**	**24.6**	**18.6**	**13.7**	**10.8**	**45.0**	**24.8**	**18.7**	**13.8**	**10.9**
Reddock - 423	**44.5**	**24.6**	**18.5**	**13.7**	**10.8**	**44.6**	**24.6**	**18.6**	**13.7**	**10.8**
Residential - 2478	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**
Southwood Lakes - 867	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**	**44.6**	**24.6**	**18.6**	**13.7**	**10.8**
Spring Garden - 1513	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**	**44.8**	**24.7**	**18.6**	**13.8**	**10.9**
Spring Garden - 1644	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**	**44.7**	**24.6**	**18.6**	**13.7**	**10.9**
St. Clair College - 2480	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**
Villa Borghese - 828	**44.6**	**24.6**	**18.6**	**13.7**	**10.8**	**44.5**	**24.6**	**18.5**	**13.7**	**10.8**
Villa Paradiso Cres. - 848	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**	**44.6**	**24.6**	**18.6**	**13.7**	**10.9**
*Background Value**	**44.1**	**24.3**	**18.3**	**13.5**	**10.7**					

Note: Values in **bold** exceed a hazard quotient value of 0.2.
* Background Hazard quotients are the same for both the Future "No Build" and Parkway scenarios.

Formaldehyde is also considered to be a carcinogen (i.e., a cancer causing chemical) via the inhalation pathway. Table 5.9 presents the results for the incremental risks associated with inhalation exposure to formaldehyde for the Year 2035. Appendix B presents the incremental risks for the other horizon years (2015 and 2025). As with the other VOC, 90th percentile background exposure accounts for the majority of the formaldehyde risks (95% to 100% of the risk). As seen in Table 5.9, all incremental risks (calculated by including background concentrations) are above a risk value of 1×10^{-6} indicating there is a potential health risk associated with background exposure to formaldehyde. However, the risks for are essentially the same for the Parkway and Future "No Build" scenarios, suggesting that the Parkway will not result in any increased incremental risk due to formaldehyde exposure.

TABLE 5.9 INCREMENTAL LIFETIME CANCER RISKS FOR CARCINOGENIC ENDPOINT ASSOCIATED WITH INHALATION EXPOSURE TO FORMALDEHYDE (INCLUDING BACKGROUND) FOR 2035

Receptor Location	Future No Build		Parkway	
	Adult	Composite	Adult	Composite
Ball Field - 2479	**4.2×10^{-5}**	**5.7×10^{-5}**	**4.2×10^{-5}**	**5.7×10^{-5}**
Bellwood Estates - 58	**4.4×10^{-5}**	**5.9×10^{-5}**	**4.3×10^{-5}**	**5.8×10^{-5}**
Bellwood Estates - 403	**4.2×10^{-5}**	**5.7×10^{-5}**	**4.2×10^{-5}**	**5.7×10^{-5}**
Grand Marais Roads - 74	**4.4×10^{-5}**	**5.8×10^{-5}**	**4.3×10^{-5}**	**5.8×10^{-5}**
Grand Marais Roads - 186	**4.3×10^{-5}**	**5.8×10^{-5}**	**4.3×10^{-5}**	**5.7×10^{-5}**
Heritage Estates - 910	**4.2×10^{-5}**	**5.6×10^{-5}**	**4.2×10^{-5}**	**5.6×10^{-5}**
Home for Aged LaSalle - 944	**4.2×10^{-5}**	**5.7×10^{-5}**	**4.2×10^{-5}**	**5.7×10^{-5}**
Home for Aged LaSalle - 945	**4.2×10^{-5}**	**5.7×10^{-5}**	**4.2×10^{-5}**	**5.7×10^{-5}**
Huron Estates - 295	**4.2×10^{-5}**	**5.7×10^{-5}**	**4.2×10^{-5}**	**5.7×10^{-5}**
Huron Estates - 410	**4.2×10^{-5}**	**5.7×10^{-5}**	**4.2×10^{-5}**	**5.7×10^{-5}**
Kendleton Court - 781	**4.3×10^{-5}**	**5.7×10^{-5}**	**4.3×10^{-5}**	**5.7×10^{-5}**
Oliver Estates - 858	**4.2×10^{-5}**	**5.6×10^{-5}**	**4.3×10^{-5}**	**5.7×10^{-5}**
Oliver Estates - 1997	**4.2×10^{-5}**	**5.7×10^{-5}**	**4.3×10^{-5}**	**5.7×10^{-5}**
Reddock - 423	**4.2×10^{-5}**	**5.7×10^{-5}**	**4.2×10^{-5}**	**5.7×10^{-5}**
Residential - 2478	**4.2×10^{-5}**	**5.6×10^{-5}**	**4.2×10^{-5}**	**5.7×10^{-5}**
Southwood Lakes - 867	**4.2×10^{-5}**	**5.6×10^{-5}**	**4.2×10^{-5}**	**5.7×10^{-5}**
Spring Garden - 1513	**4.2×10^{-5}**	**5.7×10^{-5}**	**4.3×10^{-5}**	**5.7×10^{-5}**
Spring Garden - 1644	**4.2×10^{-5}**	**5.7×10^{-5}**	**4.2×10^{-5}**	**5.7×10^{-5}**
St. Clair College - 2480	**4.2×10^{-5}**	**5.7×10^{-5}**	**4.2×10^{-5}**	**5.6×10^{-5}**
Villa Borghese - 828	**4.2×10^{-5}**	**5.7×10^{-5}**	**4.2×10^{-5}**	**5.7×10^{-5}**
Villa Paradiso Cres. - 848	**4.2×10^{-5}**	**5.7×10^{-5}**	**4.2×10^{-5}**	**5.7×10^{-5}**
Background Value	**4.2×10^{-5}**	**5.6×10^{-5}**		

Note: Values in **bold** exceed an incremental risk level of 1×10^{-6}

* Background risk values are the same for both the Future "No Build" and Parkway scenarios.

Acetaldehyde

Table 5.10 presents the hazard quotients for the non-carcinogenic endpoint associated with exposure to acetaldehyde for both the Future "No Build" and Parkway scenarios for the Year 2035. Formaldehyde is used as a surrogate for acetaldehyde from the oral pathway since no TRVs exist for acetaldehyde via the oral exposure pathway. Appendix B presents the hazard quotients for the other horizon years (2015 and 2025). As seen from Table 5.10, hazard quotients are provided for all life stages, which are essentially the same for both the Future "No Build" and Parkway scenarios since the 90th percentile background concentration accounts for the majority of the exposure (96% to 100% of the hazard quotient). This indicates that the health risks are the same for both scenarios. It should be noted that all hazard quotients including background are slightly above a value of 0.2 (0.26 to 0.28), suggesting there may be a potential risk associated with background exposure to the non-carcinogenic effects of acetaldehyde.

Acetaldehyde is also considered to be a carcinogen (i.e., a cancer causing chemical) via the inhalation pathway. Table 5.11 presents the results for the incremental risks associated with inhalation exposure to acetaldehyde for the Year 2035. Appendix B presents the incremental risks for the other horizon years (2015 and 2025). As was the case for other VOCs, background exposure accounts for the majority of the acetaldehyde risks since there is only a 0.1 µg/m^3 increase from the background to the maximum predicted concentrations. As seen in Table 5.11, background and all incremental risks (calculated by including background) are above a risk value of 1×10^{-6}, indicating there is a potential health risk associated with background exposures of acetaldehyde. However, there is no difference in the calculated risks between the Parkway and Future "No Build" scenarios indicating the Parkway will not result in any increased incremental risk due to acetaldehyde exposure.

TABLE 5.10 HAZARD QUOTIENTS FOR NON-CARCINOGENIC ENDPOINT ASSOCIATED WITH EXPOSURE TO ACETALDEHYDE (INCLUDING BACKGROUND) FOR 2035

Receptor Location	Future No Build					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
Ball Field - 2479	**0.27**	**0.27**	**0.27**	**0.27**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Bellwood Estates - 58	**0.28**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**
Bellwood Estates - 403	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Grand Marais Roads - 74	**0.28**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**
Grand Marais Roads - 186	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**
Heritage Estates - 910	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Home for Aged LaSalle - 944	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Home for Aged LaSalle - 945	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Huron Estates - 295	**0.27**	**0.27**	**0.27**	**0.27**	**0.26**	**0.27**	**0.27**	**0.27**	**0.27**	**0.26**
Huron Estates - 410	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Kendleton Court - 781	**0.27**	**0.27**	**0.27**	**0.27**	**0.26**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**
Oliver Estates - 858	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**
Oliver Estates - 1997	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**
Reddock - 423	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Residential - 2478	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Southwood Lakes - 867	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Spring Garden - 1513	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.27**	**0.26**
Spring Garden - 1644	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
St. Clair College - 2480	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Villa Borghese - 828	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Villa Paradiso Cres. - 848	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
*Background Value**	**0.27**	**0.26**	**0.26**	**0.26**	**0.26**					

Note: Values in **bold** exceed a hazard quotient value of 0.2.
* Background Hazard quotients are the same for both the Future "No Build" and Parkway scenarios.

TABLE 5.11 INCREMENTAL LIFETIME CANCER RISKS FOR CARCINOGENIC ENDPOINT ASSOCIATED WITH INHALATION EXPOSURE TO ACETALDEHYDE (INCLUDING BACKGROUND) FOR 2035

Receptor Location	Future No Build		Parkway	
	Adult	Composite	Adult	Composite
Ball Field - 2479	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Bellwood Estates - 58	**$4.0x10^{-6}$**	**$5.3x10^{-6}$**	**$3.9x10^{-6}$**	**$5.3x10^{-6}$**
Bellwood Estates - 403	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Grand Marais Roads - 74	**$4.0x10^{-6}$**	**$5.3x10^{-6}$**	**$3.9x10^{-6}$**	**$5.3x10^{-6}$**
Grand Marais Roads - 186	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Heritage Estates - 910	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Home for Aged LaSalle - 944	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Home for Aged LaSalle - 945	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Huron Estates - 295	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Huron Estates - 410	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Kendleton Court - 781	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Oliver Estates - 858	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Oliver Estates - 1997	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Reddock - 423	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Residential - 2478	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Southwood Lakes - 867	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Spring Garden - 1513	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Spring Garden - 1644	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
St. Clair College - 2480	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Villa Borghese - 828	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Villa Paradiso Cres. - 848	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
*Background Value**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**		

Note: Values in **bold** exceed an incremental risk level of 1×10^{-6}
* Background risk values are the same for both the Future "No Build" and Parkway scenarios.

Acrolein

Table 5.12 presents the hazard quotients for the non-carcinogenic endpoint associated with exposure to acrolein for both the Future "No Build" and Parkway scenarios for the Year 2035. Acrolein is considered to be a non-carcinogen and thus only hazard quotients, and not risks, are presented for acrolein. Appendix B presents the hazard quotients for the other horizon years (2015 and 2025). As seen from Table 5.12, hazard quotients are provided for all life stages, which are essentially the same for both the Future "No Build" and Parkway scenarios, indicating that the health risks are the same for both scenarios. The 90th percentile background concentration accounts for about 92% to 99% of the hazard quotient for acrolein for the toddler. It should be noted that background hazard quotients are above a value of 0.2 indicating that there may be a potential risk for non-carcinogenic effects related to background exposure to acrolein.

TABLE 5.12 HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO ACROLEIN (INCLUDING BACKGROUND) FOR 2035

Receptor Location	Future No Build					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
Ball Field - 2479	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**
Bellwood Estates - 58	**8.4**	**8.3**	**8.3**	**8.2**	**8.2**	**8.2**	**8.0**	**8.0**	**8.0**	**8.0**
Bellwood Estates - 403	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**
Grand Marais Roads - 74	**8.3**	**8.2**	**8.2**	**8.1**	**8.1**	**8.1**	**8.0**	**8.0**	**7.9**	**7.9**
Grand Marais Roads - 186	**8.1**	**8.0**	**8.0**	**7.9**	**7.9**	**8.0**	**7.9**	**7.9**	**7.8**	**7.8**
Heritage Estates - 910	**7.8**	**7.7**	**7.7**	**7.6**	**7.6**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Home for Aged LaSalle - 944	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Home for Aged LaSalle - 945	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.8**	**7.7**	**7.7**	**7.6**	**7.6**
Huron Estates - 295	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**
Huron Estates - 410	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Kendleton Court - 781	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**	**8.0**	**7.9**	**7.9**	**7.8**	**7.8**
Oliver Estates - 858	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**
Oliver Estates - 1997	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**	**8.0**	**7.9**	**7.9**	**7.8**	**7.8**
Reddock - 423	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**
Residential - 2478	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Southwood Lakes - 867	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Spring Garden - 1513	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**
Spring Garden - 1644	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**
St. Clair College - 2480	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Villa Borghese - 828	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**
Villa Paradiso Cres. - 848	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**
*Background Value**	**7.7**	**7.6**	**7.6**	**7.6**	**7.6**					

Note: Values in **bold** exceed a hazard quotient value of 0.2.

* Background Hazard quotients are the same for both the Future "No Build" and Parkway scenarios.

Chemical Interactions

When dealing with multiple chemicals, there is a potential for interaction with other chemicals that may be encountered at the site. In addition, other factors including smoking and lifestyle factors are known to compound health effects. Synergism, potentiation, antagonism or additivity of toxic effects may occur.

Type of Interaction	Description of Interaction	Effect Of Chemical A	Effect of Chemical B	Effect of Mixture
Antagonistic	One chemical reduces the toxic potency of another.	1	1	<2
Additive	Two chemicals act independently of each other, so their individual toxic potencies are added.	1	1	2
Synergistic	The toxic potency of one chemical increases the toxic potential of another.	1	1	>2
Potentiative	One chemical increases the toxic potency of another.	0	1	>1

A thorough quantitative assessment of these interactions is outside the scope of this study and, in any event, would be constrained as there is an inadequate base of toxicological evidence to quantify these interactions. One approach that can be taken is to handle some of these interactions in a simple fashion. For chemical mixtures that show additive effects based on toxicity assessment, the HQ or risk values may be added together.

Hazard quotient values for different non-carcinogenic chemicals may be summed together if the endpoints are the same. In this assessment, the endpoints are the same for VOCs and so this approach was adopted. For gaseous pollutants, the endpoints are the same; however, only hazard quotients relating to the same averaging time were summed. Table 5.13 provides the hazard quotients related to the additive effects of NO_x and SO_x for the 1 hr averaging time. As seen from the table, the additive effects of these gaseous pollutants are lower for the Parkway than for the Future "No Build" scenario. As such, the risks from the cumulative exposure of these gaseous pollutants are lower for the Parkway than for Future "No Build" scenario which represents the roadway in its current condition. The Parkway reduces the stopping and starting and idling of vehicles, which reduces the concentrations and therefore exposure of NO_x, in particular.

The additive effects of the hazard quotients for VOCs are presented in Table 5.14. As seen from the table, the hazard quotients for additive effects of the Parkway are similar to the Future "No Build" scenario. Additionally, background (90^{th} percentile) accounts for a substantial portion of the cumulative hazard quotient (as seen in Table 5.14). Therefore, the Parkway does not represent a cumulative risk for non-carcinogenic endpoints over the Future "No Build" scenario.

TABLE 5.13 CUMULATIVE HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO NO_X AND SO_X FOR THE 1 HR AVERAGING TIME PERIOD (INCLUDING BACKGROUND) FOR 2035

Receptor Location	Receptor ID	$NO_x + SO_2$ (1 hr)	
		No Build	Parkway
Ball Field	2479	0.84	0.51
Bellwood Estates	58	**1.22**	0.74
	403	0.66	0.60
Grand Marais Roads	74	**1.08**	0.67
	186	0.88	0.61
Heritage Estates	910	0.64	0.49
Home for Aged LaSalle	944	0.83	0.52
	945	0.89	0.52
Huron Estates	295	0.70	0.58
	410	0.64	0.54
Kendleton Court	781	**1.02**	0.53
Oliver Estates	858	0.87	0.55
	1997	0.99	0.60
Reddock	423	0.80	0.53
Residential	2478	0.68	0.53
Southwood Lakes	867	0.64	0.49
Spring Garden	1513	0.58	0.59
	1644	0.58	0.55
St. Clair College	2480	0.59	0.48
Villa Borghese	828	0.95	0.51
Villa Paradiso Cres.	848	0.69	0.50
Background value		*0.44*	

Note: Values in **bold** exceed a hazard quotient value of 1.0.

TABLE 5.14 CUMULATIVE HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO ALL VOCS (INCLUDING BACKGROUND) FOR 2035

	Total Hazard Quotients - Year 2035									
	No Build					Parkway				
Receptor Location	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
Ball Field - 2479	**53.1**	**33.0**	**26.9**	**22.0**	**19.1**	**53.1**	**32.9**	**26.9**	**22.0**	**19.1**
Bellwood Estates - 58	**55.1**	**34.3**	**28.0**	**22.9**	**19.9**	**54.2**	**33.6**	**27.4**	**22.4**	**19.5**
Bellwood Estates - 403	**53.0**	**32.9**	**26.8**	**21.9**	**19.0**	**53.0**	**32.9**	**26.8**	**21.9**	**19.0**
Grand Marais Roads - 74	**54.7**	**34.0**	**27.7**	**22.7**	**19.7**	**53.9**	**33.5**	**27.3**	**22.3**	**19.4**
Grand Marais Roads - 186	**53.9**	**33.4**	**27.3**	**22.3**	**19.4**	**53.4**	**33.1**	**27.0**	**22.1**	**19.2**
Heritage Estates - 910	**52.6**	**32.6**	**26.6**	**21.7**	**18.8**	**52.7**	**32.7**	**26.6**	**21.8**	**18.9**
Home for Aged LaSalle - 944	**52.8**	**32.7**	**26.7**	**21.8**	**18.9**	**52.8**	**32.7**	**26.7**	**21.8**	**18.9**
Home for Aged LaSalle - 945	**52.8**	**32.7**	**26.7**	**21.8**	**18.9**	**52.7**	**32.7**	**26.6**	**21.7**	**18.9**
Huron Estates - 295	**53.1**	**32.9**	**26.9**	**22.0**	**19.1**	**53.2**	**33.0**	**26.9**	**22.0**	**19.1**
Huron Estates - 410	**52.9**	**32.8**	**26.7**	**21.9**	**19.0**	**52.9**	**32.8**	**26.7**	**21.8**	**18.9**
Kendleton Court - 781	**53.2**	**33.0**	**26.9**	**22.0**	**19.1**	**53.4**	**33.1**	**27.0**	**22.1**	**19.2**
Oliver Estates - 858	**52.7**	**32.7**	**26.6**	**21.8**	**18.9**	**53.3**	**33.0**	**26.9**	**22.0**	**19.1**
Oliver Estates - 1997	**52.9**	**32.8**	**26.8**	**21.9**	**19.0**	**53.5**	**33.2**	**27.0**	**22.1**	**19.2**
Reddock - 423	**52.9**	**32.8**	**26.7**	**21.9**	**19.0**	**53.0**	**32.8**	**26.8**	**21.9**	**19.0**
Residential - 2478	**52.7**	**32.7**	**26.6**	**21.8**	**18.9**	**52.7**	**32.7**	**26.6**	**21.8**	**18.9**
Southwood Lakes - 867	**52.7**	**32.7**	**26.6**	**21.8**	**18.9**	**52.9**	**32.8**	**26.7**	**21.8**	**18.9**
Spring Garden - 1513	**52.8**	**32.7**	**26.7**	**21.8**	**18.9**	**53.2**	**33.0**	**26.9**	**22.0**	**19.1**
Spring Garden - 1644	**52.8**	**32.7**	**26.7**	**21.8**	**18.9**	**53.0**	**32.9**	**26.8**	**21.9**	**19.0**
St. Clair College - 2480	**52.7**	**32.7**	**26.6**	**21.8**	**18.9**	**52.7**	**32.7**	**26.6**	**21.8**	**18.9**
Villa Borghese - 828	**52.9**	**32.8**	**26.8**	**21.9**	**19.0**	**52.9**	**32.8**	**26.7**	**21.9**	**19.0**
Villa Paradiso Cres. - 848	**52.8**	**32.7**	**26.7**	**21.8**	**18.9**	**53.0**	**32.8**	**26.8**	**21.9**	**19.0**
Background	**52.3**	**32.4**	**26.4**	**21.6**	**18.7**					

Note: Values in **bold** exceed a hazard quotient value of 0.2.
* Background Hazard quotients are the same for both the Future "No Build" and Parkway scenarios.

The lifetime risk can be expressed individually for each chemical (and by site of action, if necessary) and then totalled as a group. In practical terms, at levels of exposure typically considered in the assessment, the dose-response relation is assumed to be linear and, thus, additivity of effects (strictly by organ) is reasonable. Since the target organs of the VOCs used in this assessment are similar this approach was adopted. Table 5.15 provides the additive effects of the carcinogenic endpoints for the VOCs. As seen from the table, the risk levels for additive effects of the Parkway are similar to the Future "No Build" scenario. Additionally, background (90th percentile) accounts for a substantial portion of the cumulative risk level (as seen in Table 5.15). Therefore, the Parkway does not represent a cumulative risk for carcinogenic endpoints over the Future "No Build" scenario.

TABLE 5.15 CUMULATIVE LIFETIME CANCER RISKS FOR CARCINOGENIC ENDPOINT ASSOCIATED WITH EXPOSURE TO VOCS (INCLUDING BACKGROUND) FOR 2035

	Total Incremental Lifetime Risk - Year 2035			
	No Build		Parkway	
Receptor Location	**Adult**	**Composite**	**Adult**	**Composite**
Ball Field - 2479	**$6.2x10^{-5}$**	**$8.5x10^{-5}$**	**$6.2x10^{-5}$**	**$8.5x10^{-5}$**
Bellwood Estates - 58	**$6.5x10^{-5}$**	**$8.9x10^{-5}$**	**$6.5x10^{-5}$**	**$8.8x10^{-5}$**
Bellwood Estates - 403	**$6.2x10^{-5}$**	**$8.5x10^{-5}$**	**$6.2x10^{-5}$**	**$8.5x10^{-5}$**
Grand Marais Roads - 74	**$6.5x10^{-5}$**	**$8.8x10^{-5}$**	**$6.4x10^{-5}$**	**$8.7x10^{-5}$**
Grand Marais Roads - 186	**$6.4x10^{-5}$**	**$8.7x10^{-5}$**	**$6.3x10^{-5}$**	**$8.6x10^{-5}$**
Heritage Estates - 910	**$6.2x10^{-5}$**	**$8.4x10^{-5}$**	**$6.2x10^{-5}$**	**$8.4x10^{-5}$**
Home for Aged LaSalle - 944	**$6.2x10^{-5}$**	**$8.5x10^{-5}$**	**$6.2x10^{-5}$**	**$8.5x10^{-5}$**
Home for Aged LaSalle - 945	**$6.2x10^{-5}$**	**$8.5x10^{-5}$**	**$6.2x10^{-5}$**	**$8.5x10^{-5}$**
Huron Estates - 295	**$6.3x10^{-5}$**	**$8.5x10^{-5}$**	**$6.3x10^{-5}$**	**$8.5x10^{-5}$**
Huron Estates - 410	**$6.2x10^{-5}$**	**$8.5x10^{-5}$**	**$6.2x10^{-5}$**	**$8.5x10^{-5}$**
Kendleton Court - 781	**$6.3x10^{-5}$**	**$8.5x10^{-5}$**	**$6.3x10^{-5}$**	**$8.6x10^{-5}$**
Oliver Estates - 858	**$6.2x10^{-5}$**	**$8.5x10^{-5}$**	**$6.3x10^{-5}$**	**$8.6x10^{-5}$**
Oliver Estates - 1997	**$6.2x10^{-5}$**	**$8.5x10^{-5}$**	**$6.3x10^{-5}$**	**$8.6x10^{-5}$**
Reddock - 423	**$6.2x10^{-5}$**	**$8.5x10^{-5}$**	**$6.2x10^{-5}$**	**$8.5x10^{-5}$**
Residential - 2478	**$6.2x10^{-5}$**	**$8.4x10^{-5}$**	**$6.2x10^{-5}$**	**$8.5x10^{-5}$**
Southwood Lakes - 867	**$6.2x10^{-5}$**	**$8.5x10^{-5}$**	**$6.2x10^{-5}$**	**$8.5x10^{-5}$**
Spring Garden - 1513	**$6.2x10^{-5}$**	**$8.5x10^{-5}$**	**$6.3x10^{-5}$**	**$8.6x10^{-5}$**
Spring Garden - 1644	**$6.2x10^{-5}$**	**$8.5x10^{-5}$**	**$6.3x10^{-5}$**	**$8.5x10^{-5}$**
St. Clair College - 2480	**$6.2x10^{-5}$**	**$8.4x10^{-5}$**	**$6.2x10^{-5}$**	**$8.4x10^{-5}$**
Villa Borghese - 828	**$6.2x10^{-5}$**	**$8.5x10^{-5}$**	**$6.2x10^{-5}$**	**$8.5x10^{-5}$**
Villa Paradiso Cres. - 848	**$6.2x10^{-5}$**	**$8.5x10^{-5}$**	**$6.2x10^{-5}$**	**$8.5x10^{-5}$**
Background	**$6.1x10^{-5}$**	**$8.4x10^{-5}$**		

Note: Values in **bold** exceed an incremental risk level of 1 x 10^{-6}

* Background risk values are the same for both the Future "No Build" and Parkway scenarios.

Summary

In summary, the total predicted VOC concentrations, including background, for the Future "No Build" and Parkway scenarios are essentially the same as background concentrations. As such, any risk of adverse health effects from exposure to any of the VOC is as a result of background exposure (transboundary pollution is responsible for the majority of the background). Therefore, the Parkway scenario does not result in an increased risk of adverse health effects when compared to background or the Future "No Build" scenario.

The risk assessment results support the findings of the epidemiological studies carried out by Health Canada in the Windsor area which found that bronchitis, emphysema, lung cancer and lung cancer incidence and mortality from circulatory diseases were attributed to transborder air pollution (Band *et al.* 2006).

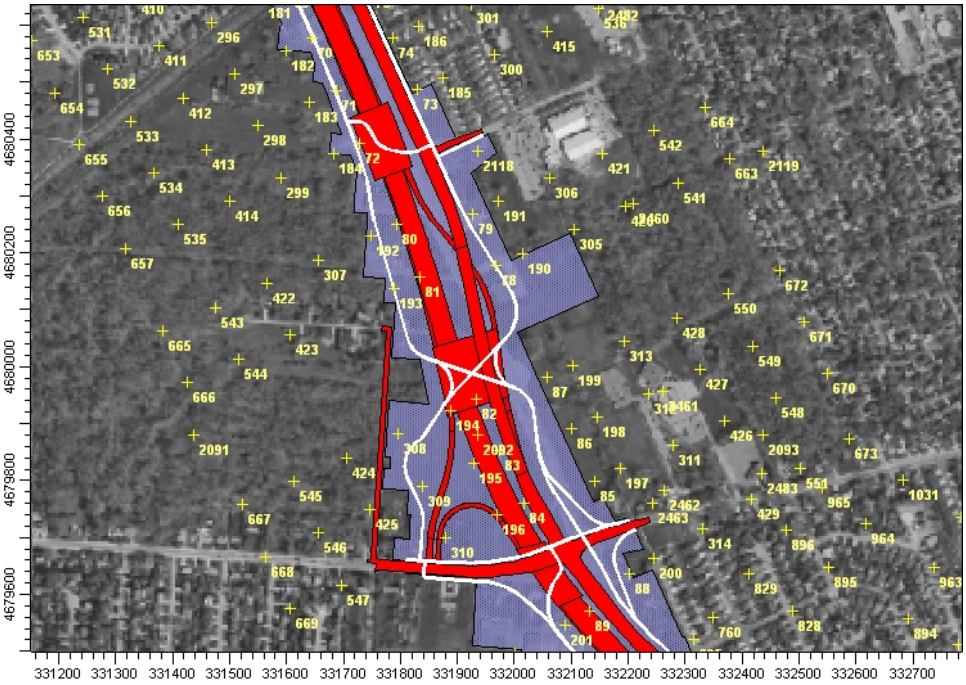
5.4. Analysis of the Right-of Way (ROW) or Green Spaces

Evaluations were also carried out for receptors within the right-of-way on the green spaces above the Parkway where they will be present only on a short term basis, either walking, jogging or riding along the pathways.

As discussed previously, over 2400 receptors in the Windsor Airshed were examined within the Air Quality modelling. The first two rows of receptors were placed at 50 m intervals from each side of the existing road, followed by 100 m intervals up to a distance of 500 m from the roadway. Another grid with 500 m x 500 m spacing was then overlaid to cover the rest of the modelling domain, which was essentially all of west Windsor and the surrounding communities. When these receptors are overlaid upon the Parkway scenario, 232 of them fall within the proposed ROW. Of these 232 receptors, 141 are either located on a roadway, roadway shoulder, or embankment or are otherwise in an area not considered for recreation uses. 7 of the 141 receptors are identified as being located on tunnels, but four of these receptors are located within 10 m of the tunnel portals and are not considered to be areas used for recreation. This leaves a total of 91 receptors that are considered as "within usable spaces" and provide a reasonable basis for assessing air quality within the recreational use areas.

Figure 5.1 provides an example of receptor locations relative to the Parkway. The white lines in the figure are the proposed trails of the Parkway. Receptor 81 in the figure below would be considered on the road. Receptor 82 is within 10 m of the tunnel portal and is not considered within the usable spaces of the ROW. Receptors 192 and 193 are examples of receptors that are within the usable spaces and are located on the trail system.

FIGURE 5.1 SAMPLE OF RECEPTOR LOCATIONS WITHIN THE ROW OR GREENSPACES



The receptor locations that have been selected for this analysis represent locations of the tunnels (greenspaces/trails) along the Windsor Essex Parkway and have been selected by the Air Quality specialist as representative locations on the tunnels over the Parkway (see Table 5.16). Results have only been calculated for the maximum exposure year of 2035. As expected, the concentrations within these green spaces (Table 5.16) are higher than concentrations in the residential receptor locations provided in Table 3.2; however, 90th percentile background concentrations still account for a substantial fraction of the predicted concentrations. For NO_x on an annual basis, background accounts for 96% to 99% of the predicted concentration. As described previously, it has been assumed that all the NO_x is converted to NO_2, this is a conservative assumption. For SO_2 on a 24-hour basis, background accounts for 94% to 99% of the exposure and for $PM_{2.5}$, background accounts for 50% to 92% of the exposure.

Table 5.17 shows the hazard quotient values associated with the predicted concentrations in the green spaces. Similar to the concentrations provided in Table 5.16, background concentrations account for the majority of the hazard quotient values. The Bethlehem/Labelle green space at receptor location 168 represents the highest concentration and risk area for exposure to $PM_{2.5}$ with a hazard quotient of 4.5 as compared to a background hazard quotient of 3.0. Thus, at this location only 50% of the exposure comes from background. In terms of short term exposure and risk to NO_x, this greenspace is the highest-risk location. Appendix B8 provides all the results for the analysis in the greenspace for the year 2035.

TABLE 5.16 MAXIMUM PREDICTED AIR CONCENTRATIONS (INCLUDING BACKGROUND) WITHIN ROW FOR GASEOUS AIR POLLUTANTS EMITTED FROM VEHICLES FOR YEAR 2035

Receptor Location	NO_x 1 hr ($\mu g/m^3$)	NO_x Annual ($\mu g/m^3$)	SO_2 1 hr ($\mu g/m^3$)	SO_2 24 hr ($\mu g/m^3$)	$PM_{2.5}$ 24 hr ($\mu g/m^3$)
Spring Garden - 1235	130.8	71.9	33.3	32.1	27
Bethlehem/Labelle - 168	159.6	72.5	33.6	32.1	31.4
Between Bethlehem and Huron Estates - 178	125.2	71.2	33	32.1	24.5
Huron Estates - 68	124.6	71.8	33.2	32.2	26.2
Pulford Tunnel - 72	127.5	70.7	33.2	32.2	24.3
Between Pulford and Reddock - 78	111.9	71.2	32.8	32.2	22.5
Huron Church Line - 740	127.5	70.9	33.2	32.1	24.9
Villa Borghese - 2068	115.3	72.8	33	32.2	23
St Clair College - 685	88.6	71.1	32.4	32.1	23.5
Villa Paradiso - 710	108.7	70.5	32.8	32.1	25.4
Heritage Estates - 774	87.5	70.4	32.4	32.1	22.6
Oliver Estates - 721	99.9	70.9	32.7	32.1	24
Oliver Estates - 722	157.1	71.2	33.8	32.1	30.6
Mero - 861	105.5	71.1	32.8	32	24.2
Background	70	70	32	32	21

TABLE 5.17 HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO GASEOUS AIR POLLUTANTS (INCLUDING BACKGROUND) FOR RECEPTORS WITHIN THE GREENSPACES FOR YEAR 2035

Receptor Location	TRV=200 µg/m^3	TRV=40 µg/m^3	TRV=350 µg/m^3	TRV=125 µg/m^3	TRV=7 µg/m^3
	NO_x 1 hr	NO_x Annual	SO_2 1 hr	SO_2 24 hr	$PM_{2.5}$ 24 hr
Spring Garden - 1235	0.65	**1.80**	0.10	0.26	**3.9**
Bethlehem/Labelle - 168	0.80	**1.81**	0.10	0.26	**4.5**
Between Bethlehem and Huron Estates - 178	0.63	**1.78**	0.09	0.26	**3.5**
Huron Estates - 68	0.62	**1.80**	0.09	0.26	**3.7**
Pulford Tunnel - 72	0.64	**1.77**	0.09	0.26	**3.5**
Between Pulford and Reddock - 78	0.56	**1.78**	0.09	0.26	**3.2**
Huron Church Line - 740	0.64	**1.77**	0.09	0.26	**3.6**
Villa Borghese - 2068	0.58	**1.82**	0.09	0.26	**3.3**
St Clair College - 685	0.44	**1.78**	0.09	0.26	**3.4**
Villa Paradiso - 710	0.54	**1.76**	0.09	0.26	**3.6**
Heritage Estates - 774	0.44	**1.76**	0.09	0.26	**3.2**
Oliver Estates - 721	0.50	**1.77**	0.09	0.26	**3.4**
Oliver Estates - 722	0.79	**1.78**	0.10	0.26	**4.4**
Mero - 861	0.53	**1.78**	0.09	0.26	**3.5**
Background	*0.35*	*1.75*	*0.09*	*0.26*	*3.0*

Note: Values in **bold** exceed a hazard quotient value of 1.0

The concentrations of VOCs in the greenspace associated with vehicles is provided in Table 5.18. As seen from the table, background air concentrations (mainly from transboundary sources) account for about 93% to 100% of the VOC concentrations in the greenspace. The greenspace at Villa Borghese receptor location 2068 has the highest VOC concentration. Table 5.19 provides the carcinogenic risks associated with exposure to these VOCs in the greenspaces. A composite receptor was selected to show the risk over a lifetime of exposure. Appendix B8 provides the risk for the adult receptor. Only the inhalation pathway was assessed as the greenspaces have been designed for connectivity and will be used for walking, jogging and cycling. Similar to the air concentration, background (90th percentile) is responsible for the majority of the risk from exposure to VOCs in the greenspaces; the traffic increment only adds 0 to 7% of the risk. Table 5.20 provides the hazard quotients associated with the non-carcinogenic endpoints for the VOCs. As with the risks for the carcinogenic endpoints, the 90th percentile background concentrations are responsible for greater than 90% of the hazard quotients.

TABLE 5.18 MAXIMUM PREDICTED AIR CONCENTRATIONS (INCLUDING BACKGROUND) (µg/m³) WITHIN THE GREENSPACES FOR VOC EMITTED FROM VEHICLES IN YEAR 2035

Receptor Location	Benzene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein
Spring Garden - 1235	2.366	0.166	4.344	2.354	0.152
Bethlehem/Labelle - 168	2.384	0.168	4.348	2.355	0.152
Between Bethlehem & Huron Estates - 178	2.356	0.165	4.333	2.349	0.151
Huron Estates - 68	2.371	0.167	4.343	2.353	0.152
Pulford Tunnel - 72	2.343	0.163	4.325	2.346	0.151
Between Pulford and Reddock - 78	2.362	0.165	4.335	2.350	0.151
Huron Church Line - 740	2.347	0.164	4.329	2.347	0.151
Villa Borghese - 2068	2.414	0.171	4.353	2.358	0.153
St Clair College - 685	2.354	0.164	4.334	2.349	0.151
Villa Paradiso - 710	2.336	0.162	4.322	2.344	0.151
Heritage Estates - 774	2.332	0.162	4.319	2.344	0.150
Oliver Estates - 721	2.349	0.164	4.328	2.347	0.151
Oliver Estates - 722	2.357	0.165	4.332	2.349	0.151
Mero - 861	2.358	0.165	4.332	2.349	0.151
Background	2.32	0.16	4.31	2.34	0.15

TABLE 5.19 INCREMENTAL RISKS ASSOCIATED WITH EXPOSURE TO VOCS (INCLUDING BACKGROUND) WITHIN THE GREENSPACE FOR YEAR 2035 FOR THE COMPOSITE RECEPTOR

Receptor Location	Benzene	1,3-Butadiene	Formaldehyde	Acetaldehyde
Spring Garden - 1235	**$7.8x10^{-6}$**	**$5.0x10^{-6}$**	**$5.6x10^{-5}$**	**$5.2x10^{-6}$**
Bethlehem/Labelle - 168	**$7.9x10^{-6}$**	**$5.0x10^{-6}$**	**$5.7x10^{-5}$**	**$5.2x10^{-6}$**
Between Bethlehem and Huron Estates - 178	**$7.8x10^{-6}$**	**$5.0x10^{-6}$**	**$5.6x10^{-5}$**	**$5.2x10^{-6}$**
Huron Estates - 68	**$7.8x10^{-6}$**	**$5.0x10^{-6}$**	**$5.6x10^{-5}$**	**$5.2x10^{-6}$**
Pulford Tunnel - 72	**$7.7x10^{-6}$**	**$4.9x10^{-6}$**	**$5.6x10^{-5}$**	**$5.2x10^{-6}$**
Between Pulford and Reddock - 78	**$7.8x10^{-6}$**	**$5.0x10^{-6}$**	**$5.6x10^{-5}$**	**$5.2x10^{-6}$**
Huron Church Line - 740	**$7.7x10^{-6}$**	**$4.9x10^{-6}$**	**$5.6x10^{-5}$**	**$5.2x10^{-6}$**
Villa Borghese - 2068	**$8.0x10^{-6}$**	**$5.1x10^{-6}$**	**$5.7x10^{-5}$**	**$5.2x10^{-6}$**
St Clair College - 685	**$7.8x10^{-6}$**	**$4.9x10^{-6}$**	**$5.6x10^{-5}$**	**$5.2x10^{-6}$**
Villa Paradiso - 710	**$7.7x10^{-6}$**	**$4.9x10^{-6}$**	**$5.6x10^{-5}$**	**$5.2x10^{-6}$**
Heritage Estates - 774	**$7.7x10^{-6}$**	**$4.9x10^{-6}$**	**$5.6x10^{-5}$**	**$5.2x10^{-6}$**
Oliver Estates - 721	**$7.8x10^{-6}$**	**$4.9x10^{-6}$**	**$5.6x10^{-5}$**	**$5.2x10^{-6}$**
Oliver Estates - 722	**$7.8x10^{-6}$**	**$5.0x10^{-6}$**	**$5.6x10^{-5}$**	**$5.2x10^{-6}$**
Mero - 861	**$7.8x10^{-6}$**	**$5.0x10^{-6}$**	**$5.6x10^{-5}$**	**$5.2x10^{-6}$**
Background	**$7.7x10^{-6}$**	**$4.8x10^{-6}$**	**$5.6x10^{-5}$**	**$5.1x10^{-6}$**

Note: Values in **bold** exceed a risk level of 1×10^{-6}.

TABLE 5.20 HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO VOCS (INCLUDING BACKGROUND) WITHIN THE GREENSPACE FOR YEAR 2035 FOR ALL RECEPTORS

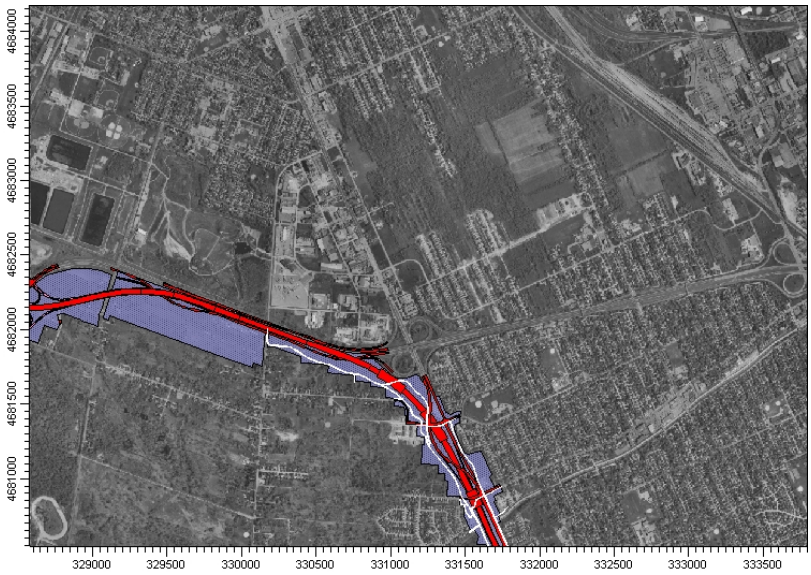
Receptor Location	Benzene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein
Spring Garden - 1235	0.08	0.08	<0.01	**0.26**	**7.6**
Bethlehem/Labelle - 168	0.08	0.08	<0.01	**0.26**	**7.6**
Between Bethlehem and Huron Estates - 178	0.08	0.08	<0.01	**0.26**	**7.6**
Huron Estates - 68	0.08	0.08	<0.01	**0.26**	**7.6**
Pulford Tunnel - 72	0.08	0.08	<0.01	**0.26**	**7.6**
Between Pulford and Reddock - 78	0.08	0.08	<0.01	**0.26**	**7.6**
Huron Church Line - 740	0.08	0.08	<0.01	**0.26**	**7.6**
Villa Borghese - 2068	0.08	0.09	<0.01	**0.26**	**7.7**
St Clair College - 685	0.08	0.08	<0.01	**0.26**	**7.6**
Villa Paradiso - 710	0.08	0.08	<0.01	**0.26**	**7.6**
Heritage Estates - 774	0.08	0.08	<0.01	**0.26**	**7.5**
Oliver Estates - 721	0.08	0.08	<0.01	**0.26**	**7.6**
Oliver Estates - 722	0.08	0.08	<0.01	**0.26**	**7.6**
Mero - 861	0.08	0.08	<0.01	**0.26**	**7.6**
Background	0.08	0.08	<0.01	**0.26**	**7.5**

Note: Values in **bold** exceed a hazard quotient value of 0.2.

5.5. Analysis of Huron Church Road to The Ambassador Bridge

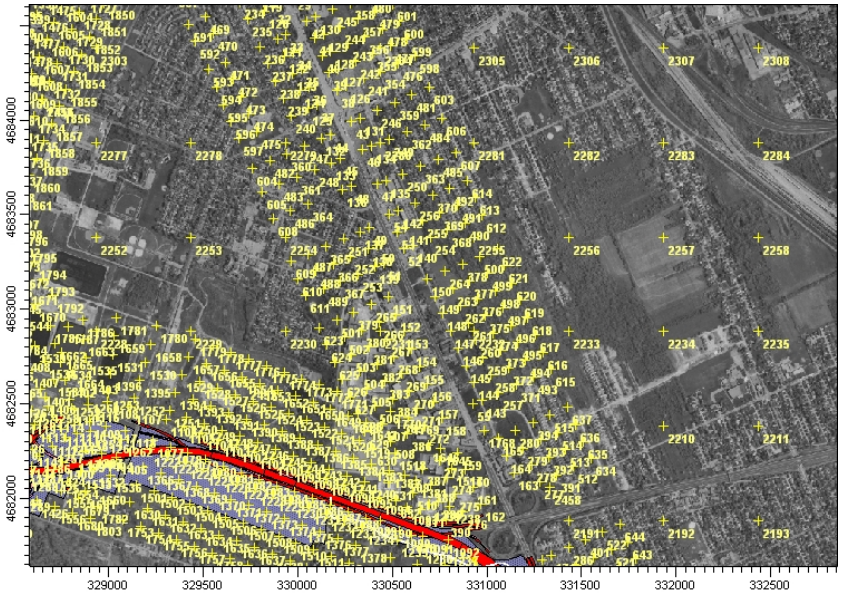
The Parkway originates at the existing Highway 401 terminus in Windsor and follows Highway 3 to Huron Church until Huron Church intersects with EC Row. At EC Row, the Parkway changes alignment and moves west with EC Row. Therefore, traffic along Huron Church north of EC Row is reduced and there should be localized improvements in air quality. The Parkway north of Grand Marais Drain is shown in Figure 5.2. This area is outside the evaluation of the Environmental Assessment; nonetheless an analysis is presented here for receptors located along this roadway.

FIGURE 5.2 FIGURE SHOWING THE PARKWAY ALIGNMENT AND HURON CHURCH ROAD TO THE AMBASSADOR BRIDGE



Receptor locations north of the Parkway follow the same grid spacing as used in the air quality analysis of the Parkway and are shown in Figure 5.3.

FIGURE 5.3 RECEPTOR GRID SPACING ALONG HURON CHURCH ROAD



Overall, while traffic in Windsor is expected to be similar between the Future "No Build" and the Parkway scenarios, the difference in the two scenarios lies in the distribution of the traffic through other Windsor border crossing corridors. Traffic is expected to be reduced at both the Ambassador Plaza and the Windsor-Detroit Tunnel with the new crossing in place when compared to the "No Build" scenario. In general, with construction of the Parkway, traffic along the Windsor Essex Parkway in the Huron Church corridor is expected to increase by 30-50% relative to traffic along this corridor in the "No Build" scenario, and traffic north of EC Row along Huron Church is expected to decrease by approximately 10-20% relative to the "No Build" scenario. Traffic in other areas of Windsor is expected to decrease as the TEPA allows for less interrupted driving conditions. The discussion of traffic impacts is better described in *The Level 2 Traffic Operations Analysis of Practical Alternatives (revised December 2008.).*

To show the effects to receptors along this road segment, receptor locations were chosen due to their proximity to the roadway. These receptors are shown in Figure 5.4.

FIGURE 5.4 RECEPTOR LOCATIONS ALONG HURON CHURCH ROAD SEGMENT

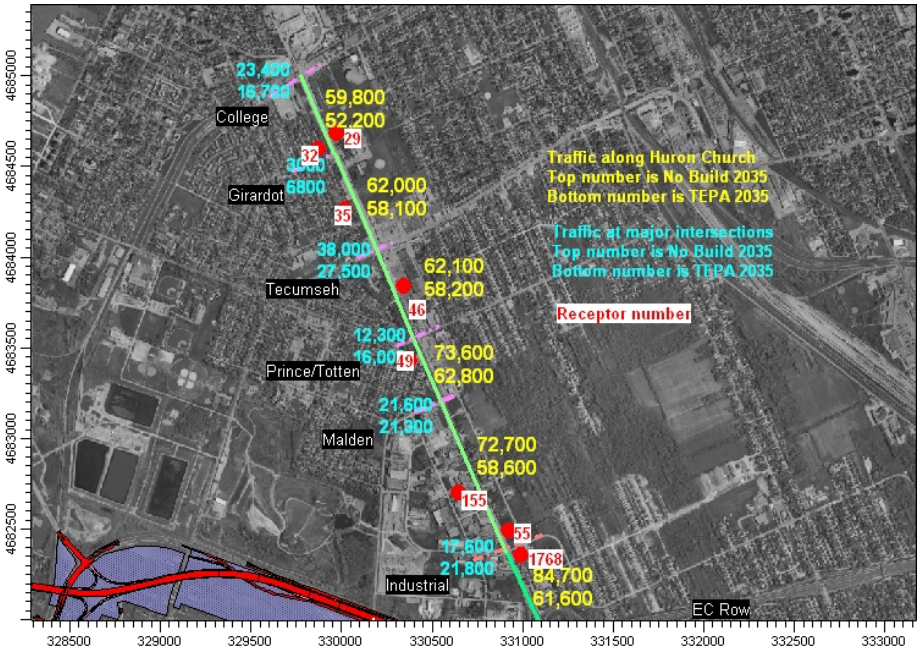


Table 5.21 provides the predicted air concentrations for gaseous pollutants associated with the Future "No Build" scenario (which is the road in its current configuration with all traffic going to the Ambassador Bridge) and the Parkway scenario (which results in the majority of international traffic going to the new crossing and smaller amounts of traffic going to the Ambassador Bridge). The analysis was carried out for 2035 which represents the maximum exposure year. As expected, concentrations of NO_x and $PM_{2.5}$ decrease in the Parkway scenario since the majority of the traffic will be routed to the new bridge crossing. However, as with all the previous analyses, background concentrations as a result of transboundary pollution account for the majority of the predicted concentrations. Table 5.22 shows the hazard quotients associated with the gaseous pollutants. As seen from this table, the exposure and risks to people residing along the Huron Church road segment to the Ambassador Bridge is reduced for the Parkway scenario.

TABLE 5.21 MAXIMUM PREDICTED AIR CONCENTRATIONS (INCLUDING BACKGROUND) ALONG HURON CHURCH ROAD* FOR GASEOUS AIR POLLUTANTS EMITTED FROM VEHICLES FOR YEAR 2035

Receptor Location	NO_x 1 hr (µg/m^3)		NO_x Annual (µg/m^3)		SO_2 1 hr (µg/m^3)		SO_2 24 hr (µg/m^3)		$PM_{2.5}$ 24 hr (µg/m^3)	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
College to Girardot - 32	304.3	170.3	77.7	71.3	32.7	32.7	32.2	32.2	25.4	21.5
College to Girardot - 29	255.1	131.2	78.5	71.8	32.6	32.5	32.2	32.2	26.3	21.3
Girardot to Tecumseh - 35	379.8	224.4	73.6	71.2	32.7	32.7	32.2	32.2	25.4	21.3
Tecumseh to Prince/Totten - 46	281.6	146.1	85.1	72.6	32.6	32.6	32.2	32.2	24.9	21.3
Prince/Totten to Malden - 49	259.3	212.3	76.5	72.1	32.8	32.8	32.2	32.2	24.5	21.6
Malden to Industrial - 55	310.2	138.0	83.7	72.4	32.8	32.7	32.3	32.3	26.2	22.2
Malden to Industrial - 155	282.8	108.1	72.2	71.0	32.6	32.6	32.1	32.1	24.3	22.0
Industrial to EC Row - 1768	256.8	126.0	87.4	73.0	32.8	32.7	32.3	32.3	25.7	22.0
Background	70		70		32		32		21	

Note: *Values are for receptors located along the existing Huron Church Access Road to the Ambassador Bridge; values change from "No Build" to "Parkway" because of the differences in traffic congestion along the Huron Church Road for the two scenarios (increased traffic along this road in the No Build scenario as compared to the Parkway scenario where traffic is diverted to the new crossing)

TABLE 5.22 HAZARD QUOTIENT ASSOCIATED WITH EXPOSURE TO GASEOUS AIR POLLUTANTS (INCLUDING BACKGROUND) FOR RECEPTORS ALONG HURON CHURCH ROAD* FOR YEAR 2035

Receptor Location	TRV=200 µg/m^3		TRV=40 µg/m^3		TRV=350 µg/m^3		TRV=125 µg/m^3		TRV=7 µg/m^{3,*}	
	NO_x 1 hr		NO_x Annual		SO_2 1 hr		SO_2 24 hr		$PM_{2.5}$ 24 hr	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
College to Girardot - 32	0.56	0.65	**1.78**	**1.80**	0.09	0.10	0.26	0.26	**3.1**	**3.9**
College to Girardot - 29	0.97	0.80	**1.84**	**1.81**	0.09	0.10	0.26	0.26	**3.4**	**4.5**
Girardot to Tecumseh - 35	0.93	0.63	**1.81**	**1.78**	0.09	0.09	0.26	0.26	**3.4**	**3.5**
Tecumseh to Prince/Totten - 46	**1.00**	0.62	**1.87**	**1.80**	0.09	0.09	0.26	0.26	**3.5**	**3.7**
Prince/Totten to Malden - 49	**1.23**	0.64	**1.89**	**1.77**	0.09	0.09	0.26	0.26	**3.5**	**3.5**
Malden to Industrial - 55	0.96	0.56	**1.83**	**1.78**	0.09	0.09	0.26	0.26	**3.7**	**3.2**
Malden to Industrial - 155	**1.58**	0.64	**1.80**	**1.77**	0.09	0.09	0.26	0.26	**3.4**	**3.6**
Industrial to EC Row - 1768	**1.10**	0.58	**1.84**	**1.82**	0.09	0.09	0.26	0.26	**3.9**	**3.3**
Background	*0.35*		*1.75*		*0.09*		*0.26*		*3.0*	

Note: *Values are for receptors located along the existing Huron Church Access Road to the Ambassador Bridge; values change from "No Build" to "Parkway" because of the differences in traffic congestion along the Huron Church Road for the two scenarios (increased traffic along this road in the No Build scenario as compared to the Parkway scenario where traffic is diverted to the new crossing)

- Values in **bold** exceed a hazard quotient value of 1.0

Table 5.23 provides the predicted air concentrations for VOCs for 2035 associated with the Future "No Build" scenario (which is the road in its current configuration with all traffic going to the Ambassador Bridge) and the Parkway scenario (which results in the majority of international traffic going to the new crossing and smaller amounts of traffic going to the Ambassador Bridge). The table shows that background concentrations account for the majority of the concentration and that concentrations approach background for the Parkway scenario. Table 5.24 and 5.25 provide the risks for the carcinogenic endpoints and the hazard quotients for the non-carcinogenic endpoints, respectively. As seen from these tables, the background is responsible for the majority of the risks and hazard quotient values. Additionally, receptor locations along Huron Church to the Ambassador Bridge experience lower risks for the Parkway Scenario. Appendix B7 provides all of the results for the Year 2035.

TABLE 5.23 MAXIMUM PREDICTED AIR CONCENTRATIONS (INCLUDING BACKGROUND) (µg/m³) ALONG HURON CHURCH ROAD* FOR VOC EMITTED FROM VEHICLES IN YEAR 2035

Receptor Location	Benzene		1,3-Butadiene		Formaldehyde		Acetaldehyde		Acrolein	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
College to Girardot - 32	2.356	2.352	0.165	0.164	4.346	4.327	2.354	2.347	0.152	0.151
College to Girardot - 29	2.368	2.367	0.167	0.165	4.360	4.333	2.359	2.349	0.153	0.151
Girardot to Tecumseh - 35	2.357	2.352	0.165	0.164	4.345	4.327	2.354	2.347	0.152	0.151
Tecumseh to Prince/Totten - 46	2.383	2.382	0.169	0.167	4.369	4.339	2.363	2.352	0.153	0.152
Prince/Totten to Malden - 49	2.368	2.368	0.167	0.166	4.354	4.335	2.357	2.350	0.152	0.151
Malden to Industrial - 55	2.393	2.384	0.170	0.167	4.377	4.342	2.366	2.353	0.154	0.152
Malden to Industrial - 155	2.346	2.349	0.164	0.163	4.336	4.327	2.350	2.347	0.151	0.151
Industrial to EC Row - 1768	2.413	2.401	0.173	0.169	4.389	4.349	2.371	2.356	0.155	0.152
Background	2.32		0.16		4.31		2.34		0.15	

Note: *Values are for receptors located along the existing Huron Church Access Road to the Ambassador Bridge; values change from "No Build" to "Parkway" because of the differences in traffic congestion along the Huron Church Road for the two scenarios (increased traffic along this road in the No Build scenario as compared to the Parkway scenario where traffic is diverted to the new crossing)

TABLE 5.24 INCREMENTAL RISKS ASSOCIATED WITH EXPOSURE TO VOCS (INCLUDING BACKGROUND) ALONG HURON CHURCH ROAD* FOR YEAR 2035 FOR THE COMPOSITE RECEPTOR

Receptor Location	Benzene		1,3-Butadiene		Formaldehyde		Acetaldehyde	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
College to Girardot - 32	**$1.8x10^{-5}$**	**$1.8x10^{-5}$**	**$5.0x10^{-6}$**	**$4.9x10^{-6}$**	**$5.6x10^{-5}$**	**$5.6x10^{-5}$**	**$5.2x10^{-6}$**	**$5.2x10^{-6}$**
College to Girardot - 29	**$1.8x10^{-5}$**	**$1.8x10^{-5}$**	**$5.0x10^{-6}$**	**$5.0x10^{-6}$**	**$5.7x10^{-5}$**	**$5.6x10^{-5}$**	**$5.2x10^{-6}$**	**$5.2x10^{-6}$**
Girardot to Tecumseh - 35	**$1.8x10^{-5}$**	**$1.8x10^{-5}$**	**$5.0x10^{-6}$**	**$4.9x10^{-6}$**	**$5.6x10^{-5}$**	**$5.6x10^{-5}$**	**$5.2x10^{-6}$**	**$5.2x10^{-6}$**
Tecumseh to Prince/Totten - 46	**$1.8x10^{-5}$**	**$1.8x10^{-5}$**	**$5.1x10^{-6}$**	**$5.0x10^{-6}$**	**$5.7x10^{-5}$**	**$5.6x10^{-5}$**	**$5.2x10^{-6}$**	**$5.2x10^{-6}$**
Prince/Totten to Malden - 49	**$1.8x10^{-5}$**	**$1.8x10^{-5}$**	**$5.0x10^{-6}$**	**$5.0x10^{-6}$**	**$5.7x10^{-5}$**	**$5.6x10^{-5}$**	**$5.2x10^{-6}$**	**$5.2x10^{-6}$**
Malden to Industrial - 55	**$1.8x10^{-5}$**	**$1.8x10^{-5}$**	**$5.1x10^{-6}$**	**$5.0x10^{-6}$**	**$5.7x10^{-5}$**	**$5.6x10^{-5}$**	**$5.2x10^{-6}$**	**$5.2x10^{-6}$**
Malden to Industrial - 155	**$1.8x10^{-5}$**	**$1.8x10^{-5}$**	**$4.9x10^{-6}$**	**$4.9x10^{-6}$**	**$5.6x10^{-5}$**	**$5.6x10^{-5}$**	**$5.2x10^{-6}$**	**$5.2x10^{-6}$**
Industrial to EC Row - 1768	**$1.8x10^{-5}$**	**$1.8x10^{-5}$**	**$5.2x10^{-6}$**	**$5.1x10^{-6}$**	**$5.7x10^{-5}$**	**$5.7x10^{-5}$**	**$5.2x10^{-6}$**	**$5.2x10^{-6}$**
Background	**$1.8x10^{-5}$**		**$4.8x10^{-6}$**		**$5.6x10^{-5}$**		**$5.1x10^{-6}$**	

Note: Values in **bold** exceed an incremental risk level of 1×10^{-6}

*Values are for receptors located along the existing Huron Church Access Road to the Ambassador Bridge; values change from "No Build" to "Parkway" because of the differences in traffic congestion along the Huron Church Road for the two scenarios (increased traffic along this road in the No Build scenario as compared to the Parkway scenario where traffic is diverted to the new crossing)

TABLE 5.25 HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO VOCS (INCLUDING BACKGROUND) ALONG HURON CHURCH ROAD* FOR YEAR 2035 FOR THE TODDLER RECEPTOR

Receptor Location	Benzene		1,3-Butadiene		Formaldehyde		Acetaldehyde		Acrolein	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
College to Girardot - 32	0.09	0.09	0.08	0.08	**24.5**	**24.4**	**0.27**	**0.26**	**7.7**	**7.7**
College to Girardot - 29	0.09	0.09	0.08	0.08	**24.6**	**24.4**	**0.27**	**0.26**	**7.8**	**7.7**
Girardot to Tecumseh - 35	0.09	0.09	0.08	0.08	**24.5**	**24.4**	**0.27**	**0.26**	**7.7**	**7.7**
Tecumseh to Prince/Totten - 46	0.10	0.10	0.08	0.08	**24.6**	**24.5**	**0.27**	**0.27**	**7.8**	**7.7**
Prince/Totten to Malden - 49	0.09	0.09	0.08	0.08	**24.5**	**24.4**	**0.27**	**0.27**	**7.7**	**7.7**
Malden to Industrial - 55	0.10	0.10	0.09	0.08	**24.7**	**24.5**	**0.27**	**0.27**	**7.8**	**7.7**
Malden to Industrial - 155	0.09	0.09	0.08	0.08	**24.4**	**24.4**	**0.27**	**0.26**	**7.7**	**7.7**
Industrial to EC Row - 1768	0.10	0.10	0.09	0.08	**24.7**	**24.5**	**0.27**	**0.27**	**7.9**	**7.7**
Background	0.09		0.08		**24.3**		**0.26**		**7.6**	

Note: *Values are for receptors located along the existing Huron Church Access Road to the Ambassador Bridge; values change from "No Build" to "Parkway" because of the differences in traffic congestion along the Huron Church Road for the two scenarios (increased traffic along this road in the No Build scenario as compared to the Parkway scenario where traffic is diverted to the new crossing)

- Values in **bold** exceed a hazard quotient value of 0.2

5.6. Uncertainty Analysis

Many areas of uncertainty attend a risk assessment. This is due to the fact that assumptions have to be made throughout the assessment either due to data gaps, environmental fate complexities or in the generalization of receptor characteristics. To be able to place a level of confidence in the results, an accounting of the uncertainty, the magnitude and type of which are important in determining the significance of the results, must be completed. In recognition of these uncertainties, conservative assumptions are used throughout the assessment to ensure that the potential for an adverse effect would not be underestimated. Several of the major assumptions are outlined below. Validation of these assumptions would reduce the uncertainty and increase the confidence in the conclusions that no measurable adverse health effects would be expected with the Parkway in comparison to the Future "No Build" scenario.

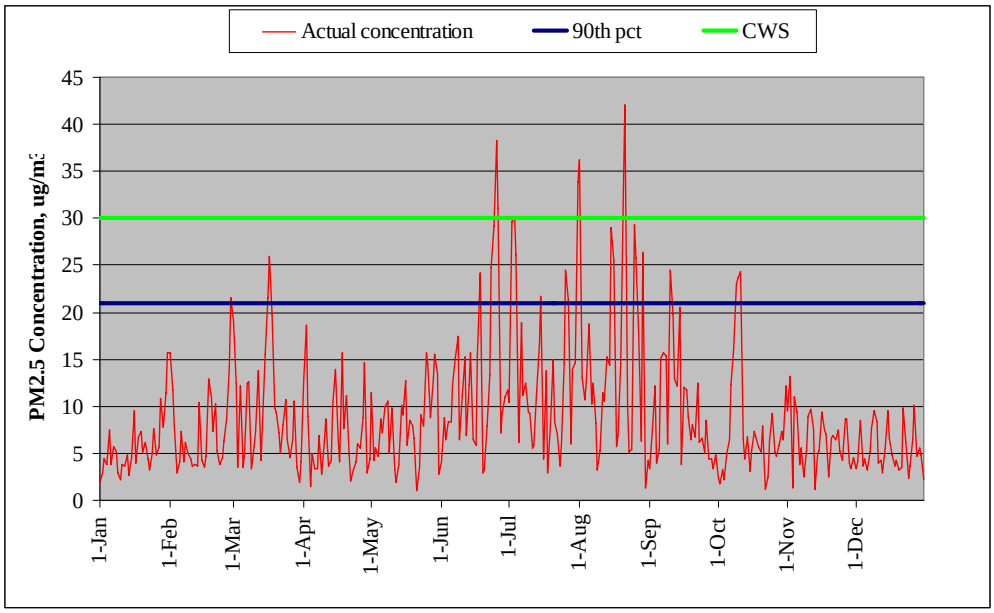
5.6.1. Uncertainties in the Assessment

Selection of the assessed chemicals (COC) was based on data and information provided in the Air Quality Impact Assessment. As indicated in that document there are uncertainties and inevitable variabilities associated with predicting future traffic flows, weather conditions and emission rates. However, the predicted concentrations are useful and acceptable for comparing the Parkway to Future "No Build" scenarios as any uncertainties will be consistent between the two scenarios.

In the evaluation of the chemicals of potential concern, some chemicals associated with vehicle movement along roadways such as PAHs, metals (from degradation of brakes and fuel additives) and asbestos were not evaluated within the assessment. Since this is a comparative assessment between the risks for the future "No Build" scenario and the risks for the proposed Parkway, the results of the assessment associated with these chemicals would be similar as the traffic volumes will be consistent between the two scenarios.

The 90th percentile background concentrations in the Windsor area were used in the air quality modelling. The assessment methodology recommended by the MOE requires the use of the 90th percentile background to calculate maximum concentrations and exceedances. A 90th percentile background occurs only 10% of the year as 90% of the time the ambient conditions are lower. For $PM_{2.5,}$ the 90th percentile background is 21 µg/m^3 on a 24 hour basis for the Windsor area as shown in the following figure. Thus the use of the 90th percentile background air concentration would tend to overestimate exposure.

FIGURE 5.5 COMPARISON OF PREDICTED TO ACTUAL BACKGROUND CONCENTRATIONS OF $PM_{2.5}$ IN WINDSOR



Background concentrations were also fixed for the horizon years since there is a large uncertainty associated with the determination of whether background concentrations will change over the horizon years. Background concentrations may increase or decrease, therefore the use of a fixed background may over or under-estimate the background in a particular horizon year. Nonetheless, any uncertainties will be consistent between the two scenarios.

It has been assumed that 100% of the NO_x emitted from vehicles is in the form of NO_2. This method provides a very conservative estimate of the NO_2 concentration since it does not take into account equilibrium that exists between NO_2 and NO. Thus exposures to NO_x have been over estimated.

The receptors and their characteristics are, in general, selected in order to over-estimate potential exposures. For example, it was assumed that an adult residential receptor was assumed to live at their house 24 hours/day, 365 days/year for 75 years with no time away from the site for vacations, working off-site, etc. This scenario is unlikely to occur and this results in a larger exposure dose. Other receptors such as workers may be present near the roadway; however, since the current human health risk assessment has calculated exposure to various lifestages including an adult, teen, child, toddler and infant receptor with continuous exposure for a period of 75 years, exposure to such a worker would be less than that measured for the resident.

For the pathways modelling, where data was lacking (e.g. physical characteristics of the soil, soil density etc.) worst-case values were generally assumed. For example, soil bulk density can range from 1.2 to 1.5 g/cm^3 (Perry and Chilton 1973) and a

value of 1.5 g/cm^3 is assumed for the calculations in this assessment. A higher soil bulk density predicts a higher soil concentration; therefore, the worst-case value for soil bulk density is 1.5 g/cm^3. Similarly, the most cautious values for chemical parameters such as soil-to-plant transfer factors were used. These transfer factors may vary by several orders of magnitude. The uncertainty in these assumptions could be reduced by using site-specific data gathered for the study area. Given that the health impacts are predicted to be insignificant, these changes would not result in any changes to the overall conclusion of the assessment.

In addition, the calculations of soil deposition assumed that deposition would occur over a 75 year period. The use of this assumption tends to overestimate the concentrations in the soil and vegetation resulting in an over-estimate of exposure.

Another area of uncertainty is the use of a single value for toxicity. The slope factors are selected to be very protective of human receptors. The factors used in the subject assessment represent risks from upper bound (95th percentile) dose-response estimates. No adjustments are made for bioavailability of the chemicals of concern from the soil into the body, which can result in an over-estimation of exposure and thus leads to uncertainty in the risk assessment. The toxicity assays used to generate these slope factors are not generally conducted for humans, in general toxicological data from laboratory species, generally rats or mice were used in the assessment. Based on the current state of toxicology, these are the best values available and tend to over-estimate risks. It is currently not possible or practical to develop approaches to evaluate the validity of the above assumptions on the overall assessment. As improvements occur in the toxicological/human health research and assessments, the uncertainties may be reduced. In addition, there are various different toxicity values available for some of the chemicals such as benzene and 1,3-butadiene. In the case of 1,3-butadiene the most conservative TRV was selected and in the case of benzene a value in the range of available TRVs was used. Since this is a comparative assessment between the risks for the future “No Build” scenario and the risks for the proposed Parkway, the results of the assessment will be consistent between the two scenarios.

In summary, the evaluation of the uncertainties in various measurements and methods used in the current risk assessment indicate that the risks have been over-estimated as a result of the assumptions made about exposure (which were generally conservative). The results of this uncertainty analysis support the overall conclusion of the assessment that in general the Parkway does not result in an increased health risk over the Future “No Build” scenario.

6. Conclusion

Transboundary pollution is the driver of air quality in Windsor and has been recognized as such by the Ministry of the Environment (MOE) in their publications "*Preliminary Air Quality Assessment Related to Traffic Congestion at Windsor's Ambassador Bridge, 2004*", "*Transboundary Air Pollution in Ontario, 2005",* and the annual Air Quality in Ontario publications. The Preliminary Air Quality Assessment Related to Traffic Congestion at Windsor's Ambassador Bridge states:

"Transboundary air pollutants from the United States account for up to 50 per cent of smog in Southwestern Ontario. In Windsor, this value may be as high as 90 per cent."

These background air concentrations overwhelm any traffic related emissions in the Windsor area. This assessment was a focused assessment on comparing the risks associated with the operation of the proposed Parkway with a Future "No Build" scenario with the roadway in its present configuration with additional traffic. The risk assessment was focused on the operation of the Windsor Essex Parkway since it was considered to be an extension of the AQIA to examine potential health effects associated with air quality. In addition, this assessment was carried in response to the requirement of the federal (CEAA) process requirement to address human health effects.

The Windsor Essex Parkway will be built in the same general corridor as Highway 3 and a section of Huron Church Road up to the E.C. Row Expressway. At E.C. Row, the traffic will have the choice of going along the existing Huron Church Road to the Ambassador Bridge and current border crossing station or of going along the Parkway until it connects with the new inspection station.

The potential adverse health effects from air emissions arising from vehicles traveling along the Parkway to people residing and/or working in the immediate area (including sensitive receptors) for the Future "No Build" (i.e. the current configuration of the road with additional traffic) and Parkway scenarios were assessed based on the following: short-term and long-term health risks associated with exposure to the gaseous air pollutants; and long-term human health risks associated with exposure to volatile organic compounds (VOCs). In addition, analyses were carried out for people using the greenspaces above the Windsor Essex Parkway as well as for people located along the Huron Church Road segment going to the Ambassador Bridge. This Huron Church Road segment is outside the scope of the Environmental Assessment but has been evaluated within the risk assessment for completeness.

Potential chemicals considered in the Air Quality Impact Assessment and the risk assessment were gaseous air pollutants (carbon monoxide (CO), carbon dioxide (CO_2), ozone, nitrogen oxides (NO_2), and sulphur dioxide (SO_2)), fine particulate matter ($PM_{2.5}$, PM_{10}), volatile organic compounds (VOC) such as acrolein, acetaldehyde, benzene, toluene, xylenes propylene, formaldehyde and 1,3-butadiene, polycyclic aromatic hydrocarbons (PAHs) such as benzo(a)pyrene, naphthalene, acenaphthylene, acenaphthene,fluorine, phenanthrene, anthracene,

fluoranthene, pyrene, benzo[*a*]anthracene, chrysene, benzo[*b,k*]fluoranthene, ideno[1,2,3-*c,d*]pyrene, dibenz[*a,h*]anthracene and benzo[*g,h,i*]perylene are associated with combustion of diesel fuels and chemicals associated with the degradation of breaks and tires such as asbestos and metals. A number of these chemicals were not considered further because they were associated with greenhouse effects, there was a lack of evidence linking health effects to exposures, emission factors were extremely low, there were low potential risks or there was no available information to quantify chemicals. The final list of chemicals of concern (COC) evaluated in both the Air Quality Impact Assessment and the human health risk assessment were gaseous air pollutants (nitrogen oxides (NO_2), and sulphur dioxide (SO_2)), fine particulate matter ($PM_{2.5}$), and volatile organic compounds (VOC) such as acrolein, acetaldehyde, benzene, formaldehyde and 1,3-butadiene. These chemicals are generally the list of chemicals considered in traffic related studies and represent the greatest potential impacts due to tailpipe or roadway surfaces.

The human health risk assessment used the predicted concentrations for the Parkway that were provided in the Air Quality Impact Assessment. The Plaza and Crossing were not assessed in the human health risk assessment since they were in an industrial area and are under federal jurisdiction. Three horizon years (2015, 2025 and 2035) were evaluated in the risk assessment, which are typical of industry practices for transportation projects. Traffic congestion along the roadway due to incidents such as collisions, and unusual events such as 9/11, were not included in the traffic analysis due to the difficulty in predicting their frequency of occurrence and therefore such incidents were not considered within the risk assessment.

Evaluation of Receptors Located along the Parkway

The short-term (e.g., respiratory health effects) and long-term health risk associated with exposure to the gaseous air pollutants was assessed based on using a hazard quotient value of 1 since background exposures were taken into account. The results of the assessment showed that background concentrations which fluctuate on a daily basis make up more than 80% to 100% of the total exposures depending on the fluctuations. The results showed that the emissions of gaseous air pollutants arising from vehicles traveling along the roadway for the Future "No Build" and Parkway scenarios were similar to background air quality (transboundary air pollution makes up the majority of the background concentrations in Windsor) for SO_2. Short-term risks arising from exposure to SO_2 for both scenarios were indistinguishable when compared to risks associated with exposure to background levels and therefore the Parkway does not result in any increased risk in comparison to the Future "No Build" scenario or background.

The hazard quotients associated with NO_2 for both the short-term (1 hour) and long-term (annual) were similar to hazard quotients associated with background (90^{th} percentile). The short-term hazard quotients were below 1 for the Parkway indicating that there will be no increased health risks over background. For the long-term, hazard quotients were above 1 for the background, Future "No Build" and Parkway scenarios. The hazard quotients associated with the Parkway are lower than the Future "No Build" scenario, indicating that there is less risk to residents in the vicinity

of the Parkway scenario for exposure to NO_2. The Air Quality Impact Assessment indicates that the lower NO_2 is due to the fact that there will be less stopping and starting and idling on The Windsor-Essex Parkway.

There are no health based thresholds for Total Particulate Matter; the World Health Organization (WHO) has concluded that fine particulate matter ($PM_{2.5}$) is more hazardous to health than coarser particles. Fine particulate matter ($PM_{2.5}$) background concentrations in the Windsor area are relatively high and are due to transboundary pollution and are above health based thresholds. The background exposure to $PM_{2.5}$ accounts for a significant portion of the hazard quotient for both the Future "No Build" and Parkway scenarios. In fact, the change in $PM_{2.5}$ concentration from background to the highest concentration for the Future "No Build" scenario is approximately 2.6 $\mu g/m^3$ and 2.0 $\mu g/m^3$ for the Parkway as compared to a background concentration of 21 $\mu g/m^3$. The Parkway scenario results in lower hazard quotients than the Future "No Build" scenario. Thus, the results of the risk assessment associated with $PM_{2.5}$ demonstrate that in general, there is less risk to residents in the vicinity of the Parkway scenario. The Air Quality Impact Assessment indicates that the lower $PM_{2.5}$ concentrations are due to the fact that there will be less stopping and starting and idling on The Windsor-Essex Parkway.

The incremental cancer risk values for long-term exposure to carcinogenic VOCs were above the regulatory risk level of one-in-a-million (1×10^{-6}). However, the incremental risks for the Parkway were no different than the risks associated with background.

Hazard quotients for non-carcinogenic effects of VOCs (predicted exposure dose ÷ chronic toxicity reference value) for background, Future "No Build" and the Parkway scenarios were below 0.2 for benzene and 1,3-butadiene. Hazard quotients for acrolein, acetaldehyde and formaldehyde were all above 0.2 for background, Future "No Build" and the Parkway scenarios. However, the hazard quotients for the Parkway were no different than the risks associated with background.

Evaluation of Receptors within the Greenspaces within the Right-of Way

The receptor locations that were selected for this analysis represent locations of the tunnels along the Windsor Essex Parkway. Results have only been calculated for the maximum exposure year of 2035. As expected, the concentrations within these green spaces are higher than concentrations in the residential receptor locations; however, background concentrations still account for a substantial fraction of the predicted concentrations.

The results show that background still dominates the risk and hazard quotients; however, at some locations such as the Bethlehem/Labelle and the Villa Borghese green space, the traffic contributions are larger that in other areas.

Evaluation of Receptors on Segment of Huron Church Road to the Ambassador Bridge

Traffic is expected to be reduced at both the Ambassador Plaza and the Windsor-Detroit Tunnel with the new crossing in place when compared to the "No Build" scenario. In general, with construction of the Parkway, traffic along the Windsor Essex Parkway in the Huron Church corridor is expected to increase by 30-50% relative to traffic along this corridor in the "No Build" scenario, and traffic north of EC Row along Huron Church is expected to decrease by approximately 10-20% relative to the "No Build" scenario.

The results indicate the background (regardless of its fluctuation) is responsible for the majority of the risks and hazard quotient values in this road scenario. Additionally, receptor locations along Huron Church Road to the Ambassador Bridge are anticipated to experience lower risks for the Parkway Scenario due to the lower traffic volumes.

Chemical Interactions

When dealing with multiple chemicals there is a potential for interaction with each other. An evaluation of chemical interactions was carried out within the risk assessment. The results of this evaluation indicated that the Parkway does not represent a greater risk from the consideration of chemical interactions over the Future "No Build" scenario.

Summary

There is little difference between the predicted total concentrations of gaseous air pollutants, fine particulate matter, and Volatile Organic Compounds for the Future "No Build" and Parkway scenarios. Thus, in general the Parkway does not result in an increased health risk over the Future "No Build" scenario. Background accounts for greater than 80% of the exposure and risks in both scenarios. For NO_x and $PM_{2.5}$, the Parkway actually results in a lower health risk in comparison to the Future "No Build" scenario.

An evaluation of the uncertainties in various measurements and methods used in the current risk assessment indicated that the risks have been over-estimated as a result of the assumptions made about exposure (which were generally conservative). In the uncertainty assessment, it was discussed that some chemicals could not be fully evaluated due to a lack of information for a quantitative assessment. The lack of analysis of these chemicals does not significantly affect the predicted health risks. The results of this uncertainty analysis support the overall conclusion of the assessment that in general the Parkway does not result in an increased health risk over the Future "No Build" scenario (which is the current configuration of Highway 3/Talbot Road and Huron Church Road to the Ambassador Bridge Crossing).

7. References

Band, P.R., J. M. Zielinski, H. Jiang, and L. Liu 2006. *Canada-US Border Air Quality Strategy (BAQS): Preliminary Results of Mortality and Cancer Incidence in Windsor, Canada.* WIT Transactions on Ecology and the Environment, 86, 777-783.

Burnett, R.T., D. Stieb, J.R. Brook, S. Cakmak, R. Dales, M. Raizenne, R. Vincent and T. Dann 2004. *Associations Between Short-term Changes in Nitrogen Dioxide and Mortality in Canadian Cities.* Archives of Environmental Health. 59:228-236.

California Air Resources Board (CARB) 2008. Staff Report: Methodology for Estimating Premature Deaths Associated with Long-term Exposures to Fine Airborne Particulate Matter in California.

California Department of Health Services (CDHS) 1988. *Risk Specific Intake Level for Benzene.* Reproductive and Cancer Hazard Assessment Section, Berkley, CA.

Crump, KS. 1994. *Risk of Benzene-Induced Leukemia: A Sensitivity Analysis Of The Pliofilm Cohort With Additional Follow-Up And New Exposure Estimates.* J Toxicol Environ Health 42:219-242.

Dockery, D.W.; C.A. Pope III; X. Xu, J.D. Spengler, J.H. Ware, M.E. Fay, B.G. Ferris, and F.A. Speizer 1993. An Association between Air Pollution and Mortality in Six U.S. Cities; N. Engl. J. Med. (1993), 329, 1753-1759.

Dominici, F., R.D. Peng, M.L. Bell, L. Pham, A. McDermott, S.L. Zeger, J.M. Samet 2006. *Fine Particulate Air Pollution and Hospital Admission for Cardiovascular and Respiratory Diseases*. Journal of the American Medical Association 295(10):1127-1134.

Dominici F., A. McDermott, M. Daniels, S.L. Zeger, J.M. Samet 2003. Mortality Among Residents of 90 Cities. In: Revised Analyses of Time-Series Studies of Air Pollution and Health. Cambridge, MA: Health Effects Institute, 9–23.

Environment Canada (EC) 2008. *National Inventory Report: Greenhouse Gas Sources and Sinks in Canada, 1990-2006.* En81-4/2006E, available at http://www.ec.gc.ca/pdb/ghg/inventory_report/2006_report/tdm-toc_eng.cfm.

Grosse Y, R. Baan, K. Straif, B. Secretan, F. El Ghissassi, V. Bouvard, A. Altieri, and V. Cogliano, on behalf of the WHO International Agency for Research on Cancer Monograph Working Group (2007). Carcinogenicity of 1,3-butadiene, ethylene oxide, vinyl chloride, vinyl fluoride, and vinyl bromide. Lancet Oncol 8: 679-680.

Health Canada 2004a. *Federal Contaminated Site Risk Assessment in Canada. Part 1: Guidance on Human Health Preliminary Quantitative Risk Assessment (PQRA).* Environmental Health Assessment Services. Cat. No.: H46-2/04-367E.

Health Canada 2004b. *Federal Contaminated Site Risk Assessment in Canada. Part II: Health Canada Toxicological Reference Values (TRVs).* Environmental Health Assessment Services. Cat. No.: H46-2/04-368E.

International Council on Clean Transportation 2009. *Methylcyclopentadienyl Manganese Tricarbonyl (MMT): A Science and Policy Review.* January.

Jerrett, M., R.T. Burnett, R. Ma, A. Pope III, D. Krewski, K.B. Newbold, G. Thurston, Y. Shi, N. Finkelstein, E.E. Calle, M.J. Thun 2005. *Spatial Analysis of Air Pollution and Mortality in Los Angeles*. Epidemiology 16(6):727-736.

Krewski, D. R.T. Burnett, M.S. Goldberg, K. Hoover, J. Siemiatycki, M. Jerrett, M. Abrahamowicz, W.H. White, G. Bartlett, L. Brodsky, L. Calisti, Y. Chen, P. De Luca, R. de Berger, N. Finkelstein, D.E. Foliart, K. Fung, E. Hughes, S. Kader, R. Lakhani, X. Luo, L. Nadon, R. Ma, R. Mallick, F. Mo, L. Richardson, B. Schichtel, T. Schopflocher, Y. Shi, P. Villeneuve, A. Willis 2000. *Reanalysis of the Harvard Six Cities Study and the American Cancer Society Study of Particulate Air Pollution and Mortality*. Health Effects Research Special Report, Parts 1 and 2, July 2000. Health Effects Institute, Cambridge, MA.Laden, F., L.M. Neas, D.M. Dockery and J. Schwartz 2000. *Association of Fine Particulate Matter from Different Sources with Daily Mortality in Six U.S. Cities*. Environ. Health Perspectives, 108: 941-947.

Laden, F., J. Schwartz, F.E. Speizer, D.W. Dockery 2006. *Reduction in Fine Particulate Air Pollution and Mortality: Extended Follow-up of the Harvard Six Cities Study.* American Journal of Respiratory and Critical Care Medicine 173:667-672.

Levy J.I., J.K. Hammitt, Y. Yanagisawa, J.D. Spengler 1999. *Development of a new damage function model for power plants: Methodology and applications* Environmental Science & Technology 33(24): 4364-4372.

Levy, J.I., J.K. Hammett and J.D. Spengler 2000. *Estimating the Mortality Impacts of Particulate Matter: What Can be Learned from Between Study Variability*. Environ. Health Perspectives 108(2): 107 – 117.

Levy, J.I. 2002. *Modeling the Benefits of Power Plant Emission Controls in Massachusetts.* Journal of the Air & Waste Management Association 52:5.

Maltoni, C., B. Conti. and G. Cotti 1983. *Benzene: A Multi-Potential Carcinogen. Results of Long-term Bioassays Performed at the Bologna Institute of Oncology.* AM. J. Ind. Med., 4, 589-630.

Ontario Ministry of the Environment (MOE) 2008. *Rationale for the Development of Generic Soil and Groundwater Standards for use at Contaminated Sites in Ontario*. September. Accessed March 200009 at http://www.ene.gov.on.ca/envision/env_reg/er/documents/2008/010-4642%203.pdf.

Ontario Ministry of the Environment (MOE) 2001. *Soil Investigation and Human Health Risk Assessment Report for the Rodney St. Community, Port Colborne*. Report No. SDB-031-3511-2000. ISBN 0-7794-2272-4. October.

Paustenbach, D; R. Bass and P. Price1993. *Benzene Toxicity and Risk Assessment, 1972-1992: Implications For Future Regulation*. Environ Health Perspect 101 (Suppl 6):177-200.

Perry, R.H. and C.H. Chilton 1973. *Chemical Engineer's Handbook*. 5th Edition. McGraw Hill Book Company.

Pope, C.A., D.W. Dockery 2006. *Human Effects of Fine Particulate Air Pollution: Lines that Connect.* Journal of the Air & Waste Management Association, 56: 709-742.

Pope, C.A., R.T. Burnett, M.J. Thun, E.E. Calle, D. Krewski, K.Ito and G.D. Thurston 2002. *Lung Cancer, Cardiopulmonary Mortality, and Long-term Exposure to Fine Particulate Air Pollution.* JAMA. 287:1132-1141.

RIVM – Baars, A.J, R.M.C Theelen, P.J.C.M. Janssen, J.M. Hesse, M.E. van Apeldoorn, M.C.M. Meijerink, L. Verdam and M.J. Zeilmaker 2001. *Re-evaluation of Human-Toxicological Maximum Permissible Risk Levels-Benzene.* National Institute of Public Health and the Environment. Bilthoven. Project No. 711701025.

Richardson, G.M. 1997. *Compendium of Canadian Human Exposure Factors for Risk Assessment*. O'Connor Associates Environmental Inc.

Rinsky, RA; R.J. Young, and A.B. Smith 1981. *Leukemia in Benzene Workers*. Am J Ind Med 2:217-245.

Rinsky, R.A.; A.B. Smith, R. Horning, *et al.* 1987. *Benzene And Leukemia: An Epidemiologic Risk Assessment.* N Engl J Med 316:1044-1050.

Rothman, N., G.L. Li, M. Dosemeci, W.E. Bechtold, G.E. Marti, Y.Z. Wang, M. Linet, L.Q. Xi, W. Lu, M.T. Smith, N. Titenko-Holland, L.P. Zhang, W. Blot, S.N. Yin, and R.B. Hayes. 1996. *Hematotoxicity Among Chinese Workers Heavily Exposed To Benzene*. Am. J. Ind. Med. 29: 236-246.

Samet, J.M., F. Dominici, F.C. Curriero, I. Coursac and S.L. Zeger 2000. *Fine Particulate Air Pollution and Mortality in 20 U.S. Cities*. The New England Journal of Medicine, 343(24): 1742-1749.

Stocco,C., M. MacNeill, D. Wang, D.,X. Xu, M. Guay, J. Brook and A.J. Wheeler. 2008. *Predicting personal exposure of Windsor, Ontario residents to volatile organic compounds using indoor measurements and survey data*. Atmospheric Environment 42: 5905-5912.

Texas Commission on Environmental Quality (TCEQ) 2007a. *Peer Review of 1,3-Butadiene Development Support Document and Report of Follow Up Conference Call*. December.

Texas Commission on Environmental Quality (TCEQ) 2007b. *1,3-Butadiene, CAS Registry Number 106-99-0, Development Support Document*. Proposed August.

ToxProbe 2002 *Estimated Human Health Risk from Exposure to Diesel Exhaust in Toronto.* Prepared for Toronto Public Health. May.

United States Environmental Protection Agency (U.S. EPA) 2008. *Integrated Risk Information System – IRIS*. Accessed at: http://www.epa.gov/iris/

United States Environmental Protection Agency (U.S. EPA) 2004. *Air Quality Criteria for Particulate Matter.* EPA/600/P-99/0002aF.

United States Environmental Protection Agency (U.S. EPA) 2002. *National Centre for Environmental Assessment – Health Assessment of 1,3 Butadiene.* EPA/600/P-98/001F.

United States Environmental Protection Agency (U.S. EPA) 1997. *Exposure Factors Handbook.* National Center for Environmental Assessment. Office of Research and Development. August.

United States Environmental Protection Agency (U.S. EPA) 1996a. *Air Quality Criteria for Particulate Matter. Volumes I, II and III.*

United States Environmental Protection Agency (U.S. EPA) 1996b. *Compilation of Air Pollutant Emission Factors.* AP-42, Fifth Edition, Volume 1, Chapter 3: Stationary Internal Combustion Sources.

United States Environmental Protection Agency (U.S. EPA) 1990. *Clean Air Act Amendments of 1990.*

Wong, C.M., R.W. Atkinson, H.R. Anderson, A.J. Hedley, S. Ma, P.Y. Chau and T.H. Lam 2002. *A Tale of Two Cities: Effects of Air Pollution on Hospital Admissions in Hong Kong and London Compared.* Environmental Health Perspectives. 110: 67-77.

Wong, O. and Raabe, G.K. 1995. *Cell-Type-Specific Leukemia Analyses in a Combined Cohort of More Than 208,000 Petroleum Workers in the US and the UK, 1937-1989.* Reg. Toxicol. Pharmacol., 21, 307-321.

World Health Organization (WHO) 2006. *Guidelines for Drinking-Water Quality, First Addendum to Third Edition, Volume 1: Recommendations.* (http://www.who.int/entity/water_sanitation_health/dwq/gdwq0506.pdf (March 19 2008).

World Health Organization (WHO) 2005. Air Quality Guidelines Global Update. EUR/05/5046029.

World Health Organization (WHO) 2004. Meta – Analysis of Time – Series Study and Panel Studies of Particulate Matter (PM) and Ozone (O_3). EUR/04/5042688. (http://www.euro.who.int/document/E82792.pdf, accessed March 19 2008).

World Health Organization (WHO) 2000. Air Quality Guidelines for Europe. WHO Regional Publications, European Series No. 91.

Zanobetti, A., J. Schwartz, D. Gold 2000a. *Are There Sensitive Subgroups for the Effects of Airborne Particles?* Environ. Health Perspect. 108: 841-845.

Zanobetti, A., J. Schwartz, D. Gold 2000b. *Airborne Particles Are A Risk Factor For Hospital Admissions For Heart And Lung Disease*. Environ. Health Perspect. 108: 1071–1077.

APPENDIX A

PATHWAYS CALCULATIONS

Appendix A: Pathways Calculations

A.1 Inhalation Pathway

The dose due to inhalation (mg/m^3) for carcinogenic effects of VOC is:

$$Dose_{inhalation,c} = \frac{EF \times ED \times C_a}{AT_c} \times \frac{1}{1000} \quad \text{(A-1)}$$

where:

EF	=	exposure frequency (days/year) [assumed]
ED	=	exposure duration (years) [assumed]
C_a	=	concentration of constituent in air (µg/m^3) [predicted]
AT_c	=	attenuation (days) [receptor-specific]
1/1000	=	unit conversion (mg/µg)

The concentration of chemicals in air (Ca) is predicted by the air dispersion modelling and is specific to each chemical at each receptor location. For non-carcinogenic effects of VOC, there is no attenuation time and since the receptor is assumed to be exposed for 24 hours per day, 7 days per week, and 365 days per year, the dose is equal to the concentration in air.

A.2 Ingestion Pathway

The general form of the equation used to determine the dose for individual COC due to the ingestion of chemicals in dust, soil and vegetation is:

$$Dose_{ingestion} = \frac{ED \times EF \times R_{ing} \times C_x}{AT \times B_w} \times F_{location} \times \frac{1}{units\_convv} \qquad \text{(A-2)}$$

where:

R_{ing} = ingestion rate (g/d) [receptor-specific]

B_w = body weight of receptor (kg) [receptor-specific]

EF = exposure frequency (days/year) [assumed]

ED = exposure duration (years) [assumed]

AT = attenuation, either AT_c (carcinogenic) or AT_{NC} (non-carcinogenic) (days) [receptor-specific]

C_x = concentration of chemical for appropriate media, x, such that

- C_{soil} – (mg/kg) [calculated in (A-3)]
- C_{dust} – (mg/kg) [assumed to = C_{soil}]
- C_{veg} – (g/kg) [calculated in (A-10)]

$F_{location}$ = fraction of dose contributed by the site (-) [receptor-specific]

units_conv = 1000 g/kg for vegetation and 1000000 mg/kg for soil and dust

The dose from the ingestion pathway for each COC is then calculated as the sum of the various ingestion pathways (i.e., soil, dust and vegetation).

The concentration of the chemical in soil is calculated for carcinogens following (A-3).

$$S_c = \frac{D_s}{k_s \times (T_c - T_1)} \times \left[\left(T_c + \frac{e^{-k_s \times T_c}}{k_s} \right) - \left(T_1 + \frac{e^{-k_s \times T_1}}{k_s} \right) \right] \qquad \text{(A-3)}$$

where:

D_s = deposition term (mg/kg-yr) [calculated (A-4)]

T_c = time period over which deposition occurs (yr) [assumed to be 75]

T_1 = time at beginning of exposure period (yr) [assumed to be 0]

k_s = soil loss constant (1/yr) [calculated (A-6)]

The soil concentration used for non-carcinogens is Sc_{Tc} (A-5).

The deposition term (D_s) is calculated as follows:

$$D_s = \frac{1000}{z \times BD} \times \frac{V_{settle} \times C_a}{10000} \quad \text{(A-4)}$$

where:

1000 = safety factor

z = soil mixing depth (cm) [tilled = 20, forage = 2]

BD = soil bulk density (g/cm^3) [assumed to be 1.5]

10000 = conversion factor (m^2 to cm^2)

V_{settle} = settling velocity (m/yr) [assumed to be 3153.6 m/yr, equivalent to 0.01 cm/s, using particle density of 4.0 g/cm^3, particle diameter 1 µm, and stable atmosphere with roughness height 0.1 cm]

C_a = concentration of chemical in air (µg/m^3) [predicted]

The soil mixing depth (z) changes depending on the type of exposure being calculated. For soil ingestion and root uptake for forage vegetation, the soil concentration calculated with z for forage was used. This was a cautious assumption, since soil concentrations for forage soils are generally higher than soil concentrations for tilled soils because the constituent is dispersed through a smaller region (2 cm vs. 20 cm) and therefore is found in greater concentrations. The tilled soil concentration was used for root uptake by above-ground vegetables and silage because these vegetation types are grown on tilled soil.

The soil concentration at time T_c (Sc_{Tc}) is calculated as follows:

$$Sc_{Tc} = \frac{D_s \times \left(1 - e^{(-k_s \times T_c)}\right)}{k_s} \quad \text{(A-5)}$$

where:

D_s = deposition term (mg/(kg yr)) [calculated (A-4)]

k_s = soil loss constant (1/yr) [calculated (A-6)]

T_c = time period over which deposition occurs (yr) [assumed to be 75]

The soil loss constant (k_s) accounts for the loss of chemical from soil by several mechanisms and is calculated as follows:

$$k_s = k_{sl} + k_{se} + k_{sr} + k_{sg} + k_{sv} \quad \text{(A-6)}$$

where:

k_{sl} = loss constant due to leaching (1/yr) [calculated (A-7)]

k_{se} = loss constant due to soil erosion (1/yr) [U.S. EPA recommended value of 0 (2005)]

k_{sr} = loss constant due to surface runoff (1/yr) [calculated (A-8)]

k_{sg} = loss constant due to degradation (1/yr) [assumed to be 0]

k_{sv} = loss constant due to volatilization (1/yr) [calculated (A-9)]

The loss constant due to leaching (k_{sl}) is calculated as follows:

$$k_{sl} = \frac{q}{\Theta_s \times z \times \left[1 + \left(\frac{BD \times Kd_s}{\Theta_s}\right)\right]} \quad \text{(A-7)}$$

where:

q = average annual recharge (cm/yr) [assumed to be 5]

Θ_s = soil volumetric water content (mL/cm^3) [assumed to be 0.2]

z = soil mixing depth (cm) [tilled = 20, forage = 2]

Kd_s = soil-water partition coefficient (cm^3/g) [chemical-specific]

BD = soil bulk density (g/cm^3) [assumed to be 1.5]

The chemical loss constant due to runoff from soil (k_{sr}) is calculated as follows:

$$k_{sr} = \frac{R}{\Theta_s \times z} \times \left(\frac{1}{1 + \left(\frac{BD \times Kd_s}{\Theta_s} \right)} \right) \quad \text{(A-8)}$$

where:

R = average annual runoff (cm/yr) [assumed to be 2.5]

Θs = soil volumetric water content (mL/cm^3) [assumed to be 0.2]

z = soil mixing depth (cm) [tilled = 20, forage = 2]

BD = soil bulk density (g/cm^3) [assumed to be 1.5]

Kd_s = soil-water partition coefficient (cm^3/g) [chemical-specific]

The chemical loss constant due to volatilization from soil (k_{sv}) is calculated as follows:

$$k_{sv} = \left[\frac{3.1536 \times 10^7 \times H}{z \times Kd_s \times R \times T_a \times BD} \right] \times \left(\frac{D_a}{z} \right) \times \left[1 - \left(\frac{BD}{\rho_{soil}} \right) - \Theta_s \right] \quad \text{(A-9)}$$

where:

3.15 x 10^7 = conversion constant (s/yr)

H = Henry's Law constant (atm m^3/mol) [chemical-specific]

z = soil mixing depth (cm) [tilled = 20, forage = 1]

BD = soil bulk density (g/cm^3) [assumed to be 1.5]

Kd_s = soil-water partition coefficient (cm^3/g) [chemical-specific]

R = universal gas constant (atm-m^3/mol-K) [assumed to be 8.205 x 10^{-5}]

Ta = ambient air temperature (K) [assumed to be 285.15]

ρ_s = Solids particle density (g/cm^3) [assumed to be 2.7]

Da = diffusivity of chemicals in air (cm^2/s) [chemical-specific]

Θ s = soil volumetric water content (mL/cm^3) [assumed to be 0.2]

The chemical concentration in vegetation (C_{veg}) is calculated following (A-10) and includes the uptake of chemicals by roots, the direct deposition of chemicals from the air to vegetation surfaces, and the direct uptake by plant leaves of vapour phase chemicals in the air.

$$C_{veg} = C_r + C_d + C_v \quad \text{(A-10)}$$

where:

C_r = concentration in plant from root uptake (mg/kg DW) [calculated (A-11)]

C_d = concentration in plant from direct deposition (mg/kg DW) [calc (A-12)]

C_v = concentration in plant from air-to-plant transfer (mg/kg DW) [calc (A-13)]

The chemical concentration in above ground vegetation due to direct uptake of chemical from soil (C_r) is calculated as shown in (A-11). For vegetation, the tilled soil concentration was used with the Br for leafy vegetation. For forage, the forage soil concentration was used with the Br for forage. And for silage, the tilled soil concentration was used with the Br for forage.

$$C_r = C_{soil} \times B_r \quad \text{(A-11)}$$

where:

C_{soil} = chemical concentration in soil (mg/kg) [calculated (A-3)]

B_r = plant-soil bioconc. factor for veg ((µg/g DW)/(µg/g soil)) [chem.-specific]

The chemical concentration in above-ground vegetation due to wet and dry deposition of chemical to the plant surface (C_d) is calculated as follows:

$$C_d = \frac{(1 - F_v) \times F_w \times V_{settle} \times C_a \times R_p \times \left(1 - e^{(-k_p \times T_p)}\right)}{Y_p \times k_p \times 1000} \quad \text{(A-12)}$$

where:

1000 = units conversion factor (mg/g)

F_v = fraction of chemical in vapour phase (-) [chemical-specific]

V_{settle} = settling velocity (m/yr) [assumed to be 3153.6 m/yr, equivalent to 0.01 cm/s, using particle density of 4.0 g/cm^3, particle diameter 1 µm, 0.02 and stable atmosphere with roughness height 0.1 cm]

C_a = concentration of chemical in air (µg/m^3) [predicted]

F_w = fraction of wet deposition that adheres to plant (-) [assumed 0.6]

R_p = interception fraction edible portion [veg =0.39, forage = 0.5, silage = 0.46]

k_p = plant surface loss coefficient (1/yr) [assumed to be 18]

T_p = length of plant exposure to deposition of edible portion of plant (yrs) [veg = 0.164, forage = 0.12, silage = 0.16]

Y_p = yield or standing crop biomass of the edible portion of plant (kg DW/m^2) [veg = 2.24, forage = 0.24, silage = 0.8]

The chemical concentration in aboveground vegetation due to the direct uptake of vapour phase chemicals into the plant leaves (C_v) is calculated as follows:

$$C_v = F_v \times \frac{C_a \times B_v \times VG_{ag}}{\rho_s} \quad \text{(A-13)}$$

where:

F_v = fraction of chemical in vapour phase (-) [chemical-specific]

C_a = concentration of chemical in air (µg/m^3) [predicted]

B_v = air-to-plant biotransfer factor ((mg/kg plant DW)/(µg/g air)) [chemical-specific]

VG_{ag} = empirical correction (-) [assumed to be 0.01 for PAHs in veg, 1 for forage and non-PAHs in veg, 0.5 for silage]

ρ_s = density of air (g/m^3) [1.2 x 10^3]

Appendix B: Results of Risk Assessment Calculations

This appendix provides all the results for the pathways modelling and risk assessment. Section B.1 provides the modelled maximum gaseous pollutant concentrations in air at all receptor locations for horizon years 2015, 2025 and 2035. Section B.2 provides the calculated hazard quotients for the gaseous pollutants. Section B.3 presents the modelled maximum air concentrations and the estimated soil concentrations for VOC at all receptor locations for the three horizon years. Section B.4 provides the doses calculated for VOC for ingestion and inhalation pathways. Section B.5 presents the results of the risk calculations for the carcinogenic VOC and Section B.6 reports the hazard quotients calculated for the non-carcinogenic VOC.

B.1 Gaseous Air Pollutant Concentrations

TABLE B.1-1: MAXIMUM PREDICTED AIR CONCENTRATIONS (INCLUDING BACKGROUND) FOR GASEOUS AIR POLLUTANTS EMITTED FROM VEHICLES FOR YEAR 2015

Receptor Location	NO_x 1 hr (µg/m^3)		NO_x Annual (µg/m^3)		SO_2 1 hr (µg/m^3)		SO_2 24 hr (µg/m^3)		$PM_{2.5}$ 24 hr (µg/m^3)	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field - 2479	144.4	110.2	83.5	78.9	32.2	32.3	32.1	32.1	22.3	22.1
Bellwood Estates - 58	247.8	180.2	117.7	91.6	32.8	32.8	32.2	32.2	24.0	22.0
Bellwood Estates - 403	123.7	111.9	82.4	77.2	32.3	32.3	32.1	32.1	21.6	21.6
Grand Marais Roads - 74	227.9	161.4	111.4	88.2	32.6	32.7	32.1	32.1	23.7	22.5
Grand Marais Roads - 186	176.8	132.0	96.8	81.9	32.4	32.5	32.1	32.1	22.6	21.8
Heritage Estates - 910	114.9	95.2	75.5	74.5	32.2	32.2	32.0	32.0	21.3	21.4
Home for Aged LaSalle - 944	138.0	107.2	78.2	74.1	32.2	32.3	32.0	32.0	21.3	21.3
Home for Aged LaSalle - 945	144.4	109.6	79.6	74.2	32.2	32.3	32.0	32.0	21.3	21.4
Huron Estates - 295	137.2	124.6	83.8	79.2	32.3	32.4	32.1	32.1	22.0	21.7
Huron Estates - 410	120.7	111.7	80.3	76.4	32.2	32.3	32.0	32.0	21.7	21.5
Kendleton Court - 781	174.8	120.9	88.0	81.8	32.3	32.3	32.1	32.1	22.1	22.4
Oliver Estates - 858	146.6	129.2	79.1	81.3	32.2	32.4	32.0	32.0	21.4	22.1
Oliver Estates - 1997	172.9	161.4	81.5	83.2	32.3	32.5	32.0	32.0	21.7	22.4
Reddock - 423	136.1	106.1	80.1	76.5	32.2	32.3	32.0	32.0	21.7	21.6
Residential - 2478	133.7	114.5	76.4	74.6	32.3	32.3	32.0	32.0	21.4	21.4
Southwood Lakes - 867	109.8	98.5	77.5	76.7	32.1	32.2	32.0	32.0	21.4	21.5
Spring Garden - 1513	119.2	133.7	78.2	79.0	32.3	32.5	32.1	32.1	21.3	21.6
Spring Garden - 1644	119.9	111.3	78.0	77.5	32.3	32.3	32.0	32.0	21.4	21.4
St. Clair College - 2480	98.9	94.0	78.3	74.8	32.1	32.2	32.0	32.0	21.7	21.5
Villa Borghese - 828	154.3	99.1	84.3	76.4	32.2	32.2	32.0	32.0	21.6	21.7
Villa Paradiso Cres. - 848	120.1	108.5	78.3	77.9	32.2	32.2	32.0	32.0	21.6	22.0
Background	70		70		32		32		21	

TABLE B.1-2: MAXIMUM TABLE B.1-2: PREDICTED AIR CONCENTRATIONS (INCLUDING BACKGROUND) FOR GASEOUS AIR POLLUTANTS EMITTED FROM VEHICLES FOR YEAR 2025

Receptor Location	NO_x 1 hr ($\mu g/m^3$)		NO_x Annual ($\mu g/m^3$)		SO_2 1 hr ($\mu g/m^3$)		SO_2 24 hr ($\mu g/m^3$)		$PM_{2.5}$ 24 hr ($\mu g/m^3$)	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field - 2479	131.4	85.4	79.9	73.5	32.2	32.3	32.1	32.1	22.7	22.7
Bellwood Estates - 58	198.1	125.0	103.2	80.7	32.9	32.9	32.2	32.2	24.2	23.0
Bellwood Estates - 403	104.9	99.5	78.4	73.6	32.3	32.3	32.1	32.1	21.7	22.2
Grand Marais Roads - 74	185.7	113.8	98.5	77.4	32.7	32.8	32.2	32.2	23.9	23.1
Grand Marais Roads - 186	146.1	100.8	88.5	74.7	32.5	32.5	32.1	32.1	22.8	22.4
Heritage Estates - 910	104.0	80.0	73.4	71.6	32.2	32.2	32.0	32.0	21.6	21.7
Home for Aged LaSalle - 944	129.0	85.4	75.7	71.6	32.2	32.3	32.0	32.0	21.5	21.4
Home for Aged LaSalle - 945	141.7	84.8	77.2	71.3	32.3	32.3	32.0	32.0	21.5	21.4
Huron Estates - 295	115.6	97.4	80.2	73.5	32.3	32.4	32.1	32.1	22.1	22.2
Huron Estates - 410	104.9	89.7	77.6	72.5	32.3	32.3	32.0	32.0	21.8	21.8
Kendleton Court - 781	170.3	90.1	85.8	74.6	32.3	32.4	32.1	32.1	22.8	23.1
Oliver Estates - 858	144.5	93.7	77.7	74.4	32.2	32.4	32.0	32.0	21.6	22.9
Oliver Estates - 1997	163.5	104.9	79.2	75.1	32.3	32.6	32.0	32.0	22.0	23.2
Reddock - 423	125.4	87.7	77.5	72.5	32.2	32.3	32.0	32.0	21.9	21.8
Residential - 2478	111.5	86.9	74.0	71.7	32.3	32.4	32.0	32.0	21.6	21.6
Southwood Lakes - 867	106.1	81.1	75.5	72.4	32.2	32.2	32.0	32.0	21.7	22.0
Spring Garden - 1513	95.9	98.5	74.7	74.0	32.4	32.6	32.1	32.1	21.4	22.2
Spring Garden - 1644	97.4	89.3	74.9	73.3	32.4	32.4	32.1	32.1	21.5	21.7
St. Clair College - 2480	93.5	78.8	76.1	71.9	32.1	32.2	32.0	32.0	21.9	21.9
Villa Borghese - 828	148.7	83.5	83.7	72.8	32.2	32.2	32.0	32.0	22.1	21.8
Villa Paradiso Cres. - 848	113.9	83.3	76.4	73.1	32.2	32.3	32.0	32.0	22.1	22.5
Background	70		70		32		32		21	

TABLE B.1-3: MAXIMUM PREDICTED AIR CONCENTRATIONS (INCLUDING BACKGROUND) FOR GASEOUS AIR POLLUTANTS EMITTED FROM VEHICLES FOR YEAR 2035

Receptor Location	NO_x 1 hr (µg/m^3)		NO_x Annual (µg/m^3)		SO_2 1 hr (µg/m^3)		SO_2 24 hr (µg/m^3)		$PM_{2.5}$ 24 hr (µg/m^3)	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field - 2479	148.9	83.5	81.6	73.1	32.2	32.3	32.1	32.1	23.6	23.0
Bellwood Estates - 58	225.1	129.0	107.1	80.2	32.9	33.1	32.2	32.2	25.4	23.6
Bellwood Estates - 403	112.8	100.6	80.1	73.3	32.3	32.4	32.1	32.1	22.2	22.7
Grand Marais Roads - 74	197.1	115.1	103.2	76.8	32.7	32.9	32.2	32.2	25.3	23.1
Grand Marais Roads - 186	156.9	103.0	91.4	74.4	32.5	32.6	32.1	32.1	23.7	22.5
Heritage Estates - 910	108.7	80.0	73.8	71.4	32.2	32.2	32.0	32.0	21.7	21.7
Home for Aged LaSalle - 944	147.9	84.6	77.4	71.4	32.3	32.4	32.0	32.0	21.7	21.5
Home for Aged LaSalle - 945	160.5	85.2	79.1	71.3	32.3	32.4	32.0	32.0	21.7	21.6
Huron Estates - 295	121.1	98.0	81.8	73.2	32.4	32.5	32.1	32.1	22.5	22.3
Huron Estates - 410	109.8	89.5	78.7	72.3	32.3	32.4	32.1	32.1	22.2	21.9
Kendleton Court - 781	186.0	87.5	88.2	74.1	32.3	32.4	32.1	32.1	23.2	23.4
Oliver Estates - 858	155.4	91.4	78.6	73.9	32.2	32.5	32.0	32.0	21.8	23.0
Oliver Estates - 1997	178.9	100.6	80.5	74.5	32.3	32.7	32.1	32.1	22.3	23.4
Reddock - 423	142.3	88.0	79.6	72.3	32.3	32.4	32.0	32.0	22.3	22.0
Residential - 2478	117.5	87.3	74.6	71.6	32.3	32.4	32.0	32.0	21.8	21.7
Southwood Lakes - 867	110.6	80.1	76.2	72.2	32.2	32.3	32.0	32.0	21.7	21.8
Spring Garden - 1513	98.4	100.2	75.3	74.2	32.4	32.7	32.1	32.1	21.5	22.5
Spring Garden - 1644	98.4	90.7	75.5	73.4	32.4	32.4	32.1	32.1	21.7	22.0
St. Clair College - 2480	99.3	78.3	76.8	71.6	32.1	32.2	32.0	32.0	22.3	22.0
Villa Borghese - 828	171.8	83.3	87.7	72.5	32.2	32.3	32.1	32.1	22.5	22.0
Villa Paradiso Cres. - 848	119.9	81.8	77.1	72.7	32.2	32.3	32.0	32.0	22.4	22.7
Background	70		70		32		32		21	

B.2 Hazard Quotient for Gaseous Pollutant

TABLE B.2-1: HAZARD QUOTIENT ASSOCIATED WITH EXPOSURE TO GASEOUS AIR POLLUTANTS (INCLUDING BACKGROUND) FOR ALL RECEPTORS FOR YEAR 2015

Receptor Location	TRV=200 µg/m^3		TRV=40 µg/m^3		TRV=350 µg/m^3		TRV=125 µg/m^3		TRV=15 µg/m^{3,*}		TRV=7 µg/m^{3,*}	
	NO_x 1 hr		NO_x Annual		SO_2 1 hr		SO_2 24 hr		$PM_{2.5}$ 24 hr		$PM_{2.5}$ 24 hr	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field - 2479	0.72	0.55	**2.1**	**2.0**	0.09	0.09	0.26	0.26	**1.5**	**1.5**	**3.2**	**3.2**
Bellwood Estates - 58	**1.2**	0.90	**2.9**	**2.3**	0.09	0.09	0.26	0.26	**1.6**	**1.5**	**3.4**	**3.1**
Bellwood Estates - 403	0.62	0.56	**2.1**	**1.9**	0.09	0.09	0.26	0.26	**1.4**	**1.4**	**3.1**	**3.1**
Grand Marais Roads - 74	**1.1**	0.81	**2.8**	**2.2**	0.09	0.09	0.26	0.26	**1.6**	**1.5**	**3.4**	**3.2**
Grand Marais Roads - 186	0.88	0.66	**2.4**	**2.0**	0.09	0.09	0.26	0.26	**1.5**	**1.5**	**3.2**	**3.1**
Heritage Estates - 910	0.57	0.48	**1.9**	**1.9**	0.09	0.09	0.26	0.26	**1.4**	**1.4**	**3.0**	**3.1**
Home for Aged LaSalle - 944	0.69	0.54	**2.0**	**1.9**	0.09	0.09	0.26	0.26	**1.4**	**1.4**	**3.0**	**3.0**
Home for Aged LaSalle - 945	0.72	0.55	**2.0**	**1.9**	0.09	0.09	0.26	0.26	**1.4**	**1.4**	**3.0**	**3.1**
Huron Estates - 295	0.69	0.62	**2.1**	**2.0**	0.09	0.09	0.26	0.26	**1.5**	**1.4**	**3.1**	**3.1**
Huron Estates - 410	0.60	0.56	**2.0**	**1.9**	0.09	0.09	0.26	0.26	**1.4**	**1.4**	**3.1**	**3.1**
Kendleton Court - 781	0.87	0.60	**2.2**	**2.0**	0.09	0.09	0.26	0.26	**1.5**	**1.5**	**3.2**	**3.2**
Oliver Estates - 858	0.73	0.65	**2.0**	**2.0**	0.09	0.09	0.26	0.26	**1.4**	**1.5**	**3.1**	**3.2**
Oliver Estates - 1997	0.86	0.81	**2.0**	**2.1**	0.09	0.09	0.26	0.26	**1.4**	**1.5**	**3.1**	**3.2**
Reddock - 423	0.68	0.53	**2.0**	**1.9**	0.09	0.09	0.26	0.26	**1.4**	**1.4**	**3.1**	**3.1**
Residential - 2478	0.67	0.57	**1.9**	**1.9**	0.09	0.09	0.26	0.26	**1.4**	**1.4**	**3.1**	**3.1**
Southwood Lakes - 867	0.55	0.49	**1.9**	**1.9**	0.09	0.09	0.26	0.26	**1.4**	**1.4**	**3.1**	**3.1**
Spring Garden - 1513	0.60	0.67	**2.0**	**2.0**	0.09	0.09	0.26	0.26	**1.4**	**1.4**	**3.0**	**3.1**
Spring Garden - 1644	0.60	0.56	**1.9**	**1.9**	0.09	0.09	0.26	0.26	**1.4**	**1.4**	**3.1**	**3.1**
St. Clair College - 2480	0.49	0.47	**2.0**	**1.9**	0.09	0.09	0.26	0.26	**1.4**	**1.4**	**3.1**	**3.1**
Villa Borghese - 828	0.77	0.50	**2.1**	**1.9**	0.09	0.09	0.26	0.26	**1.4**	**1.4**	**3.1**	**3.1**
Villa Paradiso Cres. - 848	0.60	0.54	**2.0**	**1.9**	0.09	0.09	0.26	0.26	**1.4**	**1.5**	**3.1**	**3.1**
Background	*0.35*		*1.75*		*0.09*		*0.26*		*1.4*		*3.0*	

Note: Values in **bold** exceed a hazard quotient value of 1.0

* - Calculations for two different TRVs have been provided for $PM_{2.5}$ to show the diverse thoughts on $PM_{2.5}$

TABLE B.2-2: HAZARD QUOTIENT ASSOCIATED WITH EXPOSURE TO GASEOUS AIR POLLUTANTS (INCLUDING BACKGROUND) FOR ALL RECEPTORS FOR YEAR 2025

Receptor Location	TRV=200 µg/m^3		TRV=40 µg/m^3		TRV=350 µg/m^3		TRV=125 µg/m^3		TRV=15 µg/m^{3,*}		TRV=7 µg/m^{3,*}	
	NO_x 1 hr		NO_x Annual		SO_2 1 hr		SO_2 24 hr		$PM_{2.5}$ 24 hr		$PM_{2.5}$ 24 hr	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field - 2479	0.66	0.43	**2.0**	**1.8**	0.09	0.09	0.26	0.26	**1.5**	**1.5**	**3.2**	**3.2**
Bellwood Estates - 58	0.99	0.63	**2.6**	**2.0**	0.09	0.09	0.26	0.26	**1.6**	**1.5**	**3.5**	**3.3**
Bellwood Estates - 403	0.52	0.50	**2.0**	**1.8**	0.09	0.09	0.26	0.26	**1.4**	**1.5**	**3.1**	**3.2**
Grand Marais Roads - 74	0.93	0.57	**2.5**	**1.9**	0.09	0.09	0.26	0.26	**1.6**	**1.5**	**3.4**	**3.3**
Grand Marais Roads - 186	0.73	0.50	**2.2**	**1.9**	0.09	0.09	0.26	0.26	**1.5**	**1.5**	**3.3**	**3.2**
Heritage Estates - 910	0.52	0.40	**1.8**	**1.8**	0.09	0.09	0.26	0.26	**1.4**	**1.4**	**3.1**	**3.1**
Home for Aged LaSalle - 944	0.64	0.43	**1.9**	**1.8**	0.09	0.09	0.26	0.26	**1.4**	**1.4**	**3.1**	**3.1**
Home for Aged LaSalle - 945	0.71	0.42	**1.9**	**1.8**	0.09	0.09	0.26	0.26	**1.4**	**1.4**	**3.1**	**3.1**
Huron Estates - 295	0.58	0.49	**2.0**	**1.8**	0.09	0.09	0.26	0.26	**1.5**	**1.5**	**3.2**	**3.2**
Huron Estates - 410	0.52	0.45	**1.9**	**1.8**	0.09	0.09	0.26	0.26	**1.5**	**1.5**	**3.1**	**3.1**
Kendleton Court - 781	0.85	0.45	**2.1**	**1.9**	0.09	0.09	0.26	0.26	**1.5**	**1.5**	**3.3**	**3.3**
Oliver Estates - 858	0.72	0.47	**1.9**	**1.9**	0.09	0.09	0.26	0.26	**1.4**	**1.5**	**3.1**	**3.3**
Oliver Estates - 1997	0.82	0.52	**2.0**	**1.9**	0.09	0.09	0.26	0.26	**1.5**	**1.5**	**3.1**	**3.3**
Reddock - 423	0.63	0.44	**1.9**	**1.8**	0.09	0.09	0.26	0.26	**1.5**	**1.5**	**3.1**	**3.1**
Residential - 2478	0.56	0.43	**1.9**	**1.8**	0.09	0.09	0.26	0.26	**1.4**	**1.4**	**3.1**	**3.1**
Southwood Lakes - 867	0.53	0.41	**1.9**	**1.8**	0.09	0.09	0.26	0.26	**1.4**	**1.5**	**3.1**	**3.1**
Spring Garden - 1513	0.48	0.49	**1.9**	**1.8**	0.09	0.09	0.26	0.26	**1.4**	**1.5**	**3.1**	**3.2**
Spring Garden - 1644	0.49	0.45	**1.9**	**1.8**	0.09	0.09	0.26	0.26	**1.4**	**1.4**	**3.1**	**3.1**
St. Clair College - 2480	0.47	0.39	**1.9**	**1.8**	0.09	0.09	0.26	0.26	**1.5**	**1.5**	**3.1**	**3.1**
Villa Borghese - 828	0.74	0.42	**2.1**	**1.8**	0.09	0.09	0.26	0.26	**1.5**	**1.5**	**3.2**	**3.1**
Villa Paradiso Cres. - 848	0.57	0.42	**1.9**	**1.8**	0.09	0.09	0.26	0.26	**1.5**	**1.5**	**3.2**	**3.2**
Background	*0.35*		*1.75*		*0.09*		*0.26*		*1.4*		*3.0*	

Note: Values in **bold** exceed a hazard quotient value of 1.0

* - Calculations for two different TRVs have been provided for $PM_{2.5}$ to show the diverse thoughts on $PM_{2.5}$

TABLE B.2-3: HAZARD QUOTIENT ASSOCIATED WITH EXPOSURE TO GASEOUS AIR POLLUTANTS (INCLUDING BACKGROUND) FOR ALL RECEPTORS FOR YEAR 2035

Receptor Location	TRV=200 µg/m^3		TRV=40 µg/m^3		TRV=350 µg/m^3		TRV=125 µg/m^3		TRV=15 µg/m^{3,*}		TRV=7 µg/m^{3,*}	
	NO_x 1 hr		NO_x Annual		SO_2 1 hr		SO_2 24 hr		$PM_{2.5}$ 24 hr		$PM_{2.5}$ 24 hr	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field - 2479	0.74	0.42	**2.0**	**1.8**	0.09	0.09	0.26	0.26	**1.6**	**1.5**	**3.4**	**3.3**
Bellwood Estates - 58	**1.1**	0.64	**2.7**	**2.0**	0.09	0.09	0.26	0.26	**1.7**	**1.6**	**3.6**	**3.4**
Bellwood Estates - 403	0.56	0.50	**2.0**	**1.8**	0.09	0.09	0.26	0.26	**1.5**	**1.5**	**3.2**	**3.2**
Grand Marais Roads - 74	0.99	0.58	**2.6**	**1.9**	0.09	0.09	0.26	0.26	**1.7**	**1.5**	**3.6**	**3.3**
Grand Marais Roads - 186	0.78	0.52	**2.3**	**1.9**	0.09	0.09	0.26	0.26	**1.6**	**1.5**	**3.4**	**3.2**
Heritage Estates - 910	0.54	0.40	**1.8**	**1.8**	0.09	0.09	0.26	0.26	**1.4**	**1.4**	**3.1**	**3.1**
Home for Aged LaSalle - 944	0.74	0.42	**1.9**	**1.8**	0.09	0.09	0.26	0.26	**1.4**	**1.4**	**3.1**	**3.1**
Home for Aged LaSalle - 945	0.80	0.43	**2.0**	**1.8**	0.09	0.09	0.26	0.26	**1.4**	**1.4**	**3.1**	**3.1**
Huron Estates - 295	0.61	0.49	**2.0**	**1.8**	0.09	0.09	0.26	0.26	**1.5**	**1.5**	**3.2**	**3.2**
Huron Estates - 410	0.55	0.45	**2.0**	**1.8**	0.09	0.09	0.26	0.26	**1.5**	**1.5**	**3.2**	**3.1**
Kendleton Court - 781	0.93	0.44	**2.2**	**1.9**	0.09	0.09	0.26	0.26	**1.5**	**1.6**	**3.3**	**3.3**
Oliver Estates - 858	0.78	0.46	**2.0**	**1.8**	0.09	0.09	0.26	0.26	**1.5**	**1.5**	**3.1**	**3.3**
Oliver Estates - 1997	0.89	0.50	**2.0**	**1.9**	0.09	0.09	0.26	0.26	**1.5**	**1.6**	**3.2**	**3.3**
Reddock - 423	0.71	0.44	**2.0**	**1.8**	0.09	0.09	0.26	0.26	**1.5**	**1.5**	**3.2**	**3.1**
Residential - 2478	0.59	0.44	**1.9**	**1.8**	0.09	0.09	0.26	0.26	**1.5**	**1.4**	**3.1**	**3.1**
Southwood Lakes - 867	0.55	0.40	**1.9**	**1.8**	0.09	0.09	0.26	0.26	**1.4**	**1.5**	**3.1**	**3.1**
Spring Garden - 1513	0.49	0.50	**1.9**	**1.9**	0.09	0.09	0.26	0.26	**1.4**	**1.5**	**3.1**	**3.2**
Spring Garden - 1644	0.49	0.45	**1.9**	**1.8**	0.09	0.09	0.26	0.26	**1.4**	**1.5**	**3.1**	**3.1**
St. Clair College - 2480	0.50	0.39	**1.9**	**1.8**	0.09	0.09	0.26	0.26	**1.5**	**1.5**	**3.2**	**3.1**
Villa Borghese - 828	0.86	0.42	**2.2**	**1.8**	0.09	0.09	0.26	0.26	**1.5**	**1.5**	**3.2**	**3.1**
Villa Paradiso Cres. - 848	0.60	0.41	**1.9**	**1.8**	0.09	0.09	0.26	0.26	**1.5**	**1.5**	**3.2**	**3.2**
Background	*0.35*		*1.75*		*0.09*		*0.26*		*1.4*		*3.0*	

Note: Values in **bold** exceed a hazard quotient value of 1.0

* - Calculations for two different TRVs have been provided for $PM_{2.5}$ to show the diverse thoughts on $PM_{2.5}$

B.3 Maximum Predicted VOC Concentrations

TABLE B.3-1: MAXIMUM PREDICTED AIR CONCENTRATIONS (µg/m³, INCLUDING BACKGROUND) FOR VOC EMITTED FROM VEHICLES IN YEAR 2015

Receptor Location	Benzene		1,3-Butadiene		Formaldehyde		Acetaldehyde		Acrolein	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field - 2479	2.384	2.387	0.169	0.169	4.369	4.362	2.363	2.361	0.154	0.153
Bellwood Estates - 58	2.581	2.572	0.195	0.189	4.507	4.436	2.418	2.392	0.162	0.158
Bellwood Estates - 403	2.385	2.390	0.169	0.169	4.364	4.356	2.361	2.358	0.153	0.152
Grand Marais Roads - 74	2.518	2.497	0.187	0.182	4.476	4.420	2.405	2.384	0.160	0.157
Grand Marais Roads - 186	2.451	2.435	0.178	0.175	4.420	4.384	2.383	2.369	0.156	0.154
Heritage Estates - 910	2.347	2.355	0.164	0.165	4.337	4.339	2.350	2.351	0.151	0.151
Home for Aged LaSalle - 944	2.359	2.360	0.166	0.165	4.346	4.342	2.354	2.352	0.151	0.151
Home for Aged LaSalle - 945	2.363	2.360	0.166	0.166	4.350	4.344	2.355	2.353	0.152	0.151
Huron Estates - 295	2.400	2.394	0.170	0.170	4.369	4.367	2.363	2.362	0.153	0.153
Huron Estates - 410	2.381	2.378	0.168	0.167	4.355	4.351	2.358	2.356	0.152	0.152
Kendleton Court - 781	2.397	2.405	0.171	0.171	4.374	4.378	2.365	2.367	0.154	0.154
Oliver Estates - 858	2.368	2.414	0.166	0.173	4.343	4.380	2.353	2.368	0.152	0.154
Oliver Estates - 1997	2.386	2.427	0.169	0.174	4.358	4.389	2.359	2.371	0.153	0.154
Reddock - 423	2.368	2.378	0.167	0.168	4.352	4.354	2.356	2.357	0.152	0.152
Residential - 2478	2.351	2.362	0.165	0.166	4.342	4.342	2.352	2.352	0.151	0.151
Southwood Lakes - 867	2.368	2.395	0.166	0.169	4.345	4.355	2.354	2.358	0.152	0.152
Spring Garden - 1513	2.394	2.419	0.169	0.172	4.353	4.365	2.357	2.362	0.152	0.153
Spring Garden - 1644	2.385	2.401	0.168	0.170	4.352	4.357	2.356	2.359	0.152	0.152
St. Clair College - 2480	2.357	2.357	0.165	0.165	4.343	4.340	2.353	2.352	0.152	0.152
Villa Borghese - 828	2.378	2.388	0.168	0.168	4.358	4.351	2.359	2.356	0.153	0.152
Villa Paradiso Cres. - 848	2.364	2.378	0.166	0.168	4.348	4.356	2.355	2.358	0.152	0.153
Background	2.32		0.16		4.31		2.34		0.15	

TABLE B.3-2: MAXIMUM PREDICTED AIR CONCENTRATIONS (µg/m^3, INCLUDING BACKGROUND) FOR VOC EMITTED FROM VEHICLES IN YEAR 2025

Receptor Location	Benzene		1,3-Butadiene		Formaldehyde		Acetaldehyde		Acrolein	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field - 2479	2.373	2.380	0.168	0.169	4.368	4.364	2.363	2.361	0.154	0.153
Bellwood Estates - 58	2.547	2.545	0.191	0.187	4.501	4.434	2.415	2.391	0.161	0.157
Bellwood Estates - 403	2.378	2.385	0.168	0.169	4.361	4.358	2.360	2.359	0.153	0.152
Grand Marais Roads - 74	2.494	2.485	0.185	0.181	4.471	4.421	2.403	2.384	0.160	0.156
Grand Marais Roads - 186	2.435	2.426	0.176	0.174	4.417	4.386	2.381	2.370	0.156	0.154
Heritage Estates - 910	2.343	2.350	0.164	0.165	4.336	4.340	2.350	2.351	0.151	0.151
Home for Aged LaSalle - 944	2.353	2.357	0.165	0.165	4.345	4.343	2.353	2.352	0.151	0.151
Home for Aged LaSalle - 945	2.356	2.356	0.166	0.165	4.348	4.345	2.354	2.353	0.152	0.151
Huron Estates - 295	2.390	2.389	0.169	0.170	4.367	4.369	2.363	2.363	0.153	0.153
Huron Estates - 410	2.371	2.373	0.167	0.167	4.353	4.352	2.357	2.356	0.152	0.152
Kendleton Court - 781	2.382	2.397	0.169	0.171	4.372	4.382	2.364	2.368	0.154	0.154
Oliver Estates - 858	2.360	2.407	0.165	0.172	4.342	4.381	2.352	2.368	0.152	0.154
Oliver Estates - 1997	2.374	2.418	0.168	0.174	4.356	4.391	2.358	2.372	0.153	0.155
Reddock - 423	2.362	2.374	0.166	0.168	4.351	4.356	2.356	2.358	0.152	0.152
Residential - 2478	2.346	2.361	0.164	0.166	4.341	4.343	2.351	2.352	0.151	0.151
Southwood Lakes - 867	2.360	2.388	0.165	0.169	4.343	4.354	2.353	2.358	0.152	0.152
Spring Garden - 1513	2.386	2.412	0.168	0.171	4.351	4.364	2.356	2.362	0.152	0.153
Spring Garden - 1644	2.374	2.394	0.167	0.170	4.350	4.358	2.356	2.359	0.152	0.153
St. Clair College - 2480	2.350	2.353	0.165	0.165	4.343	4.341	2.353	2.352	0.152	0.152
Villa Borghese - 828	2.369	2.384	0.167	0.168	4.357	4.352	2.358	2.357	0.153	0.152
Villa Paradiso Cres. - 848	2.355	2.372	0.165	0.168	4.347	4.359	2.354	2.359	0.152	0.153
Background	2.32		0.16		4.31		2.34		0.15	

TABLE B.3-3: MAXIMUM PREDICTED AIR CONCENTRATIONS (µg/m³, INCLUDING BACKGROUND) FOR VOC EMITTED FROM VEHICLES IN YEAR 2035

Receptor Location	Benzene		1,3-Butadiene		Formaldehyde		Acetaldehyde		Acrolein	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field - 2479	2.372	2.384	0.169	0.169	4.376	4.371	2.365	2.364	0.154	0.154
Bellwood Estates - 58	2.551	2.562	0.193	0.190	4.521	4.453	2.423	2.398	0.163	0.158
Bellwood Estates - 403	2.379	2.391	0.169	0.170	4.367	4.367	2.362	2.362	0.153	0.153
Grand Marais Roads - 74	2.499	2.501	0.186	0.183	4.490	4.436	2.410	2.390	0.161	0.157
Grand Marais Roads - 186	2.438	2.437	0.178	0.176	4.429	4.397	2.386	2.374	0.157	0.155
Heritage Estates - 910	2.343	2.353	0.164	0.165	4.339	4.343	2.351	2.353	0.151	0.152
Home for Aged LaSalle - 944	2.354	2.361	0.166	0.166	4.348	4.349	2.354	2.355	0.152	0.152
Home for Aged LaSalle - 945	2.357	2.363	0.166	0.166	4.353	4.351	2.356	2.356	0.152	0.151
Huron Estates - 295	2.391	2.396	0.170	0.170	4.373	4.377	2.365	2.366	0.154	0.154
Huron Estates - 410	2.373	2.378	0.168	0.168	4.358	4.358	2.359	2.359	0.153	0.152
Kendleton Court - 781	2.382	2.402	0.170	0.172	4.379	4.393	2.367	2.372	0.154	0.155
Oliver Estates - 858	2.361	2.413	0.166	0.173	4.345	4.388	2.353	2.371	0.152	0.154
Oliver Estates - 1997	2.375	2.425	0.168	0.175	4.360	4.401	2.359	2.375	0.153	0.155
Reddock - 423	2.363	2.382	0.167	0.169	4.356	4.363	2.358	2.361	0.153	0.153
Residential - 2478	2.346	2.362	0.164	0.166	4.345	4.347	2.353	2.354	0.152	0.152
Southwood Lakes - 867	2.361	2.391	0.166	0.169	4.345	4.360	2.354	2.360	0.152	0.152
Spring Garden - 1513	2.388	2.422	0.169	0.173	4.354	4.379	2.358	2.367	0.152	0.154
Spring Garden - 1644	2.376	2.403	0.168	0.171	4.353	4.369	2.357	2.363	0.152	0.153
St. Clair College - 2480	2.350	2.356	0.165	0.165	4.347	4.345	2.354	2.354	0.152	0.152
Villa Borghese - 828	2.372	2.386	0.168	0.169	4.362	4.356	2.360	2.358	0.153	0.153
Villa Paradiso Cres. - 848	2.355	2.376	0.166	0.168	4.351	4.366	2.356	2.362	0.152	0.153
Background	2.32		0.16		4.31		2.34		0.15	

TABLE B.3-4: MAXIMUM PREDICTED SOIL CONCENTRATIONS (mg/kg) FOR VOC EMITTED FROM VEHICLES IN YEAR 2015

Receptor Location	Benzene		1,3-Butadiene		Formaldehyde		Acetaldehyde		Acrolein	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field - 2479	0.00353	0.00354	0.0000134	0.0000134	73.1	72.9	0.00197	0.00196	0.000228	0.000227
Bellwood Estates - 58	0.00383	0.00381	0.0000154	0.0000149	75.4	74.2	0.00201	0.00199	0.000240	0.000234
Bellwood Estates - 403	0.00353	0.00354	0.0000134	0.0000134	73.0	72.8	0.00196	0.00196	0.000227	0.000225
Grand Marais Roads - 74	0.00373	0.00370	0.0000148	0.0000144	74.9	73.9	0.00200	0.00198	0.000237	0.000233
Grand Marais Roads - 186	0.00363	0.00361	0.0000141	0.0000138	73.9	73.3	0.00198	0.00197	0.000231	0.000228
Heritage Estates - 910	0.00348	0.00349	0.0000130	0.0000130	72.5	72.6	0.00196	0.00196	0.000224	0.000224
Home for Aged LaSalle - 944	0.00350	0.00350	0.0000131	0.0000130	72.7	72.6	0.00196	0.00196	0.000224	0.000224
Home for Aged LaSalle - 945	0.00350	0.00350	0.0000131	0.0000131	72.7	72.6	0.00196	0.00196	0.000225	0.000224
Huron Estates - 295	0.00356	0.00355	0.0000134	0.0000134	73.1	73.0	0.00197	0.00197	0.000227	0.000227
Huron Estates - 410	0.00353	0.00352	0.0000133	0.0000132	72.8	72.8	0.00196	0.00196	0.000225	0.000225
Kendleton Court - 781	0.00355	0.00356	0.0000135	0.0000135	73.1	73.2	0.00197	0.00197	0.000228	0.000228
Oliver Estates - 858	0.00351	0.00358	0.0000131	0.0000137	72.6	73.2	0.00196	0.00197	0.000225	0.000228
Oliver Estates - 1997	0.00354	0.00360	0.0000134	0.0000138	72.9	73.4	0.00196	0.00197	0.000227	0.000228
Reddock - 423	0.00351	0.00352	0.0000132	0.0000133	72.8	72.8	0.00196	0.00196	0.000225	0.000225
Residential - 2478	0.00348	0.00350	0.0000130	0.0000131	72.6	72.6	0.00196	0.00196	0.000224	0.000224
Southwood Lakes - 867	0.00351	0.00355	0.0000131	0.0000134	72.7	72.8	0.00196	0.00196	0.000225	0.000225
Spring Garden - 1513	0.00355	0.00359	0.0000134	0.0000136	72.8	73.0	0.00196	0.00197	0.000225	0.000227
Spring Garden - 1644	0.00353	0.00356	0.0000133	0.0000134	72.8	72.9	0.00196	0.00196	0.000225	0.000225
St. Clair College - 2480	0.00349	0.00349	0.0000130	0.0000130	72.6	72.6	0.00196	0.00196	0.000225	0.000225
Villa Borghese - 828	0.00352	0.00354	0.0000133	0.0000133	72.9	72.8	0.00196	0.00196	0.000227	0.000225
Villa Paradiso Cres. - 848	0.00350	0.00352	0.0000131	0.0000133	72.7	72.8	0.00196	0.00196	0.000225	0.000227

TABLE B.3-5: MAXIMUM PREDICTED SOIL CONCENTRATIONS (mg/kg) FOR VOC EMITTED FROM VEHICLES IN YEAR 2025

Receptor Location	Benzene		1,3-Butadiene		Formaldehyde		Acetaldehyde		Acrolein	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field - 2479	0.00352	0.00353	0.0000133	0.0000134	73.0	73.0	0.00197	0.00196	0.000228	0.000227
Bellwood Estates - 58	0.00378	0.00377	0.0000151	0.0000148	75.3	74.1	0.00201	0.00199	0.000239	0.000233
Bellwood Estates - 403	0.00352	0.00353	0.0000133	0.0000134	72.9	72.9	0.00196	0.00196	0.000227	0.000225
Grand Marais Roads - 74	0.00370	0.00368	0.0000146	0.0000143	74.8	73.9	0.00200	0.00198	0.000237	0.000231
Grand Marais Roads - 186	0.00361	0.00360	0.0000139	0.0000138	73.9	73.3	0.00198	0.00197	0.000231	0.000228
Heritage Estates - 910	0.00347	0.00348	0.0000130	0.0000130	72.5	72.6	0.00196	0.00196	0.000224	0.000224
Home for Aged LaSalle - 944	0.00349	0.00349	0.0000130	0.0000130	72.7	72.6	0.00196	0.00196	0.000224	0.000224
Home for Aged LaSalle - 945	0.00349	0.00349	0.0000131	0.0000130	72.7	72.7	0.00196	0.00196	0.000225	0.000224
Huron Estates - 295	0.00354	0.00354	0.0000134	0.0000134	73.0	73.1	0.00197	0.00197	0.000227	0.000227
Huron Estates - 410	0.00351	0.00352	0.0000132	0.0000132	72.8	72.8	0.00196	0.00196	0.000225	0.000225
Kendleton Court - 781	0.00353	0.00355	0.0000134	0.0000135	73.1	73.3	0.00197	0.00197	0.000228	0.000228
Oliver Estates - 858	0.00350	0.00357	0.0000130	0.0000136	72.6	73.3	0.00196	0.00197	0.000225	0.000228
Oliver Estates - 1997	0.00352	0.00358	0.0000133	0.0000138	72.8	73.4	0.00196	0.00197	0.000227	0.000230
Reddock - 423	0.00350	0.00352	0.0000131	0.0000133	72.8	72.8	0.00196	0.00196	0.000225	0.000225
Residential - 2478	0.00348	0.00350	0.0000130	0.0000131	72.6	72.6	0.00196	0.00196	0.000224	0.000224
Southwood Lakes - 867	0.00350	0.00354	0.0000130	0.0000134	72.6	72.8	0.00196	0.00196	0.000225	0.000225
Spring Garden - 1513	0.00354	0.00357	0.0000133	0.0000135	72.8	73.0	0.00196	0.00197	0.000225	0.000227
Spring Garden - 1644	0.00352	0.00355	0.0000132	0.0000134	72.7	72.9	0.00196	0.00196	0.000225	0.000227
St. Clair College - 2480	0.00348	0.00349	0.0000130	0.0000130	72.6	72.6	0.00196	0.00196	0.000225	0.000225
Villa Borghese - 828	0.00351	0.00353	0.0000132	0.0000133	72.9	72.8	0.00196	0.00196	0.000227	0.000225
Villa Paradiso Cres. - 848	0.00349	0.00352	0.0000130	0.0000133	72.7	72.9	0.00196	0.00196	0.000225	0.000227

TABLE B.3-6: MAXIMUM PREDICTED SOIL CONCENTRATIONS (mg/kg) FOR VOC EMITTED FROM VEHICLES IN YEAR 2035

Receptor Location	Benzene		1,3-Butadiene		Formaldehyde		Acetaldehyde		Acrolein	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field - 2479	0.00352	0.00353	0.0000134	0.0000134	73.2	73.1	0.00197	0.00197	0.000228	0.000228
Bellwood Estates - 58	0.00378	0.00380	0.0000153	0.0000150	75.6	74.5	0.00202	0.00200	0.000242	0.000234
Bellwood Estates - 403	0.00353	0.00354	0.0000134	0.0000134	73.0	73.0	0.00197	0.00197	0.000227	0.000227
Grand Marais Roads - 74	0.00370	0.00371	0.0000147	0.0000145	75.1	74.2	0.00201	0.00199	0.000239	0.000233
Grand Marais Roads - 186	0.00361	0.00361	0.0000141	0.0000139	74.1	73.5	0.00199	0.00198	0.000233	0.000230
Heritage Estates - 910	0.00347	0.00349	0.0000130	0.0000130	72.6	72.6	0.00196	0.00196	0.000224	0.000225
Home for Aged LaSalle - 944	0.00349	0.00350	0.0000131	0.0000131	72.7	72.7	0.00196	0.00196	0.000225	0.000225
Home for Aged LaSalle - 945	0.00349	0.00350	0.0000131	0.0000131	72.8	72.8	0.00196	0.00196	0.000225	0.000224
Huron Estates - 295	0.00354	0.00355	0.0000134	0.0000134	73.1	73.2	0.00197	0.00197	0.000228	0.000228
Huron Estates - 410	0.00352	0.00352	0.0000133	0.0000133	72.9	72.9	0.00196	0.00196	0.000227	0.000225
Kendleton Court - 781	0.00353	0.00356	0.0000134	0.0000136	73.2	73.5	0.00197	0.00197	0.000228	0.000230
Oliver Estates - 858	0.00350	0.00358	0.0000131	0.0000137	72.7	73.4	0.00196	0.00197	0.000225	0.000228
Oliver Estates - 1997	0.00352	0.00359	0.0000133	0.0000138	72.9	73.6	0.00196	0.00198	0.000227	0.000230
Reddock - 423	0.00350	0.00353	0.0000132	0.0000134	72.8	73.0	0.00196	0.00196	0.000227	0.000227
Residential - 2478	0.00348	0.00350	0.0000130	0.0000131	72.7	72.7	0.00196	0.00196	0.000225	0.000225
Southwood Lakes - 867	0.00350	0.00354	0.0000131	0.0000134	72.7	72.9	0.00196	0.00196	0.000225	0.000225
Spring Garden - 1513	0.00354	0.00359	0.0000134	0.0000137	72.8	73.2	0.00196	0.00197	0.000225	0.000228
Spring Garden - 1644	0.00352	0.00356	0.0000133	0.0000135	72.8	73.1	0.00196	0.00197	0.000225	0.000227
St. Clair College - 2480	0.00348	0.00349	0.0000130	0.0000130	72.7	72.7	0.00196	0.00196	0.000225	0.000225
Villa Borghese - 828	0.00352	0.00354	0.0000133	0.0000134	72.9	72.8	0.00196	0.00196	0.000227	0.000227
Villa Paradiso Cres. - 848	0.00349	0.00352	0.0000131	0.0000133	72.8	73.0	0.00196	0.00197	0.000225	0.000227

B.4 Dose Calculations for VOC

TABLE B.4-1: INHALATION EXPOSURE CONCENTRATIONS (mg/m^3, INCLUDING BACKGROUND) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC IN YEAR 2015

Receptor Location	Benzene		1,3-Butadiene		Formaldehyde		Acetaldehyde		Acrolein	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field - 2479	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Bellwood Estates - 58	$2.6x10^{-3}$	$2.6x10^{-3}$	$2.0x10^{-4}$	$1.9x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.6x10^{-4}$	$1.6x10^{-4}$
Bellwood Estates - 403	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Grand Marais Roads - 74	$2.5x10^{-3}$	$2.5x10^{-3}$	$1.9x10^{-4}$	$1.8x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.6x10^{-4}$	$1.6x10^{-4}$
Grand Marais Roads - 186	$2.5x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-4}$	$1.8x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.6x10^{-4}$	$1.5x10^{-4}$
Heritage Estates - 910	$2.3x10^{-3}$	$2.4x10^{-3}$	$1.6x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Home for Aged LaSalle - 944	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Home for Aged LaSalle - 945	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Huron Estates - 295	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Huron Estates - 410	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Kendleton Court - 781	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Oliver Estates - 858	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Oliver Estates - 1997	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Reddock - 423	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Residential - 2478	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Southwood Lakes - 867	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Spring Garden - 1513	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Spring Garden - 1644	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
St. Clair College - 2480	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Villa Borghese - 828	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Villa Paradiso Cres. - 848	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$

Note: formaldehyde does not have an inhalation TRV for non-carcinogenic effects and so dose is not calculated

TABLE B.4-2: INHALATION EXPOSURE CONCENTRATIONS (mg/m^3, INCLUDING BACKGROUND) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC IN YEAR 2025

Receptor Location	Benzene		1,3-Butadiene		Formaldehyde		Acetaldehyde		Acrolein	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field – 2479	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Bellwood Estates - 58	$2.5x10^{-3}$	$2.5x10^{-3}$	$1.9x10^{-4}$	$1.9x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.6x10^{-4}$	$1.6x10^{-4}$
Bellwood Estates - 403	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Grand Marais Roads - 74	$2.5x10^{-3}$	$2.5x10^{-3}$	$1.9x10^{-4}$	$1.8x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.6x10^{-4}$	$1.6x10^{-4}$
Grand Marais Roads - 186	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.6x10^{-4}$	$1.5x10^{-4}$
Heritage Estates - 910	$2.3x10^{-3}$	$2.4x10^{-3}$	$1.6x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Home for Aged LaSalle - 944	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Home for Aged LaSalle - 945	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Huron Estates - 295	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Huron Estates - 410	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Kendleton Court - 781	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Oliver Estates - 858	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Oliver Estates - 1997	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.6x10^{-4}$
Reddock - 423	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Residential - 2478	$2.3x10^{-3}$	$2.4x10^{-3}$	$1.6x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Southwood Lakes - 867	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Spring Garden - 1513	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Spring Garden - 1644	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
St. Clair College - 2480	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Villa Borghese - 828	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Villa Paradiso Cres. - 848	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$

Note: NA – not applicable; formaldehyde does not have an inhalation TRV for non-carcinogenic effects and so dose is not calculated

TABLE B.4-3: INHALATION EXPOSURE CONCENTRATIONS (mg/m^3, INCLUDING BACKGROUND) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC IN YEAR 2035

Receptor Location	Benzene		1,3-Butadiene		Formaldehyde		Acetaldehyde		Acrolein	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field - 2479	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Bellwood Estates - 58	$2.6x10^{-3}$	$2.6x10^{-3}$	$1.9x10^{-4}$	$1.9x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.6x10^{-4}$	$1.6x10^{-4}$
Bellwood Estates - 403	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Grand Marais Roads - 74	$2.5x10^{-3}$	$2.5x10^{-3}$	$1.9x10^{-4}$	$1.8x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.6x10^{-4}$	$1.6x10^{-4}$
Grand Marais Roads - 186	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.8x10^{-4}$	$1.8x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.6x10^{-4}$	$1.6x10^{-4}$
Heritage Estates - 910	$2.3x10^{-3}$	$2.4x10^{-3}$	$1.6x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Home for Aged LaSalle - 944	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Home for Aged LaSalle - 945	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Huron Estates - 295	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Huron Estates - 410	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Kendleton Court - 781	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.6x10^{-4}$
Oliver Estates - 858	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Oliver Estates - 1997	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.8x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.6x10^{-4}$
Reddock - 423	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Residential - 2478	$2.3x10^{-3}$	$2.4x10^{-3}$	$1.6x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Southwood Lakes - 867	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Spring Garden - 1513	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Spring Garden - 1644	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
St. Clair College - 2480	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Villa Borghese - 828	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Villa Paradiso Cres. - 848	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$

Note: NA – not applicable; formaldehyde does not have an inhalation TRV for non-carcinogenic effects and so dose is not calculated

TABLE B.4-4: INHALATION EXPOSURE CONCENTRATIONS (mg/m^3, INCLUDING BACKGROUND) FOR CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO CARCINOGENIC VOC IN YEAR 2015

Receptor	Chemical	Infant		Toddler		Child		Teen		Adult		Composite	
		No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field - 2479	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Bellwood Estates - 58	Benzene	$1.7x10^{-5}$	$1.7x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.4x10^{-4}$	$2.4x10^{-4}$	$2.8x10^{-4}$	$2.7x10^{-4}$	$1.9x10^{-3}$	$1.9x10^{-3}$	$2.6x10^{-3}$	$2.6x10^{-3}$
Bellwood Estates - 403	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Grand Marais Roads - 74	Benzene	$1.7x10^{-5}$	$1.7x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.4x10^{-4}$	$2.3x10^{-4}$	$2.7x10^{-4}$	$2.7x10^{-4}$	$1.9x10^{-3}$	$1.9x10^{-3}$	$2.5x10^{-3}$	$2.5x10^{-3}$
Grand Marais Roads - 186	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.3x10^{-4}$	$2.3x10^{-4}$	$2.6x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.5x10^{-3}$	$2.4x10^{-3}$
Heritage Estates - 910	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.3x10^{-3}$	$2.4x10^{-3}$
Home for Aged LaSalle - 944	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Home for Aged LaSalle - 945	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Huron Estates - 295	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.6x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Huron Estates - 410	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Kendleton Court - 781	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.6x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Oliver Estates - 858	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.3x10^{-4}$	$2.5x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Oliver Estates - 1997	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.3x10^{-4}$	$2.5x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Reddock - 423	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Residential - 2478	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Southwood Lakes - 867	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Spring Garden - 1513	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.3x10^{-4}$	$2.6x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Spring Garden - 1644	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
St. Clair College - 2480	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Villa Borghese - 828	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Villa Paradiso Cres. - 848	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Ball Field - 2479	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.9x10^{-6}$	$7.9x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Bellwood Estates - 58	1,3-Butadiene	$1.3x10^{-6}$	$1.3x10^{-6}$	$9.1x10^{-6}$	$8.8x10^{-6}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$2.1x10^{-5}$	$2x10^{-5}$	$1.5x10^{-4}$	$1.4x10^{-4}$	$2x10^{-4}$	$1.9x10^{-4}$
Bellwood Estates - 403	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.9x10^{-6}$	$7.9x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Grand Marais Roads - 74	1,3-Butadiene	$1.2x10^{-6}$	$1.2x10^{-6}$	$8.7x10^{-6}$	$8.5x10^{-6}$	$1.7x10^{-5}$	$1.7x10^{-5}$	$2x10^{-5}$	$1.9x10^{-5}$	$1.4x10^{-4}$	$1.4x10^{-4}$	$1.9x10^{-4}$	$1.8x10^{-4}$
Grand Marais Roads - 186	1,3-Butadiene	$1.2x10^{-6}$	$1.2x10^{-6}$	$8.3x10^{-6}$	$8.2x10^{-6}$	$1.7x10^{-5}$	$1.6x10^{-5}$	$1.9x10^{-5}$	$1.9x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.8x10^{-4}$	$1.8x10^{-4}$
Heritage Estates - 910	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.5x10^{-5}$	$1.7x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$1.6x10^{-4}$	$1.7x10^{-4}$
Home for Aged LaSalle - 944	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.5x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$

TABLE B.4-4: INHALATION EXPOSURE CONCENTRATIONS (mg/m^3, INCLUDING BACKGROUND) FOR CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO CARCINOGENIC VOC IN YEAR 2015 (CONT'D)

Receptor	Chemical	Infant		Toddler		Child		Teen		Adult		Composite	
		No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Home for Aged LaSalle - 945	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.5x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Huron Estates - 295	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.9x10^{-6}$	$7.9x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Huron Estates - 410	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.8x10^{-6}$	$7.8x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Kendleton Court - 781	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$8.0x10^{-6}$	$8.0x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Oliver Estates - 858	1,3-Butadiene	$1.1x10^{-6}$	$1.2x10^{-6}$	$7.7x10^{-6}$	$8.1x10^{-6}$	$1.5x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Oliver Estates - 1997	1,3-Butadiene	$1.1x10^{-6}$	$1.2x10^{-6}$	$7.9x10^{-6}$	$8.1x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.9x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Reddock - 423	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.8x10^{-6}$	$7.8x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Residential - 2478	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.5x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Southwood Lakes - 867	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.9x10^{-6}$	$1.5x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Spring Garden - 1513	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.9x10^{-6}$	$8x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Spring Garden - 1644	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.8x10^{-6}$	$7.9x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
St. Clair College - 2480	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.5x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Villa Borghese - 828	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.8x10^{-6}$	$7.8x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Villa Paradiso Cres. - 848	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.8x10^{-6}$	$1.5x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Ball Field - 2479	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.7x10^{-4}$	$4.7x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Bellwood Estates - 58	Formaldehyde	$3.0x10^{-5}$	$3.0x10^{-5}$	$2.1x10^{-4}$	$2.1x10^{-4}$	$4.2x10^{-4}$	$4.1x10^{-4}$	$4.8x10^{-4}$	$4.7x10^{-4}$	$3.4x10^{-3}$	$3.3x10^{-3}$	$4.5x10^{-3}$	$4.4x10^{-3}$
Bellwood Estates - 403	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.7x10^{-4}$	$4.6x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Grand Marais Roads - 74	Formaldehyde	$3.0x10^{-5}$	$2.9x10^{-5}$	$2.1x10^{-4}$	$2.1x10^{-4}$	$4.2x10^{-4}$	$4.1x10^{-4}$	$4.8x10^{-4}$	$4.7x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.5x10^{-3}$	$4.4x10^{-3}$
Grand Marais Roads - 186	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.1x10^{-4}$	$2x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.7x10^{-4}$	$4.7x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Heritage Estates - 910	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4x10^{-4}$	$4x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$4.3x10^{-3}$
Home for Aged LaSalle - 944	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$4.3x10^{-3}$
Home for Aged LaSalle - 945	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.2x10^{-3}$	$4.4x10^{-3}$	$4.3x10^{-3}$
Huron Estates - 295	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.7x10^{-4}$	$4.7x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Huron Estates - 410	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.3x10^{-3}$	$3.2x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Kendleton Court - 781	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.7x10^{-4}$	$4.7x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Oliver Estates - 858	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.7x10^{-4}$	$3.2x10^{-3}$	$3.3x10^{-3}$	$4.3x10^{-3}$	$4.4x10^{-3}$
Oliver Estates - 1997	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.7x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Reddock - 423	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$

TABLE B.4-4: INHALATION DOSE (mg/m^3, INCLUDING BACKGROUND) FOR CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO CARCINOGENIC VOC IN YEAR 2015 (CONT'D)

Receptor	Chemical	Infant		Toddler		Child		Teen		Adult		Composite	
		No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Residential - 2478	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$4.3x10^{-3}$
Southwood Lakes - 867	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.3x10^{-3}$	$4.3x10^{-3}$	$4.4x10^{-3}$
Spring Garden - 1513	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.7x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Spring Garden - 1644	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
St. Clair College - 2480	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$4.3x10^{-3}$
Villa Borghese - 828	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.3x10^{-3}$	$3.2x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Villa Paradiso Cres. - 848	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.3x10^{-3}$	$4.3x10^{-3}$	$4.4x10^{-3}$
Ball Field - 2479	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Bellwood Estates - 58	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.3x10^{-4}$	$2.2x10^{-4}$	$2.6x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Bellwood Estates - 403	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Grand Marais Roads - 74	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.6x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Grand Marais Roads - 186	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Heritage Estates - 910	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Home for Aged LaSalle - 944	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Home for Aged LaSalle - 945	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Huron Estates - 295	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Huron Estates - 410	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Kendleton Court - 781	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Oliver Estates - 858	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Oliver Estates - 1997	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Reddock - 423	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Residential - 2478	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Southwood Lakes - 867	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Spring Garden - 1513	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Spring Garden - 1644	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
St. Clair College - 2480	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Villa Borghese - 828	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Villa Paradiso Cres. - 848	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$

TABLE B.4-5: INHALATION EXPOSURE CONCENTRATIONS (mg/m^3, INCLUDING BACKGROUND) FOR CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO CARCINOGENIC VOC IN YEAR 2025

Receptor	Chemical	Infant		Toddler		Child		Teen		Adult		Composite	
		No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field - 2479	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Bellwood Estates - 58	Benzene	$1.7x10^{-5}$	$1.7x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.4x10^{-4}$	$2.4x10^{-4}$	$2.7x10^{-4}$	$2.7x10^{-4}$	$1.9x10^{-3}$	$1.9x10^{-3}$	$2.5x10^{-3}$	$2.5x10^{-3}$
Bellwood Estates - 403	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Grand Marais Roads - 74	Benzene	$1.7x10^{-5}$	$1.7x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.3x10^{-4}$	$2.3x10^{-4}$	$2.7x10^{-4}$	$2.7x10^{-4}$	$1.9x10^{-3}$	$1.9x10^{-3}$	$2.5x10^{-3}$	$2.5x10^{-3}$
Grand Marais Roads - 186	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.3x10^{-4}$	$2.3x10^{-4}$	$2.6x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Heritage Estates - 910	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.7x10^{-3}$	$1.8x10^{-3}$	$2.3x10^{-3}$	$2.4x10^{-3}$
Home for Aged LaSalle - 944	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Home for Aged LaSalle - 945	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Huron Estates - 295	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Huron Estates - 410	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Kendleton Court - 781	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Oliver Estates - 858	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Oliver Estates - 1997	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.3x10^{-4}$	$2.5x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Reddock - 423	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Residential - 2478	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.3x10^{-3}$	$2.4x10^{-3}$
Southwood Lakes - 867	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Spring Garden - 1513	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.3x10^{-4}$	$2.5x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Spring Garden - 1644	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
St. Clair College - 2480	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Villa Borghese - 828	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Villa Paradiso Cres. - 848	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Ball Field - 2479	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.8x10^{-6}$	$7.9x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Bellwood Estates - 58	1,3-Butadiene	$1.3x10^{-6}$	$1.2x10^{-6}$	$8.9x10^{-6}$	$8.7x10^{-6}$	$1.8x10^{-5}$	$1.7x10^{-5}$	$2x10^{-5}$	$2x10^{-5}$	$1.4x10^{-4}$	$1.4x10^{-4}$	$1.9x10^{-4}$	$1.9x10^{-4}$
Bellwood Estates - 403	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.8x10^{-6}$	$7.9x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Grand Marais Roads - 74	1,3-Butadiene	$1.2x10^{-6}$	$1.2x10^{-6}$	$8.6x10^{-6}$	$8.4x10^{-6}$	$1.7x10^{-5}$	$1.7x10^{-5}$	$2.0x10^{-5}$	$1.9x10^{-5}$	$1.4x10^{-4}$	$1.4x10^{-4}$	$1.9x10^{-4}$	$1.8x10^{-4}$
Grand Marais Roads - 186	1,3-Butadiene	$1.2x10^{-6}$	$1.2x10^{-6}$	$8.2x10^{-6}$	$8.1x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.9x10^{-5}$	$1.9x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.8x10^{-4}$	$1.7x10^{-4}$
Heritage Estates - 910	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.5x10^{-5}$	$1.7x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$1.6x10^{-4}$	$1.7x10^{-4}$
Home for Aged LaSalle - 944	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.5x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$

TABLE B.4-5: INHALATION EXPOSURE CONCENTRATIONS (mg/m^3, INCLUDING BACKGROUND) FOR CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO CARCINOGENIC VOC IN YEAR 2025 (CONT'D)

Receptor	Chemical	Infant		Toddler		Child		Teen		Adult		Composite	
		No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Home for Aged LaSalle - 945	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.5x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Huron Estates - 295	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.9x10^{-6}$	$7.9x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Huron Estates - 410	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.8x10^{-6}$	$7.8x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Kendleton Court - 781	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.9x10^{-6}$	$8.0x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Oliver Estates - 858	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$8.0x10^{-6}$	$1.5x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Oliver Estates - 1997	1,3-Butadiene	$1.1x10^{-6}$	$1.2x10^{-6}$	$7.8x10^{-6}$	$8.1x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.9x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Reddock - 423	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.8x10^{-6}$	$1.5x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Residential - 2478	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.5x10^{-5}$	$1.7x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$1.6x10^{-4}$	$1.7x10^{-4}$
Southwood Lakes - 867	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.9x10^{-6}$	$1.5x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Spring Garden - 1513	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.8x10^{-6}$	$8x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Spring Garden - 1644	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.8x10^{-6}$	$7.9x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
St. Clair College - 2480	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.5x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Villa Borghese - 828	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.8x10^{-6}$	$7.8x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Villa Paradiso Cres. - 848	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.8x10^{-6}$	$1.5x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Ball Field - 2479	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2x10^{-4}$	$2x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.7x10^{-4}$	$4.7x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Bellwood Estates - 58	Formaldehyde	$3.0x10^{-5}$	$3.0x10^{-5}$	$2.1x10^{-4}$	$2.1x10^{-4}$	$4.2x10^{-4}$	$4.1x10^{-4}$	$4.8x10^{-4}$	$4.7x10^{-4}$	$3.4x10^{-3}$	$3.3x10^{-3}$	$4.5x10^{-3}$	$4.4x10^{-3}$
Bellwood Estates - 403	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2x10^{-4}$	$2x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.7x10^{-4}$	$4.6x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Grand Marais Roads - 74	Formaldehyde	$3.0x10^{-5}$	$2.9x10^{-5}$	$2.1x10^{-4}$	$2.1x10^{-4}$	$4.2x10^{-4}$	$4.1x10^{-4}$	$4.8x10^{-4}$	$4.7x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.5x10^{-3}$	$4.4x10^{-3}$
Grand Marais Roads - 186	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.1x10^{-4}$	$2x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.7x10^{-4}$	$4.7x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Heritage Estates - 910	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.0x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$4.3x10^{-3}$
Home for Aged LaSalle - 944	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$4.3x10^{-3}$
Home for Aged LaSalle - 945	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$4.3x10^{-3}$
Huron Estates - 295	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.7x10^{-4}$	$4.7x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Huron Estates - 410	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.3x10^{-3}$	$3.2x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Kendleton Court - 781	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.7x10^{-4}$	$4.7x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Oliver Estates - 858	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.7x10^{-4}$	$3.2x10^{-3}$	$3.3x10^{-3}$	$4.3x10^{-3}$	$4.4x10^{-3}$
Oliver Estates - 1997	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.7x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Reddock - 423	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$

TABLE B.4-5: INHALATION EXPOSURE CONCENTRATIONS (mg/m^3, INCLUDING BACKGROUND) FOR CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO CARCINOGENIC VOC IN YEAR 2025 (CONT'D)

Receptor	Chemical	Infant		Toddler		Child		Teen		Adult		Composite	
		No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Residential - 2478	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$4.3x10^{-3}$
Southwood Lakes - 867	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.3x10^{-3}$	$4.3x10^{-3}$	$4.4x10^{-3}$
Spring Garden - 1513	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.7x10^{-4}$	$3.2x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Spring Garden - 1644	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
St. Clair College - 2480	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$4.3x10^{-3}$
Villa Borghese - 828	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.3x10^{-3}$	$3.2x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Villa Paradiso Cres. - 848	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.3x10^{-3}$	$4.3x10^{-3}$	$4.4x10^{-3}$
Ball Field - 2479	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Bellwood Estates - 58	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.3x10^{-4}$	$2.2x10^{-4}$	$2.6x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Bellwood Estates - 403	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Grand Marais Roads - 74	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.6x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Grand Marais Roads - 186	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Heritage Estates - 910	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Home for Aged LaSalle - 944	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Home for Aged LaSalle - 945	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Huron Estates - 295	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Huron Estates - 410	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Kendleton Court - 781	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Oliver Estates - 858	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Oliver Estates - 1997	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Reddock - 423	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Residential - 2478	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Southwood Lakes - 867	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Spring Garden - 1513	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Spring Garden - 1644	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
St. Clair College - 2480	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Villa Borghese - 828	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Villa Paradiso Cres. - 848	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$

TABLE B.4-6: INHALATION EXPOSURE CONCENTRATIONS (mg/m^3, INCLUDING BACKGROUND) FOR CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO CARCINOGENIC VOC IN YEAR 2035

Receptor	Chemical	Infant		Toddler		Child		Teen		Adult		Composite	
		No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field - 2479	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Bellwood Estates - 58	Benzene	$1.7x10^{-5}$	$1.7x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.4x10^{-4}$	$2.4x10^{-4}$	$2.7x10^{-4}$	$2.7x10^{-4}$	$1.9x10^{-3}$	$1.9x10^{-3}$	$2.6x10^{-3}$	$2.6x10^{-3}$
Bellwood Estates - 403	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Grand Marais Roads - 74	Benzene	$1.7x10^{-5}$	$1.7x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.3x10^{-4}$	$2.3x10^{-4}$	$2.7x10^{-4}$	$2.7x10^{-4}$	$1.9x10^{-3}$	$1.9x10^{-3}$	$2.5x10^{-3}$	$2.5x10^{-3}$
Grand Marais Roads - 186	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.3x10^{-4}$	$2.3x10^{-4}$	$2.6x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Heritage Estates - 910	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.7x10^{-3}$	$1.8x10^{-3}$	$2.3x10^{-3}$	$2.4x10^{-3}$
Home for Aged LaSalle - 944	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Home for Aged LaSalle - 945	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Huron Estates - 295	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.6x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Huron Estates - 410	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Kendleton Court - 781	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Oliver Estates - 858	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.3x10^{-4}$	$2.5x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Oliver Estates - 1997	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.3x10^{-4}$	$2.5x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Reddock - 423	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Residential - 2478	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.3x10^{-3}$	$2.4x10^{-3}$
Southwood Lakes - 867	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Spring Garden - 1513	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.3x10^{-4}$	$2.5x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Spring Garden - 1644	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
St. Clair College - 2480	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Villa Borghese - 828	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Villa Paradiso Cres. - 848	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Ball Field - 2479	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.9x10^{-6}$	$7.9x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Bellwood Estates - 58	1,3-Butadiene	$1.3x10^{-6}$	$1.3x10^{-6}$	$9.0x10^{-6}$	$8.9x10^{-6}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$2.1x10^{-5}$	$2x10^{-5}$	$1.4x10^{-4}$	$1.4x10^{-4}$	$1.9x10^{-4}$	$1.9x10^{-4}$
Bellwood Estates - 403	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.9x10^{-6}$	$7.9x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Grand Marais Roads - 74	1,3-Butadiene	$1.2x10^{-6}$	$1.2x10^{-6}$	$8.7x10^{-6}$	$8.5x10^{-6}$	$1.7x10^{-5}$	$1.7x10^{-5}$	$2.0x10^{-5}$	$2.0x10^{-5}$	$1.4x10^{-4}$	$1.4x10^{-4}$	$1.9x10^{-4}$	$1.8x10^{-4}$
Grand Marais Roads - 186	1,3-Butadiene	$1.2x10^{-6}$	$1.2x10^{-6}$	$8.3x10^{-6}$	$8.2x10^{-6}$	$1.7x10^{-5}$	$1.6x10^{-5}$	$1.9x10^{-5}$	$1.9x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.8x10^{-4}$	$1.8x10^{-4}$
Heritage Estates - 910	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.5x10^{-5}$	$1.7x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$1.6x10^{-4}$	$1.7x10^{-4}$
Home for Aged LaSalle - 944	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.5x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$

TABLE B.4-6: INHALATION EXPOSURE CONCENTRATIONS (mg/m^3, INCLUDING BACKGROUND) FOR CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO CARCINOGENIC VOC IN YEAR 2035 (CONT'D)

Receptor	Chemical	Infant		Toddler		Child		Teen		Adult		Composite	
		No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Home for Aged LaSalle - 945	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.5x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Huron Estates - 295	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.9x10^{-6}$	$7.9x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Huron Estates - 410	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.8x10^{-6}$	$7.8x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Kendleton Court - 781	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.9x10^{-6}$	$8x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Oliver Estates - 858	1,3-Butadiene	$1.1x10^{-6}$	$1.2x10^{-6}$	$7.7x10^{-6}$	$8.1x10^{-6}$	$1.5x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Oliver Estates - 1997	1,3-Butadiene	$1.1x10^{-6}$	$1.2x10^{-6}$	$7.8x10^{-6}$	$8.2x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.9x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.8x10^{-4}$
Reddock - 423	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.8x10^{-6}$	$7.9x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Residential - 2478	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.5x10^{-5}$	$1.7x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$1.6x10^{-4}$	$1.7x10^{-4}$
Southwood Lakes - 867	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.9x10^{-6}$	$1.5x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Spring Garden - 1513	1,3-Butadiene	$1.1x10^{-6}$	$1.2x10^{-6}$	$7.9x10^{-6}$	$8.1x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Spring Garden - 1644	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.8x10^{-6}$	$8x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
St. Clair College - 2480	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.5x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Villa Borghese - 828	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.8x10^{-6}$	$7.9x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Villa Paradiso Cres. - 848	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.8x10^{-6}$	$1.5x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Ball Field - 2479	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.7x10^{-4}$	$4.7x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Bellwood Estates - 58	Formaldehyde	$3.0x10^{-5}$	$3.0x10^{-5}$	$2.1x10^{-4}$	$2.1x10^{-4}$	$4.2x10^{-4}$	$4.2x10^{-4}$	$4.8x10^{-4}$	$4.7x10^{-4}$	$3.4x10^{-3}$	$3.3x10^{-3}$	$4.5x10^{-3}$	$4.5x10^{-3}$
Bellwood Estates - 403	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.7x10^{-4}$	$4.7x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Grand Marais Roads - 74	Formaldehyde	$3.0x10^{-5}$	$3.0x10^{-5}$	$2.1x10^{-4}$	$2.1x10^{-4}$	$4.2x10^{-4}$	$4.1x10^{-4}$	$4.8x10^{-4}$	$4.7x10^{-4}$	$3.4x10^{-3}$	$3.3x10^{-3}$	$4.5x10^{-3}$	$4.4x10^{-3}$
Grand Marais Roads - 186	Formaldehyde	$3.0x10^{-5}$	$2.9x10^{-5}$	$2.1x10^{-4}$	$2.1x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.7x10^{-4}$	$4.7x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Heritage Estates - 910	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$4.3x10^{-3}$
Home for Aged LaSalle - 944	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$4.3x10^{-3}$
Home for Aged LaSalle - 945	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.3x10^{-3}$	$3.2x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Huron Estates - 295	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.7x10^{-4}$	$4.7x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Huron Estates - 410	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Kendleton Court - 781	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.7x10^{-4}$	$4.7x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Oliver Estates - 858	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.7x10^{-4}$	$3.2x10^{-3}$	$3.3x10^{-3}$	$4.3x10^{-3}$	$4.4x10^{-3}$
Oliver Estates - 1997	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.7x10^{-4}$	$4.7x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Reddock - 423	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.7x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$

TABLE B.4-6: INHALATION EXPOSURE CONCENTRATIONS (mg/m^3, INCLUDING BACKGROUND) FOR CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO CARCINOGENIC VOC IN YEAR 2035 (CONT'D)

Receptor	Chemical	Infant		Toddler		Child		Teen		Adult		Composite	
		No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Residential - 2478	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$4.3x10^{-3}$
Southwood Lakes - 867	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.7x10^{-4}$	$3.2x10^{-3}$	$3.3x10^{-3}$	$4.3x10^{-3}$	$4.4x10^{-3}$
Spring Garden - 1513	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.7x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Spring Garden - 1644	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.7x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
St. Clair College - 2480	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$4.3x10^{-3}$
Villa Borghese - 828	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.7x10^{-4}$	$4.6x10^{-4}$	$3.3x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Villa Paradiso Cres. - 848	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$4.7x10^{-4}$	$3.2x10^{-3}$	$3.3x10^{-3}$	$4.4x10^{-3}$	$4.4x10^{-3}$
Ball Field - 2479	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Bellwood Estates - 58	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.3x10^{-4}$	$2.2x10^{-4}$	$2.6x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Bellwood Estates - 403	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Grand Marais Roads - 74	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.6x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Grand Marais Roads - 186	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Heritage Estates - 910	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Home for Aged LaSalle - 944	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Home for Aged LaSalle - 945	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Huron Estates - 295	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Huron Estates - 410	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Kendleton Court - 781	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Oliver Estates - 858	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Oliver Estates - 1997	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Reddock - 423	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Residential - 2478	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Southwood Lakes - 867	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Spring Garden - 1513	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Spring Garden - 1644	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
St. Clair College - 2480	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Villa Borghese - 828	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Villa Paradiso Cres. - 848	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$

TABLE B.4-7: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE FUTURE "NO BUILD" SCENARIO IN YEAR 2015

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Ball Field - 2479	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Bellwood Estates - 58	Benzene	$1.4x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.6x10^{-8}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$5.8x10^{-9}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$3.2x10^{-9}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$2.7x10^{-9}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Bellwood Estates - 403	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Grand Marais Roads - 74	Benzene	$1.4x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.5x10^{-8}$	$6.7x10^{-5}$	$6.7x10^{-5}$	$5.7x10^{-9}$	$5.1x10^{-5}$	$5.1x10^{-5}$	$3.1x10^{-9}$	$3.7x10^{-5}$	$3.7x10^{-5}$	$2.6x10^{-9}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Grand Marais Roads - 186	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.4x10^{-8}$	$6.5x10^{-5}$	$6.5x10^{-5}$	$5.5x10^{-9}$	$4.9x10^{-5}$	$4.9x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.6x10^{-9}$	$2.9x10^{-5}$	$2.9x10^{-5}$
Heritage Estates - 910	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Home for Aged LaSalle - 944	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Home for Aged LaSalle - 945	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Huron Estates - 295	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Huron Estates - 410	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Kendleton Court - 781	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Oliver Estates - 858	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Oliver Estates - 1997	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Reddock - 423	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Residential - 2478	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Southwood Lakes - 867	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Spring Garden - 1513	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Spring Garden - 1644	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
St. Clair College - 2480	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Villa Borghese - 828	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$

TABLE B.4-7: INGESTION DOSE (MG/(KG-D)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE FUTURE "NO BUILD" SCENARIO IN YEAR 2015 (CONT'D)

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Villa Paradiso Cres. - 848	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Ball Field - 2479	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Bellwood Estates - 58	Formaldehyde	$2.8x10^{-4}$	9.2	9.2	$9.1x10^{-4}$	5.1	5.1	$1.1x10^{-4}$	3.8	3.8	$6.3x10^{-5}$	2.8	2.8	$5.3x10^{-5}$	2.2	2.2
Bellwood Estates - 403	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Grand Marais Roads - 74	Formaldehyde	$2.7x10^{-4}$	9.2	9.2	$9.1x10^{-4}$	5.0	5.0	$1.1x10^{-4}$	3.8	3.8	$6.3x10^{-5}$	2.8	2.8	$5.3x10^{-5}$	2.2	2.2
Grand Marais Roads - 186	Formaldehyde	$2.7x10^{-4}$	9.0	9.0	$9.0x10^{-4}$	5.0	5.0	$1.1x10^{-4}$	3.8	3.8	$6.2x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
Heritage Estates - 910	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Home for Aged LaSalle - 944	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Home for Aged LaSalle - 945	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Huron Estates - 295	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Huron Estates - 410	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Kendleton Court - 781	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Oliver Estates - 858	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Oliver Estates - 1997	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Reddock - 423	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Residential - 2478	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Southwood Lakes - 867	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Spring Garden - 1513	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Spring Garden - 1644	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
St. Clair College - 2480	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Villa Borghese - 828	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Villa Paradiso Cres. - 848	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2

TABLE B.4-7: INGESTION DOSE (MG/(KG-D)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE FUTURE "NO BUILD" SCENARIO IN YEAR 2015 (CONT'D)

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Ball Field - 2479	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Bellwood Estates - 58	Acetaldehyde	$7.4x10^{-9}$	$1.5x10^{-3}$	$1.5x10^{-3}$	$2.4x10^{-8}$	$8.2x10^{-4}$	$8.2x10^{-4}$	$3.1x10^{-9}$	$6.2x10^{-4}$	$6.2x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.6x10^{-4}$	$3.6x10^{-4}$
Bellwood Estates - 403	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Grand Marais Roads - 74	Acetaldehyde	$7.3x10^{-9}$	$1.5x10^{-3}$	$1.5x10^{-3}$	$2.4x10^{-8}$	$8.1x10^{-4}$	$8.1x10^{-4}$	$3.0x10^{-9}$	$6.1x10^{-4}$	$6.1x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.6x10^{-4}$	$3.6x10^{-4}$
Grand Marais Roads - 186	Acetaldehyde	$7.3x10^{-9}$	$1.5x10^{-3}$	$1.5x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.1x10^{-4}$	$6.1x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Heritage Estates - 910	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Home for Aged LaSalle - 944	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Home for Aged LaSalle - 945	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Huron Estates - 295	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Huron Estates - 410	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Kendleton Court - 781	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Oliver Estates - 858	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Oliver Estates - 1997	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Reddock - 423	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Residential - 2478	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Southwood Lakes - 867	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Spring Garden - 1513	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Spring Garden - 1644	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
St. Clair College - 2480	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Villa Borghese - 828	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Villa Paradiso Cres. - 848	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Ball Field - 2479	Acrolein	$8.4x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.0x10^{-5}$	$7.0x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$

TABLE B.4-7: INGESTION DOSE (MG/(KG-D)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE FUTURE "NO BUILD" SCENARIO IN YEAR 2015 (CONT'D)

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Bellwood Estates - 58	Acrolein	$8.8x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.9x10^{-9}$	$7.3x10^{-5}$	$7.3x10^{-5}$	$3.7x10^{-10}$	$5.5x10^{-5}$	$5.5x10^{-5}$	$2.0x10^{-10}$	$4.1x10^{-5}$	$4.1x10^{-5}$	$1.7x10^{-10}$	$3.2x10^{-5}$	$3.2x10^{-5}$
Bellwood Estates - 403	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Grand Marais Roads - 74	Acrolein	$8.7x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.9x10^{-9}$	$7.3x10^{-5}$	$7.3x10^{-5}$	$3.6x10^{-10}$	$5.5x10^{-5}$	$5.5x10^{-5}$	$2.0x10^{-10}$	$4.0x10^{-5}$	$4.0x10^{-5}$	$1.7x10^{-10}$	$3.2x10^{-5}$	$3.2x10^{-5}$
Grand Marais Roads - 186	Acrolein	$8.5x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.1x10^{-5}$	$7.1x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Heritage Estates - 910	Acrolein	$8.2x10^{-10}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-9}$	$6.8x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Home for Aged LaSalle - 944	Acrolein	$8.2x10^{-10}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-9}$	$6.8x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Home for Aged LaSalle - 945	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Huron Estates - 295	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Huron Estates - 410	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Kendleton Court - 781	Acrolein	$8.4x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.0x10^{-5}$	$7.0x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Oliver Estates - 858	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Oliver Estates - 1997	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Reddock - 423	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Residential - 2478	Acrolein	$8.2x10^{-10}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-9}$	$6.8x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Southwood Lakes - 867	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Spring Garden - 1513	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Spring Garden - 1644	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
St. Clair College - 2480	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Villa Borghese - 828	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Villa Paradiso Cres. - 848	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$

Note: 1,3-butadiene is not included as it does not have an oral reference dose

TABLE B.4-8: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE PARKWAY SCENARIO IN YEAR 2015

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Ball Field - 2479	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Bellwood Estates - 58	Benzene	$1.4x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.6x10^{-8}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$5.8x10^{-9}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$3.2x10^{-9}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$2.7x10^{-9}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Bellwood Estates - 403	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Grand Marais Roads - 74	Benzene	$1.4x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.5x10^{-8}$	$6.7x10^{-5}$	$6.7x10^{-5}$	$5.6x10^{-9}$	$5.0x10^{-5}$	$5.0x10^{-5}$	$3.1x10^{-9}$	$3.7x10^{-5}$	$3.7x10^{-5}$	$2.6x10^{-9}$	$2.9x10^{-5}$	$2.9x10^{-5}$
Grand Marais Roads - 186	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.4x10^{-8}$	$6.5x10^{-5}$	$6.5x10^{-5}$	$5.5x10^{-9}$	$4.9x10^{-5}$	$4.9x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.6x10^{-9}$	$2.9x10^{-5}$	$2.9x10^{-5}$
Heritage Estates - 910	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Home for Aged LaSalle - 944	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Home for Aged LaSalle - 945	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Huron Estates - 295	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Huron Estates - 410	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Kendleton Court - 781	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Oliver Estates - 858	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.9x10^{-5}$	$4.9x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Oliver Estates - 1997	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.4x10^{-8}$	$6.5x10^{-5}$	$6.5x10^{-5}$	$5.5x10^{-9}$	$4.9x10^{-5}$	$4.9x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.9x10^{-5}$	$2.9x10^{-5}$
Reddock - 423	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Residential - 2478	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Southwood Lakes - 867	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Spring Garden - 1513	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.9x10^{-5}$	$4.9x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Spring Garden - 1644	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
St. Clair College - 2480	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Villa Borghese - 828	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Villa Paradiso Cres. - 848	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$

TABLE B.4-8: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE PARKWAY SCENARIO IN YEAR 2015 (CONT'D)

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Ball Field - 2479	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Bellwood Estates - 58	Formaldehyde	$2.7x10^{-4}$	9.1	9.1	$9.0x10^{-4}$	5.0	5.0	$1.1x10^{-4}$	3.8	3.8	$6.2x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
Bellwood Estates - 403	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Grand Marais Roads - 74	Formaldehyde	$2.7x10^{-4}$	9.0	9.0	$9.0x10^{-4}$	5.0	5.0	$1.1x10^{-4}$	3.8	3.8	$6.2x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
Grand Marais Roads - 186	Formaldehyde	$2.7x10^{-4}$	9.0	9.0	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
Heritage Estates - 910	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Home for Aged LaSalle - 944	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Home for Aged LaSalle - 945	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Huron Estates - 295	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Huron Estates - 410	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Kendleton Court - 781	Formaldehyde	$2.7x10^{-4}$	8.9	9.0	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
Oliver Estates - 858	Formaldehyde	$2.7x10^{-4}$	9.0	9.0	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
Oliver Estates - 1997	Formaldehyde	$2.7x10^{-4}$	9.0	9.0	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
Reddock - 423	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Residential - 2478	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Southwood Lakes - 867	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Spring Garden - 1513	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Spring Garden - 1644	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
St. Clair College - 2480	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Villa Borghese - 828	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Villa Paradiso Cres. - 848	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Ball Field - 2479	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Bellwood Estates - 58	Acetaldehyde	$7.3x10^{-9}$	$1.5x10^{-3}$	$1.5x10^{-3}$	$2.4x10^{-8}$	$8.1x10^{-4}$	$8.1x10^{-4}$	$3.0x10^{-9}$	$6.1x10^{-4}$	$6.1x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.6x10^{-4}$	$3.6x10^{-4}$

TABLE B.4-8: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE PARKWAY SCENARIO IN YEAR 2015 (CONT'D)

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Bellwood Estates - 403	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Grand Marais Roads - 74	Acetaldehyde	$7.3x10^{-9}$	$1.5x10^{-3}$	$1.5x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.1x10^{-4}$	$6.1x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Grand Marais Roads - 186	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Heritage Estates - 910	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Home for Aged LaSalle - 944	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Home for Aged LaSalle - 945	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Huron Estates - 295	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Huron Estates - 410	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Kendleton Court - 781	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Oliver Estates - 858	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Oliver Estates - 1997	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Reddock - 423	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Residential - 2478	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Southwood Lakes - 867	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Spring Garden - 1513	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Spring Garden - 1644	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
St. Clair College - 2480	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Villa Borghese - 828	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Villa Paradiso Cres. - 848	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Ball Field - 2479	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Bellwood Estates - 58	Acrolein	$8.6x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.2x10^{-5}$	$7.2x10^{-5}$	$3.6x10^{-10}$	$5.4x10^{-5}$	$5.4x10^{-5}$	$2.0x10^{-10}$	$4.0x10^{-5}$	$4.0x10^{-5}$	$1.7x10^{-10}$	$3.2x10^{-5}$	$3.2x10^{-5}$
Bellwood Estates - 403	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Grand Marais Roads - 74	Acrolein	$8.5x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.1x10^{-5}$	$7.1x10^{-5}$	$3.5x10^{-10}$	$5.4x10^{-5}$	$5.4x10^{-5}$	$2.0x10^{-10}$	$4.0x10^{-5}$	$4.0x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$

TABLE B.4-8: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE PARKWAY SCENARIO IN YEAR 2015 (CONT'D)

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Grand Marais Roads - 186	Acrolein	$8.4x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.0x10^{-5}$	$7.0x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Heritage Estates - 910	Acrolein	$8.2x10^{-10}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-9}$	$6.8x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Home for Aged LaSalle - 944	Acrolein	$8.2x10^{-10}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-9}$	$6.8x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Home for Aged LaSalle - 945	Acrolein	$8.2x10^{-10}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-9}$	$6.8x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Huron Estates - 295	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Huron Estates - 410	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Kendleton Court - 781	Acrolein	$8.4x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.0x10^{-5}$	$7.0x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Oliver Estates - 858	Acrolein	$8.4x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.0x10^{-5}$	$7.0x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Oliver Estates - 1997	Acrolein	$8.4x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.0x10^{-5}$	$7.0x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Reddock - 423	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Residential - 2478	Acrolein	$8.2x10^{-10}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-9}$	$6.8x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Southwood Lakes - 867	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Spring Garden - 1513	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Spring Garden - 1644	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
St. Clair College - 2480	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Villa Borghese - 828	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Villa Paradiso Cres. - 848	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$

Note: 1,3-butadiene is not included as it does not have an oral reference dose

TABLE B.4-9: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE FUTURE "NO BUILD" SCENARIO IN YEAR 2025

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Ball Field - 2479	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Bellwood Estates - 58	Benzene	$1.4x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.6x10^{-8}$	$6.8x10^{-5}$	$6.8x10^{-5}$	$5.7x10^{-9}$	$5.1x10^{-5}$	$5.1x10^{-5}$	$3.2x10^{-9}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$2.7x10^{-9}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Bellwood Estates - 403	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Grand Marais Roads - 74	Benzene	$1.4x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.5x10^{-8}$	$6.6x10^{-5}$	$6.6x10^{-5}$	$5.6x10^{-9}$	$5.0x10^{-5}$	$5.0x10^{-5}$	$3.1x10^{-9}$	$3.7x10^{-5}$	$3.7x10^{-5}$	$2.6x10^{-9}$	$2.9x10^{-5}$	$2.9x10^{-5}$
Grand Marais Roads - 186	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.4x10^{-8}$	$6.5x10^{-5}$	$6.5x10^{-5}$	$5.5x10^{-9}$	$4.9x10^{-5}$	$4.9x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.6x10^{-9}$	$2.9x10^{-5}$	$2.9x10^{-5}$
Heritage Estates - 910	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.2x10^{-5}$	$6.2x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Home for Aged LaSalle - 944	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Home for Aged LaSalle - 945	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Huron Estates - 295	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Huron Estates - 410	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Kendleton Court - 781	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Oliver Estates - 858	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Oliver Estates - 1997	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Reddock - 423	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Residential - 2478	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.2x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Southwood Lakes - 867	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Spring Garden - 1513	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Spring Garden - 1644	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
St. Clair College - 2480	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Villa Borghese - 828	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Villa Paradiso Cres. - 848	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Ball Field - 2479	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2

TABLE B.4-9: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE FUTURE "NO BUILD" SCENARIO IN YEAR 2025 (CONT'D)

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Bellwood Estates - 58	Formaldehyde	$2.8x10^{-4}$	9.2	9.2	$9.1x10^{-4}$	5.1	5.1	$1.1x10^{-4}$	3.8	3.8	$6.3x10^{-5}$	2.8	2.8	$5.3x10^{-5}$	2.2	2.2
Bellwood Estates - 403	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Grand Marais Roads - 74	Formaldehyde	$2.7x10^{-4}$	9.1	9.1	$9.1x10^{-4}$	5.0	5.0	$1.1x10^{-4}$	3.8	3.8	$6.3x10^{-5}$	2.8	2.8	$5.3x10^{-5}$	2.2	2.2
Grand Marais Roads - 186	Formaldehyde	$2.7x10^{-4}$	9.0	9.0	$9.0x10^{-4}$	5.0	5.0	$1.1x10^{-4}$	3.8	3.8	$6.2x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
Heritage Estates - 910	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Home for Aged LaSalle - 944	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Home for Aged LaSalle - 945	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Huron Estates - 295	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Huron Estates - 410	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Kendleton Court - 781	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Oliver Estates - 858	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Oliver Estates - 1997	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Reddock - 423	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Residential - 2478	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Southwood Lakes - 867	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Spring Garden - 1513	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Spring Garden - 1644	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
St. Clair College - 2480	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Villa Borghese - 828	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Villa Paradiso Cres. - 848	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Ball Field - 2479	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Bellwood Estates - 58	Acetaldehyde	$7.4x10^{-9}$	$1.5x10^{-3}$	$1.5x10^{-3}$	$2.4x10^{-8}$	$8.1x10^{-4}$	$8.1x10^{-4}$	$3.1x10^{-9}$	$6.1x10^{-4}$	$6.1x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.6x10^{-4}$	$3.6x10^{-4}$
Bellwood Estates - 403	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$

TABLE B.4-9: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE FUTURE "NO BUILD" SCENARIO IN YEAR 2025 (CONT'D)

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Grand Marais Roads - 74	Acetaldehyde	$7.3x10^{-9}$	$1.5x10^{-3}$	$1.5x10^{-3}$	$2.4x10^{-8}$	$8.1x10^{-4}$	$8.1x10^{-4}$	$3.0x10^{-9}$	$6.1x10^{-4}$	$6.1x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.6x10^{-4}$	$3.6x10^{-4}$
Grand Marais Roads - 186	Acetaldehyde	$7.2x10^{-9}$	$1.5x10^{-3}$	$1.5x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.1x10^{-4}$	$6.1x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Heritage Estates - 910	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Home for Aged LaSalle - 944	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Home for Aged LaSalle - 945	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Huron Estates - 295	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Huron Estates - 410	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Kendleton Court - 781	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Oliver Estates - 858	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Oliver Estates - 1997	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Reddock - 423	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Residential - 2478	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Southwood Lakes - 867	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Spring Garden - 1513	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Spring Garden - 1644	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
St. Clair College - 2480	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Villa Borghese - 828	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Villa Paradiso Cres. - 848	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Ball Field - 2479	Acrolein	$8.4x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.0x10^{-5}$	$7.0x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Bellwood Estates - 58	Acrolein	$8.7x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.9x10^{-9}$	$7.3x10^{-5}$	$7.3x10^{-5}$	$3.6x10^{-10}$	$5.5x10^{-5}$	$5.5x10^{-5}$	$2.0x10^{-10}$	$4.1x10^{-5}$	$4.1x10^{-5}$	$1.7x10^{-10}$	$3.2x10^{-5}$	$3.2x10^{-5}$
Bellwood Estates - 403	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Grand Marais Roads - 74	Acrolein	$8.7x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.9x10^{-9}$	$7.3x10^{-5}$	$7.3x10^{-5}$	$3.6x10^{-10}$	$5.5x10^{-5}$	$5.5x10^{-5}$	$2.0x10^{-10}$	$4.0x10^{-5}$	$4.0x10^{-5}$	$1.7x10^{-10}$	$3.2x10^{-5}$	$3.2x10^{-5}$
Grand Marais Roads - 186	Acrolein	$8.5x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.1x10^{-5}$	$7.1x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$

TABLE B.4-9: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE FUTURE "NO BUILD" SCENARIO IN YEAR 2025 (CONT'D)

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Heritage Estates - 910	Acrolein	$8.2x10^{-10}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-9}$	$6.8x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Home for Aged LaSalle - 944	Acrolein	$8.2x10^{-10}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-9}$	$6.8x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Home for Aged LaSalle - 945	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Huron Estates - 295	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Huron Estates - 410	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Kendleton Court - 781	Acrolein	$8.4x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.0x10^{-5}$	$7.0x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Oliver Estates - 858	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Oliver Estates - 1997	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Reddock - 423	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Residential - 2478	Acrolein	$8.2x10^{-10}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-9}$	$6.8x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Southwood Lakes - 867	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Spring Garden - 1513	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Spring Garden - 1644	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
St. Clair College - 2480	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Villa Borghese - 828	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Villa Paradiso Cres. - 848	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$

Note: 1,3-butadiene is not included as it does not have an oral reference dose

TABLE B.4-10: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE PARKWAY SCENARIO IN YEAR 2025

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Ball Field - 2479	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Bellwood Estates - 58	Benzene	$1.4x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.6x10^{-8}$	$6.8x10^{-5}$	$6.8x10^{-5}$	$5.7x10^{-9}$	$5.1x10^{-5}$	$5.1x10^{-5}$	$3.2x10^{-9}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$2.7x10^{-9}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Bellwood Estates - 403	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Grand Marais Roads - 74	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.5x10^{-8}$	$6.6x10^{-5}$	$6.6x10^{-5}$	$5.6x10^{-9}$	$5.0x10^{-5}$	$5.0x10^{-5}$	$3.1x10^{-9}$	$3.7x10^{-5}$	$3.7x10^{-5}$	$2.6x10^{-9}$	$2.9x10^{-5}$	$2.9x10^{-5}$
Grand Marais Roads - 186	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.4x10^{-8}$	$6.5x10^{-5}$	$6.5x10^{-5}$	$5.5x10^{-9}$	$4.9x10^{-5}$	$4.9x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Heritage Estates - 910	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Home for Aged LaSalle - 944	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Home for Aged LaSalle - 945	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Huron Estates - 295	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Huron Estates - 410	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Kendleton Court - 781	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Oliver Estates - 858	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Oliver Estates - 1997	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.9x10^{-5}$	$4.9x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Reddock - 423	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Residential - 2478	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Southwood Lakes - 867	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Spring Garden - 1513	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.9x10^{-5}$	$4.9x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Spring Garden - 1644	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
St. Clair College - 2480	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Villa Borghese - 828	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Villa Paradiso Cres. - 848	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Ball Field - 2479	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2

TABLE B.4-10: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE PARKWAY SCENARIO IN YEAR 2025 (CONT'D)

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Bellwood Estates - 58	Formaldehyde	$2.7x10^{-4}$	9.1	9.1	$9.0x10^{-4}$	5.0	5.0	$1.1x10^{-4}$	3.8	3.8	$6.2x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
Bellwood Estates - 403	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Grand Marais Roads - 74	Formaldehyde	$2.7x10^{-4}$	9.0	9.0	$9.0x10^{-4}$	5.0	5.0	$1.1x10^{-4}$	3.8	3.8	$6.2x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
Grand Marais Roads - 186	Formaldehyde	$2.7x10^{-4}$	9.0	9.0	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
Heritage Estates - 910	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Home for Aged LaSalle - 944	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Home for Aged LaSalle - 945	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Huron Estates - 295	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Huron Estates - 410	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Kendleton Court - 781	Formaldehyde	$2.7x10^{-4}$	9.0	9.0	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
Oliver Estates - 858	Formaldehyde	$2.7x10^{-4}$	9.0	9.0	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
Oliver Estates - 1997	Formaldehyde	$2.7x10^{-4}$	9.0	9.0	$8.9x10^{-4}$	5.0	5.0	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
Reddock - 423	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Residential - 2478	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Southwood Lakes - 867	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Spring Garden - 1513	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Spring Garden - 1644	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
St. Clair College - 2480	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Villa Borghese - 828	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Villa Paradiso Cres. - 848	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Ball Field - 2479	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Bellwood Estates - 58	Acetaldehyde	$7.3x10^{-9}$	$1.5x10^{-3}$	$1.5x10^{-3}$	$2.4x10^{-8}$	$8.1x10^{-4}$	$8.1x10^{-4}$	$3.0x10^{-9}$	$6.1x10^{-4}$	$6.1x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.6x10^{-4}$	$3.6x10^{-4}$
Bellwood Estates - 403	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$

TABLE B.4-10: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE PARKWAY SCENARIO IN YEAR 2025 (CONT'D)

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Grand Marais Roads - 74	Acetaldehyde	$7.3x10^{-9}$	$1.5x10^{-3}$	$1.5x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.1x10^{-4}$	$6.1x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Grand Marais Roads - 186	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Heritage Estates - 910	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Home for Aged LaSalle - 944	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Home for Aged LaSalle - 945	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Huron Estates - 295	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Huron Estates - 410	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Kendleton Court - 781	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Oliver Estates - 858	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Oliver Estates - 1997	Acetaldehyde	$7.2x10^{-9}$	$1.5x10^{-3}$	$1.5x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Reddock - 423	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Residential - 2478	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Southwood Lakes - 867	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Spring Garden - 1513	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Spring Garden - 1644	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
St. Clair College - 2480	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Villa Borghese - 828	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Villa Paradiso Cres. - 848	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Ball Field - 2479	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Bellwood Estates - 58	Acrolein	$8.5x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.1x10^{-5}$	$7.1x10^{-5}$	$3.5x10^{-10}$	$5.4x10^{-5}$	$5.4x10^{-5}$	$2.0x10^{-10}$	$4.0x10^{-5}$	$4.0x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Bellwood Estates - 403	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Grand Marais Roads - 74	Acrolein	$8.5x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.1x10^{-5}$	$7.1x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Grand Marais Roads - 186	Acrolein	$8.4x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.0x10^{-5}$	$7.0x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$

TABLE B.4-10: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE PARKWAY SCENARIO IN YEAR 2025 (CONT'D)

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Heritage Estates - 910	Acrolein	$8.2x10^{-10}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-9}$	$6.8x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Home for Aged LaSalle - 944	Acrolein	$8.2x10^{-10}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-9}$	$6.8x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Home for Aged LaSalle - 945	Acrolein	$8.2x10^{-10}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-9}$	$6.8x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Huron Estates - 295	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Huron Estates - 410	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Kendleton Court - 781	Acrolein	$8.4x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.0x10^{-5}$	$7.0x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Oliver Estates - 858	Acrolein	$8.4x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.0x10^{-5}$	$7.0x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Oliver Estates - 1997	Acrolein	$8.4x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.0x10^{-5}$	$7.0x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Reddock - 423	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Residential - 2478	Acrolein	$8.2x10^{-10}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-9}$	$6.8x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Southwood Lakes - 867	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Spring Garden - 1513	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Spring Garden - 1644	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
St. Clair College - 2480	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Villa Borghese - 828	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Villa Paradiso Cres. - 848	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$

Note: 1,3-butadiene is not included as it does not have an oral reference dose

TABLE B.4-11: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE FUTURE "NO BUILD" SCENARIO IN YEAR 2035

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Ball Field - 2479	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Bellwood Estates - 58	Benzene	$1.4x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.6x10^{-8}$	$6.8x10^{-5}$	$6.8x10^{-5}$	$5.7x10^{-9}$	$5.1x10^{-5}$	$5.1x10^{-5}$	$3.2x10^{-9}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$2.7x10^{-9}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Bellwood Estates - 403	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Grand Marais Roads - 74	Benzene	$1.4x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.5x10^{-8}$	$6.7x10^{-5}$	$6.7x10^{-5}$	$5.6x10^{-9}$	$5.0x10^{-5}$	$5.0x10^{-5}$	$3.1x10^{-9}$	$3.7x10^{-5}$	$3.7x10^{-5}$	$2.6x10^{-9}$	$2.9x10^{-5}$	$2.9x10^{-5}$
Grand Marais Roads - 186	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.4x10^{-8}$	$6.5x10^{-5}$	$6.5x10^{-5}$	$5.5x10^{-9}$	$4.9x10^{-5}$	$4.9x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.6x10^{-9}$	$2.9x10^{-5}$	$2.9x10^{-5}$
Heritage Estates - 910	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.2x10^{-5}$	$6.2x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Home for Aged LaSalle - 944	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Home for Aged LaSalle - 945	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Huron Estates - 295	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Huron Estates - 410	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Kendleton Court - 781	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Oliver Estates - 858	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Oliver Estates - 1997	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Reddock - 423	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Residential - 2478	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.2x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Southwood Lakes - 867	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Spring Garden - 1513	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Spring Garden - 1644	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
St. Clair College - 2480	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Villa Borghese - 828	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Villa Paradiso Cres. - 848	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Ball Field - 2479	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2

TABLE B.4-11: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE FUTURE "NO BUILD" SCENARIO IN YEAR 2035 (CONT'D)

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Bellwood Estates - 58	Formaldehyde	$2.8x10^{-4}$	9.2	9.2	$9.2x10^{-4}$	5.1	5.1	$1.1x10^{-4}$	3.8	3.8	$6.3x10^{-5}$	2.8	2.8	$5.3x10^{-5}$	2.2	2.2
Bellwood Estates - 403	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Grand Marais Roads - 74	Formaldehyde	$2.7x10^{-4}$	9.2	9.2	$9.1x10^{-4}$	5.1	5.1	$1.1x10^{-4}$	3.8	3.8	$6.3x10^{-5}$	2.8	2.8	$5.3x10^{-5}$	2.2	2.2
Grand Marais Roads - 186	Formaldehyde	$2.7x10^{-4}$	9.1	9.1	$9.0x10^{-4}$	5.0	5.0	$1.1x10^{-4}$	3.8	3.8	$6.2x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
Heritage Estates - 910	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Home for Aged LaSalle - 944	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Home for Aged LaSalle - 945	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Huron Estates - 295	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Huron Estates - 410	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Kendleton Court - 781	Formaldehyde	$2.7x10^{-4}$	9.0	9.0	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
Oliver Estates - 858	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Oliver Estates - 1997	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Reddock - 423	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Residential - 2478	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Southwood Lakes - 867	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Spring Garden - 1513	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Spring Garden - 1644	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
St. Clair College - 2480	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Villa Borghese - 828	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Villa Paradiso Cres. - 848	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Ball Field - 2479	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Bellwood Estates - 58	Acetaldehyde	$7.4x10^{-9}$	$1.5x10^{-3}$	$1.5x10^{-3}$	$2.4x10^{-8}$	$8.2x10^{-4}$	$8.2x10^{-4}$	$3.1x10^{-9}$	$6.2x10^{-4}$	$6.2x10^{-4}$	$1.7x10^{-9}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$1.4x10^{-9}$	$3.6x10^{-4}$	$3.6x10^{-4}$
Bellwood Estates - 403	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$

TABLE B.4-11: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE FUTURE "NO BUILD" SCENARIO IN YEAR 2035 (CONT'D)

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Grand Marais Roads - 74	Acetaldehyde	$7.3x10^{-9}$	$1.5x10^{-3}$	$1.5x10^{-3}$	$2.4x10^{-8}$	$8.1x10^{-4}$	$8.1x10^{-4}$	$3.0x10^{-9}$	$6.1x10^{-4}$	$6.1x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.6x10^{-4}$	$3.6x10^{-4}$
Grand Marais Roads - 186	Acetaldehyde	$7.3x10^{-9}$	$1.5x10^{-3}$	$1.5x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.1x10^{-4}$	$6.1x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Heritage Estates - 910	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Home for Aged LaSalle - 944	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Home for Aged LaSalle - 945	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Huron Estates - 295	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Huron Estates - 410	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Kendleton Court - 781	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Oliver Estates - 858	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Oliver Estates - 1997	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Reddock - 423	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Residential - 2478	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Southwood Lakes - 867	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Spring Garden - 1513	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Spring Garden - 1644	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
St. Clair College - 2480	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Villa Borghese - 828	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Villa Paradiso Cres. - 848	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Ball Field - 2479	Acrolein	$8.4x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.0x10^{-5}$	$7.0x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Bellwood Estates - 58	Acrolein	$8.8x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.9x10^{-9}$	$7.4x10^{-5}$	$7.4x10^{-5}$	$3.7x10^{-10}$	$5.6x10^{-5}$	$5.6x10^{-5}$	$2.0x10^{-10}$	$4.1x10^{-5}$	$4.1x10^{-5}$	$1.7x10^{-10}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Bellwood Estates - 403	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Grand Marais Roads - 74	Acrolein	$8.7x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.9x10^{-9}$	$7.3x10^{-5}$	$7.3x10^{-5}$	$3.6x10^{-10}$	$5.5x10^{-5}$	$5.5x10^{-5}$	$2.0x10^{-10}$	$4.1x10^{-5}$	$4.1x10^{-5}$	$1.7x10^{-10}$	$3.2x10^{-5}$	$3.2x10^{-5}$
Grand Marais Roads - 186	Acrolein	$8.5x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.1x10^{-5}$	$7.1x10^{-5}$	$3.5x10^{-10}$	$5.4x10^{-5}$	$5.4x10^{-5}$	$2.0x10^{-10}$	$4.0x10^{-5}$	$4.0x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$

TABLE B.4-11: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE FUTURE "NO BUILD" SCENARIO IN YEAR 2035 (CONT'D)

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Heritage Estates - 910	Acrolein	$8.2x10^{-10}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-9}$	$6.8x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Home for Aged LaSalle - 944	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Home for Aged LaSalle - 945	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Huron Estates - 295	Acrolein	$8.4x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.0x10^{-5}$	$7.0x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Huron Estates - 410	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Kendleton Court - 781	Acrolein	$8.4x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.0x10^{-5}$	$7.0x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Oliver Estates - 858	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Oliver Estates - 1997	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Reddock - 423	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Residential - 2478	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Southwood Lakes - 867	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Spring Garden - 1513	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Spring Garden - 1644	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
St. Clair College - 2480	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Villa Borghese - 828	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Villa Paradiso Cres. - 848	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$

Note: 1,3-butadiene is not included as it does not have an oral reference dose

TABLE B.4-12: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE PARKWAY SCENARIO IN YEAR 2035

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Ball Field - 2479	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Bellwood Estates - 58	Benzene	$1.4x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.6x10^{-8}$	$6.8x10^{-5}$	$6.8x10^{-5}$	$5.8x10^{-9}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$3.2x10^{-9}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$2.7x10^{-9}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Bellwood Estates - 403	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Grand Marais Roads - 74	Benzene	$1.4x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.5x10^{-8}$	$6.7x10^{-5}$	$6.7x10^{-5}$	$5.6x10^{-9}$	$5.0x10^{-5}$	$5.0x10^{-5}$	$3.1x10^{-9}$	$3.7x10^{-5}$	$3.7x10^{-5}$	$2.6x10^{-9}$	$2.9x10^{-5}$	$2.9x10^{-5}$
Grand Marais Roads - 186	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.4x10^{-8}$	$6.5x10^{-5}$	$6.5x10^{-5}$	$5.5x10^{-9}$	$4.9x10^{-5}$	$4.9x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.6x10^{-9}$	$2.9x10^{-5}$	$2.9x10^{-5}$
Heritage Estates - 910	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Home for Aged LaSalle - 944	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Home for Aged LaSalle - 945	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Huron Estates - 295	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Huron Estates - 410	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Kendleton Court - 781	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Oliver Estates - 858	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.9x10^{-5}$	$4.9x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Oliver Estates - 1997	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.4x10^{-8}$	$6.5x10^{-5}$	$6.5x10^{-5}$	$5.5x10^{-9}$	$4.9x10^{-5}$	$4.9x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Reddock - 423	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Residential - 2478	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Southwood Lakes - 867	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Spring Garden - 1513	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.4x10^{-8}$	$6.5x10^{-5}$	$6.5x10^{-5}$	$5.5x10^{-9}$	$4.9x10^{-5}$	$4.9x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Spring Garden - 1644	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
St. Clair College - 2480	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Villa Borghese - 828	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Villa Paradiso Cres. - 848	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$

TABLE B.4-12: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE PARKWAY SCENARIO IN YEAR 2035 (CONT'D)

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Ball Field - 2479	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Bellwood Estates - 58	Formaldehyde	$2.7x10^{-4}$	9.1	9.1	$9.0x10^{-4}$	5.0	5.0	$1.1x10^{-4}$	3.8	3.8	$6.2x10^{-5}$	2.8	2.8	$5.3x10^{-5}$	2.2	2.2
Bellwood Estates - 403	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Grand Marais Roads - 74	Formaldehyde	$2.7x10^{-4}$	9.1	9.1	$9.0x10^{-4}$	5.0	5.0	$1.1x10^{-4}$	3.8	3.8	$6.2x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
Grand Marais Roads - 186	Formaldehyde	$2.7x10^{-4}$	9.0	9.0	$8.9x10^{-4}$	5.0	5.0	$1.1x10^{-4}$	3.7	3.7	$6.2x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
Heritage Estates - 910	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Home for Aged LaSalle - 944	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Home for Aged LaSalle - 945	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Huron Estates - 295	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
Huron Estates - 410	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Kendleton Court - 781	Formaldehyde	$2.7x10^{-4}$	9.0	9.0	$8.9x10^{-4}$	5.0	5.0	$1.1x10^{-4}$	3.7	3.7	$6.2x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
Oliver Estates - 858	Formaldehyde	$2.7x10^{-4}$	9.0	9.0	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
Oliver Estates - 1997	Formaldehyde	$2.7x10^{-4}$	9.0	9.0	$8.9x10^{-4}$	5.0	5.0	$1.1x10^{-4}$	3.7	3.7	$6.2x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
Reddock - 423	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Residential - 2478	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Southwood Lakes - 867	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Spring Garden - 1513	Formaldehyde	$2.7x10^{-4}$	9.0	9.0	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
Spring Garden - 1644	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
St. Clair College - 2480	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Villa Borghese - 828	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Villa Paradiso Cres. - 848	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Ball Field - 2479	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Bellwood Estates - 58	Acetaldehyde	$7.3x10^{-9}$	$1.5x10^{-3}$	$1.5x10^{-3}$	$2.4x10^{-8}$	$8.1x10^{-4}$	$8.1x10^{-4}$	$3.0x10^{-9}$	$6.1x10^{-4}$	$6.1x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.6x10^{-4}$	$3.6x10^{-4}$

TABLE B.4-12: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE PARKWAY SCENARIO IN YEAR 2035 (CONT'D)

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Bellwood Estates - 403	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Grand Marais Roads - 74	Acetaldehyde	$7.3x10^{-9}$	$1.5x10^{-3}$	$1.5x10^{-3}$	$2.4x10^{-8}$	$8.1x10^{-4}$	$8.1x10^{-4}$	$3.0x10^{-9}$	$6.1x10^{-4}$	$6.1x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.6x10^{-4}$	$3.6x10^{-4}$
Grand Marais Roads - 186	Acetaldehyde	$7.2x10^{-9}$	$1.5x10^{-3}$	$1.5x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Heritage Estates - 910	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Home for Aged LaSalle - 944	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Home for Aged LaSalle - 945	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Huron Estates - 295	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Huron Estates - 410	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Kendleton Court - 781	Acetaldehyde	$7.2x10^{-9}$	$1.5x10^{-3}$	$1.5x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Oliver Estates - 858	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Oliver Estates - 1997	Acetaldehyde	$7.2x10^{-9}$	$1.5x10^{-3}$	$1.5x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Reddock - 423	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Residential - 2478	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Southwood Lakes - 867	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Spring Garden - 1513	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Spring Garden - 1644	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
St. Clair College - 2480	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Villa Borghese - 828	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Villa Paradiso Cres. - 848	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Ball Field - 2479	Acrolein	$8.4x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.0x10^{-5}$	$7.0x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Bellwood Estates - 58	Acrolein	$8.6x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.2x10^{-5}$	$7.2x10^{-5}$	$3.6x10^{-10}$	$5.4x10^{-5}$	$5.4x10^{-5}$	$2.0x10^{-10}$	$4.0x10^{-5}$	$4.0x10^{-5}$	$1.7x10^{-10}$	$3.2x10^{-5}$	$3.2x10^{-5}$
Bellwood Estates - 403	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Grand Marais Roads - 74	Acrolein	$8.5x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.1x10^{-5}$	$7.1x10^{-5}$	$3.5x10^{-10}$	$5.4x10^{-5}$	$5.4x10^{-5}$	$2.0x10^{-10}$	$4.0x10^{-5}$	$4.0x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$

TABLE B.4-12: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE PARKWAY SCENARIO IN YEAR 2035 (CONT'D)

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Grand Marais Roads - 186	Acrolein	$8.4x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.0x10^{-5}$	$7.0x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Heritage Estates - 910	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Home for Aged LaSalle - 944	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Home for Aged LaSalle - 945	Acrolein	$8.2x10^{-10}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-9}$	$6.8x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Huron Estates - 295	Acrolein	$8.4x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.0x10^{-5}$	$7.0x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Huron Estates - 410	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Kendleton Court - 781	Acrolein	$8.4x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.0x10^{-5}$	$7.0x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Oliver Estates - 858	Acrolein	$8.4x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.0x10^{-5}$	$7.0x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Oliver Estates - 1997	Acrolein	$8.4x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.0x10^{-5}$	$7.0x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Reddock - 423	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Residential - 2478	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Southwood Lakes - 867	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Spring Garden - 1513	Acrolein	$8.4x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.0x10^{-5}$	$7.0x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Spring Garden - 1644	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
St. Clair College - 2480	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Villa Borghese - 828	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Villa Paradiso Cres. - 848	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$

Note: 1,3-butadiene is not included as it does not have an oral reference dose

TABLE B.4-13: INGESTION DOSE (mg/(kg-d)) FOR CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE FUTURE "NO BUILD" SCENARIO IN YEAR 2015

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult			Composite		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Ball Field - 2479	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Bellwood Estates - 58	Benzene	$9.3x10^{-11}$	$8.3x10^{-7}$	$8.3x10^{-7}$	$2.2x10^{-9}$	$3.2x10^{-6}$	$3.2x10^{-6}$	$5.4x10^{-10}$	$4.8x10^{-6}$	$4.8x10^{-6}$	$3.4x10^{-10}$	$4.1x10^{-6}$	$4.1x10^{-6}$	$2.0x10^{-9}$	$2.3x10^{-5}$	$2.3x10^{-5}$	$5.2x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$
Bellwood Estates - 403	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Grand Marais Roads - 74	Benzene	$9.1x10^{-11}$	$8.1x10^{-7}$	$8.1x10^{-7}$	$2.1x10^{-9}$	$3.1x10^{-6}$	$3.1x10^{-6}$	$5.3x10^{-10}$	$4.7x10^{-6}$	$4.7x10^{-6}$	$3.3x10^{-10}$	$4.0x10^{-6}$	$4.0x10^{-6}$	$2.0x10^{-9}$	$2.2x10^{-5}$	$2.2x10^{-5}$	$5.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$
Grand Marais Roads - 186	Benzene	$8.9x10^{-11}$	$7.9x10^{-7}$	$7.9x10^{-7}$	$2.1x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.2x10^{-10}$	$4.6x10^{-6}$	$4.6x10^{-6}$	$3.2x10^{-10}$	$3.9x10^{-6}$	$3.9x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.9x10^{-9}$	$3.4x10^{-5}$	$3.4x10^{-5}$
Heritage Estates - 910	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$4.9x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.2x10^{-5}$	$3.2x10^{-5}$
Home for Aged LaSalle - 944	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Home for Aged LaSalle - 945	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Huron Estates - 295	Benzene	$8.7x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Huron Estates - 410	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Kendleton Court - 781	Benzene	$8.7x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Oliver Estates - 858	Benzene	$8.6x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Oliver Estates - 1997	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Reddock - 423	Benzene	$8.6x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Residential - 2478	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$4.9x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.2x10^{-5}$	$3.2x10^{-5}$
Southwood Lakes - 867	Benzene	$8.6x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Spring Garden - 1513	Benzene	$8.7x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Spring Garden - 1644	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
St. Clair College - 2480	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Villa Borghese - 828	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Villa Paradiso Cres. - 848	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$

Note: benzene is the only COC with a carcinogenic TRV (oral slope factor)

TABLE B.4-14: INGESTION DOSE (mg/(kg-d)) FOR CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE PARKWAY SCENARIO IN YEAR 2015

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult			Composite		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Ball Field - 2479	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Bellwood Estates - 58	Benzene	$9.3x10^{-11}$	$8.3x10^{-7}$	$8.3x10^{-7}$	$2.2x10^{-9}$	$3.2x10^{-6}$	$3.2x10^{-6}$	$5.4x10^{-10}$	$4.8x10^{-6}$	$4.8x10^{-6}$	$3.4x10^{-10}$	$4.1x10^{-6}$	$4.1x10^{-6}$	$2.0x10^{-9}$	$2.3x10^{-5}$	$2.3x10^{-5}$	$5.1x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$
Bellwood Estates - 403	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Grand Marais Roads - 74	Benzene	$9.0x10^{-11}$	$8.0x10^{-7}$	$8.0x10^{-7}$	$2.1x10^{-9}$	$3.1x10^{-6}$	$3.1x10^{-6}$	$5.2x10^{-10}$	$4.7x10^{-6}$	$4.7x10^{-6}$	$3.3x10^{-10}$	$4.0x10^{-6}$	$4.0x10^{-6}$	$2.0x10^{-9}$	$2.2x10^{-5}$	$2.2x10^{-5}$	$5.0x10^{-9}$	$3.4x10^{-5}$	$3.4x10^{-5}$
Grand Marais Roads - 186	Benzene	$8.8x10^{-11}$	$7.8x10^{-7}$	$7.8x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.1x10^{-10}$	$4.6x10^{-6}$	$4.6x10^{-6}$	$3.2x10^{-10}$	$3.9x10^{-6}$	$3.9x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.9x10^{-9}$	$3.4x10^{-5}$	$3.4x10^{-5}$
Heritage Estates - 910	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.2x10^{-5}$	$3.2x10^{-5}$
Home for Aged LaSalle - 944	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Home for Aged LaSalle - 945	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Huron Estates - 295	Benzene	$8.7x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Huron Estates - 410	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Kendleton Court - 781	Benzene	$8.7x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.1x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Oliver Estates - 858	Benzene	$8.7x10^{-11}$	$7.8x10^{-7}$	$7.8x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.1x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Oliver Estates - 1997	Benzene	$8.8x10^{-11}$	$7.8x10^{-7}$	$7.8x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.1x10^{-10}$	$4.6x10^{-6}$	$4.6x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.9x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Reddock - 423	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Residential - 2478	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Southwood Lakes - 867	Benzene	$8.7x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Spring Garden - 1513	Benzene	$8.7x10^{-11}$	$7.8x10^{-7}$	$7.8x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.1x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Spring Garden - 1644	Benzene	$8.7x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
St. Clair College - 2480	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Villa Borghese - 828	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Villa Paradiso Cres. - 848	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$

Note: benzene is the only COC with a carcinogenic TRV (oral slope factor)

TABLE B.4-15: INGESTION DOSE (mg/(kg-d)) FOR CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE FUTURE "NO BUILD" SCENARIO IN YEAR 2025

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult			Composite		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Ball Field - 2479	Benzene	$8.6x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Bellwood Estates - 58	Benzene	$9.2x10^{-11}$	$8.2x10^{-7}$	$8.2x10^{-7}$	$2.1x10^{-9}$	$3.2x10^{-6}$	$3.2x10^{-6}$	$5.4x10^{-10}$	$4.8x10^{-6}$	$4.8x10^{-6}$	$3.4x10^{-10}$	$4.0x10^{-6}$	$4.0x10^{-6}$	$2.0x10^{-9}$	$2.2x10^{-5}$	$2.2x10^{-5}$	$5.1x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$
Bellwood Estates - 403	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Grand Marais Roads - 74	Benzene	$9.0x10^{-11}$	$8.0x10^{-7}$	$8.0x10^{-7}$	$2.1x10^{-9}$	$3.1x10^{-6}$	$3.1x10^{-6}$	$5.2x10^{-10}$	$4.7x10^{-6}$	$4.7x10^{-6}$	$3.3x10^{-10}$	$4.0x10^{-6}$	$4.0x10^{-6}$	$2.0x10^{-9}$	$2.2x10^{-5}$	$2.2x10^{-5}$	$5.0x10^{-9}$	$3.4x10^{-5}$	$3.4x10^{-5}$
Grand Marais Roads - 186	Benzene	$8.8x10^{-11}$	$7.8x10^{-7}$	$7.8x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.1x10^{-10}$	$4.6x10^{-6}$	$4.6x10^{-6}$	$3.2x10^{-10}$	$3.9x10^{-6}$	$3.9x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.9x10^{-9}$	$3.4x10^{-5}$	$3.4x10^{-5}$
Heritage Estates - 910	Benzene	$8.5x10^{-11}$	$7.5x10^{-7}$	$7.5x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$4.9x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.2x10^{-5}$	$3.2x10^{-5}$
Home for Aged LaSalle - 944	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$4.9x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.2x10^{-5}$	$3.2x10^{-5}$
Home for Aged LaSalle - 945	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Huron Estates - 295	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Huron Estates - 410	Benzene	$8.6x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Kendleton Court - 781	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Oliver Estates - 858	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Oliver Estates - 1997	Benzene	$8.6x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Reddock - 423	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Residential - 2478	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$4.9x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.2x10^{-5}$	$3.2x10^{-5}$
Southwood Lakes - 867	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Spring Garden - 1513	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Spring Garden - 1644	Benzene	$8.6x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
St. Clair College - 2480	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$4.9x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.2x10^{-5}$	$3.2x10^{-5}$
Villa Borghese - 828	Benzene	$8.6x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Villa Paradiso Cres. - 848	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.2x10^{-5}$	$3.2x10^{-5}$

Note: benzene is the only COC with a carcinogenic TRV (oral slope factor)

TABLE B.4-16: INGESTION DOSE (mg/(kg-d)) FOR CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE PARKWAY SCENARIO IN YEAR 2025

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult			Composite		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Ball Field - 2479	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Bellwood Estates - 58	Benzene	$9.2x10^{-11}$	$8.2x10^{-7}$	$8.2x10^{-7}$	$2.1x10^{-9}$	$3.2x10^{-6}$	$3.2x10^{-6}$	$5.4x10^{-10}$	$4.8x10^{-6}$	$4.8x10^{-6}$	$3.4x10^{-10}$	$4.0x10^{-6}$	$4.0x10^{-6}$	$2.0x10^{-9}$	$2.2x10^{-5}$	$2.2x10^{-5}$	$5.1x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$
Bellwood Estates - 403	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Grand Marais Roads - 74	Benzene	$9.0x10^{-11}$	$8.0x10^{-7}$	$8.0x10^{-7}$	$2.1x10^{-9}$	$3.1x10^{-6}$	$3.1x10^{-6}$	$5.2x10^{-10}$	$4.7x10^{-6}$	$4.7x10^{-6}$	$3.3x10^{-10}$	$3.9x10^{-6}$	$3.9x10^{-6}$	$1.9x10^{-9}$	$2.2x10^{-5}$	$2.2x10^{-5}$	$5.0x10^{-9}$	$3.4x10^{-5}$	$3.4x10^{-5}$
Grand Marais Roads - 186	Benzene	$8.8x10^{-11}$	$7.8x10^{-7}$	$7.8x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.1x10^{-10}$	$4.6x10^{-6}$	$4.6x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.9x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Heritage Estates - 910	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$4.9x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.2x10^{-5}$	$3.2x10^{-5}$
Home for Aged LaSalle - 944	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Home for Aged LaSalle - 945	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Huron Estates - 295	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Huron Estates - 410	Benzene	$8.6x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Kendleton Court - 781	Benzene	$8.7x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Oliver Estates - 858	Benzene	$8.7x10^{-11}$	$7.8x10^{-7}$	$7.8x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.1x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Oliver Estates - 1997	Benzene	$8.7x10^{-11}$	$7.8x10^{-7}$	$7.8x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.1x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Reddock - 423	Benzene	$8.6x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Residential - 2478	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Southwood Lakes - 867	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Spring Garden - 1513	Benzene	$8.7x10^{-11}$	$7.8x10^{-7}$	$7.8x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.1x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Spring Garden - 1644	Benzene	$8.7x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
St. Clair College - 2480	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$4.9x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.2x10^{-5}$	$3.2x10^{-5}$
Villa Borghese - 828	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Villa Paradiso Cres. - 848	Benzene	$8.6x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$

Note: benzene is the only COC with a carcinogenic TRV (oral slope factor)

TABLE B.4-17: INGESTION DOSE (mg/(kg-d)) FOR CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE FUTURE "NO BUILD" SCENARIO IN YEAR 2035

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult			Composite		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Ball Field - 2479	Benzene	$8.6x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Bellwood Estates - 58	Benzene	$9.2x10^{-11}$	$8.2x10^{-7}$	$8.2x10^{-7}$	$2.1x10^{-9}$	$3.2x10^{-6}$	$3.2x10^{-6}$	$5.4x10^{-10}$	$4.8x10^{-6}$	$4.8x10^{-6}$	$3.4x10^{-10}$	$4.0x10^{-6}$	$4.0x10^{-6}$	$2.0x10^{-9}$	$2.2x10^{-5}$	$2.2x10^{-5}$	$5.1x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$
Bellwood Estates - 403	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Grand Marais Roads - 74	Benzene	$9.0x10^{-11}$	$8.0x10^{-7}$	$8.0x10^{-7}$	$2.1x10^{-9}$	$3.1x10^{-6}$	$3.1x10^{-6}$	$5.3x10^{-10}$	$4.7x10^{-6}$	$4.7x10^{-6}$	$3.3x10^{-10}$	$4.0x10^{-6}$	$4.0x10^{-6}$	$2.0x10^{-9}$	$2.2x10^{-5}$	$2.2x10^{-5}$	$5.0x10^{-9}$	$3.4x10^{-5}$	$3.4x10^{-5}$
Grand Marais Roads - 186	Benzene	$8.8x10^{-11}$	$7.9x10^{-7}$	$7.9x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.1x10^{-10}$	$4.6x10^{-6}$	$4.6x10^{-6}$	$3.2x10^{-10}$	$3.9x10^{-6}$	$3.9x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.9x10^{-9}$	$3.4x10^{-5}$	$3.4x10^{-5}$
Heritage Estates - 910	Benzene	$8.5x10^{-11}$	$7.5x10^{-7}$	$7.5x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$4.9x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.2x10^{-5}$	$3.2x10^{-5}$
Home for Aged LaSalle - 944	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$4.9x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.2x10^{-5}$	$3.2x10^{-5}$
Home for Aged LaSalle - 945	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Huron Estates - 295	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Huron Estates - 410	Benzene	$8.6x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Kendleton Court - 781	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Oliver Estates - 858	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Oliver Estates - 1997	Benzene	$8.6x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Reddock - 423	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Residential - 2478	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$4.9x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.2x10^{-5}$	$3.2x10^{-5}$
Southwood Lakes - 867	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Spring Garden - 1513	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Spring Garden - 1644	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
St. Clair College - 2480	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$4.9x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.2x10^{-5}$	$3.2x10^{-5}$
Villa Borghese - 828	Benzene	$8.6x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Villa Paradiso Cres. - 848	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.2x10^{-5}$	$3.2x10^{-5}$

Note: benzene is the only COC with a carcinogenic TRV (oral slope factor)

TABLE B.4-18: INGESTION DOSE (mg/(kg-d)) FOR CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC FOR THE PARKWAY SCENARIO IN YEAR 2035

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult			Composite		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Ball Field - 2479	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Bellwood Estates - 58	Benzene	$9.3x10^{-11}$	$8.2x10^{-7}$	$8.3x10^{-7}$	$2.1x10^{-9}$	$3.2x10^{-6}$	$3.2x10^{-6}$	$5.4x10^{-10}$	$4.8x10^{-6}$	$4.8x10^{-6}$	$3.4x10^{-10}$	$4.1x10^{-6}$	$4.1x10^{-6}$	$2.0x10^{-9}$	$2.2x10^{-5}$	$2.2x10^{-5}$	$5.1x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$
Bellwood Estates - 403	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Grand Marais Roads - 74	Benzene	$9.0x10^{-11}$	$8.1x10^{-7}$	$8.1x10^{-7}$	$2.1x10^{-9}$	$3.1x10^{-6}$	$3.1x10^{-6}$	$5.3x10^{-10}$	$4.7x10^{-6}$	$4.7x10^{-6}$	$3.3x10^{-10}$	$4.0x10^{-6}$	$4.0x10^{-6}$	$2.0x10^{-9}$	$2.2x10^{-5}$	$2.2x10^{-5}$	$5.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$
Grand Marais Roads - 186	Benzene	$8.8x10^{-11}$	$7.8x10^{-7}$	$7.8x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.1x10^{-10}$	$4.6x10^{-6}$	$4.6x10^{-6}$	$3.2x10^{-10}$	$3.9x10^{-6}$	$3.9x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.9x10^{-9}$	$3.4x10^{-5}$	$3.4x10^{-5}$
Heritage Estates - 910	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$4.9x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.2x10^{-5}$	$3.2x10^{-5}$
Home for Aged LaSalle - 944	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Home for Aged LaSalle - 945	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Huron Estates - 295	Benzene	$8.7x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Huron Estates - 410	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Kendleton Court - 781	Benzene	$8.7x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Oliver Estates - 858	Benzene	$8.7x10^{-11}$	$7.8x10^{-7}$	$7.8x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.1x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Oliver Estates - 1997	Benzene	$8.8x10^{-11}$	$7.8x10^{-7}$	$7.8x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.1x10^{-10}$	$4.6x10^{-6}$	$4.6x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Reddock - 423	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Residential - 2478	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Southwood Lakes - 867	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Spring Garden - 1513	Benzene	$8.8x10^{-11}$	$7.8x10^{-7}$	$7.8x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.1x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Spring Garden - 1644	Benzene	$8.7x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.1x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
St. Clair College - 2480	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Villa Borghese - 828	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Villa Paradiso Cres. - 848	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$

Note: benzene is the only COC with a carcinogenic TRV (oral slope factor)

B.5 Incremental Risks

TABLE B.5-1: INCREMENTAL RISKS ASSOCIATED WITH EXPOSURE TO BENZENE (INCLUDING BACKGROUND) FOR YEAR 2015

Receptor Location	"No Build"		Parkway	
	Adult	Composite	Adult	Composite
Ball Field - 2479	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Bellwood Estates - 58	**$1.3x10^{-5}$**	**$2.0x10^{-5}$**	**$1.3x10^{-5}$**	**$1.9x10^{-5}$**
Bellwood Estates - 403	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Grand Marais Roads - 74	**$1.3x10^{-5}$**	**$1.9x10^{-5}$**	**$1.3x10^{-5}$**	**$1.9x10^{-5}$**
Grand Marais Roads - 186	**$1.3x10^{-5}$**	**$1.9x10^{-5}$**	**$1.3x10^{-5}$**	**$1.8x10^{-5}$**
Heritage Estates - 910	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Home for Aged LaSalle - 944	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Home for Aged LaSalle - 945	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Huron Estates - 295	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Huron Estates - 410	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Kendleton Court - 781	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Oliver Estates - 858	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.3x10^{-5}$**	**$1.8x10^{-5}$**
Oliver Estates - 1997	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.3x10^{-5}$**	**$1.8x10^{-5}$**
Reddock - 423	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Residential - 2478	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Southwood Lakes - 867	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Spring Garden - 1513	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.3x10^{-5}$**	**$1.8x10^{-5}$**
Spring Garden - 1644	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
St. Clair College - 2480	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Villa Borghese - 828	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Villa Paradiso Cres. - 848	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Background Value	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**		

Note: Values in **bold** exceed an incremental risk level of 1×10^{-6}

TABLE B.5-2: INCREMENTAL RISKS ASSOCIATED WITH EXPOSURE TO 1,3-BUTADIENE (INCLUDING BACKGROUND) FOR YEAR 2015

Receptor Location	"No Build"		Parkway	
	Adult	Composite	Adult	Composite
Ball Field - 2479	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
Bellwood Estates - 58	**$4.4x10^{-6}$**	**$5.9x10^{-6}$**	**$4.2x10^{-6}$**	**$5.7x10^{-6}$**
Bellwood Estates - 403	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
Grand Marais Roads - 74	**$4.2x10^{-6}$**	**$5.6x10^{-6}$**	**$4.1x10^{-6}$**	**$5.5x10^{-6}$**
Grand Marais Roads - 186	**$4.0x10^{-6}$**	**$5.3x10^{-6}$**	**$3.9x10^{-6}$**	**$5.3x10^{-6}$**
Heritage Estates - 910	**$3.7x10^{-6}$**	**$4.9x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Home for Aged LaSalle - 944	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Home for Aged LaSalle - 945	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Huron Estates - 295	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
Huron Estates - 410	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Kendleton Court - 781	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
Oliver Estates - 858	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Oliver Estates - 1997	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Reddock - 423	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**
Residential - 2478	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Southwood Lakes - 867	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
Spring Garden - 1513	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Spring Garden - 1644	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
St. Clair College - 2480	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Villa Borghese - 828	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**
Villa Paradiso Cres. - 848	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**
Background Value	**3.6x10-6**	**4.8x10-6**		

Note: Values in **bold** exceed an incremental risk level of 1×10^{-6}

TABLE B.5-3: INCREMENTAL RISKS ASSOCIATED WITH EXPOSURE TO FORMALDEHYDE (INCLUDING BACKGROUND) FOR YEAR 2015

Receptor Location	"No Build"		Parkway	
	Adult	Composite	Adult	Composite
Ball Field - 2479	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**
Bellwood Estates - 58	**$4.4x10^{-5}$**	**$5.9x10^{-5}$**	**$4.3x10^{-5}$**	**$5.8x10^{-5}$**
Bellwood Estates - 403	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**
Grand Marais Roads - 74	**$4.3x10^{-5}$**	**$5.8x10^{-5}$**	**$4.3x10^{-5}$**	**$5.7x10^{-5}$**
Grand Marais Roads - 186	**$4.3x10^{-5}$**	**$5.7x10^{-5}$**	**$4.3x10^{-5}$**	**$5.7x10^{-5}$**
Heritage Estates - 910	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Home for Aged LaSalle - 944	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Home for Aged LaSalle - 945	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Huron Estates - 295	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**
Huron Estates - 410	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**
Kendleton Court - 781	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**
Oliver Estates - 858	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**	**$4.3x10^{-5}$**	**$5.7x10^{-5}$**
Oliver Estates - 1997	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.3x10^{-5}$**	**$5.7x10^{-5}$**
Reddock - 423	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**
Residential - 2478	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Southwood Lakes - 867	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**
Spring Garden - 1513	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**
Spring Garden - 1644	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**
St. Clair College - 2480	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Villa Borghese - 828	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**
Villa Paradiso Cres. - 848	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**
Background Value	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**		

Note: Values in **bold** exceed an incremental risk level of 1×10^{-6}

TABLE B.5-4: INCREMENTAL RISKS ASSOCIATED WITH EXPOSURE TO ACETALDEHYDE (INCLUDING BACKGROUND) FOR YEAR 2015

Receptor Location	"No Build"		Parkway	
	Adult	Composite	Adult	Composite
Ball Field - 2479	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Bellwood Estates - 58	**$4.0x10^{-6}$**	**$5.3x10^{-6}$**	**$3.9x10^{-6}$**	**$5.3x10^{-6}$**
Bellwood Estates - 403	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Grand Marais Roads - 74	**$4.0x10^{-6}$**	**$5.3x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Grand Marais Roads - 186	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Heritage Estates - 910	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Home for Aged LaSalle - 944	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Home for Aged LaSalle - 945	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Huron Estates - 295	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Huron Estates - 410	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Kendleton Court - 781	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Oliver Estates - 858	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Oliver Estates - 1997	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Reddock - 423	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Residential - 2478	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Southwood Lakes - 867	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Spring Garden - 1513	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Spring Garden - 1644	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
St. Clair College - 2480	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Villa Borghese - 828	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Villa Paradiso Cres. - 848	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Background Value	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**		

Note: Values in **bold** exceed an incremental risk level of 1×10^{-6}

TABLE B.5-5: INCREMENTAL RISKS ASSOCIATED WITH EXPOSURE TO BENZENE (INCLUDING BACKGROUND) FOR YEAR 2025

Receptor Location	"No Build"		Parkway	
	Adult	Composite	Adult	Composite
Ball Field - 2479	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Bellwood Estates - 58	**$1.3x10^{-5}$**	**$1.9x10^{-5}$**	**$1.3x10^{-5}$**	**$1.9x10^{-5}$**
Bellwood Estates - 403	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Grand Marais Roads - 74	**$1.3x10^{-5}$**	**$1.9x10^{-5}$**	**$1.3x10^{-5}$**	**$1.9x10^{-5}$**
Grand Marais Roads - 186	**$1.3x10^{-5}$**	**$1.8x10^{-5}$**	**$1.3x10^{-5}$**	**$1.8x10^{-5}$**
Heritage Estates - 910	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Home for Aged LaSalle - 944	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Home for Aged LaSalle - 945	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Huron Estates - 295	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Huron Estates - 410	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Kendleton Court - 781	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Oliver Estates - 858	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Oliver Estates - 1997	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.3x10^{-5}$**	**$1.8x10^{-5}$**
Reddock - 423	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Residential - 2478	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Southwood Lakes - 867	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Spring Garden - 1513	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.3x10^{-5}$**	**$1.8x10^{-5}$**
Spring Garden - 1644	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
St. Clair College - 2480	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Villa Borghese - 828	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Villa Paradiso Cres. - 848	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Background Value	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**		

Note: Values in **bold** exceed an incremental risk level of 1×10^{-6}

TABLE B.5-6: INCREMENTAL RISKS ASSOCIATED WITH EXPOSURE TO 1,3-BUTADIENE (INCLUDING BACKGROUND) FOR YEAR 2025

Receptor Location	"No Build"		Parkway	
	Adult	Composite	Adult	Composite
Ball Field - 2479	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
Bellwood Estates - 58	**$4.3x10^{-6}$**	**$5.7x10^{-6}$**	**$4.2x10^{-6}$**	**$5.6x10^{-6}$**
Bellwood Estates - 403	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
Grand Marais Roads - 74	**$4.1x10^{-6}$**	**$5.6x10^{-6}$**	**$4.1x10^{-6}$**	**$5.4x10^{-6}$**
Grand Marais Roads - 186	**$3.9x10^{-6}$**	**$5.3x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Heritage Estates - 910	**$3.7x10^{-6}$**	**$4.9x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Home for Aged LaSalle - 944	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Home for Aged LaSalle - 945	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Huron Estates - 295	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
Huron Estates - 410	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Kendleton Court - 781	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
Oliver Estates - 858	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Oliver Estates - 1997	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Reddock - 423	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**
Residential - 2478	**$3.7x10^{-6}$**	**$4.9x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Southwood Lakes - 867	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
Spring Garden - 1513	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
Spring Garden - 1644	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
St. Clair College - 2480	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Villa Borghese - 828	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**
Villa Paradiso Cres. - 848	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**
Background Value	**$3.6x10^{-6}$**	**$4.8x10^{-6}$**		

Note: Values in **bold** exceed an incremental risk level of 1×10^{-6}

TABLE B.5-7: INCREMENTAL RISKS ASSOCIATED WITH EXPOSURE TO FORMALDEHYDE (INCLUDING BACKGROUND) FOR YEAR 2025

Receptor Location	"No Build"		Parkway	
	Adult	Composite	Adult	Composite
Ball Field - 2479	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**
Bellwood Estates - 58	**$4.4x10^{-5}$**	**$5.9x10^{-5}$**	**$4.3x10^{-5}$**	**$5.8x10^{-5}$**
Bellwood Estates - 403	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**
Grand Marais Roads - 74	**$4.3x10^{-5}$**	**$5.8x10^{-5}$**	**$4.3x10^{-5}$**	**$5.7x10^{-5}$**
Grand Marais Roads - 186	**$4.3x10^{-5}$**	**$5.7x10^{-5}$**	**$4.3x10^{-5}$**	**$5.7x10^{-5}$**
Heritage Estates - 910	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Home for Aged LaSalle - 944	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Home for Aged LaSalle - 945	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Huron Estates - 295	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**
Huron Estates - 410	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**
Kendleton Court - 781	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.3x10^{-5}$**	**$5.7x10^{-5}$**
Oliver Estates - 858	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**	**$4.3x10^{-5}$**	**$5.7x10^{-5}$**
Oliver Estates - 1997	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.3x10^{-5}$**	**$5.7x10^{-5}$**
Reddock - 423	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**
Residential - 2478	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Southwood Lakes - 867	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**
Spring Garden - 1513	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**
Spring Garden - 1644	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**
St. Clair College - 2480	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Villa Borghese - 828	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**
Villa Paradiso Cres. - 848	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**
Background Value	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**		

Note: Values in **bold** exceed an incremental risk level of 1×10^{-6}

TABLE B.5-8: INCREMENTAL RISKS ASSOCIATED WITH EXPOSURE TO ACETALDEHYDE (INCLUDING BACKGROUND) FOR YEAR 2025

Receptor Location	"No Build"		Parkway	
	Adult	Composite	Adult	Composite
Ball Field - 2479	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Bellwood Estates - 58	**$4.0x10^{-6}$**	**$5.3x10^{-6}$**	**$3.9x10^{-6}$**	**$5.3x10^{-6}$**
Bellwood Estates - 403	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Grand Marais Roads - 74	**$3.9x10^{-6}$**	**$5.3x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Grand Marais Roads - 186	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Heritage Estates - 910	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Home for Aged LaSalle - 944	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Home for Aged LaSalle - 945	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Huron Estates - 295	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Huron Estates - 410	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Kendleton Court - 781	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Oliver Estates - 858	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Oliver Estates - 1997	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Reddock - 423	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Residential - 2478	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Southwood Lakes - 867	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Spring Garden - 1513	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Spring Garden - 1644	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
St. Clair College - 2480	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Villa Borghese - 828	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Villa Paradiso Cres. - 848	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Background Value	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**		

Note: Values in **bold** exceed an incremental risk level of 1×10^{-6}

TABLE B.5-9: INCREMENTAL RISKS ASSOCIATED WITH EXPOSURE TO BENZENE (INCLUDING BACKGROUND) FOR YEAR 2035

Receptor Location	"No Build"		Parkway	
	Adult	Composite	Adult	Composite
Ball Field - 2479	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Bellwood Estates - 58	**$1.3x10^{-5}$**	**$1.9x10^{-5}$**	**$1.3x10^{-5}$**	**$1.9x10^{-5}$**
Bellwood Estates - 403	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Grand Marais Roads - 74	**$1.3x10^{-5}$**	**$1.9x10^{-5}$**	**$1.3x10^{-5}$**	**$1.9x10^{-5}$**
Grand Marais Roads - 186	**$1.3x10^{-5}$**	**$1.8x10^{-5}$**	**$1.3x10^{-5}$**	**$1.8x10^{-5}$**
Heritage Estates - 910	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Home for Aged LaSalle - 944	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Home for Aged LaSalle - 945	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Huron Estates - 295	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Huron Estates - 410	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Kendleton Court - 781	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Oliver Estates - 858	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.3x10^{-5}$**	**$1.8x10^{-5}$**
Oliver Estates - 1997	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.3x10^{-5}$**	**$1.8x10^{-5}$**
Reddock - 423	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Residential - 2478	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Southwood Lakes - 867	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Spring Garden - 1513	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.3x10^{-5}$**	**$1.8x10^{-5}$**
Spring Garden - 1644	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
St. Clair College - 2480	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Villa Borghese - 828	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Villa Paradiso Cres. - 848	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Background Value	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**		

Note: Values in **bold** exceed an incremental risk level of 1×10^{-6}

TABLE B.5-10: INCREMENTAL RISKS ASSOCIATED WITH EXPOSURE TO 1,3-BUTADIENE (INCLUDING BACKGROUND) FOR YEAR 2035

Receptor Location	"No Build"		Parkway	
	Adult	Composite	Adult	Composite
Ball Field - 2479	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
Bellwood Estates - 58	**$4.3x10^{-6}$**	**$5.8x10^{-6}$**	**$4.3x10^{-6}$**	**$5.7x10^{-6}$**
Bellwood Estates - 403	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
Grand Marais Roads - 74	**$4.2x10^{-6}$**	**$5.6x10^{-6}$**	**$4.1x10^{-6}$**	**$5.5x10^{-6}$**
Grand Marais Roads - 186	**$4.0x10^{-6}$**	**$5.3x10^{-6}$**	**$3.9x10^{-6}$**	**$5.3x10^{-6}$**
Heritage Estates - 910	**$3.7x10^{-6}$**	**$4.9x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Home for Aged LaSalle - 944	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Home for Aged LaSalle - 945	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Huron Estates - 295	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
Huron Estates - 410	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**
Kendleton Court - 781	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Oliver Estates - 858	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Oliver Estates - 1997	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**	**$3.9x10^{-6}$**	**$5.3x10^{-6}$**
Reddock - 423	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
Residential - 2478	**$3.7x10^{-6}$**	**$4.9x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Southwood Lakes - 867	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
Spring Garden - 1513	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Spring Garden - 1644	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
St. Clair College - 2480	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Villa Borghese - 828	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
Villa Paradiso Cres. - 848	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**
Background Value	**$3.6x10^{-6}$**	**$4.8x10^{-6}$**		

Note: Values in **bold** exceed an incremental risk level of 1×10^{-6}

TABLE B.5-11: INCREMENTAL RISKS ASSOCIATED WITH EXPOSURE TO FORMALDEHYDE (INCLUDING BACKGROUND) FOR YEAR 2035

Receptor Location	"No Build"		Parkway	
	Adult	Composite	Adult	Composite
Ball Field - 2479	**4.2x10^{-5}**	**5.7x10^{-5}**	**4.2x10^{-5}**	**5.7x10^{-5}**
Bellwood Estates - 58	**4.4x10^{-5}**	**5.9x10^{-5}**	**4.3x10^{-5}**	**5.8x10^{-5}**
Bellwood Estates - 403	**4.2x10^{-5}**	**5.7x10^{-5}**	**4.2x10^{-5}**	**5.7x10^{-5}**
Grand Marais Roads - 74	**4.4x10^{-5}**	**5.8x10^{-5}**	**4.3x10^{-5}**	**5.8x10^{-5}**
Grand Marais Roads - 186	**4.3x10^{-5}**	**5.8x10^{-5}**	**4.3x10^{-5}**	**5.7x10^{-5}**
Heritage Estates - 910	**4.2x10^{-5}**	**5.6x10^{-5}**	**4.2x10^{-5}**	**5.6x10^{-5}**
Home for Aged LaSalle - 944	**4.2x10^{-5}**	**5.7x10^{-5}**	**4.2x10^{-5}**	**5.7x10^{-5}**
Home for Aged LaSalle - 945	**4.2x10^{-5}**	**5.7x10^{-5}**	**4.2x10^{-5}**	**5.7x10^{-5}**
Huron Estates - 295	**4.2x10^{-5}**	**5.7x10^{-5}**	**4.2x10^{-5}**	**5.7x10^{-5}**
Huron Estates - 410	**4.2x10^{-5}**	**5.7x10^{-5}**	**4.2x10^{-5}**	**5.7x10^{-5}**
Kendleton Court - 781	**4.3x10^{-5}**	**5.7x10^{-5}**	**4.3x10^{-5}**	**5.7x10^{-5}**
Oliver Estates - 858	**4.2x10^{-5}**	**5.6x10^{-5}**	**4.3x10^{-5}**	**5.7x10^{-5}**
Oliver Estates - 1997	**4.2x10^{-5}**	**5.7x10^{-5}**	**4.3x10^{-5}**	**5.7x10^{-5}**
Reddock - 423	**4.2x10^{-5}**	**5.7x10^{-5}**	**4.2x10^{-5}**	**5.7x10^{-5}**
Residential - 2478	**4.2x10^{-5}**	**5.6x10^{-5}**	**4.2x10^{-5}**	**5.7x10^{-5}**
Southwood Lakes - 867	**4.2x10^{-5}**	**5.6x10^{-5}**	**4.2x10^{-5}**	**5.7x10^{-5}**
Spring Garden - 1513	**4.2x10^{-5}**	**5.7x10^{-5}**	**4.3x10^{-5}**	**5.7x10^{-5}**
Spring Garden - 1644	**4.2x10^{-5}**	**5.7x10^{-5}**	**4.2x10^{-5}**	**5.7x10^{-5}**
St. Clair College - 2480	**4.2x10^{-5}**	**5.7x10^{-5}**	**4.2x10^{-5}**	**5.6x10^{-5}**
Villa Borghese - 828	**4.2x10^{-5}**	**5.7x10^{-5}**	**4.2x10^{-5}**	**5.7x10^{-5}**
Villa Paradiso Cres. - 848	**4.2x10^{-5}**	**5.7x10^{-5}**	**4.2x10^{-5}**	**5.7x10^{-5}**
Background Value	**4.2x10-5**	**5.6x10-5**		

Note: Values in **bold** exceed an incremental risk level of 1 x 10^{-6}

TABLE B.5-12: INCREMENTAL RISKS ASSOCIATED WITH EXPOSURE TO ACETALDEHYDE (INCLUDING BACKGROUND) FOR YEAR 2035

Receptor Location	"No Build"		Parkway	
	Adult	Composite	Adult	Composite
Ball Field - 2479	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Bellwood Estates - 58	**$4.0x10^{-6}$**	**$5.3x10^{-6}$**	**$3.9x10^{-6}$**	**$5.3x10^{-6}$**
Bellwood Estates - 403	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Grand Marais Roads - 74	**$4.0x10^{-6}$**	**$5.3x10^{-6}$**	**$3.9x10^{-6}$**	**$5.3x10^{-6}$**
Grand Marais Roads - 186	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Heritage Estates - 910	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Home for Aged LaSalle - 944	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Home for Aged LaSalle - 945	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Huron Estates - 295	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Huron Estates - 410	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Kendleton Court - 781	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Oliver Estates - 858	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Oliver Estates - 1997	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Reddock - 423	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Residential - 2478	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Southwood Lakes - 867	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Spring Garden - 1513	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Spring Garden - 1644	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
St. Clair College - 2480	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Villa Borghese - 828	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Villa Paradiso Cres. - 848	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Background Value	**3.8x10-6**	**5.1x10-6**		

Note: Values in **bold** exceed an incremental risk level of 1×10^{-6}

B.6 Hazard Quotients

TABLE B.6-1: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO BENZENE (INCLUDING BACKGROUND) FOR YEAR 2015

Receptor Location	"No Build"					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
Ball Field - 2479	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Bellwood Estates - 58	0.12	0.10	0.10	0.10	0.09	0.12	0.10	0.10	0.10	0.09
Bellwood Estates - 403	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Grand Marais Roads - 74	0.11	0.10	0.10	0.09	0.09	0.11	0.10	0.10	0.09	0.09
Grand Marais Roads - 186	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Heritage Estates - 910	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
Home for Aged LaSalle - 944	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
Home for Aged LaSalle - 945	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
Huron Estates - 295	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Huron Estates - 410	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Kendleton Court - 781	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Oliver Estates - 858	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Oliver Estates - 1997	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Reddock - 423	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Residential - 2478	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
Southwood Lakes - 867	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Spring Garden - 1513	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Spring Garden - 1644	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
St. Clair College - 2480	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
Villa Borghese - 828	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Villa Paradiso Cres. - 848	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Background	0.11	0.09	0.09	0.09	0.08					

TABLE B.6-2: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO 1,3-BUTADIENE (INCLUDING BACKGROUND) FOR YEAR 2015

Receptor Location	"No Build"					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
Ball Field - 2479	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Bellwood Estates - 58	0.10	0.10	0.10	0.10	0.10	0.09	0.09	0.09	0.09	0.09
Bellwood Estates - 403	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Grand Marais Roads - 74	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Grand Marais Roads - 186	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Heritage Estates - 910	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Home for Aged LaSalle - 944	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Home for Aged LaSalle - 945	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Huron Estates - 295	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Huron Estates - 410	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Kendleton Court - 781	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Oliver Estates - 858	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09
Oliver Estates - 1997	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09
Reddock - 423	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Residential - 2478	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Southwood Lakes - 867	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Spring Garden - 1513	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09
Spring Garden - 1644	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09
St. Clair College - 2480	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Villa Borghese - 828	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Villa Paradiso Cres. - 848	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Background	0.08	0.08	0.08	0.08	0.08					

TABLE B.6-3: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO FORMALDEHYDE (INCLUDING BACKGROUND) FOR YEAR 2015

Receptor Location	"No Build"					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
Ball Field - 2479	**44.7**	**24.6**	**18.6**	**13.7**	**10.9**	**44.6**	**24.6**	**18.6**	**13.7**	**10.8**
Bellwood Estates - 58	**46.1**	**25.4**	**19.2**	**14.2**	**11.2**	**45.3**	**25.0**	**18.9**	**13.9**	**11.0**
Bellwood Estates - 403	**44.6**	**24.6**	**18.6**	**13.7**	**10.8**	**44.5**	**24.6**	**18.5**	**13.7**	**10.8**
Grand Marais Roads - 74	**45.8**	**25.2**	**19.1**	**14.1**	**11.1**	**45.2**	**24.9**	**18.8**	**13.9**	**11.0**
Grand Marais Roads - 186	**45.2**	**24.9**	**18.8**	**13.9**	**11.0**	**44.8**	**24.7**	**18.7**	**13.8**	**10.9**
Heritage Estates - 910	**44.3**	**24.4**	**18.5**	**13.6**	**10.8**	**44.4**	**24.5**	**18.5**	**13.6**	**10.8**
Home for Aged LaSalle - 944	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**	**44.4**	**24.5**	**18.5**	**13.6**	**10.8**
Home for Aged LaSalle - 945	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**
Huron Estates - 295	**44.7**	**24.6**	**18.6**	**13.7**	**10.9**	**44.6**	**24.6**	**18.6**	**13.7**	**10.9**
Huron Estates - 410	**44.5**	**24.6**	**18.5**	**13.7**	**10.8**	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**
Kendleton Court - 781	**44.7**	**24.7**	**18.6**	**13.7**	**10.9**	**44.8**	**24.7**	**18.6**	**13.8**	**10.9**
Oliver Estates - 858	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**	**44.8**	**24.7**	**18.6**	**13.8**	**10.9**
Oliver Estates - 1997	**44.5**	**24.6**	**18.6**	**13.7**	**10.8**	**44.9**	**24.7**	**18.7**	**13.8**	**10.9**
Reddock - 423	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**
Residential - 2478	**44.4**	**24.5**	**18.5**	**13.6**	**10.8**	**44.4**	**24.5**	**18.5**	**13.6**	**10.8**
Southwood Lakes - 867	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**	**44.5**	**24.6**	**18.5**	**13.7**	**10.8**
Spring Garden - 1513	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**	**44.6**	**24.6**	**18.6**	**13.7**	**10.9**
Spring Garden - 1644	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**	**44.5**	**24.6**	**18.5**	**13.7**	**10.8**
St. Clair College - 2480	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**	**44.4**	**24.5**	**18.5**	**13.6**	**10.8**
Villa Borghese - 828	**44.5**	**24.6**	**18.6**	**13.7**	**10.8**	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**
Villa Paradiso Cres. - 848	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**	**44.5**	**24.6**	**18.5**	**13.7**	**10.8**
Background	**44.1**	**24.3**	**18.3**	**13.5**	**10.7**					

Note: Values in **bold** exceed a hazard quotient value of 0.2

TABLE B.6-4: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO ACETALDEHYDE (INCLUDING BACKGROUND) FOR YEAR 2015

Receptor Location	"No Build"					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
Ball Field - 2479	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Bellwood Estates - 58	**0.28**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**
Bellwood Estates - 403	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Grand Marais Roads - 74	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**
Grand Marais Roads - 186	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.26**
Heritage Estates - 910	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Home for Aged LaSalle - 944	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Home for Aged LaSalle - 945	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Huron Estates - 295	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Huron Estates - 410	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Kendleton Court - 781	**0.27**	**0.27**	**0.27**	**0.27**	**0.26**	**0.27**	**0.27**	**0.27**	**0.27**	**0.26**
Oliver Estates - 858	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.27**	**0.26**
Oliver Estates - 1997	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**
Reddock - 423	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Residential - 2478	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Southwood Lakes - 867	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Spring Garden - 1513	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Spring Garden - 1644	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
St. Clair College - 2480	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Villa Borghese - 828	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Villa Paradiso Cres. - 848	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Background	**0.27**	**0.26**	**0.26**	**0.26**	**0.26**					

Note: Values in **bold** exceed a hazard quotient value of 0.2

TABLE B.6-5: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO ACROLEIN (INCLUDING BACKGROUND) FOR YEAR 2015

Receptor Location	"No Build"					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
Ball Field - 2479	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**
Bellwood Estates - 58	**8.4**	**8.2**	**8.2**	**8.2**	**8.2**	**8.2**	**8.0**	**8.0**	**8.0**	**8.0**
Bellwood Estates - 403	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Grand Marais Roads - 74	**8.3**	**8.1**	**8.1**	**8.1**	**8.1**	**8.1**	**8.0**	**8.0**	**7.9**	**7.9**
Grand Marais Roads - 186	**8.1**	**7.9**	**7.9**	**7.9**	**7.9**	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**
Heritage Estates - 910	**7.8**	**7.7**	**7.7**	**7.6**	**7.6**	**7.8**	**7.7**	**7.7**	**7.6**	**7.6**
Home for Aged LaSalle - 944	**7.8**	**7.7**	**7.7**	**7.6**	**7.6**	**7.8**	**7.7**	**7.7**	**7.6**	**7.6**
Home for Aged LaSalle - 945	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.8**	**7.7**	**7.7**	**7.6**	**7.6**
Huron Estates - 295	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**
Huron Estates - 410	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Kendleton Court - 781	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**
Oliver Estates - 858	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**
Oliver Estates - 1997	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**
Reddock - 423	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Residential - 2478	**7.8**	**7.7**	**7.7**	**7.6**	**7.6**	**7.8**	**7.7**	**7.7**	**7.6**	**7.6**
Southwood Lakes - 867	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Spring Garden - 1513	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**
Spring Garden - 1644	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
St. Clair College - 2480	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Villa Borghese - 828	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Villa Paradiso Cres. - 848	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**
Background	**7.7**	**7.6**	**7.6**	**7.6**	**7.6**					

Note: Values in **bold** exceed a hazard quotient value of 0.2

TABLE B.6-6: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO BENZENE (INCLUDING BACKGROUND) FOR YEAR 2025

Receptor Location	"No Build"					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
Ball Field - 2479	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Bellwood Estates - 58	0.12	0.10	0.10	0.09	0.09	0.12	0.10	0.10	0.09	0.09
Bellwood Estates - 403	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Grand Marais Roads - 74	0.11	0.10	0.10	0.09	0.09	0.11	0.10	0.10	0.09	0.09
Grand Marais Roads - 186	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Heritage Estates - 910	0.11	0.09	0.09	0.09	0.08	0.11	0.09	0.09	0.09	0.09
Home for Aged LaSalle - 944	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
Home for Aged LaSalle - 945	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
Huron Estates - 295	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Huron Estates - 410	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
Kendleton Court - 781	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Oliver Estates - 858	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Oliver Estates - 1997	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Reddock - 423	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
Residential - 2478	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
Southwood Lakes - 867	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Spring Garden - 1513	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Spring Garden - 1644	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
St. Clair College - 2480	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
Villa Borghese - 828	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Villa Paradiso Cres. - 848	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
Background	0.11	0.09	0.09	0.09	0.08					

TABLE B.6-7: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO 1,3-BUTADIENE (INCLUDING BACKGROUND) FOR YEAR 2025

Receptor Location	"No Build"					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
Ball Field - 2479	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Bellwood Estates - 58	0.10	0.10	0.10	0.10	0.10	0.09	0.09	0.09	0.09	0.09
Bellwood Estates - 403	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Grand Marais Roads - 74	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Grand Marais Roads - 186	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Heritage Estates - 910	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Home for Aged LaSalle - 944	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Home for Aged LaSalle - 945	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Huron Estates - 295	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09
Huron Estates - 410	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Kendleton Court - 781	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09
Oliver Estates - 858	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09
Oliver Estates - 1997	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09
Reddock - 423	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Residential - 2478	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Southwood Lakes - 867	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Spring Garden - 1513	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09
Spring Garden - 1644	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09
St. Clair College - 2480	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Villa Borghese - 828	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Villa Paradiso Cres. - 848	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Background	0.08	0.08	0.08	0.08	0.08					

TABLE B.6-8: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO FORMALDEHYDE (INCLUDING BACKGROUND) FOR YEAR 2025

Receptor Location	"No Build"					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
Ball Field - 2479	**44.6**	**24.6**	**18.6**	**13.7**	**10.9**	**44.6**	**24.6**	**18.6**	**13.7**	**10.8**
Bellwood Estates - 58	**46.0**	**25.4**	**19.2**	**14.1**	**11.2**	**45.3**	**25.0**	**18.9**	**13.9**	**11.0**
Bellwood Estates - 403	**44.6**	**24.6**	**18.6**	**13.7**	**10.8**	**44.5**	**24.6**	**18.6**	**13.7**	**10.8**
Grand Marais Roads - 74	**45.7**	**25.2**	**19.0**	**14.1**	**11.1**	**45.2**	**24.9**	**18.8**	**13.9**	**11.0**
Grand Marais Roads - 186	**45.1**	**24.9**	**18.8**	**13.9**	**11.0**	**44.8**	**24.7**	**18.7**	**13.8**	**10.9**
Heritage Estates - 910	**44.3**	**24.4**	**18.5**	**13.6**	**10.8**	**44.4**	**24.5**	**18.5**	**13.6**	**10.8**
Home for Aged LaSalle - 944	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**
Home for Aged LaSalle - 945	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**
Huron Estates - 295	**44.6**	**24.6**	**18.6**	**13.7**	**10.9**	**44.7**	**24.6**	**18.6**	**13.7**	**10.9**
Huron Estates - 410	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**
Kendleton Court - 781	**44.7**	**24.6**	**18.6**	**13.7**	**10.9**	**44.8**	**24.7**	**18.7**	**13.8**	**10.9**
Oliver Estates - 858	**44.4**	**24.5**	**18.5**	**13.6**	**10.8**	**44.8**	**24.7**	**18.6**	**13.8**	**10.9**
Oliver Estates - 1997	**44.5**	**24.6**	**18.5**	**13.7**	**10.8**	**44.9**	**24.8**	**18.7**	**13.8**	**10.9**
Reddock - 423	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**	**44.5**	**24.6**	**18.5**	**13.7**	**10.8**
Residential - 2478	**44.4**	**24.5**	**18.5**	**13.6**	**10.8**	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**
Southwood Lakes - 867	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**
Spring Garden - 1513	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**	**44.6**	**24.6**	**18.6**	**13.7**	**10.8**
Spring Garden - 1644	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**	**44.5**	**24.6**	**18.6**	**13.7**	**10.8**
St. Clair College - 2480	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**	**44.4**	**24.5**	**18.5**	**13.6**	**10.8**
Villa Borghese - 828	**44.5**	**24.6**	**18.5**	**13.7**	**10.8**	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**
Villa Paradiso Cres. - 848	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**	**44.6**	**24.6**	**18.6**	**13.7**	**10.8**
Background	**44.1**	**24.3**	**18.3**	**13.5**	**10.7**					

Note: Values in **bold** exceed a hazard quotient value of 0.2

TABLE B.6-9: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO ACETALDEHYDE (INCLUDING BACKGROUND) FOR YEAR 2025

Receptor Location	"No Build"					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
Ball Field - 2479	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Bellwood Estates - 58	**0.28**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**
Bellwood Estates - 403	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Grand Marais Roads - 74	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**
Grand Marais Roads - 186	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**
Heritage Estates - 910	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Home for Aged LaSalle - 944	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Home for Aged LaSalle - 945	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Huron Estates - 295	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Huron Estates - 410	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Kendleton Court - 781	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.27**	**0.26**
Oliver Estates - 858	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.27**	**0.26**
Oliver Estates - 1997	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**
Reddock - 423	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Residential - 2478	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Southwood Lakes - 867	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Spring Garden - 1513	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Spring Garden - 1644	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
St. Clair College - 2480	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Villa Borghese - 828	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Villa Paradiso Cres. - 848	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Background	**0.27**	**0.26**	**0.26**	**0.26**	**0.26**					

Note: Values in **bold** exceed a hazard quotient value of 0.2

TABLE B.6-10: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO ACROLEIN (INCLUDING BACKGROUND) FOR YEAR 2025

Receptor Location	"No Build"					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
Ball Field - 2479	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**
Bellwood Estates - 58	**8.3**	**8.2**	**8.2**	**8.1**	**8.1**	**8.1**	**8.0**	**8.0**	**7.9**	**7.9**
Bellwood Estates - 403	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Grand Marais Roads - 74	**8.3**	**8.1**	**8.1**	**8.1**	**8.1**	**8.1**	**7.9**	**7.9**	**7.9**	**7.9**
Grand Marais Roads - 186	**8.1**	**7.9**	**7.9**	**7.9**	**7.9**	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**
Heritage Estates - 910	**7.8**	**7.7**	**7.7**	**7.6**	**7.6**	**7.8**	**7.7**	**7.7**	**7.6**	**7.6**
Home for Aged LaSalle - 944	**7.8**	**7.7**	**7.7**	**7.6**	**7.6**	**7.8**	**7.7**	**7.7**	**7.6**	**7.6**
Home for Aged LaSalle - 945	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.8**	**7.7**	**7.7**	**7.6**	**7.6**
Huron Estates - 295	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**
Huron Estates - 410	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Kendleton Court - 781	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**
Oliver Estates - 858	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**
Oliver Estates - 1997	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**	**8.0**	**7.9**	**7.9**	**7.8**	**7.8**
Reddock - 423	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Residential - 2478	**7.8**	**7.7**	**7.7**	**7.6**	**7.6**	**7.8**	**7.7**	**7.7**	**7.6**	**7.6**
Southwood Lakes - 867	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Spring Garden - 1513	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**
Spring Garden - 1644	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**
St. Clair College - 2480	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Villa Borghese - 828	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Villa Paradiso Cres. - 848	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**
Background	**7.7**	**7.6**	**7.6**	**7.6**	**7.6**					

Note: Values in **bold** exceed a hazard quotient value of 0.2

TABLE B.6-11: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO BENZENE (INCLUDING BACKGROUND) FOR YEAR 2035

Receptor Location	"No Build"					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
Ball Field - 2479	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Bellwood Estates - 58	0.12	0.10	0.10	0.09	0.09	0.12	0.10	0.10	0.09	0.09
Bellwood Estates - 403	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Grand Marais Roads - 74	0.11	0.10	0.10	0.09	0.09	0.11	0.10	0.10	0.09	0.09
Grand Marais Roads - 186	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Heritage Estates - 910	0.11	0.09	0.09	0.09	0.08	0.11	0.09	0.09	0.09	0.09
Home for Aged LaSalle - 944	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
Home for Aged LaSalle - 945	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
Huron Estates - 295	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Huron Estates - 410	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Kendleton Court - 781	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Oliver Estates - 858	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Oliver Estates - 1997	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Reddock - 423	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Residential - 2478	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
Southwood Lakes - 867	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Spring Garden - 1513	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Spring Garden - 1644	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
St. Clair College - 2480	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
Villa Borghese - 828	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Villa Paradiso Cres. - 848	0.11	0.09	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Background Value	0.11	0.09	0.09	0.09	0.08					

TABLE B.6-12: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO 1,3-BUTADIENE (INCLUDING BACKGROUND) FOR YEAR 2035

Receptor Location	"No Build"					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
Ball Field - 2479	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Bellwood Estates - 58	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Bellwood Estates - 403	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09
Grand Marais Roads - 74	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Grand Marais Roads - 186	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Heritage Estates - 910	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Home for Aged LaSalle - 944	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Home for Aged LaSalle - 945	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Huron Estates - 295	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Huron Estates - 410	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Kendleton Court - 781	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Oliver Estates - 858	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09
Oliver Estates - 1997	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09
Reddock - 423	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Residential - 2478	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Southwood Lakes - 867	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Spring Garden - 1513	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09
Spring Garden - 1644	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09
St. Clair College - 2480	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Villa Borghese - 828	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Villa Paradiso Cres. - 848	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Background Value	0.08	0.08	0.08	0.08	0.08					

TABLE B.6-13: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO FORMALDEHYDE (INCLUDING BACKGROUND) FOR YEAR 2035

Receptor Location	"No Build"					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
Ball Field - 2479	**44.7**	**24.7**	**18.6**	**13.8**	**10.9**	**44.7**	**24.6**	**18.6**	**13.7**	**10.9**
Bellwood Estates - 58	**46.2**	**25.5**	**19.2**	**14.2**	**11.2**	**45.5**	**25.1**	**19.0**	**14.0**	**11.1**
Bellwood Estates - 403	**44.6**	**24.6**	**18.6**	**13.7**	**10.9**	**44.6**	**24.6**	**18.6**	**13.7**	**10.9**
Grand Marais Roads - 74	**45.9**	**25.3**	**19.1**	**14.1**	**11.2**	**45.3**	**25.0**	**18.9**	**13.9**	**11.0**
Grand Marais Roads - 186	**45.3**	**25.0**	**18.9**	**13.9**	**11.0**	**44.9**	**24.8**	**18.7**	**13.8**	**10.9**
Heritage Estates - 910	**44.4**	**24.5**	**18.5**	**13.6**	**10.8**	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**
Home for Aged LaSalle - 944	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**
Home for Aged LaSalle - 945	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**
Huron Estates - 295	**44.7**	**24.7**	**18.6**	**13.7**	**10.9**	**44.7**	**24.7**	**18.6**	**13.8**	**10.9**
Huron Estates - 410	**44.5**	**24.6**	**18.6**	**13.7**	**10.8**	**44.5**	**24.6**	**18.6**	**13.7**	**10.8**
Kendleton Court - 781	**44.8**	**24.7**	**18.6**	**13.8**	**10.9**	**44.9**	**24.8**	**18.7**	**13.8**	**10.9**
Oliver Estates - 858	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**	**44.9**	**24.7**	**18.7**	**13.8**	**10.9**
Oliver Estates - 1997	**44.6**	**24.6**	**18.6**	**13.7**	**10.8**	**45.0**	**24.8**	**18.7**	**13.8**	**10.9**
Reddock - 423	**44.5**	**24.6**	**18.5**	**13.7**	**10.8**	**44.6**	**24.6**	**18.6**	**13.7**	**10.8**
Residential - 2478	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**
Southwood Lakes - 867	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**	**44.6**	**24.6**	**18.6**	**13.7**	**10.8**
Spring Garden - 1513	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**	**44.8**	**24.7**	**18.6**	**13.8**	**10.9**
Spring Garden - 1644	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**	**44.7**	**24.6**	**18.6**	**13.7**	**10.9**
St. Clair College - 2480	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**
Villa Borghese - 828	**44.6**	**24.6**	**18.6**	**13.7**	**10.8**	**44.5**	**24.6**	**18.5**	**13.7**	**10.8**
Villa Paradiso Cres. - 848	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**	**44.6**	**24.6**	**18.6**	**13.7**	**10.9**
Background Value	**44.1**	**24.3**	**18.3**	**13.5**	**10.7**					

Note: Values in **bold** exceed a hazard quotient value of 0.2

TABLE B.6-14: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO ACETALDEHYDE (INCLUDING BACKGROUND) FOR YEAR 2035

Receptor Location	"No Build"					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
Ball Field - 2479	**0.27**	**0.27**	**0.27**	**0.27**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Bellwood Estates - 58	**0.28**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**
Bellwood Estates - 403	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Grand Marais Roads - 74	**0.28**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**
Grand Marais Roads - 186	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**
Heritage Estates - 910	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Home for Aged LaSalle - 944	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Home for Aged LaSalle - 945	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Huron Estates - 295	**0.27**	**0.27**	**0.27**	**0.27**	**0.26**	**0.27**	**0.27**	**0.27**	**0.27**	**0.26**
Huron Estates - 410	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Kendleton Court - 781	**0.27**	**0.27**	**0.27**	**0.27**	**0.26**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**
Oliver Estates - 858	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**
Oliver Estates - 1997	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**
Reddock - 423	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Residential - 2478	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Southwood Lakes - 867	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Spring Garden - 1513	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.27**	**0.26**
Spring Garden - 1644	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
St. Clair College - 2480	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Villa Borghese - 828	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Villa Paradiso Cres. - 848	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**
Background Value	**0.27**	**0.26**	**0.26**	**0.26**	**0.26**					

Note: Values in **bold** exceed a hazard quotient value of 0.2

TABLE B.6-15: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO ACROLEIN (INCLUDING BACKGROUND) FOR YEAR 2035

Receptor Location	"No Build"					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
Ball Field - 2479	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**
Bellwood Estates - 58	**8.4**	**8.3**	**8.3**	**8.2**	**8.2**	**8.2**	**8.0**	**8.0**	**8.0**	**8.0**
Bellwood Estates - 403	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**
Grand Marais Roads - 74	**8.3**	**8.2**	**8.2**	**8.1**	**8.1**	**8.1**	**8.0**	**8.0**	**7.9**	**7.9**
Grand Marais Roads - 186	**8.1**	**8.0**	**8.0**	**7.9**	**7.9**	**8.0**	**7.9**	**7.9**	**7.8**	**7.8**
Heritage Estates - 910	**7.8**	**7.7**	**7.7**	**7.6**	**7.6**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Home for Aged LaSalle - 944	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Home for Aged LaSalle - 945	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.8**	**7.7**	**7.7**	**7.6**	**7.6**
Huron Estates - 295	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**
Huron Estates - 410	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Kendleton Court - 781	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**	**8.0**	**7.9**	**7.9**	**7.8**	**7.8**
Oliver Estates - 858	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**
Oliver Estates - 1997	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**	**8.0**	**7.9**	**7.9**	**7.8**	**7.8**
Reddock - 423	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**
Residential - 2478	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Southwood Lakes - 867	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Spring Garden - 1513	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**
Spring Garden - 1644	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**
St. Clair College - 2480	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Villa Borghese - 828	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**
Villa Paradiso Cres. - 848	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**
Background Value	**7.7**	**7.6**	**7.6**	**7.6**	**7.6**					

Note: Values in **bold** exceed a hazard quotient value of 0.2

B.7 Receptors Along Huron Church Road to the Ambassador Bridge for Horizon Year 2035

The results presented in Appendix B.7 are the maximum predicted air concentrations, soil concentrations, doses, risks and hazards presented to human receptors outside the area of continued analysis (i.e., along the existing Huron-Church Road). Although the human receptors selected in the HHRA will encompass the exposure to this receptor, since the air concentrations will decrease with distance from the proposed Parkway (the area of continued analysis), this appendix summarizes the risks and hazards to these out-of-area receptors.

TABLE B.7-1: MAXIMUM PREDICTED AIR CONCENTRATIONS (INCLUDING BACKGROUND) ALONG HURON CHURCH ROAD* FOR GASEOUS AIR POLLUTANTS EMITTED FROM VEHICLES FOR YEAR 2035

Receptor Location	NO_x 1 hr ($\mu g/m^3$)		NO_x Annual ($\mu g/m^3$)		SO_2 1 hr ($\mu g/m^3$)		SO_2 24 hr ($\mu g/m^3$)		$PM_{2.5}$ 24 hr ($\mu g/m^3$)	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
College to Girardot - 32	304.3	170.3	77.7	71.3	32.7	32.7	32.2	32.2	25.4	21.5
College to Girardot - 29	255.1	131.2	78.5	71.8	32.6	32.5	32.2	32.2	26.3	21.3
Girardot to Tecumseh - 35	379.8	224.4	73.6	71.2	32.7	32.7	32.2	32.2	25.4	21.3
Tecumseh to Prince/Totten - 46	281.6	146.1	85.1	72.6	32.6	32.6	32.2	32.2	24.9	21.3
Prince/Totten to Malden - 49	259.3	212.3	76.5	72.1	32.8	32.8	32.2	32.2	24.5	21.6
Malden to Industrial - 55	310.2	138.0	83.7	72.4	32.8	32.7	32.3	32.3	26.2	22.2
Malden to Industrial - 155	282.8	108.1	72.2	71.0	32.6	32.6	32.1	32.1	24.3	22.0
Industrial to EC Row - 1768	256.8	126.0	87.4	73.0	32.8	32.7	32.3	32.3	25.7	22.0
Background	70		70		32		32		21	

Note: *Values are for receptors located along the existing Huron Church Access Road to the Ambassador Bridge; values change from “No Build” to “Parkway” because of the differences in traffic congestion along the Huron Church Road for the two scenarios (increased traffic along this road in the No Build scenario as compared to the Parkway scenario where traffic is diverted to the new crossing)

TABLE B.7-2: HAZARD QUOTIENT ASSOCIATED WITH EXPOSURE TO GASEOUS AIR POLLUTANTS (INCLUDING BACKGROUND) FOR RECEPTORS ALONG HURON CHURCH ROAD* FOR YEAR 2035

Receptor Location	TRV=200 µg/m^3		TRV=40 µg/m^3		TRV=350 µg/m^3		TRV=125 µg/m^3		TRV=15 µg/m^{3,*}		TRV=7 µg/m^{3,*}	
	NO_x 1 hr		NO_x Annual		SO_2 1 hr		SO_2 24 hr		$PM_{2.5}$ 24 hr		$PM_{2.5}$ 24 hr	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
College to Girardot - 32	0.56	0.65	**1.78**	**1.80**	0.09	0.10	0.26	0.26	**1.5**	**1.8**	**3.1**	**3.9**
College to Girardot - 29	0.97	0.80	**1.84**	**1.81**	0.09	0.10	0.26	0.26	**1.6**	**2.1**	**3.4**	**4.5**
Girardot to Tecumseh - 35	0.93	0.63	**1.81**	**1.78**	0.09	0.09	0.26	0.26	**1.6**	**1.6**	**3.4**	**3.5**
Tecumseh to Prince/Totten - 46	**1.00**	0.62	**1.87**	**1.80**	0.09	0.09	0.26	0.26	**1.6**	**1.7**	**3.5**	**3.7**
Prince/Totten to Malden - 49	**1.23**	0.64	**1.89**	**1.77**	0.09	0.09	0.26	0.26	**1.6**	**1.6**	**3.5**	**3.5**
Malden to Industrial - 55	0.96	0.56	**1.83**	**1.78**	0.09	0.09	0.26	0.26	**1.7**	**1.5**	**3.7**	**3.2**
Malden to Industrial - 155	**1.58**	0.64	**1.80**	**1.77**	0.09	0.09	0.26	0.26	**1.6**	**1.7**	**3.4**	**3.6**
Industrial to EC Row - 1768	**1.10**	0.58	**1.84**	**1.82**	0.09	0.09	0.26	0.26	**1.8**	**1.5**	**3.9**	**3.3**
Background	0.35		**1.75**		0.09		0.26		**1.4**		**3.0**	

Note: *Values are for receptors located along the existing Huron Church Access Road to the Ambassador Bridge; values change from "No Build" to "Parkway" because of the differences in traffic congestion along the Huron Church Road for the two scenarios (increased traffic along this road in the No Build scenario as compared to the Parkway scenario where traffic is diverted to the new crossing)

- Values in **bold** exceed a hazard quotient value of 1.0

* - Calculations for two different TRVs have been provided for $PM_{2.5}$ to show the diverse thoughts on $PM_{2.5}$

TABLE B.7-3: MAXIMUM PREDICTED AIR CONCENTRATIONS (INCLUDING BACKGROUND) (µg/m³) ALONG HURON CHURCH ROAD* FOR VOC EMITTED FROM VEHICLES IN YEAR 2035

Receptor Location	Benzene		1,3-Butadiene		Formaldehyde		Acetaldehyde		Acrolein	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
College to Girardot - 32	2.356	2.352	0.165	0.164	4.346	4.327	2.354	2.347	0.152	0.151
College to Girardot - 29	2.368	2.367	0.167	0.165	4.360	4.333	2.359	2.349	0.153	0.151
Girardot to Tecumseh - 35	2.357	2.352	0.165	0.164	4.345	4.327	2.354	2.347	0.152	0.151
Tecumseh to Prince/Totten - 46	2.383	2.382	0.169	0.167	4.369	4.339	2.363	2.352	0.153	0.152
Prince/Totten to Malden - 49	2.368	2.368	0.167	0.166	4.354	4.335	2.357	2.350	0.152	0.151
Malden to Industrial - 55	2.393	2.384	0.170	0.167	4.377	4.342	2.366	2.353	0.154	0.152
Malden to Industrial - 155	2.346	2.349	0.164	0.163	4.336	4.327	2.350	2.347	0.151	0.151
Industrial to EC Row - 1768	2.413	2.401	0.173	0.169	4.389	4.349	2.371	2.356	0.155	0.152
Background	2.32		0.16		4.31		2.34		0.15	

Note: *Values are for receptors located along the existing Huron Church Access Road to the Ambassador Bridge; values change from "No Build" to "Parkway" because of the differences in traffic congestion along the Huron Church Road for the two scenarios (increased traffic along this road in the No Build scenario as compared to the Parkway scenario where traffic is diverted to the new crossing)

TABLE B.7-4: MAXIMUM PREDICTED SOIL CONCENTRATIONS (mg/kg) ALONG HURON CHURCH ROAD* FOR VOC EMITTED FROM VEHICLES IN YEAR 2035

Receptor Location	Benzene		1,3-Butadiene		Formaldehyde		Acetaldehyde		Acrolein	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
College to Girardot - 32	0.00349	0.00349	0.0000130	0.0000130	72.7	72.4	0.00196	0.00195	0.000225	0.000224
College to Girardot - 29	0.00351	0.00351	0.0000132	0.0000130	72.9	72.5	0.00196	0.00195	0.000227	0.000224
Girardot to Tecumseh - 35	0.00349	0.00349	0.0000130	0.0000130	72.7	72.4	0.00196	0.00195	0.000225	0.000224
Tecumseh to Prince/Totten - 46	0.00353	0.00353	0.0000134	0.0000132	73.1	72.6	0.00197	0.00196	0.000227	0.000225
Prince/Totten to Malden - 49	0.00351	0.00351	0.0000132	0.0000131	72.8	72.5	0.00196	0.00196	0.000225	0.000224
Malden to Industrial - 55	0.00355	0.00353	0.0000134	0.0000132	73.2	72.6	0.00197	0.00196	0.000228	0.000225
Malden to Industrial - 155	0.00348	0.00348	0.0000130	0.0000129	72.5	72.4	0.00196	0.00195	0.000224	0.000224
Industrial to EC Row - 1768	0.00358	0.00356	0.0000137	0.0000134	73.4	72.7	0.00197	0.00196	0.000230	0.000225

Note: *Values are for receptors located along the existing Huron Church Access Road to the Ambassador Bridge; values change from "No Build" to "Parkway" because of the differences in traffic congestion along the Huron Church Road for the two scenarios (increased traffic along this road in the No Build scenario as compared to the Parkway scenario where traffic is diverted to the new crossing)

TABLE B.7-5: INHALATION EXPOSURE CONCENTRATIONS (mg/m^3, INCLUDING BACKGROUND) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS ALONG HURON CHURCH ROAD* EXPOSED TO VOC IN YEAR 2035

Receptor Location	Benzene		1,3-Butadiene		Formaldehyde		Acetaldehyde		Acrolein	
	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
College to Girardot - 32	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.6x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.3x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
College to Girardot - 29	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.3x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Girardot to Tecumseh - 35	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.6x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.3x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Tecumseh to Prince/Totten - 46	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Prince/Totten to Malden - 49	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Malden to Industrial - 55	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Malden to Industrial - 155	$2.3x10^{-3}$	$2.3x10^{-3}$	$1.6x10^{-4}$	$1.6x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.3x10^{-3}$	$1.5x10^{-4}$	$1.5x10^{-4}$
Industrial to EC Row - 1768	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.7x10^{-4}$	$1.7x10^{-4}$	NA	NA	$2.4x10^{-3}$	$2.4x10^{-3}$	$1.6x10^{-4}$	$1.5x10^{-4}$

Note: *Values are for receptors located along the existing Huron Church Access Road to the Ambassador Bridge; values change from “No Build” to “Parkway” because of the differences in traffic congestion along the Huron Church Road for the two scenarios (increased traffic along this road in the No Build scenario as compared to the Parkway scenario where traffic is diverted to the new crossing)
NA – not applicable; formaldehyde does not have an inhalation TRV for non-carcinogenic effects

TABLE B.7-6: INHALATION EXPOSURE CONCENTRATIONS (mg/m³, INCLUDING BACKGROUND) FOR CARCINOGENIC EFFECTS FOR ALL RECEPTORS ALONG HURON CHURCH ROAD* EXPOSED TO VOC IN YEAR 2035

Receptor	Chemical	Infant		Toddler		Child		Teen		Adult		Composite	
		No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
College to Girardot - 32	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
College to Girardot - 29	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Girardot to Tecumseh - 35	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Tecumseh to Prince/Totten - 46	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Prince/Totten to Malden - 49	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Malden to Industrial - 55	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.6x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Malden to Industrial - 155	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.3x10^{-3}$	$2.3x10^{-3}$
Industrial to EC Row - 1768	Benzene	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.3x10^{-4}$	$2.2x10^{-4}$	$2.6x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
College to Girardot - 32	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.5x10^{-5}$	$1.8x10^{-5}$	$1.7x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.6x10^{-4}$
College to Girardot - 29	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.8x10^{-6}$	$7.7x10^{-6}$	$1.6x10^{-5}$	$1.5x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Girardot to Tecumseh - 35	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.5x10^{-5}$	$1.8x10^{-5}$	$1.7x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.6x10^{-4}$
Tecumseh to Prince/Totten - 46	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.9x10^{-6}$	$7.8x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Prince/Totten to Malden - 49	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.8x10^{-6}$	$7.7x10^{-6}$	$1.6x10^{-5}$	$1.5x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Malden to Industrial - 55	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.9x10^{-6}$	$7.8x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.2x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
Malden to Industrial - 155	1,3-Butadiene	$1.1x10^{-6}$	$1.1x10^{-6}$	$7.7x10^{-6}$	$7.6x10^{-6}$	$1.5x10^{-5}$	$1.5x10^{-5}$	$1.7x10^{-5}$	$1.7x10^{-5}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$1.6x10^{-4}$	$1.6x10^{-4}$
Industrial to EC Row - 1768	1,3-Butadiene	$1.2x10^{-6}$	$1.1x10^{-6}$	$8.1x10^{-6}$	$7.9x10^{-6}$	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$1.7x10^{-4}$	$1.7x10^{-4}$
College to Girardot - 32	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.0x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$4.3x10^{-3}$
College to Girardot - 29	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.0x10^{-4}$	$4.7x10^{-4}$	$4.6x10^{-4}$	$3.3x10^{-3}$	$3.2x10^{-3}$	$4.4x10^{-3}$	$4.3x10^{-3}$
Girardot to Tecumseh - 35	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.0x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$4.3x10^{-3}$
Tecumseh to Prince/Totten - 46	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.0x10^{-4}$	$4.7x10^{-4}$	$4.6x10^{-4}$	$3.3x10^{-3}$	$3.2x10^{-3}$	$4.4x10^{-3}$	$4.3x10^{-3}$

Note: *Values are for receptors located along the existing Huron Church Access Road to the Ambassador Bridge; values change from “No Build” to “Parkway” because of the differences in traffic congestion along the Huron Church Road for the two scenarios (increased traffic along this road in the No Build scenario as compared to the Parkway scenario where traffic is diverted to the new crossing)

TABLE B.7-6: INHALATION EXPOSURE CONCENTRATIONS (mg/m³, INCLUDING BACKGROUND) FOR CARCINOGENIC EFFECTS FOR ALL RECEPTORS ALONG HURON CHURCH ROAD* EXPOSED TO VOC IN YEAR 2035 (CONT'D)

Receptor	Chemical	Infant		Toddler		Child		Teen		Adult		Composite	
		No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
Prince/Totten to Malden - 49	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.0x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.3x10^{-3}$	$3.2x10^{-3}$	$4.4x10^{-3}$	$4.3x10^{-3}$
Malden to Industrial - 55	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.7x10^{-4}$	$4.6x10^{-4}$	$3.3x10^{-3}$	$3.2x10^{-3}$	$4.4x10^{-3}$	$4.3x10^{-3}$
Malden to Industrial - 155	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.0x10^{-4}$	$4.0x10^{-4}$	$4.6x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$3.2x10^{-3}$	$4.3x10^{-3}$	$4.3x10^{-3}$
Industrial to EC Row - 1768	Formaldehyde	$2.9x10^{-5}$	$2.9x10^{-5}$	$2.0x10^{-4}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.1x10^{-4}$	$4.7x10^{-4}$	$4.6x10^{-4}$	$3.3x10^{-3}$	$3.2x10^{-3}$	$4.4x10^{-3}$	$4.3x10^{-3}$
College to Girardot - 32	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.3x10^{-3}$
College to Girardot - 29	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.3x10^{-3}$
Girardot to Tecumseh - 35	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.3x10^{-3}$
Tecumseh to Prince/Totten - 46	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Prince/Totten to Malden - 49	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Malden to Industrial - 55	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
Malden to Industrial - 155	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.3x10^{-3}$
Industrial to EC Row - 1768	Acetaldehyde	$1.6x10^{-5}$	$1.6x10^{-5}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$1.8x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$

Note: *Values are for receptors located along the existing Huron Church Access Road to the Ambassador Bridge; values change from "No Build" to "Parkway" because of the differences in traffic congestion along the Huron Church Road for the two scenarios (increased traffic along this road in the No Build scenario as compared to the Parkway scenario where traffic is diverted to the new crossing)

TABLE B.7-7: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC ALONG HURON CHURCH ROAD FOR THE FUTURE "NO BUILD" SCENARIO IN YEAR 2035

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
College to Girardot - 32	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
College to Girardot - 29	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Girardot to Tecumseh - 35	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Tecumseh to Prince/Totten - 46	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Prince/Totten to Malden - 49	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Malden to Industrial - 55	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Malden to Industrial - 155	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.2x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Industrial to EC Row - 1768	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.9x10^{-5}$	$4.9x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
College to Girardot - 32	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
College to Girardot - 29	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Girardot to Tecumseh - 35	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Tecumseh to Prince/Totten - 46	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.2x10^{-5}$	2.2	2.2
Prince/Totten to Malden - 49	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Malden to Industrial - 55	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
Malden to Industrial - 155	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Industrial to EC Row - 1768	Formaldehyde	$2.7x10^{-4}$	9.0	9.0	$8.9x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.8	2.8	$5.2x10^{-5}$	2.2	2.2
College to Girardot - 32	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
College to Girardot - 29	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Girardot to Tecumseh - 35	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Tecumseh to Prince/Totten - 46	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Prince/Totten to Malden - 49	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Malden to Industrial - 55	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$

TABLE B.7-7: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC ALONG HURON CHURCH ROAD FOR THE FUTURE "NO BUILD" SCENARIO IN YEAR 2035 (CONT'D)

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Malden to Industrial - 155	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Industrial to EC Row - 1768	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$8.0x10^{-4}$	$8.0x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.7x10^{-9}$	$4.5x10^{-4}$	$4.5x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
College to Girardot - 32	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
College to Girardot - 29	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Girardot to Tecumseh - 35	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Tecumseh to Prince/Totten - 46	Acrolein	$8.3x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Prince/Totten to Malden - 49	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Malden to Industrial - 55	Acrolein	$8.4x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.0x10^{-5}$	$7.0x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$
Malden to Industrial - 155	Acrolein	$8.2x10^{-10}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-9}$	$6.8x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Industrial to EC Row - 1768	Acrolein	$8.4x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.8x10^{-9}$	$7.0x10^{-5}$	$7.0x10^{-5}$	$3.5x10^{-10}$	$5.3x10^{-5}$	$5.3x10^{-5}$	$1.9x10^{-10}$	$3.9x10^{-5}$	$3.9x10^{-5}$	$1.6x10^{-10}$	$3.1x10^{-5}$	$3.1x10^{-5}$

TABLE B.7-8: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC ALONG HURON CHURCH ROAD FOR THE PARKWAY SCENARIO IN YEAR 2035

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
College to Girardot - 32	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
College to Girardot - 29	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Girardot to Tecumseh - 35	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Tecumseh to Prince/Totten - 46	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Prince/Totten to Malden - 49	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Malden to Industrial - 55	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.3x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Malden to Industrial - 155	Benzene	$1.3x10^{-8}$	$1.1x10^{-4}$	$1.1x10^{-4}$	$4.2x10^{-8}$	$6.3x10^{-5}$	$6.3x10^{-5}$	$5.3x10^{-9}$	$4.7x10^{-5}$	$4.7x10^{-5}$	$2.9x10^{-9}$	$3.5x10^{-5}$	$3.5x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
Industrial to EC Row - 1768	Benzene	$1.3x10^{-8}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$4.3x10^{-8}$	$6.4x10^{-5}$	$6.4x10^{-5}$	$5.4x10^{-9}$	$4.8x10^{-5}$	$4.8x10^{-5}$	$3.0x10^{-9}$	$3.6x10^{-5}$	$3.6x10^{-5}$	$2.5x10^{-9}$	$2.8x10^{-5}$	$2.8x10^{-5}$
College to Girardot - 32	Formaldehyde	$2.6x10^{-4}$	8.8	8.8	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
College to Girardot - 29	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Girardot to Tecumseh - 35	Formaldehyde	$2.6x10^{-4}$	8.8	8.8	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Tecumseh to Prince/Totten - 46	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Prince/Totten to Malden - 49	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Malden to Industrial - 55	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Malden to Industrial - 155	Formaldehyde	$2.6x10^{-4}$	8.8	8.8	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
Industrial to EC Row - 1768	Formaldehyde	$2.7x10^{-4}$	8.9	8.9	$8.8x10^{-4}$	4.9	4.9	$1.1x10^{-4}$	3.7	3.7	$6.1x10^{-5}$	2.7	2.7	$5.1x10^{-5}$	2.2	2.2
College to Girardot - 32	Acetaldehyde	$7.1x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
College to Girardot - 29	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Girardot to Tecumseh - 35	Acetaldehyde	$7.1x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Tecumseh to Prince/Totten - 46	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Prince/Totten to Malden - 49	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$

TABLE B.7-8: INGESTION DOSE (mg/(kg-d)) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC ALONG THE HURON CHURCH ROAD FOR THE PARKWAY SCENARIO IN YEAR 2035 (CONT'D)

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
Malden to Industrial - 55	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Malden to Industrial - 155	Acetaldehyde	$7.1x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
Industrial to EC Row - 1768	Acetaldehyde	$7.2x10^{-9}$	$1.4x10^{-3}$	$1.4x10^{-3}$	$2.4x10^{-8}$	$7.9x10^{-4}$	$7.9x10^{-4}$	$3.0x10^{-9}$	$6.0x10^{-4}$	$6.0x10^{-4}$	$1.6x10^{-9}$	$4.4x10^{-4}$	$4.4x10^{-4}$	$1.4x10^{-9}$	$3.5x10^{-4}$	$3.5x10^{-4}$
College to Girardot - 32	Acrolein	$8.2x10^{-10}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-9}$	$6.8x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
College to Girardot - 29	Acrolein	$8.2x10^{-10}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-9}$	$6.8x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Girardot to Tecumseh - 35	Acrolein	$8.2x10^{-10}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-9}$	$6.8x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Tecumseh to Prince/Totten - 46	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Prince/Totten to Malden - 49	Acrolein	$8.2x10^{-10}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-9}$	$6.8x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Malden to Industrial - 55	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Malden to Industrial - 155	Acrolein	$8.2x10^{-10}$	$1.2x10^{-4}$	$1.2x10^{-4}$	$2.7x10^{-9}$	$6.8x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$
Industrial to EC Row - 1768	Acrolein	$8.2x10^{-10}$	$1.3x10^{-4}$	$1.3x10^{-4}$	$2.7x10^{-9}$	$6.9x10^{-5}$	$6.9x10^{-5}$	$3.4x10^{-10}$	$5.2x10^{-5}$	$5.2x10^{-5}$	$1.9x10^{-10}$	$3.8x10^{-5}$	$3.8x10^{-5}$	$1.6x10^{-10}$	$3.0x10^{-5}$	$3.0x10^{-5}$

TABLE B.7-9: INGESTION DOSE (mg/(kg-d)) FOR CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC ALONG HURON CHURCH ROAD FOR THE FUTURE "NO BUILD" SCENARIO IN YEAR 2035

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult			Composite		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
College to Girardot - 32	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
College to Girardot - 29	Benzene	$8.6x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Girardot to Tecumseh - 35	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Tecumseh to Prince/Totten - 46	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Prince/Totten to Malden - 49	Benzene	$8.6x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Malden to Industrial - 55	Benzene	$8.7x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Malden to Industrial - 155	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$4.9x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.2x10^{-5}$	$3.2x10^{-5}$
Industrial to EC Row - 1768	Benzene	$8.7x10^{-11}$	$7.8x10^{-7}$	$7.8x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.1x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$

TABLE B.7-10: INGESTION DOSE (mg/(kg-d)) FOR CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC ALONG HURON CHURCH ROAD FOR THE PARKWAY SCENARIO IN YEAR 2035

Receptor	Chemical	Infant			Toddler			Child			Teen			Adult			Composite		
		Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total	Soil	Backyard Produce	Total
College to Girardot - 32	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$4.9x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.2x10^{-5}$	$3.2x10^{-5}$
College to Girardot - 29	Benzene	$8.6x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Girardot to Tecumseh - 35	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$4.9x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.2x10^{-5}$	$3.2x10^{-5}$
Tecumseh to Prince/Totten - 46	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Prince/Totten to Malden - 49	Benzene	$8.6x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$5.0x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Malden to Industrial - 55	Benzene	$8.6x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
Malden to Industrial - 155	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$4.9x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.2x10^{-5}$	$3.2x10^{-5}$
Industrial to EC Row - 1768	Benzene	$8.7x10^{-11}$	$7.7x10^{-7}$	$7.7x10^{-7}$	$2.0x10^{-9}$	$3.0x10^{-6}$	$3.0x10^{-6}$	$5.0x10^{-10}$	$4.5x10^{-6}$	$4.5x10^{-6}$	$3.2x10^{-10}$	$3.8x10^{-6}$	$3.8x10^{-6}$	$1.9x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.8x10^{-9}$	$3.3x10^{-5}$	$3.3x10^{-5}$
College to Girardot - 32	Benzene	$8.5x10^{-11}$	$7.6x10^{-7}$	$7.6x10^{-7}$	$2.0x10^{-9}$	$2.9x10^{-6}$	$2.9x10^{-6}$	$4.9x10^{-10}$	$4.4x10^{-6}$	$4.4x10^{-6}$	$3.1x10^{-10}$	$3.7x10^{-6}$	$3.7x10^{-6}$	$1.8x10^{-9}$	$2.1x10^{-5}$	$2.1x10^{-5}$	$4.7x10^{-9}$	$3.2x10^{-5}$	$3.2x10^{-5}$

TABLE B.7-11: INCREMENTAL RISKS ASSOCIATED WITH EXPOSURE TO BENZENE (INCLUDING BACKGROUND) ALONG HURON CHURCH ROAD* FOR YEAR 2035

Receptor Location	"No Build"		Parkway	
	Adult	Composite	Adult	Composite
College to Girardot - 32	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
College to Girardot - 29	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Girardot to Tecumseh - 35	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Tecumseh to Prince/Totten - 46	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Prince/Totten to Malden - 49	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Malden to Industrial - 55	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Malden to Industrial - 155	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Industrial to EC Row - 1768	**$1.3x10^{-5}$**	**$1.8x10^{-5}$**	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**
Background	**$1.2x10^{-5}$**	**$1.8x10^{-5}$**		

Note: Values in **bold** exceed an incremental risk level of 1×10^{-6}

*Values are for receptors located along the existing Huron Church Access Road to the Ambassador Bridge; values change from "No Build" to "Parkway" because of the differences in traffic congestion along the Huron Church Road for the two scenarios (increased traffic along this road in the No Build scenario as compared to the Parkway scenario where traffic is diverted to the new crossing)

TABLE B.7-12: INCREMENTAL RISKS ASSOCIATED WITH EXPOSURE TO 1,3-BUTADIENE (INCLUDING BACKGROUND) ALONG HURON CHURCH ROAD* FOR YEAR 2035

Receptor Location	"No Build"		Parkway	
	Adult	Composite	Adult	Composite
College to Girardot - 32	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.7x10^{-6}$**	**$4.9x10^{-6}$**
College to Girardot - 29	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Girardot to Tecumseh - 35	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.7x10^{-6}$**	**$4.9x10^{-6}$**
Tecumseh to Prince/Totten - 46	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Prince/Totten to Malden - 49	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Malden to Industrial - 55	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Malden to Industrial - 155	**$3.7x10^{-6}$**	**$4.9x10^{-6}$**	**$3.7x10^{-6}$**	**$4.9x10^{-6}$**
Industrial to EC Row - 1768	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
Background	**$3.6x10^{-6}$**	**$4.8x10^{-6}$**		

Note: Values in **bold** exceed an incremental risk level of 1×10^{-6}

*Values are for receptors located along the existing Huron Church Access Road to the Ambassador Bridge; values change from "No Build" to "Parkway" because of the differences in traffic congestion along the Huron Church Road for the two scenarios (increased traffic along this road in the No Build scenario as compared to the Parkway scenario where traffic is diverted to the new crossing)

TABLE B.7-13: INCREMENTAL RISKS ASSOCIATED WITH EXPOSURE TO FORMALDEHYDE (INCLUDING BACKGROUND) ALONG HURON CHURCH ROAD* FOR YEAR 2035

Receptor Location	"No Build"		Parkway	
	Adult	Composite	Adult	Composite
College to Girardot - 32	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
College to Girardot - 29	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Girardot to Tecumseh - 35	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Tecumseh to Prince/Totten - 46	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Prince/Totten to Malden - 49	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Malden to Industrial - 55	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Malden to Industrial - 155	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Industrial to EC Row - 1768	**$4.3x10^{-5}$**	**$5.7x10^{-5}$**	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**
Background	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**		

Note: Values in **bold** exceed an incremental risk level of 1×10^{-6}

*Values are for receptors located along the existing Huron Church Access Road to the Ambassador Bridge; values change from "No Build" to "Parkway" because of the differences in traffic congestion along the Huron Church Road for the two scenarios (increased traffic along this road in the No Build scenario as compared to the Parkway scenario where traffic is diverted to the new crossing)

TABLE B.7-14: INCREMENTAL RISKS ASSOCIATED WITH EXPOSURE TO ACETALDEHYDE (INCLUDING BACKGROUND) ALONG HURON CHURCH ROAD* FOR YEAR 2035

Receptor Location	"No Build"		Parkway	
	Adult	Composite	Adult	Composite
College to Girardot - 32	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
College to Girardot - 29	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Girardot to Tecumseh - 35	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Tecumseh to Prince/Totten - 46	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Prince/Totten to Malden - 49	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Malden to Industrial - 55	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Malden to Industrial - 155	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Industrial to EC Row - 1768	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Background	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**		

Note: Values in **bold** exceed an incremental risk level of 1×10^{-6}

*Values are for receptors located along the existing Huron Church Access Road to the Ambassador Bridge; values change from "No Build" to "Parkway" because of the differences in traffic congestion along the Huron Church Road for the two scenarios (increased traffic along this road in the No Build scenario as compared to the Parkway scenario where traffic is diverted to the new crossing)

TABLE B.7-15: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO BENZENE (INCLUDING BACKGROUND) ALONG HURON CHURCH ROAD* FOR YEAR 2035

Receptor Location	"No Build"					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
College to Girardot - 32	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
College to Girardot - 29	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
Girardot to Tecumseh - 35	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
Tecumseh to Prince/Totten - 46	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Prince/Totten to Malden - 49	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
Malden to Industrial - 55	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Malden to Industrial - 155	0.11	0.09	0.09	0.09	0.09	0.11	0.09	0.09	0.09	0.09
Industrial to EC Row - 1768	0.11	0.10	0.09	0.09	0.09	0.11	0.10	0.09	0.09	0.09
Background	0.11	0.09	0.09	0.09	0.08					

Note: *Values are for receptors located along the existing Huron Church Access Road to the Ambassador Bridge; values change from "No Build" to "Parkway" because of the differences in traffic congestion along the Huron Church Road for the two scenarios (increased traffic along this road in the No Build scenario as compared to the Parkway scenario where traffic is diverted to the new crossing)

TABLE B.7-16: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO 1,3-BUTADIENE (INCLUDING BACKGROUND) ALONG HURON CHURCH ROAD* FOR YEAR 2035

Receptor Location	"No Build"					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
College to Girardot - 32	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
College to Girardot - 29	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Girardot to Tecumseh - 35	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Tecumseh to Prince/Totten - 46	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Prince/Totten to Malden - 49	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Malden to Industrial - 55	0.09	0.09	0.09	0.09	0.09	0.08	0.08	0.08	0.08	0.08
Malden to Industrial - 155	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Industrial to EC Row - 1768	0.09	0.09	0.09	0.09	0.09	0.08	0.08	0.08	0.08	0.08
Background	0.08	0.08	0.08	0.08	0.08					

Note: *Values are for receptors located along the existing Huron Church Access Road to the Ambassador Bridge; values change from "No Build" to "Parkway" because of the differences in traffic congestion along the Huron Church Road for the two scenarios (increased traffic along this road in the No Build scenario as compared to the Parkway scenario where traffic is diverted to the new crossing)

TABLE B.7-17: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO FORMALDEHYDE (INCLUDING BACKGROUND) ALONG HURON CHURCH ROAD* FOR YEAR 2035

Receptor Location	"No Build"					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
College to Girardot - 32	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**	**44.2**	**24.4**	**18.4**	**13.6**	**10.8**
College to Girardot - 29	**44.6**	**24.6**	**18.6**	**13.7**	**10.8**	**44.3**	**24.4**	**18.4**	**13.6**	**10.8**
Girardot to Tecumseh - 35	**44.4**	**24.5**	**18.5**	**13.7**	**10.8**	**44.2**	**24.4**	**18.4**	**13.6**	**10.8**
Tecumseh to Prince/Totten - 46	**44.7**	**24.6**	**18.6**	**13.7**	**10.9**	**44.4**	**24.5**	**18.5**	**13.6**	**10.8**
Prince/Totten to Malden - 49	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**	**44.3**	**24.4**	**18.5**	**13.6**	**10.8**
Malden to Industrial - 55	**44.7**	**24.7**	**18.6**	**13.8**	**10.9**	**44.4**	**24.5**	**18.5**	**13.6**	**10.8**
Malden to Industrial - 155	**44.3**	**24.4**	**18.5**	**13.6**	**10.8**	**44.2**	**24.4**	**18.4**	**13.6**	**10.8**
Industrial to EC Row - 1768	**44.9**	**24.7**	**18.7**	**13.8**	**10.9**	**44.5**	**24.5**	**18.5**	**13.7**	**10.8**
Background	**44.1**	**24.3**	**18.3**	**13.5**	**10.7**					

Note: Values in **bold** exceed a hazard quotient value of 0.2

*Values are for receptors located along the existing Huron Church Access Road to the Ambassador Bridge; values change from "No Build" to "Parkway" because of differences in traffic congestion along Huron Church Road for scenarios (increased traffic along road in No Build scenario as compared to the Parkway scenario where traffic is diverted to the new crossing)

TABLE B.7-18: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO ACETALDEHYDE (INCLUDING BACKGROUND) ALONG HURON CHURCH ROADFOR YEAR 2035

Receptor Location	"No Build"					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
College to Girardot - 32	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.26**	**0.26**	**0.26**	**0.26**
College to Girardot - 29	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.26**	**0.26**	**0.26**	**0.26**
Girardot to Tecumseh - 35	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.26**	**0.26**	**0.26**	**0.26**
Tecumseh to Prince/Totten - 46	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Prince/Totten to Malden - 49	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Malden to Industrial - 55	**0.27**	**0.27**	**0.27**	**0.27**	**0.26**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Malden to Industrial - 155	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**	**0.27**	**0.26**	**0.26**	**0.26**	**0.26**
Industrial to EC Row - 1768	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.27**	**0.26**	**0.26**	**0.26**
Background	**0.27**	**0.26**	**0.26**	**0.26**	**0.26**					

Note: Values in **bold** exceed a hazard quotient value of 0.2

*Values are for receptors located along the existing Huron Church Access Road to the Ambassador Bridge; values change from "No Build" to "Parkway" because of differences in traffic congestion along Huron Church Road for scenarios (increased traffic along road in No Build scenario as compared to the Parkway scenario where traffic is diverted to the new crossing)

TABLE B.7-19: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO ACROLEIN (INCLUDING BACKGROUND) ALONG HURON CHURCH ROAD* FOR YEAR 2035

Receptor Location	"No Build"					Parkway				
	Infant	Toddler	Child	Teen	Adult	Infant	Toddler	Child	Teen	Adult
College to Girardot - 32	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.8**	**7.7**	**7.7**	**7.6**	**7.6**
College to Girardot - 29	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**	**7.8**	**7.7**	**7.7**	**7.6**	**7.6**
Girardot to Tecumseh - 35	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.8**	**7.7**	**7.7**	**7.6**	**7.6**
Tecumseh to Prince/Totten - 46	**7.9**	**7.8**	**7.8**	**7.7**	**7.7**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Prince/Totten to Malden - 49	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**	**7.8**	**7.7**	**7.7**	**7.6**	**7.6**
Malden to Industrial - 55	**8.0**	**7.8**	**7.8**	**7.8**	**7.8**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Malden to Industrial - 155	**7.8**	**7.7**	**7.7**	**7.6**	**7.6**	**7.8**	**7.7**	**7.7**	**7.6**	**7.6**
Industrial to EC Row - 1768	**8.0**	**7.9**	**7.9**	**7.8**	**7.8**	**7.9**	**7.7**	**7.7**	**7.7**	**7.7**
Background	**7.7**	**7.6**	**7.6**	**7.6**	**7.6**					

Note: Values in **bold** exceed a hazard quotient value of 0.2

Note: *Values are for receptors located along the existing Huron Church Access Road to the Ambassador Bridge; values change from "No Build" to "Parkway" because of the differences in traffic congestion along the Huron Church Road for the two scenarios (increased traffic along this road in the No Build scenario as compared to the Parkway scenario where traffic is diverted to the new crossing)

B.8 Receptors within ROW for Horizon Year 2035

The results in Appendix B.8 provide the maximum predicted air concentrations, soil concentrations, doses, risk and hazard quotients for the recreational user of the greenspaces and trails within the right-of-way (ROW) of the Parkway. Although the residential receptor, who is assumed to be present for 24 hours a day, 7 days a week for 365 days of the year outdoors over a lifetime of 75 years, encompasses the exposure and risks to this ROW receptor, the calculations have been performed for the year 2035 and the results are summarized below. Calculations were only completed for the Parkway scenario, as there are no greenspaces/trails to consider in the "No Build" scenario. As such, the results in this section are all for the Parkway scenario. Ingestion was not considered an active pathway. There will be no produce grown in these areas for consumption, and the users will mainly be cyclists and runners who will not be at risk of significant soil ingestion. As such, only inhalation is considered an active pathway for the receptors within the ROW.

TABLE B.8-1: MAXIMUM PREDICTED AIR CONCENTRATIONS (INCLUDING BACKGROUND) WITHIN ROW FOR GASEOUS AIR POLLUTANTS EMITTED FROM VEHICLES FOR YEAR 2035

Receptor Location	NO_x 1 hr ($\mu g/m^3$)	NO_x Annual ($\mu g/m^3$)	SO_2 1 hr ($\mu g/m^3$)	SO_2 24 hr ($\mu g/m^3$)	$PM_{2.5}$ 24 hr ($\mu g/m^3$)
	Parkway		Parkway		Parkway
Spring Garden - 1235	130.8	71.9	33.3	32.1	27
Bethlehem/Labelle - 168	159.6	72.5	33.6	32.1	31.4
Between Bethlehem and Huron Estates - 178	125.2	71.2	33	32.1	24.5
Huron Estates - 68	124.6	71.8	33.2	32.2	26.2
Pulford Tunnel - 72	127.5	70.7	33.2	32.2	24.3
Between Pulford and Reddock - 78	111.9	71.2	32.8	32.2	22.5
Huron Church Line - 740	127.5	70.9	33.2	32.1	24.9
Villa Borghese - 2068	115.3	72.8	33	32.2	23
St Clair College - 685	88.6	71.1	32.4	32.1	23.5
Villa Paradiso - 710	108.7	70.5	32.8	32.1	25.4
Heritage Estates - 774	87.5	70.4	32.4	32.1	22.6
Oliver Estates - 721	99.9	70.9	32.7	32.1	24
Oliver Estates - 722	157.1	71.2	33.8	32.1	30.6
Mero - 861	105.5	71.1	32.8	32	24.2
Background	70	70	32	32	21

TABLE B.8-2: HAZARD QUOTIENT ASSOCIATED WITH EXPOSURE TO GASEOUS AIR POLLUTANTS (INCLUDING BACKGROUND) FOR RECEPTORS WITHIN ROW FOR YEAR 2035

Receptor Location	TRV=200 µg/m^3	TRV=40 µg/m^3	TRV=350 µg/m^3	TRV=125 µg/m^3	TRV=15 µg/m^{3,*}	TRV=7 µg/m^{3,*}
	NO_x 1 hr	NO_x Annual	SO_2 1 hr	SO_2 24 hr	$PM_{2.5}$ 24 hr	$PM_{2.5}$ 24 hr
	Parkway	Parkway	Parkway	Parkway	Parkway	Parkway
Spring Garden - 1235	0.65	**1.80**	0.10	0.26	**1.8**	**3.9**
Bethlehem/Labelle - 168	0.80	**1.81**	0.10	0.26	**2.1**	**4.5**
Between Bethlehem and Huron Estates - 178	0.63	**1.78**	0.09	0.26	**1.6**	**3.5**
Huron Estates - 68	0.62	**1.80**	0.09	0.26	**1.7**	**3.7**
Pulford Tunnel - 72	0.64	**1.77**	0.09	0.26	**1.6**	**3.5**
Between Pulford and Reddock - 78	0.56	**1.78**	0.09	0.26	**1.5**	**3.2**
Huron Church Line - 740	0.64	**1.77**	0.09	0.26	**1.7**	**3.6**
Villa Borghese - 2068	0.58	**1.82**	0.09	0.26	**1.5**	**3.3**
St Clair College - 685	0.44	**1.78**	0.09	0.26	**1.6**	**3.4**
Villa Paradiso - 710	0.54	**1.76**	0.09	0.26	**1.7**	**3.6**
Heritage Estates - 774	0.44	**1.76**	0.09	0.26	**1.5**	**3.2**
Oliver Estates - 721	0.50	**1.77**	0.09	0.26	**1.6**	**3.4**
Oliver Estates - 722	0.79	**1.78**	0.10	0.26	**2.0**	**4.4**
Mero - 861	0.53	**1.78**	0.09	0.26	**1.6**	**3.5**
Background	*0.35*	*1.75*	*0.09*	*0.26*	*1.4*	*3.0*

Note: Values in **bold** exceed a hazard quotient value of 1.0

* - Calculations for two different TRVs have been provided for $PM_{2.5}$ to show the diverse thoughts on $PM_{2.5}$

TABLE B.8-3: MAXIMUM PREDICTED AIR CONCENTRATIONS (INCLUDING BACKGROUND) (µg/m^3) WITHIN ROW FOR VOC EMITTED FROM VEHICLES IN YEAR 2035

Receptor Location	Benzene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein
	Parkway	Parkway	Parkway	Parkway	Parkway
Spring Garden - 1235	2.366	0.166	4.344	2.354	0.152
Bethlehem/Labelle - 168	2.384	0.168	4.348	2.355	0.152
Between Bethlehem and Huron Estates - 178	2.356	0.165	4.333	2.349	0.151
Huron Estates - 68	2.371	0.167	4.343	2.353	0.152
Pulford Tunnel - 72	2.343	0.163	4.325	2.346	0.151
Between Pulford and Reddock - 78	2.362	0.165	4.335	2.350	0.151
Huron Church Line - 740	2.347	0.164	4.329	2.347	0.151
Villa Borghese - 2068	2.414	0.171	4.353	2.358	0.153
St Clair College - 685	2.354	0.164	4.334	2.349	0.151
Villa Paradiso - 710	2.336	0.162	4.322	2.344	0.151
Heritage Estates - 774	2.332	0.162	4.319	2.344	0.150
Oliver Estates - 721	2.349	0.164	4.328	2.347	0.151
Oliver Estates - 722	2.357	0.165	4.332	2.349	0.151
Mero - 861	2.358	0.165	4.332	2.349	0.151
Background	2.32	0.16	4.31	2.34	0.15

TABLE B.8-4: INHALATION EXPOSURE CONCENTRATIONS (mg/m^3, INCLUDING BACKGROUND) FOR NON-CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC WITHIN ROW IN YEAR 2035

Receptor Location	Benzene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein
	Parkway	Parkway	Parkway	Parkway	Parkway
Spring Garden - 1235	$2.4x10^{-3}$	$1.7x10^{-4}$	NA	$2.4x10^{-3}$	$1.5x10^{-4}$
Bethlehem/Labelle - 168	$2.4x10^{-3}$	$1.7x10^{-4}$	NA	$2.4x10^{-3}$	$1.5x10^{-4}$
Between Bethlehem and Huron Estates - 178	$2.4x10^{-3}$	$1.7x10^{-4}$	NA	$2.3x10^{-3}$	$1.5x10^{-4}$
Huron Estates - 68	$2.4x10^{-3}$	$1.7x10^{-4}$	NA	$2.4x10^{-3}$	$1.5x10^{-4}$
Pulford Tunnel - 72	$2.3x10^{-3}$	$1.6x10^{-4}$	NA	$2.3x10^{-3}$	$1.5x10^{-4}$
Between Pulford and Reddock - 78	$2.4x10^{-3}$	$1.7x10^{-4}$	NA	$2.4x10^{-3}$	$1.5x10^{-4}$
Huron Church Line - 740	$2.3x10^{-3}$	$1.6x10^{-4}$	NA	$2.3x10^{-3}$	$1.5x10^{-4}$
Villa Borghese - 2068	$2.4x10^{-3}$	$1.7x10^{-4}$	NA	$2.4x10^{-3}$	$1.5x10^{-4}$
St Clair College - 685	$2.4x10^{-3}$	$1.6x10^{-4}$	NA	$2.3x10^{-3}$	$1.5x10^{-4}$
Villa Paradiso - 710	$2.3x10^{-3}$	$1.6x10^{-4}$	NA	$2.3x10^{-3}$	$1.5x10^{-4}$
Heritage Estates - 774	$2.3x10^{-3}$	$1.6x10^{-4}$	NA	$2.3x10^{-3}$	$1.5x10^{-4}$
Oliver Estates - 721	$2.3x10^{-3}$	$1.6x10^{-4}$	NA	$2.3x10^{-3}$	$1.5x10^{-4}$
Oliver Estates - 722	$2.4x10^{-3}$	$1.7x10^{-4}$	NA	$2.3x10^{-3}$	$1.5x10^{-4}$
Mero - 861	$2.4x10^{-3}$	$1.7x10^{-4}$	NA	$2.3x10^{-3}$	$1.5x10^{-4}$

Note: NA – not applicable; formaldehyde does not have an inhalation TRV for non-carcinogenic effects

TABLE B.8-5: INHALATION EXPOSURE CONCENTRATIONS (MG/M3, INCLUDING BACKGROUND) FOR CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC WITHIN ROW IN YEAR 2035

Receptor	Chemical	Infant	Toddler	Child	Teen	Adult	Composite
		Parkway	Parkway	Parkway	Parkway	Parkway	Parkway
Spring Garden - 1235	Benzene	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Bethlehem/Labelle - 168	Benzene	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Between Bethlehem and Huron Estates - 178	Benzene	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Huron Estates - 68	Benzene	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Pulford Tunnel - 72	Benzene	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.7x10^{-3}$	$2.3x10^{-3}$
Between Pulford and Reddock - 78	Benzene	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Huron Church Line - 740	Benzene	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.3x10^{-3}$
Villa Borghese - 2068	Benzene	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.3x10^{-4}$	$2.6x10^{-4}$	$1.8x10^{-3}$	$2.4x10^{-3}$
St Clair College - 685	Benzene	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Villa Paradiso - 710	Benzene	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.7x10^{-3}$	$2.3x10^{-3}$
Heritage Estates - 774	Benzene	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.7x10^{-3}$	$2.3x10^{-3}$
Oliver Estates - 721	Benzene	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.3x10^{-3}$
Oliver Estates - 722	Benzene	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Mero - 861	Benzene	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Spring Garden - 1235	1,3-Butadiene	$1.1x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.7x10^{-4}$
Bethlehem/Labelle - 168	1,3-Butadiene	$1.1x10^{-6}$	$7.8x10^{-6}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.7x10^{-4}$
Between Bethlehem and Huron Estates - 178	1,3-Butadiene	$1.1x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.7x10^{-4}$
Huron Estates - 68	1,3-Butadiene	$1.1x10^{-6}$	$7.8x10^{-6}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.7x10^{-4}$
Pulford Tunnel - 72	1,3-Butadiene	$1.1x10^{-6}$	$7.6x10^{-6}$	$1.5x10^{-5}$	$1.7x10^{-5}$	$1.2x10^{-4}$	$1.6x10^{-4}$
Between Pulford and Reddock - 78	1,3-Butadiene	$1.1x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.7x10^{-4}$

TABLE B.8-5: INHALATION EXPOSURE CONCENTRATIONS (mg/m³, INCLUDING BACKGROUND) FOR CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC WITHIN ROW IN YEAR 2035 (CONT'D)

Receptor	Chemical	Infant	Toddler	Child	Teen	Adult	Composite
		Parkway	Parkway	Parkway	Parkway	Parkway	Parkway
Huron Church Line - 740	1,3-Butadiene	$1.1x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.7x10^{-5}$	$1.2x10^{-4}$	$1.6x10^{-4}$
Villa Borghese - 2068	1,3-Butadiene	$1.1x10^{-6}$	$8.0x10^{-6}$	$1.6x10^{-5}$	$1.8x10^{-5}$	$1.3x10^{-4}$	$1.7x10^{-4}$
St Clair College - 685	1,3-Butadiene	$1.1x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.7x10^{-5}$	$1.2x10^{-4}$	$1.6x10^{-4}$
Villa Paradiso - 710	1,3-Butadiene	$1.1x10^{-6}$	$7.6x10^{-6}$	$1.5x10^{-5}$	$1.7x10^{-5}$	$1.2x10^{-4}$	$1.6x10^{-4}$
Heritage Estates - 774	1,3-Butadiene	$1.1x10^{-6}$	$7.6x10^{-6}$	$1.5x10^{-5}$	$1.7x10^{-5}$	$1.2x10^{-4}$	$1.6x10^{-4}$
Oliver Estates - 721	1,3-Butadiene	$1.1x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.7x10^{-5}$	$1.2x10^{-4}$	$1.6x10^{-4}$
Oliver Estates - 722	1,3-Butadiene	$1.1x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.7x10^{-4}$
Mero - 861	1,3-Butadiene	$1.1x10^{-6}$	$7.7x10^{-6}$	$1.5x10^{-5}$	$1.8x10^{-5}$	$1.2x10^{-4}$	$1.7x10^{-4}$
Spring Garden - 1235	Formaldehyde	$2.9x10^{-5}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$4.3x10^{-3}$
Bethlehem/Labelle - 168	Formaldehyde	$2.9x10^{-5}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$4.3x10^{-3}$
Between Bethlehem and Huron Estates - 178	Formaldehyde	$2.9x10^{-5}$	$2.0x10^{-4}$	$4.0x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$4.3x10^{-3}$
Huron Estates - 68	Formaldehyde	$2.9x10^{-5}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$4.3x10^{-3}$
Pulford Tunnel - 72	Formaldehyde	$2.9x10^{-5}$	$2.0x10^{-4}$	$4.0x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$4.3x10^{-3}$
Between Pulford and Reddock - 78	Formaldehyde	$2.9x10^{-5}$	$2.0x10^{-4}$	$4.0x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$4.3x10^{-3}$
Huron Church Line - 740	Formaldehyde	$2.9x10^{-5}$	$2.0x10^{-4}$	$4.0x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$4.3x10^{-3}$
Villa Borghese - 2068	Formaldehyde	$2.9x10^{-5}$	$2.0x10^{-4}$	$4.1x10^{-4}$	$4.6x10^{-4}$	$3.3x10^{-3}$	$4.4x10^{-3}$
St Clair College - 685	Formaldehyde	$2.9x10^{-5}$	$2.0x10^{-4}$	$4.0x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$4.3x10^{-3}$
Villa Paradiso - 710	Formaldehyde	$2.9x10^{-5}$	$2.0x10^{-4}$	$4.0x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$4.3x10^{-3}$
Heritage Estates - 774	Formaldehyde	$2.9x10^{-5}$	$2.0x10^{-4}$	$4.0x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$4.3x10^{-3}$
Oliver Estates - 721	Formaldehyde	$2.9x10^{-5}$	$2.0x10^{-4}$	$4.0x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$4.3x10^{-3}$
Oliver Estates - 722	Formaldehyde	$2.9x10^{-5}$	$2.0x10^{-4}$	$4.0x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$4.3x10^{-3}$
Mero - 861	Formaldehyde	$2.9x10^{-5}$	$2.0x10^{-4}$	$4.0x10^{-4}$	$4.6x10^{-4}$	$3.2x10^{-3}$	$4.3x10^{-3}$
Spring Garden - 1235	Acetaldehyde	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Bethlehem/Labelle - 168	Acetaldehyde	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Between Bethlehem and Huron Estates - 178	Acetaldehyde	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.3x10^{-3}$
Huron Estates - 68	Acetaldehyde	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.4x10^{-3}$

TABLE B.8-5: INHALATION EXPOSURE CONCENTRATIONS (mg/m³, INCLUDING BACKGROUND) FOR CARCINOGENIC EFFECTS FOR ALL RECEPTORS EXPOSED TO VOC WITHIN ROW IN YEAR 2035 (CONT'D)

Receptor	Chemical	Infant	Toddler	Child	Teen	Adult	Composite
		Parkway	Parkway	Parkway	Parkway	Parkway	Parkway
Pulford Tunnel - 72	Acetaldehyde	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.3x10^{-3}$
Between Pulford and Reddock - 78	Acetaldehyde	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.4x10^{-3}$
Huron Church Line - 740	Acetaldehyde	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.3x10^{-3}$
Villa Borghese - 2068	Acetaldehyde	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.4x10^{-3}$
St Clair College - 685	Acetaldehyde	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.3x10^{-3}$
Villa Paradiso - 710	Acetaldehyde	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.3x10^{-3}$
Heritage Estates - 774	Acetaldehyde	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.3x10^{-3}$
Oliver Estates - 721	Acetaldehyde	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.3x10^{-3}$
Oliver Estates - 722	Acetaldehyde	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.3x10^{-3}$
Mero - 861	Acetaldehyde	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.3x10^{-3}$

TABLE B.8-6: INCREMENTAL RISKS ASSOCIATED WITH EXPOSURE TO BENZENE (INCLUDING BACKGROUND) WITHIN ROW FOR YEAR 2035

Receptor Location	Parkway	
	Adult	Composite
Spring Garden - 1235	**$5.8x10^{-6}$**	**$7.8x10^{-6}$**
Bethlehem/Labelle - 168	**$5.9x10^{-6}$**	**$7.9x10^{-6}$**
Between Bethlehem and Huron Estates - 178	**$5.8x10^{-6}$**	**$7.8x10^{-6}$**
Huron Estates - 68	**$5.8x10^{-6}$**	**$7.8x10^{-6}$**
Pulford Tunnel - 72	**$5.8x10^{-6}$**	**$7.7x10^{-6}$**
Between Pulford and Reddock - 78	**$5.8x10^{-6}$**	**$7.8x10^{-6}$**
Huron Church Line - 740	**$5.8x10^{-6}$**	**$7.7x10^{-6}$**
Villa Borghese - 2068	**$5.9x10^{-6}$**	**$8.0x10^{-6}$**
St Clair College - 685	**$5.8x10^{-6}$**	**$7.8x10^{-6}$**
Villa Paradiso - 710	**$5.8x10^{-6}$**	**$7.7x10^{-6}$**
Heritage Estates - 774	**$5.7x10^{-6}$**	**$7.7x10^{-6}$**
Oliver Estates - 721	**$5.8x10^{-6}$**	**$7.8x10^{-6}$**
Oliver Estates - 722	**$5.8x10^{-6}$**	**$7.8x10^{-6}$**
Mero - 861	**$5.8x10^{-6}$**	**$7.8x10^{-6}$**
Background	**$5.7x10^{-6}$**	**$7.7x10^{-6}$**

Note: Values in **bold** exceed an incremental risk level of 1×10^{-6}

TABLE B.8-7: INCREMENTAL RISKS ASSOCIATED WITH EXPOSURE TO 1,3-BUTADIENE (INCLUDING BACKGROUND) WITHIN ROW FOR YEAR 2035

Receptor Location	Parkway	
	Adult	Composite
Spring Garden - 1235	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Bethlehem/Labelle - 168	**$3.8x10^{-6}$**	**$5.0x10^{-6}$**
Between Bethlehem and Huron Estates - 178	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Huron Estates - 68	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Pulford Tunnel - 72	**$3.7x10^{-6}$**	**$4.9x10^{-6}$**
Between Pulford and Reddock - 78	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Huron Church Line - 740	**$3.7x10^{-6}$**	**$4.9x10^{-6}$**
Villa Borghese - 2068	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**
St Clair College - 685	**$3.7x10^{-6}$**	**$4.9x10^{-6}$**
Villa Paradiso - 710	**$3.6x10^{-6}$**	**$4.9x10^{-6}$**
Heritage Estates - 774	**$3.6x10^{-6}$**	**$4.9x10^{-6}$**
Oliver Estates - 721	**$3.7x10^{-6}$**	**$4.9x10^{-6}$**
Oliver Estates - 722	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Mero - 861	**$3.7x10^{-6}$**	**$5.0x10^{-6}$**
Background	**$3.6x10^{-6}$**	**$4.8x10^{-6}$**

Note: Values in **bold** exceed an incremental risk level of 1×10^{-6}

TABLE B.8-8: INCREMENTAL RISKS ASSOCIATED WITH EXPOSURE TO FORMALDEHYDE (INCLUDING BACKGROUND) WITHIN ROW FOR YEAR 2035

Receptor Location	Parkway	
	Adult	Composite
Spring Garden - 1235	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Bethlehem/Labelle - 168	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**
Between Bethlehem and Huron Estates - 178	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Huron Estates - 68	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Pulford Tunnel - 72	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Between Pulford and Reddock - 78	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Huron Church Line - 740	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Villa Borghese - 2068	**$4.2x10^{-5}$**	**$5.7x10^{-5}$**
St Clair College - 685	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Villa Paradiso - 710	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Heritage Estates - 774	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Oliver Estates - 721	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Oliver Estates - 722	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Mero - 861	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**
Background	**$4.2x10^{-5}$**	**$5.6x10^{-5}$**

Note: Values in **bold** exceed an incremental risk level of 1 x 10^{-6}

TABLE B.8-9: INCREMENTAL RISKS ASSOCIATED WITH EXPOSURE TO ACETALDEHYDE (INCLUDING BACKGROUND) WITHIN ROW FOR YEAR 2035

Receptor Location	Parkway	
	Adult	Composite
Spring Garden - 1235	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Bethlehem/Labelle - 168	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Between Bethlehem and Huron Estates - 178	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Huron Estates - 68	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Pulford Tunnel - 72	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Between Pulford and Reddock - 78	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Huron Church Line - 740	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Villa Borghese - 2068	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
St Clair College - 685	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Villa Paradiso - 710	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Heritage Estates - 774	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Oliver Estates - 721	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Oliver Estates - 722	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Mero - 861	**$3.9x10^{-6}$**	**$5.2x10^{-6}$**
Background	**$3.8x10^{-6}$**	**$5.1x10^{-6}$**

Note: Values in **bold** exceed an incremental risk level of 1 x 10^{-6}

TABLE B.8-10: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO BENZENE (INCLUDING BACKGROUND) WITHIN ROW FOR YEAR 2035

Receptor Location	Parkway				
	Infant	Toddler	Child	Teen	Adult
Spring Garden - 1235	0.08	0.08	0.08	0.08	0.08
Bethlehem/Labelle - 168	0.08	0.08	0.08	0.08	0.08
Between Bethlehem and Huron Estates - 178	0.08	0.08	0.08	0.08	0.08
Huron Estates - 68	0.08	0.08	0.08	0.08	0.08
Pulford Tunnel - 72	0.08	0.08	0.08	0.08	0.08
Between Pulford and Reddock - 78	0.08	0.08	0.08	0.08	0.08
Huron Church Line - 740	0.08	0.08	0.08	0.08	0.08
Villa Borghese - 2068	0.08	0.08	0.08	0.08	0.08
St Clair College - 685	0.08	0.08	0.08	0.08	0.08
Villa Paradiso - 710	0.08	0.08	0.08	0.08	0.08
Heritage Estates - 774	0.08	0.08	0.08	0.08	0.08
Oliver Estates - 721	0.08	0.08	0.08	0.08	0.08
Oliver Estates - 722	0.08	0.08	0.08	0.08	0.08
Mero - 861	0.08	0.08	0.08	0.08	0.08
Background	0.08	0.08	0.08	0.08	0.08

TABLE B.8-11: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO 1,3-BUTADIENE (INCLUDING BACKGROUND) WITHIN ROW FOR YEAR 2035

Receptor Location	Parkway				
	Infant	Toddler	Child	Teen	Adult
Spring Garden - 1235	0.08	0.08	0.08	0.08	0.08
Bethlehem/Labelle - 168	0.08	0.08	0.08	0.08	0.08
Between Bethlehem and Huron Estates - 178	0.08	0.08	0.08	0.08	0.08
Huron Estates - 68	0.08	0.08	0.08	0.08	0.08
Pulford Tunnel - 72	0.08	0.08	0.08	0.08	0.08
Between Pulford and Reddock - 78	0.08	0.08	0.08	0.08	0.08
Huron Church Line - 740	0.08	0.08	0.08	0.08	0.08
Villa Borghese - 2068	0.09	0.09	0.09	0.09	0.09
St Clair College - 685	0.08	0.08	0.08	0.08	0.08
Villa Paradiso - 710	0.08	0.08	0.08	0.08	0.08
Heritage Estates - 774	0.08	0.08	0.08	0.08	0.08
Oliver Estates - 721	0.08	0.08	0.08	0.08	0.08
Oliver Estates - 722	0.08	0.08	0.08	0.08	0.08
Mero - 861	0.08	0.08	0.08	0.08	0.08
Background	0.08	0.08	0.08	0.08	0.08

TABLE B.8-12: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO FORMALDEHYDE (INCLUDING BACKGROUND) WITHIN ROW FOR YEAR 2035

Receptor Location	Parkway				
	Infant	Toddler	Child	Teen	Adult
Spring Garden - 1235	<0.01	<0.01	<0.01	<0.01	<0.01
Bethlehem/Labelle - 168	<0.01	<0.01	<0.01	<0.01	<0.01
Between Bethlehem and Huron Estates - 178	<0.01	<0.01	<0.01	<0.01	<0.01
Huron Estates - 68	<0.01	<0.01	<0.01	<0.01	<0.01
Pulford Tunnel - 72	<0.01	<0.01	<0.01	<0.01	<0.01
Between Pulford and Reddock - 78	<0.01	<0.01	<0.01	<0.01	<0.01
Huron Church Line - 740	<0.01	<0.01	<0.01	<0.01	<0.01
Villa Borghese - 2068	<0.01	<0.01	<0.01	<0.01	<0.01
St Clair College - 685	<0.01	<0.01	<0.01	<0.01	<0.01
Villa Paradiso - 710	<0.01	<0.01	<0.01	<0.01	<0.01
Heritage Estates - 774	<0.01	<0.01	<0.01	<0.01	<0.01
Oliver Estates - 721	<0.01	<0.01	<0.01	<0.01	<0.01
Oliver Estates - 722	<0.01	<0.01	<0.01	<0.01	<0.01
Mero - 861	<0.01	<0.01	<0.01	<0.01	<0.01
Background	<0.01	<0.01	<0.01	<0.01	<0.01

TABLE B.8-13: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO ACETALDEHYDE (INCLUDING BACKGROUND) WITHIN ROW FOR YEAR 2035

Receptor Location	Parkway				
	Infant	Toddler	Child	Teen	Adult
Spring Garden - 1235	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**
Bethlehem/Labelle - 168	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**
Between Bethlehem and Huron Estates - 178	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**
Huron Estates - 68	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**
Pulford Tunnel - 72	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**
Between Pulford and Reddock - 78	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**
Huron Church Line - 740	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**
Villa Borghese - 2068	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**
St Clair College - 685	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**
Villa Paradiso - 710	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**
Heritage Estates - 774	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**
Oliver Estates - 721	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**
Oliver Estates - 722	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**
Mero - 861	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**
Background	**0.26**	**0.26**	**0.26**	**0.26**	**0.26**

Note: Values in **bold** exceed a hazard quotient value of 0.2

TABLE B.8-14: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO ACROLEIN (INCLUDING BACKGROUND) WITHIN ROW FOR YEAR 2035

Receptor Location	Parkway				
	Infant	Toddler	Child	Teen	Adult
Spring Garden - 1235	**7.6**	**7.6**	**7.6**	**7.6**	**7.6**
Bethlehem/Labelle - 168	**7.6**	**7.6**	**7.6**	**7.6**	**7.6**
Between Bethlehem and Huron Estates - 178	**7.6**	**7.6**	**7.6**	**7.6**	**7.6**
Huron Estates - 68	**7.6**	**7.6**	**7.6**	**7.6**	**7.6**
Pulford Tunnel - 72	**7.6**	**7.6**	**7.6**	**7.6**	**7.6**
Between Pulford and Reddock - 78	**7.6**	**7.6**	**7.6**	**7.6**	**7.6**
Huron Church Line - 740	**7.6**	**7.6**	**7.6**	**7.6**	**7.6**
Villa Borghese - 2068	**7.7**	**7.7**	**7.7**	**7.7**	**7.7**
St Clair College - 685	**7.6**	**7.6**	**7.6**	**7.6**	**7.6**
Villa Paradiso - 710	**7.6**	**7.6**	**7.6**	**7.6**	**7.6**
Heritage Estates - 774	**7.5**	**7.5**	**7.5**	**7.5**	**7.5**
Oliver Estates - 721	**7.6**	**7.6**	**7.6**	**7.6**	**7.6**
Oliver Estates - 722	**7.6**	**7.6**	**7.6**	**7.6**	**7.6**
Mero - 861	**7.6**	**7.6**	**7.6**	**7.6**	**7.6**
Background	**7.5**	**7.5**	**7.5**	**7.5**	**7.5**

Note: Values in **bold** exceed a hazard quotient value of 0.2

APPENDIX C

SAMPLE CALCULATION

Appendix C: Sample Calculations

This appendix includes a worked calculation for one chemical at the maximum concentration location. The equations in Appendix A form the basis for these calculations.

C.1 Sample Calculation – Ball Field (Parkway Scenario) for Year 2015

Following is a worked calculation for risks associated with benzene exposure for resident receptors at the ball field (Receptor No. 2479) location. The receptor characteristics and the fixed values and assumptions used in the calculations are summarized in Table C.1-1 and Table C.1-2 respectively.

TABLE C.1-1: RECEPTOR CHARACTERISTICS

Parameter	Symbol	Units	Infant	Toddler	Child	Teen	Adult	Source
Soil Ingestion Rate	$R_{ing\text{-}soil}$	(mg/d)	30	100	50	50	50	MOE 2008
Vegetation Ingestion Rate	$R_{ing\text{-}veg}$	(g/d)	155	172	259	347	325	Richardson 1997
Body Weight	B_w	(kg)	8.2	16.5	32.9	59.7	70.7	Richardson 1997
Fraction of soil and air from site	F_{soil}	(-)	1	1	1	1	1	Assumed
Fraction of veg from site	F_{veg}	(-)	0.075	0.075	0.075	0.075	0.075	MOE 2001
Exposure Frequency	EF	(days/yr)	365.25	365.25	365.25	365.25	365.25	Assumed
Exposure Duration	ED	(yr)	0.5	3.5	7	8	56	Assumed
Averaging Time – Carcinogen	AT_C	(days)	27393.75	27393.75	27393.75	27393.75	27393.75	Assumed 75 years
Averaging Time – Non Carcinogen	AT_{NC}	(days)	182.625	1278.375	2556.75	2922	20454	Assumed same as ED

TABLE C.1-2: STARTING VALUES AND ASSUMPTIONS

	Parameter	Symbol	Value	Units	Source
Chemical-Specific (for Benzene)	Soil-water partition coefficient	Kd_s	0.37	(cm^3/g)	U.S. EPA (2001) Reg. 9
	Diffusivity in air	D_a	0.088	(cm^2/s)	Burton 1997
	Fraction of air in the vapour phase	F_v	1	(-)	Burton 1997
	Henry's Law constant	H	$5.43x10^{-3}$	($(atm\ m^3)/mol$)	Howard 1990
	Air-to-plant biotransfer factor	B_v	$1.90x10^{-3}$	(µg/g plant)/(µg/g air)	UDEQ (2000)
	Soil-to-plant biotransfer factor (leafy)	$B_{r\ leafy}$	2.3	(µg/g plant)/(µg/g soil)	UDEQ (2000)
	Soil-to-plant biotransfer factor (forage)	$B_{r\ forage}$	2.3		UDEQ (2000)
Location-Specific	Concentration in air	C_a	2.387	($µg/m^3$)	Modelled
	Settling velocity	V_{settle}	3153.6	(m/yr)	Assumed; same value for each location
Toxicity Data for Benzene	Slope Factor – oral	SF_o	$3.1x10^{-1}$	mg/(kg-day)	Health Canada 2004b
	Unit Risk – inhalation	UR_i	$3.3x10^{-3}$	$(mg/m^3)^{-1}$	Health Canada 2004b
	Reference Dose – oral	RfD	$4.0x10^{-3}$	mg/(kg-day)	IRIS (U.S. EPA 2008)
	Reference Concentration - inhalation	RfC	$3.0x10^{-2}$	mg/m^3	IRIS (U.S. EPA 2008)

Table C.1-3 shows the calculations used to obtain the inhalation exposure concentrations and risks due to the carcinogenic properties of benzene. Table C.1-4 shows the calculation of the hazard quotient related to the non-carcinogenic characteristics of benzene and its impact through the inhalation pathway.

TABLE C.1-3: INHALATION EXPOSURE CONCENTRATION AND RISK CALCULATION FOR CARCINOGENIC EFFECTS OF BENZENE

Equation #	Parameter	Equation	Units	Infant	Toddler	Child	Teen	Adult	Composite *
(A-1)	$Dose_{inhalation,C}$	$\frac{EF \times ED \times C_a}{AT_C} \times \frac{1}{1000}$	mg/m^3	$1.6x10^{-5}$	$1.1x10^{-4}$	$2.2x10^{-4}$	$2.5x10^{-4}$	$1.8x10^{-3}$	$2.4x10^{-3}$
(5-3)	$Risk_{inhalation}$	$Dose_{inhalation,c} \times UR_i$	(-)	n/a	n/a	n/a	n/a	$5.9x10^{-6}$	$7.9x10^{-6}$

Notes: n/a – not assessed

* - dose for composite receptor was calculated as the sum of dose for all life stages (infant, toddler, child, teen and adult)

TABLE C.1-4: INHALATION EXPOSURE CONCENTRATION AND HAZARD QUOTIENT CALCULATION FOR NON-CARCINOGENIC EFFECTS OF BENZENE*

Equation #	Parameter	Equation	Units	Infant	Toddler	Child	Teen	Adult
-	$Dose_{inhalation,NC}$	$C_a \times \frac{1}{1000}$	mg/m^3	$2.4x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$	$2.4x10^{-3}$
(5-1)	$HQ_{inhalation}$	$\frac{Dose_{inhalation,NC}}{RfC}$	(-)	$8.0x10^{-2}$	$8.0x10^{-2}$	$8.0x10^{-2}$	$8.0x10^{-2}$	$8.0x10^{-2}$

Notes:

* - dose and hazard quotient is the same for all receptors because receptors are assumed to be exposed 24 hours per day, 7 days per week, 365 days per year

The soil concentrations at the maximum concentration location are obtained from the equations shown in Table C.1-5. Default values for the parameters are provided in the equations in Appendix A.

TABLE C.1-5: SOIL CONCENTRATION CALCULATION

Eqn #	Parameter	Equation	Value	Units
(A-9)	k_{sv}	$\left[\frac{3.1536\times10^{7}\times H}{Z\times Kd_s\times R\times T\times BD}\right]\times\left(\frac{D_a}{Z}\right)\times\left[1-\left(\frac{BD}{\rho_{soil}}\right)-\Theta_s\right]$	70919 (forage), 709 (tilled)	(1/yr)
(A-8)	k_{sr}	$\frac{R}{\Theta_s\times z}\times\left(\frac{1}{1+\left(\frac{BD\times Kd_s}{\Theta_s}\right)}\right)$	1.66 (forage), 0.166 (tilled)	(1/yr)
	k_{se}	Assumed to be zero	0	(1/yr)
	k_{sg}	Assumed to be zero	0	(1/yr)
(A-7)	k_{sl}	$\frac{q}{\Theta_s\times z\times\left[1+\left(\frac{BD\times Kd_s}{\Theta_s}\right)\right]}$	3.3 (forage), 0.33 (tilled)	(1/yr)
(A-6)	k_s	$k_{sl}+k_{se}+k_{sr}+k_{sg}+k_{sv}$	70924 (forage), 710 (tilled)	(1/yr)
(A-4)	D_s	$\frac{100}{z\times BD}\times\frac{V_{settle}\times C_a}{1000}$	251 (forage), 25.1 (tilled)	(mg/(kg yr))
(A-5)	Sc_{Tc}	$\frac{D_s\times\left(1-e^{(-k_s\times T_c)}\right)}{k_s}$	$3.5\text{x}10^{-3}$ (forage), $3.5\text{x}10^{-2}$ (tilled)	(mg/kg)
(A-3)	C_{soil}	$\frac{D_s}{k_s\times\left(T_c-T_1\right)}\times\left[\left(T_c+\frac{e^{-k_s\times T_c}}{k_s}\right)-\left(T_1+\frac{e^{-k_s\times T_1}}{k_s}\right)\right]$	$3.5\text{x}10^{-3}$ (forage), $3.5\text{x}10^{-2}$ (tilled)	(mg/kg)

The vegetation concentration calculations are shown in Table C.1-6. Parameters needed for the equations are given in Table C.1-2 or provided in the equations in Appendix A.

TABLE C.1-6 : VEGETATION CONCENTRATION CALCULATION

Eqn #	Parameter	Equation	Value	Units
(A-13)	C_v	$F_v \times \frac{C_a \times B_v \times VG_{ag}}{\rho_s}$	3.8x10^{-6}(veg), 3.8x10^{-6} (forage), 1.9x10^{-6} (silage)	(mg/kg DW)
(A-12)	C_d	$\frac{(1-F_v)\times F_w \times V_{settle} \times C_a \times R_p \times \left[\left(1-e^{(-k_p \times T_p)}\right)\right]}{Y_p \times k_p \times 1000}$	0	(mg/kg DW)
(A-11)	C_r	$C_{soil} \times B_r$	8.1x10^{-2} (veg), 8.1x10^{-3} (forage), 8.1x10^{-2} (silage)	(mg/kg DW)
(A-10)	C_{veg}	$C_r + C_d + C_v$	8.1x10^{-2} (veg), 8.1x10^{-3} (forage), 8.1x10^{-2} (silage)	(mg/kg DW)

The calculations shown in Table C.1-7 are for the ingestion dose and risk associated with the carcinogenic properties of benzene. Table C.1-8 gives the ingestion dose and hazard quotient calculations for the non-carcinogenic characteristics of benzene. For non-carcinogens, the Sc_{Tc} is used for the C_{soil}.

TABLE C.1-7 : CARCINOGEN INGESTION DOSE AND RISK CALCULATION

Eqn #	Parameter	Equation	Units	Infant	Toddler	Child	Teen	Adult	Composite *
(A-2)	$Dose_{soil,C}$ **	$\frac{R_{ing-soil} \times C_{soil} \times EF \times ED}{AT_C \times B_w} \times F_{soil} \times \frac{1}{1000000}$	(mg/(kg d))	$8.6x10^{-11}$	$2.0x10^{-9}$	$5.0x10^{-10}$	$3.2x10^{-10}$	$1.9x10^{-9}$	$4.8x10^{-9}$
(A-2)	$Dose_{veg,C}$	$\frac{R_{ing-veg} \times C_{veg} \times EF \times ED}{AT_C \times B_w} \times F_{veg} \times \frac{1}{1000}$	(mg/(kg d))	$7.7x10^{-7}$	$3.0x10^{-6}$	$4.5x10^{-6}$	$3.8x10^{-6}$	$2.1x10^{-5}$	$3.3x10^{-5}$
	$Dose_{ingestion,C}$	$Dose_{soil,C} + Dose_{veg,C}$	(mg/(kg d))	$7.7x10^{-7}$	$3.0x10^{-6}$	$4.5x10^{-6}$	$3.8x10^{-6}$	$2.1x10^{-5}$	$3.3x10^{-5}$
(5-2)	$Risk_{ingestion}$	$Dose_{ingestion,C}\left(\frac{mg}{kg\,d}\right) \times SF_o\left(\frac{mg}{kg\,d}\right)^{-1}$	(-)	N/A	N/A	N/A	N/A	$6.5x10^{-6}$	$1.0x10^{-5}$

Note: N/A – not assessed

* - dose for composite receptor was calculated as the sum of dose for all life stages (infant, toddler, child, teen and adult)

** - dose from dust is calculated assuming C_{dust} is equal to C_{soil}; $Dose_{dust,C}$ is calculated with this same equation

TABLE C.1-8: NON-CARCINOGEN INGESTION DOSE AND HAZARD QUOTIENT CALCULATION

Eqn #	Parameter	Equation	Units	Infant	Toddler	Child	Teen	Adult
(A-2)	$Dose_{soil,NC}$*	$\frac{R_{ing-soil} \times Sc_{Tc} \times EF \times ED}{AT_{NC} \times B_w} \times F_{soil} \times \frac{1}{1000000}$	(mg/(kg d))	$1.3x10^{-8}$	$4.3x10^{-8}$	$5.4x10^{-9}$	$3.0x10^{-9}$	$2.5x10^{-9}$
(A-2)	$Dose_{veg,NC}$	$\frac{R_{ing-veg} \times C_{veg} \times EF \times ED}{AT_{NC} \times B_w} \times F_{veg} \times \frac{1}{1000}$	(mg/(kg d))	$1.2x10^{-4}$	$6.4x10^{-5}$	$4.8x10^{-5}$	$3.5x10^{-5}$	$2.8x10^{-5}$
	$Dose_{ingestion,NC}$	$Dose_{soil} + Dose_{veg}$	(mg/(kg d))	$1.2x10^{-4}$	$6.4x10^{-5}$	$4.8x10^{-5}$	$3.5x10^{-5}$	$2.8x10^{-5}$
(5-1b)	$HQ_{ingestion}$	$\frac{Dose_{ingestion,NC}\left(\frac{mg}{kg\,d}\right)}{RfD\left(\frac{mg}{kg\,d}\right)}$	(-)	$2.9x10^{-2}$	$1.6x10^{-2}$	$1.2x10^{-2}$	$8.9x10^{-3}$	$7.0x10^{-3}$

Note: * - dose from dust is calculated assuming C_{dust} is equal to C_{soil}; $Dose_{dust,NC}$ is calculated with this same equation

TABLE C.1-9: GASEOUS AIR POLLUTANT HAZARD QUOTIENT CALCULATION ($PM_{2.5}$)

Eqn #	Parameter	Equation	Units	All Receptors	
				TRV = 15 µg/m^3	TRV = 7 µg/m^3
(5-1b)	$HQ_{inhalation}$	$HQ = \frac{PredictedAirConcentration\left(\mu g / m^3\right)}{TRV\left(\mu g / m^3\right)}$	(-)	1.5	3.2

APPENDIX D
CHEMICAL-SPECIFIC PARAMETERS

Appendix D: Chemical-Specific Parameters

The following chemical-specific parameters were used in the dose, hazard quotient and risk calculations for the VOC. The parameters listed here are not relevant for calculations for the gaseous air pollutants and, as such, have not been provided. The toxicity reference values for the VOC and gaseous air pollutants have been provided in Section 4. The parameters for benzene have been provided in Appendix C.

TABLE D.1-1: STARTING VALUES AND ASSUMPTIONS FOR FORMALDEHYDE

Parameter	Symbol	Value	Units	Source
Soil-water partition coefficient	Kd_s	0.88	(cm^3/g)	U.S. EPA (2001) Reg. 9
Diffusivity in air	D_a	0.18	(cm^2/s)	Burton 1997
Fraction of air in the vapour phase	F_v	1	(-)	Burton 1997
Henry's Law constant	H	$3.4x10^{-7}$	((atm m^3)/mol)	Howard 1990
Air-to-plant biotransfer factor	B_v	NA	(µg/g plant)/(µg/g air)	UDEQ (2000)
Soil-to-plant biotransfer factor (leafy)	$B_{r\ leafy}$	41	(µg/g plant)/(µg/g soil)	UDEQ (2000)
Soil-to-plant biotransfer factor (forage)	$B_{r\ forage}$	41		UDEQ (2000)

TABLE D.1-2: STARTING VALUES AND ASSUMPTIONS FOR ACETALDEHYDE

Parameter	Symbol	Value	Units	Source
Soil-water partition coefficient	Kd_s	0.00953	(cm^3/g)	U.S. EPA (2001) Reg. 9
Diffusivity in air	D_a	0.272	(cm^2/s)	Burton 1997
Fraction of air in the vapour phase	F_v	1	(-)	Burton 1997
Henry's Law constant	H	$8.06x10^{-5}$	((atm m^3)/mol)	Howard 1990
Air-to-plant biotransfer factor	B_v	NA	(µg/g plant)/(µg/g air)	UDEQ (2000)
Soil-to-plant biotransfer factor (leafy)	$B_{r\ leafy}$	51.9	(µg/g plant)/(µg/g soil)	UDEQ (2000)
Soil-to-plant biotransfer factor (forage)	$B_{r\ forage}$	51.9		UDEQ (2000)

TABLE D.1-3: STARTING VALUES AND ASSUMPTIONS FOR 1,3-BUTADIENE

Parameter	Symbol	Value	Units	Source
Soil-water partition coefficient	Kd_s	0.72	(cm^3/g)	U.S. EPA (2001) Reg. 9
Diffusivity in air	D_a	0.249	(cm^2/s)	Burton 1997
Fraction of air in the vapour phase	F_v	1	(-)	Burton 1997
Henry's Law constant	H	$7.0x10^{-2}$	((atm m^3)/mol)	Howard 1990
Air-to-plant biotransfer factor	B_v	N/A	(µg/g plant)/(µg/g air)	UDEQ (2000)
Soil-to-plant biotransfer factor (leafy)	$B_{r\ leafy}$	2.6	(µg/g plant)/(µg/g soil)	UDEQ (2000)
Soil-to-plant biotransfer factor (forage)	$B_{r\ forage}$	2.6		UDEQ (2000)

TABLE D.1-4: STARTING VALUES AND ASSUMPTIONS FOR ACROLEIN

Parameter	Symbol	Value	Units	Source
Soil-water partition coefficient	Kd_s	0.0139	(cm^3/g)	U.S. EPA (2001) Reg. 9
Diffusivity in air	D_a	0.192	(cm^2/s)	Burton 1997
Fraction of air in the vapour phase	F_v	1	(-)	Burton 1997
Henry's Law constant	H	$9.34x10^{-5}$	((atm m^3)/mol)	Howard 1990
Air-to-plant biotransfer factor	B_v	0.000586	(µg/g plant)/(µg/g air)	UDEQ (2000)
Soil-to-plant biotransfer factor (leafy)	$B_{r\ leafy}$	39.2	(µg/g plant)/(µg/g soil)	UDEQ (2000)
Soil-to-plant biotransfer factor (forage)	$B_{r\ forage}$	39.2		UDEQ (2000)

APPENDIX E

Additional Information

Appendix E: Additional Information

The following appendix provides information on receptor locations and the distance from the Parkway as well as additional maps and provides summary tables on the incremental changes in concentration related to traffic effects for benzene and $PM_{2.5}$ for the "No Build" and Parkway scenarios over the horizon years from 2015 to 2035. In addition, summary tables are provided with the incremental changes above the 90th and 50th percentile backgrounds for benzene and $PM_{2.5}$ for the "No Build" and Parkway scenarios for 2015 and 2035.

E.1 Receptor Locations and Distance from Roadway

Table E.1-1 provides a summary of the distances from the roadway to the various receptor locations selected for evaluation within the HHRA. As seen in the table, different receptor locations encompass residential locations, senior homes (Royal Oak Senior Home (944, 945)), parks (St Clair Park (2478)), ballfields (St Clair College Athletic field (2479)) and other sensitive locations such as the Association for Persons with Physical Disabilities (1644) in Spring Garden. These receptor locations were selected to encompass a wide range of receptor types and exposure as well as distances to the roadway. As seen from the table, distances from the roadway ranged from 25m to 350m and thus capture a wide range of exposure. The attached map provides the receptor locations along the roadway as well as the receptors selected for the evaluation in the right-of-way (greenspaces) as well as the Huron Church Road to Ambassador Bridge segment of the roadway.

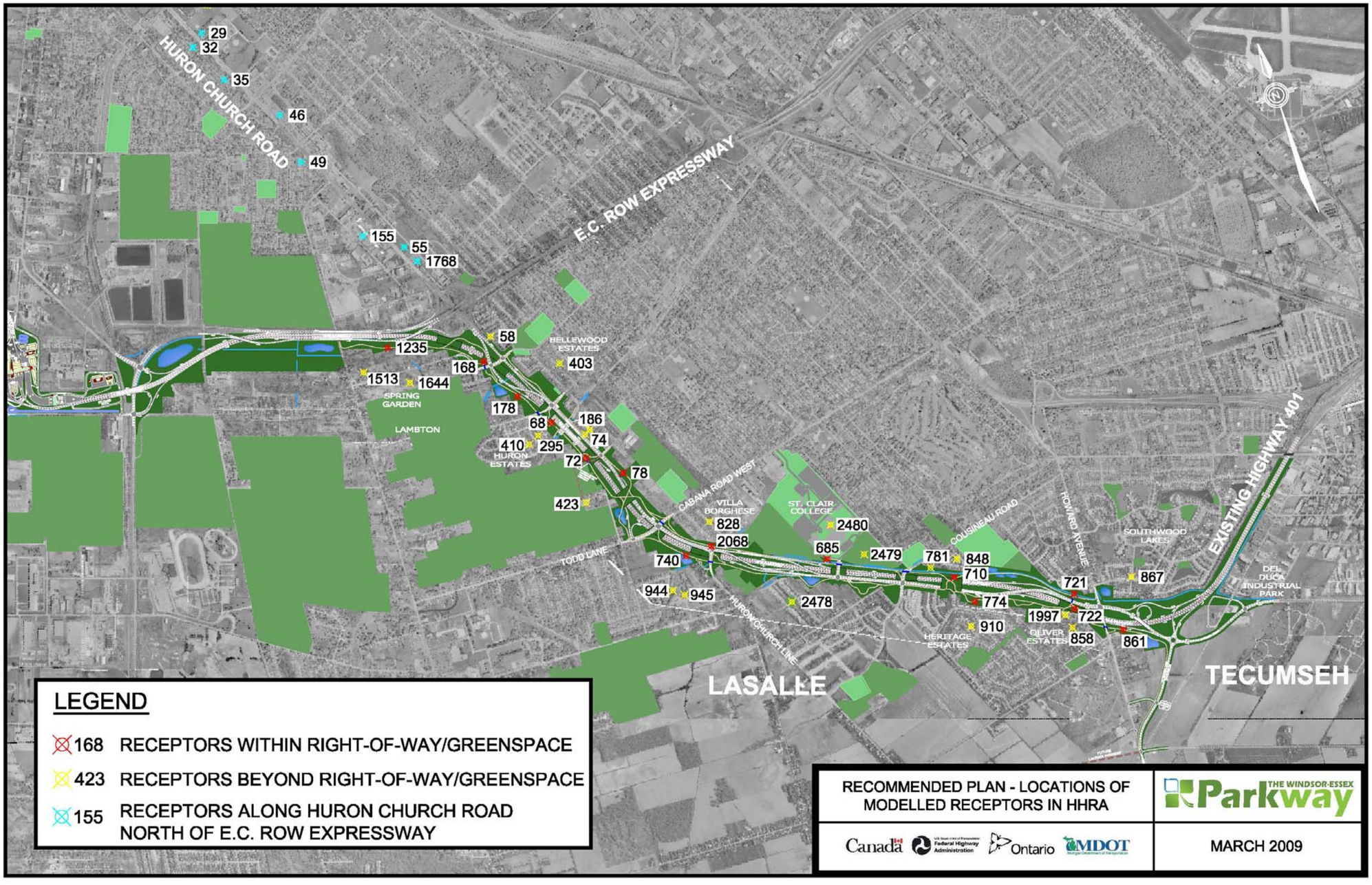

HURON CHURCH ROAD
E.C. ROW EXPRESSWAY
EXISTING HIGHWAY 401
29
32
35
46
49
155
55
1768
58
1235
168
403
1513
1644
178
68
186
74
410
295
72
78
423
828
2068
740
944
945
2480
685
2479
781
848
710
774
910
721
1997
722
858
861
867
2478
BELLEWOOD ESTATES
SPRING GARDEN
LAMBTON
HURON ESTATES
VILLA BORGHESE
ST. CLAIR COLLEGE
CABANA ROAD WEST
TODD LANE
COUSINEAU ROAD
HOWARD AVENUE
SOUTHWOOD LAKES
DEL DUCA INDUSTRIAL PARK
HERITAGE ESTATES
OLIVER ESTATES
HURON CHURCH LINE
LASALLE
TECUMSEH
LEGEND
168 RECEPTORS WITHIN RIGHT-OF-WAY/GREENSPACE
423 RECEPTORS BEYOND RIGHT-OF-WAY/GREENSPACE
155 RECEPTORS ALONG HURON CHURCH ROAD NORTH OF E.C. ROW EXPRESSWAY
RECOMMENDED PLAN - LOCATIONS OF MODELLED RECEPTORS IN HHRA
THE WINDSOR-ESSEX Parkway
Canada
Federal Highway Administration
Ontario
MDOT
MARCH 2009

TABLE E.1-1: RECEPTOR LOCATIONS AND DISTANCES FROM ROADWAY

Receptor	Receptor Description	Distance to Road, m
2479	Ball Field (St Clair College Athletic Field 4 ball diamond)	150
58	Bellewood Estates (Fleming Crt)	50
403	Bellewood Estates	300
74	Grand Marais Roads (Northway and Norfolk)	25
186	Grand Marais Roads (Northway and Norfolk)	75
910	Heritage Estates	260
944	Home for Aged La Salle (Royal Oak Senior Home)	330
945	Home for Aged La Salle (Royal Oak Senior Home)	260
295	Huron Estates (Lambton)	175
410	Huron Estates	270
781	Kendleton Court	100
858	Oliver Estates (Grosvenor to Croydon)	100
1997	Oliver Estates (Chelsea)	25
423	Reddock	230
2478	Residential (St Clair Park)	250
867	Southwood Lakes (Alpen Rose)	200
1513	Spring Garden	250
1644	Spring Garden (Association for Persons with Physical Disabilities)	300
2480	St Clair College	350
828	Villa Borghese	200
848	Villa Paradiso Crescent	200

E.2 Evaluation of Incremental Change Between 2015 and 2035 Associated with Vehicular Emissions

Table E.2-1 provides a summary of the incremental change for benzene concentrations associated with vehicular emissions between 2015 and 2035 for the receptors along the roadway. As seen from the table, the predicted benzene concentrations decrease between 2015 and 2035 due to changes in tail pipe emission factors for benzene over the 20 year time period. These emission rate changes are associated with changes in technology of vehicles. In general there is decrease in 20% for the emission factor related to benzene due to improved technologies. For the "No Build" scenario, the average change in benzene concentrations over the receptor locations is about 15% which is reflected in the change of emission factors. For the Parkway scenario, the change is not as large (only about 3%), this is mainly due to the counteracting 30% increase in traffic along the Parkway. The predicted concentrations between the "No Build" and Parkway scenarios are similar and thus the Parkway does not result in an increased exposure and hence risk over the "No Build" scenario.

Table E.2-2 provides a summary of the incremental change for $PM_{2.5}$ concentrations associated with vehicular emissions between 2015 and 2035 for the receptors along the roadway. As seen from the table, the predicted $PM_{2.5}$ concentrations increase between 2015 and 2035, this is mainly due to the increased road dust as the road dust associated with increased traffic overrides any gains in control technologies of tailpipe emissions.

TABLE E.2-1: INCREMENTAL CHANGES BETWEEN 2015 and 2035 ASSOCIATED WITH BENZENE EXPOSURE

			Benzene Traffic increment (no background)							
			2015		2035		Difference Between 2035 and 2015			
			Max Concentration, µg/m³		Max Concentration, µg/m³		Increment, µg/m³		% change	
Receptor	Receptor Description	Distance to Road m	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
2479	Ball Field (St Clair College Athletic Field 4 ball diamond)	150	0.064	0.067	0.052	0.064	-0.012	-0.003	-19%	-4%
58	Bellewood Estates (Fleming Crt)	50	0.261	0.252	0.231	0.242	-0.030	-0.010	-11%	-4%
403	Bellewood Estates	300	0.065	0.07	0.059	0.071	-0.006	0.001	-9%	1%
74	Grand Marais Roads (Northway and Norfolk)	25	0.198	0.177	0.179	0.181	-0.019	0.004	-10%	2%
186	Grand Marais Roads (Northway and Norfolk)	75	0.131	0.115	0.118	0.117	-0.013	0.002	-10%	2%
910	Heritage Estates	260	0.027	0.035	0.023	0.033	-0.004	-0.002	-15%	-6%
944	Home for Aged La Salle (Royal Oak Senior Home)	330	0.039	0.04	0.034	0.041	-0.005	0.001	-13%	3%
945	Home for Aged La Salle (Royal Oak Senior Home)	260	0.043	0.04	0.037	0.043	-0.006	0.003	-14%	8%
295	Huron Estates (Lambton)	175	0.08	0.074	0.071	0.076	-0.009	0.002	-11%	3%
410	Huron Estates	270	0.061	0.058	0.053	0.058	-0.008	0.000	-13%	0%
781	Kendleton Court	100	0.077	0.085	0.062	0.082	-0.015	-0.003	-19%	-4%
858	Oliver Estates (Grosvenor to Croydon)	100	0.048	0.094	0.041	0.093	-0.007	-0.001	-15%	-1%
1997	Oliver Estates (Chelsea)	25	0.066	0.107	0.055	0.105	-0.011	-0.002	-17%	-2%
423	Reddock	230	0.048	0.058	0.043	0.062	-0.005	0.004	-10%	7%
2478	Residential (St Clair Park)	250	0.031	0.042	0.026	0.042	-0.005	0.000	-16%	0%
867	Southwood Lakes (Alpen Rose)	200	0.048	0.075	0.041	0.071	-0.007	-0.004	-15%	-5%
1513	Spring Garden	250	0.074	0.099	0.068	0.102	-0.006	0.003	-8%	3%
1644	Spring Garden (Association for Persons with Physical Disabilities)	300	0.065	0.081	0.056	0.083	-0.009	0.002	-14%	2%
2480	St Clair College	350	0.037	0.037	0.03	0.036	-0.007	-0.001	-19%	-3%
828	Villa Borghese	200	0.058	0.068	0.052	0.066	-0.006	-0.002	-10%	-3%
848	Villa Paradiso Crescent	200	0.044	0.058	0.035	0.056	-0.009	-0.002	-20%	-3%

TABLE E.2-2: INCREMENTAL CHANGES BETWEEN 2015 and 2035 ASSOCIATED WITH $PM_{2.5}$ EXPOSURE

			$PM_{2.5}$ Traffic increment (no background)							
			2015		2035		2035-2015			
			Max Concentration, µg/m3		Max Concentration,µg/m3		Increment, µg/m3		% change	
Receptor	Receptor Description	Distance to Road, m	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
2479	Ball Field (St Clair College Athletic Field 4 ball diamond)	150	1.3	1.1	2.60	2.00	1.3	0.9	100%	82%
58	Bellewood Estates (Fleming Crt)	50	3.0	1.0	4.40	2.60	1.4	1.6	47%	160%
403	Bellewood Estates	300	0.6	0.6	1.20	1.70	0.6	1.1	100%	183%
74	Grand Marais Roads (Northway and Norfolk)	25	2.7	1.5	4.30	2.10	1.6	0.6	59%	40%
186	Grand Marais Roads (Northway and Norfolk)	75	1.6	0.8	2.70	1.50	1.1	0.7	69%	87%
910	Heritage Estates	260	0.3	0.4	0.70	0.70	0.4	0.3	133%	75%
944	Home for Aged La Salle (Royal Oak Senior Home)	330	0.3	0.3	0.70	0.50	0.4	0.2	133%	67%
945	Home for Aged La Salle (Royal Oak Senior Home)	260	0.3	0.4	0.70	0.60	0.4	0.2	133%	50%
295	Huron Estates (Lambton)	175	1.0	0.7	1.50	1.30	0.5	0.6	50%	86%
410	Huron Estates	270	0.7	0.5	1.20	0.90	0.5	0.4	71%	80%
781	Kendleton Court	100	1.1	1.4	2.20	2.40	1.1	1.0	100%	71%
858	Oliver Estates (Grosvenor to Croydon)	100	0.4	1.1	0.80	2.00	0.4	0.9	100%	82%
1997	Oliver Estates (Chelsea)	25	0.7	1.4	1.30	2.40	0.6	1.0	86%	71%
423	Reddock	230	0.7	0.6	1.30	1.00	0.6	0.4	86%	67%
2478	Residential (St Clair Park)	250	0.4	0.4	0.80	0.70	0.4	0.3	100%	75%
867	Southwood Lakes (Alpen Rose)	200	0.4	0.5	0.70	0.80	0.3	0.3	75%	60%
1513	Spring Garden	250	0.3	0.6	0.50	1.50	0.2	0.9	67%	150%
1644	Spring Garden (Association for Persons with Physical Disabilities)	300	0.4	0.4	0.70	1.00	0.3	0.6	75%	150%
2480	St Clair College	350	0.7	0.5	1.30	1.00	0.6	0.5	86%	100%
828	Villa Borghese	200	0.6	0.7	1.50	1.00	0.9	0.3	150%	43%
848	Villa Paradiso Crescent	200	0.6	1.0	1.40	1.70	0.8	0.7	133%	70%

E.3 Evaluation of Incremental Change Using the 90th Percentile and 50th Percentile Background Concentrations for 2015 and 2035

Table E.3-1 provides a summary of the incremental change for benzene concentrations associated with the use of the 90th percentile and 50th percentile background concentrations for 2015 and 2035 for the receptors along the roadway. As seen from the table, the predicted benzene concentrations decrease between 2015 and 2035 due to changes in emission factors for benzene over the 20 year time period. The incremental contribution associated with traffic related changes is also provided in the table. The incremental percent change is represented by the traffic increment (provided in tables from the previous section) divided by the traffic increment plus background. As seen from the table, the incremental contribution considering the 90th percentile background is essentially the same between the "No Build" and Parkway scenarios and ranges from 1 to 10% of background. The use of the 50th percentile background results in a higher incremental contribution ranging from 3 to 18%. Nonetheless, the total benzene concentrations are higher when the 90th percentile background concentrations are considered and the use of the 90th percentile background concentration represents a conservative estimate of exposure. In addition, the predicted concentrations between the "No Build" and Parkway scenarios are similar and thus the Parkway does not result in an increased exposure and hence risk over the "No Build" scenario.

Table E.3-2 provides a summary of the incremental change for $PM_{2.5}$ concentrations associated with the use of the 90th percentile and 50th percentile background concentrations for 2015 and 2035 for the receptors along the roadway. As seen from the table, the predicted $PM_{2.5}$ concentrations increase between 2015 and 2035 as the road dust associated with increased traffic overrides any gains in control technologies of tailpipe emissions. The incremental contribution associated with traffic related changes is also provided in the table. The incremental percent change is represented by the traffic increment (provided in tables from the previous section) divided by the traffic increment plus background. As seen from the table, the incremental contribution considering the 90th percentile background is lower for the Parkway as compared to the "No Build" scenario indicating that the Parkway scenario represents a lower exposure and hence risk from $PM_{2.5}$ concentrations associated with vehicular traffic. A similar conclusion is reached when the 50th percentile background concentration is used. The incremental contribution of $PM_{2.5}$ associated with traffic is higher by about a factor of 2 if the 50th percentile background concentration is used. Nonetheless, the total $PM_{2.5}$ concentrations are higher when the 90th percentile background concentrations are considered and the use of the 90th percentile background concentration represents a conservative estimate of exposure.

TABLE E.3-1: INCREMENTAL CHANGES ASSOCIATED WITH THE 90th AND 50th PERCENTILE BACKGROUND CONCENTRATIONS FOR BENZENE EXPOSURE

		Traffic + 90th percentile background (2.32 µg/m³)								Traffic + 50th percentile background (1.2 µg/m³)							
		2015				2035				2015				2035			
		Max Concentration, µg/m³		Increment contribution (traffic increment)/traffic increment + background)		Max Concentration, µg/m³		Increment contribution (traffic increment)/traffic increment + background)		Max Concentration, µg/m³		Increment contribution (traffic increment)/traffic increment + background)		Max Concentration, µg/m³		Increment contribution (traffic increment)/traffic increment + background)	
Receptor	Receptor Description	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
2479	Ball Field (St Clair College Athletic Field 4 ball diamond)	2.384	2.387	3%	3%	2.372	2.384	3%	3%	1.264	1.267	5%	5%	1.252	1.264	5%	5%
58	Bellewood Estates (Fleming Crt)	2.581	2.572	10%	10%	2.551	2.562	10%	10%	1.461	1.452	18%	17%	1.431	1.442	18%	17%
403	Bellewood Estates	2.385	2.39	3%	3%	2.379	2.391	3%	3%	1.265	1.27	5%	6%	1.259	1.271	5%	6%
74	Grand Marais Roads (Northway and Norfolk)	2.518	2.497	8%	7%	2.499	2.501	8%	7%	1.398	1.377	14%	13%	1.379	1.381	14%	13%
186	Grand Marais Roads (Northway and Norfolk)	2.451	2.435	5%	5%	2.438	2.437	5%	5%	1.331	1.315	10%	9%	1.318	1.317	10%	9%
910	Heritage Estates	2.347	2.355	1%	1%	2.343	2.353	1%	1%	1.227	1.235	2%	3%	1.223	1.233	2%	3%
944	Home for Aged La Salle (Royal Oak Senior Home)	2.359	2.36	2%	2%	2.354	2.361	2%	2%	1.239	1.24	3%	3%	1.234	1.241	3%	3%
945	Home for Aged La Salle (Royal Oak Senior Home)	2.363	2.36	2%	2%	2.357	2.363	2%	2%	1.243	1.24	3%	3%	1.237	1.243	3%	3%
295	Huron Estates (Lambton)	2.4	2.394	3%	3%	2.391	2.396	3%	3%	1.28	1.274	6%	6%	1.271	1.276	6%	6%
410	Huron Estates	2.381	2.378	3%	2%	2.373	2.378	3%	2%	1.261	1.258	5%	5%	1.253	1.258	5%	5%
781	Kendleton Court	2.397	2.405	3%	4%	2.382	2.402	3%	4%	1.277	1.285	6%	7%	1.262	1.282	6%	7%
858	Oliver Estates (Grosvenor to Croydon)	2.368	2.414	2%	4%	2.361	2.413	2%	4%	1.248	1.294	4%	7%	1.241	1.293	4%	7%
1997	Oliver Estates (Chelsea)	2.386	2.427	3%	4%	2.375	2.425	3%	4%	1.266	1.307	5%	8%	1.255	1.305	5%	8%
423	Reddock	2.368	2.378	2%	2%	2.363	2.382	2%	2%	1.248	1.258	4%	5%	1.243	1.262	4%	5%
2478	Residential (St Clair Park)	2.351	2.362	1%	2%	2.346	2.362	1%	2%	1.231	1.242	3%	3%	1.226	1.242	3%	3%
867	Southwood Lakes (Alpen Rose)	2.368	2.395	2%	3%	2.361	2.391	2%	3%	1.248	1.275	4%	6%	1.241	1.271	4%	6%
1513	Spring Garden	2.394	2.419	3%	4%	2.388	2.422	3%	4%	1.274	1.299	6%	8%	1.268	1.302	6%	8%
1644	Spring Garden (Association for Persons with Physical Disabilities)	2.385	2.401	3%	3%	2.376	2.403	3%	3%	1.265	1.281	5%	6%	1.256	1.283	5%	6%
2480	St Clair College	2.357	2.357	2%	2%	2.35	2.356	2%	2%	1.237	1.237	3%	3%	1.23	1.236	3%	3%
828	Villa Borghese	2.378	2.388	2%	3%	2.372	2.386	2%	3%	1.258	1.268	5%	5%	1.252	1.266	5%	5%
848	Villa Paradiso Crescent	2.364	2.378	2%	2%	2.355	2.376	2%	2%	1.244	1.258	4%	5%	1.235	1.256	4%	5%

TABLE E.3-2: INCREMENTAL CHANGES ASSOCIATED WITH THE 90th AND 50th PERCENTILE BACKGROUND CONCENTRATIONS FOR $PM_{2.5}$ EXPOSURE

		Traffic + 90th percentile background (21 ug/m3)								Traffic + 50th percentile background (10 ug/m3)							
		2015				2035				2015				2035			
		Max Concentration, µg/m³		Increment contribution (traffic increment)/traffic increment + background)		Max Concentration, µg/m³		Increment contribution (traffic increment)/traffic increment + background)		Max Concentration, µg/m³		Increment contribution (traffic increment)/traffic increment + background)		Max Concentration, µg/m³		Increment contribution (traffic increment)/traffic increment + background)	
Receptor	Receptor Description	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway	No Build	Parkway
2479	Ball Field (St Clair College Athletic Field 4 ball diamond)	22.3	22.1	6%	5%	23.6	23	6%	5%	11.3	11.1	12%	10%	12.6	12	10%	9%
58	Bellewood Estates (Fleming Crt)	24	22	13%	5%	25.4	23.6	12%	4%	13	11	23%	9%	14.4	12.6	21%	8%
403	Bellewood Estates	21.6	21.6	3%	3%	22.2	22.7	3%	3%	10.6	10.6	6%	6%	11.2	11.7	5%	5%
74	Grand Marais Roads (Northway and Norfolk)	23.7	22.5	11%	7%	25.3	23.1	11%	6%	12.7	11.5	21%	13%	14.3	12.1	19%	12%
186	Grand Marais Roads (Northway and Norfolk)	22.6	21.8	7%	4%	23.7	22.5	7%	4%	11.6	10.8	14%	7%	12.7	11.5	13%	7%
910	Heritage Estates	21.3	21.4	1%	2%	21.7	21.7	1%	2%	10.3	10.4	3%	4%	10.7	10.7	3%	4%
944	Home for Aged La Salle (Royal Oak Senior Home)	21.3	21.3	1%	1%	21.7	21.5	1%	1%	10.3	10.3	3%	3%	10.7	10.5	3%	3%
945	Home for Aged La Salle (Royal Oak Senior Home)	21.3	21.4	1%	2%	21.7	21.6	1%	2%	10.3	10.4	3%	4%	10.7	10.6	3%	4%
295	Huron Estates (Lambton)	22	21.7	5%	3%	22.5	22.3	4%	3%	11	10.7	9%	7%	11.5	11.3	9%	6%
410	Huron Estates	21.7	21.5	3%	2%	22.2	21.9	3%	2%	10.7	10.5	7%	5%	11.2	10.9	6%	5%
781	Kendleton Court	22.1	22.4	5%	6%	23.2	23.4	5%	6%	11.1	11.4	10%	12%	12.2	12.4	9%	11%
858	Oliver Estates (Grosvenor to Croydon)	21.4	22.1	2%	5%	21.8	23	2%	5%	10.4	11.1	4%	10%	10.8	12	4%	9%
1997	Oliver Estates (Chelsea)	21.7	22.4	3%	6%	22.3	23.4	3%	6%	10.7	11.4	7%	12%	11.3	12.4	6%	11%
423	Reddock	21.7	21.6	3%	3%	22.3	22	3%	3%	10.7	10.6	7%	6%	11.3	11	6%	5%
2478	Residential (St Clair Park)	21.4	21.4	2%	2%	21.8	21.7	2%	2%	10.4	10.4	4%	4%	10.8	10.7	4%	4%
867	Southwood Lakes (Alpen Rose)	21.4	21.5	2%	2%	21.7	21.8	2%	2%	10.4	10.5	4%	5%	10.7	10.8	4%	5%
1513	Spring Garden	21.3	21.6	1%	3%	21.5	22.5	1%	3%	10.3	10.6	3%	6%	10.5	11.5	3%	5%
1644	Spring Garden (Association for Persons with Physical Disabilities)	21.4	21.4	2%	2%	21.7	22	2%	2%	10.4	10.4	4%	4%	10.7	11	4%	4%
2480	St Clair College	21.7	21.5	3%	2%	22.3	22	3%	2%	10.7	10.5	7%	5%	11.3	11	6%	5%
828	Villa Borghese	21.6	21.7	3%	3%	22.5	22	3%	3%	10.6	10.7	6%	7%	11.5	11	5%	6%
848	Villa Paradiso Crescent	21.6	22	3%	5%	22.4	22.7	3%	4%	10.6	11	6%	9%	11.4	11.7	5%	9%

E.4 Evaluation of SO_2 Using Different Guideline Limits

The 24 hour guideline for SO_2 has been updated in 2005 by the WHO; the new guideline is approximately six times lower than the 2000 guideline value and is based on epidemiological studies from 2003 onwards. These studies indicated that there was a major decrease in childhood respiratory disease and all-age mortality when the sulphur content in fuels was substantially reduced. Several studies indicate that there is no threshold for health effects for 24 hour exposure to SO_2 concentrations in the range of 5 to 40 µg/m^3. The guideline has therefore been set at 20 µg/m^3. The WHO acknowledges the difficulty in achieving the new guideline value in the short-term, and has suggested a stepped approach using a tier I interim value of 125 µg/m^3. The tier II interim value of 50 µg/m^3 is an intermediate goal based on a reduction of motor vehicle emissions, industrial emissions and/or emissions from power plant production. The WHO suggests that this is a reasonable and feasible goal for some developing countries and would lead to significant health improvements. The following tables present the results comparing predicted concentrations to all three values (20 µg/m^3, 50 µg/m^3 and 125 µg/m^3) for the years 2015, 2025 and 2035. The results of the evaluation of the three different guideline values associated with exposure to SO_2 demonstrate that there is no difference between the Future "No Build" (i.e. the roadway in its current configuration) and the Parkway scenarios and that background accounts for the majority of the exposure. In addition, the hazard quotients do not change between the different horizon years. This is not surprising since gasoline in Canada does not contain sulphur.

TABLE E.4-1: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO SO_2 (INCLUDING BACKGROUND) FOR 2015

Receptor Location	Receptor ID	SO_2 24 hr TRV=125 µg/m^3		SO_2 24 hr TRV=50 µg/m^3		SO_2 24 hr TRV=20 µg/m^3	
		No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field	2479	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Bellwood Estates	58	0.26	0.26	0.64	0.64	**1.61**	**1.61**
	403	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Grand Marais Roads	74	0.26	0.26	0.64	0.64	**1.61**	**1.61**
	186	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Heritage Estates	910	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Home for Aged LaSalle	944	0.26	0.26	0.64	0.64	**1.60**	**1.60**
	945	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Huron Estates	295	0.26	0.26	0.64	0.64	**1.60**	**1.60**
	410	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Kendleton Court	781	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Oliver Estates	858	0.26	0.26	0.64	0.64	**1.60**	**1.60**
	1997	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Reddock	423	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Residential	2478	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Southwood Lakes	867	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Spring Garden	1513	0.26	0.26	0.64	0.64	**1.60**	**1.60**
	1644	0.26	0.26	0.64	0.64	**1.60**	**1.60**
St. Clair College	2480	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Villa Borghese	828	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Villa Paradiso Cres.	848	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Background value		*0.26*		*0.64*		***1.60***	

TABLE E.4-2: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO SO_2 (INCLUDING BACKGROUND) FOR 2025

Receptor Location	Receptor ID	SO_2 24 hr TRV=125 µg/m^3		SO_2 24 hr TRV=50 µg/m^3		SO_2 24 hr TRV=20 µg/m^3	
		No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field	2479	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Bellwood Estates	58	0.26	0.26	0.64	0.64	**1.61**	**1.61**
	403	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Grand Marais Roads	74	0.26	0.26	0.64	0.64	**1.61**	**1.61**
	186	0.26	0.26	0.64	0.64	**1.61**	**1.61**
Heritage Estates	910	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Home for Aged LaSalle	944	0.26	0.26	0.64	0.64	**1.60**	**1.60**
	945	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Huron Estates	295	0.26	0.26	0.64	0.64	**1.60**	**1.60**
	410	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Kendleton Court	781	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Oliver Estates	858	0.26	0.26	0.64	0.64	**1.60**	**1.60**
	1997	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Reddock	423	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Residential	2478	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Southwood Lakes	867	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Spring Garden	1513	0.26	0.26	0.64	0.64	**1.60**	**1.60**
	1644	0.26	0.26	0.64	0.64	**1.60**	**1.60**
St. Clair College	2480	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Villa Borghese	828	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Villa Paradiso Cres.	848	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Background value		*0.26*		*0.64*		***1.60***	

TABLE E.4-3: HAZARD QUOTIENTS ASSOCIATED WITH EXPOSURE TO SO_2 (INCLUDING BACKGROUND) FOR 2035

Receptor Location	Receptor ID	SO_2 24 hr TRV=125 µg/m^3		SO_2 24 hr TRV=50 µg/m^3		SO_2 24 hr TRV=20 µg/m^3	
		No Build	Parkway	No Build	Parkway	No Build	Parkway
Ball Field	2479	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Bellwood Estates	58	0.26	0.26	0.64	0.64	**1.61**	**1.61**
	403	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Grand Marais Roads	74	0.26	0.26	0.64	0.64	**1.61**	**1.61**
	186	0.26	0.26	0.64	0.64	**1.61**	**1.61**
Heritage Estates	910	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Home for Aged LaSalle	944	0.26	0.26	0.64	0.64	**1.60**	**1.60**
	945	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Huron Estates	295	0.26	0.26	0.64	0.64	**1.60**	**1.60**
	410	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Kendleton Court	781	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Oliver Estates	858	0.26	0.26	0.64	0.64	**1.60**	**1.60**
	1997	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Reddock	423	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Residential	2478	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Southwood Lakes	867	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Spring Garden	1513	0.26	0.26	0.64	0.64	**1.60**	**1.60**
	1644	0.26	0.26	0.64	0.64	**1.60**	**1.60**
St. Clair College	2480	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Villa Borghese	828	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Villa Paradiso Cres.	848	0.26	0.26	0.64	0.64	**1.60**	**1.60**
Background value		*0.26*		*0.64*		***1.60***	